PanEnergy™

PLAN OF OPERATIONS FOR EXISTING NATURAL GAS PIPELINE AT PADRE ISLAND NATIONAL SEASHORE



Prepared For:

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

PADRE ISLAND NATIONAL SEASHORE
9405 SOUTH PADRE ISLAND DRIVE
CORPUS CHRISTI, TEXAS 78418-5597
(512) 949-8173

Prepared by:

PANENERGY FIELD SERVICES, INC.
P. O. BOX 5493
DENVER, COLORADO 80217
(303) 595-3331
and
Belaire Environmental, Inc.
P. O. Box 741
Rockport, TX 78381
(512) 729-2948

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PREFACE

This Plan of Operations was prepared jointly by PanEnergy Field Services, Inc. (PanEnergy) and Belaire Environmental, Inc. (BEI). This plan provides information for the Murdock Pass Pipeline system that consists of approximately 24 miles of 10-inch (Murdock Pass lateral), 2.5 miles of 6-inch (Penescal Lateral) and one mile of 2-inch pipeline (Sprint Lateral) located within the Padre Island National Seashore boundaries. PanEnergy supplied information for sections I, II, IV, V, VI, and VIII. BEI prepared Sections III and VII and Sections IX through XIV. Urban Engineering (UE) provided surveying, plats, maps, and drafting support. SWCA, Inc. Environmental Consultants performed a cultural resource survey.

The Plan of Operations is required under the National Park Service (NPS) regulations, Title 36 of the Code of Federal Regulations, Part 9, Subpart B (36 CFR 9B). It is essentially a permit application. NPS approval of the Plan of Operations serves as an operator's permit to conduct operations within the Padre Island National Seashore (PINS).

During the planning process, the project was coordinated with Mr. Paul Eubank of the PINS; Mr. Jim Gilmore, Regulatory Branch of the U.S. Army Corps of Engineers (COE), Corpus Christi Office; Mr. Beau Hardegree, Texas Parks and Wildlife (TPW), and Ms. Lain Ellis of the Texas Historical Commission. Additional site inspections were made during August 1997, involving the PINS, COE, and TPW concerning depth-of-cover of the pipeline and the subsequent remediation. Virtually all recommendations made by these government representatives were incorporated into this document.

The format of this document generally follows the "Plan of Operations" provided to BEI by the PINS (36 CER 9.36). These requirements were modified somewhat by PanEnergy and BEI to relate to the pipeline project. Mr. Paul Eubank of PINS reviewed and approved these modifications in December 1996, February 1997 and June 1997. Each item in that list of information requirements is restated and PanEnergy's response immediately follows. Appendix A provides a copy of these information requirements; 36 CFR 9 Subpart B regulations are included in Appendix B.

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C	Ownership & Rights-of-Way Documents
D	Description of Pipeline
E	Spill Prevention Control & Countermeasure Plan
F	Plan Correspondence

I. OWNERSHIP INFORMATION

A. Provide names, addresses, and telephone number of the following:

1. Pipeline owner:

PanEnergy Texas Intrastate Pipeline Company
370 17th Street
Denver, Colorado 80202

2. Pipeline operator:

PanEnergy Field Services Company
Rt. 1 Box 97
Falfurrias, Texas 78355

3. Person accountable for operations:

Mr. James Rintamaki
General Manager - Gulf Coast
PanEnergy Field Services, Inc.
370 17th Street
P.O. Box 5497
Denver, Colorado 80217
1-303-605-1788 or 303-595-3331

4. Field representative:

Mr. Mike Lloyd
Director of Operations
Gulf Coast
PanEnergy Field Service, Inc.
Rt. 1 Box 97
Falfurrias, Texas 78355
1-512-325-9350 or 1-512-798-2791 or 1-800-435-1697

5. Contact person in case of spill, emergency, etc.:

Witcher Communications
1-800-435-1679

Mr. Neal Coffey
Plant Manager
PanEnergy Field Service, Inc.
Rt. 1 Box 97
Falfurrias, Texas
1-800-435-1697 or 512-325-9330

B. Provide copies of the following:

1. Ownership documentation:

See Appendix C.

2. Designation of operator:

PanEnergy Pipeline Company is the owner/operator.

3. Designation of agent:

No agent has been designated.

4. Right-of-way agreement:

See Appendix C.

5. Other pertinent agreements:

There are no other pertinent agreements.

II MAPS

A. RIGHTS-OF-WAY

1. Provide survey plat or other equivalent data to pinpoint locations of rights-of-way:

See Exhibit A (Pocket - Sheets 1 - 5).

2. Identify rights-of-way on USGS quadrangle map(s), 1:24,000 scale:

See Figures 2 - 6.

B. OPERATIONS LOCATION MAPS

Submit scaled Map(s) showing the location of operations. USGS quadrangle(s) should be used as base map(s). Show the following (as applicable):

a. Access road(s):

See Figures 2 - 6.

b. Helicopter landing zone:

There are no existing landing zones.

c. Location of wells and other facilities:

There are no wells or other facilities associated with this pipeline.

d. Location of pipeline(s):

See Figures 1 - 6. For surveyed location of pipeline see Topographic Map Overlay (Sheets 1 & 2, Pocket).

e. Sources of any fill or borrow materials necessary for operations:

It is anticipated that fill will be needed. PanEnergy plans, at this time, to obtain fill from existing areas on Padre Island (see Figure 7). Areas approved by the PINS will be used to meet depth requirements and other needs as required by the PINS.

C. Operations Plats

Submit scaled plat(s) showing the layout, dimensions, and design of the operations. Scale should be large. Include cross-sections where appropriate. Show the following (as applicable):

a. Access road dimensions:

See Figures 2 and 3. The park access road is the paved main park road. The road, approximately 26 feet wide and approximately 7 miles long, was not constructed by PanEnergy but is used to access the national park facilities. This accesses only the northern most portion of the 10-inch pipeline. There are two other access roads that are accessible only through locked gates.

b. Surface disturbance dimensions (for pipeline lowering):

The field inspection of the pipelines estimated that 1750 ft of pipeline are exposed (Appendix F). Lowering of the lines to achieve 3 ft of cover can be accomplished by excavating a trench typically 3.5 ft deep and 3 ft wide at the bottom with 3:1 side slopes. The approximate top width of the trench would be 24 ft. The excavated Material would be temporarily placed alongside the trench and would cover an area approximately 24 ft wide. Thus, the total width of surface disturbance due to pipeline lowering would be 48 ft. The surface area disturbed during lowering operations would be approximately 84,000 sq. ft (48 ft x 1750 ft), or 1.93 acres.

The soil would be sidecast along the pipeline route and stored for reburial subsequent to pipeline lowering. The general surface area would be approximately 456,000 square feet is size. Additional surface disturbance would occur in the lowering areas. If an average of 3.5 vertical feet of fill is excavated from the pipeline areas, approximately 900,000 square feet of surface area would be disturbed by the lowering activities. The pipeline lowering would be accomplished by obtaining a Nation Wide Permit Number 3 from the District Corps of Engineers.

Once the pipeline is lowered, the surface contours would be restored and the soil would be mulched with native hay to achieve revegetation..

Exposed Pipe Survey was conducted by PanEnergy personnel and Mr. Paul Eubank of the NPS on August 19, 1997. The exposed locations were identified using a hand held Global Positioning System

II MAPS (Continued)

(GPS) and the pipe thickness was inspected using an ultrasound gauge meter. Results of survey indicate their are ten (10) areas of concern. Nine actual exposed and one under seasonal waters. Total exposed pipe is 1,575 foot and 400 foot of pipe laying in seasonal pond. Areas are identified by latitude and longitude with brief Ranger's comment for possible remediation.

The following is a list of the pipeline locations:

1st : Pipe located at seasonal Pond, 400' at lat/long 27°.26.07 N & 97.18.75 W.
Comment: Pipeline needs to be lower.

2nd : Pipe located at lat/long 27°. 20.59 N & 97°.20.78 W, 200' exposed, coating looked good, .300 wall pipe.
Comment: Pipe can be covered with surrounding material.

3rd : Pipe located at lat/long 27°.20.03 N & 97°.20.09 W, 300' exposed, coating looked bad visible corrosion on pipe, .300 wall pipe.
Comment: Pipe needs to be repaired and lowered, pipe located in seasonal water area.

4th: Pipe located at lat/long 27°.19.39 N & 97°.20.07 W, 100' exposed, coating looked good, .300 wall pipe.
Comment: Pipe can be covered with surrounding material.

5th: Pipe located at lat/long 27°.19.36 N & 97°.20.07 W, 100' exposed, coating looked good, .300 wall pipe.
Comment: Pipe can be covered with surrounding material.

6th: Pipe located at lat/long 27°.16.49 N & 97°.21.58 W, 300' exposed, coating shows some signs of cracking with some corrosion, .300 wall pipe.
Comment: Pipe will need to be excavated and lowered, very flat area.

7th : Pipe located at lat/long 27°.16.13 N & 97°.21.07 W, 250' exposed, coating looked OK, .300 wall pipe.
Comment: Pipe will need to be excavated and lowered, very flat area.

8th: Pipe located at lat/long 27°.14.07 N & 97°.21.09 W, 75' exposed, coating looked OK, .300 wall pipe.
Comment: Pipe will need to be excavated and lowered, very flat area.

9th: Pipe located at lat/long 27°.14.50 N & 97°.22.12 W, 150' exposed, coating OK, .300 wall pipe.
Comment: Pipe will need to be excavated and lowered, very flat area.

10th: Pipe located at lat/long 27°.11.38 N & 97°.22.31 W, 100' exposed, coating OK, .300 wall pipe.
Comment: Pipe will need to be excavated and lowered, very flat area.

II MAPS (Continued)

c. Surface disturbance dimensions (for pipeline repair):

The surface length of a typical trench would be approximately 60 feet. The surface width of the trench for the 10-inch pipeline would be approximately 24-feet extending 12 feet on either side of the pipeline.

Excavated material would be placed to one side of the pipeline within the rights-of-way shown on Exhibit A. The rights-of-way for the 10-inch pipeline are 100 feet to either side of the pipeline. Thus, the surface disturbance dimensions in case of repair would be approximately 4,440 square feet [(24 feet + 50 feet) x 60 feet] for the main 10-inch pipeline. See Exhibit A for possible locations of surface disturbances.

d. Location and size of all excavations (e.g., ditches, sumps, etc. in case of repair):

Exhibit A shows the extents of the 10-inch pipeline within the PINS. A leak and subsequent excavation for repair could occur at virtually any point along the pipeline. The trench for repair of the line would be approximately 60 feet in length. The surface widths of the trench for the 10-inch pipeline would be approximately 24 feet. The bottom width of the 10-inch pipeline trench would be approximately 5 feet and the depth of the trench would be approximately 6 feet. It is estimated that the side slopes would be 1.5:1.

e. Location and size of all excavations (for pipeline installation):

Locations and size of possible additional pipelines are not known at this time.

f. Layout and size of all equipment including tanks, pipelines, metering points, heater treaters, separators, etc.; a plat prepared by a registered surveyor or equivalent positioning data will be required:

See Exhibit A.

g. Location of electrical powerlines:

See Exhibit A.

h. Location of pipeline control valves, pressure regulators, pressure and volume monitors and alarms, and cathodic protection (rectifiers) stations:

See Exhibit A.

i. Other facilities and/or equipment:

There are no surface structures associated with this pipeline.

II MAPS (Continued)

D. TOPOGRAPHIC INFORMATION (EXISTING DATA)

See Exhibit A and Figures 2-6.

III. DESCRIPTION OF AREA GEOLOGY

A. Describe the surface and subsurface geology including physiography, topography, and formations:

Padre Island is a barrier island flanked by the Gulf of Mexico on the eastern shoreline and the Laguna Madre on the western shoreline. The surface formation is recent aged sand, and the area consists of shifting sand dunes, intermittent ponds with sand/algal flats, and grasslands. The topographic elevation varies from sea level to approximately 25 feet above sea level. Most of the topographic variation is produced by windblown sand dunes.

The Laguna Madre in the project area is a shallow hypersaline lagoon with bottom elevations ranging from mean sea level to approximately three feet below mean sea level. Bottom sediments are generally comprised of mixtures of sand, silt, and shell fragments. The nearshore bottom of the Laguna Madre near the pipelines is mostly covered with seagrass.

Algermissen (1969) determined from seismic risk studies that there is no risk of damage due to seismic events in the pipeline area. Coffman (1973 & 1979) reports that there have been no earthquakes recorded within the lower Texas coastal region or within 200 miles of this site in the PINS. A minor earthquake was reported in March 1997, at Alice, Texas, approximately 50 miles west of the PanEnergy project. No active surface faults are known in the project area, and it seems unlikely that surface faults will be activated due to fluid withdrawal. Data presently available do not indicate measurable subsidence due to ground water withdrawal or other activities (Brown et al., 1977).

B. Depths of all known freshwater aquifers, brine zones, and other minerals (e.g., coal, oil, shale, etc.):

According to the Texas Natural Resource Conservation Commission (TNRCC), usable quality groundwater near the pipelines should be protected from the surface to a depth of 1,700-feet (Bright & Company and Belaire Consulting Inc. (BCI), 1994). No minerals of any type will be encountered during operation of the pipelines.

III. DESCRIPTION OF AREA GEOLOGY (Continued)

C. Provide any references that may be available:

Brown et al. (1977) provide an overview of area geology as well as a list of more than 75 references related to this section of Padre Island. The U.S. Soil Conservation Service also gives detailed information on the surface structures of North Padre Island (U. S. Department of Agriculture, 1965). The Texas Railroad Commission maintains records on the historical drilling activities in the immediate area.

IV. TIME TABLE FOR OPERATIONS

Provide the following dates or times (as applicable):

1. Date operations began:

The 10/6/2-inch pipeline was constructed in 1954 and operated by Florida Gas and Transmission Company.

PanEnergy commenced operation of the 10 and 6-inch pipelines in November 1996.

2. Anticipated longevity of operations:

It is anticipated that operations of the 10-inch pipeline will continue through the year 2050. The 2-inch Sprit lateral is inactive and is not anticipated to be in-service. Repair operations are not addressed for the 2-inch lateral, only abandonment procedures. PanEnergy continues to maintain the 10 and 6-inch pipelines in accordance with 49 CFR, Part 192 and Nationwide Permit No. 3 (COE) regulations (Appendix B).

3. Estimated date when reclamation will begin:

Reclamation of the 10 and 6-inch pipelines is expected to begin 60 days after approval from the PINS and Army Corps of Engineers is received.

4. Estimated time to complete reclamation:

Reclamation is expected to be complete within a year after start of work.

V. DESCRIPTION OF OPERATIONS

Address the following requirements, as applicable, and be as detailed as possible:

A. Methods, sequence of work, and all equipment used in site construction and maintenance:

Although additional drilling and development of oil and gas reserves offshore of the PINS may require construction of pipelines to allow for gathering, construction of lateral connections is not anticipated along the 10-inch pipeline at this time. Work preformed, where applicable, will be through the application and issuance of Nationwide Permit No. 3 (Maintenance) from the U.S. Army Corps of Engineers.

1. **Routine Maintenance**

In addition to construction, maintenance of the current pipeline is expected and includes:

- annual maintenance of valves;
- annual leakage survey; and
- painting as required.

Urethane will be used to brush-paint the valves after sanding and cleaning of metal surfaces is accomplished. Adjacent ground surrounding the valve will be covered with plastic or other suitable material to keep all spilled or waste material from contacting soil or vegetation. All waste material will be collected, hauled from the PINS and disposed of at an approved facility.

2. **Pipeline Repairs**

Repairs to the Padre Island section of the Murdock Pass 10 and 6-inch pipelines could require the use of the following (but not limited to) equipment:

- Rubber Tired Backhoe(s);
- Welding Equipment;
- X-ray Equipment; and
- Support vehicle(s).

V. DESCRIPTION OF OPERATIONS (Continued)

A. Methods, sequence of work, and all equipment used in site construction and maintenance: (Continued)

The backhoe and support equipment would travel within the designated 200-ft right-of-way (shown in Exhibit A) to the point of repair. The welding, x-ray equipment, repair tools and materials would be transported to the repair location via a non-lugged wide tired buggy along the pipeline right-of-way to minimize impacts to the surrounding environment. Once at the point of repair, the backhoe would excavate as described in II. C. 1.c., above. The excavation and temporary fill area would be kept to the minimum practical surface area. Silt curtains will be installed, as necessary, to contain excavated material. Once the pipeline is exposed, welding will be done, x-rayed to ensure completeness and the pipeline pressure tested. The temporary fill material will be returned to the excavated area to pre-excavation contours, once the repair is made. The disturbed area will be revegetated with local species. Equipment will exit via the same routes as were used for access. All wastes or unused materials will be removed and disposed of at an approved facility. Care will be taken to prevent soil contact by oil, gasoline, or other potentially hazardous chemicals associated with repair activities.

Repairs to the 10 and 6-inch pipelines in the Laguna Madre will be performed by equipment delivered by shallow-draft barges (e. g. 8 feet x 16 feet x 0. 5-feet draft). The barges will be powered by skiffs with outboard engines. Depending upon the nature of the repair, marsh backhoes, marsh draglines, and/or marsh buggies would be used to excavate soil and manipulate the pipe in waters no deeper than three feet. If the water depth were greater than three feet, shallow draft barge with crane and jet barge would be used to uncover, manipulate, and recover the pipeline.

3. Pipeline Lowering

Excavation and placement of soil to lower exposed pipeline could require the use of the following (but limited to) equipment:

- Rubber-tired backhoe(s);
- Rubber-tired front-end loader(s);
- Support vehicles; and
- Welding equipment.

V. DESCRIPTION OF OPERATIONS (Continued)

A. Methods, sequence of work, and all equipment used in site construction and maintenance: (Continued)

The equipment would travel within the designated 200 foot right-of-way to the areas where lowering the pipeline is required. Once at the work site, the backhoe(s) would excavate soil from around the pipeline location in the right-of-way. Excavated soil would be piled along side of the exposed pipeline where practical, or temporarily piled in the right-of-way, then moved by front-end loader to areas on the pipeline where cover is required subsequent to lowering activities. Soils would be placed to achieve a minimum 30 inches of cover over the pipeline. Equipment would exit the work site via the same route as were used for access.

B. Groundwater requirements, amount and source:

No groundwater requirements are needed for this operation.

C. Description of facilities, including all methods, materials, and equipment to be used in production and transportation of gas:

1. Treating and separating equipment:

None are within PINS.

2. Flowlines and pipelines:

a. Size, type, length, depth, etc.:

Drawing Number	Mile Point	Length (feet)	Pipe Size O. D.	Wall Thickness (inches)	Grade	Wrap/Protection	Wt. per Ft.
MP.1.6.C	24.62 - 29.55	26,000	10.75	0.307	API-5L "B"	Coal Tar Enamel	34.24
WLMP.1.7	29.55 - 34.28	10,832	10.75	0.307	API-5L "B"	Coal Tar Enamel	34.24
		9,939	10.75	0.5	API-5L "B"	Wate Kote	54.74
WLMP.1.8	34.28 - 39.77	29,000	10.75	0.307	API-5L "B"	Coal Tar Enamel	34.24
WLMP.1.9	39.77 - 45.38	29,600	10.75	0.307	API-5L "B"	Coal Tar Enamel	34.24
WLMP.1.10	45-38 - 50.18	25,367	10.75	0.307	API-5L "B"	Coal Tar Enamel	34.24
		130,738	Total Feet				

There is no information currently available concerning the 6-inch and 2-inch lateral pipelines. A description of the pipelines is provided in Appendix D.

V. DESCRIPTION OF OPERATIONS (Continued)

C. Description of facilities, including all methods, materials, and equipment to be used in production and transportation of gas: (Continued)

b. Inspection and testing measures:

PanEnergy operates and maintains the 6-inch lateral and the 10-inch lateral pipelines in accordance with CFR Title 49, Part 192 and Nationwide Permit No. 3 (COE) regulations. PanEnergy continues to provide cathodic protection and periodic maintenance and inspection on each pipeline.

c. Maximum and mean flow rate of product:

The 10-inch pipeline has an average throughput across the Padre Island National Seashore of approximately 2.0 million cubic feet (MCF) of natural gas per day.

d. Maximum and mean allowable operating pressure (MAOP):

The MAOP of the pipeline is 1,080 pounds per square inch gauge (psig).

e. Cathodic protection methods:

PanEnergy provides cathodic protection of the 10 and 6-inch pipelines with conventional rectifier beds.

f. "Pig" launching/retrieving station(s):

There are no pig launching or retrieving facilities for these pipelines within the Padre Island National Seashore.

g. Maintenance, including vegetation management:

No vegetation maintenance will be under-taken. Other maintenance is described in V. (A.), above.

3. **Pressure-control equipment:**

No pressure-control equipment is within PINS.

4. **Metering points, including LACT units, orifice meters and turbine meters:**

No metering points (including LACT units), orifice meters, or turbine meters are within PINS.

5. **Sales points, if on lease:**

No sales points are within PINS.

V. DESCRIPTION OF OPERATIONS (Continued)

C. Description of facilities, including all methods, materials, and equipment to be used in production and transportation of gas: (Continued)

6. Tanker truck pick-up points, if on park:

No pick-up points are within PINS.

7. Gas compression (if applicable):

No gas compression is within PINS.

8. Maintenance of access road surface and vegetation encroachment:

The access road is maintained by the NPS. No maintenance is anticipated since a 3/4-ton pickup is the only vehicular traffic.

9. Description of any additional ancillary facilities:

There are no ancillary facilities associated with this pipeline.

D. Description of all actions to be taken to comply with regulatory operating standards (as applicable):

1. Surface operations shall not be conducted within 500 feet of a watercourse, high pool shoreline, mean high tideline, or any structure or facility (excluding roads and pipelines) used for unit interpretation or administration, unless specifically authorized:

PanEnergy will comply with this provision.

2. Protection of all survey monuments, witness corners, reference monuments and bearing tress:

PanEnergy will comply with this provision.

3. Posting of a sign showing operator name and operation identification number:

PanEnergy will comply with this provision.

4. Fencing around all wells, storage tanks, and high pressure equipment as specified by the Superintendent:

PanEnergy will comply with this provision.

V. DESCRIPTION OF OPERATIONS (Continued)

D. Description of all actions to be taken to comply with regulatory operating standards (as applicable): (Continued)

5. Posting of warning signs acceptable to the Superintendent if operations are located in or near visitor use areas:

PanEnergy will comply with this provision.

6. Preventing accumulation of oil and other materials deemed to be fire hazards:

PanEnergy will comply with this provision.

7. Removal or storage of all materials not in use:

PanEnergy will comply with this provision.

8. Operator accountability for all contractors and subcontractors compliance with the requirements of an approved plan of operations:

PanEnergy will comply with this provision.

E. Security measures to ensure public health and safety:

The pipelines are marked at the Intercoastal Waterways of Laguna Madre, the western boundary of PINS. The onshore valves on the 10-inch line are key locked to prevent tampering.

VI. CONTAMINATING OR TOXIC SUBSTANCE SPILL CONTROL PLAN

This section shall include all actions to be performed in case of a release of any toxic or hazardous substance.

A. List of fuels, chemicals, substances, and additives to be used during conduct of operations:

See Appendix E for MSDS.

B. Identification of toxic or hazardous substances that will be used or be encountered during the operations, and potential hazards to humans and environment:

See Appendix E for MSDS.

C. Description of anticipated abnormal pressures or temperatures expected to be encountered:

No abnormal pressures are anticipated.

D. Detailed description of contingency actions to be performed in the event of toxic or hazardous substance release:

1. Notification of appropriate agencies (e.g., park, other federal, state and local):

   See Appendix E.

2. Actions to secure area to protect public:

   See Appendix E.

3. Spill containment actions including necessary equipment:

   See Appendix E.

4. Cleanup/removal methods and equipment:

   See Appendix E.

E. Description of emergency response equipment to be maintained at the operation location and off-site equipment that can be mobilized including name(s) and telephone number(s) of contact persons and response time:

See Appendix E.

F. Describe how waste oil, produced waters, and chemicals that will be stored, impounded, and disposed:

See Appendix E.

VII RECLAMATION PLAN

This section shall describe actions related to proper reclamation of surface estate disturbed by the operations. Reclamation plans would apply to surface improvements as well as areas that may be disturbed by spill cleanup activities. (Note: an updated reclamation plan may be required by the NPS prior to conducting restoration of disturbed lands).

A. Removal of all surface structures, equipment, and man-made debris:

1. Remove all above-ground structures including trailers, tents, storage buildings, water tanks, fuel storage tanks, production equipment, powerlines, pipelines, etc. except as required for continued production operations. All structures must be removed upon abandonment of the operation, except where the Superintendent finds that abandonment is a preferred course of action:

Upon abandonment of operations, PanEnergy proposes to cleanse, inert the lines with a gas such as nitrogen, cap, and abandon pipelines in place. Liquids used to flush the pipelines prior to the introduction of nitrogen would be collected in an enclosed container for proper disposal. A detailed plan will be submitted to PINS in the future, one year prior to abandonment of the pipelines. The abandonment plan will provide that the pipelines be capped near the Laguna Madre shoreline such that salt water cannot enter the parts of the lines that are left buried under Padre Island. The 2-inch Sprit lateral is located within the sand dune area of the park. This portion of the pipeline will be cleansed, inert with nitrogen type gas and capped using the same technique as the larger 10 and 6-inch pipelines. The purpose of such capping is to preclude the introduction of high salinity water into the ground or surface waters of PINS. The plan will utilize technical and regulatory procedures that prevail at that time.

2. Remove all equipment including drilling tools, production equipment, valves, flanges, hand tools, all vehicle parts, etc.:

PanEnergy will comply with this provision.

3. Remove all trash and debris including fuel, chemicals, and blasting materials. Such materials must be disposed of at an approved site:

PanEnergy will comply with this provision.

VII RECLAMATION PLAN (Continued)

B. Surface restoration:

1. Remove all material, such as lumber, gravel, shell, metal, or other material.
2. Remove all dams, dikes, berms, etc., fill with existing topsoil and re-grade to previous contours.
3. Remove access roads by pulling out culverts and temporary bridges, and by recontouring road profile to match the natural topographic grade.

PanEnergy will restore the land surface to pre-project contours by removing all surface improvements described in Section II C i. Any spill reclamation areas will be similarly restored. Backhoes, dozers, trucks, and other necessary equipment will be used to take up and haul off the various materials. All surface materials that are part of the project will be removed and properly disposed of.

The pre-project contours, as described in Exhibit A, will be restored by moving fill as needed. Dozers, backhoes, and trucks will be used to remove, haul, and smooth the soil. Care will be taken not to disturb areas outside prescribed project perimeters. Natural topographic grades will be accomplished. If sufficient soil is not available within the perimeters of the project components, approved suitable soil will be hauled onto the job site from outside the PINS (see Section II B e).

C. Replacing topsoil, recontouring, and re-vegetating:

1. Spread stockpiled topsoil and grade to original contours.

Because soils in the project area are predominantly sand, topsoil will not be stockpiled. PINS environmental protection personnel concur with this approach. Native hay will be mulched into the recontoured soil as needed to accomplish revegetation of uplands. In wetland areas, it is anticipated that the soils will revegetate with only spreading and contouring the replacement soil.

2. Provide topographic cross-sections showing the site configuration after reclamation:

Exhibit A provides topographic profiles that show the site configuration after reclamation. These profiles were prepared by Urban Engineering.

3. Re-seed and/or transplant native grasses and other native vegetation as prescribed by the NPS:

VII RECLAMATION PLAN (Continued)

a. Describe seedbed preparation, e.g., ripping, discing, scarifying, etc.:

Seedbed preparation can include ripping, discing, and/or scarifying the soils. Soils will be contoured to a smooth surface before revegetation efforts begin. Because soils in the project area are predominantly sand, no additional seedbed preparation is deemed warranted prior to installation of vegetation.

b. Identify native plant species, including seed or transplant sources, collection methods (if not available commercially), seed mixtures, percent live seed, seeding rates, seeding methods (e.g., broadcast, seed drill, hydro-seed, etc.) and mulching methods:

As noted in Section VII C 1, above, PanEnergy proposes to mulch, where necessary, the recontoured upland project areas with native hay taken from Padre or Mustang Islands. It is anticipated that wetland areas will revegetate naturally with recontouring. No seeding or transplanting is planned for restored wetlands. Seagrass areas will be restored.

Native hay from approved areas within PINS or commercial or private sources will be used to revegetate uplands. At least one commercial source of native hay is available. If, for some reason, PINS or commercial hay is not available or suitable at the time of reclamation, PanEnergy will obtain rights to harvest native hay from a private landowner on Padre or Mustang Islands. If practical, hay will be selected and harvested at a time that will provide for high seed density in the hay bales. Fall harvest will probably provide optimum seed material. Native plant species will, to the extent practical, correspond to those found in the area of reclamation prior to disturbance of the area. Section IX B provides vegetation mapping and species composition along the entirety of the pipelines.

Impacted seagrass beds will be planted with plugs. Species will be selected as described in the previous paragraph. Transplant sources will be selected shortly prior to the time the plants are needed. BEI has several sources of transplant material. Once plant sources are identified, the PINS will be given an opportunity to review and approve the sources prior to initiation of work. Transplants will be borrowed from natural areas outside the PINS. No more than one 6-inch plug of plant material will be removed from one square yard of borrow surface area. The plugs will be removed by shovel and care will be taken to ensure the integrity of root systems. Soil will be gently shaken or washed from the roots back into the hole created by the shovel. Plants will be immediately placed in plastic containers with sufficient water to cover roots. Transplant material will be transported to the PINS and replanted within 24 hours. Plants will be securely embedded in 3-6-inch deep holes made by hand tools. Soil will be compacted around the emergent plant leaves by hand pressure to secure the buried root mass.

VII RECLAMATION PLAN (Continued)

c. Watering methods, amounts, and frequency (if necessary):

If native hay mulch is used as a seed source, no watering is proposed. If a seagrass area were restored, no watering would be necessary.

d. Target species composition and structure, and percent cover:

Target species composition, structure and percent cover will correspond to those described in sections IX B and IX C of this Plan of Operations for any specific reclamation area. Target percent vegetation cover will be 70% of the pre-impact vegetation cover reported for a given area in Section IX C of this plan.

4. Methodology to monitor the area to determine success of re-vegetation efforts (e.g., species survival, vegetation density, diversity, percent cover, etc.) and to identify problem areas which may require additional actions:

If required by PINS, all restored areas will be monitored for coverage annually until desired coverage is achieved. Monitoring will involve sampling on a minimum of six randomly or systematically selected transects. Each transect will be perpendicular to the length of the restored area and will extend across its entire width into unimpacted vegetated areas. At 5-ft or 10-ft intervals (depending upon transect length) on each transect, three 6-inch diameter core or surface samples will be taken. The presence or absence of vegetation and the species present in each sample will be noted and recorded. Percent vegetation cover will be calculated by dividing the total number of samples with vegetation present by the total number of samples taken. If 70% of pre-impacted vegetation coverage is not accomplished at the time of monitoring, unvegetated areas will be remulched or replanted as required by PINS.

5. Describe specific actions to prevent influx of exotic plant species into disturbed areas:

During each monitoring effort, exotic plants will be removed by hand tool or other approved methods, placed in plastic bags, and disposed of at an approved site. No exotic species influx is anticipated.

D. Present an itemized list of estimated costs to accomplish reclamation actions. Cost estimates should address the following:

PanEnergy will submit a detailed abandonment plan 30 days prior to the proposed abandonment. At this time, it is estimated that abandonment costs would be as follows:

VII RECLAMATION PLAN (Continued)

2-inch Pipeline (Sprint Lateral) Abandonment-In-Place

1. All equipment to be used in reclamation actions:

Welding Equipment		$1,000.00
Supplies		$1,000.00
Backhoe		$3,400.00
	TOTAL	$5,400.00

2. Personnel:

Labor (2 backhoe operators, etc)	$1,500.00
Engineering Oversight	$1,000.00

3. All materials such as fill, soil, seed, plants, mulch, erosion control fabric (if necessary):
   None anticipated.

4. Water and trucking fees (if necessary):
   None anticipated.

5. Vegetation monitoring costs:
   None anticipated.

6. Exotic species control costs:
   None anticipated.

6-inch Pipeline (Penescal Lateral) Abandonment-In-Place

1. All equipment to be used in reclamation actions:

Barge, jet barge, tug (including operators)		$28,000.00
Welding Equipment		$9,000.00
Supplies		$6,000.00
Backhoe		$10,400.00
	TOTAL	$53,400.00

3. Personnel:

Labor (2 backhoe operators, etc)	$7,500.00
Engineering Oversight	$3,000.00

VII RECLAMATION PLAN (Continued)

4. All materials such as fill, soil, seed, plants, mulch, erosion control fabric (if necessary):

   None anticipated. However, restoration of a typical 2,880 sq. foot repair impact in seagrass beds is approximately $4,000.00.

5. Water and trucking fees (if necessary):

   None anticipated.

7. Vegetation monitoring costs:

   None anticipated. Approximately $2,500.00 per monitoring event in seagrass.

8. Exotic species control costs:

   None anticipated.

10-inch Pipeline (Murdock Pass) Abandonment-In-Place:

1. All equipment to be used in reclamation actions:

Barge, jet barge, (tug) including operators	$35,000.00
Welding Equipment	$9,000.00
Supplies	$13,000.00
Backhoe	$16,400.00
TOTAL	$73,400.00

2. Personnel:

Labor (2 backhoe operators, etc)	$7,500.00
Engineering Oversight	$3,000.00

4. All materials such as fill, soil, seed, plants, mulch, erosion control fabric (if necessary):

   None anticipated. However, restoration of a typical 2,880 sq. feet repair impact in seagrass beds is approximately $4,000.00.

5. Water and trucking fees (if necessary):

   None anticipated.

6. Vegetation monitoring costs:

   None anticipated. Approximately $2,500.00 per monitoring event in seagrass.

VII RECLAMATION PLAN (Continued)

7. Exotic species control costs:

   None anticipated

Reclamation of 10-inch and 6-inch Pipeline Repair Impact Areas:

1. All equipment to be used in reclamation actions (approximately 3 days):

   Backhoe $5,200.00

2. Personnel:

   Labor (2 backhoe operators) $ 2,800.00

3. All materials such as fill, soil, seed, plants, mulch, erosion control fabric (if necessary):

   Re-vegetation of a typical 2,880 sq. feet repair impact area (6-inch pipeline) or 4,380-sq. feet repair impact area (10-inch pipeline) would cost approximately $5,000.00, in seagrass or uplands.

4. Water and trucking fees (if necessary):

   $4,000.00 for typical 2,880-sq. feet upland repair impact area. (6-inch pipeline) or 4,380-sq. feet upland repair impact area (10-inch pipeline).

5. Vegetation monitoring costs:

   $2,500.00 per event for a typical 2,880-sq. foot repair impacted area (6-inch pipeline) or 4,380-sq. foot repair impacted area (10-inch pipeline).

6. Exotic species control:

   $2,500.00 per event for a typical 2,880-sq. foot repair impacted area (6-inch pipeline) or 4,380-sq. foot repair impacted area (10-inch pipeline).

Reclamation of Pipeline Lowering Impact Areas:

1. AD equipment to be used in reclamation actions:

Backhoe (15 days) $26,000
Rologon (hay haul, 5 days) $ 6,000

2. Personnel: (labor):

Backhoe operators (2)	$14,000
Mulching laborers (2)	s 8,000

3. All materials such as fill, soil seed, plants, mulch, erosion control fabric (if necessary):

Native hay (300 bales)	$ 3,000

4. Water and trucking fees (if necessary):

If needed $14,000

5. Vegetation monitoring costs:

Per event $ 5,000

6. Exotic species control:

Per event $10,000

NOTE: *The dollar amounts are subject to change and are presented as guidance only.*

E. Discuss alternative reclamation methods and techniques, and provide cost comparisons on each:

An alternative to pipeline abandonment-in-place would be removal of the lines. Removal would result in the disturbance of substantial acreage of seagrass, wetlands, sand/algal flats, and vegetated uplands. These disturbances would require restoration. It is preferable to PanEnergy to avoid disturbance of established habitats.

PanEnergy has not estimated cost of removal of the 10-inch and 6-inch lateral pipelines, but the cost is expected to be substantially greater than the cost of abandonment in place. PanEnergy will provide a detailed cost estimate for removal in its abandonment plan for the pipelines.

An alternative to the proposed revegetation techniques would be seeding or sprigging emergent areas with native grasses. The cost for seeding would be roughly the same as the cost of the proposed methods when mulching and watering are considered. One major disadvantage of seeding is that free seeds may tend to

VII RECLAMATION PLAN (Continued)

wash out during heavy rainfall events or blow out during high winds, whereas seeds in native hay will tend to remain in place. The cost of sprigging would be roughly the same as the proposed method of revegetation, but watering costs would at least double the total expense of revegetation. The methods selected have a proven record of accomplishment and probably have a higher probability of success.

VIII. AFFIDAVITS, STATEMENTS, AND PERMITS

A. PanEnergy Field Services, Inc., its contractors and its subcontractors, will fully comply with the Plan of operations, if approved by the National Park Service, and will further comply with all standards and stipulations issued by the Regional Director in accordance with regulations contained at Title 36 of the Code of Federal Regulations, Part 9, Subpart B (36 CFR 9B). PanEnergy Field Services, Inc. is fully accountable for its contractor(s)' and subcontractor(s)' compliance.

Signed: _____ Date: 2 Feb 98

B. The proposed operation is in compliance with all applicable federal, state, and local laws and regulations. This includes, but is not limited to, the following regulations:

1. 36 CFR 9B regulations;
2. Applicable regulations under 36 CFR Parts 1-7;
3. Clean Water Act (Sections 402 and 404) - PanEnergy has coordinated with the U. S. Amy Corps of Engineers (COE) and will comply with permit requirements;
4. Clean Air Act - PanEnergy will comply with the Texas Natural Resource Conservation Commission (TNRCC) regulations;
5. State water law and/or regulations; - PanEnergy will comply with the TNRCC regulations;
6. Coastal Zone Management Act; - Although the Texas Coastal Management Plan excludes federal parks from regulation, PanEnergy will comply with the general provisions of the Texas Coastal Management Plan;
7. State oil and gas regulations; and
8. Department of Transportation 49 CFR Part 192. PanEnergy will comply.

Signed: _____ Date: 2 Feb 98

C. Provide a copy of, or proof off application for permits required by other federal, state, or local agencies.

See Appendix F - COE permit correspondence and TGLO correspondence regarding coastal management act.

D. Provide a statement that the Superintendent will be assured access to the site as is necessary to properly monitor the operation and to ensure compliance with the Plan of operations.

The Superintendent or his designee will have access to the site as is necessary to properly monitor the operation and to ensure compliance with the Plan of operations.

IX. DESCRIPTON OF NATURAL RESOURCES

A. Describe the soils in the area and provide baseline data on soil chemical composition.

Soils in the project area are predominantly sand. The USDA (1965), Brown et. al. (1977), and Brown and Huey (1991) describe the history, dynamics, and physical properties of soils m Padre Island and the project area. According to the USDA (1965), soil pH generally ranges from 5.5 to 8.0, with higher pH occurrences nearer the Gulf side of the island. Soils are comprised of the Galveston and Mustang series.

Based on historical and recent aerial photographs and nautical charts, it appears that oil and gas exploration activities have occurred for many years near the PanEnergy pipelines. Other pipelines intersect the route of the lines. Although these activities could have caused some impact on the soils on or near the pipeline, areas of visual impact are not readily apparent. Per discussions with NPS personnel, no soil samples were collected from the project area.

B. Provide a description and map(s) of vegetation types within 200 feet either side of the pipeline rights-of-way. Seagrass beds will be mapped 50 feet either side of the pipelines.

On behalf of PanEnergy, BEI mapped the vegetation types in proximity to the pipeline. Fieldwork was performed in December 1996, and January 1997. Aerial photographs where taken on February 15, 1997, and used for interpretation, combined with a nine-day groundtruthing effort, to prepare the vegetation map. Prior to BEI's sampling of the pipeline route, Urban Engineering surveyed and staked the pipeline at approximately 400-foot intervals. Urban Engineering also measured the ground elevation and depth of cover over the top of the pipeline.

For the seagrass surveys, BEI collected vegetation samples at 10-foot intervals along the pipeline route. BEI also sampled at 10-foot intervals on 400-foot long transects that were perpendicular to the pipeline. Each transect extended 200 feet to either side of the pipeline. The transects were spaced approximately 400 feet apart along the length of the pipeline. At each sample station, BEI personnel collected three 6-inch diameter core samples. Where water depth permitted, three hand-grab samples were taken to avoid destruction of vegetation. Each sample was examined for the presence or absence of vegetation, species present, and soil type. Observations were recorded on field data sheets.

IX. DESCRIPTION OF NATURAL RESOURCES (Continued)

Percent vegetation coverage was estimated by dividing the number of samples with vegetation present by the total number of samples taken.

For the vegetation surveys on Padre Island, BEI sampled on transects perpendicular to the pipeline. The transects were spaced no more than 1,000 feet apart and extended 200 feet to either side of the pipeline. At 50-foot intervals or at representative points on each transect, BEI observed vegetation within a one square meter quadrant. Species present and percent cover of each species were estimated and recorded on field data sheets. Percent coverage for dominant species within a plant community was estimated by averaging the coverage of that species for each quadrant sampled within the community.

The results of the vegetation mapping effort are in Exhibit B and Table 1. BEI found 54 species of plants during the field survey. Vegetation communities can be divided into six distinct types: dunes, flat uplands with scattered hummocks, non-tidal wetlands, tidal wetlands, sand/algal flats, and seagrass beds. Most of the dunes are inactive and well vegetated. The uplands generally include small hummocks and flat land containing varying amounts of scattered non-tidal wetlands. The uplands are typically well covered with a diverse mixture of vegetation. Trees and shrubs are prevalent along only one reach of the pipeline, Segment 37. Non-tidal wetlands are both seasonal and perennial in nature and are dominated by a variety of hydrophytic species. During the field surveys, standing water was observed in most of these non-tidal wetlands. Tidal wetlands observed are typical of those in the Laguna Madre. No smooth cordgrass (*Spartina alterniflora*) is present on the shoreline areas. A variety of salt-tolerant hydrophytes dominates these wetlands. Sand/algal flats in the study area are generally the upper reaches of broad flats that are periodically inundated by high tides or wind-driven wave forces. Seagrass beds are well represented in the nearshore shallow Laguna Madre portion of the pipeline.

The USDA (1965), Brown et al. (1976), EMANCO (1980), Continental Shelf Associates, Inc. (CSA) (1985), Chapman (1988), Brown and Huey (1991), Drawe (1992), Bright & Company and Belaire Consulting, Inc. (1994), Texas Eastern Transmission Corporation and BEI (1995), Carter and Burgess (1994), and Williams Field Services and BEI (1997) provide an overview of vegetation and other environmental features in the project area. Section IX C, below, discusses species composition and vegetation coverage in the immediate project vicinity.

IX. DESCRIPTION OF NATURAL RESOURCES (Continued)

C. Provide baseline data on vegetation species composition (density and diversity) of over-story, mid-story, shrub layer, and herbaceous components within the project area (this information is necessary to determine species to be used in site reclamation and to assist in determining when reclamation is complete).

As noted in Section IX B, above, BEI collected data on species composition and coverage along the full length of the pipelines. Methods are also described above. Species composition and coverage in each 90 distinct vegetation communities mapped are summarized in Exhibit B and Table 1. Dune areas are typically dominated by seacoast bluestem (*Schizachyrium scoparium var. Littoralis*) and gulfdune paspalum (*Paspalum monostachyum*). Vegetation coverage of dunes ranged from 46% in pipeline segment 5 to 96% in Segment 7. Coverage of 80% or greater is common in dunes.

Flat uplands with hummocks and scattered depressions were also dominated by seacoast bluestem and gulfdune paspalum. Trees (*Salix nigra*) were found only in Segment 37. Other species observed are given in Table 1. Coverage in these areas ranged from a low of 81% in pipeline Segment 16 to highs of 99% and 100% in many of the segments. Vegetation cover of 90% or greater is common in the flat upland areas.

Non-tidal wetlands are interspersed along most of the pipeline route. Deeper non-tidal wetlands are dominated by:

- cattail (*Typha domingensis*),
- swordgrass (*Scirpus americanus*) and
- frog-fruits (*Phyla nodiflora*).

Shallow depressions are dominated by:

- saltmeadow cordgrass (*Spartina patens*),
- gulfdune paspalum (*Paspalum monostachyum*), and
- swordgrass (*Scirpus americanus*).

Lowest vegetation cover in non-tidal wetlands is 20% in Segment 14, a predominantly unvegetated open-water area. Vegetation coverage higher than 85% are common in non-tidal wetlands within most pipeline reaches.

IX. DESCRIPTION OF NATURAL RESOURCES (Continued)

Tidal wetlands occur less frequently than non-tidal marshes. Dominant species in tidal marshes are:

- salt-flat grass (*Monanthochloe littoralis*),
- saltgrass (*Distichlis spicata*),
- sea ox-eye (*Borrichia frutescens*), and
- saltmeadow cordgrass (*Spartina patens*).

Vegetation cover ranges from a low of 71% in Segment 84 to a high of 93% in Segment 82. Vegetation cover in the tidal marshes was commonly above 80%.

Seagrass beds occur at the north and south extremes of the pipeline project in the nearshore Laguna Madre. The seagrass bed at the north, pipeline Segment 1, is dominated by shoalgrass (*Halodule wrightii*). Only one seagrass sample contained another species. Clovergrass (*Halophila engelmannii*) is present near the deeper, offshore extremes of the north seagrass bed. Overall vegetation coverage in the north seagrass bed was 76%. Coverage from 500 ft off the Padre Island shoreline to 2000 ft offshore is 98%. The seagrass bed at the south, pipeline Segment 90, is dominated by shoalgrass (*Halodule wrightii*). No other species was found in samples. Vegetation coverage in the south bed was 99 percent.

D. Describe the wildlife species composition in the project area.

During BEI's field investigations, personnel made notes of wildlife observed in the area of the pipeline route. Species observed were:

- the brown pelican (*Pelecanus occidentalis*),
- white pelican (*Pelecanus erythrorhynchos*),
- great blue heron (*Ardea herodias*), tri-color heron (*Egretta tricolor*),
- sandhill crane (*Grus canadensis*),
- killdeer (*Charadrius vociferus*),
- bobwhite quail (*Colinus virginianus*),
- mourning dove (*Zenaid ura macroura*),
- white-tailed hawk (*Buteo albicandatus*),
- jack rabbit (*Lepas californicus*),
- white-tailed deer (*Odocoileus virginianus*), and
- coyote (*Canis latrans*).

Also observed but not identified to species were various migratory waterfowl including ducks and geese.

IX. DESCRIPTION OF NATURAL RESOURCES (Continued)

During wetter periods, the wetland areas likely hold freshwater and offer a source of drinking water for numerous species of birds, mammals, reptiles, and other wildlife species. The diverse vegetation offers feeding opportunities for a variety of birds and other wildlife.

CSA (1985), Chapman (1981, 1988), Britton and Morton (1989), Brown and Huey (1991), Bright & Company and BCI (1994), Texas Eastern Transmission Corporation and BEI (1995), and Williams Field Services Pipeline Company and BEI (1997) provide data and discussions of the wildlife utilization of the project area. Ecoservices (1993) surveyed bird activity near the project site from July 1992 through April 1993. 281,045 birds of 97 species were identified and counted.

Important species included:

- the brown pelican;
- piping plover (*Charadrius melodus*);
- snowy plover (*C. alexandriunus*);
- peregrine falcon (*Falco peregrinus*); and
- reddish egret (*Egretta rufescens*).

Species of goose, duck, gull, tern, and sandpiper were also observed.

Other wildlife likely to utilize habitat in the general project area include mammals such as:

- the spotted ground squirrel (*Spermophilus spilosoma*);
- kangaroo rat (*Dipodomys spp.*);
- South Texas pocket gopher (*Geomys personatus*);
- short-tailed grasshopper mouse (*Onychomys leucogaster*);
- white-footed deer mouse (*Peromyscus leucopus*);
- eastern mole (*Scatopus aquaticus*);
- raccoon (*Procyon lotor*); and
- eastern cottontail (*Sylvilagus floridanus*) (CSA, 1985).

IX. DESCRIPTION OF NATURAL RESOURCES (Continued)

Reptiles include:

- keeled earless lizard (*Holbrookia propinqua propinqua*);
- whiptail lizard (*Cnemidophorus sp.);*
- western diamondback rattlesnake (*Crotalus atrox);*
- glass snake (*Ophisaurus attenuatus*);
- western massessagua rattlesnake (*Sistrurus catenatus*);
- hog-nosed snake (*Heterodon nasicus*);
- glassy snake (*Arizona elegans*);
- Marcy's gartersnake (*Thamnophis marcianus*); and
- slender glass lizard (*Ophisaurus vantralis*) (Chapman, 1988; CSA, 1985).

The ornate box turtle (*Terrapene ornata ornata*) has also been reported on the island (CSA, 1985).

E. Provide a description and locations of unique, rare, threatened, and endangered species that inhabit or frequent the project area.

Exhibit C is a federal list of threatened and endangered species for Kleberg and Kenedy Counties. This list was provided in January 1997, by Pat Clements of the U.S. Fish and Wildlife Service, Corpus Christi, TX. Some of these species utilize the general project area. Figures 8 and 9 illustrate various sensitive shoreline ecosystems for Kleberg and Kenedy Counties.

These species include the piping plover which may feed in nearby intertidal zones during the fall, winter, and spring (Eubank, 1991). The peregrine falcon may utilize higher elevations, such as drilling rig derricks in the area, as a perch during the winter (Chapman, 1988). The brown pelican utilizes nearshore Gulf of Mexico and the Laguna Madre as feeding and resting areas. Kemp's ridley sea turtles (*Lepidochelys kempi*) have used portions of Padre Island for nesting (Manzella and Williams, 1992). The proposed project does not include any known critical habitat for these species or other threatened or endangered species.

IX. DESCRIPTION OF NATURAL RESOURCES (Continued)

F. Provide a description of the air quality, including information on pollutant levels and existing point sources.

According to Mr. Ed Kaperzyk, Texas Natural Resource Conservation Commission (TNRCC) Air Programs, all of Kleberg and Kenedy Counties are attainment areas for regulated pollutants. No violations of ambient air standards have been recorded. TNRCC also advised BEI that they are not aware of any monitoring stations or existing air quality data for the PINS in the project area. Prevailing southeast winds from the Gulf of Mexico likely introduce few pollutants to the project area.

No point sources of air pollution are in close proximity to the pipeline. Construction equipment and vehicular traffic on Park Road 22 and on smaller roads are moving sources of emissions from internal combustion engines.

G. Describe the area hydrology, hydrography, and water quality of surface waters in or near the area of proposed operations and describe any known spills or leaks which may have occurred in the project area.

Brown et al. (1977), Bright & Company and BCI (1994), Texas Eastern Transmission Corporation and BCI (1995), and Williams Field Services Pipeline Company and BEI (1997) describe the surface hydrology of Padre Island in the PINS. No streams are present in the project vicinity. Drainage from rainfall events tends to accumulate in wetland areas. The water seeps into the groundwater system, evaporates, or stands for variable periods within the wetland ponds. Surface waters travel only short distances (e.g., a few hundred feet) during and after rainfall events and encounter no known sources of contamination. During major storm events, flooding of all or most of the pipeline route would occur. Floodwaters would recede within several days.

Britton and Morton (1989) provide insights into the hydrography and hydrology of the nearshore Gulf of Mexico and the Laguna Madre. The Conrad Blucher Institute, Corpus Christi, monitors tides and other hydrographic parameters in the Laguna Madre. Tides in the Laguna Madre, a hypersaline lagoon, typically experience minor fluctuations (e.g., 1 to 3 inches) on a daily basis. Tide levels tend to be higher (e.g., 1 to 1.5 feet) in the spring and fall than in the winter and summer. After frontal passages, tide levels in the Laguna Madre typically fall 0.5 to 1 foot for several days. Gulf of Mexico tides typically fluctuate 1 to 1.5 feet on a daily basis. Seasonal patterns are similar to those described for the Laguna Madre. Tidal inlets nearest the project area are the Corpus Christi Ship Channel to the north and the Port

Mansfield Channel to the south. No river system substantially influences the Laguna Madre. The Nueces River and the Rio Grande are the nearest river influences to the north and south of the project area, respectively. The circulation patterns of surface waters in the Gulf vary seasonally near the project.

BCI (1994) performed a surface monitoring program in non-tidal wetlands to the east of the PanEnergy pipeline (Bright & Company and BCI, 1994). This information is available from PINS. The TNRCC recommends protection of usable-quality groundwater to a depth of 1,700 feet below the land surface. No other available sources of groundwater quality data are known.

The Texas Water Commission (1992) and the TNRCC (1994) have evaluated water quality in the Upper Laguna Madre. No water quality concerns were identified in the project area. Salinity levels typically range from 30 to 60 parts per thousand (ppt). These studies provide an historical and current summary of various water quality parameters such as temperature, nutrients, coliform, dissolved oxygen, heavy metals, and toxic substances. The only parameter of "possible concern" noted by the TNRCC is ammonia nitrogen. A dense algal bloom, commonly referred to as the "brown tide," has persisted in the Upper Laguna Madre since 1990. This bloom, which has reduced light penetration to seagrass beds, may be influenced by ammonia nitrogen levels. The reduced light penetration poses a serious threat to seagrass bed survival.

H. Provide a description of existing noise levels in the project area, including point and non-point sources.

No point sources of noise are present in the project vicinity. Non-point sources of noise include the noise created by vehicular traffic on the Gulf beach and traffic on Park Road 22. Occasional boat traffic in the Laguna Madre and GIWW may also provide non-point sources of noise.

Typical noise levels from sources, which may occur in the project area in the future, are included in Exhibit D.

X. DESCRIPTION OF CULTURAL RESOURCES

Provide results of an archaeological and cultural resource survey of the proposed project area performed by a professional archaeologist including cultural background information and review of the National Register of Historic Places.

SWCA, Inc. performed an archaeological and cultural survey of the proposed project. That survey report is included as Exhibit E of this document.

SWCA, Inc.'s report provides cultural background information and a review of the national Register of Historic Places. SWCA also examined survey stations and auger samples along the pipeline route. These efforts failed to identify any cultural evidence or properties that are listed on, or considered eligible for nomination to, the National Register of Historic Places or worthy of inclusion as State of Texas Archaeological Landmarks.

XI SOCIAL AND ECONOMIC ENVIRONMENT

Describe the social and economic environments to be affected by the proposed operation.

The pipeline is located in Kleberg and Kenedy Counties. Both counties have relatively small populations and ranching is the principal economic activity. Kenedy County had a 1996 population of less than 438 people. The U.S. Census Bureau estimated the Kleberg County population at 30,325 in 1996.

The Padre Island National Seashore is virtually undeveloped and is managed for the purpose of public recreation and preservation of the natural environment (U. S. Department of Interior, 1983). The two pipelines cross open fields, dunes, wetlands, and the Laguna Madre. The 10-inch pipeline does not cross Park Road 22. The Gulf beach lies east of the pipelines.

Traffic on Park Road 22 consists of primarily visitors who utilize the recreational attractions such as the Gulf beach, Bird Island boat basin, camping, wind surfing, bird watching, and other outdoor activities. Approximately 750,000 visitors per year enter the park (Boswell, 1996). In 1995, 757,617 persons visited the PINS. Though October 1996, 734,000 visitors were counted. Employees of the PINS, as well as operators of mineral production facilities, also utilize the paved roadway.

The Gulf beach is used for swimming, fishing, shell collecting, bird watching, camping, and other outdoor recreation purposes. The Laguna Madre is utilized for recreational fishing and a variety of other water sports activities.

XII ENVIRONMENTAL CONSEQUENCES

A. Describe the anticipated direct, indirect, and cumulative effects of the proposed operation on the unit's land features and uses, wildlife, vegetation, soils, water resources, air quality, noise, and social and economic environments.

Since the pipelines are already in place, the only anticipated surface disturbances would be due to line repair, maintenance, lowering or abandonment.

Land features that could be affected during repair or maintenance of the lines would be dunes, hummocks, uplands, non-tidal and tidal wetlands, sand/algal flats, and seagrass beds. As discussed in Section II C, above, repairs to the 10- and 6-inch pipelines would disturb approximately 4,380 sq. feet and 2,880 sq. feet. Abandonment work would disturb approximately 900 sq. feet of sandy shallows. Lowering of the exposed portions of the pipelines would result in the excavation of approximately 14,800 square feet of uplands with hummocks, approximately 19,166 square feet of non-tidal open water with scattered marsh, 35,719 square feet of non-tidal marsh or vegetated depression, 10,019 square feet of salt marsh, and 3,600 square feet of moderate to high dunes with occasional depressions. Disturbed areas would be re-contoured and revegetated as described in Section VII.

Minor land use effects are expected to occur during repair, covering, lowering and abandonment activities. Land and water equipment may temporarily add slightly to the traffic on Park Road 22 and in the Laguna Madre. These activities should require fewer than 14 consecutive days during a given year. Impacts due to equipment tracks on Padre Island will be minimized by using the same paths for ingress and egress; ruts greater than one inch will be backfilled and contoured to the surrounding terrain.

Direct effects to wildlife should be limited to the displacement of fauna, which utilize areas to be repaired or maintained (see Section II). Abandonment work will cause similar minor displacements. Wildlife would be indirectly affected by vehicular traffic, equipment usage, and workers in areas of repair and maintenance. These disturbances should be minor and of short duration. Wildlife may be directly affected by any spill that might occur. No significant direct or indirect impacts to threaten or endangered species are anticipated (Section IX E).

As discussed in the second paragraph of this section, various square footages of vegetation communities would be directly impacted due to repair, maintenance, spill clean up, covering or abandonment work. The composition and coverage of these vegetated areas are mapped and described in detail in Section IX.

XII ENVIRONMENTAL CONSEQUENCES (Continued)

Clean up activities would provide for removal and replacement of impacted soils and for re-vegetation of the affected areas.

Soils may be moved during repair, maintenance, and spill clean up, covering or abandonment work. Clean soils will be returned to the excavated area. Any soils impacted by spilled materials would be disposed of at an approved site and replaced by similar soils approved in advance by PINS personnel. Spill clean up and restoration would be implemented as described in Section VI. Areas impacted by spills, if any, should be limited to very small areas (e.g., less than a few thousand square feet).

Water resources would be directly affected by repair, maintenance, covering, spills, spill clean up, lowering and abandonment activities in non-tidal and tidal wetlands as well as in the Laguna Madre. Impacts due to soil movement would include temporary turbidity and would be of short duration. Spilled materials would be contained and cleaned up as described in Section VI. Any spills would be of small volumes and should have minor, temporary effects on water resources.

Air emissions maybe released during repair, maintenance, covering, spills, and abandonment activities. Emissions would originate from vehicles, equipment, paint, and spilled materials. Such emissions are expected to be minor, localized, and temporary in nature. Prevailing winds should quickly disperse such emissions.

Noise levels would be increased in the project area during repair, maintenance, covering, spill clean up, and abandonment activities. Noise from vehicles, equipment, and workers would be minor, localized, and temporary (see Exhibit D). Wildlife may avoid work areas during working hours but should return to affected areas when work-related noise ceases. Noise levels should not affect Gulf beaches due to prevailing southeast winds.

The effects of the pipeline operations on the social and economic environments of the project area should be occasional and minor. During repair, maintenance, spill clean up, lowering and abandonment activities, light vehicular traffic would occur on Park Road 22. Some work vessels would traverse the nearby Laguna Madre (Section V). The effects of this traffic and associated work may cause minor inconveniences but should not significantly disrupt recreational activities that currently take place at the PINS.

XII ENVIRONMENTAL CONSEQUENCES (Continued)

B. Provide a description of the measures that will be taken to ensure minimum disturbance to natural resources (surface and subsurface) and historical, cultural, and archaeological resources.

Since the pipelines are in place, relatively few disturbances are expected to occur due to pipeline operations. Some means of minimizing disturbances are listed below:

1. Access to and from points or repair and maintenance will be restricted to minimize affects on vegetation. Laguna Madre access will be restricted to shallow-draft vessels to avoid seagrass impacts;

2. Excavation and temporary fill areas will be kept to the minimize size necessary to accomplish lowering, maintenance, clean up, or abandonment work;

3. A spill response plan will be in place for all work activities to assure containment, clean up, and restoration;

4. Any disturbed areas will be restored; and

5. All employees and contractors will be educated regarding the need to minimize disturbances to the land, water, wildlife, natural resources and people at PINS.

C. Describe the environmental impacts that cannot be mitigated.

Impacts that cannot be mitigated are increases in vehicular traffic during lowering, repair, maintenance, clean up, or abandonment work.

XIII ALTERNATIVES

A. Provide a detailed description of all reasonable technologically feasible methods of operations (e.g., access routes, equipment, locations, season, etc.) and associated environmental effects.

Since the pipeline projects are currently in place, alternatives available to PanEnergy are limited to repair, maintenance, lowering and abandonment plans.

PanEnergy considered various equipment types for implementing repair work. In the Laguna Madre, prevailing shallow water limited feasible options to shallow-draft barges, outboard-powered skiffs, and marsh-type equipment. Larger vessels and equipment could perform the work, but would result in greater damage to seagrass beds. Maintenance options have also been considered. The maintenance procedures selected tend to minimize environmental effects.

PanEnergy considered alternative techniques for accomplishing required cover over exposed portions of the pipeline. These alternatives included hauling in fill from offsite and excavating fill on-site to cover the pipelines. Implementation of the haul-in fill operation would result in greatly increased vehicular traffic, greater impacts to dune, upland, and wetland access routes, and greater potential for soil disturbances. Covering of the fines would increase the surface area of the impacts to vegetation. Covering the pipelines with hauled or on-site fill would be less costly than the option selected.

Alternative abandonment and reclamation plans are discussed in Section VII.

XIV DISCUSSION

A. Discuss the proposed plan of operations as related to the unit's Statement for Management and other planning documents furnished by the Superintendent.

The Statement for Management (U. S. Department of Interior, 1976) and the General management Plan/Development Conceptual Plan (PINS, 1983) for the Padre Island National Seashore were provided to BEI by Mr. Paul Eubank, Environmental Protection Specialist for PINS. These documents provide a "framework" for directing park operations and for communicating park objectives to the public (U.S. Department of Interior, 1976).

PINS was established by Public Law 87-712 in 1962 to "save and preserve, for purposes of public recreation, benefit, and inspiration, a portion of diminishing seashore of the United States that remains undeveloped." A further purpose is to "conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (U. S. Department of Interior, 1976). Special use permits are issued by the PINS to parties proposing to develop mineral resources in the park.

The stated PINS management objectives are to:

* Provide for recreational opportunities and development of the National Seashore in a mariner that is compatible with the protection of the natural and cultural resources of the area;

* Avoid, to the extent-possible, the long- and short-term impacts associated with the occupancy and modification of barrier island flood-plains and the destruction or modification of wetlands;

* Encourage a continuing research program that will provide the staff with information needed for interpretation and management of the natural and cultural aspects of the seashore;

* Maintain and foster close liaison and cooperation with governmental and non-governmental entities and individuals who have an interest in the national seashore and its surroundings;

* Provide visitors with a varied and balanced interpretive program that offers insights into the natural and cultural values of the seashore; and

* Fulfilling the commitment to previous property owners by ensuring their ability to recover the reserved oil and gas mineral resources with a minimum of environmental consequences.

XIV DISCUSSION (Continued)

The PanEnergy pipeline project appears consistent with the stated goals and objectives of the PINS planning management documents. Impacts to natural resources and cultural, archaeological, and historic resources will be avoided or minimized. Mitigation or restoration will be provided for unavoidable impacts. PanEnergy has coordinated with interested state and federal agencies.

PanEnergy, as stated in prior sections of this document, will take measures to educate and supervise contractors and employees to minimize effects of operations on visitors as well as the natural resources.

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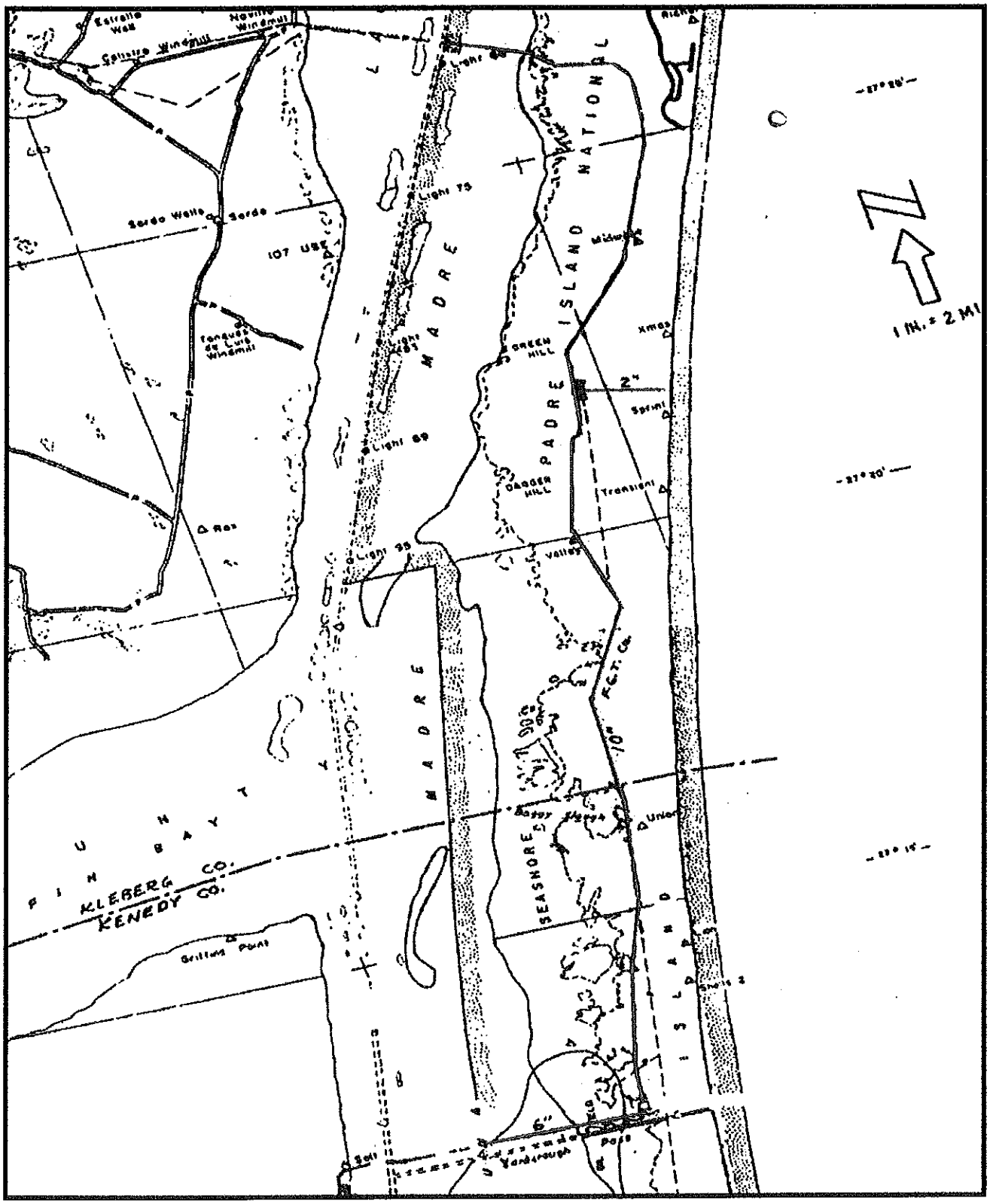
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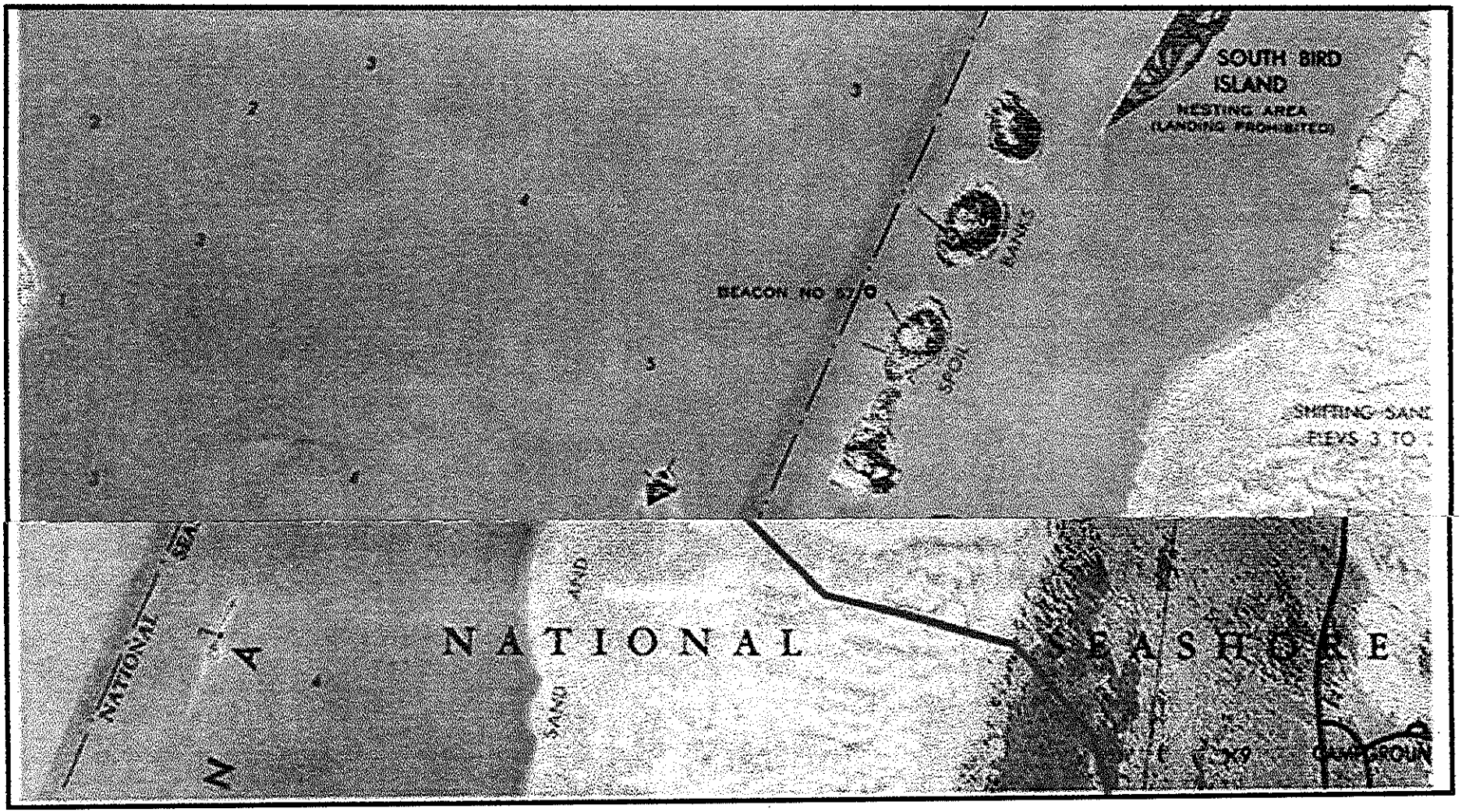
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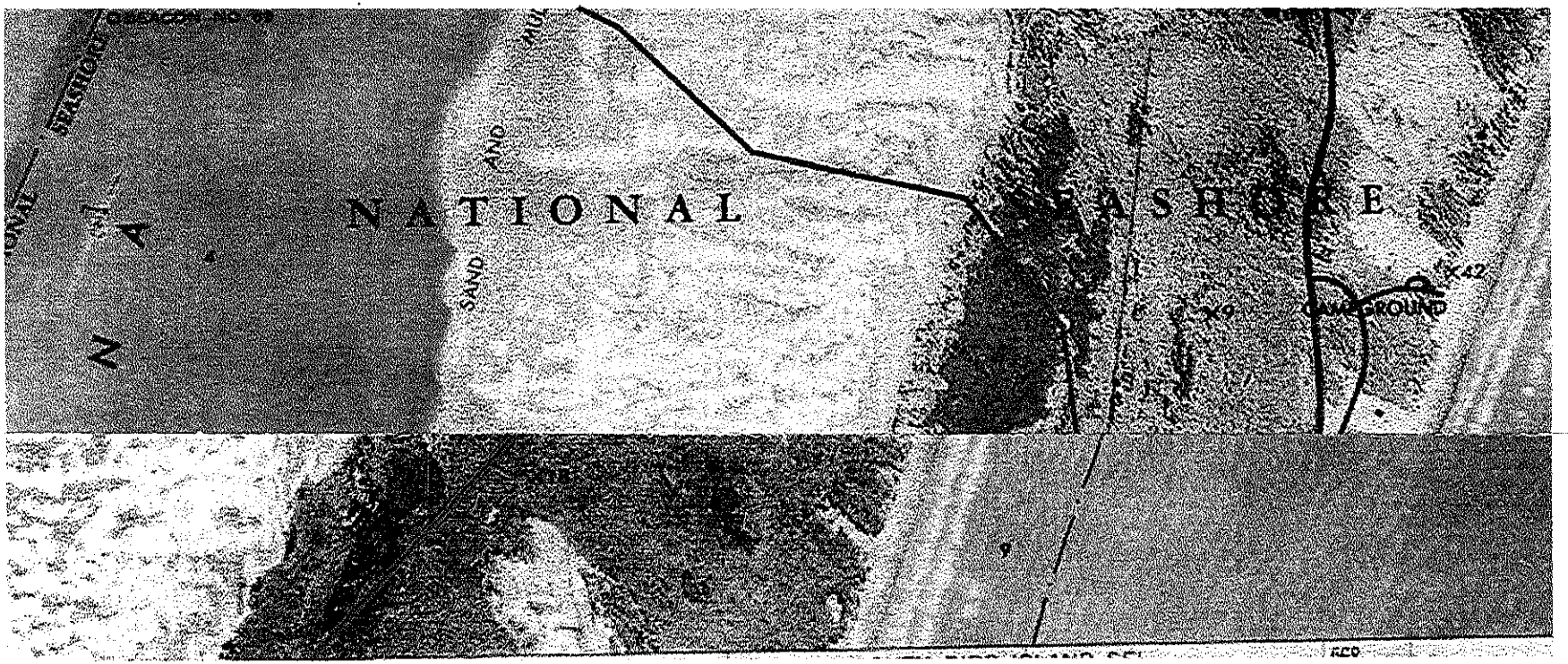
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FIGURE 1 - Plat of 10/6/2-inch Pipelines - PanEnergy Field Services, Inc.

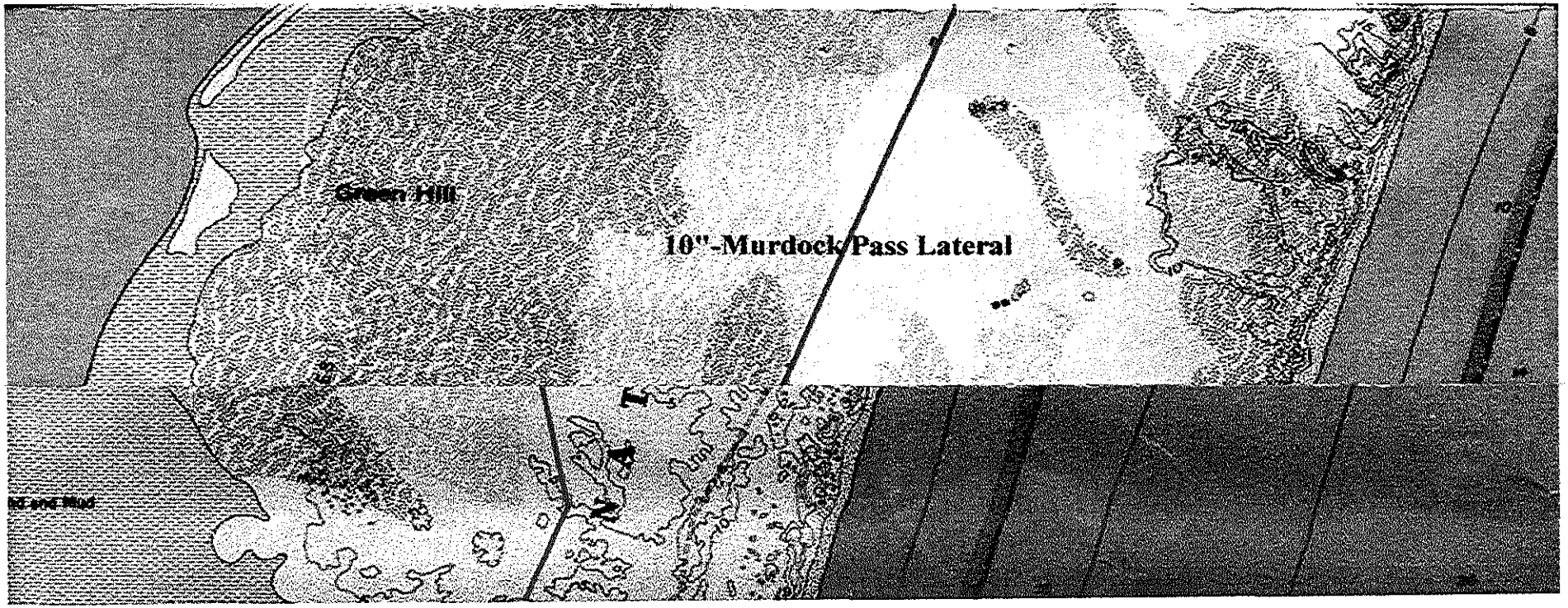


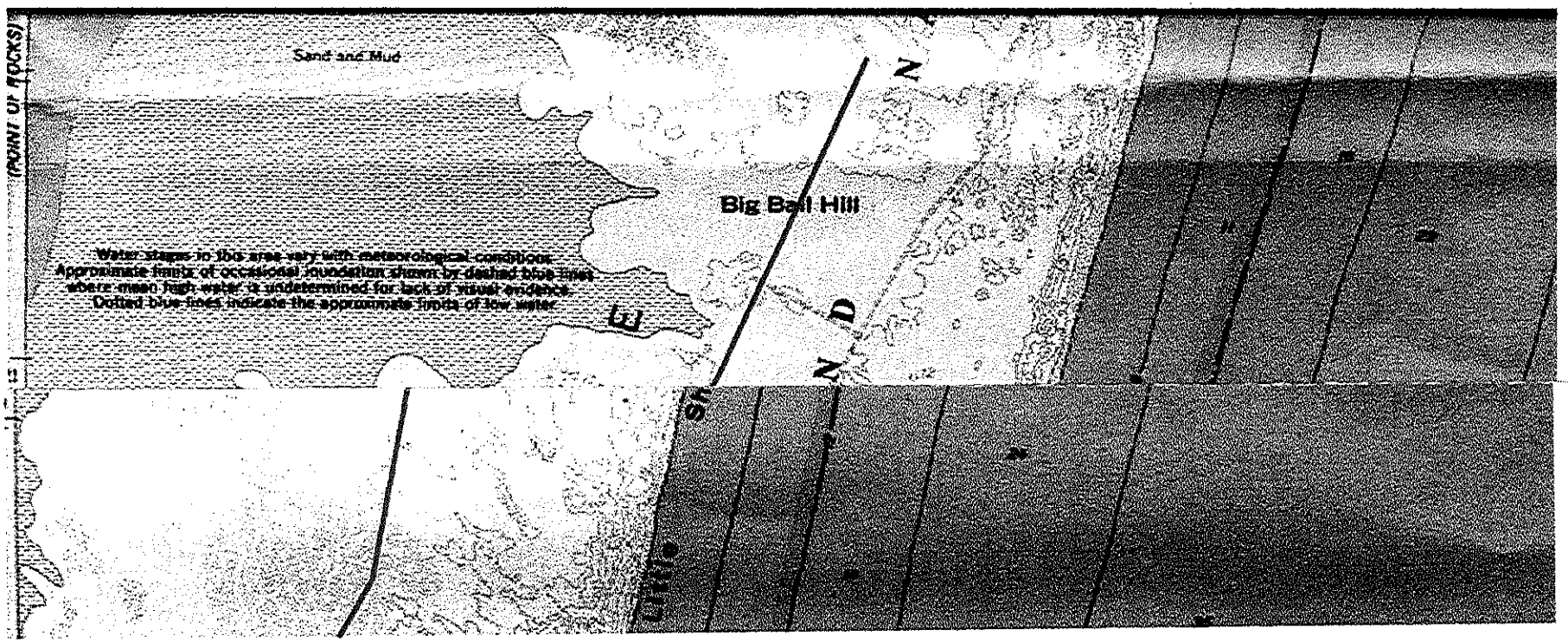


NOTE: RED LINE SHOWS APPROXIMATE LOCATION OF PIPELINE WITHIN PARK BOUNDARIES.

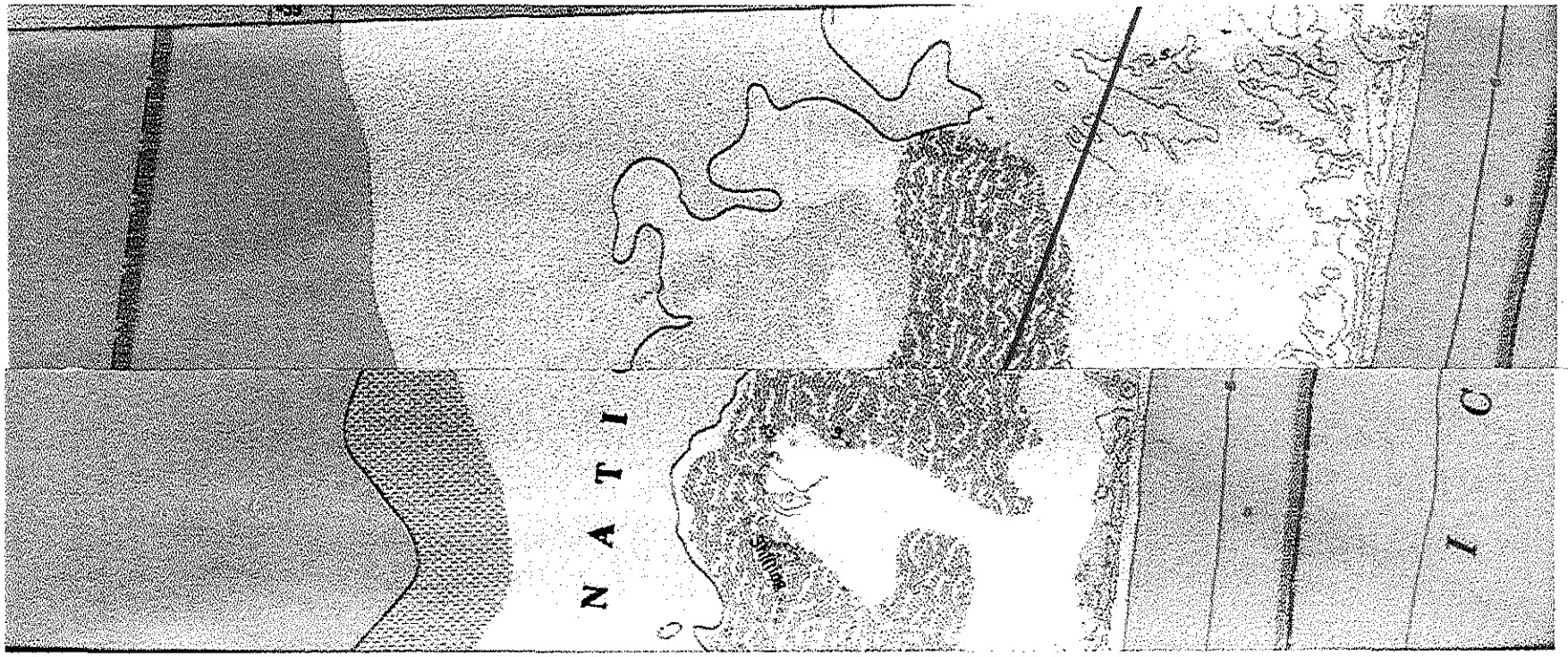


NOTE: RED LINE SHOWS APPROXIMATE LOCATION OF PIPELINE WITHIN PARK BOUNDARIES.


Green Hill
10"-Murdock Pass Lateral



NOTE: RED LINE SHOWS APPROXIMATE LOCATION OF PIPELINE WITHIN PARK BOUNDARIES.



NOTE: RED LINE SHOWS APPROXIMATE LOCATION OF PIPELINE WITHIN PARK BOUNDARIES.

APPROXIMATE LOCATION OF POTENTIAL FILL SOURCE
PADRE ISLAND
LAGUNA MADRE
GULF OF MEXICO
APPROX LOCATION
OF FILL SOURCE
PARK RD 22
N
Source: Precision Maps, Victoria, TX
Scale: 1" = 1000 yds
MADRE
SAND FLATS

FIGURE 8 - Kleberg County Sensitive Area Map

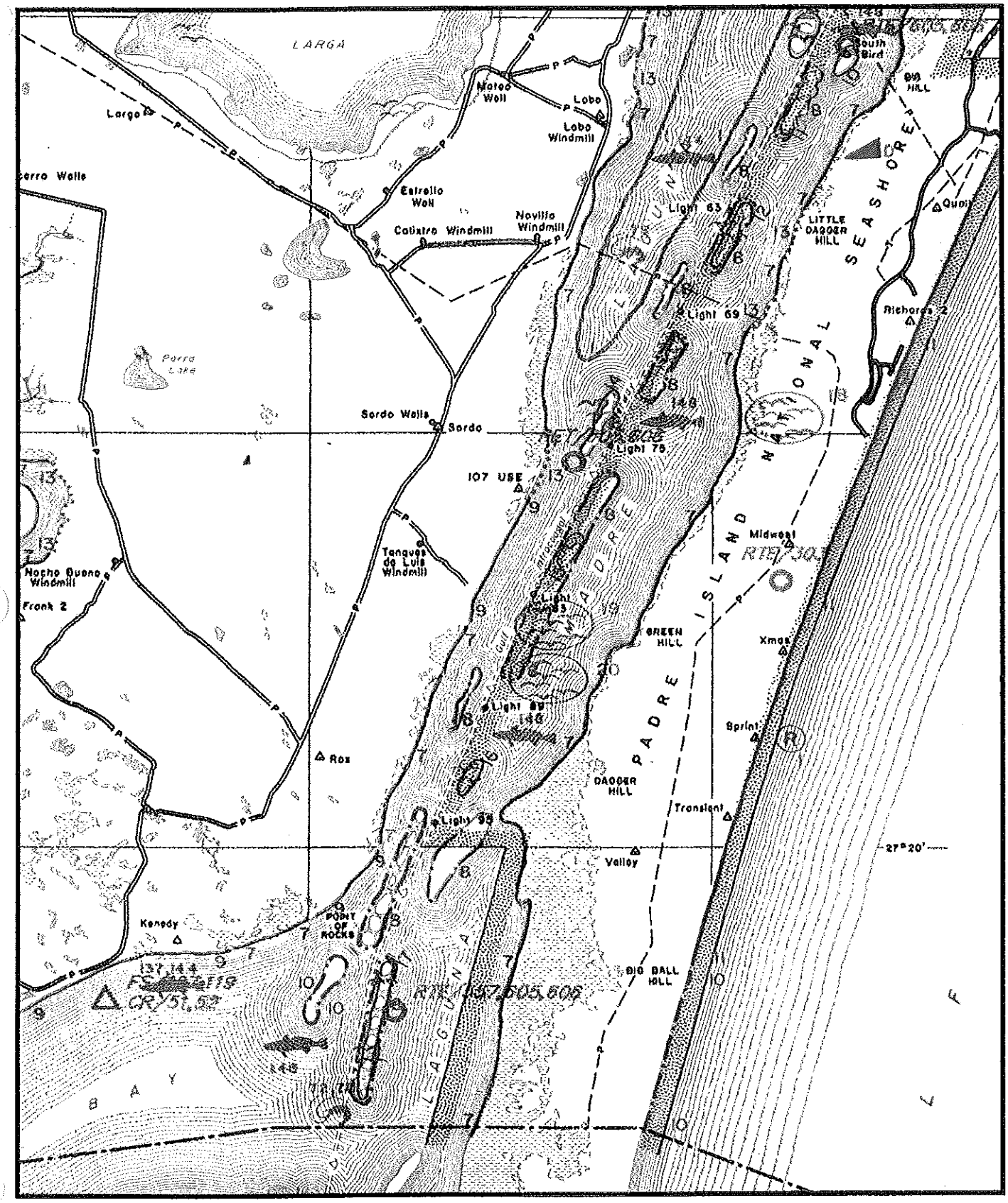
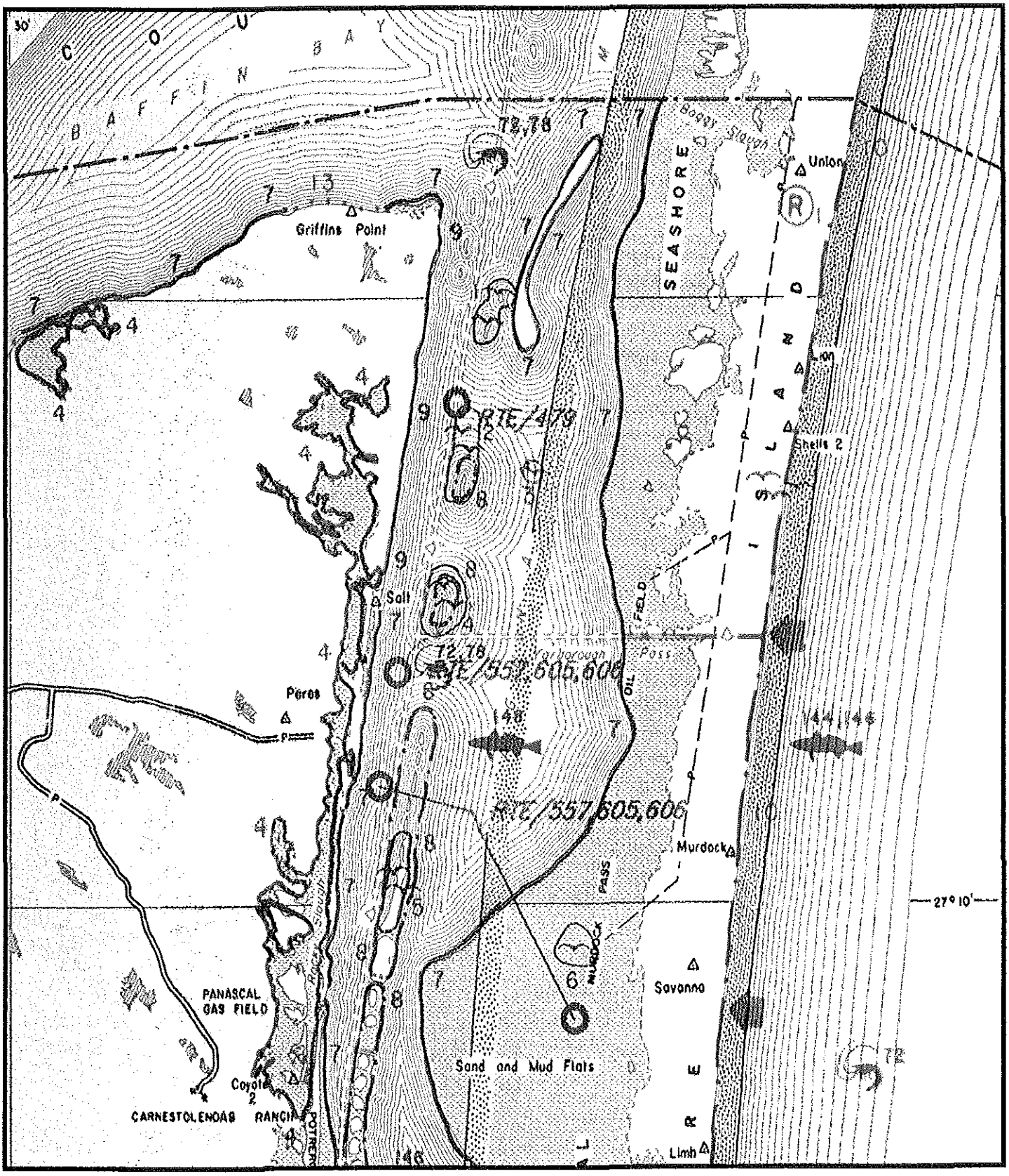
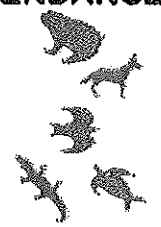


FIGURE 9 - Kenedy County Sensitive Area Map



Legend - Sensitive Area Maps

RARE, THREATENED, AND ENDANGERED SPECIES HABITATS



AMPHIBIANS
MAMMALS
BIRDS
REPTILES

BIRD HABITATS



BIRD ROOKERIES
CONCENTRATIONS OF BIRDS

PRIME FISH AND SHELLFISH GROUNDS



FISH
CRUSTACEANS

COASTAL HYDROGRAPHIC INFORMATION



TIDES AT SPECIFIC LOCATIONS
WASHOVER AREAS
WAVE ACTION

LOGISTICAL FEATURES

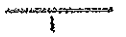


WATER INTAKE POINTS*
DISPOSAL SITES*
WILDLIFE MANAGEMENT AREAS
MAJOR RECREATIONAL AREAS
MARINAS
AVIATION FACILITIES
MAJOR LAND ACCESS ROUTES
BOAT LAUNCH SITES

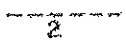
*M = Municipal I = Industrial

COASTAL SENSITIVITY INDEX

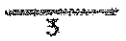
HIGH IMPACT



SHALLOW SEAGRASS FLATS



MANGROVES



MARSHES AND WETLANDS (TIDALLY INFLUENCED)



SHELTERED TIDAL FLATS WITH VEGETATED MARGINS

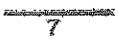
MODERATE IMPACT



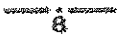
RIPARIAN ZONE ALONG FRESHWATER RIVERS WITH SALT WEDGE



OYSTER REEFS



EXPOSED TIDAL FLATS

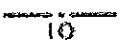


DREDGED SPOIL DEPOSITS

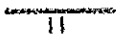


PARTIALLY EXPOSED BAY MARGINS

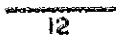
LOW IMPACT



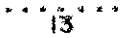
SAND-SHELL SUBSTRATE



FINE-GRAINED SAND



SEAWALLS, JETTIES, BULKHEADS, AND REVETMENTS



EROSIONAL SCARPS

ECOLOGICAL SPECIES KEYCODE LIST

RTE 241 PADDLEFISH (S/E)
RTE 257 BLACKFIN GOBY (S/E)
RTE 258 RIVER GOBY (S/T)
RTE 259 OPPOSSUM PIPEFISH (S/T)
RTE 300 GREEN SEA TURTLE (F/E)
RTE 301 LOGGERHEAD SEA TURTLE (F/T)
RTE 302 HAWKSBILL SEA TURTLE (F/E)
RTE 303 KEMP'S RIDLEY SEA TURTLE (F/E)
RTE 304 LEATHERBACK SEA TURTLE (F/E)
RTE 350 WEST INDIAN MANATEE (F/E)
RTE 477 BLACK LACE CACTUS (F/E)
RTE 478 THREEFLOWER BROOMWEED (S)
RTE 479 SEACOAST BLUESTEM-COASTAL LIVE OAK SERIES (S)
RTE 480 BALDCYPRESS-TUPELO SERIES (S)
RTE 481 GAMMAGRASS-SWITCHGRASS SERIES (S/E)
RTE 482 SEACOAST BLUESTEM-GULFDUNE PASPALUM SERIES (S/T)
RTE 483 TEXAS WINDMILL-GRASS (S)
RTE 484 LITTLE BLUESTEM-BROWNSEED PASPALUM SERIES (S/T)
RTE 485 RUNYON'S WATER WILLOW (S)
RTE 486 SMOOTH BLUE STAR (S)
RTE 487 GRANDE PRAIRIE EVENING PRIMROSE (S/T)
RTE 488 TEXAS BITTERWEED (F/E)
RTE 489 WATER OAK-SWEETGUM SERIES (S)
RTE 490 RUSH-SEDGE SERIES (S)
RTE 491 LILA DE LOS LLANOS (CHANDLER'S CRAG-LILY) (S)
RTE 492 TEXAS EBONY-ANACUA SERIES (S/E)
RTE 493 TEXAS EBONY-SNAKE-EYES SERIES (S/T)
RTE 494 SOUTH TEXAS RAGWEED (S)
RTE 495 TEXAS PALMETTO SERIES (S/E)
RTE 496 VASEY'S ADELIA (S)
RTE 497 TEXAS AYENIA (S)
RTE 498 MONTEZUMA BALD CYPRESS (S/E)
RTE 499 SLENDER RUSH-PEA (F/E)
RTE 49A ELMENDORF ONION (S)
RTE 49B ROUGHSEED SEA-PURSLANE (S/T)
RTE 49C CORRELL'S FALSE DRAGON-HEAD (S/T)
RTE 49D LONG-SEPALED FALSE DRAGON-HEAD (S/T)
RTE 49E HOUSTON MEADOW-RUE (S)
RTE 49F LUNDELL'S WHITLOW-WORT (S)
RTE 49G MATHIS SPIDERLING (S)
RTE 49H WATER OAK-COASTAL LIVE OAK SERIES (S)
RTE 491 TEXAS STONECROP (S)
RTE 49J COASTAL GAYFEATHER (S)
RTE 557 LEAST TERN (F/E)
RTE 566 ROSEATE TERN (S)
RTE 571 SOOTY TERN (S/T)
RTE 576 ESKIMO CURLEW (F/E)
RTE 577 PIPING PLOVER (F/T)
RTE 603 WOOD STORK (S/T)
RTE 605 REDDISH EGRET (S/T)
RTE 606 WHITE-FACED IBIS (S/T)
RTE 625 WHOOPING CRANE (F/E)
RTE 702 AMERICAN SWALLOW-TAILED KITE (S/T)
RTE 707 BALD EAGLE (F/E)
RTE 709 ARCTIC PEREGRINE FALCON (F/E)
RTE 712 OSPREY (F/T)
RTE 717 WHITE-TAILED HAWK (S/T)
RTE 719 ZONE-TAILED HAWK (S/T)
RTE 720 GRAY HAWK (S/T)
RTE 721 COMMON BLACK-HAWK (S/T)
RTE 723 APLOMADO FALCON (F/E)
RTE 724 FERRUGINOUS PYGMY-OWL (S/T)
RTE 760 BROWN PELICAN (F/E)
RTE 804 ATTWATER'S GREATER PRAIRIE CHICKEN (F/E)
RTE 826 BACHMAN'S SPARROW (S/T)
RTE 849 RIO GRANDE LESSER SIREN (S/E)
RTE 84A BOTTERI'S SPARROW (S/T)
RTE 84B NORTHERN BEARDLESS-TYRANNULET (S/T)
RTE 84C GOLDEN-CHEEKED WARBLER (S/T)
RTE 84D ROSE-THROATED BECARD (S/T)
RTE 84E TROPICAL PARULA (S/T)
RTE 84F BLACK-CAPPED VIREO (F/E)
RTE 851 AMERICAN ALLIGATOR (F)
RTE 878 TEXAS INDIGO SNAKE (S/T)
RTE 880 MEXICAN TREEFROG (S/T)
RTE 881 RIO GRANDE CHIRPING FROG (S)
RTE 883 TEXAS TORTOISE (S/T)
RTE 884 TEXAS HORNED LIZARD (S/T)
RTE 885 WHITE-LIPPED FROG (S/T)
RTE 887 NORTHERN CAT-EYED SNAKE (S/E)
RTE 888 BLACK-STRIPPED SNAKE (F/T)
RTE 889 MEXICAN BLACKHEAD SNAKE (S/E)
RTE 890 SPECKLED RACER (S/E)
RTE 891 WESTERN SMOOTH GREEN SNAKE (F/E)
RTE 892 TIMBER RATTLESNAKE (S/T)
RTE 893 NORTHERN SCARLET SNAKE (S/T)
RTE 894 TEXAS SCARLET SNAKE (S/T)
RTE 895 HOUSTON TOAD (F/E)
RTE 896 BLACK-SPOTTED NEWT (S/E)
RTE 897 SHEEP FROG (S/T)
RTE 898 ALLIGATOR SNAPPING TURTLE (S/T)
RTE 900 RED WOLF (F/E)
RTE 901 BLACK BEAR (S/E)
RTE 904 OCELOT (F/E)
RTE 905 JAGUARUNDI (F/E)
RTE 947 COATI (S/E)
RTE 948 COUE'S RICE RAT (S/T)
RTE 949 SOUTHERN YELLOW BAT (S/T)

BIRD 550 SHOREBIRDS
BIRD 551 GULLS AND TERNS
BIRD 552 SANDPIPERS
BIRD 553 JACANA
BIRD 554 AMERICAN OYSTERCATCHER
BIRD 555 PLOVERS
BIRD 560 ROYAL TERN
BIRD 561 BLACK TERN
BIRD 562 AMERICAN TERN
BIRD 563 FORSTER'S TERN
BIRD 564 SANDWICH TERN
BIRD 565 GULL-BILLED TERN
BIRD 567 BLACK SKIMMER
BIRD 568 LAUGHING GULL
BIRD 569 WILSON'S PLOVER
BIRD 572 BLACK-NECKED STILT
BIRD 600 WADING BIRDS
BIRD 601 HERONS
BIRD 602 EGRETS
BIRD 604 GREAT BLUE HERON
BIRD 607 WHITE IBIS
BIRD 608 ROSEATE SPOONBILL
BIRD 609 GREAT EGRET
BIRD 610 SNOWY EGRET
BIRD 611 LOUISIANA HERON
BIRD 612 BLACK-CROWNED NIGHT HERON
BIRD 613 LITTLE BLUE HERON
BIRD 614 CATTLE EGRET
BIRD 650 WATERFOWL
BIRD 651 DABBLING DUCKS
BIRD 652 DIVING DUCKS
BIRD 653 GEESE
BIRD 654 ANHINGA
BIRD 656 NORTHERN SHOVELER
BIRD 660 SNOW GOOSE
BIRD 661 CANADA GOOSE
BIRD 662 MOTTLED DUCK
BIRD 663 FULVOUS WHISTLING-DUCK
BIRD 665 REDHEAD
BIRD 666 WHITE-FRONTED GOOSE
BIRD 668 TEALS
BIRD 670 AMERICAN COOT
BIRD 700 RAPTORS
BIRD 701 BIRD HAWKS
BIRD 708 MARSH HAWK
BIRD 722 WHITE-TAILED KITE
BIRD 752 BROWN NODDY
BIRD 753 OLIVACEOUS CORMORANT
BIRD 755 CORMORANTS
BIRD 759 WHITE PELICAN
BIRD 800 SONGBIRDS AND OTHERS
BIRD 812 CUCKOOS, ROADRUNNERS, ANIS
BIRD 822 HUMMINGBIRDS
BIRD 829 PERCHING BIRDS
BIRD 832 WARBLERS
BIRD 833 GOATSUCKERS
BIRD 834 FRINGILLIDS

CR 51 WHITE SHRIMP
CR 52 BROWN SHRIMP
CR 53 PINK SHRIMP
CR 54 BLUE CRAB
CR 57 EASTERN OYSTER
CR 59 BRACKISH-WATER CLAM
CR 61 SOUTHERN QUAHOG

FS 103 MULLET
FS 106 SUNFISH AND BASS
FS 107 DRUM
FS 108 SPOTTED SEATROUT
FS 110 SAND SEATROUT
FS 111 ATLANTIC CROAKER
FS 112 RED DRUM
FS 113 BLACK DRUM
FS 119 SHEEPSHEAD
FS 120 SOUTHERN FLOUNDER
FS 121 BLUE CATFISH
FS 123 CHANNEL CATFISH
FS 126 WHITE CRAPPIE
FS 127 BLACK CRAPPIE
FS 128 LARGEMOUTH BASS
FS 129 SPOTTED BASS
FS 131 LONGEAR SUNFISH
FS 132 WARMOUTH
FS 133 BLUEGILL
FS 134 REDEAR SUNFISH
FS 135 STRIPED MULLET
FS 136 RED SNAPPER
FS 139 COBIA
FS 142 SPANISH MACKEREL
FS 143 KING MACKEREL
FS 144 SEA CATFISH
FS 145 GULF MENHADEN
FS 147 GARS
FS 148 BUFFALOS
FS 149 FRESHWATER DRUM
FS 151 CARP
FS 194 GIZZARD SHAD
FS 208 STRIPED BASS
FS 226 FLATHEAD CATFISH
FS 227 WHITE BASS
FS 233 GAFFTOPSAIL CATFISH
FS 245 RIO GRANDE CICHLID
FS 256 DWARF SEAHORSE

NOTE
CR - CRUSTACEANS
FS - FISH
RTE - RARE, THREATENED, OR ENDANGERED SPECIES
S - STATE PROTECTED SPECIES
F - FEDERAL PROTECTED SPECIES
T - THREATENED SPECIES
E - ENDANGERED SPECIES

SEASONAL SPECIES SENSITIVITY DIAGRAM

SEASONAL SPECIES SENSITIVITY DIAGRAM

SPECIES	LOCATION	MONTHS J	F	M	A	M	J	J	A	S	O	N	D
(1) RARE THREATENED OR ENDANGERED SPECIES													
AMERICAN ALLIGATOR (Alligator Mississippiensis)	Coastal Counties – coastal marshes, swamps, riparian, lake shorelines, rivers, estuaries												
ATTWATER'S PRAIRIE CHICKEN (Tympanuchus Cupido Attwateri)	Tall-grass coastal prairies												
ARCTIC PEREGRINE FALCON (Falco peregrinus tundrius)	Coastal Zone												
BALD EAGLE (Haliaeetus leucocephalus)	Coastal Zone – major rivers and reservoirs												
BROWN PELICAN – NESTING (Pelecanus occidentalis) BROWN PELICAN – MIGRANTS	Central coast – Nueces to Matagorda Counties South and upper coast												
HOUSTON TOAD (Bufo houstonensis)	Sandy habitat with temporary springtime ponds – Southeast Texas (Historic)												
KEMP'S RIDLEY SEA TURTLE (Lepidochelys kempi)	Shallow coastal and estuarine waters												
RED WOLF (Canis rufus)	Coastal prairies and marshes												
WHOOPING CRANE (Grus Americana)	Aransas and Calhoun Counties Aransas National Wildlife Refuge; Coastal marshes, tidal flats, barrier islands.												
GREEN SEA TURTLE	Coastal areas, Texas beaches												
LOGGERHEAD TURTLE	Large coastal bays, sand beaches												
HAWKSBILL SEA TURTLE	Shallow coastal and estuarine waters, Texas beaches												
LEATHERBACK SEA TURTLE	Shallow coastal and nearshore water, Texas beaches												
WEST INDIAN MANATEE	Coastal slow-moving waterways, (canals, rivers, estuaries, bays etc.)												
LEAST TERN	Shallow coastal water and beaches												
ESKIMO CURLEW	Galveston County, upper coast												
PIPING PLOVER	Coastal area, beaches and tidal flats												
OSPREY	Rivers, lakes and coast												
APLOMADO FALCON	Rio Grande delta												
(2) COASTAL RESOURCES													
ATLANTIC CROAKER													
– spawning	Shallow open gulf waters												
– larval/juvenile	nearshore gulf waters, shallow baywaters												
– adults	bays and nearshore gulf waters												
REDFISH													
– spawning	Gulf passes and adjacent nearshore waters												
– larval/juvenile	shallow estuarine waters												
– adults	oyster reef areas, sea grass beds, estuarine waters												

SPECIES	LOCATION	MONTHS J	F	M	A	M	J	J	A	S	O	N	D
BLACK DRUM													
– spawning	Large primary bays												
– larval/juvenile	estuarine waters												
– adults	coastal bays												
SOUTHERN FLOUNDER													
– spawning	Offshore gulf waters												
– larval/juvenile	shallow estuarine waters												
– adults	inshore waters, gulf waters												
STRIPED MULLET													
– spawning	Offshore – gulf waters												
– larval/juvenile	tidal inlets, shallow water areas, riparian zones												
– adults	coastal zone												
BLUE CRABS													
– spawning	Gulf passes and adjacent nearshore waters												
– larval/juvenile	shallow bay shoreline areas												
– adults	estuaries and nearshore coastal waters												
BROWN SHRIMP													
– spawning	Offshore waters												
– larval/ juvenile	estuaries, shallow water areas												
– adults	primary bays												
WHITE SHRIMP													
– spawning	Offshore gulf waters												
– larval/juvenile	areas of lower salinity vegetated shallow bay/estuary												
– adults	open primary bays												
PINK SHRIMP													
– spawning	Offshore gulf waters												
– larval/juvenile	coastal lagoons with higher salinities												
– adults	firm mud or sand bottoms offshore												
SHEEPSHEAD													
– spawning	Offshore												
– larval	oyster reefs, grassbeds												
– juvenile	jetties, bulkhead shorelines												
– adults	bays												
SPOTTED SEATROUT													
– spawning	Bays and lagoons												
– larval/juvenile	seagrass beds, marsh, open bays												
– adults	bays and nearshore waters												
SAND SEATROUT													
– spawning	Gulf passes and adjacent nearshore waters												
– larval/juvenile	sand bottom areas												
– adults	open bays and nearshore waters												

CODING CONVERSION

NEW CODE	SPECIES	OLD CODE
51	WHITE SHRIMP	71
52	BROWN SHRIMP	72
53	PINK SHRIMP	73
54	BLUE CRAB	51
108	SPOTTED SEATROUT	137
110	SAND SEATROUT	138
111	ATLANTIC CROAKER	140
112	RED FISH	144
113	BLACK DRUM	146
118	SHEEPSHEAD	136
119	SOUTHERN FLOUNDER	148
135	STRIPED MULLET	163

NEW CODE	SPECIES	OLD CODE
303	RIDLEY SEA TURTLE	RST
835	WHOOPING CRANE	WC
707	BALD EAGLE	BE
708	PEREGRINE FALCON	APF
790	BROWN PELICAN	BP
804	ATTWATER'S PRAIRIE CHICKEN	APC
651	AMERICAN ALLIGATOR	AA
895	HOUSTON TOAD	HT
900	RED WOLF	RW

OTHERS – SEE ECOLOGICAL FEATURES KEYCODE LIST

Texas Water Commission

TABLE 1
SUMMARY OF VEGETATION COMMUNITIES IN PROJECT AREA
PANENERGY FIELD SERVICES, INC.
PADRE ISLAND NATIONAL SEASHORE
10-INCH AND 6-INCH PIPELINES
DECEMBER 1996 & JANUARY 1997

Segment	Segment Location	Vegetation Communities
1	4+05 - 24+25	Shoalgrass (*Halodule wrightii)* of high shoot density (6,000-9,000 shoots/m^2). The east and west extremes of the bed have sparse to moderate shoot densities Clovergrass (*Halophila englemannii)* was the only other species found in samples. Estimated bottom elevation ranged from -3.3 ft MLT nearer the GIWW to -2.5 ft MLT nearer the Laguna Madre shoreline. Vegetation coverage was 76%.
2	24+25 - 41+76	Sandy, unvegetated nearshore shallows, gently sloping upward to a 2 ft-4 ft high bluff on the Laguna Madre shoreline of Padre Island.
3	41+76 - 44+05	Low upland with interspersed tidal marsh species. Dominant species were: • *Schizachyrium scoparium* var. *littoralis,* • *Paspalum monostachyum,* • *Borrichia frutescens,* and • *Sporobolus virginicus.* Other species observed were: • *Ambrosia psilostachya,* • *Maechaeranthera phyllocephala,* • *Salicornia virginica,* • *Distichlis spicata,* • *Limonium carolinianum,* and • *Andropogon glomeratus.* Vegetation coverage was 84%.
4	44+05 - 50+80	Unvegetated algal flat.
5	50+80 - 63+02	Flat upland on and to the west of the pipeline; high semi-stable dune ridge to the east of the pipeline. A small number of nontidal wetlands were found on either side of the pipeline. Flat lands were 97% covered and dominated by: • *Paspalum monostachyum* and • *Schizachyrium scoparium* var. *littoralis.* Other species observed were: • *Hydrocotyle bonariensis,* • *Andropogon glomeratus,* • *Salix nigra,* • *Ambrosia psilostachya,* • *Juncus megacephalus,* • *Hydrocotyle bonariensis,* • *Iva angustifolia,* and • *Eupatorium coelestinum.*

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Segment	Segment Location	Vegetation Communities
		Dunes were 46% covered and were dominated by: • *Heterothecus subaxillaris,* • *Paspalum monostachyum,* and • *Salix nigra* Other species observed were: • *Schizachyrium scoparium* var. *littoralis* and • *Baptisia leucophaera* var. *laevicaulis.*
		The wetlands were 99% covered and were dominated by *Scirpus americanus* and *Phyla nodiflora.* Other species observed were *Hydrocotyle bonariensis* and *Typha domingensis.*
6	63+03 - 76+10	Partially active high dunes dominated by: • *Salix nigra,* • *Heterothecus subaxillaris,* and • *Schizachyrium scoparium* var. *littoralis.* Other species observed were: • *Sporobolus virginicus,* • *Paspalum monostachyum,* • *Baptisia leucophaera* var. *laevicaulis,* and • *Cassia aspera.* Vegetation coverage was 54%.
7	76+10 - 82+32	Relatively flat uplands with scattered hummocks and a few interspersed minor depressions. The dominant vegetation was: • *Schizachyrium scoparium* var. *littoralis.* Other species observed were: • *Heterothecus subaxillaris,* • *Baptisia leucophaera* var. *laevicaulis,* • *Sporobolus virginicus,* • *Dichanthelium oligosanthes,* • *Hydrocotyle bonariensis,* and • *Paspalum monostachyum.* Vegetation cover was 96%

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10-INCH AND 6-INCH PIPELINES
DECEMBER 1996 & JANUARY 1997

Segment	Segment Location	Vegetation Communities
8	82+32 - 87+26	Lower flat ground with many depressional areas with standing water. The dominant vegetation was *Paspalum monostachyum.* Other species observed were: • *Schizachyrium scoparium* var. *littoralis,* • *Andropogon glomeratus,* • *Scirpus americanus,* • *Spartina patens,* • *Centella asiatica,* • *Phyla nodiflora,* • *Bacopa monnieri,* • *Baptisia leucophaera* var. *laevicaulis,* • *Eleocharis* spp., • *Cyperus* sp., • *Salix nigra,* • *Eupatorium coelestinum,* and • *Typha domingensis.* Vegetation cover was 99%.
9	87+26 - 90+64	Flat upland with very few hummocks and very few small depressional areas. The vegetation was dominated by: • *Schizachyrium scoparium* var. *littoralis,* • *Paspalum monostachyum,* • *Spartina patens,* • *Baptisia leucophaera* var. *laevicaulis,* and • *Andropogon glomeratus*. Vegetation cover was 99%
10	90+64 - 100+00	Flat upland higher than segment 9 with many scattered hummocks and only two observed small depressions. The vegetation was dominated by: • *Schizachyrium scoparium* var. *littoralis* and • *Paspalum monostachyum.* • *Spartina patens,* • *Hydrocotyle bonariensis,* • *Dichanthelium oligosanthes,* • *Centella asiatica,* • *Baptisia leucophaera* var. *laevicaulis,* • *Eupatorium coelestinum,* and • *Andropogon virginicus.* Vegetation coverage was 99%.

TABLE 1
SUMMARY OF VEGETATION COMMUNITIES IN PROJECT AREA
PANENERGY FIELD SERVICES, INC.
PADRE ISLAND NATIONAL SEASHORE
10-INCH AND 6-INCH PIPELINES
DECEMBER 1996 & JANUARY 1997

Segment	Segment Location	Vegetation Communities
11	100+00 - 103+16	Non-tidal marsh with up to 1.2 ft of standing water dominated by *Typha domingensis.* Other species observed were: • *Scripus americanus,* • *Juncus* sp., • *Phyla nodiflora,* • *Spartina patens,* • *Bacopa monnieri,* • *Centella asiatica,* and • *Sporobolus virginicus* Vegetation cover was 94%.
12	103+16 - 111+22	Predominantly an unvegetated open water area (typical water depth 0.8 ft-1.5 ft) with non-tidal marsh mostly to the west of the pipeline. Approximately 70% of this segment was open water, 30% was marsh. The marsh was dominated by *Typha domingensis.* Other species observed were: • *Spartina patens,* • *Scirpus americanus,* • *Phyla nodiflora,* • *Bacopa monnieri,* • *Andropogon glomeratus* and • *Juncus megacephalus.* Vegetation cover in the marsh was 95%.
13	111+22 - 112+00	A higher ridge separating the ponds of segments 12 and 14, dominated by *Paspalum monostachyum* and, *Spartina patens.* Other species observed were: • *Scirpus americanus,* • *Centella asiatica,* • *Schizachyrium scoparium* var. *littoralis,* • *Uniola paniculata* and • *Oenothera drummondii.* Vegetation cover was 93%.

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PANENERGY FIELD SERVICES, INC.
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10-INCH AND 6-INCH PIPELINES
DECEMBER 1996 & JANUARY 1997

Segment	Segment Location	Vegetation Communities
14	112+00 - 118+30	Predominately an unvegetated open water area (typical water depth 1.0 ft-1.2 ft) with scattered non-tidal marsh. Approximately 80% of this segment was open water, 20% was marsh. The marsh was dominated by *Spartina patens* and *Typha domingensis.* Other species observed were: • *Paspalum monostachyum,* • *Schizachyrium scoparium* var. *littoralis,* • *Baptisia leucophaera* var. *laevicaulis,* • *Phyla nodiflora,* • *Centella asiatica,* • *Bacopa monnieri,* and • *Fungus megacephalus.* Vegetation cover was 95%.
15	118+30 - 133+00	Higher ground than segment 14, with a my of flat ground, frequent hummocks, and frequent small, shallow, depressions with standing water (0.1 ft-0.3 fit deep). Higher ground was 87% covered and was dominated by: • *Paspalum monostachyum,* • *Spartina patens,* • *Andropogon virginicus,* • *Baptisia leucophaera* var. *laevicaulis* and • *Dichanthelium oligosanthes* present. Typical depression was 53% covered dominated by: • *Spartina patens,* with • *Scirpus americanus,* • *Centella asiatica,* • *Paspalum monostachyam,* and • *Sporobolus virginicus.*
16	113+00 - 153+95	Higher ground than segment 15 with many scattered hummocks and very few depressions. A shallow trench-type depression (0.1ft-0.2ft of standing water), generally 15 ft wide, was directly over the pipeline through most of segment. This trench was 76% covered, dominated by: • *Spartina patens,* • *Scirpus americanus,* • *Centella asiatica,* and • *Paspalum monostachyam* • The few scattered depressions were 37% covered, dominated by: • *Spartina patents,* with • *Centella asiatica* and

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10-INCH AND 6-INCH PIPELINES
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Segment	Segment Location	Vegetation Communities
		• *Andropogon glomeratus*. • Higher ground was dominated by: • *Andropogon virginicus*, with • *Schizachyrium scoparium* var. *littoralis*, • *Spartina patens*, • *Baptisia leucophaera* var. *laevicaulis*, • *Dichanthelium oligosanthes*, • *Hydrocotyle bonariensis, and* • *Iva angustifolia.* Vegetation cover was 81%
17	153+95 - 164+00	Higher than segment 16 with higher hummocks and high dunes present. A large pond was found to the east of segment 17. Segment 17 was dominated by: • *Schizachyrium scoparium* var. *littoralis*, with • *Heterotheca subaxillaris*, • *Andropogon virginicus, Baptisia leucophaera* var. *laevicaulis*, • *Uniola paniculata*, • *Paspalum monostachyam*, • *Panicum amarum*, and • *Spartina patens*. Vegetation cover was 94%.
18	164+00 - 186+85	Lower than segment 17, with hummocks scattered among low land with 0.1 ft-0.8 ft of standing water. A trench 20-40 ft wide was observed over the pipeline with 0.4 ft-0.5 ft of standing water. Vegetation was dominated by: • *Spartina patens*, with • *Andropogon virginicus*, • *Paspalum monostachyum*, • *Centella asiatica*, • *Eleocharis* spp., • *Bacopa monnieri*, • *Dichanthelium oligosanthes*, • *Baptisia leucophaera* var. *laevicaulis*, • *Heterotheca subaxillaris*, • *Schizachyrium scoparium* var. *littoralis*, • *Sporobolus virginicus* and • *Scirpus americanus*. Vegetation cover was 83%.

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PANENERGY FIELD SERVICES, INC.
PADRE ISLAND NATIONAL SEASHORE
10-INCH AND 6-INCH PIPELINES
DECEMBER 1996 & JANUARY 1997

Segment	Segment Location	Vegetation Communities
19	186+85 - 192+50	Higher ground than segment 18, characterized by flat ground with many hummocks and a few small, shallow depressions. Typical depression had 60% vegetation cover with 0.1 ft of standing water and was dominated by: • *Spartina patens,* with • *Paspalum monostachyum,* • *Centella asiatica,* • *Andropogon virginicus* and • *Dichromena colorata.* Flat ground in segment 19 was dominated by: • *Schizachyrium scoparium* var. *littoralis,* • *Andropogon virginicus,* and • *Paspalum monostachyam,* with • *Baptisia leucophaera* var. *laevicaulis,* • *Hydrocotyle bonariensis,* • *Sporobolus virginicus,* and • *Spartina patens*. Vegetation cover was 93%.
20	192+50 - 202+45	Lower than segment 19, characterized by flat, low land with up to 1.0 ft of standing water and occasional, small hummocks. Vegetation was dominated by: • *Spartina patens,* with • *Juncus* sp., • *Centella asiatica,* • *Sporobolus virginicus,* • *Scripus americanus,* • *Andropogon virginicus,* • *Schizachyrium scoparium* var. *littoral,* • *Baptisia leucophaera* var. *laevicaulis* and • *Bacopa monnieri.* Vegetation cover was 79%.
21	202+45 - 210+16	Higher ground than segment 20, characterized by flat ground interspersed with many hummocks, high dunes, and non-tidal marsh areas. Marsh areas, with typically 72% vegetation cover, comprised approximately one-third of segment 21 and were dominated by: • *Spartina patens,* with • *Centella asiatica,* • *Paspalum monostachyum,* and • *Andropogon virginicus.* Higher ground was dominated by: • *Schizachyrium scoparium* var. *littorals,* • *Andropogon virginicus,* and

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Segment	Segment Location	Vegetation Communities
		• *Paspalum monostachyum,* with • *Spartina patens,* • *Baptisia leucophaera* var. *laevicaulis,* and • *Hydrocotyle bonariensis.* Vegetation cover was 94%.
22	210+16 - 223+90	Higher ground than segment 21 with mostly stable, high dunes and rolling, lower dunes. Only one small depression with no standing water was observed with 92 % vegetation cover and dominated by: • *Paspalum monostachyum,* with • *Eleocharis* spp., • *Andropogon virginicus,* • *Spartina patens,* and • *Centella asiatica.* Higher ground was dominated by: • *Schizachyrium scoparium* var. *littoralis,* with • *Paspalum monostachyum,* • *Heterothecus subaxillaris,* • *Baptisia leucophaera* var. *laevicaulis,* • *Schizachyrium scoparium* var. *frequents,* and • *Chenopodia* sp. Vegetation cover was 84%.
23	223+90 - 227+50	Lower, flatter terrain than segment 22 with a few scattered hummocks and no standing water and dominated by: • *Schizachyrium scoparium* var. *littoralis,* with • *Spartina patens,* • *Paspalum monostachyum,* • *Andropogon virginicus,* • *Baptisia leucophaera* var. *laevicaulis,* • *Scirpus americanus,* and • *Andropogon geradi*. Vegetation cover was 100%.

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10-INCH AND 6-INCH PIPELINES
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Segment	Segment Location	Vegetation Communities
24	227+50 - 233+86	Lower than segment 23 with 0.1 ft-0.5 ft of standing water and a few scattered hummocks. Vegetation was dominated by: • *Spartina patens,* • *Paspalum monostachyam* and • *Andropogon virginicus,* with • *Centella asiatica,* • *Eleocharis* spp. • *Juncus megacephalus*. Vegetation cover was 81 %.
25	233+86 - 237+65	Higher ground than segment 24 with few hummocks and very few depressions. Vegetation was dominated by: • *Schizachyrium scoparium* var. *littoralis* and • *Paspalum monostachyam,* with • *Spartina patens,* • *Andropogon virginicus,* • *Baptisia leucophaera* var. *laevicaulis* and • *Hydrocotyle bonariensis.* Vegetation cover was 93%.
26	237+65 - 271+50	Lower ground than segment 25 with standing water (0.1 ft-1.0 ft deep) over approximately 85% of this segment ant a few scattered hummocks. Vegetation was dominated by: • *Spartina patens* and • *Paspalum monostachyum,* with • *Eleocharis parvula, Eleocharis* spp., • *Centella asiatica,* • *Bacopa monnieri,* • *Juncus megacephalus,* • *Dichanthelium oligosanthes,* • *Sporobolus virginicus,* • *Schizachyrium scoparium* var. *littorals,* • *Baptisia leucophaera* var. *laevicaulis* and • *Andropogon virginicus.* Vegetation cover was 71%.
27	271+50 - 276+10	Much higher ground than segment 26 with high, rolling dunes and hummocks. Very few depressional areas were observed. Dunes were observed west and wetlands east of this segment. Vegetation was dominated by: • *Schizachyrium scoparium* var. *littorals,* with • *Paspalum monostachyam,* • *Spartina patens,* • *Baptisia leucophaera* var. *laevicaulis,* • *Iva angustifolia,* • *Chenopodia* sp.,

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Segment	Segment Location	Vegetation Communities
		• *Uniola paniculata,* • *Heterothecus subaxillaris* and • *Sporobolus virginicus.* Vegetation cover was 87%.
28	276+10 - 282+16	Lower area than segment 27 with typically 0.3 ft-0.7 ft of standing water with scattered hummocks. Approximately 85% of this segment had standing water. Vegetation was dominated by: • *Paspalum monostachyum,* with • *Spartina patens,* • *Centella asiatica,* • *Andropogon virginicus,* • *Eleocharis spp.,* • *Schizachyrium scoparium* var. *littoralis,* • *Baptisia leucophaera* var. *laevicaulis,* • *Eleocharis parvula, Dichanthelium oligosanthes* and • *Sporobolus virginicus.* Vegetation cover was 65%.
29	282+16 - 324+00	Higher area (90-95% upland) than segment 28, characterized by flat uplands with low, rolling dunes and minor, scattered depressions. Vegetation was dominated by: • *Schizachyrium scoparium* var. *littoralis,* with • *Paspalum monostachyum* • *Andropogon virginicus,* • *Schizachyrium scoparium* var. *frequens,* • *Cassia aspera,* • *Baptisia leucophaera* var. *laevicaulis,* • *Spartina patens,* • *Dichanthelium oligosanthes,* • *Centella asiatica,* • *Juncus megacephalus,* • *Uniola paniculata,* • *Chenopodia* sp., and • *Eleocharis* spp. Vegetation cover was 80%. Typical depression was 91% covered with vegetation and was dominated by: • *Spartina patens* and • *Andropogon virginicus,* with • *Paspalum monostachyam,* • *Scirpus americanus,* • *Juncus megacephalus,* • *Centella asiatica* and • *Schizachyrium scoparium* var. *littoralis.*

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Segment	Segment Location	Vegetation Communities
30	324+00 - 326+50	High, partially active dune and high uplands dominated by: • *Schizachyrium scoparium* var. *littoralis,* with • *Uniola paniculata,* • *Baptisia leucophaera* var. *laevicaulis,* • *Chenopodia* sp. and • *Cassia aspera.* Vegetation cover was 55%.
31	326+50 - 334+23	Habitat was similar to segment 29 and dominated by: • *Schizachyrium scoparium* var. *littoralis,* with • *Paspalum monostachyam,* • *Eragostis oxylepis,* • *Baptisia leucophaera* var. *laevicaulis,* • *Andropogon virginicus,* • *Spartina patens,* • *Salidago sempervirens* and • *Chenopodia* sp. Vegetation cover was 76%.
32	334+23 - 343+40	Much lower ground than segment 31 with standing water (0.8 ft-1.0 ft deep) over approximately 90% of the area. A few hummocks were present, primarily to the east of the pipeline. Vegetation was dominated by: • *Scirpus American,* • *Juncus* spp., and • *Spartina patens,* with • *Bacopa monnieri,* • *Uniola paniculata,* • *Paspalum monostachyam,* and • *Eleocharis* spp. Vegetation cover was 55%.
33	343+40 - 345+00	Higher ground than segment 32 with very little standing water east of the pipeline and mostly standing water (0.7 ft-0.9 ft deep) to the west of the line. Vegetation was dominated by: • *Scirpus americanus,* with • *Spartina patens,* • *Hydrocotyle bonariensis,* • *Centella asiatica,* • *Bacopa monnieri,* • *Sporobolus virginicus,* • *Andropogon glomeratus,* • *Phyla nodiflora,* and • *Schizachyrium scoparium* var. *littorals*. Vegetation cover was 72%.

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Segment	Segment Location	Vegetation Communities
34	345+00 - 347+50	Lower ground than segment 33 with standing water (0.3 ft-1.1 ft deep) over nearly all of this segment. Vegetation was dominated by: • *Scirpus americanus,* with • *Centella asiatica,* • *Sporobolus virginicus,* • *Eleocharis* spp., • *Phyla nodiflora,* • *Juncus* spp., and • *Hydrocotyle bonariensis.* Vegetation cover was 87%.
35	347+50 - 349+42	Higher ground than segment 34 with less than 0.1 ft of standing water over much of this area. The south end of this segment abuts the north fence of the Six Pigs site. Vegetation is dominated by: • *Spartina patens,* with • *Scirpus americanus,* • *Hydrocotyle bonariensis,* • *Phyla nodiflora,* • *Centella asiatica,* • *Sporobolus virginicus,* • *Andropogon glomeratus,* • *Schizachyrium scoparium* var. *littoralis,* and • *Paspalum monostachyum.* Vegetation cover was 94%.
36	349+42 - 412+50	This segment began at the north fence of the Six Pigs site and extended southward through high ground with rolling, low dunes with depressions and ponds frequently to the east and west of the pipeline, occasionally encroaching into the 400-ft wide right-of-way. Typical depressions were dominated by: • *Scirpus americanus,* • *Paspalum monostachyum,* • *Eleocharis spp.,* and • *Andropogon virginicus,* with • *Phyla nodiflora,* • *Hydrocotyle bonariensis,* • *Schizachyrium scoparium* var. *littoralis,* • *Baptisia leucophaera* var. *laevicaulis,* • *Cassia fiasiculata* var. *ferrisiae,* • *Centella asiatica,* and • *Typha domingensis.* Typical vegetation cover in depression was 87%. Higher ground was dominated by: • *Paspalum monostachyum* and • *Schizachyrium scoparium* var. *littoralis,* with • *Andropogon virginicus,*

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Segment	Segment Location	Vegetation Communities
		• *Baptisia leucophaera* var. *laevicaulis,* • *Dichanthelium oligosanthes,* • *Hydrocotyle bonariensis,* • *Scirpus americanus,* • *Andropogon glomeratus,* • *Eleocharis* spp., • *Phyla nodiflora,* • *Juncus megacephalus,* • *Salidago sempervirens,* and • *Opuntia compressa.* • *Salix nigra* was found only in the southern 500 ft of segment 36. Vegetation cover was 95%.
37	412+50 - 471+00	More frequent depressions than segment 36 with *Salix nigra* trees and shrubs abundant near lowlands. Low dunes and flat uplands were evenly timed with ponds and depressions. Depressions (0.1 ft-0.8 ft deep) were typically 93% covered with vegetation and dominated by: • *Salix nigra,* • *Scirpus americanus,* and • *Paspalum monostachyum*, with • *Hydrocotyle bonaniensis,* • *Phyla nodiflora,* • *Centella asiatica,* • *Eleocharis* spp., • *Bacopa monnieri,* • *Andropogon glomeratus,* and • *Typha domingensis.* **Segment 37 was dominated by:** • *Schizachyrium scoparium* var. *littoralis,* • *Paspalum monostachyum,* and • *Salix nigra,* with • *Scirpus americanus,* • *Andropogon glomeratus,* • *Hydrocotyle bonariensis,* • *Phyla nodiflora,* • *Baptisia leucophaera* var. *laevicaulis,* • *Heterotheca subaxillaris,* • *Centella asiatica,* • *Dichanthelium oligosanthes,* • *Eleocharis* spp., • *Bacopa monnieri,*

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Segment	Segment Location	Vegetation Communities
		• *Juncus megacephalus,* • *Iva angustifolia,* and • *Chenopodia* sp. Vegetation cover was 98%.
38	471+00 - 482+25	Willow shrubs but no willow trees were present in segment 38. Higher ground than segment 37 and characterized by flat upland with low, rolling dunes and hummocks with a partially active east-to-west dune ridge at 474+00 to 474+900 (61% vegetation cover dominated by: • *Heterothecus subaxillaris* and • *Schizachyrium scoparium* var. *littoralis,* with • *Paspalum monostachyum, Spartina patens,* and • *Dichanthelium oligosanthes* also present). Small depressions were located near the south end of this segment on and east of the pipeline (98% vegetation cover dominated by): • *Paspalum monostachyum,* with • *Andropogon glomeratus,* • *Hydrocotyle bonariensis,* • *Salix nigra,* • *Phyla nodiflora,* and • *Centella asiatica.* **Segment 38 was dominated by:** • *Paspalum monostachyum* and • *Schizachyrium scoparium* var. *littoralis,* with • *Heterothecus subaxillaris,* • *Baptisia leucophaera* var. *laevicaulis,* • *Scirpus americanus,* • *Juncus megacephalus,* • *Sporobolus virginicus,* • *Spartina patens,* • *Andropogon glomeratus,* • *Dichanthelium oligosanthes,* • *Iva angustifolia, Salix nigra,* and • *Andropogon virginicus.* Vegetation cover was 91%.
39	482+25 - 500+10	No willows were present in segment 39. Flat uplands with low hummocks and some shallow (to 0.3 ft standing water) depressions (94% vegetation cover and dominated by: • *Paspalum monostachyum,* • *Scirpus americanus,* and

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Segment	Segment Location	Vegetation Communities
		• *Andropogon virginicus*, with • *Phyla nodiflora,* • *Hydrocotyle bonariensis,* • *Andropogon glomeratus,* • *Juncus megacephalus,* and • *Schizachyrium scoparium* var. *littoralis.* **Segment 39 was dominated by:** • *Paspalum monostachyum* and • *Schizachyrium scoparium* var. *littoralis*, with • *Baptisia leucophaera* var. *laevicaulis,* • *Heterothecus subaxillaris,* • *Juncus megacephalus,* • *Scirpus americanus,* • *Andropogon glomeratus,* • *Sporobolus virginicus,* • *Iva angustifolia,* and • *Hydrocotyle bonariensis.* Vegetation cover was 97%.
40	500+10 - 505+90	Lower than segment 39 and with occasional hummocks and standing water over approximately 70% of this segment. The vegetation is dominated by: • *Paspalum monostachyum* and • *Scirpus americanus*, with • *Phyla nodiflora,* • *Hydrocotyle bonariensis,* • *Iva angustifolia,* • *Baptisia leucophaera* var. *laevicaulis,* • *Schizachyrium scoparium* var. *littoralis* and • *Typha domingensis.* Vegetation cover was 94%.

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Segment	Segment Location	Vegetation Communities
41	505+90 - 520+10	Lower than segment 40 with few hummocks and approximately 90% standing water (to 1.0 ft deep). A north-south dune ridge was located just east of the right-of-way. Segment 40 was dominated by: • *Typha domingensis,* • *Scirpus americanus,* and • *Phyla nodiflora,* with • *Salix nigra,* • *Eleocharis parvula,* • *Paspalum monostachyum,* • *Andropogon virginicus,* • *Iva angustifolia,* • *Eleocharis* spp., • *Baptisia leucophaera* var. *laevicaulis* and • *Schizachyrium scoparium* var. *littoralis.* Vegetation cover was 93%.
42	520+10 - 523+45	Rolling dunes with 81% vegetation cover dominated by: • *Schizachyrium scoparium* var. *littoralis* and • *Heterotheca subaxillaris* • *Paspalum monostachyum,* • *Baptisia leucophaera* var. *laevicaulis,* • *Uniola paniculata,* and • *Sporobolus virginicus.*
43	523+45 - 545+80	Flat uplands with occasional hummocks and low dunes with small, infrequent depressions. Typical depression (84% vegetation cover dominated by: • *Scirpus americanus* with • *Paspalum monostachyum* • *Dichromena colorata* • *Phyla nodiflora* • *Centella asiatica* • *Hydrocotyle bonariensis* • *Iva angustifolia* • *Sporobolus virginicus Salix nigra* and • *Typha domingensis* also present) had 0.1 ft-0.4 ft standing water.

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Segment	Segment Location	Vegetation Communities
		Segment 43 vegetation was dominated by: • *Paspalum monostachyum,* and • *Schizachyrium scoparium* var. *littoralis,* with • *Baptisia leucophaera* var. *laevicaulis* , • *Scirpus americanus,* • *Iva angustifolia,* • *Sporobolus virginicus,* • *Heterotheca subaxillaris,* • *Dichanthelium oligosanthes,* • *Lycium carolinianum* , • *Dichromena colorata,* • *Juncus megacephalus,* • *Phyla nodiflora,* and • *Andropogon glomeratus.* Vegetation cover was 92%.
44	545+80 - 551+70	Moderately high dune ridge traversed the pipeline in a southeast-northwest direction with minor depressions (no standing water). Depressions were 85% covered and dominated by: • *Paspalum monostachyum* with • *Scirpus americanus* and • *Andropogon virginicus.* **Segment 44 was dominated by:** • *Paspalum monostachyam,* and • *Schizachyrium scoparium* var. *littoralis,* with • *Heterotheca subaxillaris,* • *Iva angustifolia,* • *Andropogon virginicus,* and • *Panicum amarum.* Vegetation cover was 77%.
45	551+70 - 591+81	Flat uplands with many hummocks, some low dunes, and a few shallow depressions. Depressions (94% covered with vegetation and dominated by: • *Scirpus americanus* • *Andropogon, virginicus,* and • *Paspalum monostachyum* with • *Hydrocotyle bonariensis* • *Phyla nodiflora* • *Juncus megacephalus* • *Sporobolus virginicus* • *Spartina patens*

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Segment	Segment Location	Vegetation Communities
		• *Schizachyrium scoparium* var. *littoralis* and • *Andropogon glomeratus*) comprised less than 5% of segment 45 and had no more than 0.1 ft of standing water. **Segment 45 vegetation was dominated by:** • *Schizachyrium scoparium* var. *littoralis,* and • *Paspalum monostachyam,* with • *Andropogon virginicus,* • *Baptisia leucophaera* var. *laevicaulis,* • *Sporobolus virginicus,* • *Heterothecus subaxillaris,* • *Juncus megacephalus,* • *Iva angustifolia,* • *Hydrocotyle bonariensis,* • *Uniola paniculata,* • *Monanthochloe littoralis,* • *Spartina patents,* • *Ambrosia psilostachya,* and • *Phyla nodiflora.* Vegetation cover was 95%.
46	591+81 - 598+60	Lowland with approximately 70% standing water (0.1 ft-0.3 ft deep) and some higher flat uplands. Vegetation was dominated by: • *Scirpus americanus,* and • *Spartina patens,* with • *Schizachyrium scoparium* var. *littoralis,* • *Paspalum monostachyam,* • *Sporobolus virginicus,* • *Iva angustifolia,* • *Borrichia frutescens,* • *Distichlis spicata,* • *Ambrosia psilostachya,* • *Uniola paniculata,* and • *Maechaeranthera phyllocephala.* Vegetation cover was 97%.
47	598+60 - 600+90	Salt marsh dominated by: • *Distichlis spicata* and • *Monanthochloe littoralis* with • *Borrichia frutescens,* • *Lycium carolinianum,* • *Iva angustifolia,* and • *Maechaeranthera phyllocephala.* Vegetation cover was 79%.

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Segment	Segment Location	Vegetation Communities
48	600+90 - 612+25	Higher, flat land with hummocks and a few minor depressions. Depressions (40% covered with vegetation and dominated by: • *Scirpus americanus* and • *Spartina patens* with • *Andropogon glomeratus,* • *Paspalum monostachyam,* • *Hydrocotyle bonariensis* and • *Phyla nodiflora*) comprised less than 5% of segment 48. **Segment 48 vegetation was dominated by**: • *Schizachyrium scoparium* var. *littoralis,* and • *Paspalum monostachyum,* with • *Sporobolus virginicus,* • *Iva angustifolia,* • *Baptisia leucophaera* var. *laevicaulis,* • *Andropogon glomeratus* • *Scirpus americanus,* • *Hydrocotyle bonariensis,* and • *Phyla nodiflora.* Vegetation cover was 97%.
49	612+25 - 616+08	Salt marsh dominated by: • *Monanthochloe littoralis* with • *Borrichia frutescens,* • *Distichlis spicata,* • *Maechaeranthera phyllocephala,* • *Basis maritime, Lyceum carolinianum* and • *Spartina patens.* Vegetation cover was 72%.
50	616+08-627+70	Higher, flat land mixed with hummocks and depressions. Depressions had 0.1ft -0.4ft of water and dominated by (87% cover): • *Scirpus americanus* and • *Paspalum monostachyam,* with • *Andropogon virginicus,* • *Distichlis spicata,* and • *Spartina patens.* **Segment 50 vegetation was dominated by:** • *Paspalum monostachyum,* • *Schizachyrium scoparium,* var. *littoralis,* and • *Scirpus americanus,* with • *Bronchia frutescens,*

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Segment	Segment Location	Vegetation Communities
		• *Andropogon glomeratus,* • *Distichlis spicata,* • *Iva angustifolia,* • *Maechaeranthera phyllocephala,* and • *Baptisia leucophaera* var. *laevicaulis*. Vegetation cover was 94%.
51	627+70-635+80	Higher ground than segment 50 with less than 10% depressional area 85% covered with vegetation and dominated by: • *Scirpus americanus* ant • *Paspalum monostachyam,* with • *Andropogon virginicus,* • *Spartina patens,* • *Maechaeranthera phyllocephala,* and • *Distichlis spicata.* **Segment 51 vegetation was dominated by:** • *Paspalum monostachyam,* • *Schizachyrium scoparium* var. *littorals,* and • *Heterotheca subaxillaris,* with • *Scirpus americanus,* • *Andropogon glomeratus,* • *Hydrocotyle bonariensis,* • *Uniola paniculata,* • *Opuntia compressa,* and • *Sporobolus virginicus*. Vegetation cover was 87%.
52	635+80-636+90	Salt marsh dominated by: • *Monanthochloe littorals,* with • *Borrichia frutescens,* • *Maechaeranthera phyllocephala,* and • *Spartina patens*. Vegetation cover was 86%.
53	636+90-650+60	Mix of depressions, flat uplands, hummocks, and low to moderate dunes. Depressions comprise approximately 60% of segment 53. Vegetation was dominated by: • *Spartina paniculata* and • *Schizachyrium scoparium* var. *littoralis,* with • *Borrichia frutescens,* • *Andropogon glomeratus,* • *Heterotheca subaxillaris* • *Baptisia leucophaera* var. *laevicaulis,*

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Segment	Segment Location	Vegetation Communities
		• *Uniola paniculata,* and • *Sporobolus virginicus.* Vegetation cover was 97%.
54	650+60-659+00	Somewhat higher ground than segment 53 with more frequent hummocks and dunes and less frequent (less than 20%) depressional areas. Vegetation was dominated by: • *Schizachyrium scoparium* var. *littoralis* and • *Paspalum monostachyam,* with • *Scirpus americanus,* • *Andropogon glomeratus,* • *Iva angustifolia,* • *Hydrocotyle bonariensis,* • *Heterothecus subaxillaris,* • *Baptisia leucophaera* var. *laevicaulis,* • *Uniola paniculata, Panicum amarum,* and • *Sporobolus virginicus.* Vegetation cover was 93%.
55	659+00-663+50	Fresh-to-brackish marsh dominated by: • *Scirpus americanus* and • *Phyla nodiflora,* with • *Spartina patens,* • *Distichlis spicata,* • *Borrichia frutescens,* • *Andropogon glomeratus,* • *Paspalum monostachyum,* and • *Sporobolus virginicus.* Vegetation cover was 94%.

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Segment	Segment Location	Vegetation Communities
56	663+50-671+20	Higher area than segment 55 with mostly low to moderate, partly active dunes and some minor depressions (less than 10%). Vegetation was dominated by: • *Schizachyrium scoparium* var. *littoralis* and • *Paspalum monostachyam,* with • *Heterotheca subaxillaris,* • *Baptisia leucophaera* var. *laevicaulis,* • *Sporobolus virginicus,* • *Spartina patens,* • *Iva angustifolia,* • *Scirpus americanus,* • *Hydrocotyle bonariensis,* • *Juncus megacephalus,* and • *Distichlis spicata.* Vegetation cover was 77%.
57	671+20-689+00	Fresh-to-brackish marsh dominated by: • *Scirpus americanus* and • *Spartina patens,* with • *Typha domingensis,* • *Borrichia frutescens,* • *Cyperus* spp., • *Phyla nodiflora,* • *Salix nigra,* • *Euchres parvula,* • *Lycium carolinianum,* • *Iva angustifolia,* and • *Distichlis spicata.* Vegetation cover was 83%.
58	689+00 - 721+30	Higher ground than segment 57 comprised mostly of flat uplands with hummocks and dunes with occasional depressions (less than 15% of area). Depressions were 91 % covered with vegetation and dominated by: • *Scirpus americanus,* • *Phyla nodiflora,* and • *Typha domingensis,* with • *Borrichia frutescens,* • *Spartina patens,* • *Andropogon virginicus,* • *Hydrocotyle bonariensis,* • *Uniola paniculata,* • *Sporobolus virginicus,*

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		• *Baptisia leucophaera* var. *laevicaulis,* • *Iva angustifolia,* and • *Spartina patens*. Vegetation cover was 91%.
59	721+30-731+10	Tidal marsh dominated by: • *Monanthochloe littoralis* and • *Borrichia frutescens,* with • *Batis maritima,* • *Salicornia virginica,* • *Maechaeranthera phyllocephala,* • *Spartina patens,* • *Distichlis spicata,* • *Eleocharis parvula,* • *Eleocharis spp.*, and • *Scirpus americanus.* Vegetation cover was 79%.
60	731+10 - 733+50	Higher ground than segment 59 except in the western 100-ft of the right-of-way where habitat similar to serpent was present. Segment 60 was dominated by: • *Paspalum monostachyum* and • *Schizachyrium scoparium* var. *littoralis,* with • *Hydrocotyle bonariensis,* • *Iva angustifolia,* • *Borrichia frutescens,* • *Heterotheca subaxillaris,* • *Baptisia leucophaera* var. *laevicaulis,* and • *Maechaeranthera phyllocephala*. Vegetation cover was 94%.
61	733+50 - 748+98	Similar to the segment 59 salt marsh with habitat similar to segment 60 generally east of the pipeline in the northern half of segment 61. Vegetation was dominated by: • *Monanthochloe littoralis* and • *Borrichia frutescens,* with • *Maechaeranthera phyllocephala,* • *Distichlis spicata,* • *Salicornia virginica,* • *Lycium carolinianum,* • *Eleocharis parvula,* • *Schizachyrium scoparium* var. *littoralis,* • *Paspalum monostachyum,*

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Segment	Segment Location	Vegetation Communities
		• *Hydrocotyle bonariensis,* and • *Baptisia leucophaera* var. *laevicaulis.* Vegetation cover was 79%.
62	748+98 - 777+05	Higher, flat uplands with hummocks and depressions (less than 20% of segment 62) generally to the east of the pipeline. Typical depressions (0.1 ft-0.6 ft deep) were 68% covered and dominated by: • *Spartina patens,* • *Scirpus americanus,* • *Paspalum monostachyum,* and • *Phyla nodiflora,* with • *Hydrocotyle bonariensis,* • *Borrichia frutescens,* • *Iva angustifolia,* • *Andropogon glomeratus,* • *Distichlis spicata,* • *Sporobolus virginicus,* • *Salix nigra,* • *Andropogon virginicus,* and • *Maechaeranthera phyllocephala.* **Higher uplands of segment 62 were dominated by:** • *Schizachyrium scoparium* var. *littoralis* and • *Paspalum monostachyum, with* • *Spartina patens,* • *Scirpus americanus,* • *Hydrocotyle bonariensis,* • *Heterotheca subaxillaris,* • *Baptisia leucophaera* var. *laevicaulis,* and • *Iva angustifolia.* Vegetation cover was 97%.
63	777+05 - 787+50	Fresh-to-brackish marsh with hummocks. Vegetation was dominated by: • *Spartina patens,* with • *Scirpus americanus,* • *Lycium carolinianum,* • *Andropogon glomeratus,* • *Schizachyrium scoparium* var. *littoralis,* • *Eleocharis parvula,* • *Eupatorium coelestinum,* and • *Baptisia leucophaera* var. *laevicaulis.* Vegetation cover was 94%.

TABLE 1
SUMMARY OF VEGETATION COMMUNITIES IN PROJECT AREA
PANENERGY FIELD SERVICES, INC.
PADRE ISLAND NATIONAL SEASHORE
10-INCH AND 6-INCH PIPELINES
DECEMBER 1996 & JANUARY 1997

Segment	Segment Location	Vegetation Communities
64	787+50 - 792+40	A high marsh-upland mix with scattered hummocks. Vegetation was dominated by: • *Spartina patens* and • *Schizachyrium scoparium* var. *littoralis,* with • *Scirpus americanus,* • *Andropogon glomeratus,* • *Paspalum monostachyum,* • *Borrichia frutescens,* • *Eleocharis* spp., and • *Cycium carolinianum*. Vegetation cover was 40%.
65	792+40 - 814+30	Higher, flat ground than segment 64 with rolling, low dunes and hummocks and scattered depressional areas (less than 10% of segment 65). Depressions (0.1 ft-0.3 ft deep) were typically 86% covered with vegetation and dominated by: • *Scirpus americanus* and • *Spartina patens,* with • *Distichlis spicata,* • *Sporobolus virginicus,* • *Andropogon glomeratus,* • *Hydrocotyle bonariensis,* • *Phyla nodiflora*, and • *Eleocharis spp.* **Segment 65 vegetation was dominated by:** • *Schizachyrium scoparium* var. *littoralis* and • *Paspalum monostachyum*, with • *Dichanthelium oligosanthes,* • *Sporobolus virginicus,* • *Heterotheca subaxillaris,* • *Andropogon glomeratus,* • *Scirpus americanus,* • *Opuntia compressa,* • *Baptisia leucophaera var. laevicaulis,* • *Spartina patens,* and • *Uniola paniculata*. Vegetation cover was 91%.

TABLE 1
SUMMARY OF VEGETATION COMMUNITIES IN PROJECT AREA
PANENERGY FIELD SERVICES, INC.
PADRE ISLAND NATIONAL SEASHORE
10-INCH AND 6-INCH PIPELINES
DECEMBER 1996 & JANUARY 1997

Segment	Segment Location	Vegetation Communities
66	814+30 - 818+10	Brackish marsh combated by: • *Spartina patens* and • *Eleocharis spp.* with • *Scirpus americanus,* • *Distichlis spicata,* • *Sporobolus virginicus,* • *Dichanthelium oligosanthes,* • *Hydrocotyle bonariensis,* and • *Phyla nodiflora.* Vegetation cover was 75%.
67	818+10 - 823+90	Higher, flat uplands with scattered hummocks and minor depressions (less than 10% of segment 67). Depressions were typically 87% covered with vegetation and dominated by: • *Scirpus americanus* and • *Phyla nodiflora,* with • *Hydrocotyle bonariensis* and • *Spartina patens.* **Segment 67 was dominated by:** • *Schizachyrium scoparium* var. *littoralis* and • *Paspalum monostachyum,* with • *Hydrocotyle bonariensis,* • *Andropogon glomeratus,* • *Scirpus americanus,* • *Spartina patens,* and • *Eleocharis* spp. Vegetation cover was 97%.
68	823+90-829+50	A high-to-moderate dune complex with minor depressions (less than 10% of segment 68). Depressions mostly had no standing water to 0.1 ft of water and were dominated by: • *Scirpus americanus,* with • *Spartina patent,* • *Hydrocotyle bonariensis,* and • *Phyla nodiflora.* **Depressions were 85% covered by vegetation. Segment 68 was dominated by:** • *Schizachyrium scoparium* var. *littoralis* and • *Paspalum monostachyum,* with • *Heterotheca subaxillaris,* • *Baptisia leucophaera* var. *laevicaulis,* • *Sporobolus Virginians,* and

TABLE 1
SUMMARY OF VEGETATION COMMUNITIES IN PROJECT AREA
PANENERGY FIELD SERVICES, INC.
PADRE ISLAND NATIONAL SEASHORE
10-INCH AND 6-INCH PIPELINES
DECEMBER 1996 & JANUARY 1997

Segment	Segment Location	Vegetation Communities
		• *Hydrocotyle bonariensis.* Vegetation cover was 83%.
69	829+50-835+30	Brackish marsh rained with flat uplands (less than 20% of segment 69). Segment 69 was dominated by: • *Spartina patens* and • *Scirpus americanus,* with • *Schizachyrium scoparium* var. *littoralis,* • *Andropogon glomeratus,* • *Phyla nodiflora,* • *Hydrocotyle bonariensis,* • *Borrichia frutescens,* • *Distichlis spicata,* • *Dichanthelium oligosanthes,* and • *Eleocharis* spp.. Vegetation cover was 89%.
70	835+30-840+36	Low, rolling dunes with minor depressions (less than 10% of segment 70). Vegetation was dominated by: • *Schizachyrium scoparium* var. *littoralis,* and • *Paspalum monostachyam,* with • *Scirpus Americans,* • *Heterothecus subaxillaris,* • *Baptisia leucophaera* var. *laevicaulis,* • *Andropogon glomeratus,* and • *Spartina patens.* Vegetation cover was 92%.
71	840+36-863+90	A mix of fresh to brackish marsh and low to moderate dunes (less than 20% of segment 71). Vegetation was dominated by: • *Spartina patens* and • *Paspalum monostachyam,* with • *Scirpus americanus,* • *Schizachyrium scoparium* var. *littorals,* • *Iva angustifolia,* • *Andropogon glomeratus,* • *Cyperus* spp., • *Eleocharis* spp., • *Borrichia frutescens,* • *Dichanthelium oligosanthes,* • *Centella asiatica,* • *Phyla nodiflora,* • *Monanthochloe littoralis,*

TABLE 1
SUMMARY OF VEGETATION COMMUNITIES IN PROJECT AREA
PANENERGY FIELD SERVICES, INC.
PADRE ISLAND NATIONAL SEASHORE
10-INCH AND 6-INCH PIPELINES
DECEMBER 1996 & JANUARY 1997

Segment	Segment Location	Vegetation Communities
		• *Distichlis spicata,* and • *Salix nigra.* Vegetation cover was 88%.
72	863+90-891+60	Higher areas than segment 71 with predominantly low, rolling dunes with occasional depressions (less than 15% of segment 72). Typical shallow depression was 85% covered with vegetation and dominated by: • *Spartina patens* and • *Paspalum monostachyam,* with • *Scirpus americanus,* • *Hydrocotyle bonariensis,* and • *Eleocharis* spp.. **Segment 72 was dominated by:** • *Schizachyrium scoparium* var. *littoralis* and • *Paspalum monostachyam,* with • *Spartina patens,* • *Scirpus americanus,* • *Iva angustifolia,* • *Baptisia leucophaera* var. *laevicaulis,* • *Schizachyrium scoparium* var. *frequens,* • *Heterothecus subaxillaris,* • *Andropogon glomeratus,* • *Distichlis spicata,* • *Dichanthelium oligosanthes,* • *Phyla nodiflora,* • *Juncus megacephalus,* and • *Opuntia compressa.* Vegetation cover was 86%.
73	891+60-895+71	Lower area than segment 72 with predominantly standing water (0.1 in - 0.4 in) and a few hummocks (less than 10% of segment 73). Vegetation was dominated by: • *Scirpus americanus* and • *Phyla nodiflora,* with • *Hydrocotyle bonariensis,* • *Iva angustifolia,* • *Andropogon glomeratus,* • *Salix nigra, Spartina paresis,* • *Dichanthelium oligosanthes,* • *Schizachyrium scoparium* var. *littoralis,* and • *Paspalum monostachyum.* Vegetation cover was 91%.

TABLE 1
SUMMARY OF VEGETATION COMMUNITIES IN PROJECT AREA
PANENERGY FIELD SERVICES, INC.
PADRE ISLAND NATIONAL SEASHORE
10-INCH AND 6-INCH PIPELINES
DECEMBER 1996 & JANUARY 1997

Segment	Segment Location	Vegetation Communities
74	895+71-909+25	Higher area than segment 73 dominated by low, rolling dunes with minor depressions (less than 15% of segment 74). Depressions were shadow (0.1 ft - 0.2 ft of water), 87% covered with vegetation, and dominated by: • *Scirpus americanus,* and • *Spartina patent,* with • *Phyla nodiflora,* • *Andropogon glomeratus,* • *Hydrocotyle bonariensis,* • *Salix nigra,* and • *Dichanthelium oligosanthes.* **Segment 74 is dominated by:** • *Paspalum monostachyum* and • *Schizachyrium scoparium* var. *littoralis,* with • *Heterothecus subaxillaris,* • *Baptisia leucophaera* var. *laevicaulis,* • *Opuntia compressa,* • *Spartina patens,* • *Scirpus americanus,* • *Hydrocotyle bonariensis,* and • *Andropogon glomeratus.* Vegetation cover was *84%.*
75	909+25-927+65	Lower area than segment 74 with predominantly non-tidal marsh and occasional higher hummocks (less than 10% of segment 75). Vegetation was dominated by: • *Paspalum monostachyam,* • *Scirpus americanus,* and • *Phyla nodiflora,* with • *Spartina patens,* • *Hydrocotyle bonariensis,* • *Salix nigra,* • *Bacopa monnieri,* • *Dichanthelium oligosanthes,* • *Cyperus* spp., • *Schizachyrium scoparium* var. *littoralis,* • *Baptisia leucophaera* var. *laevicaulis,* and • *Andropogon glomeratus.* Vegetation cover was 79%.

TABLE 1
SUMMARY OF VEGETATION COMMUNITIES IN PROJECT AREA
PANENERGY FIELD SERVICES, INC.
PADRE ISLAND NATIONAL SEASHORE
10-INCH AND 6-INCH PIPELINES
DECEMBER 1996 & JANUARY 1997

Segment	Segment Location	Vegetation Communities
76	927+65 - 951+70	Higher area than segment 75 with low, rolling dunes and hummocks and minor depressions (less than 15% of segment 76). Segment 76 vegetation was dominated by: • *Paspalum monostachyam* and • *Schizachyrium scoparium* var. *littorals,* with • *Spartina patens,* • *Heterothecus subaxillaris,* • *Andropogon glomeratus,* • *Scirpus americanus,* • *Iva angustifolia,* • *Cyperus* spp., • *Baptisia leucophaera* var. *laevicaulis,* • *Uniola paniculata, Opuntia compressa,* and • *Maechaeranthera phyllocephala.* Vegetation cover was 89%.
77	951+70 - 957+10	Lower area than segment 76 with non-tidal marsh and ponds (0.1 ft - 0.4 ft of water) mixed with hummocks and flat uplands (higher ground comprised less than 20% of segment 77). Segment 77 vegetation was dominated by: • *Scirpus americanus,* • *Bacopa monnieri,* and • *Phyla nodiflora,* with • *Paspalum monostachyam,* • *Schizachyrium scoparium* var. *littoralis,* • *Andropogon glomeratus,* • *Iva angustifolia,* and • *Dichanthelium oligosanthes.* Vegetation cover was 93%.
78	957+10 - 959+50	Partially active dune ridge (southeast to northwest) dominated by: • *Schizachyrium scoparium* var. *littoralis,* with • *Paspalum monostachyam,* • *Heterothecus subaxillaris,* • *Uniola paniculata,* • *Spartina patens,* • *Opuntia compressa,* and • *Baptisia leucophaera* var. *laevicaulis.* Vegetation cover was 58%.

TABLE 1
SUMMARY OF VEGETATION COMMUNITIES IN PROJECT AREA
PANENERGY FIELD SERVICES, INC.
PADRE ISLAND NATIONAL SEASHORE
10-INCH AND 6-INCH PIPELINES
DECEMBER 1996 & JANUARY 1997

Segment	Segment Location	Vegetation Communities
79	959+50 - 966+25	A mix of brackish marsh, net uplands with hummocks, and high, stable dunes. The dunes were generally to the east of the pipeline. No standing water was observed in segment 79. Vegetation was dominated by: • *Spartina patens* and • *Scirpus americanus,* with • *Salix nigra,* • *Hydrocotyle bonariensis,* • *Andropogon glomeratus,* • *Schizachyrium scoparium* var. *littoralis,* • *Distichlis spicata, Paspalum monostachyam,* and • *Heterothecus subaxillaris.* Vegetation cover was 94%.
80	966+25-978+00	Low, rolling, stable dunes with some higher stable dunes and some depressions (less than 5% of segment 80). Depressions were 97% covered with vegetation, mostly dry with a maximum of 0.2 ft standing water, and dominated by: • *Spartina patens* and • *Scirpus americanus,* with • *Paspalum monostachyam,* • *Hydrocotyle bonariensis,* and • *Andropogon glomeratus.* **Segment 80 was dominated by:** • *Schizachyrium scoparium* var. *littoralis* and • *Paspalum monostachyam,* with • *Baptisia leucophaera* var. *laevicaulis,* • *Hydrocotyle bonariensis,* • *Scirpus americanus,* • *Spartina patens,* • *Andropogon glomeratus,* • *Salix nigra,* • *Iva angustifolia,* • *Dichanthelium oligosanthes,* • *Distichlis spicata,* • *Sporobolus virginicus,* • *Heterothecus subaxilloris,* and • *Uniola paniculata.* Vegetation cover was 98%.

TABLE 1
SUMMARY OF VEGETATION COMMUNITIES IN PROJECT AREA
PANENERGY FIELD SERVICES, INC.
PADRE ISLAND NATIONAL SEASHORE
10-INCH AND 6-INCH PIPELINES
DECEMBER 1996 & JANUARY 1997

Segment	Segment Location	Vegetation Communities
81	978+00-980+50	A shallow depression (at least 85% of segment 81) bounded on the east by flat uplands with hummocks. Vegetation was dominated by: • *Spartina patens* and • *Scirpus americanus,* with • *Andropogon glomeratus,* • *Schizachyrium scoparium* var. *littoralis,* • *Ambrosia psilostachya,* • *Hydrocotyle bonariensis,* and • *Dichanthelium oligosanthes*. Vegetation cover was 96%.
82	980+50-982+45	Tidal marsh (at least 80% of segment 82) with flat uplands to the east. Segment 82 is dominated by: • *Monanthochloe littoralis* and • *Spartina patens,* with • *Borrichia frutescens,* • *Distichlis spicata,* • *Maechaeranthera phyllocephala,* and • *Schizachyrium scoparium* var. *littoralis*. Vegetation cover was 93%.
83	982+45-984+50	Higher area than segment 82 mixed with brackish marsh and transitional species. Vegetation was dominated by: • *Spartina patens* and • *Paspalum monostachyam,* with • *Schizachyrium scoparium* var. *littoralis,* • *Eleocharis parvula,* • *Hydrocotyle bonariensis,* • *Scirpus americanus,* • *Iva angustifolia,* and • *Eupatorium coelestinum*. Vegetation cover was 91%.
84	984+50 - 992+00	A tidal marsh that included old structures and improvements. Vegetation was dominated by: • *Monanthochloe littoralis* and • *Spartina patents,* with • *Borrichia frutescens,* • *Distichlis spicata,* • *Maechaeranthera phyllocephala,* • *Salicornia virginica,* and • *Ambrosia phisolostachya.* Vegetation cover was 71%.

TABLE 1
SUMMARY OF VEGETATION COMMUNITIES IN PROJECT AREA
PANENERGY FIELD SERVICES, INC.
PADRE ISLAND NATIONAL SEASHORE
10-INCH AND 6-INCH PIPELINES
DECEMBER 1996 & JANUARY 1997

Segment	Segment Location	Vegetation Communities
85	992+00 - 1012+00	Higher ground with tidal marsh encroaching the right-of-way to the north of the pipeline. Tidal marsh was 77% covered by vegetation and dominated by: • *Monanthochloe littorals* and • *Spartina patens,* with • *Borrichia frutescens,* • *Distichlis spicata,* and • *Salicornia virginica.* **Segment 85 was dominated by:** • *Paspalum monostachyam* and • *Schizachyrium scoparium* var. *littoralis,* with • *Spartina patens,* • *Hydrocotyle bonariensis,* • *Baptisia leucophaera* var. *frutescens,* • *Andropogon glomeratus,* and • *Heterothecus subaxillaris.* Vegetation cover was 94%.
86	1012+00 -1019+60	Sand and algal flat covered most of this segment with a borrow area and higher ground similar to segment 85 south of the pipeline. Vegetation cover was approximately 25%.
87	1019+60-1033+50	Higher ground than segment 86 with a mix of low hummocks and shallow depressions (less than 15% of segment 87). A 50-ft - 100-ft wide sand flat encroached (north-south) approximately 350ft west of the start of segment 87. Depressions had a maximum of 0.1-ft standing water, 87% vegetation cover, and were dominated by: • *Scirpus americanus* and • *Spartina patens,* with • *Hydrocotyle bonariensis,* • *Andropogon glomeratus,* • *Baptisia leucophaera* var. *laevicaulis,* and • *Iva angustifolia* Segment 87 was dominated by: • *Paspalum monostachyam,* • *Schizachyrium scoparium* var. *littoralis,* and • *Spartina patents, with* • *Hydrocotyle bonariensis,* • *Andropogon glomeratus,* • *Baptisia leucophaera* var. *laevicaulis,* and • *Sporobolus angustifolia.* Vegetation cover was 92%.

TABLE 1
SUMMARY OF VEGETATION COMMUNITIES IN PROJECT AREA
PANENERGY FIELD SERVICES, INC.
PADRE ISLAND NATIONAL SEASHORE
10-INCH AND 6-INCH PIPELINES
DECEMBER 1996 & JANUARY 1997

Segment	Segment Location	Vegetation Communities
88	1033+50-1034+32	High ridge, transitional salt marsh adjacent to the bluff on the Laguna Madre shoreline Vegetation was dominated by: • *Spartina patent* and • *Iva angustifolia,* width • *Distichlis spicata,* • *Sporobolus virginicus,* • *Hydrocotyle bonariensis,* • *Borrichia frutescens,* and • *Lycium carolinianum*. Vegetation cover was 73%.
89	1034+32-1035+54	Unvegetated, nearshore sandy bay bottom.
90	1035+54 - 1040+ 18	Shoalgrass bed *(Halodule wrightii)* of sparse to moderate density (150 - 3500 shoots/m^2). No other species were found. Elevations ranged from approximately +0.2 ft MLT near the shoreline to -1.9 ft MLT near the GIWW. Vegetation cover was 98%.

NOTE:. Vegetation species are listed in order of observed abundance. Survey segment length is the distance measured in the field along the centerline of the pipeline. See Exhibit B for segment map.

TABLE 2
SUMMARY OF EXPOSED PIPELINE AREAS
DUKE ENERGY FIELD SERVICES, INC. PIPELINE AT
PADRE ISLAND NATIONAL SEASHORE
January 1998

	Approx Location of Exposed Pipe From Station	To Station	Feet Exposed	Habitat Type
1.	103+20	107+20	400	Non-tidal open water with sparse marsh
2.	469+90	471+00	110	Non-tidal marsh
3.	471+00	471+90	90	Flat upland with hummocks
4.	504+90	507+90	300	Non-tidal marsh
5.	544+47	545+47	100	Flat uplands with occasional hummocks low dunes, and small infrequent depressions
6.	546+22	547+22	100	Moderately high dune ridge with minor depressions
7.	729+05	731+10	205	High tidal marsh
8.	731+10	732+05	95	Flat upland
9.	751+50	754+00	25	Flat upland with occasional depressions
10.	824+68	825+43	75	High to moderate dunes with minor depressions
11.	854+67	856+17	150	Fresh to brackish marsh
12.	892+71	893+71	100	Non-tidal marsh

TABLE 3
SUMMARY
ESTIMATE OF WETLAND IMPACT'S
PROPOSED LOWERING
DUKE ENERGY PIPELINE, PADRE ISLAND NATIONAL SEASHORE

Habitat	Estimated Wetland Impacts (acres)*
Non-tidal open water	0.44
Non-tidal marsh/depression	0.82
Salt marsh	0.23
TOTAL	1.49 acres

Typical width of impact would be 48 ft. Temporary excavation and temporary fill areas would be restored.

EXHIBIT B

VEGETATION PLATS OF PROJECT AREA (LOCATED IN POCKET)

EXHIBIT C

LIST OF THREATENED & ENDANGERED SPECIES

Federally-Listed as Threatened and Endangered Species of Texas
November 29, 1996

This list represents species which may be found in counties throughout the state. It is recommended that the field station responsible for a project area be contacted if additional information is needed (see enclosed map).

DISCLAIMER

This County by County list is based on information available to the U.S. Fish and Wildlife Service at the time of preparation, date on page 1. This list is subject to change, without notice, as new biological information is gathered and should not be used as the sole source for identifying species that may be impacted by a project.

Migratory Species Common to many or all Counties: Species listed specifically in a county have confirmed sightings. If a species is not listed they may occur as migrants in those counties.

American peregrine falcon	(E)	Falco peregrinus anatum
Least tern	(E)	Sterna antillarum
Whooping crane	(E)	Grus americana
Bald eagle	(T)	Haliaeetus leucocephalus
Piping plover	(T)	Charadrius melodus
Arctic peregrine falcon	(TSA)	Falco peregrinus tundrius
Loggerhead shrike	(SOC)	Lanius ludovicianus
White-faced ibis	(SOC)	Plegadis chihi

Kenedy County

Jaguarundi	(E)	Felis yagouaroundi cacomitli
Ocelot	(E)	Felis pardalis
nerican peregrine falcon	(E)	Falco peregrinus anatum
rown pelican	(E)	Pelecanus occidentalis
Northern aplomado falcon	(E)	Falco femoralis septentrionalis
Hawksbill sea turtle	(E w/CH‡)	Eretmochelys imbricata
Kemp's Ridley sea turtle	(E)	Lepidochelys kempii
Leatherback sea turtle	(E w/CH‡)	Dermochelys coriacea
Green sea turtle	(T)	Chelonia mydas
Loggerhead sea turtle	(T)	Caretta caretta
Piping plover	(T)	Charadrius melodus
Arctic peregrine falcon	(TSA)	Falco peregrinus tundrius
Cactus ferruginous pygmy owl	(P/T)	Glaucidium brasilianum cactorum
Gulf Coast hog-nosed skunk	(C)	Conepatus leuconotus texensis
Coues' rice rat	(SOC)	Oryzomys couesi aquaticus
Audubon's oriole	(SOC)	Icterus graduacauda audubonii
Cerulean warbler	(SOC)	Dendroica cerulea
Ferruginous hawk	(SOC)	Buteo regalis
Black tern	(SOC)	Chlidonias niger
Loggerhead shrike	(SOC)	Lanius ludovicianus
Reddish egret	(SOC)	Egretta rufescens
Sennett's hooded oriole	(SOC)	Icterus cucullatus sennetti
Texas Botteri's sparrow	(SOC)	Aimophila botterii texana
Texas olive sparrow	(SOC)	Arremonops rufivirgatus rufivirgatus
Tropical parula	(SOC)	Parula pitiayumi nigrilora
White-faced ibis	(SOC)	Plegadis chihi
Black-spotted newt	(SOC)	Notophthalmus meridionalis
io Grande lesser siren	(SOC)	Siren intermedia texana
exas horned lizard	(SOC)	Phrynosoma cornutum
Bailey's ballmoss	(SOC)	Tillandsia baileyi
Roughseed sea-purslane	(SOC)	Sesuvium trianthemoides
Los Olmos tiger beetle	(SOC)	Cicindela nevadica olmosa

Kleberg County		
Jaguarundi	(E)	Felis yagouaroundi cacomitli
Ocelot	(E)	Felis pardalis
American peregrine falcon	(E)	Falco peregrinus anatum
Brown pelican	(E)	Pelecanus occidentalis
Northern aplomado falcon	(E)	Falco femoralis septentrionalis
Hawksbill sea turtle	(E w/CH‡)	Eretmochelys imbricata
Kemp's Ridley sea turtle	(E)	Lepidochelys kempii
Leatherback sea turtle	(E w/CH‡)	Dermochelys coriacea
Black lace cactus	(E)	Echinocereus reichenbachii var. albertii
Slender rush-pea	(E)	Hoffmannseggia tenella
South Texas ambrosia	(E)	Ambrosia cheiranthifolia
Green sea turtle	(T)	Chelonia mydas
Loggerhead sea turtle	(T)	Caretta caretta
Bald eagle	(T)	Haliaeetus leucocephalus
Arctic peregrine falcon	(TSA)	Falco peregrinus tundrius
Piping plover	(T)	Charadrius melodus
American alligator	(TSA)	Alligator mississipiensis
Gulf Coast hog-nosed skunk	(C)	Conepatus leuconotus texensis
Mountain plover	(C)	Charadrius montanus
Audubon's oriole	(SOC)	Icterus graduacauda audubonii
Black tern	(SOC)	Charadrius niger
Cerulean warbler	(SOC)	Dendroica cerulea
Ferruginous hawk	(SOC)	Buteo regalis
Loggerhead shrike	(SOC)	Lanius ludovicianus
Reddish egret	(SOC)	Egretta rufescens
Sennett's hooded oriole	(SOC)	Icterus cucullatus sennetti
Texas Botteri's sparrow	(SOC)	Aimophila botterii texana
Texas olive sparrow	(SOC)	Arremonops rufivirgatus rufivirgatus
White-faced ibis	(SOC)	Plegadis chihi
Black-spotted newt	(SOC)	Notophthalmus meridionalis
Rio Grande lesser siren	(SOC)	Siren intermedia texana
Texas horned lizard	(SOC)	Phrynosoma cornutum
Bailey's ballmoss	(SOC)	Tillandsia baileyi
Lilia de los llanos	(SOC)	Echeandia chandleri
Welder machaeranthera	(SOC)	Psilactis heterocarpa
Maculated manfreda skipper	(SOC)	Stalligsia maculosus
Nueces County		
Jaguarundi	(E)	Felis yagouaroundi cacomitli
Ocelot	(E)	Felis pardalis
American peregrine falcon	(E)	Falco peregrinus anatum
Brown pelican	(E)	Pelecanus occidentalis
West Indian manatee (=Florida)	(E)	Trichechus manatus
Hawksbill sea turtle	(E w/CH‡)	Eretmochelys imbricata
Kemp's Ridley sea turtle	(E)	Lepidochelys kempii
Leatherback sea turtle	(E w/CH‡)	Dermochelys coriacea
Slender rush-pea	(E)	Hoffmannseggia tenella
South Texas ambrosia	(E)	Ambrosia cheiranthifolia
Arctic peregrine falcon	(TSA)	Falco peregrinus tundrius
Piping plover	(T)	Charadrius melodus
Green sea turtle	(T)	Chelonia mydas
Loggerhead sea turtle	(T)	Caretta caretta
Gulf Coast hog-nosed skunk	(C)	Conepatus leuconotus texensis
Mountain plover	(C)	Charadrius montanus
Audubon's oriole	(SOC)	Icterus graduacauda audubonii
Black rail	(SOC)	Laterallus jamaicensis
Black tern	(SOC)	Chlidonias niger

Cerulean warbler	(SOC)	Dendroica cerulea
Ferruginous hawk	(SOC)	Buteo regalis
Loggerhead shrike	(SOC)	Lanius ludovicianus
Northern gray hawk	(SOC)	Buteo nitidus maximus
Reddish egret	(SOC)	Egretta rufescens
Sennett's hooded oriole	(SOC)	Icterus cucullatus sennetti
Texas Botteri's sparrow	(SOC)	Aimophila botterii texana
Texas olive sparrow	(SOC)	Arremonops rufivirgatus rufivirgatus
White-faced ibis	(SOC)	Plegadis chihi
Black-spotted newt	(SOC)	Notophthalmus meridionalis
Rio Grande lesser siren	(SOC)	Siren intermedia texana
Gulf salt marsh snake	(SOC)	Nerodia clarkii
Texas diamondback terrapin	(SOC)	Malaclemys terrapin littoralis
Texas horned lizard	(SOC)	Phrynosoma cornutum
Maritime Texas pocket gopher	(SOC)	Geomys personatus maritimus
Lilia de los llanos	(SOC)	Echeandia chandleri
Roughseed sea-purslane	(SOC)	Sesuvium trianthemoides
Texas windmill-grass	(SOC)	Chloris texensis
Thieret's skullcap	(SOC)	Scutellaria thieretii
Welder machaeranthera	(SOC)	Psilactis heterocarpa
Maculated manfreda skipper	(SOC)	Stallingsia maculosus

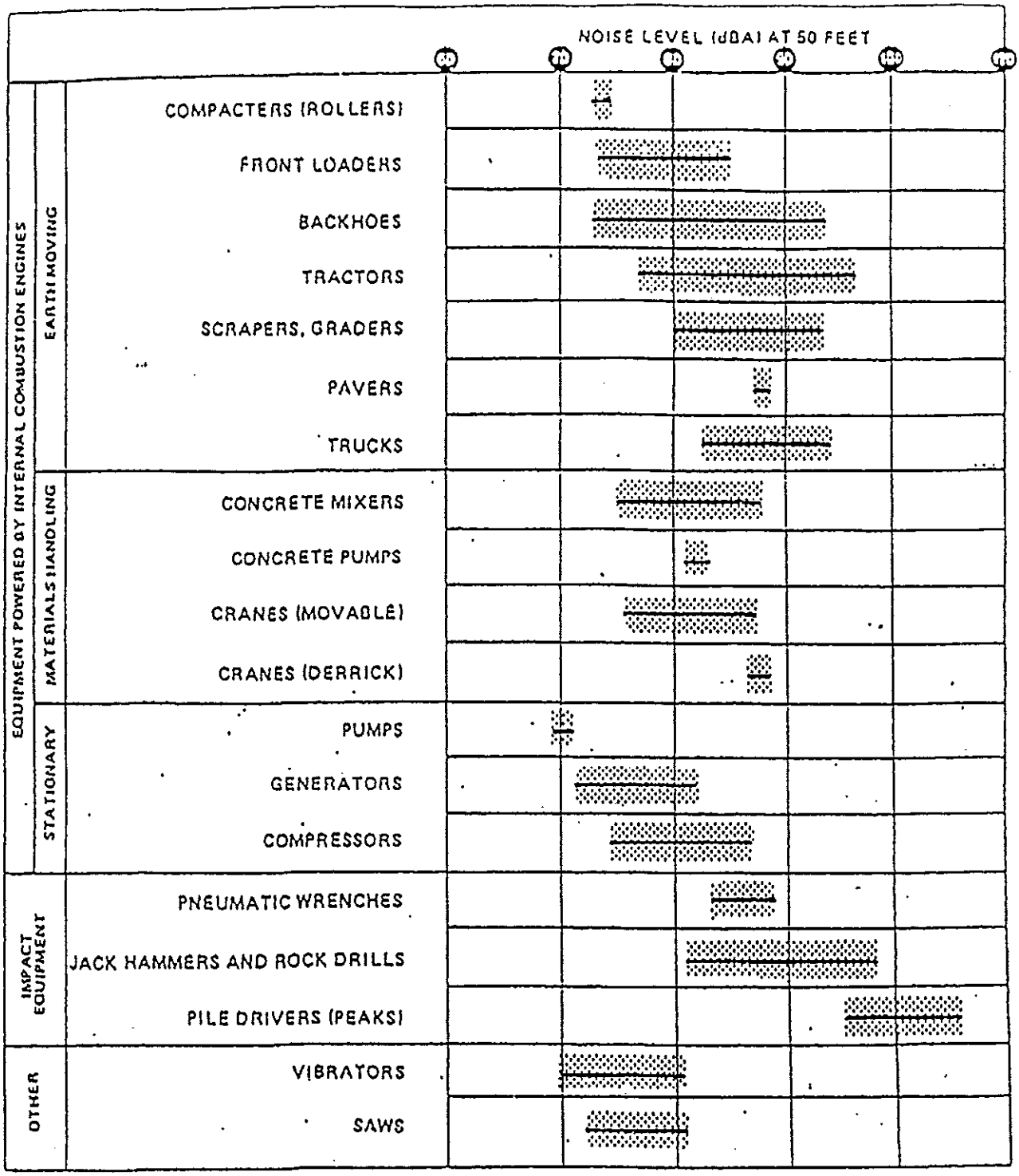
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Statewide or areawide migrants are not included in county by county, except where they breed or occur in concentrations. The whooping crane is an exception an attempt is made to include all confirmed sightings on this list.

	=	Species in danger of extinction throughout all or a significant portion of its range.
▲	=	Species which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range.
TSA	=	Threatened due to similarity of appearance
PE	=	Species proposed to be listed as endangered
P/T	=	Species proposed to be listed as threatened.
P/	=	Proposed ...
C	=	Species for which the Service has on file enough substantial information to warrant listing as threatened or endangered.
SOC	=	Species for which there is some information evidence of vulnerability, but not enough data to support listing at this time.
CH	=	Critical Habitat (in Texas unless annotated ‡)
□	=	with special rule
‡	=	CH designated (or proposed) outside Texas

EXHIBIT D

NOISE LEVELS



NOTE: Based on limited available data samples.

SOURCE: EPA, 1974

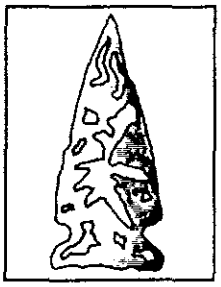
Comparison of Sound Pressure Level and Sound Intensity

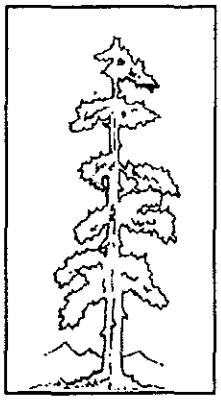
Sounds	Sound Pressure Level	Sound Intensity
Threshold of Audibility	0 dB	1
Soundproof Room	10 dB	10
Quiet Conversation/Whisper	20 dB	100
Average Auditorium	30 dB	1,000
Quiet Radio/Private Office	40 dB	10,000
Average Conversation	50 dB	100,000
Average Radio/Average Office	60 dB	1,000,000
Average Street-Noise	70 dB	10,000,000
Noisy Office	80 dB	100,000,000
Loud Street Noise/Noisy Factory	90 dB	1,000,000,000
Boiler Factory/Subway	100 dB	10,000,000,000
Nearby Riveter	110 dB	100,000,000,000
Thunder Clap	120 dB	1,000,000,000,000

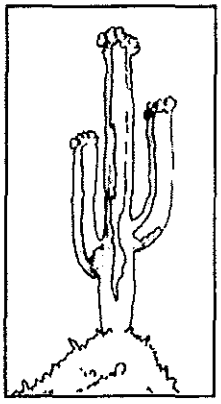
EXHIBIT E

CULTURAL RESOURCE SURVEY

ARCHAEOLOGICAL INVESTIGATIONS ALONG THE APPROXIMATELY 23-MILE PAN ENERGY PIPELINE, PADRE ISLAND NATIONAL SEASHORE, KENEDY AND KLEBERG COUNTIES, TEXAS







Submitted to

BELAIRE ENVIRONMENTAL INC.

Prepared by

SWCA, INC.
ENVIRONMENTAL CONSULTANTS

MARCH 1997

ARCHAEOLOGICAL INVESTIGATIONS ALONG THE APPROXIMATELY 23-MILE PAN ENERGY PIPELINE, PADRE ISLAND NATIONAL SEASHORE, KENEDY AND KLEBERG COUNTIES, TEXAS

Submitted to

BELAIRE ENVIRONMENTAL INC.
1802 Baywood
Rockport, Texas 78382

Prepared by

SWCA, INC. ENVIRONMENTAL CONSULTANTS
1712 Rio Grande, Suite C
Austin, Texas 78701
(512) 476-0891

Kevin A. Miller
and
Christopher Howell

SWCA Archaeological Report No. 97-66

MARCH 1997

ABSTRACT

SWCA, Inc. Environmental Consultants in cooperation with Belaire Environmental Inc. conducted cultural resource investigations along the existing 23-mile Pan Energy pipeline in Padre Island National Seashore, Kenedy and Kleberg Counties, Texas. Investigations were conducted per National Park Service regulations in support of a Plan of Operations for the transfer of ownership of the pipeline. The pipeline begins on North Padre Island at the Murdock Pass Oil Field in Kenedy County and extends north along the center of the island into Kleberg County near the National Park headquarters. The pipeline then heads west and crosses the Laguna Madre and Intracoastal Waterway before entering the mainland just south of Laguna Larga and Corpus Christi. Archaeological investigations consisted of records and maps review and a pedestrian survey with shovel tests along the existing pipeline right-of-way located within the National Seashore Park. For the project, a 200 ft. wide right-of-way, 100 ft. on either side of centerline, was intensively surveyed. No significant cultural materials were found along the entire length of the pipeline. A number of partial fence lines and fenced enclosures were observed some distance from the pipeline and are likely the result of 19th and 20th century ranching and military activities. Based on these results, it is recommended that archaeological clearance be granted for this project.

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MANAGEMENT SUMMARY

PROJECT TITLE: Padre Island National Seashore Pan Energy Pipeline Survey.

PROJECT DESCRIPTION: The project involved an archaeological background literature search and pedestrian survey of the existing 23-mile, 200 ft. wide Pan Energy pipeline right-of-way on Padre Island National Seashore, North Island, Kenedy and Kleberg Counties, Texas.

LOCATION: The north end of the project area is located near the National Park Service Headquarters in Padre Island National Seashore approximately 12 miles southeast of the City of Corpus Christi in Kenedy and Kleberg Counties, Texas. The pipeline extends due south to Yarborough Pass before continuing southwest into the Laguna Madre. U.S.G.S. 7.5 Minute Topographic Maps Pita Island, South Bird Island, South Bird Island SE, and Yarborough Pass.

NUMBER OF SURVEYED ACRES: appr. 550 acres.

PRINCIPAL INVESTIGATOR: Kevin A. Miller, SWCA Inc.

DATE OF WORK: January 6-8, 1997.

PURPOSE OF WORK: SWCA Inc. Environmental Consultants was contracted by Belaire Environmental Inc. to fulfill the cultural resource portion of National Park Service project regulatory requirements for a Plan of Operations involving transfer of ownership of the pipeline.

NUMBER OF SITES: None.

LIST OF POTENTIALLY ELIGIBLE SITES: None

CHAPTER 1

INTRODUCTION

This report details the results of cultural resource investigations conducted by SWCA, Inc. Environmental Consultants (SWCA) in conjunction with Belaire Environmental Inc. along the existing Pan Energy Pipeline in Padre Island National Seashore located on North Padre Island south of the City of Corpus Christi, Kleberg and Kenedy Counties, Texas. Per National Park Service regulatory requirements, cultural resource investigations were conducted by SWCA in support of Belaire Environmental's production of a Plan of Operations involving transfer of ownership of the pipeline. The approximately 23-mile gas pipeline is oriented south to north along the center of North Padre Island within the confines of Padre Island National Seashore (Figure 1.1).

For this study, the pipeline right-of-way (ROW) is 200-ft wide, thus creating an approximately 550-acre project area. From the south, the pipeline begins at Yarborough Pass and extends north to the National Park headquarters before turning west and extending across the Laguna Madre onto the mainland. Within the barrier island, the pipeline crosses an environment characterized by marsh grasslands and low dune formations in a dynamic setting. Established in the early 1960's, the pipeline ROW traverses active and stable dune fields, broad grasslands, barrier flats, and extensive marshes with standing water. Several compressor and measurement gas stations are located along the length of the line.

Archaeological investigations consisted of a background literature and records search of the project area and an intensive pedestrian survey with limited shovel testing of the pipeline ROW. The background literature search performed by SWCA, Inc. archaeologists revealed several previously recorded sites on the barrier island located outside the pipeline ROW. The background review also revealed several previously recorded prehistoric sites near the project area which have disappeared over time in the active dunal environment of the island. The pipeline ROW was intensively examined for the presence of cultural resources by SWCA, Inc. archaeologists on January 06-08, 1997. Pedestrian survey of the line revealed no significant cultural resources in the project area. A scatter of 1950's shell casings from military activities was noted in one small section of the pipeline. Also, several Historic fence lines and fenced enclosures relating to 19th and 20th century cattle operations were noted well outside the pipeline ROW. Based on these results, it is recommended that archaeological clearance be granted for the project.

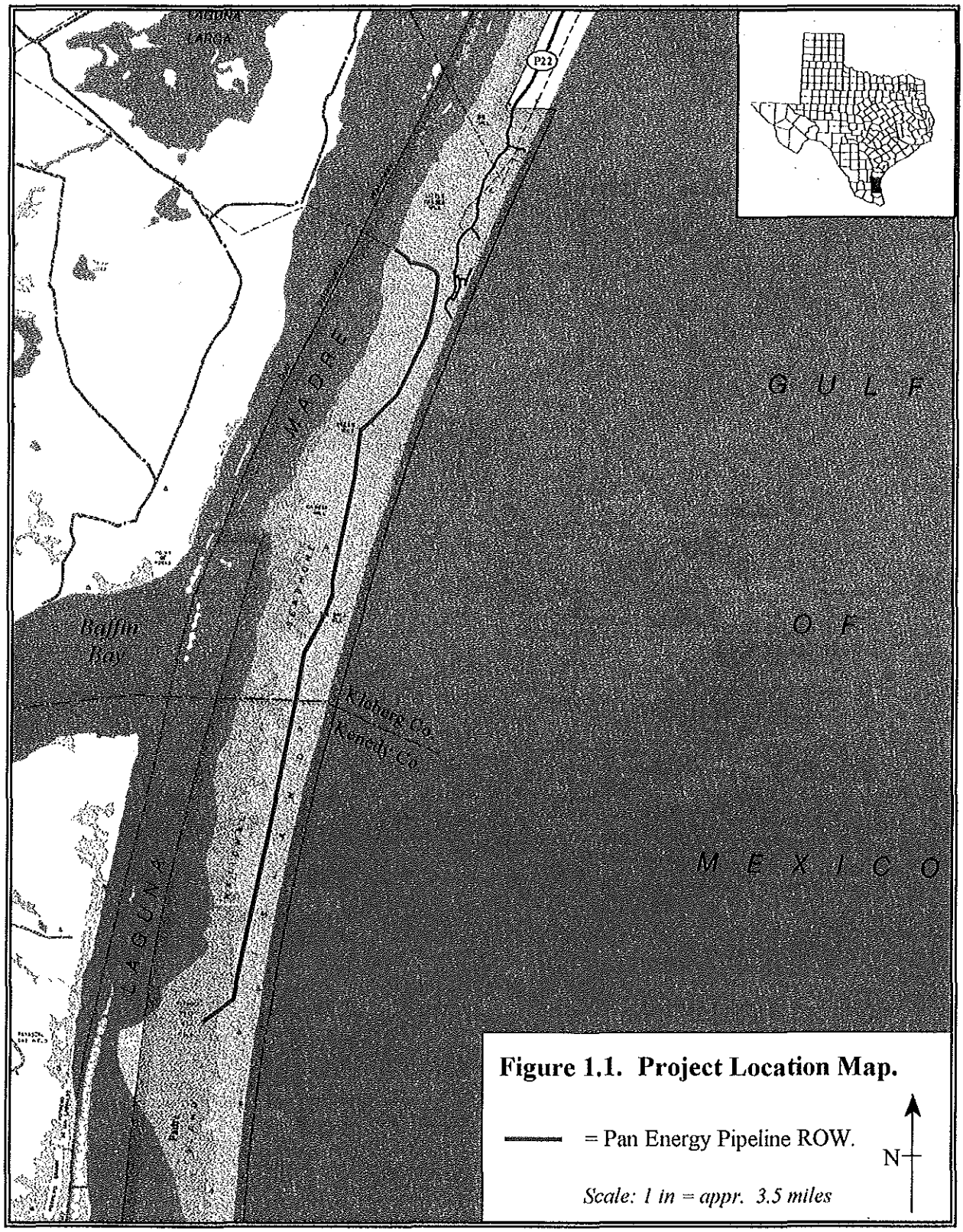


Figure 1.1. Project Location Map.

CHAPTER 2

ENVIRONMENTAL SETTING

GEOLOGY AND TOPOGRAPHY

Padre Island, the largest barrier island located along the Texas Gulf Coast, extends appr. 117 miles from Corpus Christi Bay to just north of the Rio Grande delta near Brownsville. The barrier island has formed and developed over the last 5,000 years through deposition of deltaic sediments of the Beaumont Formation combined with wind and wave currents. More recent sediments that comprise the island are deltaic deposits of the Brazos, Nueces, and Rio Grande rivers which were originally laid down as a series of islands or bars (Bond and Kotter 1989:4). About 4,000 years ago, these islands merged to form the continuous barrier island present today. Wave action and southeasterly winds have continued to shape and modify the island over the last 4,000 years, with a marked increase in the last century (Scurlock et al. 1974). Composed of poor and excessively drained fine sands, the island falls within the Galveston-Mustang-Active Sand Dune classification (New World Research 1981). Shovel testing on this project consistently revealed deep, tan sands throughout the length of the pipeline.

As outlined in Bond and Kotter (1989), Weise and White (1980) define three environmental systems for Padre Island: the barrier system, the lagoon system, and man-modified areas. The project area lies entirely within the barrier system, a complex, dynamic environment composed of various, ever-changing topographic features. These features include the beach, sandflat/coppice dune fields (lying between the backbeach and foredunes), fore-island dune ridges, stabilized blowout dunes (dunes stabilized by vegetation), vegetated barrier flats, ephemeral ponds and marshes, wind-deflation flats, and back-island dunes and sandflats (Bond and Kotter 1989:9-11). For the most part, the existing pipeline ROW is aligned in the middle of the island through extensive vegetated barrier flats, marshes (Figure 2.1), stabilized dune blowouts, and active, back-island dune fields (Figure 2.2).

As discussed in the Previous Investigations chapter below, the dynamic environment of the barrier island is an on-going process of landform change characterized by shifting sand dune fields, changing vegetation communities, and eolian deposition that greatly effects cultural resources and the archaeological record. Historical documentation of the barrier island environment describes substantial changes over relatively short periods of time along the length of the island (Scurlock et al. 1974:5). By examining aerial photographs, Bond and Kotter (1989) noted extensive changes across the island over time, including areas once consisting of blowing sand dunes transformed into vegetated, stable dunes and significant movement of the Laguna Madre shoreline. No previously recorded sites were found within their survey areas and shovel testing proved almost futile in discovering new, unrecorded cultural resources.

CLIMATE

The climate of North Padre Island is described as subtropical with mild, dry winters and long, hot summers with periodic droughts. Average annual precipitation is about 28 inches per year and average temperatures are 70 degrees (Scurlock et al. 1974:4). The greatest rainfall generally occurs in

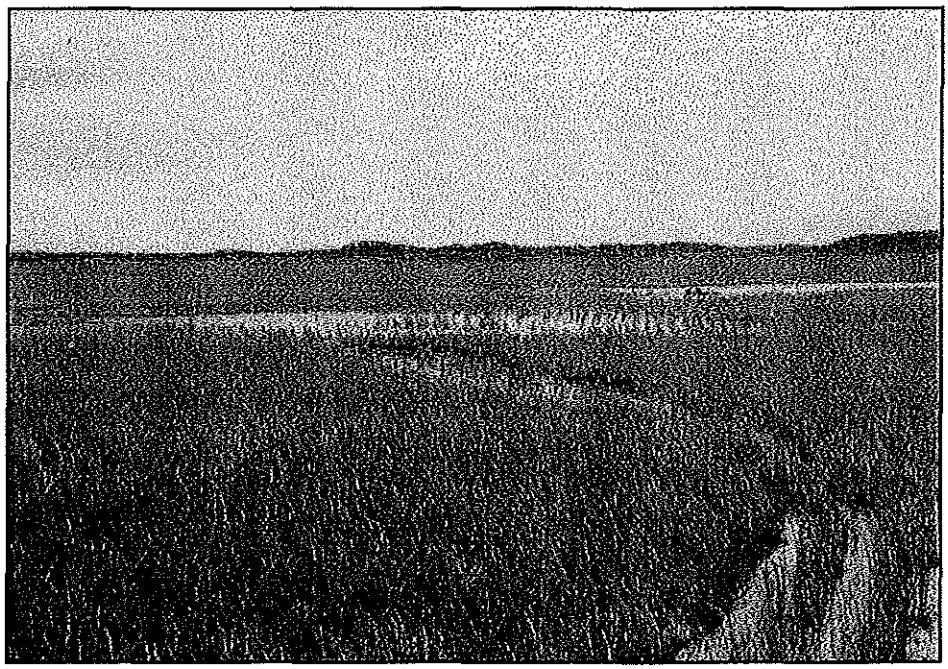


Figure 2.1. Submerged marsh/swale area along pipeline ROW.



Figure 2.2. Active dune field located along pipeline ROW.

September and hurricane season is from June to November. Very heavy rainfall is usually associated with the hurricanes and flooding of the island is common during these storms. Southeasterly winds that prevail from March through November are a primary force in shaping the island topography (Bond and Kotter 1989).

VEGETATION

The project area lies within Gould's (1969) Gulf Prairies and Marshes vegetation region; this region is composed mainly of level grasslands and low, flat woodlands. On the barrier island, vegetation communities are similar to those found on the mainland. Bond and Kotter (1989) list five habitat types that correspond to landform features. These types are grasslands, freshwater and brackish marshes, saline marshes, tidal flats, and active dune fields. Grasslands, the primary type crossed by the pipeline, occur in the ridge-swale topography with sandy flats, low, stabilized dunes, and ridges. Primary plant species found in this zone include seacoast bluestem (*Schizachyrium scoparium*) and bushy bluestem (*Andropogon glomeratus*) with lesser amounts of other grass species (Bond and Kotter 1989:14). The pipeline also crosses several broad areas of freshwater and brackish marshes lying within swales located between ridge systems. These marshes are dominated by cattails (*Typha sp.*), American bulrush (*Scirpus americanus*) and marshhay cordgrass (*Spartina patens*). Vegetation is sparse in the active dunefields crossed by the pipeline. In isolated areas, low mesquite trees (*Prosopis glandulosa*) were observed. Historically, cattle grazing has altered vegetation communities on the island with the introduction of non-native grass species.

WILDLIFE

North Padre Island and the project area fall within the eastern edge of the Tamaulipan biotic province as defined by Blair (1950). Though many species of mammals, birds, reptiles, and amphibians occur within this biotic province, many fauna typical of the province are not present on the island due to its separation from the mainland.

Common small mammals that may occur on Padre Island include hispid cotton rat (*Sigmodon hispidus*), fulvous harvest mouse (*Reithrodontomys fulvescens*), and striped skunk (*Mephitis mephitus*). Mammal species that occur within the project area include white-tailed deer (*Odocoileus virginianus*) and coyote (*Canis latrans*) as well as raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*), and Texas pocket gopher (*Geomys personatus*). Other species that may occur include black-tailed jackrabbit (*Lepus californicus*), Padre Island kangaroo rat (*Dipodomys compactus compactus*), and eastern mole (*Scalopus aquaticus*). Common to the dune fields, the pocket gopher proved invaluable in this study due to its tendency to dig deep holes with resulting large piles of backdirt. These backdirt piles were used to evaluate the subsurface of dunal areas and provided a convenient means of assessing the presence/absence of buried cultural materials.

The unique environment of the barrier island supports a large avian, fish, and shellfish community. Bird species are numerous along the Texas coast with more than 350 species found within the region at different times of the year (Bond and Kotter 1989:16). The island is the primary nesting ground for many migratory species and year-round species. Common species observed during the project include laughing gull (*Larus atricilla*), royal tern (*Sterna maxima*), northern mockingbird (*Mimus polyglottos*), savannah sparrow (*Passerculus sandwichensis*), eastern meadowlark (*Sturnella magna*), red-

winged blackbird (*Agelaius phoeniceus*), sandhill crane (*Grus canadensis*), snow goose (*Chen caerulescens*), and great-tailed grackle (*Quiscalus mexicanus*).

Fish and shellfish species, economically important to the prehistoric inhabitants of the island, commonly include sea catfish (*Arius felis* and *Bagre marinus*), striped mullet (*Mugil cephalis*), spotted sea trout (*Cynoscion nebulosa*), redfish (*Sciaenops ocellatus*), oyster (*Crassostrea virginica*), clam (*Rangia cuneata*), heart clam (*Dinocardium robustum Soalnder*), and blue crab (*Callinectes sapidus*). Species commonly exploited in prehistoric times include heart clam, clam, oyster, mullet, and drum species (Scurlock et al. 1974).

CHAPTER 3

CULTURAL SETTING

CULTURAL HISTORY

Early Archaic

The earliest human occupation of the central Texas coast shorelines date to the Early Archaic though isolated occurrences of Paleoindian artifacts have been reported from the region (Ricklis 1995). The Early Archaic (7500 - 4200 B.P) is characterized by the seasonal use of marine resources along the coast by relatively small hunter/gatherer populations. The Early Archaic can be broken into two periods: Period 1 ca. 7500-6800 B.P. and Period 2, ca. 5800-4200 B.P. (Ricklis 1995:269). Unfortunately, evidence of both Early Archaic periods is somewhat limited since most sites rest on eroded Beaumont Formation surfaces that probably have been heavily impacted by later Early to Middle Holocene erosion.

Period 1 site types consist of thin, dense lenses of oyster shell (*Crassostrea virginica*) located along the shorelines in silty, cumulic soils above the Pleistocene Beaumont Formation. Tools are made primarily of marine shell with few lithic artifacts. Few fish remains (especially otoliths) are known, possibly indicating a heavier reliance upon marine shell sources for subsistence needs (Ricklis 1995:272).

Period 2 site types again consist of thin, dense lenses of oyster shell located along shorelines. In addition, oyster shell (*Rangia flexuosa*) sites are also found along river and stream areas. Site frequencies in Period 2 increase, possibly indicating a higher population in the region. Marine shell tools dominate the artifact assemblages while lithic tools include *Bell, Early Triangular* and *Tortugas* projectile points. An increase in fish otoliths over Period 1 probably indicates increased harvesting of this resource (Ricklis 1995:278).

Middle Archaic

The Middle Archaic (ca. 4200-3100 B.P.) is characterized by an apparent hiatus in occupation of the shoreline area. Ricklis notes that although a sufficient number of multi-component sites have been examined, virtually no Middle Archaic components have been discovered. Changes in sea level likely altered the local environment enough that occupation was not possible in the coastal area at the time (Ricklis 1995:278).

Late Archaic

The Late Archaic (ca. 3100-950 B.P.) is marked by a stabilized sea level with a modern coastline configuration. Sites are considerably larger than in the Early Archaic, with thicker shell middens and greater quantities and types of artifacts. The sites suggest more frequent, intensive occupation of shorelines with a higher population density. Possibly reflecting the increased populations are large cemetery sites such as that at Oso Creek (41NU2) and Loma Sandia (41LK28) which first appear in the Late Archaic (Hall 1995; Taylor and Highley 1995). At Oso Creek, 146 documented individuals were

excavated with cemetery goods including pendants, beads, shell ornaments, and chert knives. Occupations are more frequent and intensive with reoccupation occurring at many sites during the Late Archaic. Evidence of intensive harvesting of shellfish, fish, and white-tail deer are apparent (Ricklis 279-280). Artifact assemblages include *Ensor, Kent, Catan,* and *Matamoros* projectile points as well as a variety of stone, bone and shell tools. Basketry and burned clay nodules also first appear in the Late Archaic.

By 2500-2200 B.P. the barrier islands such as South Padre Island had taken their present configuration. Ricklis (1995:281) believes the broad shallows formed between the barrier island and coastline provided a new environment for the increase in estuarine fish carrying capacity and human occupation subsequently shifted to a greater economic focus on fish procurement. Marine resources were harvested in the winter/early spring as part of a seasonal pattern which included shoreline fishing camps. The use of watercraft has been inferred from the Late Archaic sites located on the barrier islands (Scurlock et al. 1974).

Late Prehistoric

The Late Prehistoric, ca. 950-250 (A.D. 1000-1700), is marked by a technological change in projectile points from the larger dart points used with atlatls (spearthrowers) to the smaller arrowpoints of the bow and arrow. In addition, ceramics come into common use. Based on changes in major artifact forms and possible subsistence patterns, Ricklis divides the Late Prehistoric into Initial (A.D.1000-1250/1300) and Final (A.D.1250-1700) Periods (Ricklis 1995:28). The Initial Period is characterized by shell middens located along marine estuaries. Cemetery sites are again present and the reader is referred to Hall (1995) for detailed coverage. Occupation is seasonal, characterized by the harvesting of specific resources with specialized tool assemblages. The first ceramics include plain, sandy paste pottery like the Goose Creek ceramics of the upper Texas coast commonly found near the modern city of Houston, and asphaltum coated and decorated pottery. Intensive use of marine resources (especially *Rangia cuneata*) continued until around A.D. 1300 when an increasing bison population along the mainland coastal prairies became the focus of intensive human exploitation.

The Final Period of the Late Prehistoric begins with this shifting focus on bison hunting. New, bison hunting tool kits consisting of *Perdiz* arrowpoints, unifacial scrapers, bifacial knives, chert drills, and prismatic blades come into use. Plainware ceramic assemblages are largely replaced by a variety of decorated Rockport ceramics including pottery, pipes and jars. Bone artifacts include points and bird bone beads and a variety of shell tools are also associated with the Final Period of the Late Prehistoric. Ricklis suggests a continued winter/early spring use of coastal sites coupled with summer and fall use of inland, bison hunting areas (Ricklis 1995:287). Johnson (1994:267) suggests the bison tool kits may represent a spread of hunting technologies, but not a cultural incursion, from the bison hunting, ceramic producing Toyah cultures of central Texas into the Padre Island coastal region.

Historic Period

The Historic period begins in 1526 with the failed colonizing expedition of Panfilo de Narvaez. Narvaez attempted to settle the Rio de las Palmas (Rio Grande) with five ships and 400 men. After

numerous hardships beginning in Florida, a remnant of the expedition was cast by storm somewhere along the upper Texas coast. This remnant consisted of Cabeza de Vaca, Alonso de Castillo, Andres Dorantes and Estevanios the Moor. At first captives of native coastal Texas Indians, some of the group eventually made their way into the southwestern United States and finally to Mexico (Scurlock et.al. 1974).

In 1554, three of four Spanish ships sailing from Vera Cruz to Havana carrying a large gold cargo wrecked off the south end of North Padre Island near Mansfield Pass. Only 300 of the 1000 passengers and crew made it to Padre Island. On the seventh day of their marooning, Indians brought food for the Spaniards but a misunderstanding led to a battle and the Indians were driven off the island with crossbows. Several survivors eventually found their way back to Mexico (Scurlock et.al. 1974). Fray Mendez eventually made his way to the wreck site and was soon joined by Captain Angel de Villafana from Vera Cruz. The captain and his divers salvaged a portion of the cargo in late 1554 (Chipman 1992).

In 1685 the Frenchman Rene Robert Cavelier established a colony at Matagorda Bay. In response, the Spaniard Alonso de Leon headed several expeditions to search for the French, and in 1689 his third expedition located the remains of the French fort. Alonso de Leon learned that the French had been massacred by the Indians three months before his arrival (Scurlock et.al 1974; Chipman 1992). This was followed in 1721 by the establishment of the Spanish Presidios de Nuestra Senora Loreto and Senora de Espiritu Santo de Zuniga. Both presidios were located near the site of La Salle's Fort St. Louis on Garcitas Creek in Victoria County (Chipman 1992). This marked the beginning of the establishment of numerous presidios and missions in the coastal area in an attempt to secure the Texas coast for Spain before other European rivals such as the French could settle it. One of the first Spaniards to attempt Spanish settlement of the lower Texas coast was Don Diego Ortiz Parrilla and his contingent of Spanish soldiers who settled North Padre Island in 1766 (Newcomb 1990). Their attempts to christianize the local Karankawa Indians met with little success and the settlement of North Padre Island was soon abandoned (Newcomb 1990).

During the Historic period, the island was utilized by local Indians as part of a seasonal resource area. Canoe travel was common in the coastal waters between the barrier island and the coastal bays. Readers are referred to Newcomb (1990) for descriptions of Karankawa and Coahuiltecan Indians inhabiting the region during the Historic period (Scurlock et.al. 1996).

A more permanent Padre Island settlement was established in 1805 by Padre Nicolas Balli and his nephew Juan Jose Balli. They established Rancho Santa Cruz de Buena Vista near the present-day south end of North Padre Island (Chipman 1992). In 1828, a survey team of Spaniards led by Don Domingo de la Fuente covered all of North Padre Island from south to north so the Ballis family could reapply for their land grant under the new government of Mexico. Only the Rancho Cruz habitation was reported on the island by this survey team (Scurlock 1974).

In 1839, after Texas gained its independence from Mexico, a trading post was established by William P. Aubry and Henry Lawrence Kinney on Corpus Christi Bay. Another trading post was established by Pillip Dimmitt, James Gourlay and John Sutherland in 1841 near Oso Creek and modern Corpus Christi (Webb 1952). When Texas joined the Union in 1845, United States army troops camped near Corpus Christi under the direction General Zachary Taylor. A detachment of 25 troops was sent to reconnoiter Padre Island on February 9, 1846 under Captain William J. Hardee in hopes of finding

an alternate route to attack Mexico. A homestead belonging to Mr. Eilly was found on the north end of the island. No suitable ford across Laguna Madre was found at the southern end of the island however so the army instead traveled south across the mainland (Scurlock 1972).

In May of 1846, a detachment of Texas Rangers traveled down Padre Island and recorded only one inhabitant for the island, a man who salvaged debris. From 1847 to 1861 the southern end of the island was occupied by Mr. John V. Singer and family who had shipwrecked on the island but stayed to raise cattle (Webb 1952). In 1854, the famous King Ranch turned an eye to the island and, after numerous court delays, eventually acquired 6,000 acres from the Balli family in 1905. During the U.S. Civil War the island was a hideout for contraband smugglers. After the war, cattle ranching was established on the island and a meat packing facility was located on the north end of the island until 1900 (Webb 1952; Scurlock 1974). In the 1870s, the Dunn family kept about 750 head of cattle and 150 head of horses on the island. Patrick F. Dunn built bunkhouses and pens at the northern end of the island and in 1884 moved his family about twenty miles south of the northern point.

Patrick Dunn eventually relocated his homestead to the bunkhouse area in 1907. The two-story structure was destroyed by a storm in 1916. Cattle were driven from south to north on the island with numerous pens located along the way (Scurlock et.al. 1974). In 1926, Patrick Dunn sold the surface rights of most of Padre Island to Col. Sam H. Robertson who then sold the rights to Albert R. and Frank E. Jones of Kansas City, Missouri. Both Roberston and Jones attempted to develop the island as a resort but the climate and World War II precluded this. The son of Patrick Dunn took over ranch management after his father died in 1937. In 1970 the last cattle were removed from the island in an agreement with the National Park Service (Scurlock et.al. 1974). In 1958, in order to preserve the unique and relatively pristine environment on the island, Texas Senator Ralph W. Yarborough introduced the bill to establish a National Park on Padre Island. Padre Island National Seashore was established by the United States Congress in 1962 (Scurlock et.al. 1974).

PREVIOUS RESEARCH

Previous archaeological surveys on North Padre Island have encountered many problems, namely a dynamic environment that makes it extremely difficult to locate or relocate archaeological sites. Historical documentation of the barrier island environment describes substantial changes in topography, vegetation, and lagoonal margins over short periods of time along the entire island (Scurlock 1974:5). In a thorough study of the island and its active environment, Bond and Kotter (1989) noted extensive changes over a 20 year period, including areas once characterized by blowing sand dunes transformed into heavily vegetated, stable dunes, constantly forming blowing dunes, and substantial movement of the Laguna Madre shoreline. Due to the constantly changing topography, Bond and Kotter (1989) were unable to relocate any previously recorded sites (they had disappeared or were reburied) nor did they discover any new sites even though a very systematic survey strategy with shovel tests was employed. The somewhat unique, on-going process of change on the island continues to this day. Shifting dunes, tides, frequent storms, ever-changing marsh and grasslands and consistent winds all combine to change the surface of the island on a seasonal and even daily basis. Bond (Bond and Kotter 1989:iii) notes that previous surveys relied largely upon sites located by local, avocational archaeologists who visit the island over many seasons.

For the most part, formal archaeological investigations on Padre Island have been limited to

surveys and a number of small, petroleum related clearance projects. In 1964, T.N. Campbell performed a survey of the entire Padre Island National Seashore for the National Park Service (Campbell 1964). He recorded 15 prehistoric and Historic sites and numerous private collections. Prehistoric sites consisted of light shell scatters with some lithic artifacts while Historic sites were restricted to cattle fences and corrals. Campbell documented the Fitzpatrick, Bowman and Hess collections from the island, noting that the majority of prehistoric remains date to the Rockport phase while the majority of Historic remains were associated with the Dunn family cattle ranch activities. In the study, Campbell pointed out the difficulties of finding or relocating sites due to constant alteration of the surface. He recommended a detailed and multi-disciplinary research approach for archaeological investigations on the island (Scurlock et.al. 1974; Campbell 1964).

From 1973-1974 the Office of the State Archeologist, Texas Historical Commission was contracted by the National Park Service to conduct an archaeological assessment of resources on Padre Island. Associated materials and documents were gathered and organized, and a field reconnaissance was conducted with Dan Scurlock heading the project. Attempts were made to revisit 13 sites dating from the Archaic through Historic periods but most no longer had visible cultural materials. Scurlock et al. (1974) noted a total of 23 recorded sites and suggested a survey conducted over several years under a variety of weather and environmental conditions is the only way to gain an accurate assessment of the cultural resources of the island (Scurlock et.al. 1974).

Beginning in the 1980s, numerous clearance projects of limited scope have taken place on Padre Island. Two pipeline easement surveys were conducted at the south end of Padre Island by New World Research in 1980. No sites were recorded along the 9 km of easement that was surveyed (Bond and Kotter 1989). Three surveys of well pad drilling sites located north of the current SWCA project area were conducted by the Center for Archeological Research at the University of Texas at San Antonio. No cultural materials were observed although visibility was poor in all cases. Two more well pad drilling sites, one located east and one located north of the current SWCA project area, were surveyed by Prewitt and Associates, Inc. in 1984, resulting in negative findings (Fields 1984).

Also in 1984, New World Research conducted a complex, random transect survey of all physiographic zones across the island (Bradford and Payne 1993). Transects were .5 km wide and were designed to cover substantial portions of the island. The overall discovery rate for the project was very low (seven prehistoric and Historic artifact scatters) and rapidly shifting sands made relocation of previously recorded sites next to impossible. In 1988, Espey, Huston & Associates, Inc. conducted surveys of two proposed seismic line locations at the north end of Padre Island, also resulting in negative findings (Espey, Huston and Associates 1988).

In 1989, Espey Huston conducted surveys at proposed dredge disposal areas 182A and 187A for the Department of the Army. Bond and Kotter (1989) attempted a systematic, 100% survey of the two proposed dredge disposal areas located at the northern edge of the current SWCA project area. The systematic survey of 1,847 hectares included transects and extensive shovel testing. No new sites were recorded and five previously recorded sites were no longer extant in the Espey, Huston and Associates 1989 project area. After one week of field work without finding a new or previously recorded site, it was calculated that the crew would need to excavate 320 shovel tests to have one percent chance of finding an artifact! (Bond and Kotter 1989).

In 1993, James Warren and Archaeology Consultants, Inc. conducted a survey for a two acre

drilling pad and 10,100 ft. of access road in the Kleberg County portion of Padre Island National Seashore with negative results (Warren 1993). In the study, Warren utilized limited shovel tests and a soil auger to test submerged or partially submerged areas for cultural materials. Also in 1993, the National Park Service, Southwest Regional Office conducted a limited survey of the Malaquite Beach Visitor area. The negative results of this project led Bradford and Payne (1993) to again note the difficulties in relocating recorded sites and in observing cultural materials in adverse environmental situations.

Shipwrecks associated with Padre Island are quite common and local collectors have built up substantial collections of associated artifacts over the years. Archaeological research has focused upon the most important of these wrecks. In 1972, the Texas Antiquities Committee and National Park Service began investigating three Spanish ships lost in 1554. One of these, the San Esteban (41KN10), has yielded over 12,000 kg of artifacts (Bond and Kotter 1989). In 1994 the remains of one Historic period ship and several modern ships were investigated in a dune on Padre Island. The remains were minimal but their nature demonstrated the dynamic nature of the Padre Island environment and the difficulties it presents for assessing cultural material remains (Bradford 1994). Currently, investigations are being conducted on a ship of the La Salle expedition by the Texas Historical Commission just off the inland coast of North Padre Island.

CHAPTER 4

ARCHAEOLOGICAL METHODS

An archaeological background literature and records search was performed by SWCA in order to determine the locations and content of any previous surveys and recorded sites in or near the project area. The investigation included examining records at the Texas Archaeological Research Laboratory (TARL), the Texas Historical Commission, Department of Antiquities Protection, and the Texas Natural Resources Information Systems. Site files, relevant maps, and National Register of Historic Places listings were examined. Additional potential sources of information, such as aerial photographs and Soil Conservation Service Survey maps, were also examined.

For the 100% pedestrian survey, the project area was systematically surface surveyed by archaeologists walking the existing 200-ft wide right-of-way (ROW) in parallel transects spaced approximately 10 to 15 m apart. Due to weather conditions and large stretches of submerged swales and grasslands, the walkover of the line had to be slowly conducted in Neoprene waders. However, after two days walking the line and numerous logistical access problems, a 6-wheel drive ATV was used to traverse the southern 14 miles of the pipeline ROW. Both archaeologists intensively surveyed the ground surface (where surface visibility allowed) while the ATV was used to slowly cross over submerged grassland areas. When dunes, ridges or potential cultural resources were reached, the archaeologists dismounted and walked the ROW along side the vehicle. In this fashion, higher probability dunal areas were thoroughly examined while the submerged grasslands (which could not be shovel tested or easily walked) were quickly crossed and surveyed. This greatly expedited the survey and allowed for the timely completion of the project.

Based on the review of negative results from previous studies on the island, a systematic shovel testing regimen across the entire length of the line did not seem to be a reasonable approach to conducting the survey. Instead, shovel tests (ST) measuring approximately 30 cm in diameter were judgementally excavated so as to test all high probability areas. Due to the varying topography (dune ridges divided by submerged or partially submerged grasslands), shovel testing was generally limited to dry dunal areas, ridges, and stabilized landforms though several were placed in submerged areas as control. All fill from shovel test excavations was screened through 1/4-inch mesh. The locations and results of all shovel tests were recorded on appropriate forms. Areas with substantial subsurface exposure, particularly the numerous pocket gopher holes found in all dunal areas, were examined for cultural resources but generally not shovel tested. Based on observations, the pocket gopher holes extended for .5 to over 2 meters into the sand dunes. The resulting backdirt provided an excellent means of examining the subsurface in these areas. Field records (daily notes, shovel test forms, photographic logs, etc.) were kept in standard format. Any cultural resources encountered were assessed, mapped, and documented on appropriate State of Texas Archaeological Site Forms.

CHAPTER 5

RESULTS OF INVESTIGATIONS

The background literature and records review revealed no previously recorded archaeological sites within the proposed project area ROW. Review of the literature, particularly Scurlock et al. (1972), did show that several previously recorded sites (41KL2 and 41KL4, for instance) had been located in the vicinity of the pipeline from the 1950's through the 1970's. However, subsequent surveys, including Scurlock's, could not relocate the sites and they are presently not listed on maps or records at TARL or the THC. Without the locational data for these sites, they could not be examined or even looked for during the survey. It is likely these sites have been reburied by shifting sands in the active environment of the island.

On January 06-08 1997, SWCA archaeologists conducted a 100% pedestrian survey on the pipeline ROW. As mentioned previously, the pipeline crossed a variety of topography including active dunes, stabilized dunes, ridge systems, submerged and partially submerged swales and tidal marshes, and vegetated barrier flats. Through walking and the use of an ATV, the entire length of the existing pipeline ROW was intensively surveyed for cultural resources. Shovel testing was employed on a limited basis to examine dunal areas and landforms which appeared to have potential to contain buried cultural resources. A total of 65 shovel tests were excavated down the length of the line. Shovel tests averaged 40 cmbs and revealed thick gray to tan sands. Besides those placed in large dunes, almost every shovel test hit the water table at roughly 30 or 40 cmbs. Shovel tests placed in the low-lying swales or in the vegetated barrier flats usually hit the water table immediately, preventing a more thorough testing of the deposits. No artifacts were recovered from any of the excavated shovel tests. Examination of hundreds of pocket gopher mounds and dune profiles across the pipeline failed to reveal a single artifact (Figure 5.1).

Intensive surface inspection revealed the presence of cultural materials in areas well outside the project ROW. Cultural materials outside the ROW consisted primarily of partial fence lines from Historic cattle ranching activities. The fence lines varied from a series of 5 to 10 posts to long lines of over 50 rounded posts. In several areas, large, square or rectangular enclosures formed by the fence posts could be seen in the distance (Figure 5.2). These enclosures are likely cattle pens or corrals used during the ranching activities on the island. The fences may also be related to military activities on the island where selected areas were marked off for aerial bombing and strafing practice in the 1950's. No detailed examinations of these areas could be made due to their distance outside the project ROW and project time constraints.

Within the pipeline ROW, cultural materials were only observed in the vicinity of one of the distant fence enclosures. Six 20 mm shells (dated to 1952) were found scattered in a somewhat linear trend to the west of the pipeline ROW. One shell was found in the ROW but the remaining five were found between the ROW and the rectangular enclosure. Based on the association of some of the enclosures with military aerial target practice, it is hypothesized that the spent shell casings were ejected from an incoming military plane as it fired its weapons while approaching the fenced target area. This sparse scatter was not recorded as an archaeological site and is not considered potentially significant. No other cultural materials were observed within the entire length of the pipeline ROW.

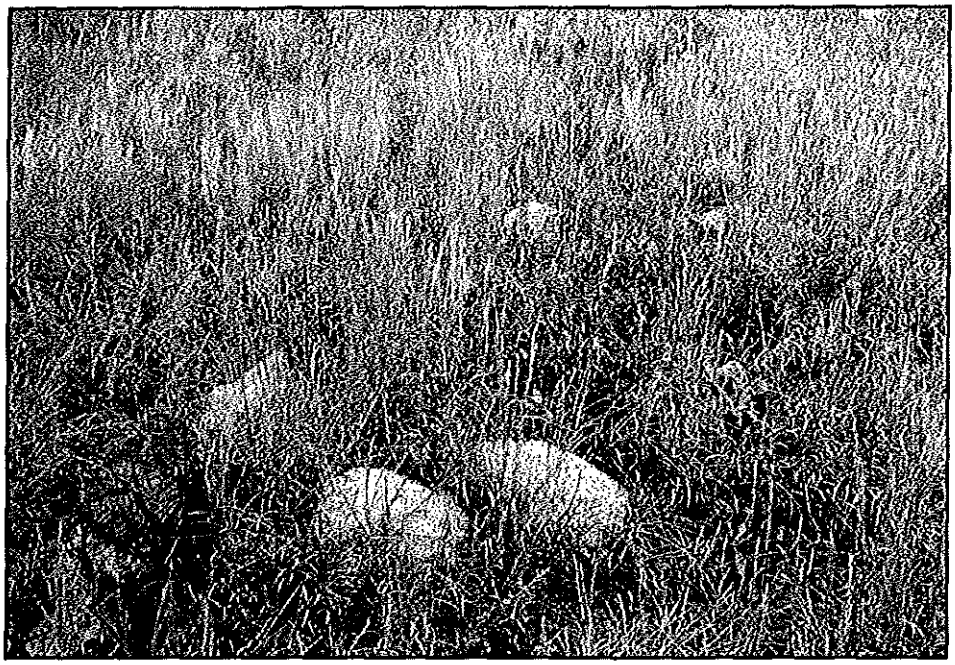


Figure 5.1. Pocket gopher backdirt piles in stabilized dune field.



Figure 5.2. Fenced enclosure (corral?) seen at distance west of pipeline.

CHAPTER 6

SUMMARY AND RECOMMENDATIONS

Archaeological investigations were conducted by SWCA, Inc. Environmental Consultants in conjunction with Belaire Environmental Inc. on the existing 23-mile Pan Energy pipeline located in Padre Island National Seashore, Kleberg and Kenedy counties, Texas. Investigations were conducted in support of the production of a Plan of Operations (National Park Service regulations) regarding transfer of ownership of the pipeline. The pipeline is aligned north-south down the approximate center of the National Park and has a 200-ft wide right-of-way (ROW). The archaeological study consisted of a background literature and records review and an intensive pedestrian survey with shovel tests of the existing pipeline ROW.

The background literature and records review revealed several previously recorded prehistoric archaeological sites in the vicinity of the project area. However, these sites, recorded in the 1960's and early 1970's, have disappeared in the active environment of the island and could not be relocated in this or previous studies (Scurlock et al. 1974). The pedestrian survey of the pipeline revealed no significant cultural resources within the pipeline ROW. A sparse scatter of 20 mm shell casings related to military activities on the island in the 1950's was observed in one portion of the ROW. These materials are not considered archaeological significant. No other cultural materials were observed along the remainder of the pipeline. Several fence lines and fence enclosures were noted to the west of the pipeline ROW. These areas are related to late 19th and early 20th century cattle ranching operations as well as later (1950's) military activities which were performed on the island. Based on these results, it is recommended that archaeological clearance be granted for the transfer of ownership project.

As with many previous archaeological studies which have been conducted in the area (Scurlock et al. 1974; Bond and Kotter 1984; Campbell 1964; Bradford and Payne 1993; Warren 1993, etc.), this survey encountered numerous logistical and methodological difficulties presented by the unique, dynamic environment of the barrier island. Logistically, survey of the pipeline was hindered by the lack of road infrastructure and varying topography that included long stretches of submerged or partially submerged grasslands, swales, and marshes. Pedestrian survey of these areas proved slow and tedious and, since access to the line was very limited, the utilization of an ATV became necessary. The ATV provided access into areas which would have required 5 to 10 miles of walking and allowed the survey to proceed through the submerged portions of the line in an expedient manner. Though approval from the National Park Service must be granted and strict regulations adhered to, future studies along the island should consider the use of ATVs to conduct surveys in a timely, cost-effective manner.

Methodologically, the submerged or partially submerged sections of the line as well as the thick grasslands proved difficult if not impossible to thoroughly survey using standard archaeological techniques. Shovel testing was somewhat useless due to the high water table (test holes would fill with water immediately or there would be 1 to 2 ft of standing water) and surface visibility was close to zero. In addition, the varying topography led to differential survey coverage of areas (dry dunes/dune fields were intensively examined while survey of the submerged portions was limited). Studies using systematic transect/shovel testing regimes, particularly Bond and Kotter (1984) and Bradford and Payne (1993), have repeatedly shown standard approaches to be ineffective in relocating previously recorded sites or undiscovered sites on the island. The problem is in part due to the island's active, shifting topography which constantly buries or exposes cultural materials as well as the ephemeral nature of the island's

prehistoric archaeological record. The Pan Energy pipeline study proved no different in effectiveness from these previous studies

Without the use of long-term, multi-year studies or the advent of new archaeological survey techniques/technologies, few suggestions can be made for future cultural resource management studies on the barrier island. First, archaeological studies on the island should utilize Global Positioning Station (GPS) data systems to accurately plot any archaeological resources encountered. By providing exact GPS coordinates for sites, later studies should be able to go back to the precise site location regardless of whether the site has been reburied by shifting sands and is no longer visible on the surface. This will at least provide a good starting point for relocating and evaluating sites and, as more sites are plotted in this manner, a database of site types and locations can be produced for the barrier island. A second suggestion for archaeological investigations on the island is the use of hand augers instead of shovels in testing submerged and/or thick grassland areas. A hand auger would prove quicker and easier to use than the standard shovel/screen combination in these settings. Though sites in the area are generally sparse and the subsurface window that it would provide would be very narrow, augering would still afford a means of examining deposits in a limited fashion without having to shovel or screen waterlogged sediments.

A final suggestion for archaeological studies on the island would be the extensive utilization of aerial photography to assess topographical and environmental changes in a project area. Bond and Kotter (1984) used aerial photographs to study and assess changes in their project areas over a 40 year period. This provided another means of accurately assessing possible changes to cultural materials/sites due to the shifting environment. Study of aerial photography before initiation of fieldwork could furnish important data to the relocation or discovery of cultural materials.

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Belaire Environmental, Inc.

Planning • Permitting • Habitat Creation

December 13, 1996

Mr. Paul Eubank
Padre Island National Seashore
9405 South Padre Island Drive
Corpus Christi, TX 78418-5597

Dear Paul:

Re: PanEnergy Plan of Operations, Scope of Work

Thank you for taking time this morning to discuss the referenced project with me. Based on our conversation, we will take the following approach in collecting data and in preparing the Plan of Operations document:

* PanEnergy will use the Texas Eastern Transmission Corporation Plan of Operations (September 25, 1995) as general guidance for collection of field data and preparation of the Plan of Operations document. A "Table of Contents" and "Information Requirements" from Texas Eastern's Plan are enclosed.

* The surveying of the line will include any tie-in points, valves, and other surface structures.

* Access routes to the pipeline will be identified.

* A "worst-case" spill scenario will be evaluated.

* The vegetation mapping and vegetation coverage evaluation will include a corridor 200 ft to either side of the pipeline. Vegetation transects may be spaced at 1000-ft intervals except where vegetation community changes occur between transects.

* The archaeological survey will include an area 100 ft either side of the pipeline.

If I have omitted or misunderstood any important items, please let me know.

As you are aware, Urban Engineering is currently surveying the pipeline. Belaire Environmental, Inc. (BEI) will start the vegetation mapping on Monday, December 16, 1996. SWCA, Inc. will start the archaeological field work the week of January 6, 1997.

Thank you very much for your helpful assistance.

Sincerely,

Charles E. Belaire

Encl.

P.O. Box 741
Rockport, TX 78381

512-729-2948 Fax 512-729-2970

cc: Mike Lloyd
Neal Coffee
PanEnergy Field Services, Inc.
Rt. 1, Box 97
Falfurrias, TX 78355

Tom Stotler
Bob Pearson
Margaret Ash
PanEnergy Field Services, Inc.
P.O. Box 5493
Denver, CO 80217

Dan Urban
Urban Engineering
2725 Swatner
Corpus Christi, TX 78404

Jim Jones
SWCA, Inc.
1712 Rio Grande, Suite C
Austin, TX 78701

PLAN OF OPERATIONS INFORMATION REQUIREMENTS FOR PROPOSED DRILLING AND/OR PRODUCTION OPERATIONS

This list of requirements is presented to assist National Park Service personnel and nonfederal oil and gas operators in defining specific information that should be included in a proposed plan of operations for an exploratory drilling and/or production operation. The specified requirements are based on the regulatory provisions under 36 CFR §9.36. This information list can also be used by the NPS to determine if a proposed plan of operations is complete and sufficiently detailed to merit "official acceptance" for review and analysis in accordance with the regulations at 36 CFR §9.36(c).

A plan of operations may not need to address all of the information requirements presented in this list. Information requirements should be tailored to the type of operation proposed (e.g., exploratory drilling, production operation, pipeline construction and operation, well plugging, etc.). The list should be used in conjunction with the 36 CFR Part 9B regulations to determine which items are applicable to the proposed operation, and are therefore required in a plan of operations. The Superintendent and Regional Director may require additional information to effectively analyze the proposed operation (36 CFR §9.36(a)(18)). (Contact the Mining and Minerals Branch for assistance in determining information requirements for particular types of proposed operations.)

I. LEASE AND OWNERSHIP INFORMATION

A. Name, address, and telephone number of:
   1. Surface owner (if other than the NPS);
   2. Lessor (Mineral owner);
   3. Lessee;
   4. Operator (if different than lessee);
   5. Person accountable for operations;
   6. Field representative;
   7. Contact person in case of spill, emergency, etc.;
   8. Unit operator (if applicable).

B. Copies of the following (as applicable):
   1. Deed or affidavit of ownership,
   2. Lease document,
   3. Designation of operator,
   4. Designation of agent,
   5. Unit agreement,
   6. Communitization or pooling agreement(s), and
   7. Spacing orders.

II. MAPS

A. Tract/Lease Location and Boundaries
   1. Identify the location and boundary of the oil and gas tract, lease, or leases on the appropriate 1:24,000 scale USGS quadrangle(s); and
   2. Legal Description: Provide the quarter-quarter, section, township, range, meridian, and distances from section lines; or land abstract name and number.

B. Operations Location Maps
   1. Submit scaled map(s) showing the location of proposed operations. USGS quadrangle(s) should be used as base map(s). Show the following (as applicable):
      a. Existing access route(s);

c. Location of proposed helicopter landing zones;
d. Location of proposed well(s) and/or facilities;
e. Location of all water, disposal, producing, shut-in, exploratory, or abandoned wells within a two-mile radius of the proposed operation site;
f. Location of proposed flowlines and pipelines;
g. Location of all existing flowlines and pipelines in the area of proposed operations; and
h. Sources of any fill or borrow materials necessary for operations.

C. Operations Plats
1. Submit sealed plat(s) showing the layout, dimensions, and design of the proposed operations. Scale should be large. Include cross sections where appropriate. Show the following (as applicable):
a. Location and dimension of drill rig and associated equipment;
b. Well pad dimensions;
c. Access road dimensions;
d. Surface disturbance dimensions;
e. Location and size of all excavations (e.g., ditches, sumps, etc.);
f. Location and size of all production equipment including tanks, pipelines, metering points, heater treaters, separators, etc.;
g. Location and layout of the wellhead;
h. Location of electrical powerlines;
i. Location and layout of waterflood facilities;
j. Location of any enhanced oil recovery facilities;
k. Location and layout of trailers or living quarters;
l. Location of water disposal facilities and wells;
m. Location of any sanitary facilities;
n. Location of pipeline control valves, pressure regulators, pressure and volume monitors and alarms, and cathodic protection (rectifiers) stations; and
o. Other facilities and/or equipment.

D. Topographic Maps
1. Submit the following maps as determined by a registered land surveyor or civil engineer (as applicable):
a. Existing topographic profiles of the proposed well pad area at specified spacing,
b. Linear topographic profile of the proposed access road area, and
c. Cross section profile of cut and fill required for well pad or access road construction.

III. DESCRIPTION OF AREA GEOLOGY

A. Describe the surface and subsurface geology including physiography, topography, and formations. Include a generalized geologic map showing the location of the drill pad. Include the following in the discussion:
1. Surface formation and thickness;
2. Stratigraphy, including the estimated depths of all formation tops to total depth;
3. Proposed total depth of the well(s) and depth of potential (or known) producing formations;
4. Depths of all known freshwater aquifers, brine zones, and other minerals (e.g., coal, oil shale, etc.);
5. Target formation and predicted reservoir characteristics;
6. Surface and subsurface geologic hazards such as over-pressured or under-pressured zones, bentonitic clays and shales, surface instability, etc.;
7. Describe any previous exploration or production in the area; and
8. Provide any references that may be available.

IV. TIMETABLE FOR OPERATIONS

A. Provide the following dates or times (as applicable):
   1. Estimated date to begin site preparation,
   2. Estimated spud date (i.e., date drilling will begin),
   3. Estimated time to drill to total depth,
   4. Estimated time to test and complete well,
   5. Anticipated longevity of operations,
   6. Estimated date when reclamation will begin, and
   7. Estimated time to complete reclamation.

V. DESCRIPTION OF OPERATIONS

Address the following requirements as applicable, and be as detailed as possible. If proposed operations include exploratory drilling and production, describe each phase separately.

A. Methods, sequence of work, and all equipment used in site construction

B. Methods, sequence of work, and description of all equipment used in drilling operations

C. Blowout preventer(s) and other pressure control equipment during drilling
   1. Description of such equipment including minimum specifications and pressure ratings,.
   2. Schematic diagram of blowout preventers and other pressure control equipment, and
   3. Description of testing procedures and frequencies.

D. Mud System
   1. Mud types, properties and additives (be specific), weights, and rational for use; and
   2. Mud containment system (e.g., number, type and size of mixing tanks and reserve fluid tanks; separation, storage and fate of cuttings; etc.).

E. Water requirements, amount and source

F. Testing, logging, and coring programs

G. Casing program
   1. Casing description including size, grade, and weight of each string;
   2. Setting depths of each string; and
   3. Type of casing anchors.

H. Cementing program
   1. Types and amounts of cement,
   2. Cement additives, and
   3. Cementing procedures.

I. Methods, materials, and all equipment to complete, stimulate or work-over a well, including anticipated frequency and park notification prior to conducting such operations

J. Description of proposed production facilities including all methods, materials and equipment to be used in production and transportation of oil and gas (Note: Production operations may be described "generically" if equipment and layout cannot be predicted; however, a supplemental plan of operations will likely be required in such cases prior to the conduct of production operations.)
   1. Pumping unit (type, size, etc.);

2. Tank batteries (number, type, size, volume, etc.) and berm or "firewall" construction and maintenance (Note: firewall dimensions must contain 1.5 times the volume of the largest tank);
3. Treating and separating equipment;
4. Produced water storage and disposal;
5. Removal/disposal of impounded precipitation within the tank firewall, if applicable;
6. Flowlines and pipelines:
   a. Size, type, length, depth, etc.;
   b. Inspection and testing procedures;
   c. Maximum and mean flow rate of product;
   d. Maximum and mean operating pressure;
   e. Cathodic protection methods;
   f. "Pig" launching/retrieving station(s); and
   g. Maintenance, including vegetation management.
7. Pressure control equipment:
   a. Description of such equipment including minimum specifications and pressure ratings,
   b. Schematic diagram of pressure control equipment, and
   c. Description of testing procedures and frequencies.
8. Metering points, including LACT units, orifice meters, and turbine meters;
9. Sales points, if on lease;
10. Tanker truck pick-up points, if on lease;
11. Gas compression (if applicable);
12. Enhanced oil recovery facilities including waterflooding, fireflooding, polymer flooding, and any other secondary or tertiary recovery facilities (if applicable); and
13. Maintenance of access road surface and vegetation encroachment.

K. Plugging procedures (Note: an updated description of plugging procedures may be required by the NPS prior to plugging the well.)
   1. Types of plugs and setting depths,
   2. Type and amount of cement required, and
   3. Type of abandoned hole marker.

L. Description of any additional ancillary facilities

M. Description of <u>all actions</u> to be taken to comply with regulatory operating standards (as applicable)
   1. Surface operations shall not be conducted within 500 feet of a watercourse, high pool shoreline, mean high tideline, or any structure or facility (excluding roads) used for unit interpretation or administration, unless specifically authorized;
   2. Protection of all survey monuments, witness corners, reference monuments and bearing trees;
   3. Shut-in of well when drilling or production operations are suspended for 24 hours or more, but less than 30 days;
   4. Shut-in of well when production operations are suspended for 30 days or more;
   5. Posting of a sign showing operator name and operation identification number;
   6. Fencing around all wells, storage tanks, and high pressure equipment as specified by the Superintendent;
   7. Posting of warning signs acceptable to the Superintendent if operations are located in or near visitor use areas;
   8. Preventing accumulation of oil and other materials deemed to be fire hazards;
   9. Removal or storage of all materials not in use; and
   10. Operator accountability for all contractors and subcontractors compliance with the requirements of an approved plan of operations.

N. Security measures to ensure public health and safety.

VI. CONTAMINATING OR TOXIC SUBSTANCE SPILL CONTROL PLAN

This section shall include all actions to be performed in the event of an oil spill, brine spill, release of drilling fluids, blow-out, or release of any toxic or hazardous substance.

A. List of fuels, chemicals, substances, and additives to be used during conduct of operations;

B. Identification of toxic or hazardous substances that will be used or may be encountered during the operations, and potential hazards to humans and the environment;

C. Description of anticipated abnormal pressures or temperatures expected to be encountered;

D. Detailed description of contingency actions to be performed in the event of toxic or hazardous substance release:
   1. Notification of appropriate agencies (e.g., park, other federal, state and local),
   2. Actions to secure area to protect public,
   3. Spill containment actions including necessary equipment, and
   4. Cleanup/removal methods and equipment;

E. Description of emergency response equipment to be maintained at the operation location and off-site equipment that can be mobilized including name(s) and telephone number(s) of contact persons and response time; and

F. Describe how waste oil, drilling muds, produced waters, cuttings, and chemicals will be stored, impounded, and disposed.

VII. RECLAMATION PLAN

This section shall describe all actions related to proper reclamation of surface estate that may be disturbed by the proposed operations. (Note: an updated reclamation plan may be required by the NPS prior to conducting restoration of disturbed lands.)

A. Removal of all surface structures, equipment, and man-made debris
   1. Remove all above ground structures including trailers, tents, storage buildings, water tanks, fuel storage tanks, mud tanks, drilling equipment, production equipment, powerlines, pipelines, etc., except as required for continued production operations. All structures must be removed upon abandonment of the operation;
   2. Remove all equipment including drilling tools, production equipment, valves, flanges, hand tools, all vehicles parts, etc.; and
   3. Remove all drilling muds, drill chips, pit liners, trash and debris including fuel, chemicals, and blasting materials. Such materials must be disposed of at an approved site.

B. Surface Restoration
   1. Remove all well-pad material, such as lumber, gravel, shell, metal, or other pad material;
   2. Remove all dams, dikes, berms, etc., fill with existing topsoil and regrade to previous contour; and
   3. Remove temporary access roads by pulling out culverts and temporary bridges, and by recontouring road profile to match the natural topographic grade.

C. Replacing topsoil, recontouring, and revegetating
   1. Spread stockpiled topsoil and grade to original contours;
   2. Provide topographic cross-sections showing the site configuration after reclamation;
   3. Reseed and/or transplant native grasses and other native vegetation as prescribed by the NPS;
      a. Describe seedbed preparation, e.g., ripping, dicing, scarifying, etc.;

b. Identify native plant species, including seed or transplant sources, collection methods (if not available commercially), seed mixtures, percent live seed, seeding rates, seeding methods (e.g., broadcast, seed drill, hydroseed, etc.), and mulching methods;
c. Watering methods, amounts, and frequency (if necessary);
d. Target species composition and structure, and percent cover;

4. Methodology to monitor the area to determine success of revegetation efforts (e.g., species survival, vegetation density, diversity, percent cover, etc.) and to identify problem areas which may require additional actions; and
5. Describe specific actions to prevent influx of exotic plant species into disturbed area.

D. Present an <u>itemized list</u> of estimated costs to accomplish reclamation actions. Cost estimates should address the following at a minimum:
1. All equipment to be used in reclamation actions;
2. Personnel;
3. All materials such as fill, soil, seed, plants, mulch, erosion control fabric (if necessary);
4. Water and trucking fees (if necessary);
5. Vegetation monitoring costs; and
6. Exotic species control costs.

E. Discuss alternative reclamation methods and techniques, and provide cost comparisons on each.

VIII. <u>AFFIDAVITS, STATEMENTS AND PERMITS</u>

A. Provide a statement that the operator will fully comply with the plan of operations if approved by the NPS, and will further comply with all standards, stipulations, demands, and orders issued by the Regional Director;

B. Submit an affidavit stating that the proposed operation is in compliance with all applicable federal, state and local laws and regulations. Examples of applicable laws include, but are not limited to:
1. 36 CFR 9B regulations;
2. Applicable regulations under 36 CFR Parts 1-7;
3. Clean Water Act (Sections 402 and 404);
4. Clean Air Act;
5. State water law and/or regulations;
6. Coastal Zone Management Act (requires a consistency statement);
7. State oil and gas regulations;

C. Provide a copy of, or proof of application for, <u>all permits</u> required by other federal, state, or local agencies; and

D. Provide a statement that the Superintendent will be assured access to the site as is necessary to properly monitor the operation and to ensure compliance with the plan of operations.

IX. <u>DESCRIPTION OF NATURAL RESOURCES</u>

A. Describe the soils in the area, and if required by the Superintendent, provide baseline data on soil chemical composition including, but not limited to pH, specific conductivity, sodium, calcium, magnesium, chloride, and oil and grease concentrations on the proposed well pad area;

B. Provide a description and map(s) of vegetation types within at least a 0.25-mile radius of the proposed operations area;

C. Provide baseline data on vegetation species composition (density and diversity) of overstory, midstory, shrub layer, and herbaceous components within the project area (this information is

necessary to determine species to be used in site reclamation, and to assist in determining when reclamation is complete);

D. Describe the wildlife species composition in the project area;

E. Provide a description and locations of unique, rare, threatened and endangered species that inhabit or frequent the project area;

F. Provide a description of the air quality, including information on pollutant levels and existing point sources;

G. Describe the area hydrology, hydrography, and water quality of surface and subsurface waters in or near the area of proposed operations; and

H. Provide a description of existing noise levels in the project area, including point and non-point sources.

X. DESCRIPTION OF CULTURAL RESOURCES

A. Provide results of an archeological and cultural resource survey of the proposed project area performed by a professional archeologist, including cultural background information and review of the National Register of Historic Places.

XI. SOCIAL AND ECONOMIC ENVIRONMENT

A. Describe the social and economic environments to be affected by the proposed operation.

XII. ENVIRONMENTAL CONSEQUENCES

A. Describe the anticipated direct, indirect, and cumulative effects of the proposed operation on the units land features and uses, wildlife, vegetation, soils, water resources, air quality, noise, and social and economic environments;

B. Provide a description of the measures that will be taken to ensure minimum disturbance to natural resources (surface and subsurface) and historical, cultural and archeological resources; and

C. Describe the environmental impacts which cannot be mitigated.

XIII. ALTERNATIVES

A. Provide a detailed description of all reasonable technologically feasible alternative methods of operations (e.g., equipment, locations, season, etc.) and associated environmental effects.

XIV. Discuss the proposed plan of operations as related to the unit's Statement for Management and other planning documents furnished by the Superintendent.

Subpart B - Non-Federal Oil and Gas Rights

Authority Act of August 25, 1916, 39 Stat. 535 (16 U.S.C. 1, et seq.) and the acts establishing the units of the National Park System including but not limited to: Act of April 25, 1947, 61 Stat. 54 (16 U.S.C. 241, et seq.) Act of July 2, 1958, 72 Stat. 285 (16 U.S.C. 410, et seq.) Act of October 27, 1972, 86 Stat. 1312 (IS U.S.C. 460dd, et seq.): Act of October 11, 1974, 88 Stat. 1258 (16 U.S.C. 698-698e): Act of October 11, 1974, 88 Stat. 1258 (IS U.S.C. 698 f-698 m) Act of December 27, 1974, as Stat. 1787 (16 U.S.C. 460ff et seq.)

Source 43 FR 57825, Dec. 8, 1978. unless otherwise noted.

§9.30 Purpose and scope

(a) These regulations control all activities within any unit of the National Park System in the exercise of rights in oil and gas not owned by the United States where access is on, across or through federally owned or controlled lands or waters. Such rights arise most frequently in one of two situations:

(1) When the land is owned in fee, including the right to the oil and gas, or

(2) When in a transfer of the surface estate to the United States, the reserved the rights to the oil and gas.

These regulations are designed to insure that a activities undertaken pursuant to these rights are conducted in a manner consistent with the purposes for which the National Park System and each unit thereof were created to prevent of damage to the environment and other resource values and to insure to the extent feasible that all units of the National Park System are left unimpaired for the enjoyment of future generations.

These regulations are not intended to result in the taking of a property interest, but rather to impose reasonable regulations on activities which involve and affect federally-owned lands.

(b) Regulations controlling the exercise of minerals rights obtained under the Mining Law of 1872 in units of the National Park System can be found at 36 CFR Part 9, Subpart A. In area where oil and gas arc owned by the United States and leasing is authorized the applicable regulations can be found at 43 CFR Group 3100.

(c) These regulations allow operators the flexibility to design plans of operations only for that phase of operations contemplated. Each plan need only describe those functions for which the operator wants Immediate approval. For instance, it is impossible to define, at the beginning of exploratory activity, the design that production facilities might take. For this reason, an operator may submit a plan which applies only to the exploratory phase, allowing careful preparation of a plan for the production phase after exploration is completed. This allows (or phased reclamation and bonding at a level commensurate with the level of operations approved, However, it must be noted that because of potential cumulative impacts, and because of qualitative differences in the nature of the operations, approval of a plan of operations covering one phase of operations does not guarantee later approval of a plan of operations covering a subsequent phase.

(43 FR 57825, Dec. 8, 1978, as amended at 44 FR 57914, June 29, 1979)

§ 9.31 Definitions.

The terms used in this Subpart shall have the following meanings:

(a) *Secretary*, The Secretary of the Interior.

(b) *Director,* The Director of the National Park Service or his designee.

(c) *Operations.* All functions work and activities within a unit in connection will exploration for and development of *oil* and gas resources, the right to v which Is not owned by the United Slates, including:

(1) gathering basic information required to comply with this Subpart. prospecting exploration ration, surveying, preproduction development and production;
(2) gathering, onsite storage, transport or processing of petroleum products:
(3) surveillance, inspection, monitoring. or maintenance of equipment: reclamation of the surface disturbed by such activities and all activities and uses reasonably incident thereto performed within a unit, including construction or use of roads, pipelines, or other means of access or transportation on, across, or through federally owned or controlled lands and waters, regardless of whether such activities and uses take place on Federal, State or private lands.

(d) *Operator.* A person conducting or proposing to conduct operations.

(e) *Person.* Any individual, firm, partnership, corporation, association, or other entity.

(f) *Superintendent* The Superintendent or his designee, of the unit of the National Park System containing lands subject to the rights covered by these regulations.

(g) *Commercial Vehicle*. Any motorized equipment used in direct or indirect support of operations.

(h) *Unit.* Any National Park System area.

(i) *Owner* The owner, or his legal representative, of the rights to oil and gas being exercised.

(j) *Regional Director*. The Regional Director, or his designee, for the National Park Service region in which the given unit is located.

(k) *Designated Roads.* Those existing roads determined by the Superintendent in accordance with 36 CFR 1.5 and § 4.19 to be open for the use of the general public or for the exclusive use of an operator.

(l) *Oil.* Any viscous combustible liquid hydrocarbon or solid hydrocarbon substance easily liquifiable on warming which occurs naturally in the earth, including drip gasoline or other natural condensates recovered from gas without resort to manufacturing process.

(m) *Gas.* Any fluid, either combustible or noncombustible, which is produced In a natural state from the earth and which maintains a gaseous or rarefied state at ordinary temperature and pressure conditions.

(n) *Site.* Those lands or waters on which operations are to be carried out.

(o) *Contaminating substances.* Those substances, including but not limited to, salt water or any other injurious or toxic chemical, waste oil or waste emulsified oil, basic sediment. mud with injurious or toxic additives, or injurious or toxic substances produced or used In the drilling development production, transportation, or on site storage, refining and processing of oil and gas.

(p) *Statement for Management* A National Park Service planning document used to guide short. and long term management of a unit to deter. mine the nature and extent of planning required to meet the unit's management objectives: and, in the absence of more specific planning documents to provide a general framework for directing park operations and communicating park objectives to the public. (43 FR 57825, Dec. 8. 1978: 44 FR 37914. June 29, 1979)

§ 9.32 Access.

(a) No access on, across or through lands or waters owned or controlled by the United States to a site for operations will be granted except for operations covered by § 9.33 and, except as provided by § 9.38, until the operator has filed a plan of operations pursuant to § 9.36 and has had the plan of operations approved in accordance with § 9.37. An approved plan of operations serves as the operator's access permit.

(b) No operations shall be conducted on a site within a unit, access to which Is on, across or through federally owned or controlled lands or waters except in accordance with an approved plan of operations. the terms of § 9.33 or approval under § 9.38.

(c) Any operator intending to use aircraft of any kind (or access to a federally-owned or controlled site must comply with these regulations. Failure of an operator to receive the proper approval under these regulations prior to using aircraft in this manner is a violation of both these regulation and 36 CFR 2.17.

(d) No access to a site outside a unit unless such access is by foot, pack animal, or designated road. Persons using designated roads for access to such a site must comply with the terms of § 9.50 where applicable.

(e) Any operator on a site outside bloc boundaries of a unit must comply with these regulations if he is using: directional drilling techniques which result in the drill hole crossing into the unit and passing under any land or water the surface of which is owned by the United States. Except, that the operator need not comply in those areas Where, upon application of the operator or upon his own action, the Regional Director is able to determine from available data, that such operations pose no significant threat of damage to park resources, both surface and subsurface. resulting front surface subsidence, fracture of geological formations with resultant fresh water aquifer contamination, or natural gas escape, or the like.

§ 9.33 Existing operations.

(a) Any person conducting operations on January 8, 1979, In accordance with a Federal or State issued permit may continue to do so as provided by this section. After expiration of such existing permits no operations shall be conducted except under an approved plan of operations, unless access Is granted by the Regional Director under § 9.38.

(1) All Federal special use permits dealing with access on, across or through lands or waters owned or controlled by the United States to a site for the conduct of operations within any unit Issued prior to January 8, 1979, shall expire according to their terms and shall not be rescued, unless by the terms of the existing permit It must be renewed.

(2) All operations on a site in a unit access to which is on, across, or through federally owned or controlled lands or waters conducted pursuant to a valid State access permit may be continued for the term of that permit, exclusive of any renewal period whether mandatory or discretionary, if conducted in accordance with the permit.

(b) Any person conducting operations on January 8, 1979, in a unit where Federal or State permits were not required prior to January 8, 1979 may continue those operators pending final decision on his plan of operations; Provided that:

(1) The operator (within thirty (30) days of January 8. 1979), notifies the Superintendent in writing of the nature and location of the operations; and

(2) Within sixty (60) days after such notification, the operator submits, In accordance with these regulations, a substantially complete proposed plan of operations for those operations:

(3) Failure to comply with § 9.33(b) (1) and (2) shall constitute grounds for the suspension of operations.

(c) At any time when operations which are allowed to continue under § 9.33 (a) and (b) pose an Immediate threat of significant Injury to federally overfed or controlled lands or waters, the Superintendent shall require the operator to suspend operations Immediately until the threat Is removed or remedied. The Superintendent must, within five (5) days of this suspension notify the operator In writing of the reasons for the suspension and of his right to appeal the suspension under §9.48.

(43 FR 57825, Dec. 8. 1978; 44 FR 37914, June 29, 1979)

§ 9.34 Transfers of interest.

(a) Whenever an owner of rights being exercised under an approved plan of operations sells, aisles, bequeaths, or otherwise conveys all or any part of those rights. he, his agent., executor, or representative must notify the Superintendent within sixty (60) days of the transfer of: the site(s) involved, the name and address of the person to whom an interest hers been conveyed; and a description of the interest transferred. Failure to so notify the Superintendent shall render the approval of any previously approved plan of operations void.

(b) Tile transferring owner shall remain responsible for compliance with the plan of operations and shall remain liable under his bond until such time the Superintendent is notified of the transfer in accordance with paragraph (3). At that time the Superintendent Fill prohibit the new owner (ram operating until such time as the new owner has filed with the Superintendent:

(1) A statement ratifying the existing plan of operations and stating his intent to be bound thereby. or a new plan of operations, and
(2) a suitable substitute performance bond which complies with the requirements of § 9.48.

§9.35 Use of water.

No operator ma, use for operations any water from a point of diversion which Is within the boundaries of any unit unless authorized in writing by the Regional Director. The Regional Director shall not approve a plan of operations requiring the use of water from such source unless the operator shows either that his right to the use of the water Is superior to any claim of the United States to the water, or where the operator's claim to the water Is subordinate to that of the United States that the removal of the water from

the water system will not drainage the unit's resources. In either situation, the operator's use-of water must comply with appropriate State water laws.

§ 9.36 Plan of Operations

(a) The proposed plan of operations shall Include, as appropriate to the proposed operations the following:

(1) The names and legal addresses of the following persons:

The operator, and the owner(s) or lessee(s) (if rights are State-owned) other than the operator;

(2) Copy of the lease, deed, designation of operator, or assignment of rights upon which the operator's right to conduct operations is based;

(3) A map or maps showing the location of the perimeter of the area where the operator has the right to conduct operations. as described in § 9.3G(a)(2), referenced to the State plane coordinate system or other public land surges as acceptable to the Superintendent;

(4) A map or maps showing the location, as determined by a registered land surveyor or civil engineer, of a point within a site of operations showing its relationship to the perimeter of the area described in § 9.36(a)(2) and to the perimeter of the site of operations: the location of existing arid proposed access roads or routes to the site; the boundaries of proposed sun face disturbance; the location of proposed drilling: location and description of all surface facilities including Bumps, reserve pits and ponds; location of tank batteries, production facilities and gathering, service and transmission lines; wellsite layout: sources of construction materials such as fill; and the location of ancillary facilities such as camps, sanitary facilities, water supply and disposal facilities, and airstrips. The point within the site of operations identified by registered land surveyor or civil engineer shall be marked with a permanent ground monument acceptable to the Superintendent, shall contain the point's State plane coordinate values, and shall be placed at least to an accuracy of third order, class 1, unless otherwise authorized by the Superintendent;

(5) A description of the mayor equipment to be used in the operations, including a description of equipment and methods to be used for the transport of all waters used in or produced by operations, and of the proposed method of transporting such equipment to and from the site:

(6) An estimated timetable for any phase of operations for which approval Is sought and the anticipated date of operation completion;

(7) The geologic name of the surface formation;

(8) The proposed drilling depth, and the estimated tops of important geologic markers;

(9) The estimated depths at which anticipated water, brines, oil, gas, or other mineral bearing formations are expected to be encountered;

(10) The nature and extent of the known deposit or reservoir to be produced and a description of the pro posed operations, including:

(i) The proposed casing programs including the size, grade, and weight of each string, and whether it is new, or used;

(ii) The proposed setting depth of each casing string. and the amount of type of cement, including additives to be used;

(iii) The operator's minimum specifications for pressure control equipment which is to be used, a schematic diagram thereof showing sizes. pressure ratings, and the testing procedures and testing frequency;

(iv) The type and characteristics of the proposed circulating medium or mediums to be employed for rotary drilling and the quantities and types of mud and weighting material to be maintained;

(v) The testing. logging, and coring programs to be followed;

(vi) Anticipated abnormal pressures or temperatures expected to be encountered; or potential hazards to per. sons and the environment such as hydrogen sulfide gas or oil spiels, along with plans for mitigation of such hazards:

(11) A description of the steps to be taken to comply with the applicable operating standards of §9.41 of this subpart;

(12) Provisions for reclamation which will result in compliance with the requirements of §9.39:

(13) A breakdown of the estimated costs to be incurred during the implementation of the reclamation plan;

(14) Methods for disposal of all rubbish and other solid and liquid wastes, and contaminating substances;

(15) An affidavit stating that the operations planned are in compliance with all applicable Federal, State and local laws and regulations;

(16) Background information Including:

(i) A description of the natural, cultural, social and Economic environments to be affected by operations, including a description and/or map(s) of the locations of all water, abandoned, temporally abandoned disposal, production. and drilling wells of public record within a two-mile radius of the proposed site. Where such information is available from documents identified in §9.36(d) specific reference to the document and the location within the location where such information can be found will be sufficient to satisfy this requirement;

(ii) The anticipated direct and indirect effects of the operation on the unit's natural, cultural, social. and economic environment.

(iii) Steps to be taken to insure minimum surface disturbance and to mitigate any adverse environmental effects, and a discussion of the impacts which cannot be mitigated;

(iv) Measures to protect surface and subsurface waters by means of casing and cement, etc.

(v) All reasonable technologically feasible alternative methods of operations, their costs. and their environmental effects, and

(vi) The effects of the steps to be taken to achieve reclamation;

(17) Any other facets of the pro. posed operations which the operator wishes to point out for consideration; and

(18) Any additional Information that is required to enable the Superintendent to establish whether the operator has the right to conduct operations as specified in the plan of operations; to effectively analyze the effects that the operations will have on the preservation, management and public use of

the unit; and to make a recommendation to the Regional Director regarding approval or disapproval of the plan of operations and the amount of the performance bond to be posted.

(b) Where any information required to be submitted as part of a proposed plan of operations has been submitted to the Superintendent In substantially the same form In a prior approved plan of operations, a specific cross-reference to that Information contained in the prior approved plan of operations will be sufficient to Incorporate It into the proposed plan and will satisfy the applicable requirement of this section.

(c) Information and materials submitted In compliance faith this section bill not constitute a plan of operations until information required by §9.36(a) (1) through (18), which the Superintendent determines as pertinent to the type of operations proposed, has been submitted to and determined adequate by the Regional Director.

(d) In all cases the plan of operations must consider and discuss the unit's Statement for Management and other planning documents as furnished by the Superintendent. and activities to control, minimize or prevent damage to the recreational. biological. physical. scientific. cultural, and scenic resources of the unit, and any reclamation procedures suggested by the Superintendent.

[43 FR 57825 Dec. 8. 1978; 44 FR 37914. June 29. 1979]

9.37 Plan of operations approval.

(a) The Regional Director shall not approve a plan of operations:

(1) Until the operator shows that the operations will be conducted in a manner which utilizes technologically feasible methods least damaging to the federally-owned or controlled lands, waters and resources of the unit while assuring the protection of public health and safety.

(2) For operations at a site the sun face estate of which is not owned by the federal government. where operations would constitute a nuisance to federal lands or waters In the vicinity of the operations, would significantly Injure federally-owned or controlled lands and waters; or

(3) For operations at a site the sun face estate of which Is owned or con. trolled by the federal government, where operations would substantially Interfere with management of the unit to ensure the preservation of its natural and ecological Integrity In perpetuity, or would significantly Injure the federally-owned or controlled lands or waters; Provided, however, That It the application of this standard would, under applicable law, constitute a taking of a property Interest rather than an appropriate exercise of regulatory authority, the plan of operations may be approved It the operations would be conducted In accordance with paragraph (a)(1) of this section, unless a decision Is made to acquire the mineral Interest.

(4) Where the plan of operations does not satisfy each of the requirements of 9.36 applicable to the operations proposed.

(b) Within sixty (60) days of the receipt of a plan of operations, the Regional Director shall make an environmental analysis of such plan, and:

(1) Notify the operator that the plan of operations has been approved or rejected. and, if rejected, the reasons for the rejection; or

(2) Notify the operator that the plan of operations has been conditionally approved, subject to the operator's acceptance of specific provisions and stipulations; or

(3) Notify the operator of any modification of the plan of operations which is necessary before such plan will be approved or of additional information needed to effectively analyze the effects that the operations will have on the preservation, management and use of the unit, and to make a decision regarding approval or disapproval of the plan of operations and the amount of the performance bond to be posted; or

(4) Notify the operator that the plan of operations is being reviewed, but that more time, not to exceed an additional thirty days, is necessary to complete such review, and setting forth the reasons why additional time is required. Provided, however, That days during which the area of operations is inaccessible for such reasons as in. clement weather, natural catastrophe, acts of God. etc., for inspection shall not be included when computing either this time period, or that in sub. section (b) above; or

(5) Notify the operator that the plan of operations has been reviewed, but cannot be considered for approval until forty-five (45) days after a final environmental statement has been prepared and filed with the Environmental Protection Agency; or

(6) Notify the operator that the plan of operations is being reviewed but that more time to provide opportunity ties for public participation in the plan of operations review nod to provide sufficient time to analyze public comments received Is necessary,. Within thirty (30) days alter closure of the pubic continent period specified by the Regional Director, he shall comply with § 9.37 (b) (1) through *(5)*.

(c) The Regional Director shall act as expeditiously as possible upon a proposed plan of operations consistent with the nature and scone of the operations proposed. Failure to act within the time limits specified in this section shall constitute a rejection of the plan of operations from Which the operator shall have a right to appeal under § 9.49.

(d) The Regional Director's analysis shall include:

(1) An examination of all information submitted by the operator;

(2) An evaluation of measures and timing required to comply with reclamation requirements;

(3) An evaluation of necessary conditions and amount of the bond or security deposit (See § 9.48);

(4) An evaluation of the need for any additional requirements in the plan;

(5) A determination regarding the impact of this operation and cumulative impacts of all proposed and existing operations on the management of the unit; and

(6) A determination whether implementation by the operator of an proved plan of operations would be a major Federal action significantly affecting the quality of the human environment or would be sufficiently controversial to warrant preparation of an environmental statement pursuant to section 102(2)(c) of the National Environmental Policy Act of 1969.

(e) Prior to approval of a plan of operations, the Regional Director shall determine whether any properties included in, or eligible for inclusion in the National Register of Historic Places or National Registry of

Natural Landmarks may be affected by the proposed operations. This determination will require the acquisition of adequate information, such as that resulting from field surveys, in order to properly determine the presence and significance of cultural resources within the areas to be affected by operations. Whenever National Register properties or properties eligible for inclusion in the National Register would be affected by operations, the Regional Director shall comply with Section 106 of the Historic Preservations Act of 1966 as implemented by 36 CFR Part 800.

(f) Approval of each plan of operations is conditioned upon the Superintendent having such reasonable access to the site as is necessary to properly monitor and insure compliance with the plan of operations [43 FR 57825, Dec. 8, 1978: 44 FR 37918 June 29, 1979]

§ 9.38 Temporary approval.

(a) The Regional Director may approve prove on a temporary basis:

(1) Access on, across or through federally-owned or controlled lands or v waters for the purpose of collecting basic information necessary to enable timely compliance with these regulations. Such temporary approval shall be for a period not in excess of sixty (60) days.

(2) The continuance of existing operations, if their suspension would result In an unreasonable economic burden or injury to the operator: provided that such operations must be conducted in accordance with all applicable laws, and in a manner prescribed by the Regional Director designed to minimize or prevent significant environmental damage: and provided that within sixty (60) days of the granting of such temporary approval the operator either:

(i) Submits an initial substantially complete plan of operations: or
(ii) if a proposed plan of operations has been submitted, responds to any outstanding requests for additional in formation.

(b) The Regional Director may approve new operations on a temporary basis only when:

(1) The Regional Director finds that the operations will not cause significant environmental damage or result in significant new or additional surface disturbance to the unit: and either

(2) The operator can demonstrate a compelling reason for the failure to have had timely approval of a proposed plan of operations: or

(3) The operator can demonstrate that failure to grant such approval will result in an unreasonable economic burden or injury to the operator.

[43 FR 57825. Dec. 8, 1978, as amended al 44 FR 37914, June 29.1979]

§ 9.39 Reclamation requirements.

(a) Within the time specified by the reclamation provisions of the plan of Operations, which shall be as soon as possible after completion of approved operations and shall not be later than six (6) months thereafter unless a longer period of time is authorized in writing by the Regional Director, each operator shall initiate reclamation as follows:

(1) Where the Federal government does not own the surface estate, the operator shall at a minimum:

(i) Remove or neutralize any, contaminating substances and

(ii) Rehabilitate the area of open to a condition which would not constitute a nuisance or would not adversely affect, injure or damage federally-owned lands or waters, including removal of above ground structures and equipment used for operations, except that such structures and equipment may remain where they are to be used for continuing operations which are the subject of another approved plan of operations or of a plan which has been submitted for approval.

(2) On any site where the surface estate is owned or controlled by the Federal government, each operator must take steps to restore natural condition and processes. These steps shall include but are not limited to:

(i) Removing all above ground structures, equipment and roads used for operations, except that such structures, equipment and roads may remain where they are to be used for continuing operations which are the subject of another approved plan of operations or of a plan which has been submitted for approval, or unless otherwise authorized by the Regional Director consistent with the unit purpose and management objectives;

(ii) Removing all other man made debris resulting from operations;

(iii) Removing or neutralizing any contaminating substances;

(iv) Plugging and capping all non-productive wells and filling dump holes, ditches, reserve pits and other excavations;

(v) Grading to reasonably conform the contour of the area of operations to a contour similar to that which existed prior to the initiation of operations, where such grading will not jeopardize reclamation;

(vi) Replacing the natural topsoil necessary for vegetative restoration; and

(vii) Reestablishing native vegetative communities.

§ 9.40 Supplementation or revision of plan of operations

(a) A proposal to supplement or revise an approved plan of operations may be made by either the operator or the Regional Director to adjust the plan to changed conditions or to address conditions not previously contemplated by notifying the appropriate party in writing of the proposed alteration and the justification therefore.

(b) Any proposed supplementation or revision of a plan of operations initiated under paragraph (a) of this section by either party shall be reviewed and acted on by the Regional Director In accordance with § 9.37. If failure to Implement proposed changes would not pose an immediate threat of significant injury to federally-owned or controlled lands or waters, the operator will be notified in writing sixty (60) days prior to the date such changes become effective during which time the operator may submit comments on proposed changes. If failure to implement proposed changes would pose immediate threat of significant injury to federally owned or controlled lands or waters, the provisions of § 9.33(c) apply.

§ 9.41 Operating Standards

The following standards shall apply to operations within a unit:

(a) Surface operations shall at no time be conducted within 500 feet of the banks of perennial, intermittent or ephemeral watercourses or within 500 feet of the high pool shoreline of natural or man-made impoundments or within 500 feet of the mean high tide. line: or within 500 feet of any structure Lure or facility (excluding roads nit d for unit interpretation, public recreation or for administration of the unit unless specifically authorized by an approved plan of operations.

(b) The operator shall protect all survey monuments, witness corners, reference monuments and bearing trees against destruction. obliteration. Or damage from operations and shall be responsible for the reestablishment. restoration, or referencing of any monuments, corners and bearing trees which are destroyed, obliterated, or damaged by such operations.

(c) Whenever drilling or producing operations are suspended for 24 hours or more, but less than 30 days, the wells shall be shut in by closing wellhead valves or blowout prevention equipment. When producing operations are suspended for 30 days or more, a suitable plug or other fittings acceptable to the Superintendent shall be used to close the wells.

(d) The operator shall mark each and every operating derrick or well in a conspicuous place with his name or the name of the owner, and the number and location of the well, and shall take all necessary means and precautions to preserve these markings.

(e) Around existing or future installations, e.g., well, storage tanks, all high pressure facilities fences shall be built for protection of unit visitors and wildlife and protection of said facilities unless otherwise authorized by the Superintendent. Fences erected for production of unit visitors and wildlife shall be of a design and material acceptable to the Superintendent, and where appropriate, shall have at least one gate which is of sufficient width to allow access by fire trucks. Hazards within visitor use areas will be clearly marked with warning signs acceptable to the Superintendent.

(f) The operator shall carry on all operations and maintain the site at all times in a safe and workmanlike manner, having due regard for the preservation of the environment of the unit. The operator shall take reasonable steps to prevent and shall remove accumulations of oil or other materials deemed to be fire hazards from the vicinity of well locations and lease tanks, and shall remove from the property or store In an orderly manner all scrap or other materials not in use.

(g) Operators will be held fully ac countable (or their contractor's or subcontractor's compliance with the requirements of the approved plan of operations.

[43 FR 57825, Dec. 8, 1978: 44 FR 37915, June 29,1978]

§ 9.42 Well records and reports. plots and maps, samples, tests and surveys.

Any technical data gathered during the drilling of any well, Including daily drilling reports and geological reports, which are submitted to the State pursuant to State regulations, or to any other bureau or agency of the Federal government shall be available for inspection by the Superintendent upon his request.

§ 9 43 Precautions Necessary In Areas Where High Pressures Are Likely To Exist.

When drilling in "wildcat" territory, or in any field where high pressures are likely to exist. the operator shall take all necessary precautions for keeping the well under control at all times and shall Install and maintain the proper high-pressure fittings and equipment to assure proper well control. Under such conditions the surface string must be cemented through Its length, unless another procedure is authorized or proscribed by the Superintendent and all strings of casing must be securely anchored.

§ 9.44 Open flows and control of "wild" wells.

The operator shall take all technologically feasible precautions to prevent any all, gas. or water well from blowing open or becoming "wild," and, shall take immediate steps and exercise due diligence to bring under control any "wild" well, or burning oil or gas well.

§ 9.45 Handling of wastes.

Oilfield brine and all other waste and contaminating substances must be kept in the smallest practicable area. must be confined so as to prevent escape as a result of percolation. rain, high water or other causes, and such wastes must be stored and disposed of or removed from the area as quickly as practicable in such a manner as to prevent contamination. pollution. damage or injury to the lands, water (surface and subsurface), facilities. cultural re sources, wildlife, and vegetation of or visitors of the unit.

§ 9.46 Accidents, and fires.

The operator shall take technologically feasible precautions to prevent accidents and fires, shall notify the Superintendent within 24 hours of all accidents involving serious personal Injury or death, or fires on the site, and shall submit a full written report thereon within ninety (90) days. This report supersedes the

requirement outlined in 36 CFR 2.17, but does not relieve persons from the responsibility of making any other accident reports which may be required under State or local laws.

§ 9.47 Cultural resource protection.

(a) Where the surface estate of the site is owned by the United States, the operator shall not, without written authorization of the Superintendent, Injure, alter, destroy, or collect any site, structure, object, or other value of historical. archeological, or other cultural scientific importance in violation of the Antiquities Act (16 U.S.C 431-433 (See 43 CFR Part 3).

(b) Once approved operations have commenced, the operator shall adequately bring to the attention of the Superintendent any cultural or scientific resource encountered that might be altered or destroyed by his operation and shall leave such discovery Intact until told to proceed by the Superintendent. The Superintendent will evaluate the discoveries brought to his attention, and will determine within ten (10) working days what action will be taken with respect to such discoveries.

§ 9.48 Performance bond.

(a) Prior to approval of a plan of operations the operator shall be required to file a suitable performance bond with satisfactory surety, payable to the Secretary or his designee. The bond shall be conditioned upon faithful compliance with applicable regulations and the plan of operations as approved, revised or supplemented. This performance bond is in addition to and not in lieu of any, bond or security deposit required by other regulatory authorities.

(b) In lieu of a performance bond, an operator may elect to deposit with the Secretary or his designee, cash or negotiable bonds of the U.S. Government. The cash deposit or the market value of such securities shall be at least equal to the required sum of the bond. When bonds are to serve as security there must be provided to the Secretary a power of attorney.

(c) In the event that an approved plan of operations is revised or supplemented In accordance with § 9.40, the Regional Director may adjust the amount of the bond or security deposit it to conform to the modified plan of operations.

(d) The bond or security deposit shall be in an amount:

(1) Equal to the estimated cost of reclaiming the site, either in its entirety or in phases, that has been damaged or destroyed as a result of operations conducted In accordance with an approved, supplemented, plan of operations plus;

(2) An amount set by the Superintendent consistent with the type of operations proposed, to bond against the liability Imposed by § 9.511a): to provide the means for rapid and effective cleanup: and to minimize damages resulting from an oil spill the escape of gas, wastes, contaminating substances, or fire caused by operations. This amount shall not exceed twenty-five thousand dollars ($25,000) for geophysical surveys when using more than one field party or five thousand dollars ($5,000) when operating with only one field party, and shall not exceed fifty thousand dollars ($50,000) for each wellsite or other operation.

(3) When an operator's total bond or security deposit with the National Park Service amounts to two hundred thousand dollars ($200,000) for activities conducted within a given unit, no further bond requirements shall be collected for additional activities conducted within that unit, and the operator may substitute a blanket bond of two hundred thousand dollars ($200,000) (or all operations conducted within the unit.

(e) The operator's and his surety's responsibility and liability under the bond or security deposit shall continue until such time as the Superintendent determines that successful reclamation of the area of operations has occurred and where a well has been drilled, the well has been properly plugged and abandoned. If all efforts to secure the operator s compliance with pertinent provisions of the approved plan of operations are unsuccessful, the operator's surety company will be required to perform reclamation In accordance with the approved plan of operations.

(f) Within thirty (30) days after determining that all reclamation requirements of an approved plan of operations are completed, Including proper abandonment of the well, the Regional Director shall notify the operator that the period of liability under the bond or security deposit has been terminated.
[43 FR 57825 Dec. 8, 1978: 44 FR 37915, June 29, 1979]

§ 9.49 Appeals.

(a) Any operator aggrieved by a decision of the Regional Director in connection with the regulations In this Subpart may file with the Regional Director a written statement setting forth in detail the respects in which the decision is contrary to, or is in contact with the facts, the law, or these regulations, or is otherwise in error. No such appeal will be considered unless it is filed with the Regional Director within thirty (30) days after the date of notification to the operator of the action or decision complained of. Upon receipt of such written statement from the aggrieved operator, the Regional Director shall promptly review the action or decision and either reverse his original decision of prepare his own statement, explaining that decision and the reasons therefor, and forward the statement and record on appeal to the Director for review and decision. Copies of the Regional Director's statement shall be furnished to the aggrieved operator. who shall have thirty (30) days within which to file exceptions to the Regional Director's decision. The Department has the discretion to initiate a hearing before the Office of Hearing and Appeals in a particular case (See 43 CFR 4.700).

(b) The official files of the National Park Service on the proposed plan of operations and any testimony and documents submitted by the parties on which the decision of the Regional Director was based shall constitute the record on appeal. The Regional Director shall maintain the record under separate cover and shall certify that it was the record on which his decision was based at the time it was forwarded to the Director of the National Park Service The National Park Service shall make the record available to the operator upon request.

(c) If the Director considers the record inadequate to support the decision on appeal, he may provide for the production of such additional evidence or information as may be appropriate, or may remand the case to the Regional Director, with appropriate instruction for further action.

(d) On or before the expiration of forty-five (45) days after his receipt of the exceptions to the Regional Director's decision, the Director shall make his decision in writing: provided however, that if more than

forty-five (45) days are required for a decision after the exceptions are received, the Director's shall notify the parties to the appeal and specify the reasons for delay. The decision of the Director shall include:

(1) A statement of facts
(2) conclusions: and
(3) reasons upon which the conclusions are based.

The decision of the Director shall be the final administrative action of the agency on a proposed plan of operations.

(e) A decision of the Regional Director's from which an appeal is taken shall not be automatically stayed by the filing of a statement of appeal. A request for a stay may accompany the statement of appeal or may be directed to the Director. The Director shall promptly rule on requests for stays. A decision of the Director on request for a stay shall constitute a final administrative decision.

(f) Where, under this Subpart, the Superintendent has the authority to make the original decision, appeals may be taken in the manner provided by this section, as if the decision had been made by the Regional Director, except that the original statement of appeal shall be filed with the Superintendent and if he decides not to reverse his original decision, the Regional al Director shall have, except as noted below, the final review authority. The only decision of a Regional Director under this paragraph which shall be appealable by the Director is an appeal from a suspension under § 9.51(b). Such an appeal shall follow the procedure of paragraphs (a)-(3) of this section.
[43 FR 57828, Dec. 5, 1978: 44 FR 37915, June 29. 1979]

§ 9.50 Use of roads by commercial Vehicles.

(a) After January 8, 1978, no commercial vehicle shall use roads administered by the National Park Service without being registered with the Superintendent Roads must be used in accordance with procedures outlined In an approved plan of operations.

(1) A fee shall be charged for such registration and use based upon a posted fee schedule. The fee schedule posted shall be subject to change upon sixty (60) days of notice.

(2) An adjustment of the fee may be made at the discretion of the Superintendent where a cooperative maintenance agreement is entered into with the operator.

(b) No commercial vehicle which exceeds roadway load limits speckled by the Superintendent shall be used on roads administered by the National Park Service unless authorized in writing by the Superintendent, or unless authorized by an approved plan of operations.

(c) Should a commercial vehicle used in operations cause damage to roads, resources or other facilities of the National Park Service, the operator shall be liable (or all damages so caused).

§ 9.51 Damages and penalties

(a) The operator shall be held liable for any damages to federally-owned or controlled lands. waters, or resources resulting from his failure to comply with either his plan of operations, or, where operations are continued pursuant to § 9.33, failure to comply with the applicable permit or, where operations are temporarily approved under § 9.38, failure to comply with the terms of that approval.

(b) The operator agrees, as a condition for receiving an approved plan of operations, that he will hold harmless the United States and its employees from any damages or claims for injury or death of persons and damage or loss of property by any person or persons arising out of any acts or omissions by the operator, his agents, employees or subcontractors done in the course of operations.

(c) Undertaking any operations within the boundaries of any unit in violation of this Subpart shall be deemed a trespass against the United States and shall be cause for revocation of approval of the plan of operations.

(1) When a violation by an operator under an approved Plan of operations is discovered, and if It does not pose an Immediate threat of significant injury to federally-owned or controlled lands or waters, the operator will be notified In writing by the Superintendent and will be given ten (10) days to correct the violation: if the violation is not corrected within ten (10) days, approval of the plan of operations will be suspended until such time as the violation is corrected.

(2) If the violation poses an immediate threat of significant injury to federally owned or controlled lands or waters approval of the plan of operations will be immediately suspended until such time as the violation is rejected. The operator will be notified in writing within five (5) days of any suspension and shall have the right to appeal that decision under § 9.48.

(3) Failure to correct any violation or damage to federally owned or controlled lands, waters or resources caused by such violations will result in revocation of plan of operations approval.

[43 FR 57825, Dec. 8, 1978: 4{ FR 37915 June 29.1979]

§ 9.52 Public inspection of documents

(a) When a Superintendent receives a request for permission for access on, across or through federally-owned or controlled lands or waters for the purpose of conducting operations, the Superintendent shall publish a notice of this request in a newspaper of general circulation in the county(s) in which the lands are situated, or in such publications as deemed appropriate by the Superintendent.

(b) Upon receipt of the plan or operations in accordance with 9.35 (c), the Superintendent shall publish a notice in the Federal Register advising the availability of the plan for public review and comment. Written comments received within thirty (30) days will become part of the official record. As a result of comments received or if otherwise deemed appropriate by the Superintendent , he may provide additional opportunity for public participation to review the plan of operations.

(c) Any document required to be submitted pursuant to the regulations in the Subpart shall be made available for public inspection at the office of the Superintendent during normal business hours, unless otherwise available pursuant to 9.51 (b). this does not include those records only made available for the Superintendent's inspection under 9.41 of this subpart or those records determined by the Superintendent to contain proprietary or confidential information. The availability of such records for inspection shall be governed by rules and regulations found at 43 CFR Part 2.

[43 FR 57825. Dec. 8, 1978: 44 FR 37915, June 29, 1979]

corrective action, including the anticipated schedule for starting and concluding such action.

[Amdt. 191-6, 53 FR 24949, July 1, 1988; 53 FR 29800, Aug. 8, 1988, as amended by Amdt. 191-7, 54 FR 32344, Aug. 7, 1989; Amdt. 191-8, 54 FR 40878, Oct. 4, 1989; Amdt. 191-10, 61 FR 18516, Apr. 26, 1996]

§ 191.27 Filing offshore pipeline condition reports.

(a) Each operator shall, within 60 days after completion of the inspection of all its underwater pipelines subject to § 192.612(a), report the following information:

(1) Name and principal address of operator.

(2) Date of report.

(3) Name, job title, and business telephone number of person submitting the report.

(4) Total number of miles of pipeline inspected.

(5) Length and date of installation of each exposed pipeline segment, and location, including, if available, the location according to the Minerals Management Service or state offshore area and block number tract.

(6) Length and date of installation of each pipeline segment, if different from a pipeline segment identified under paragraph (a)(5) of this section, that is a hazard to navigation, and the location, including, if available, the location according to the Minerals Management Service or state offshore area and block number tract.

(b) The report shall be mailed to the Information Officer, Research and Special Programs Administration, Department of Transportation, 400 Seventh Street, SW., Washington, DC 20590.

[Amdt. 191-9, 56 FR 63770, Dec. 5, 1991]

PART 192—TRANSPORTATION OF NATURAL AND OTHER GAS BY PIPELINE: MINIMUM FEDERAL SAFETY STANDARDS

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AUTHORITY: 49 U.S.C. 5103, 60102, 60104, 60108, 60109, 60110, 60113, and 60118; and 49 CFR 1.53.

SOURCE: 35 FR 13257, Aug. 19, 1970, unless otherwise noted.

Subpart A—General

§ 192.1 Scope of part.

(a) This part prescribes minimum safety requirements for pipeline facilities and the transportation of gas, including pipeline facilities and the transportation of gas within the limits of the outer continental shelf as that term is defined in the Outer Continental Shelf Lands Act (43 U.S.C. 1331).

(b) This part does not apply to:

(1) Offshore pipelines upstream from the outlet flange of each facility where hydrocarbons are produced or where produced hydrocarbons are first separated, dehydrated, or otherwise processed, whichever facility is farther downstream;

(2) Onshore gathering of gas outside of the following areas:

(i) An area within the limits of any incorporated or unincorporated city, town, or village.

(ii) Any designated residential or commercial area such as a subdivision, business or shopping center, or community development.

(3) Onshore gathering of gas within inlets of the Gulf of Mexico except as provided in § 192.612.

(4) Any pipeline system that transports only petroleum gas or petroleum gas/air mixtures to—

(i) Fewer than 10 customers, if no portion of the system is located in a public place; or

(ii) A single customer, if the system is located entirely on the customer's premises (no matter if a portion of the system is located in a public place).

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-27, 41 FR 34605, Aug. 16, 1976; Amdt. 192-67, 56 FR 63771, Dec. 5, 1991; Amdt. 192-78, 61 FR 28782, June 6, 1996]

§ 192.3 Definitions.

As used in this part:

Administrator means the Administrator of the Research and Special Programs Administration or any person to whom authority in the matter concerned has been delegated by the Secretary of Transportation.

Distribution line means a pipeline other than a gathering or transmission line.

Exposed pipeline means a pipeline where the top of the pipe is protruding above the seabed in water less than 15 feet deep, as measured from the mean low water.

Gas means natural gas, flammable gas, or gas which is toxic or corrosive.

Gathering line means a pipeline that transports gas from a current production facility to a transmission line or main.

Gulf of Mexico and its inlets means the waters from the mean high water mark of the coast of the Gulf of Mexico and its inlets open to the sea (excluding rivers, tidal marshes, lakes, and canals) seaward to include the territorial sea and Outer Continental Shelf to a depth of 15 feet, as measured from the mean low water.

Hazard to navigation means, for the purpose of this part, a pipeline where the top of the pipe is less than 12 inches below the seabed in water less than 15 feet deep, as measured from the mean low water.

High-pressure distribution system means a distribution system in which the gas pressure in the main is higher than the pressure provided to the customer.

Line section means a continuous run of transmission line between adjacent compressor stations, between a compressor station and storage facilities, between a compressor station and a block valve, or between adjacent block valves.

Listed specification means a specification listed in section I of appendix B of this part.

Low-pressure distribution system means a distribution system in which the gas pressure in the main is substantially the same as the pressure provided to the customer.

Main means a distribution line that serves as a common source of supply for more than one service line.

Maximum actual operating pressure means the maximum pressure that occurs during normal operations over a period of 1 year.

Maximum allowable operating pressure (MAOP) means the maximum pressure at which a pipeline or segment of a pipeline may be operated under this part.

Municipality means a city, county, or any other political subdivision of a State.

Offshore means beyond the line of ordinary low water along that portion of the coast of the United States that is in direct contact with the open seas and beyond the line marking the seaward limit of inland waters.

Operator means a person who engages in the transportation of gas.

Person means any individual, firm, joint venture, partnership, corporation, association, State, municipality, cooperative association, or joint stock association, and including any trustee, receiver, assignee, or personal representative thereof.

Petroleum gas means propane, propylene, butane, (normal butane or isobutanes), and butylene (including isomers), or mixtures composed predominantly of these gases, having a vapor pressure not exceeding 1434 kPa (208 psig) at 38°C (100°F).

Pipe means any pipe or tubing used in the transportation of gas, including pipe-type holders.

Pipeline means all parts of those physical facilities through which gas moves in transportation, including pipe, valves, and other appurtenance attached to pipe, compressor units, metering stations, regulator stations, delivery stations, holders, and fabricated assemblies.

Pipeline facility means new and existing pipelines, rights-of-way, and any equipment, facility, or building used in the transportation of gas or in the treatment of gas during the course of transportation.

Service line means a distribution line that transports gas from a common source of supply to (1) a customer meter or the connection to a customer's piping, whichever is farther downstream, or (2) the connection to a customer's piping if there is no customer meter. A customer meter is the meter that measures the transfer of gas from an operator to a consumer.

SMYS means specified minimum yield strength is:

(1) For steel pipe manufactured in accordance with a listed specification, the yield strength specified as a minimum in that specification; or

(2) For steel pipe manufactured in accordance with an unknown or unlisted specification, the yield strength determined in accordance with § 192.107(b).

State means each of the several States, the District of Columbia, and the Commonwealth of Puerto Rico.

Transmission line means a pipeline, other than a gathering line, that:

(a) Transports gas from a gathering line or storage facility to a distribution center, storage facility, or large volume customer that is not downstream from a distribution center;

(b) Operates at a hoop stress of 20 percent or more of SMYS; or

(c) Transports gas within a storage field. A large volume customer may receive similar volumes of gas as a distribution center, and includes factories, power plants, and institutional users of gas.

Transportation of gas means the gathering, transmission, or distribution of gas by pipeline or the storage of gas, in or affecting interstate or foreign commerce.

[Amdt. 192-13, 38 FR 9084, Apr. 10, 1973, as amended by Amdt. 192-27, 41 FR 34605, Aug. 16, 1976; Amdt. 192-58, 53 FR 1635, Jan. 21, 1988; Amdt. 192-67, 56 FR 63771, Dec. 5, 1991; Amdt. 192-72, 59 FR 17281, Apr. 12, 1994; Amdt. 192-78, 61 FR 28783, June 6, 1996]

§ 192.5 Class locations.

(a) This section classifies pipeline locations for purposes of this part. The following criteria apply to classifications under this section.

(1) A "class location unit" is an onshore area that extends 220 yards on either side of the centerline of any continuous 1- mile length of pipeline.

(2) Each separate dwelling unit in a multiple dwelling unit building is counted as a separate building intended for human occupancy.

(b) Except as provided in paragraph (c) of this section, pipeline locations are classified as follows:

(1) A Class 1 location is:

(i) An offshore area; or

(ii) Any class location unit that has 10 or fewer buildings intended for human occupancy.

(2) A Class 2 location is any class location unit that has more than 10 but fewer than 46 buildings intended for human occupancy.

(3) A Class 3 location is:

(i) Any class location unit that has 46 or more buildings intended for human occupancy; or

(ii) An area where the pipeline lies within 100 yards of either a building or a small, well-defined outside area (such as a playground, recreation area, outdoor theater, or other place of public assembly) that is occupied by 20 or more persons on at least 5 days a week for 10 weeks in any 12-month period. (The days and weeks need not be consecutive.)

(4) A Class 4 location is any class location unit where buildings with four or more stories above ground are prevalent.

(c) The length of Class locations 2, 3, and 4 may be adjusted as follows:

(1) A Class 4 location ends 220 yards from the nearest building with four or more stories above ground.

(2) When a cluster of buildings intended for human occupancy requires a Class 2 or 3 location, the class location ends 220 yards from the nearest building in the cluster.

[Amdt. 192-78, 61 FR 28783, June 6, 1996; 61 FR 35139, July 5, 1996]

§ 192.7 Incorporation by reference.

(a) Any documents or portions thereof incorporated by reference in this part are included in this part as though set out in full. When only a portion of a document is referenced, the remainder is not incorporated in this part.

(b) All incorporated materials are available for inspection in the Research and Special Programs Administration, 400 Seventh Street, SW., Washington, DC, and at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC. These materials have been approved for incorporation by reference by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. In addition, the incorporated materials are available from the respective organizations listed in appendix A to this part.

(c) The full titles for the publications incorporated by reference in this part are provided in appendix A to this part. Numbers in parentheses indicate applicable editions. Earlier editions of documents listed or editions of documents formerly listed in previous editions of appendix A may be used for materials and components manufactured, designed, or installed in accordance with those earlier editions or earlier documents at the time they were listed. The user must refer to the appropriate previous edition of 49 CFR for a listing of the earlier listed editions or documents.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-37, 46 FR 10159, Feb. 2, 1981; Amdt 192-51, 51 FR 15334, Apr. 23, 1986; 58 FR 14521, Mar. 18, 1993; Amdt. 192-78, 61 FR 28783, June 6, 1996]

§ 192.9 Gathering lines.

Except as provided in §§ 192.1 and 192.150, each operator of a gathering line must comply with the requirements of this part applicable to transmission lines.

[Amdt. 192-72, 59 FR 17281, Apr. 12, 1994]

§ 192.11 Petroleum gas systems.

(a) Each plant that supplies petroleum gas by pipeline to a natural gas distribution system must meet the requirements of this part and ANSI/NFPA 58 and 59.

(b) Each pipeline system subject to this part that transports only petroleum gas or petroleum gas/air mixtures must meet the requirements of this part and of ANSI/NFPA 58 and 59.

(c) In the event of a conflict between this part and ANSI/NFPA 58 and 59, ANSI/NFPA 58 and 59 prevail.

[Amdt. 192-78, 61 FR 28783, June 6, 1996]

§ 192.13 General.

(a) No person may operate a segment of pipeline that is readied for service after March 12, 1971, or in the case of an offshore gathering line, after July 31, 1977, unless:

(1) The pipeline has been designed, installed, constructed, initially inspected, and initially tested in accordance with this part; or

(2) The pipeline qualifies for use under this part in accordance with § 192.14.

(b) No person may operate a segment of pipeline that is replaced, relocated, or otherwise changed after November 12, 1970, or in the case of an offshore gathering line, after July 31, 1977, unless that replacement, relocation, or change has been made in accordance with this part.

(c) Each operator shall maintain, modify as appropriate, and follow the plans, procedures, and programs that it is required to establish under this part.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-27, 41 FR 34605, Aug. 16, 1976; Amdt. 192-30, 42 FR 60148, Nov. 25, 1977]

§ 192.14 Conversion to service subject to this part.

(a) A steel pipeline previously used in service not subject to this part qualifies for use under this part if the operator prepares and follows a written procedure to carry out the following requirements:

(1) The design, construction, operation, and maintenance history of the pipeline must be reviewed and, where sufficient historical records are not available, appropriate tests must be performed to determine if the pipeline is in a satisfactory condition for safe operation.

(2) The pipeline right-of-way, all aboveground segments of the pipeline, and appropriately selected underground segments must be visually inspected for physical defects and operating conditions which reasonably could be expected to impair the strength or tightness of the pipeline.

(3) All known unsafe defects and conditions must be corrected in accordance with this part.

(4) The pipeline must be tested in accordance with subpart J of this part to substantiate the maximum allowable operating pressure permitted by subpart L of this part.

(b) Each operator must keep for the life of the pipeline a record of the investigations, tests, repairs, replacements, and alterations made under the requirements of paragraph (a) of this section.

[Amdt. 192-30, 42 FR 60148, Nov. 25, 1977]

§ 192.15 Rules of regulatory construction.

(a) As used in this part:

Includes means including but not limited to.

May means "is permitted to" or "is authorized to".

May not means "is not permitted to" or "is not authorized to".

Shall is used in the mandatory and imperative sense.

(b) In this part:

(1) Words importing the singular include the plural;

(2) Words importing the plural include the singular; and

(3) Words importing the masculine gender include the feminine.

§ 192.16 Customer notification.

(a) This section applies to each operator of a service line who does not maintain the customer's buried piping up to entry of the first building downstream, or, if the customer's buried piping does not enter a building, up to the principal gas utilization equipment or the first fence (or wall) that surrounds that equipment. For the purpose of this section, "customer's buried piping" does not include branch lines that serve yard lanterns, pool heaters, or other types of secondary equipment. Also, "maintain" means monitor for corrosion according to § 192.465 if the customer's buried piping is metallic, survey for leaks according to § 192.723, and if an unsafe condition is found, shut off the flow of gas, advise the customer of the need to repair the unsafe condition, or repair the unsafe condition.

(b) Each operator shall notify each customer once in writing of the following information:

(1) The operator does not maintain the customer's buried piping.

(2) If the customer's buried piping is not maintained, it may be subject to the potential hazards of corrosion and leakage.

(3) Buried gas piping should be—

(i) Periodically inspected for leaks;

(ii) Periodically inspected for corrosion if the piping is metallic; and

(iii) Repaired if any unsafe condition is discovered.

(4) When excavating near buried gas piping, the piping should be located in advance, and the excavation done by hand.

(5) The operator (if applicable), plumbers, and heating contractors can assist in locating, inspecting, and repairing the customer's buried piping.

(c) Each operator shall notify each customer not later than August 14, 1996, or 90 days after the customer first receives gas at a particular location, whichever is later. However, operators

of master meter systems may continuously post a general notice in a prominent location frequented by customers.

(d) Each operator must make the following records available for inspection by the Administrator or a State agency participating under 49 U.S.C. 60105 or 60106:

(1) A copy of the notice currently in use; and

(2) Evidence that notices have been sent to customers within the previous 3 years.

[Amdt. 192-74, 60 FR 41828, Aug. 14, 1995, as amended by Amdt. 192-74A, 60 FR 63451, Dec. 11, 1995]

Subpart B—Materials

§ 192.51 Scope.

This subpart prescribes minimum requirements for the selection and qualification of pipe and components for use in pipelines.

§ 192.53 General.

Materials for pipe and components must be:

(a) Able to maintain the structural integrity of the pipeline under temperature and other environmental conditions that may be anticipated;

(b) Chemically compatible with any gas that they transport and with any other material in the pipeline with which they are in contact; and

(c) Qualified in accordance with the applicable requirements of this subpart.

§ 192.55 Steel pipe.

(a) New steel pipe is qualified for use under this part if:

(1) It was manufactured in accordance with a listed specification;

(2) It meets the requirements of—

(i) Section II of appendix B to this part; or

(ii) If it was manufactured before November 12, 1970, either section II or III of appendix B to this part; or

(3) It is used in accordance with paragraph (c) or (d) of this section.

(b) Used steel pipe is qualified for use under this part if:

(1) It was manufactured in accordance with a listed specification and it meets the requirements of paragraph II-C of appendix B to this part;

(2) It meets the requirements of:

(i) Section II of appendix B to this part; or

(ii) If it was manufactured before November 12, 1970, either section II or III of appendix B to this part;

(3) It has been used in an existing line of the same or higher pressure and meets the requirements of paragraph II-C of appendix B to this part; or

(4) It is used in accordance with paragraph (c) of this section.

(c) New or used steel pipe may be used at a pressure resulting in a hoop stress of less than 6,000 p.s.i. where no close coiling or close bending is to be done, if visual examination indicates that the pipe is in good condition and that it is free of split seams and other defects that would cause leakage. If it is to be welded, steel pipe that has not been manufactured to a listed specification must also pass the weldability tests prescribed in paragraph II-B of appendix B to this part.

(d) Steel pipe that has not been previously used may be used as replacement pipe in a segment of pipeline if it has been manufactured prior to November 12, 1970, in accordance with the same specification as the pipe used in constructing that segment of pipeline.

(e) New steel pipe that has been cold expanded must comply with the mandatory provisions of API Specification 5L.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 191-1, 35 FR 17660, Nov. 17, 1970; Amdt. 192-12, 38 FR 4761, Feb. 22, 1973; Amdt. 192-51, 51 FR 15335, Apr. 23, 1986; 58 FR 14521, Mar. 18, 1993]

§ 192.57 [Reserved]

§ 192.59 Plastic pipe.

(a) New plastic pipe is qualified for use under this part if:

(1) It is manufactured in accordance with a listed specification; and

(2) It is resistant to chemicals with which contact may be anticipated.

(b) Used plastic pipe is qualified for use under this part if:

(1) It was manufactured in accordance with a listed specification;

(2) It is resistant to chemicals with which contact may be anticipated;

(3) It has been used only in natural gas service;

(4) Its dimensions are still within the tolerances of the specification to which it was manufactured; and

(5) It is free of visible defects.

(c) For the purpose of paragraphs (a)(1) and (b)(1) of this section, where pipe of a diameter included in a listed specification is impractical to use, pipe of a diameter between the sizes included in a listed specification may be used if it:

(1) Meets the strength and design criteria required of pipe included in that listed specification; and

(2) Is manufactured from plastic compounds which meet the criteria for material required of pipe included in that listed specification.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-19, 40 FR 10472, Mar. 6, 1975; Amdt. 192-58, 53 FR 1635, Jan. 21, 1988]

§ 192.61 [Reserved]

§ 192.63 Marking of materials.

(a) Except as provided in paragraph (d) of this section, each valve, fitting, length of pipe, and other component must be marked—

(1) As prescribed in the specification or standard to which it was manufactured, except that thermoplastic fittings must be marked in accordance with ASTM D 2513; or

(2) To indicate size, material, manufacturer, pressure rating, and temperature rating, and as appropriate, type, grade, and model.

(b) Surfaces of pipe and components that are subject to stress from internal pressure may not be field die stamped.

(c) If any item is marked by die stamping, the die must have blunt or rounded edges that will minimize stress concentrations.

(d) Paragraph (a) of this section does not apply to items manufactured before November 12, 1970, that meet all of the following:

(1) The item is identifiable as to type, manufacturer, and model.

(2) Specifications or standards giving pressure, temperature, and other appropriate criteria for the use of items are readily available.

[Amdt. 192-1, 35 FR 17660, Nov. 17, 1970, as amended by Amdt. 192-31, 43 FR 883, Apr. 3, 1978; Amdt. 192-61, 53 FR 36793, Sept. 22, 1988; Amdt. 192-62, 54 FR 5627, Feb. 6, 1989; Amdt. 192-61A, 54 FR 32642, Aug. 9, 1989; 58 FR 14521, Mar. 18, 1993; Amdt. 192-76, 61 FR 26122, May 24, 1996; 61 FR 36826, July 15, 1996]

§ 192.65 Transportation of pipe.

In a pipeline to be operated at a hoop stress of 20 percent or more of SMYS, an operator may not use pipe having an outer diameter to wall thickness ratio of 70 to 1, or more, that is transported by railroad unless:

(a) The transportation is performed in accordance with API RP 5L1.

(b) In the case of pipe transported before November 12, 1970, the pipe is tested in accordance with subpart J of this part to at least 1.25 times the maximum allowable operating pressure if it is to be installed in a class 1 location and to at least 1.5 times the maximum allowable operating pressure if it is to be installed in a class 2, 3, or 4 location. Notwithstanding any shorter time period permitted under subpart J of this part, the test pressure must be maintained for at least 8 hours.

[Amdt. 192-12, 38 FR 4761, Feb. 22, 1973, as amended by Amdt. 192-17, 40 FR 6346, Feb. 11, 1975; 58 FR 14521, Mar. 18, 1993]

Subpart C—Pipe Design

§ 192.101 Scope.

This subpart prescribes the minimum requirements for the design of pipe.

§ 192.103 General.

Pipe must be designed with sufficient wall thickness, or must be installed with adequate protection, to withstand anticipated external pressures and loads that will be imposed on the pipe after installation.

§ 192.105 Design formula for steel pipe.

(a) The design pressure for steel pipe is determined in accordance with the following formula:

$$P=(2\ St/D)\times F\times E\times T$$

P=Design pressure in pounds per square inch gauge.

S=Yield strength in pounds per square inch determined in accordance with § 192.107.
D=Nominal outside diameter of the pipe in inches.
t=Nominal wall thickness of the pipe in inches. If this is unknown, it is determined in accordance with § 192.109. Additional wall thickness required for concurrent external loads in accordance with § 192.103 may not be included in computing design pressure.
F=Design factor determined in accordance with § 192.111.
E=Longitudinal joint factor determined in accordance with § 192.113.
T=Temperature derating factor determined in accordance with § 192.115.

(b) If steel pipe that has been subjected to cold expansion to meet the SMYS is subsequently heated, other than by welding or stress relieving as a part of welding, the design pressure is limited to 75 percent of the pressure determined under paragraph (a) of this section if the temperature of the pipe exceeds 900° F (482° C) at any time or is held above 600° F (316° C) for more than 1 hour.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-47, 49 FR 7569, Mar. 1, 1984]

§ 192.107 Yield strength (*S*) for steel pipe.

(a) For pipe that is manufactured in accordance with a specification listed in section I of appendix B of this part, the yield strength to be used in the design formula in § 192.105 is the SMYS stated in the listed specification, if that value is known.

(b) For pipe that is manufactured in accordance with a specification not listed in section I of appendix B to this part or whose specification or tensile properties are unknown, the yield strength to be used in the design formula in § 192.105 is one of the following:

(1) If the pipe is tensile tested in accordance with section II-D of appendix B to this part, the lower of the following:

(i) 80 percent of the average yield strength determined by the tensile tests.

(ii) The lowest yield strength determined by the tensile tests.

(2) If the pipe is not tensile tested as provided in paragraph (b)(1) of this section 24,000 p.s.i.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-78, 61 FR 28783, June 6, 1996]

§ 192.109 Nominal wall thickness (*t*) for steel pipe.

(a) If the nominal wall thickness for steel pipe is not known, it is determined by measuring the thickness of each piece of pipe at quarter points on one end.

(b) However, if the pipe is of uniform grade, size, and thickness and there are more than 10 lengths, only 10 percent of the individual lengths, but not less than 10 lengths, need be measured. The thickness of the lengths that are not measured must be verified by applying a gauge set to the minimum thickness found by the measurement. The nominal wall thickness to be used in the design formula in § 192.105 is the next wall thickness found in commercial specifications that is below the average of all the measurements taken. However, the nominal wall thickness used may not be more than 1.14 times the smallest measurement taken on pipe less than 20 inches in outside diameter, nor more than 1.11 times the smallest measurement taken on pipe 20 inches or more in outside diameter.

§ 192.111 Design factor (*F*) for steel pipe.

(a) Except as otherwise provided in paragraphs (b), (c), and (d) of this section, the design factor to be used in the design formula in § 192.105 is determined in accordance with the following table:

Class location	Design factor (*F*)
1	0.72
2	0.60
3	0.50
4	0.40

(b) A design factor of 0.60 or less must be used in the design formula in § 192.105 for steel pipe in Class 1 locations that:

(1) Crosses the right-of-way of an unimproved public road, without a casing;

(2) Crosses without a casing, or makes a parallel encroachment on, the

right-of-way of either a hard surfaced road, a highway, a public street, or a railroad;

(3) Is supported by a vehicular, pedestrian, railroad, or pipeline bridge; or

(4) Is used in a fabricated assembly, (including separators, mainline valve assemblies, cross-connections, and river crossing headers) or is used within five pipe diameters in any direction from the last fitting of a fabricated assembly, other than a transition piece or an elbow used in place of a pipe bend which is not associated with a fabricated assembly.

(c) For Class 2 locations, a design factor of 0.50, or less, must be used in the design formula in § 192.105 for uncased steel pipe that crosses the right-of-way of a hard surfaced road, a highway, a public street, or a railroad.

(d) For Class 1 and Class 2 locations, a design factor of 0.50, or less, must be used in the design formula in § 192.105 for—

(1) Steel pipe in a compressor station, regulating station, or measuring station; and

(2) Steel pipe, including a pipe riser, on a platform located offshore or in inland navigable waters.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-27, 41 FR 34605, Aug. 16, 1976]

§ 192.113 Longitudinal joint factor (*E*) for steel pipe.

The longitudinal joint factor to be used in the design formula in § 192.105 is determined in accordance with the following table:

Specification	Pipe class	Longitudinal joint factor (E)
ASTM A 53	Seamless	1.00
	Electric resistance welded	1.00
	Furnace butt welded	.60
ASTM A 106	Seamless	1.00
ASTM A 333/A 333M	Seamless	1.00
	Electric resistance welded	1.00
ASTM A 381	Double submerged arc welded	1.00
ASTM A 671	Electric-fusion-welded	1.00
ASTM A 672	Electric-fusion-welded	1.00
ASTM A 691	Electric-fusion-welded	1.00
API 5 L	Seamless	1.00
	Electric resistance welded	1.00
	Electric flash welded	1.00
	Submerged arc welded	1.00
	Furnace butt welded	.60
Other	Pipe over 4 inches	.80
Other	Pipe 4 inches or less	.60

If the type of longitudinal joint cannot be determined, the joint factor to be used must not exceed that designated for "Other."

[Amdt. 192-37, 46 FR 10159, Feb. 2, 1981, as amended by Amdt. 192-51, 51 FR 15335, Apr. 23, 1986; Amdt. 192-62, 54 FR 5627, Feb. 6, 1989; 58 FR 14521, Mar. 18, 1993]

§ 192.115 Temperature derating factor (*T*) for steel pipe.

The temperature derating factor to be used in the design formula in § 192.105 is determined as follows:

Gas temperature in degrees Fahrenheit	Temperature derating factor (T)
250 or less	1.000
300	0.967
350	0.933
400	0.900
450	0.867

For intermediate gas temperatures, the derating factor is determined by interpolation.

§ 192.117 [Reserved]

§ 192.119 [Reserved]

§ 192.121 Design of plastic pipe.

Subject to the limitations of § 192.123, the design pressure for plastic pipe is determined in accordance with either of the following formulas:

$$P = 2S\frac{t}{(D-t)} - 0.32$$

$$P = \frac{2S}{(SDR-1)} - 0.32$$

Where:

P=Design pressure, gauge, kPa (psig).

S=For thermoplastic pipe, the long-term hydrostatic strength determined in accordance with the listed specification at a temperature equal to 23°C (73°F), 38°C (100°F),

49°C (120°F), or 60°C (140°F); for reinforced thermosetting plastic pipe, 75,842 kPa (11,000 psi).

t=Specified wall thickness, mm (in).

D=Specified outside diameter, mm (in).

SDR=Standard dimension ratio, the ratio of the average specified outside diameter to the minimum specified wall thickness, corresponding to a value from a common numbering system that was derived from the American National Standards Institute preferred number series 10.

[Amdt. 192-78, 61 FR 28783, June 6, 1996]

§ 192.123 Design limitations for plastic pipe.

(a) The design pressure may not exceed a gauge pressure of 689 kPa (100 psig) for plastic pipe used in:

(1) Distribution systems; or

(2) Classes 3 and 4 locations.

(b) Plastic pipe may not be used where operating temperatures of the pipe will be:

(1) Below −29°C (−20°F), or −40°C (−40°F) if all pipe and pipeline components whose operating temperature will be below −29°C (−20°F) have a temperature rating by the manufacturer consistent with that operating temperature; or

(2) Above the following applicable temperatures:

(i) For thermoplastic pipe, the temperature at which the long-term hydrostatic strength used in the design formula under § 192.121 is determined. However, if the pipe was manufactured before May 18, 1978 and its long-term hydrostatic strength was determined at 23°C (73°F), it may be used at temperatures up to 38°C (100°F).

(ii) For reinforced thermosetting plastic pipe, 66°C (150°F).

(c) The wall thickness for thermoplastic pipe may not be less than 1.57 millimeters (0.062 in.).

(d) The wall thickness for reinforced thermosetting plastic pipe may not be less than that listed in the following table:

Nominal size in inches	Minimum wall thickness in millimeters (inches)
2	1.52 (0.060)
3	1.52 (0.060)
4	1.78 (0.070)
6	2.54 (0.100)

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-31, 43 FR 13883, Apr. 3, 1978; Amdt. 192-78, 61 FR 28783, June 6, 1996]

§ 192.125 Design of copper pipe.

(a) Copper pipe used in mains must have a minimum wall thickness of 0.065 inches and must be hard drawn.

(b) Copper pipe used in service lines must have wall thickness not less than that indicated in the following table:

Standard size (inch)	Nominal O.D. (inch)	Wall thickness (inch)	
		Nominal	Tolerance
½	.625	.040	.0035
⅝	.750	.042	.0035
¾	.875	.045	.004
1	1.125	.050	.004
1¼	1.375	.055	.0045
1½	1.625	.060	.0045

(c) Copper pipe used in mains and service lines may not be used at pressures in excess of 100 p.s.i.g.

(d) Copper pipe that does not have an internal corrosion resistant lining may not be used to carry gas that has an average hydrogen sulfide content of more than 0.3 grains per 100 standard cubic feet of gas.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-62, 54 FR 5628, Feb. 6, 1989]

Subpart D—Design of Pipeline Components

§ 192.141 Scope.

This subpart prescribes minimum requirements for the design and installation of pipeline components and facilities. In addition, it prescribes requirements relating to protection against accidental overpressuring.

§ 192.143 General requirements.

Each component of a pipeline must be able to withstand operating pressures and other anticipated loadings without impairment of its serviceability with unit stresses equivalent to those allowed for comparable material in pipe in the same location and kind

of service. However, if design based upon unit stresses is impractical for a particular component, design may be based upon a pressure rating established by the manufacturer by pressure testing that component or a prototype of the component.

[Amdt. 48, 49 FR 19824, May 10, 1984]

§ 192.144 Qualifying metallic components.

Notwithstanding any requirement of this subpart which incorporates by reference an edition of a document listed in appendix A of this part, a metallic component manufactured in accordance with any other edition of that document is qualified for use under this part if—

(a) It can be shown through visual inspection of the cleaned component that no defect exists which might impair the strength or tightness of the component; and

(b) The edition of the document under which the component was manufactured has equal or more stringent requirements for the following as an edition of that document currently or previously listed in appendix A:

(1) Pressure testing;

(2) Materials; and

(3) Pressure and temperature ratings.

[Amdt. 192-45, 48 FR 30639, July 5, 1983]

§ 192.145 Valves.

(a) Except for cast iron and plastic valves, each valve must meet the minimum requirements, or equivalent, of API 6D. A valve may not be used under operating conditions that exceed the applicable pressure-temperature ratings contained in those requirements.

(b) Each cast iron and plastic valve must comply with the following:

(1) The valve must have a maximum service pressure rating for temperatures that equal or exceed the maximum service temperature.

(2) The valve must be tested as part of the manufacturing, as follows:

(i) With the valve in the fully open position, the shell must be tested with no leakage to a pressure at least 1.5 times the maximum service rating.

(ii) After the shell test, the seat must be tested to a pressure not less than 1.5 times the maximum service pressure rating. Except for swing check valves, test pressure during the seat test must be applied successively on each side of the closed valve with the opposite side open. No visible leakage is permitted.

(iii) After the last pressure test is completed, the valve must be operated through its full travel to demonstrate freedom from interference.

(c) Each valve must be able to meet the anticipated operating conditions.

(d) No valve having shell components made of ductile iron may be used at pressures exceeding 80 percent of the pressure ratings for comparable steel valves at their listed temperature. However, a valve having shell components made of ductile iron may be used at pressures up to 80 percent of the pressure ratings for comparable steel valves at their listed temperature, if:

(1) The temperature-adjusted service pressure does not exceed 1,000 p.s.i.g.; and

(2) Welding is not used on any ductile iron component in the fabrication of the valve shells or their assembly.

(e) No valve having pressure containing parts made of ductile iron may be used in the gas pipe components of compressor stations.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-62, 54 FR 5628, Feb. 6, 1989]

§ 192.147 Flanges and flange accessories.

(a) Each flange or flange accessory (other than cast iron) must meet the minimum requirements of ASME/ANSI B16.5, MSS SP-44, or the equivalent.

(b) Each flange assembly must be able to withstand the maximum pressure at which the pipeline is to be operated and to maintain its physical and chemical properties at any temperature to which it is anticipated that it might be subjected in service.

(c) Each flange on a flanged joint in cast iron pipe must conform in dimensions, drilling, face and gasket design to ASME/ANSI B16.1 and be cast integrally with the pipe, valve, or fitting.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-62, 54 FR 5628, Feb. 6, 1989; 58 FR 14521, Mar. 18, 1993]

§ 192.149 Standard fittings.

(a) The minimum metal thickness of threaded fittings may not be less than

specified for the pressures and temperatures in the applicable standards referenced in this part, or their equivalent.

(b) Each steel butt-welding fitting must have pressure and temperature ratings based on stresses for pipe of the same or equivalent material. The actual bursting strength of the fitting must at least equal the computed bursting strength of pipe of the designated material and wall thickness, as determined by a prototype that was tested to at least the pressure required for the pipeline to which it is being added.

§ 192.150 Passage of internal inspection devices.

(a) Except as provided in paragraphs (b) and (c) of this section, each new transmission line and each line section of a transmission line where the line pipe, valve, fitting, or other line component is replaced must be designed and constructed to accommodate the passage of instrumented internal inspection devices.

(b) This section does not apply to: (1) Manifolds;

(2) Station piping such as at compressor stations, meter stations, or regulator stations;

(3) Piping associated with storage facilities, other than a continuous run of transmission line between a compressor station and storage facilities;

(4) Cross-overs;

(5) Sizes of pipe for which an instrumented internal inspection device is not commercially available;

(6) Transmission lines, operated in conjunction with a distribution system which are installed in Class 4 locations;

(7) Offshore pipelines, other than transmission lines 10 inches or greater in nominal diameter, that transport gas to onshore facilities; and

(8) Other piping that, under § 190.9 of this chapter, the Administrator finds in a particular case would be impracticable to design and construct to accommodate the passage of instrumented internal inspection devices.

(c) An operator encountering emergencies, construction time constraints or other unforeseen construction problems need not construct a new or replacement segment of a transmission line to meet paragraph (a) of this section, if the operator determines and documents why an impracticability prohibits compliance with paragraph (a) of this section. Within 30 days after discovering the emergency or construction problem the operator must petition, under § 190.9 of this chapter, for approval that design and construction to accommodate passage of instrumented internal inspection devices would be impracticable. If the petition is denied, within 1 year after the date of the notice of the denial, the operator must modify that segment to allow passage of instrumented internal inspection devices.

[Amdt. 192-72, 59 FR 17281, Apr. 12, 1994]

§ 192.151 Tapping.

(a) Each mechanical fitting used to make a hot tap must be designed for at least the operating pressure of the pipeline.

(b) Where a ductile iron pipe is tapped, the extent of full-thread engagement and the need for the use of outside-sealing service connections, tapping saddles, or other fixtures must be determined by service conditions.

(c) Where a threaded tap is made in cast iron or ductile iron pipe, the diameter of the tapped hole may not be more than 25 percent of the nominal diameter of the pipe unless the pipe is reinforced, except that

(1) Existing taps may be used for replacement service, if they are free of cracks and have good threads; and

(2) A 1¼-inch tap may be made in a 4-inch cast iron or ductile iron pipe, without reinforcement.

However, in areas where climate, soil, and service conditions may create unusual external stresses on cast iron pipe, unreinforced taps may be used only on 6-inch or larger pipe.

§ 192.153 Components fabricated by welding.

(a) Except for branch connections and assemblies of standard pipe and fittings joined by circumferential welds, the design pressure of each component fabricated by welding, whose strength cannot be determined, must be established in accordance with paragraph UG-101 of section VIII, Division 1, of

the ASME Boiler and Pressure Vessel Code.

(b) Each prefabricated unit that uses plate and longitudinal seams must be designed, constructed, and tested in accordance with section I, section VIII, Division 1, or section VIII, Division 2 of the ASME Boiler and Pressure Vessel Code, except for the following:

(1) Regularly manufactured butt-welding fittings.

(2) Pipe that has been produced and tested under a specification listed in appendix B to this part.

(3) Partial assemblies such as split rings or collars.

(4) Prefabricated units that the manufacturer certifies have been tested to at least twice the maximum pressure to which they will be subjected under the anticipated operating conditions.

(c) Orange-peel bull plugs and orange-peel swages may not be used on pipelines that are to operate at a hoop stress of 20 percent or more of the SMYS of the pipe.

(d) Except for flat closures designed in accordance with section VIII of the ASME Boiler and Pressure Code, flat closures and fish tails may not be used on pipe that either operates at 100 p.s.i.g., or more, or is more than 3 inches nominal diameter.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-1, 35 FR 17660, Nov. 17, 1970; 58 FR 14521, Mar. 18, 1993; Amdt. 192-68, 58 FR 45268, Aug. 27, 1993]

§ 192.155 Welded branch connections.

Each welded branch connection made to pipe in the form of a single connection, or in a header or manifold as a series of connections, must be designed to ensure that the strength of the pipeline system is not reduced, taking into account the stresses in the remaining pipe wall due to the opening in the pipe or header, the shear stresses produced by the pressure acting on the area of the branch opening, and any external loadings due to thermal movement, weight, and vibration.

§ 192.157 Extruded outlets.

Each extruded outlet must be suitable for anticipated service conditions and must be at least equal to the design strength of the pipe and other fittings in the pipeline to which it is attached.

§ 192.159 Flexibility.

Each pipeline must be designed with enough flexibility to prevent thermal expansion or contraction from causing excessive stresses in the pipe or components, excessive bending or unusual loads at joints, or undesirable forces or moments at points of connection to equipment, or at anchorage or guide points.

§ 192.161 Supports and anchors.

(a) Each pipeline and its associated equipment must have enough anchors or supports to:

(1) Prevent undue strain on connected equipment;

(2) Resist longitudinal forces caused by a bend or offset in the pipe; and

(3) Prevent or damp out excessive vibration.

(b) Each exposed pipeline must have enough supports or anchors to protect the exposed pipe joints from the maximum end force caused by internal pressure and any additional forces caused by temperature expansion or contraction or by the weight of the pipe and its contents.

(c) Each support or anchor on an exposed pipeline must be made of durable, noncombustible material and must be designed and installed as follows:

(1) Free expansion and contraction of the pipeline between supports or anchors may not be restricted.

(2) Provision must be made for the service conditions involved.

(3) Movement of the pipeline may not cause disengagement of the support equipment.

(d) Each support on an exposed pipeline operated at a stress level of 50 percent or more of SMYS must comply with the following:

(1) A structural support may not be welded directly to the pipe.

(2) The support must be provided by a member that completely encircles the pipe.

(3) If an encircling member is welded to a pipe, the weld must be continuous and cover the entire circumference.

(e) Each underground pipeline that is connected to a relatively unyielding line or other fixed object must have

enough flexibility to provide for possible movement, or it must have an anchor that will limit the movement of the pipeline.

(f) Except for offshore pipelines, each underground pipeline that is being connected to new branches must have a firm foundation for both the header and the branch to prevent detrimental lateral and vertical movement.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-58, 53 FR 1635, Jan. 21, 1988]

§ 192.163 Compressor stations: Design and construction.

(a) *Location of compressor building.* Except for a compressor building on a platform located offshore or in inland navigable waters, each main compressor building of a compressor station must be located on property under the control of the operator. It must be far enough away from adjacent property, not under control of the operator, to minimize the possibility of fire being communicated to the compressor building from structures on adjacent property. There must be enough open space around the main compressor building to allow the free movement of fire-fighting equipment.

(b) *Building construction.* Each building on a compressor station site must be made of noncombustible materials if it contains either—

(1) Pipe more than 2 inches in diameter that is carrying gas under pressure; or

(2) Gas handling equipment other than gas utilization equipment used for domestic purposes.

(c) *Exits.* Each operating floor of a main compressor building must have at least two separated and unobstructed exits located so as to provide a convenient possibility of escape and an unobstructed passage to a place of safety. Each door latch on an exit must be of a type which can be readily opened from the inside without a key. Each swinging door located in an exterior wall must be mounted to swing outward.

(d) *Fenced areas.* Each fence around a compressor station must have at least two gates located so as to provide a convenient opportunity for escape to a place of safety, or have other facilities affording a similarly convenient exit from the area. Each gate located within 200 feet of any compressor plant building must open outward and, when occupied, must be openable from the inside without a key.

(e) *Electrical facilities.* Electrical equipment and wiring installed in compressor stations must conform to the National Electrical Code, ANSI/NFPA 70, so far as that code is applicable.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-27, 41 FR 34605, Aug. 16, 1976; Amdt. 192-37, 46 FR 10159, Feb. 2, 1981; 58 FR 14521, Mar. 18, 1993]

§ 192.165 Compressor stations: Liquid removal.

(a) Where entrained vapors in gas may liquefy under the anticipated pressure and temperature conditions, the compressor must be protected against the introduction of those liquids in quantities that could cause damage.

(b) Each liquid separator used to remove entrained liquids at a compressor station must:

(1) Have a manually operable means of removing these liquids.

(2) Where slugs of liquid could be carried into the compressors, have either automatic liquid removal facilities, an automatic compressor shutdown device, or a high liquid level alarm; and

(3) Be manufactured in accordance with section VIII of the ASME Boiler and Pressure Vessel Code, except that liquid separators constructed of pipe and fittings without internal welding must be fabricated with a design factor of 0.4, or less.

§ 192.167 Compressor stations: Emergency shutdown.

(a) Except for unattended field compressor stations of 1,000 horsepower or less, each compressor station must have an emergency shutdown system that meets the following:

(1) It must be able to block gas out of the station and blow down the station piping.

(2) It must discharge gas from the blowdown piping at a location where the gas will not create a hazard.

(3) It must provide means for the shutdown of gas compressing equipment, gas fires, and electrical facilities in the vicinity of gas headers and in the compressor building, except that:

(i) Electrical circuits that supply emergency lighting required to assist station personnel in evacuating the compressor building and the area in the vicinity of the gas headers must remain energized; and

(ii) Electrical circuits needed to protect equipment from damage may remain energized.

(4) It must be operable from at least two locations, each of which is:

(i) Outside the gas area of the station;

(ii) Near the exit gates, if the station is fenced, or near emergency exits, if not fenced; and

(iii) Not more than 500 feet from the limits of the station.

(b) If a compressor station supplies gas directly to a distribution system with no other adequate source of gas available, the emergency shutdown system must be designed so that it will not function at the wrong time and cause an unintended outage on the distribution system.

(c) On a platform located offshore or in inland navigable waters, the emergency shutdown system must be designed and installed to actuate automatically by each of the following events:

(1) In the case of an unattended compressor station:

(i) When the gas pressure equals the maximum allowable operating pressure plus 15 percent; or

(ii) When an uncontrolled fire occurs on the platform; and

(2) In the case of a compressor station in a building:

(i) When an uncontrolled fire occurs in the building; or

(ii) When the concentration of gas in air reaches 50 percent or more of the lower explosive limit in a building which has a source of ignition.

For the purpose of paragraph (c)(2)(ii) of this section, an electrical facility which conforms to Class 1, Group D, of the National Electrical Code is not a source of ignition.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-27, 41 FR 34605, Aug. 16, 1976]

§ 192.169 Compressor stations: Pressure limiting devices.

(a) Each compressor station must have pressure relief or other suitable protective devices of sufficient capacity and sensitivity to ensure that the maximum allowable operating pressure of the station piping and equipment is not exceeded by more than 10 percent.

(b) Each vent line that exhausts gas from the pressure relief valves of a compressor station must extend to a location where the gas may be discharged without hazard.

§ 192.171 Compressor stations: Additional safety equipment.

(a) Each compressor station must have adequate fire protection facilities. If fire pumps are a part of these facilities, their operation may not be affected by the emergency shutdown system.

(b) Each compressor station prime mover, other than an electrical induction or synchronous motor, must have an automatic device to shut down the unit before the speed of either the prime mover or the driven unit exceeds a maximum safe speed.

(c) Each compressor unit in a compressor station must have a shutdown or alarm device that operates in the event of inadequate cooling or lubrication of the unit.

(d) Each compressor station gas engine that operates with pressure gas injection must be equipped so that stoppage of the engine automatically shuts off the fuel and vents the engine distribution manifold.

(e) Each muffler for a gas engine in a compressor station must have vent slots or holes in the baffles of each compartment to prevent gas from being trapped in the muffler.

§ 192.173 Compressor stations: Ventilation.

Each compressor station building must be ventilated to ensure that employees are not endangered by the accumulation of gas in rooms, sumps, attics, pits, or other enclosed places.

§ 192.175 Pipe-type and bottle-type holders.

(a) Each pipe-type and bottle-type holder must be designed so as to prevent the accumulation of liquids in the

holder, in connecting pipe, or in auxiliary equipment, that might cause corrosion or interfere with the safe operation of the holder.

(b) Each pipe-type or bottle-type holder must have minimum clearance from other holders in accordance with the following formula:

$$C=(3D\times P\times F)/1{,}000$$

In which:

C=Minimum clearance between pipe containers or bottles in inches.
D=Outside diameter of pipe containers or bottles in inches.
P=Maximum allowable operating pressure, p.s.i.g.
F=Design factor as set forth in §192.111 of this part.

§ 192.177 Additional provisions for bottle-type holders.

(a) Each bottle-type holder must be—

(1) Located on a site entirely surrounded by fencing that prevents access by unauthorized persons and with minimum clearance from the fence as follows:

Maximum allowable operating pressure	Minimum clearance (feet)
Less than 1,000 p.s.i.g	25
1,000 p.s.i.g. or more	100

(2) Designed using the design factors set forth in §192.111; and

(3) Buried with a minimum cover in accordance with §192.327.

(b) Each bottle-type holder manufactured from steel that is not weldable under field conditions must comply with the following:

(1) A bottle-type holder made from alloy steel must meet the chemical and tensile requirements for the various grades of steel in ASTM A 372/A 372M.

(2) The actual yield-tensile ratio of the steel may not exceed 0.85.

(3) Welding may not be performed on the holder after it has been heat treated or stress relieved, except that copper wires may be attached to the small diameter portion of the bottle end closure for cathodic protection if a localized thermit welding process is used.

(4) The holder must be given a mill hydrostatic test at a pressure that produces a hoop stress at least equal to 85 percent of the SMYS.

(5) The holder, connection pipe, and components must be leak tested after installation as required by subpart J of this part.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192–58, 53 FR 1635, Jan. 21, 1988; Amdt 192–62, 54 FR 5628, Feb. 6, 1989; 58 FR 14521, Mar. 18, 1993]

§ 192.179 Transmission line valves.

(a) Each transmission line, other than offshore segments, must have sectionalizing block valves spaced as follows, unless in a particular case the Administrator finds that alternative spacing would provide an equivalent level of safety:

(1) Each point on the pipeline in a Class 4 location must be within 2½ miles of a valve.

(2) Each point on the pipeline in a Class 3 location must be within 4 miles of a valve.

(3) Each point on the pipeline in a Class 2 location must be within 7½ miles of a valve.

(4) Each point on the pipeline in a Class 1 location must be within 10 miles of a valve.

(b) Each sectionalizing block valve on a transmission line, other than offshore segments, must comply with the following:

(1) The valve and the operating device to open or close the valve must be readily accessible and protected from tampering and damage.

(2) The valve must be supported to prevent settling of the valve or movement of the pipe to which it is attached.

(c) Each section of a transmission line, other than offshore segments, between main line valves must have a blowdown valve with enough capacity to allow the transmission line to be blown down as rapidly as practicable. Each blowdown discharge must be located so the gas can be blown to the atmosphere without hazard and, if the transmission line is adjacent to an overhead electric line, so that the gas is directed away from the electrical conductors.

(d) Offshore segments of transmission lines must be equipped with valves or other components to shut off the flow

of gas to an offshore platform in an emergency.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-27, 41 FR 34606, Aug. 16, 1976; Amdt. 192-78, 61 FR 28784, June 6, 1996]

§ 192.181 Distribution line valves.

(a) Each high-pressure distribution system must have valves spaced so as to reduce the time to shut down a section of main in an emergency. The valve spacing is determined by the operating pressure, the size of the mains, and the local physical conditions.

(b) Each regulator station controlling the flow or pressure of gas in a distribution system must have a valve installed on the inlet piping at a distance from the regulator station sufficient to permit the operation of the valve during an emergency that might preclude access to the station.

(c) Each valve on a main installed for operating or emergency purposes must comply with the following:

(1) The valve must be placed in a readily accessible location so as to facilitate its operation in an emergency.

(2) The operating stem or mechanism must be readily accessible.

(3) If the valve is installed in a buried box or enclosure, the box or enclosure must be installed so as to avoid transmitting external loads to the main.

§ 192.183 Vaults: Structural design requirements.

(a) Each underground vault or pit for valves, pressure relieving, pressure limiting, or pressure regulating stations, must be able to meet the loads which may be imposed upon it, and to protect installed equipment.

(b) There must be enough working space so that all of the equipment required in the vault or pit can be properly installed, operated, and maintained.

(c) Each pipe entering, or within, a regulator vault or pit must be steel for sizes 10 inch, and less, except that control and gage piping may be copper. Where pipe extends through the vault or pit structure, provision must be made to prevent the passage of gases or liquids through the opening and to avert strains in the pipe.

§ 192.185 Vaults: Accessibility.

Each vault must be located in an accessible location and, so far as practical, away from:

(a) Street intersections or points where traffic is heavy or dense;

(b) Points of minimum elevation, catch basins, or places where the access cover will be in the course of surface waters; and

(c) Water, electric, steam, or other facilities.

§ 192.187 Vaults: Sealing, venting, and ventilation.

Each underground vault or closed top pit containing either a pressure regulating or reducing station, or a pressure limiting or relieving station, must be sealed, vented or ventilated as follows:

(a) When the internal volume exceeds 200 cubic feet:

(1) The vault or pit must be ventilated with two ducts, each having at least the ventilating effect of a pipe 4 inches in diameter;

(2) The ventilation must be enough to minimize the formation of combustible atmosphere in the vault or pit; and

(3) The ducts must be high enough above grade to disperse any gas-air mixtures that might be discharged.

(b) When the internal volume is more than 75 cubic feet but less than 200 cubic feet:

(1) If the vault or pit is sealed, each opening must have a tight fitting cover without open holes through which an explosive mixture might be ignited, and there must be a means for testing the internal atmosphere before removing the cover;

(2) If the vault or pit is vented, there must be a means of preventing external sources of ignition from reaching the vault atmosphere; or

(3) If the vault or pit is ventilated, paragraph (a) or (c) of this section applies.

(c) If a vault or pit covered by paragraph (b) of this section is ventilated by openings in the covers or gratings and the ratio of the internal volume, in cubic feet, to the effective ventilating area of the cover or grating, in square feet, is less than 20 to 1, no additional ventilation is required.

§ 192.189 Vaults: Drainage and waterproofing.

(a) Each vault must be designed so as to minimize the entrance of water.

(b) A vault containing gas piping may not be connected by means of a drain connection to any other underground structure.

(c) Electrical equipment in vaults must conform to the applicable requirements of Class I, Group D, of the National Electrical Code, ANSI/NFPA 70.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-76, 61 FR 26122, May 24, 1996]

§ 192.191 Design pressure of plastic fittings.

(a) Thermosetting fittings for plastic pipe must conform to ASTM D 2517.

(b) Thermoplastic fittings for plastic pipe must conform to ASTM D 2513.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-58, 53 FR 1635, Jan. 21, 1988]

§ 192.193 Valve installation in plastic pipe.

Each valve installed in plastic pipe must be designed so as to protect the plastic material against excessive torsional or shearing loads when the valve or shutoff is operated, and from any other secondary stresses that might be exerted through the valve or its enclosure.

§ 192.195 Protection against accidental overpressuring.

(a) *General requirements.* Except as provided in § 192.197, each pipeline that is connected to a gas source so that the maximum allowable operating pressure could be exceeded as the result of pressure control failure or of some other type of failure, must have pressure relieving or pressure limiting devices that meet the requirements of §§ 192.199 and 192.201.

(b) *Additional requirements for distribution systems.* Each distribution system that is supplied from a source of gas that is at a higher pressure than the maximum allowable operating pressure for the system must—

(1) Have pressure regulation devices capable of meeting the pressure, load, and other service conditions that will be experienced in normal operation of the system, and that could be activated in the event of failure of some portion of the system; and

(2) Be designed so as to prevent accidental overpressuring.

§ 192.197 Control of the pressure of gas delivered from high-pressure distribution systems.

(a) If the maximum actual operating pressure of the distribution system is under 60 p.s.i.g. and a service regulator having the following characteristics is used, no other pressure limiting device is required:

(1) A regulator capable of reducing distribution line pressure to pressures recommended for household appliances.

(2) A single port valve with proper orifice for the maximum gas pressure at the regulator inlet.

(3) A valve seat made of resilient material designed to withstand abrasion of the gas, impurities in gas, cutting by the valve, and to resist permanent deformation when it is pressed against the valve port.

(4) Pipe connections to the regulator not exceeding 2 inches in diameter.

(5) A regulator that, under normal operating conditions, is able to regulate the downstream pressure within the necessary limits of accuracy and to limit the build-up of pressure under no-flow conditions to prevent a pressure that would cause the unsafe operation of any connected and properly adjusted gas utilization equipment.

(6) A self-contained service regulator with no external static or control lines.

(b) If the maximum actual operating pressure of the distribution system is 60 p.s.i.g., or less, and a service regulator that does not have all of the characteristics listed in paragraph (a) of this section is used, or if the gas contains materials that seriously interfere with the operation of service regulators, there must be suitable protective devices to prevent unsafe overpressuring of the customer's appliances if the service regulator fails.

(c) If the maximum actual operating pressure of the distribution system exceeds 60 p.s.i.g., one of the following methods must be used to regulate and limit, to the maximum safe value, the pressure of gas delivered to the customer:

(1) A service regulator having the characteristics listed in paragraph (a) of this section, and another regulator located upstream from the service regulator. The upstream regulator may not be set to maintain a pressure higher than 60 p.s.i.g. A device must be installed between the upstream regulator and the service regulator to limit the pressure on the inlet of the service regulator to 60 p.s.i.g. or less in case the upstream regulator fails to function properly. This device may be either a relief valve or an automatic shutoff that shuts, if the pressure on the inlet of the service regulator exceeds the set pressure (60 p.s.i.g. or less), and remains closed until manually reset.

(2) A service regulator and a monitoring regulator set to limit, to a maximum safe value, the pressure of the gas delivered to the customer.

(3) A service regulator with a relief valve vented to the outside atmosphere, with the relief valve set to open so that the pressure of gas going to the customer does not exceed a maximum safe value. The relief valve may either be built into the service regulator or it may be a separate unit installed downstream from the service regulator. This combination may be used alone only in those cases where the inlet pressure on the service regulator does not exceed the manufacturer's safe working pressure rating of the service regulator, and may not be used where the inlet pressure on the service regulator exceeds 125 p.s.i.g. For higher inlet pressures, the methods in paragraph (c) (1) or (2) of this section must be used.

(4) A service regulator and an automatic shutoff device that closes upon a rise in pressure downstream from the regulator and remains closed until manually reset.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-1, 35 FR 17660, Nov. 7, 1970]

§ 192.199 Requirements for design of pressure relief and limiting devices.

Except for rupture discs, each pressure relief or pressure limiting device must:

(a) Be constructed of materials such that the operation of the device will not be impaired by corrosion;

(b) Have valves and valve seats that are designed not to stick in a position that will make the device inoperative;

(c) Be designed and installed so that it can be readily operated to determine if the valve is free, can be tested to determine the pressure at which it will operate, and can be tested for leakage when in the closed position;

(d) Have support made of noncombustible material;

(e) Have discharge stacks, vents, or outlet ports designed to prevent accumulation of water, ice, or snow, located where gas can be discharged into the atmosphere without undue hazard;

(f) Be designed and installed so that the size of the openings, pipe, and fittings located between the system to be protected and the pressure relieving device, and the size of the vent line, are adequate to prevent hammering of the valve and to prevent impairment of relief capacity;

(g) Where installed at a district regulator station to protect a pipeline system from overpressuring, be designed and installed to prevent any single incident such as an explosion in a vault or damage by a vehicle from affecting the operation of both the overpressure protective device and the district regulator; and

(h) Except for a valve that will isolate the system under protection from its source of pressure, be designed to prevent unauthorized operation of any stop valve that will make the pressure relief valve or pressure limiting device inoperative.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-1, 35 FR 17660, Nov. 17, 1970]

§ 192.201 Required capacity of pressure relieving and limiting stations.

(a) Each pressure relief station or pressure limiting station or group of those stations installed to protect a pipeline must have enough capacity, and must be set to operate, to insure the following:

(1) In a low pressure distribution system, the pressure may not cause the unsafe operation of any connected and properly adjusted gas utilization equipment.

(2) In pipelines other than a low pressure distribution system:

(i) If the maximum allowable operating pressure is 60 p.s.i.g. or more, the pressure may not exceed the maximum allowable operating pressure plus 10 percent, or the pressure that produces a hoop stress of 75 percent of SMYS, whichever is lower;

(ii) If the maximum allowable operating pressure is 12 p.s.i.g. or more, but less than 60 p.s.i.g., the pressure may not exceed the maximum allowable operating pressure plus 6 p.s.i.g.; or

(iii) If the maximum allowable operating pressure is less than 12 p.s.i.g., the pressure may not exceed the maximum allowable operating pressure plus 50 percent.

(b) When more than one pressure regulating or compressor station feeds into a pipeline, relief valves or other protective devices must be installed at each station to ensure that the complete failure of the largest capacity regulator or compressor, or any single run of lesser capacity regulators or compressors in that station, will not impose pressures on any part of the pipeline or distribution system in excess of those for which it was designed, or against which it was protected, whichever is lower.

(c) Relief valves or other pressure limiting devices must be installed at or near each regulator station in a low-pressure distribution system, with a capacity to limit the maximum pressure in the main to a pressure that will not exceed the safe operating pressure for any connected and properly adjusted gas utilization equipment.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-9, 37 FR 20827, Oct. 4, 1972]

§ 192.203 Instrument, control, and sampling pipe and components.

(a) *Applicability.* This section applies to the design of instrument, control, and sampling pipe and components. It does not apply to permanently closed systems, such as fluid-filled temperature-responsive devices.

(b) *Materials and design.* All materials employed for pipe and components must be designed to meet the particular conditions of service and the following:

(1) Each takeoff connection and attaching boss, fitting, or adapter must be made of suitable material, be able to withstand the maximum service pressure and temperature of the pipe or equipment to which it is attached, and be designed to satisfactorily withstand all stresses without failure by fatigue.

(2) Except for takeoff lines that can be isolated from sources of pressure by other valving, a shutoff valve must be installed in each takeoff line as near as practicable to the point of takeoff. Blowdown valves must be installed where necessary.

(3) Brass or copper material may not be used for metal temperatures greater than 400° F.

(4) Pipe or components that may contain liquids must be protected by heating or other means from damage due to freezing.

(5) Pipe or components in which liquids may accumulate must have drains or drips.

(6) Pipe or components subject to clogging from solids or deposits must have suitable connections for cleaning.

(7) The arrangement of pipe, components, and supports must provide safety under anticipated operating stresses.

(8) Each joint between sections of pipe, and between pipe and valves or fittings, must be made in a manner suitable for the anticipated pressure and temperature condition. Slip type expansion joints may not be used. Expansion must be allowed for by providing flexibility within the system itself.

(9) Each control line must be protected from anticipated causes of damage and must be designed and installed to prevent damage to any one control line from making both the regulator and the over-pressure protective device inoperative.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-78, 61 FR 28784, June 6, 1996]

Subpart E—Welding of Steel in Pipelines

§ 192.221 Scope.

(a) This subpart prescribes minimum requirements for welding steel materials in pipelines.

(b) This subpart does not apply to welding that occurs during the manufacture of steel pipe or steel pipeline components.

§ 192.225 Welding—General.

(a) Welding must be performed by a qualified welder in accordance with welding procedures qualified to produce welds meeting the requirements of this subpart. The quality of the test welds used to qualify the procedure shall be determined by destructive testing.

(b) Each welding procedure must be recorded in detail, including the results of the qualifying tests. This record must be retained and followed whenever the procedure is used.

[Amdt. 192-52, 51 FR 20297, June 4, 1986]

§ 192.227 Qualification of welders.

(a) Except as provided in paragraph (b) of this section, each welder must be qualified in accordance with section 3 of API Standard 1104 or section IX of the ASME Boiler and Pressure Vessel Code. However, a welder qualified under an earlier edition than listed in appendix A may weld but may not requalify under that earlier edition.

(b) A welder may qualify to perform welding on pipe to be operated at a pressure that produces a hoop stress of less than 20 percent of SMYS by performing an acceptable test weld, for the process to be used, under the test set forth in section I of Appendix C of this part. Each welder who is to make a welded service line connection to a main must first perform an acceptable test weld under section II of Appendix C of this part as a requirement of the qualifying test.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-43, 47 FR 46851, Oct. 21, 1982; Amdt. 192-52, 51 FR 20297, June 4, 1986; Amdt. 192-78, 61 FR 28784, June 6, 1996]

§ 192.229 Limitations on welders.

(a) No welder whose qualification is based on nondestructive testing may weld compressor station pipe and components.

(b) No welder may weld with a particular welding process unless, within the preceding 6 calendar months, he has engaged in welding with that process.

(c) A welder qualified under § 192.227(a)—

(1) May not weld on pipe to be operated at a pressure that produces a hoop stress of 20 percent or more of SMYS unless within the preceding 6 calendar months the welder has had one weld tested and found acceptable under section 3 or 6 of API Standard 1104, except that a welder qualified under an earlier edition previously listed in Appendix A of this part may weld but may not requalify under that earlier edition; and

(2) May not weld on pipe to be operated at a pressure that produces a hoop stress of less than 20 percent of SMYS unless the welder is tested in accordance with paragraph (c)(1) of this section or requalifies under paragraph (d)(1) or (d)(2) of this section.

(d) A welder qualified under § 192.227(b) may not weld unless—

(1) Within the preceding 15 calendar months, but at least once each calendar year, the welder has requalified under § 192.227(b); or

(2) Within the preceding 7½ calendar months, but at least twice each calendar year, the welder has had—

(i) A production weld cut out, tested, and found acceptable in accordance with the qualifying test; or

(ii) For welders who work only on service lines 2 inches or smaller in diameter, two sample welds tested and found acceptable in accordance with the test in section III of Appendix C of this part.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-37, 46 FR 10159, Feb. 2, 1981; Amdt. 192-78, 61 FR 28784, June 6, 1996]

§ 192.231 Protection from weather.

The welding operation must be protected from weather conditions that would impair the quality of the completed weld.

§ 192.233 Miter joints.

(a) A miter joint on steel pipe to be operated at a pressure that produces a hoop stress of 30 percent or more of SMYS may not deflect the pipe more than 3°.

(b) A miter joint on steel pipe to be operated at a pressure that produces a hoop stress of less than 30 percent, but more than 10 percent, of SMYS may not deflect the pipe more than 12½° and must be a distance equal to one pipe diameter or more away from any other miter joint, as measured from the crotch of each joint.

(c) A miter joint on steel pipe to be operated at a pressure that produces a hoop stress of 10 percent or less of SMYS may not deflect the pipe more than 90°.

§ 192.235 Preparation for welding.

Before beginning any welding, the welding surfaces must be clean and free of any material that may be detrimental to the weld, and the pipe or component must be aligned to provide the most favorable condition for depositing the root bead. This alignment must be preserved while the root bead is being deposited.

§ 192.241 Inspection and test of welds.

(a) Visual inspection of welding must be conducted to insure that:

(1) The welding is performed in accordance with the welding procedure; and

(2) The weld is acceptable under paragraph (c) of this section.

(b) The welds on a pipeline to be operated at a pressure that produces a hoop stress of 20 percent or more of SMYS must be nondestructively tested in accordance with § 192.243, except that welds that are visually inspected and approved by a qualified welding inspector need not be nondestructively tested if:

(1) The pipe has a nominal diameter of less than 6 inches; or

(2) The pipeline is to be operated at a pressure that produces a hoop stress of less than 40 percent of SMYS and the welds are so limited in number that nondestructive testing is impractical.

(c) The acceptability of a weld that is nondestructively tested or visually inspected is determined according to the standards in section 6 of API Standard 1104. However, if a girth weld is unacceptable under those standards for a reason other than a crack, and if the Appendix to API Standard 1104 applies to the weld, the acceptability of the weld may be further determined under that Appendix.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-37, 46 FR 10160, Feb. 2, 1981; Amdt. 192-78, 61 FR 28784, June 6, 1996]

§ 192.243 Nondestructive testing.

(a) Nondestructive testing of welds must be performed by any process, other than trepanning, that will clearly indicate defects that may affect the integrity of the weld.

(b) Nondestructive testing of welds must be performed:

(1) In accordance with written procedures; and

(2) By persons who have been trained and qualified in the established procedures and with the equipment employed in testing.

(c) Procedures must be established for the proper interpretation of each nondestructive test of a weld to ensure the acceptability of the weld under § 192.241(c).

(d) When nondestructive testing is required under § 192.241(b), the following percentages of each day's field butt welds, selected at random by the operator, must be nondestructively tested over their entire circumference:

(1) In Class 1 locations, except offshore, at least 10 percent.

(2) In Class 2 locations, at least 15 percent.

(3) In Class 3 and Class 4 locations, at crossings of major or navigable rivers, offshore, and within railroad or public highway rights-of-way, including tunnels, bridges, and overhead road crossings, 100 percent unless impracticable, in which case at least 90 percent. Nondestructive testing must be impracticable for each girth weld not tested.

(4) At pipeline tie-ins, including tie-ins of replacement sections, 100 percent.

(e) Except for a welder whose work is isolated from the principal welding activity, a sample of each welder's work for each day must be nondestructively tested, when nondestructive testing is required under § 192.241(b).

(f) When nondestructive testing is required under § 192.241(b), each operator must retain, for the life of the pipeline, a record showing by milepost, engineering station, or by geographic feature, the number of girth welds made, the number nondestructively tested, the number rejected, and the disposition of the rejects.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-27, 41 FR 34606, Aug. 16, 1976; Amdt. 192-50, 50 FR 37192, Sept. 12, 1985; Amdt. 192-78, 61 FR 28784, June 6, 1996]

§ 192.245 Repair or removal of defects.

(a) Each weld that is unacceptable under § 192.241(c) must be removed or repaired. Except for welds on an offshore pipeline being installed from a pipeline vessel, a weld must be removed if it has a crack that is more than 8 percent of the weld length.

(b) Each weld that is repaired must have the defect removed down to sound metal and the segment to be repaired must be preheated if conditions exist which would adversely affect the quality of the weld repair. After repair, the segment of the weld that was repaired must be inspected to ensure its acceptability.

(c) Repair of a crack, or of any defect in a previously repaired area must be in accordance with written weld repair procedures that have been qualified under § 192.225. Repair procedures must provide that the minimum mechanical properties specified for the welding procedure used to make the original weld are met upon completion of the final weld repair.

[Amdt. 192-46, 48 FR 48674, Oct. 20, 1983]

Subpart F—Joining of Materials Other Than by Welding

§ 192.271 Scope.

(a) This subpart prescribes minimum requirements for joining materials in pipelines, other than by welding.

(b) This subpart does not apply to joining during the manufacture of pipe or pipeline components.

§ 192.273 General.

(a) The pipeline must be designed and installed so that each joint will sustain the longitudinal pullout or thrust forces caused by contraction or expansion of the piping or by anticipated external or internal loading.

(b) Each joint must be made in accordance with written procedures that have been proven by test or experience to produce strong gastight joints.

(c) Each joint must be inspected to insure compliance with this subpart.

§ 192.275 Cast iron pipe.

(a) Each caulked bell and spigot joint in cast iron pipe must be sealed with mechanical leak clamps.

(b) Each mechanical joint in cast iron pipe must have a gasket made of a resilient material as the sealing medium. Each gasket must be suitably confined and retained under compression by a separate gland or follower ring.

(c) Cast iron pipe may not be joined by threaded joints.

(d) Cast iron pipe may not be joined by brazing.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-62, 54 FR 5628, Feb. 6, 1989]

§ 192.277 Ductile iron pipe.

(a) Ductile iron pipe may not be joined by threaded joints.

(b) Ductile iron pipe may not be joined by brazing.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-62, 54 FR 5628, Feb. 6, 1989]

§ 192.279 Copper pipe.

Copper pipe may not be threaded except that copper pipe used for joining screw fittings or valves may be threaded if the wall thickness is equivalent to the comparable size of Schedule 40 or heavier wall pipe listed in Table C1 of ASME/ANSI B16.5.

[Amdt. 192-62, 54 FR 5628, Feb. 6, 1989, as amended at 58 FR 14521, Mar. 18, 1993]

§ 192.281 Plastic pipe.

(a) *General.* A plastic pipe joint that is joined by solvent cement, adhesive, or heat fusion may not be disturbed until it has properly set. Plastic pipe may not be joined by a threaded joint or miter joint.

(b) *Solvent cement joints.* Each solvent cement joint on plastic pipe must comply with the following:

(1) The mating surfaces of the joint must be clean, dry, and free of material which might be detrimental to the joint.

(2) The solvent cement must conform to ASTM Designation D 2513.

(3) The joint may not be heated to accelerate the setting of the cement.

(c) *Heat-fusion joints.* Each heat-fusion joint on plastic pipe must comply with the following:

(1) A butt heat-fusion joint must be joined by a device that holds the heater

element square to the ends of the piping, compresses the heated ends together, and holds the pipe in proper alignment while the plastic hardens.

(2) A socket heat-fusion joint must be joined by a device that heats the mating surfaces of the joint uniformly and simultaneously to essentially the same temperature.

(3) An electrofusion joint must be joined utilizing the equipment and techniques of the fittings manufacturer or equipment and techniques shown, by testing joints to the requirements of § 192.283(a)(1)(iii), to be at least equivalent to those of the fittings manufacturer.

(4) Heat may not be applied with a torch or other open flame.

(d) *Adhesive joints.* Each adhesive joint on plastic pipe must comply with the following:

(1) The adhesive must conform to ASTM Designation D 2517.

(2) The materials and adhesive must be compatible with each other.

(e) *Mechanical joints.* Each compression type mechanical joint on plastic pipe must comply with the following:

(1) The gasket material in the coupling must be compatible with the plastic.

(2) A rigid internal tubular stiffener, other than a split tubular stiffener, must be used in conjunction with the coupling.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-34, 44 FR 42973, July 23, 1979; Amdt. 192-58, 53 FR 1635, Jan. 21, 1988; Amdt. 192-61, 53 FR 36793, Sept. 22, 1988; 58 FR 14521, Mar. 18, 1993; Amdt. 192-78, 61 FR 28784, June 6, 1996]

§ 192.283 Plastic pipe: qualifying joining procedures.

(a) *Heat fusion, solvent cement, and adhesive joints.* Before any written procedure established under § 192.273(b) is used for making plastic pipe joints by a heat fusion, solvent cement, or adhesive method, the procedure must be qualified by subjecting specimen joints made according to the procedure to the following tests:

(1) The burst test requirements of—

(i) In the case of thermoplastic pipe, paragraph 6.6 (Sustained Pressure Test) or paragraph 6.7 (Minimum Hydrostatic Burst Pressure (Quick Burst)) of ASTM D 2513;

(ii) In the case of thermosetting plastic pipe, paragraph 8.5 (Minimum Hydrostatic Burst Pressure) or paragraph 8.9 (Sustained Static Pressure Test) of ASTM D2517; or

(iii) In the case of electrofusion fittings for polyethylene pipe and tubing, paragraph 9.1 (Minimum Hydraulic Burst Pressure Test), paragraph 9.2 (Sustained Pressure Test), paragraph 9.3 (Tensile Strength Test), or paragraph 9.4 (Joint Integrity Tests) of ASTM Designation F1055.

(2) For procedures intended for lateral pipe connections, subject a specimen joint made from pipe sections joined at right angles according to the procedure to a force on the lateral pipe until failure occurs in the specimen. If failure initiates outside the joint area, the procedure qualifies for use; and

(3) For procedures intended for nonlateral pipe connections, follow the tensile test requirements of ASTM D638, except that the test may be conducted at ambient temperature and humidity. If the specimen elongates no less than 25 percent or failure initiates outside the joint area, the procedure qualifies for use.

(b) *Mechanical joints.* Before any written procedure established under § 192.273(b) is used for making mechanical plastic pipe joints that are designed to withstand tensile forces, the procedure must be qualified by subjecting 5 specimen joints made according to the procedure to the following tensile test:

(1) Use an apparatus for the test as specified in ASTM D 638 (except for conditioning).

(2) The specimen must be of such length that the distance between the grips of the apparatus and the end of the stiffener does not affect the joint strength.

(3) The speed of testing is 5.0 mm (0.20 in) per minute, plus or minus 25 percent.

(4) Pipe specimens less than 102 mm (4 in) in diameter are qualified if the pipe yields to an elongation of no less than 25 percent or failure initiates outside the joint area.

(5) Pipe specimens 102 mm (4 in) and larger in diameter shall be pulled until the pipe is subjected to a tensile stress

equal to or greater than the maximum thermal stress that would be produced by a temperature change of 38° C (100° F) or until the pipe is pulled from the fitting. If the pipe pulls from the fitting, the lowest value of the five test results or the manufacturer's rating, whichever is lower must be used in the design calculations for stress.

(6) Each specimen that fails at the grips must be retested using new pipe.

(7) Results obtained pertain only to the specific outside diameter, and material of the pipe tested, except that testing of a heavier wall pipe may be used to qualify pipe of the same material but with a lesser wall thickness.

(c) A copy of each written procedure being used for joining plastic pipe must be available to the persons making and inspecting joints.

(d) Pipe or fittings manufactured before July 1, 1980, may be used in accordance with procedures that the manufacturer certifies will produce a joint as strong as the pipe.

[Amdt. 192-34A, 45 FR 9935, Feb. 14, 1980, as amended by Amdt. 192-34B, 46 FR 39, Jan. 2, 1981; 47 FR 32720, July 29, 1982; 47 FR 49973, Nov. 4, 1982; 58 FR 14521, Mar. 18, 1993; Amdt. 192-78, 61 FR 28784, June 6, 1996]

§ 192.285 Plastic pipe: qualifying persons to make joints.

(a) No person may make a plastic pipe joint unless that person has been qualified under the applicable joining procedure by:

(1) Appropriate training or experience in the use of the procedure; and

(2) Making a specimen joint from pipe sections joined according to the procedure that passes the inspection and test set forth in paragraph (b) of this section.

(b) The specimen joint must be:

(1) Visually examined during and after assembly or joining and found to have the same appearance as a joint or photographs of a joint that is acceptable under the procedure; and

(2) In the case of a heat fusion, solvent cement, or adhesive joint:

(i) Tested under any one of the test methods listed under § 192.283(a) applicable to the type of joint and material being tested;

(ii) Examined by ultrasonic inspection and found not to contain flaws that would cause failure; or

(iii) Cut into at least 3 longitudinal straps, each of which is:

(A) Visually examined and found not to contain voids or discontinuities on the cut surfaces of the joint area; and

(B) Deformed by bending, torque, or impact, and if failure occurs, it must not initiate in the joint area.

(c) A person must be requalified under an applicable procedure, if during any 12-month period that person:

(1) Does not make any joints under that procedure; or

(2) Has 3 joints or 3 percent of the joints made, whichever is greater, under that procedure that are found unacceptable by testing under § 192.513.

(d) Each operator shall establish a method to determine that each person making joints in plastic pipelines in his system is qualified in accordance with this section.

[Amdt. 192-34A, 45 FR 9935, Feb. 14, 1980, as amended by Amdt. 192-34B, 46 FR 39, Jan. 2, 1981]

§ 192.287 Plastic pipe: inspection of joints.

No person may carry out the inspection of joints in plastic pipes required by §§ 192.273(c) and 192.285(b) unless that person has been qualified by appropriate training or experience in evaluating the acceptability of plastic pipe joints made under the applicable joining procedure.

[Amdt. 192-34, 44 FR 42974, July 23, 1979]

Subpart G—General Construction Requirements for Transmission Lines and Mains

§ 192.301 Scope.

This subpart prescribes minimum requirements for constructing transmission lines and mains.

§ 192.303 Compliance with specifications or standards.

Each transmission line or main must be constructed in accordance with comprehensive written specifications or standards that are consistent with this part.

§ 192.305 Inspection: General.

Each transmission line or main must be inspected to ensure that it is constructed in accordance with this part.

§ 192.307 Inspection of materials.

Each length of pipe and each other component must be visually inspected at the site of installation to ensure that it has not sustained any visually determinable damage that could impair its serviceability.

§ 192.309 Repair of steel pipe.

(a) Each imperfection or damage that impairs the serviceability of a length of steel pipe must be repaired or removed. If a repair is made by grinding, the remaining wall thickness must at least be equal to either:

(1) The minimum thickness required by the tolerances in the specification to which the pipe was manufactured; or

(2) The nominal wall thickness required for the design pressure of the pipeline.

(b) Each of the following dents must be removed from steel pipe to be operated at a pressure that produces a hoop stress of 20 percent, or more, of SMYS:

(1) A dent that contains a stress concentrator such as a scratch, gouge, groove, or arc burn.

(2) A dent that affects the longitudinal weld or a circumferential weld.

(3) In pipe to be operated at a pressure that produces a hoop stress of 40 percent or more of SMYS, a dent that has a depth of:

(i) More than one-quarter inch in pipe 12¾ inches or less in outer diameter; or

(ii) More than 2 percent of the nominal pipe diameter in pipe over 12¾ inches in outer diameter.

For the purpose of this section a "dent" is a depression that produces a gross disturbance in the curvature of the pipe wall without reducing the pipe-wall thickness. The depth of a dent is measured as the gap between the lowest point of the dent and a prolongation of the original contour of the pipe.

(c) Each arc burn on steel pipe to be operated at a pressure that produces a hoop stress of 40 percent, or more, of SMYS must be repaired or removed. If a repair is made by grinding, the arc burn must be completely removed and the remaining wall thickness must be at least equal to either:

(1) The minimum wall thickness required by the tolerances in the specification to which the pipe was manufactured; or

(2) The nominal wall thickness required for the design pressure of the pipeline.

(d) A gouge, groove, arc burn, or dent may not be repaired by insert patching or by pounding out.

(e) Each gouge, groove, arc burn, or dent that is removed from a length of pipe must be removed by cutting out the damaged portion as a cylinder.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-1, 35 FR 17660, Nov. 17, 1970]

§ 192.311 Repair of plastic pipe.

Each imperfection or damage that would impair the serviceability of plastic pipe must be repaired by a patching saddle or removed.

§ 192.313 Bends and elbows.

(a) Each field bend in steel pipe, other than a wrinkle bend made in accordance with § 192.315, must comply with the following:

(1) A bend must not impair the serviceability of the pipe.

(2) Each bend must have a smooth contour and be free from buckling, cracks, or any other mechanical damage.

(3) On pipe containing a longitudinal weld, the longitudinal weld must be as near as practicable to the neutral axis of the bend unless:

(i) The bend is made with an internal bending mandrel; or

(ii) The pipe is 12 inches or less in outside diameter or has a diameter to wall thickness ratio less than 70.

(b) Each circumferential weld of steel pipe which is located where the stress during bending causes a permanent deformation in the pipe must be nondestructively tested either before or after the bending process.

(c) Wrought-steel welding elbows and transverse segments of these elbows may not be used for changes in direction on steel pipe that is 2 inches or more in diameter unless the arc length,

as measured along the crotch, is at least 1 inch.

[Amdt. No. 192-26, 41 FR 26018, June 24, 1976, as amended by Amdt. 192-29, 42 FR 42866, Aug. 25, 1977; Amdt. 192-29, 42 FR 60148, Nov. 25, 1977; Amdt. 192-49, 50 FR 13225, Apr. 3, 1985]

§ 192.315 Wrinkle bends in steel pipe.

(a) A wrinkle bend may not be made on steel pipe to be operated at a pressure that produces a hoop stress of 30 percent, or more, of SMYS.

(b) Each wrinkle bend on steel pipe must comply with the following:

(1) The bend must not have any sharp kinks.

(2) When measured along the crotch of the bend, the wrinkles must be a distance of at least one pipe diameter.

(3) On pipe 16 inches or larger in diameter, the bend may not have a deflection of more than 1½° for each wrinkle.

(4) On pipe containing a longitudinal weld the longitudinal seam must be as near as practicable to the neutral axis of the bend.

§ 192.317 Protection from hazards.

(a) The operator must take all practicable steps to protect each transmission line or main from washouts, floods, unstable soil, landslides, or other hazards that may cause the pipeline to move or to sustain abnormal loads. In addition, the operator must take all practicable steps to protect offshore pipelines from damage by mud slides, water currents, hurricanes, ship anchors, and fishing operations.

(b) Each aboveground transmission line or main, not located offshore or in inland navigable water areas, must be protected from accidental damage by vehicular traffic or other similar causes, either by being placed at a safe distance from the traffic or by installing barricades.

(c) Pipelines, including pipe risers, on each platform located offshore or in inland navigable waters must be protected from accidental damage by vessels.

[Amdt. 192-27, 41 FR 34606, Aug. 16, 1976, as amended by Amdt. 192-78, 61 FR 28784, June 6, 1996]

§ 192.319 Installation of pipe in a ditch.

(a) When installed in a ditch, each transmission line that is to be operated at a pressure producing a hoop stress of 20 percent or more of SMYS must be installed so that the pipe fits the ditch so as to minimize stresses and protect the pipe coating from damage.

(b) When a ditch for a transmission line or main is backfilled, it must be backfilled in a manner that:

(1) Provides firm support under the pipe; and

(2) Prevents damage to the pipe and pipe coating from equipment or from the backfill material.

(c) All offshore pipe in water at least 12 feet deep but not more than 200 feet deep, as measured from the mean low tide, except pipe in the Gulf of Mexico and its inlets under 15 feet of water, must be installed so that the top of the pipe is below the natural bottom unless the pipe is supported by stanchions, held in place by anchors or heavy concrete coating, or protected by an equivalent means. Pipe in the Gulf of Mexico and its inlets under 15 feet of water must be installed so that the top of the pipe is 36 inches below the seabed for normal excavation or 18 inches for rock excavation.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-27, 41 FR 34606, Aug. 16, 1976; Amdt. 192-78, 61 FR 28784, June 6, 1996]

§ 192.321 Installation of plastic pipe.

(a) Plastic pipe must be installed below ground level unless otherwise permitted by paragraph (g) of this section.

(b) Plastic pipe that is installed in a vault or any other below grade enclosure must be completely encased in gas-tight metal pipe and fittings that are adequately protected from corrosion.

(c) Plastic pipe must be installed so as to minimize shear or tensile stresses.

(d) Thermoplastic pipe that is not encased must have a minimum wall thickness of 0.090 inch, except that pipe with an outside diameter of 0.875 inch or less may have a minimum wall thickness of 0.062 inch.

(e) Plastic pipe that is not encased must have an electrically conductive

wire or other means of locating the pipe while it is underground.

(f) Plastic pipe that is being encased must be inserted into the casing pipe in a manner that will protect the plastic. The leading end of the plastic must be closed before insertion.

(g) Uncased plastic pipe may be temporarily installed above ground level under the following conditions:

(1) The operator must be able to demonstrate that the cumulative aboveground exposure of the pipe does not exceed the manufacturer's recommended maximum period of exposure or 2 years, whichever is less.

(2) The pipe either is located where damage by external forces is unlikely or is otherwise protected against such damage.

(3) The pipe adequately resists exposure to ultraviolet light and high and low temperatures.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-78, 61 FR 28784, June 6, 1996]

§ 192.323 Casing.

Each casing used on a transmission line or main under a railroad or highway must comply with the following:

(a) The casing must be designed to withstand the superimposed loads.

(b) If there is a possibility of water entering the casing, the ends must be sealed.

(c) If the ends of an unvented casing are sealed and the sealing is strong enough to retain the maximum allowable operating pressure of the pipe, the casing must be designed to hold this pressure at a stress level of not more than 72 percent of SMYS.

(d) If vents are installed on a casing, the vents must be protected from the weather to prevent water from entering the casing.

§ 192.325 Underground clearance.

(a) Each transmission line must be installed with at least 12 inches of clearance from any other underground structure not associated with the transmission line. If this clearance cannot be attained, the transmission line must be protected from damage that might result from the proximity of the other structure.

(b) Each main must be installed with enough clearance from any other underground structure to allow proper maintenance and to protect against damage that might result from proximity to other structures.

(c) In addition to meeting the requirements of paragraph (a) or (b) of this section, each plastic transmission line or main must be installed with sufficient clearance, or must be insulated, from any source of heat so as to prevent the heat from impairing the serviceability of the pipe.

(d) Each pipe-type or bottle-type holder must be installed with a minimum clearance from any other holder as prescribed in § 192.175(b).

§ 192.327 Cover.

(a) Except as provided in paragraphs (c), (e), (f), and (g) of this section, each buried transmission line must be installed with a minimum cover as follows:

Location	Normal soil	Consolidated rock
	Inches	
Class 1 locations	30	18
Class 2, 3, and 4 locations	36	24
Drainage ditches of public roads and railroad crossings	36	24

(b) Except as provided in paragraphs (c) and (d) of this section, each buried main must be installed with at least 24 inches of cover.

(c) Where an underground structure prevents the installation of a transmission line or main with the minimum cover, the transmission line or main may be installed with less cover if it is provided with additional protection to withstand anticipated external loads.

(d) A main may be installed with less than 24 inches of cover if the law of the State or municipality:

(1) Establishes a minimum cover of less than 24 inches;

(2) Requires that mains be installed in a common trench with other utility lines; and

(3) Provides adequately for prevention of damage to the pipe by external forces.

(e) Except as provided in paragraph (c) of this section, all pipe installed in a navigable river, stream, or harbor must be installed with a minimum

of the manufacturer's shell test pressure.

(b) Each newly installed meter manufactured after November 12, 1970, must have been tested to a minimum of 10 p.s.i.g.

(c) A rebuilt or repaired tinned steel case meter may not be used at a pressure that is more than 50 percent of the pressure used to test the meter after rebuilding or repairing.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-1, 35 FR 17660, Nov. 17, 1970]

§ 192.361 Service lines: Installation.

(a) *Depth.* Each buried service line must be installed with at least 12 inches of cover in private property and at least 18 inches of cover in streets and roads. However, where an underground structure prevents installation at those depths, the service line must be able to withstand any anticipated external load.

(b) *Support and backfill.* Each service line must be properly supported on undisturbed or well-compacted soil, and material used for backfill must be free of materials that could damage the pipe or its coating.

(c) *Grading for drainage.* Where condensate in the gas might cause interruption in the gas supply to the customer, the service line must be graded so as to drain into the main or into drips at the low points in the service line.

(d) *Protection against piping strain and external loading.* Each service line must be installed so as to minimize anticipated piping strain and external loading.

(e) *Installation of service lines into buildings.* Each underground service line installed below grade through the outer foundation wall of a building must:

(1) In the case of a metal service line, be protected against corrosion;

(2) In the case of a plastic service line, be protected from shearing action and backfill settlement; and

(3) Be sealed at the foundation wall to prevent leakage into the building.

(f) *Installation of service lines under buildings.* Where an underground service line is installed under a building:

(1) It must be encased in a gas tight conduit;

(2) The conduit and the service line must, if the service line supplies the building it underlies, extend into a normally usable and accessible part of the building; and

(3) The space between the conduit and the service line must be sealed to prevent gas leakage into the building and, if the conduit is sealed at both ends, a vent line from the annular space must extend to a point where gas would not be a hazard, and extend above grade, terminating in a rain and insect resistant fitting.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-75, 61 FR 18517, Apr. 26, 1996]

§ 192.363 Service lines: Valve requirements.

(a) Each service line must have a service-line valve that meets the applicable requirements of subparts B and D of this part. A valve incorporated in a meter bar, that allows the meter to be bypassed, may not be used as a service-line valve.

(b) A soft seat service line valve may not be used if its ability to control the flow of gas could be adversely affected by exposure to anticipated heat.

(c) Each service-line valve on a high-pressure service line, installed above ground or in an area where the blowing of gas would be hazardous, must be designed and constructed to minimize the possibility of the removal of the core of the valve with other than specialized tools.

§ 192.365 Service lines: Location of valves.

(a) *Relation to regulator or meter.* Each service-line valve must be installed upstream of the regulator or, if there is no regulator, upstream of the meter.

(b) *Outside valves.* Each service line must have a shut-off valve in a readily accessible location that, if feasible, is outside of the building.

(c) *Underground valves.* Each underground service-line valve must be located in a covered durable curb box or standpipe that allows ready operation of the valve and is supported independently of the service lines.

§ 192.367 Service lines: General requirements for connections to main piping.

(a) *Location.* Each service line connection to a main must be located at the top of the main or, if that is not practical, at the side of the main, unless a suitable protective device is installed to minimize the possibility of dust and moisture being carried from the main into the service line.

(b) *Compression-type connection to main.* Each compression-type service line to main connection must:

(1) Be designed and installed to effectively sustain the longitudinal pull-out or thrust forces caused by contraction or expansion of the piping, or by anticipated external or internal loading; and

(2) If gaskets are used in connecting the service line to the main connection fitting, have gaskets that are compatible with the kind of gas in the system.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-75, 61 FR 18517, Apr. 26, 1996]

§ 192.369 Service lines: Connections to cast iron or ductile iron mains.

(a) Each service line connected to a cast iron or ductile iron main must be connected by a mechanical clamp, by drilling and tapping the main, or by another method meeting the requirements of § 192.273.

(b) If a threaded tap is being inserted, the requirements of § 192.151 (b) and (c) must also be met.

§ 192.371 Service lines: Steel.

Each steel service line to be operated at less than 100 p.s.i.g. must be constructed of pipe designed for a minimum of 100 p.s.i.g.

[Amdt. 192-1, 35 FR 17660, Nov. 17, 1970]

§ 192.373 Service lines: Cast iron and ductile iron.

(a) Cast or ductile iron pipe less than 6 inches in diameter may not be installed for service lines.

(b) If cast iron pipe or ductile iron pipe is installed for use as a service line, the part of the service line which extends through the building wall must be of steel pipe.

(c) A cast iron or ductile iron service line may not be installed in unstable soil or under a building.

§ 192.375 Service lines: Plastic.

(a) Each plastic service line outside a building must be installed below ground level, except that—

(1) It may be installed in accordance with § 192.321(g); and

(2) It may terminate above ground level and outside the building, if—

(i) The above ground level part of the plastic service line is protected against deterioration and external damage; and

(ii) The plastic service line is not used to support external loads.

(b) Each plastic service line inside a building must be protected against external damage.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-78, 61 FR 28785, June 6, 1996]

§ 192.377 Service lines: Copper.

Each copper service line installed within a building must be protected against external damage.

§ 192.379 New service lines not in use.

Each service line that is not placed in service upon completion of installation must comply with one of the following until the customer is supplied with gas:

(a) The valve that is closed to prevent the flow of gas to the customer must be provided with a locking device or other means designed to prevent the opening of the valve by persons other than those authorized by the operator.

(b) A mechanical device or fitting that will prevent the flow of gas must be installed in the service line or in the meter assembly.

(c) The customer's piping must be physically disconnected from the gas supply and the open pipe ends sealed.

[Amdt. 192-8, 37 FR 20694, Oct. 3, 1972]

§ 192.381 Service lines: Excess flow valve performance standards.

(a) Excess flow valves to be used on single residence service lines that operate continuously throughout the year at a pressure not less than 10 psig must be manufactured and tested by the manufacturer according to an industry specification, or the manufacturer's written specification, to ensure that each valve will:

(1) Function properly up to the maximum operating pressure at which the valve is rated;

(2) Function properly at all temperatures reasonably expected in the operating environment of the service line;

(3) At 10 psig:

(i) Be sized to close at, or not more than 50 percent above the rated closure flow rate specified by the manufacturer; and

(ii) Upon closure, reduce gas flow—

(A) For an excess flow valve designed to allow pressure to equalize across the valve, to no more than 5 percent of the manufacturer's specified closure flow rate, up to a maximum of 20 cubic feet per hour; or

(B) For an excess flow valve designed to prevent equalization of pressure across the valve, to no more than 0.4 cubic feet per hour; and

(4) Not close when the pressure is less than the manufacturer's minimum specified operating pressure and the flow rate is below the manufacturer's minimum specified closure flow rate.

(b) An excess flow valve must meet the applicable requirements of Subparts B and D of this part.

(c) An operator must mark or otherwise identify the presence of an excess flow valve in the service line.

(d) An operator should locate an excess flow valve beyond the hard surface and as near as practical to the fitting connecting the service line to its source of gas supply.

(e) An operator should not install an excess flow valve on a service line where the operator has prior experience with contaminants in the gas stream, where these contaminants could be expected to cause the excess flow valve to malfunction or where the excess flow valve would interfere with necessary operation and maintenance activities on the service, such as blowing liquids from the line.

[Amdt. 192-79, 61 FR 31459, June 20, 1996]

Subpart I—Requirements for Corrosion Control

SOURCE: Amdt. 192-4, 36 FR 12302, June 30, 1971, unless otherwise noted.

§ 192.451 Scope.

(a) This subpart prescribes minimum requirements for the protection of metallic pipelines from external, internal, and atmospheric corrosion.

(b) [Reserved]

[Amdt. 192-4, 36 FR 12302, June 30, 1971, as amended by Amdt. 192-27, 41 FR 34606, Aug. 16, 1976; Amdt. 192-33, 43 FR 39389, Sept. 5, 1978]

§ 192.452 Applicability to converted pipelines.

Notwithstanding the date the pipeline was installed or any earlier deadlines for compliance, each pipeline which qualifies for use under this part in accordance with § 192.14 must meet the requirements of this subpart specifically applicable to pipelines installed before August 1, 1971, and all other applicable requirements within 1 year after the pipeline is readied for service. However, the requirements of this subpart specifically applicable to pipelines installed after July 31, 1971, apply if the pipeline substantially meets those requirements before it is readied for service or it is a segment which is replaced, relocated, or substantially altered.

[Amdt. 192-30, 42 FR 60148, Nov. 25, 1977]

§ 192.453 General.

The corrosion control procedures required by § 192.605(b)(2), including those for the design, installation, operation, and maintenance of cathodic protection systems, must be carried out by, or under the direction of, a person qualified in pipeline corrosion control methods.

[Amdt. 192-71, 59 FR 6584, Feb. 11, 1994]

§ 192.455 External corrosion control: Buried or submerged pipelines installed after July 31, 1971.

(a) Except as provided in paragraphs (b), (c), and (f) of this section, each buried or submerged pipeline installed after July 31, 1971, must be protected against external corrosion, including the following:

(1) It must have an external protective coating meeting the requirements of § 192.461.

(2) It must have a cathodic protection system designed to protect the

pipeline in accordance with this subpart, installed and placed in operation within 1 year after completion of construction.

(b) An operator need not comply with paragraph (a) of this section, if the operator can demonstrate by tests, investigation, or experience in the area of application, including, as a minimum, soil resistivity measurements and tests for corrosion accelerating bacteria, that a corrosive environment does not exist. However, within 6 months after an installation made pursuant to the preceding sentence, the operator shall conduct tests, including pipe-to-soil potential measurements with respect to either a continuous reference electrode or an electrode using close spacing, not to exceed 20 feet, and soil resistivity measurements at potential profile peak locations, to adequately evaluate the potential profile along the entire pipeline. If the tests made indicate that a corrosive condition exists, the pipeline must be cathodically protected in accordance with paragraph (a)(2) of this section.

(c) An operator need not comply with paragraph (a) of this section, if the operator can demonstrate by tests, investigation, or experience that—

(1) For a copper pipeline, a corrosive environment does not exist; or

(2) For a temporary pipeline with an operating period of service not to exceed 5 years beyond installation, corrosion during the 5-year period of service of the pipeline will not be detrimental to public safety.

(d) Notwithstanding the provisions of paragraph (b) or (c) of this section, if a pipeline is externally coated, it must be cathodically protected in accordance with paragraph (a)(2) of this section.

(e) Aluminum may not be installed in a buried or submerged pipeline if that aluminum is exposed to an environment with a natural pH in excess of 8, unless tests or experience indicate its suitability in the particular environment involved.

(f) This section does not apply to electrically isolated, metal alloy fittings in plastic pipelines, if:

(1) For the size fitting to be used, an operator can show by test, investigation, or experience in the area of application that adequate corrosion control is provided by the alloy composition; and

(2) The fitting is designed to prevent leakage caused by localized corrosion pitting.

[Amdt. 192-4, 36 FR 12302, June 30, 1971, as amended at Amdt. 192-28, 42 FR 35654, July 11, 1977; Amdt. 192-39, 47 FR 9844, Mar. 8, 1982; Amdt. 192-78, 61 FR 28785, June 6, 1996]

§ 192.457 External corrosion control: Buried or submerged pipelines installed before August 1, 1971.

(a) Except for buried piping at compressor, regulator, and measuring stations, each buried or submerged transmission line installed before August 1, 1971, that has an effective external coating must be cathodically protected along the entire area that is effectively coated, in accordance with this subpart. For the purposes of this subpart, a pipeline does not have an effective external coating if its cathodic protection current requirements are substantially the same as if it were bare. The operator shall make tests to determine the cathodic protection current requirements.

(b) Except for cast iron or ductile iron, each of the following buried or submerged pipelines installed before August 1, 1971, must be cathodically protected in accordance with this subpart in areas in which active corrosion is found:

(1) Bare or ineffectively coated transmission lines.

(2) Bare or coated pipes at compressor, regulator, and measuring stations.

(3) Bare or coated distribution lines. The operator shall determine the areas of active corrosion by electrical survey, or where electrical survey is impractical, by the study of corrosion and leak history records, by leak detection survey, or by other means.

(c) For the purpose of this subpart, active corrosion means continuing corrosion which, unless controlled, could result in a condition that is detrimental to public safety.

[Amdt. 192-4, 36 FR 12302, June 30, 1971, as amended by Amdt. 192-33, 43 FR 39390, Sept. 5, 1978]

§ 192.459 External corrosion control: Examination of buried pipeline when exposed.

Whenever an operator has knowledge that any portion of a buried pipeline is exposed, the exposed portion must be examined for evidence of external corrosion if the pipe is bare, or if the coating is deteriorated. If external corrosion is found, remedial action must be taken to the extent required by § 192.483 and the applicable paragraphs of §§ 192.485, 192.487, or 192.489.

§ 192.461 External corrosion control: Protective coating.

(a) Each external protective coating, whether conductive or insulating, applied for the purpose of external corrosion control must—

(1) Be applied on a properly prepared surface;

(2) Have sufficient adhesion to the metal surface to effectively resist underfilm migration of moisture;

(3) Be sufficiently ductile to resist cracking;

(4) Have sufficient strength to resist damage due to handling and soil stress; and

(5) Have properties compatible with any supplemental cathodic protection.

(b) Each external protective coating which is an electrically insulating type must also have low moisture absorption and high electrical resistance.

(c) Each external protective coating must be inspected just prior to lowering the pipe into the ditch and backfilling, and any damage detrimental to effective corrosion control must be repaired.

(d) Each external protective coating must be protected from damage resulting from adverse ditch conditions or damage from supporting blocks.

(e) If coated pipe is installed by boring, driving, or other similar method, precautions must be taken to minimize damage to the coating during installation.

§ 192.463 External corrosion control: Cathodic protection.

(a) Each cathodic protection system required by this subpart must provide a level of cathodic protection that complies with one or more of the applicable criteria contained in appendix D of this part. If none of these criteria is applicable, the cathodic protection system must provide a level of cathodic protection at least equal to that provided by compliance with one or more of these criteria.

(b) If amphoteric metals are included in a buried or submerged pipeline containing a metal of different anodic potential—

(1) The amphoteric metals must be electrically isolated from the remainder of the pipeline and cathodically protected; or

(2) The entire buried or submerged pipeline must be cathodically protected at a cathodic potential that meets the requirements of appendix D of this part for amphoteric metals.

(c) The amount of cathodic protection must be controlled so as not to damage the protective coating or the pipe.

§ 192.465 External corrosion control: Monitoring.

(a) Each pipeline that is under cathodic protection must be tested at least once each calendar year, but with intervals not exceeding 15 months, to determine whether the cathodic protection meets the requirements of § 192.463. However, if tests at those intervals are impractical for separately protected short sections of mains or transmission lines, not in excess of 100 feet, or separately protected service lines, these pipelines may be surveyed on a sampling basis. At least 10 percent of these protected structures, distributed over the entire system must be surveyed each calendar year, with a different 10 percent checked each subsequent year, so that the entire system is tested in each 10-year period.

(b) Each cathodic protection rectifier or other impressed current power source must be inspected six times each calendar year, but with intervals not exceeding 2½ months, to insure that it is operating.

(c) Each reverse current switch, each diode, and each interference bond whose failure would jeopardize structure protection must be electrically checked for proper performance six times each calendar year, but with intervals not exceeding 2½ months. Each other interference bond must be

checked at least once each calendar year, but with intervals not exceeding 15 months.

(d) Each operator shall take prompt remedial action to correct any deficiencies indicated by the monitoring.

(e) After the initial evaluation required by paragraphs (b) and (c) of § 192.455 and paragraph (b) of § 192.457, each operator shall, at intervals not exceeding 3 years, reevaluate its unprotected pipelines and cathodically protect them in accordance with this subpart in areas in which active corrosion is found. The operator shall determine the areas of active corrosion by electrical survey, or where electrical survey is impractical, by the study of corrosion and leak history records, by leak detection survey, or by other means.

[Amdt. 192-4, 36 FR 12302, June 30, 1971, as amended by Amdt. 192-33, 43 FR 39390, Sept. 5, 1978; Amdt. 192-35A, 45 FR 23441, Apr. 7, 1980]

§ 192.467 External corrosion control: Electrical isolation.

(a) Each buried or submerged pipeline must be electrically isolated from other underground metallic structures, unless the pipeline and the other structures are electrically interconnected and cathodically protected as a single unit.

(b) One or more insulating devices must be installed where electrical isolation of a portion of a pipeline is necessary to facilitate the application of corrosion control.

(c) Except for unprotected copper inserted in ferrous pipe, each pipeline must be electrically isolated from metallic casings that are a part of the underground system. However, if isolation is not achieved because it is impractical, other measures must be taken to minimize corrosion of the pipeline inside the casing.

(d) Inspection and electrical tests must be made to assure that electrical isolation is adequate.

(e) An insulating device may not be installed in an area where a combustible atmosphere is anticipated unless precautions are taken to prevent arcing.

(f) Where a pipeline is located in close proximity to electrical transmission tower footings, ground cables or counterpoise, or in other areas where fault currents or unusual risk of lightning may be anticipated, it must be provided with protection against damage due to fault currents or lightning, and protective measures must also be taken at insulating devices.

[Amdt. 192-4, 36 FR 12302, June 30, 1971, as amended by Amdt. 192-33, 43 FR 39390, Sept. 5, 1978]

§ 192.469 External corrosion control: Test stations.

Each pipeline under cathodic protection required by this subpart must have sufficient test stations or other contact points for electrical measurement to determine the adequacy of cathodic protection.

[Amdt. 192-27, 41 FR 34606, Aug. 16, 1976]

§ 192.471 External corrosion control: Test leads.

(a) Each test lead wire must be connected to the pipeline so as to remain mechanically secure and electrically conductive.

(b) Each test lead wire must be attached to the pipeline so as to minimize stress concentration on the pipe.

(c) Each bared test lead wire and bared metallic area at point of connection to the pipeline must be coated with an electrical insulating material compatible with the pipe coating and the insulation on the wire.

§ 192.473 External corrosion control: Interference currents.

(a) Each operator whose pipeline system is subjected to stray currents shall have in effect a continuing program to minimize the detrimental effects of such currents.

(b) Each impressed current type cathodic protection system or galvanic anode system must be designed and installed so as to minimize any adverse effects on existing adjacent underground metallic structures.

[Amdt. 192-4, 36 FR 12302, June 30, 1971, as amended by Amdt. 192-33, 43 FR 39390, Sept. 5, 1978]

§ 192.475 Internal corrosion control: General.

(a) Corrosive gas may not be transported by pipeline, unless the corrosive effect of the gas on the pipeline has been investigated and steps have been taken to minimize internal corrosion.

(b) Whenever any pipe is removed from a pipeline for any reason, the internal surface must be inspected for evidence of corrosion. If internal corrosion is found—

(1) The adjacent pipe must be investigated to determine the extent of internal corrosion;

(2) Replacement must be made to the extent required by the applicable paragraphs of §§ 192.485, 192.487, or 192.489; and

(3) Steps must be taken to minimize the internal corrosion.

(c) Gas containing more than 0.25 grain of hydrogen sulfide per 100 standard cubic feet (4 parts per million) may not be stored in pipe-type or bottle-type holders.

[Amdt. 192-4, 36 FR 12302, June 30, 1971, as amended by Amdt. 192-33, 43 FR 39390, Sept. 5, 1978; Amdt. 192-78, 61 FR 28785, June 6, 1996]

§ 192.477 Internal corrosion control: Monitoring.

If corrosive gas is being transported, coupons or other suitable means must be used to determine the effectiveness of the steps taken to minimize internal corrosion. Each coupon or other means of monitoring internal corrosion must be checked two times each calendar year, but with intervals not exceeding 7½ months.

[Amdt. 192-33, 43 FR 39390, Sept. 5, 1978]

§ 192.479 Atmospheric corrosion control: General.

(a) *Pipelines installed after July 31, 1971.* Each aboveground pipeline or portion of a pipeline installed after July 31, 1971 that is exposed to the atmosphere must be cleaned and either coated or jacketed with a material suitable for the prevention of atmospheric corrosion. An operator need not comply with this paragraph, if the operator can demonstrate by test, investigation, or experience in the area of application, that a corrosive atmosphere does not exist.

(b) *Pipelines installed before August 1, 1971.* Each operator having an aboveground pipeline or portion of a pipeline installed before August 1, 1971 that is exposed to the atmosphere, shall—

(1) Determine the areas of atmospheric corrosion on the pipeline;

(2) If atmospheric corrosion is found, take remedial measures to the extent required by the applicable paragraphs of §§ 192.485, 192.487, or 192.489; and

(3) Clean and either coat or jacket the areas of atmospheric corrosion on the pipeline with a material suitable for the prevention of atmospheric corrosion.

[Amdt. 192-4, 36 FR 12302, June 30, 1971, as amended by Amdt. 192-33, 43 FR 39390, Sept. 5, 1978]

§ 192.481 Atmospheric corrosion control: Monitoring.

After meeting the requirements of § 192.479 (a) and (b), each operator shall, at intervals not exceeding 3 years for onshore pipelines and at least once each calendar year, but with intervals not exceeding 15 months, for offshore pipelines, reevaluate each pipeline that is exposed to the atmosphere and take remedial action whenever necessary to maintain protection against atmospheric corrosion.

[Amdt. 192-33, 43 FR 39390, Sept. 5, 1978]

§ 192.483 Remedial measures: General.

(a) Each segment of metallic pipe that replaces pipe removed from a buried or submerged pipeline because of external corrosion must have a properly prepared surface and must be provided with an external protective coating that meets the requirements of § 192.461.

(b) Each segment of metallic pipe that replaces pipe removed from a buried or submerged pipeline because of external corrosion must be cathodically protected in accordance with this subpart.

(c) Except for cast iron or ductile iron pipe, each segment of buried or submerged pipe that is required to be repaired because of external corrosion must be cathodically protected in accordance with this subpart.

§ 192.485 Remedial measures: Transmission lines.

(a) *General corrosion.* Each segment of transmission line with general corrosion and with a remaining wall thickness less than that required for the maximum allowable operating pressure of the pipeline must be replaced or the operating pressure reduced commensurate with the strength of the pipe based on actual remaining wall thickness. However, if the area of general corrosion is small, the corroded pipe may be repaired. Corrosion pitting so closely grouped as to affect the overall strength of the pipe is considered general corrosion for the purpose of this paragraph.

(b) *Localized corrosion pitting.* Each segment of transmission line pipe with localized corrosion pitting to a degree where leakage might result must be replaced or repaired, or the operating pressure must be reduced commensurate with the strength of the pipe, based on the actual remaining wall thickness in the pits.

(c) Under paragraphs (a) and (b) of this section, the strength of pipe based on actual remaining wall thickness may be determined by the procedure in ASME/ANSI B31G or the procedure in AGA Pipeline Research Committee Project PR 3-805 (with RSTRENG disk). Both procedures apply to corroded regions that do not penetrate the pipe wall, subject to the limitations prescribed in the procedures.

[Amdt. 192-4, 36 FR 12302, June 30, 1971, as amended by Amdt. 192-33, 43 FR 39390, Sept. 5, 1978; Amdt. 192-78, 61 FR 28785, June 6, 1996]

§ 192.487 Remedial measures: Distribution lines other than cast iron or ductile iron lines.

(a) *General corrosion.* Except for cast iron or ductile iron pipe, each segment of generally corroded distribution line pipe with a remaining wall thickness less than that required for the maximum allowable operating pressure of the pipeline, or a remaining wall thickness less than 30 percent of the nominal wall thickness, must be replaced. However, if the area of general corrosion is small, the corroded pipe may be repaired. Corrosion pitting so closely grouped as to affect the overall strength of the pipe is considered general corrosion for the purpose of this paragraph.

(b) *Localized corrosion pitting.* Except for cast iron or ductile iron pipe, each segment of distribution line pipe with localized corrosion pitting to a degree where leakage might result must be replaced or repaired.

§ 192.489 Remedial measures: Cast iron and ductile iron pipelines.

(a) *General graphitization.* Each segment of cast iron or ductile iron pipe on which general graphitization is found to a degree where a fracture or any leakage might result, must be replaced.

(b) *Localized graphitization.* Each segment of cast iron or ductile iron pipe on which localized graphitization is found to a degree where any leakage might result, must be replaced or repaired, or sealed by internal sealing methods adequate to prevent or arrest any leakage.

§ 192.491 Corrosion control records.

(a) Each operator shall maintain records or maps to show the location of cathodically protected piping, cathodic protection facilities, galvanic anodes, and neighboring structures bonded to the cathodic protection system. Records or maps showing a stated number of anodes, installed in a stated manner or spacing, need not show specific distances to each buried anode.

(b) Each record or map required by paragraph (a) of this section must be retained for as long as the pipeline remains in service.

(c) Each operator shall maintain a record of each test, survey, or inspection required by this subpart in sufficient detail to demonstrate the adequacy of corrosion control measures or that a corrosive condition does not exist. These records must be retained for at least 5 years, except that records related to §§ 192.465 (a) and (e) and 192.475(b) must be retained for as long as the pipeline remains in service.

[Amdt. 192-78, 61 FR 28785, June 6, 1996]

Subpart J—Test Requirements

§ 192.501 Scope.

This subpart prescribes minimum leak-test and strength-test requirements for pipelines.

§ 192.503 General requirements.

(a) No person may operate a new segment of pipeline, or return to service a segment of pipeline that has been relocated or replaced, until—

(1) It has been tested in accordance with this subpart and § 192.619 to substantiate the maximum allowable operating pressure; and

(2) Each potentially hazardous leak has been located and eliminated.

(b) The test medium must be liquid, air, natural gas, or inert gas that is—

(1) Compatible with the material of which the pipeline is constructed;

(2) Relatively free of sedimentary materials; and

(3) Except for natural gas, nonflammable.

(c) Except as provided in § 192.505(a), if air, natural gas, or inert gas is used as the test medium, the following maximum hoop stress limitations apply:

Class location	Maximum hoop stress allowed as percentage of SMYS	
	Natural gas	Air or inert gas
1	80	80
2	30	75
3	30	50
4	30	40

(d) Each joint used to tie in a test segment of pipeline is excepted from the specific test requirements of this subpart, but each non-welded joint must be leak tested at not less than its operating pressure.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-58, 53 FR 1635, Jan. 21, 1988; Amdt. 192-60, 53 FR 36029, Sept. 16, 1988; Amdt. 192-60A, 54 FR 5485, Feb. 3, 1989]

§ 192.505 Strength test requirements for steel pipeline to operate at a hoop stress of 30 percent or more of SMYS.

(a) Except for service lines, each segment of a steel pipeline that is to operate at a hoop stress of 30 percent or more of SMYS must be strength tested in accordance with this section to substantiate the proposed maximum allowable operating pressure. In addition, in a Class 1 or Class 2 location, if there is a building intended for human occupancy within 300 feet of a pipeline, a hydrostatic test must be conducted to a test pressure of at least 125 percent of maximum operating pressure on that segment of the pipeline within 300 feet of such a building, but in no event may the test section be less than 600 feet unless the length of the newly installed or relocated pipe is less than 600 feet. However, if the buildings are evacuated while the hoop stress exceeds 50 percent of SMYS, air or inert gas may be used as the test medium.

(b) In a Class 1 or Class 2 location, each compressor station regulator station, and measuring station, must be tested to at least Class 3 location test requirements.

(c) Except as provided in paragraph (e) of this section, the strength test must be conducted by maintaining the pressure at or above the test pressure for at least 8 hours.

(d) If a component other than pipe is the only item being replaced or added to a pipeline, a strength test after installation is not required, if the manufacturer of the component certifies that—

(1) The component was tested to at least the pressure required for the pipeline to which it is being added; or

(2) The component was manufactured under a quality control system that ensures that each item manufactured is at least equal in strength to a prototype and that the prototype was tested to at least the pressure required for the pipeline to which it is being added.

(e) For fabricated units and short sections of pipe, for which a post installation test is impractical, a pre-installation strength test must be conducted by maintaining the pressure at or above the test pressure for at least 4 hours.

§ 192.507 Test requirements for pipelines to operate at a hoop stress less than 30 percent of SMYS and at or above 100 p.s.i.g.

Except for service lines and plastic pipelines, each segment of a pipeline that is to be operated at a hoop stress less than 30 percent of SMYS and at or

above 100 p.s.i.g. must be tested in accordance with the following:

(a) The pipeline operator must use a test procedure that will ensure discovery of all potentially hazardous leaks in the segment being tested.

(b) If, during the test, the segment is to be stressed to 20 percent or more of SMYS and natural gas, inert gas, or air is the test medium—

(1) A leak test must be made at a pressure between 100 p.s.i.g. and the pressure required to produce a hoop stress of 20 percent of SMYS; or

(2) The line must be walked to check for leaks while the hoop stress is held at approximately 20 percent of SMYS.

(c) The pressure must be maintained at or above the test pressure for at least 1 hour.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-58, 53 FR 1635, Jan. 21, 1988]

§ 192.509 Test requirements for pipelines to operate below 100 p.s.i.g.

Except for service lines and plastic pipelines, each segment of a pipeline that is to be operated below 100 p.s.i.g. must be leak tested in accordance with the following:

(a) The test procedure used must ensure discovery of all potentially hazardous leaks in the segment being tested.

(b) Each main that is to be operated at less than 1 p.s.i.g. must be tested to at least 10 p.s.i.g. and each main to be operated at or above 1 p.s.i.g. must be tested to at least 90 p.s.i.g.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-58, 53 FR 1635, Jan. 21, 1988]

§ 192.511 Test requirements for service lines.

(a) Each segment of a service line (other than plastic) must be leak tested in accordance with this section before being placed in service. If feasible, the service line connection to the main must be included in the test; if not feasible, it must be given a leakage test at the operating pressure when placed in service.

(b) Each segment of a service line (other than plastic) intended to be operated at a pressure of at least 1 p.s.i.g. but not more than 40 p.s.i.g. must be given a leak test at a pressure of not less than 50 p.s.i.g.

(c) Each segment of a service line (other than plastic) intended to be operated at pressures of more than 40 p.s.i.g. must be tested to at least 90 p.s.i.g., except that each segment of a steel service line stressed to 20 percent or more of SMYS must be tested in accordance with § 192.507 of this subpart.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-74, 61 FR 18517, Apr. 26, 1996]

§ 192.513 Test requirements for plastic pipelines.

(a) Each segment of a plastic pipeline must be tested in accordance with this section.

(b) The test procedure must insure discovery of all potentially hazardous leaks in the segment being tested.

(c) The test pressure must be at least 150 percent of the maximum operating pressure or 50 psig, whichever is greater. However, the maximum test pressure may not be more than three times the pressure determined under § 192.121, at a temperature not less than the pipe temperature during the test.

(d) During the test, the temperature of thermoplastic material may not be more than 38 °C (100 °F), or the temperature at which the material's long-term hydrostatic strength has been determined under the listed specification, whichever is greater.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-77, 61 FR 27793, June 3, 1996; 61 FR 45905, Aug. 30, 1996]

§ 192.515 Environmental protection and safety requirements.

(a) In conducting tests under this subpart, each operator shall insure that every reasonable precaution is taken to protect its employees and the general public during the testing. Whenever the hoop stress of the segment of the pipeline being tested will exceed 50 percent of SMYS, the operator shall take all practicable steps to keep persons not working on the testing operation outside of the testing area until the pressure is reduced to or below the proposed maximum allowable operating pressure.

(b) The operator shall insure that the test medium is disposed of in a manner that will minimize damage to the environment.

§ 192.517 Records.

Each operator shall make, and retain for the useful life of the pipeline, a record of each test performed under §§ 192.505 and 192.507. The record must contain at least the following information:

(a) The operator's name, the name of the operator's employee responsible for making the test, and the name of any test company used.

(b) Test medium used.

(c) Test pressure.

(d) Test duration.

(e) Pressure recording charts, or other record of pressure readings.

(f) Elevation variations, whenever significant for the particular test.

(g) Leaks and failures noted and their disposition.

Subpart K—Uprating

§ 192.551 Scope.

This subpart prescribes minimum requirements for increasing maximum allowable operating pressures (uprating) for pipelines.

§ 192.553 General requirements.

(a) *Pressure increases.* Whenever the requirements of this subpart require that an increase in operating pressure be made in increments, the pressure must be increased gradually, at a rate that can be controlled, and in accordance with the following:

(1) At the end of each incremental increase, the pressure must be held constant while the entire segment of pipeline that is affected is checked for leaks.

(2) Each leak detected must be repaired before a further pressure increase is made, except that a leak determined not to be potentially hazardous need not be repaired, if it is monitored during the pressure increase and it does not become potentially hazardous.

(b) *Records.* Each operator who uprates a segment of pipeline shall retain for the life of the segment a record of each investigation required by this subpart, of all work performed, and of each pressure test conducted, in connection with the uprating.

(c) *Written plan.* Each operator who uprates a segment of pipeline shall establish a written procedure that will ensure that each applicable requirement of this subpart is complied with.

(d) *Limitation on increase in maximum allowable operating pressure.* Except as provided in § 192.555(c), a new maximum allowable operating pressure established under this subpart may not exceed the maximum that would be allowed under this part for a new segment of pipeline constructed of the same materials in the same location. However, when uprating a steel pipeline, if any variable necessary to determine the design pressure under the design formula (§ 192.105) is unknown, the MAOP may be increased as provided in § 192.619(a)(1).

[35 FR 13257, Aug. 10, 1970, as amended by Amdt. 192–78, 61 FR 28785, June 6, 1996]

§ 192.555 Uprating to a pressure that will produce a hoop stress of 30 percent or more of SMYS in steel pipelines.

(a) Unless the requirements of this section have been met, no person may subject any segment of a steel pipeline to an operating pressure that will produce a hoop stress of 30 percent or more of SMYS and that is above the established maximum allowable operating pressure.

(b) Before increasing operating pressure above the previously established maximum allowable operating pressure the operator shall:

(1) Review the design, operating, and maintenance history and previous testing of the segment of pipeline and determine whether the proposed increase is safe and consistent with the requirements of this part; and

(2) Make any repairs, replacements, or alterations in the segment of pipeline that are necessary for safe operation at the increased pressure.

(c) After complying with paragraph (b) of this section, an operator may increase the maximum allowable operating pressure of a segment of pipeline constructed before September 12, 1970, to the highest pressure that is permitted under § 192.619, using as test pressure the highest pressure to which the segment of pipeline was previously

subjected (either in a strength test or in actual operation).

(d) After complying with paragraph (b) of this section, an operator that does not qualify under paragraph (c) of this section may increase the previously established maximum allowable operating pressure if at least one of the following requirements is met:

(1) The segment of pipeline is successfully tested in accordance with the requirements of this part for a new line of the same material in the same location.

(2) An increased maximum allowable operating pressure may be established for a segment of pipeline in a Class 1 location if the line has not previously been tested, and if:

(i) It is impractical to test it in accordance with the requirements of this part;

(ii) The new maximum operating pressure does not exceed 80 percent of that allowed for a new line of the same design in the same location; and

(iii) The operator determines that the new maximum allowable operating pressure is consistent with the condition of the segment of pipeline and the design requirements of this part.

(e) Where a segment of pipeline is uprated in accordance with paragraph (c) or (d)(2) of this section, the increase in pressure must be made in increments that are equal to:

(1) 10 percent of the pressure before the uprating; or

(2) 25 percent of the total pressure increase,

whichever produces the fewer number of increments.

§ 192.557 Uprating: Steel pipelines to a pressure that will produce a hoop stress less than 30 percent of SMYS; plastic, cast iron, and ductile iron pipelines.

(a) Unless the requirements of this section have been met, no person may subject:

(1) A segment of steel pipeline to an operating pressure that will produce a hoop stress less than 30 percent of SMYS and that is above the previously established maximum allowable operating pressure; or

(2) A plastic, cast iron, or ductile iron pipeline segment to an operating pressure that is above the previously established maximum allowable operating pressure.

(b) Before increasing operating pressure above the previously established maximum allowable operating pressure, the operator shall:

(1) Review the design, operating, and maintenance history of the segment of pipeline;

(2) Make a leakage survey (if it has been more than 1 year since the last survey) and repair any leaks that are found, except that a leak determined not to be potentially hazardous need not be repaired, if it is monitored during the pressure increase and it does not become potentially hazardous;

(3) Make any repairs, replacements, or alterations in the segment of pipeline that are necessary for safe operation at the increased pressure;

(4) Reinforce or anchor offsets, bends and dead ends in pipe joined by compression couplings or bell and spigot joints to prevent failure of the pipe joint, if the offset, bend, or dead end is exposed in an excavation;

(5) Isolate the segment of pipeline in which the pressure is to be increased from any adjacent segment that will continue to be operated at a lower pressure; and

(6) If the pressure in mains or service lines, or both, is to be higher than the pressure delivered to the customer, install a service regulator on each service line and test each regulator to determine that it is functioning. Pressure may be increased as necessary to test each regulator, after a regulator has been installed on each pipeline subject to the increased pressure.

(c) After complying with paragraph (b) of this section, the increase in maximum allowable operating pressure must be made in increments that are equal to 10 p.s.i.g. or 25 percent of the total pressure increase, whichever produces the fewer number of increments. Whenever the requirements of paragraph (b)(6) of this section apply, there must be at least two approximately equal incremental increases.

(d) If records for cast iron or ductile iron pipeline facilities are not complete enough to determine stresses produced by internal pressure, trench loading, rolling loads, beam stresses,

and other bending loads, in evaluating the level of safety of the pipeline when operating at the proposed increased pressure, the following procedures must be followed:

(1) In estimating the stresses, if the original laying conditions cannot be ascertained, the operator shall assume that cast iron pipe was supported on blocks with tamped backfill and that ductile iron pipe was laid without blocks with tamped backfill.

(2) Unless the actual maximum cover depth is known, the operator shall measure the actual cover in at least three places where the cover is most likely to be greatest and shall use the greatest cover measured.

(3) Unless the actual nominal wall thickness is known, the operator shall determine the wall thickness by cutting and measuring coupons from at least three separate pipe lengths. The coupons must be cut from pipe lengths in areas where the cover depth is most likely to be the greatest. The average of all measurements taken must be increased by the allowance indicated in the following table:

Pipe size (inches)	Allowance (inches)		
	Cast iron pipe		Ductile iron pipe
	Pit cast pipe	Centrifugally cast pipe	
3 to 8	0.075	0.065	0.065
10 to 12	0.08	0.07	0.07
14 to 24	0.08	0.08	0.075
30 to 42	0.09	0.09	0.075
48	0.09	0.09	0.08
54 to 60	0.09	.....	.....

(4) For cast iron pipe, unless the pipe manufacturing process is known, the operator shall assume that the pipe is pit cast pipe with a bursting tensile strength of 11,000 p.s.i. and a modulus of rupture of 31,000 p.s.i.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-37, 46 FR 10160, Feb. 2, 1981; Amdt. 192-62, 54 FR 5628, Feb. 6, 1989]

Subpart L—Operations

§ 192.601 Scope.

This subpart prescribes minimum requirements for the operation of pipeline facilities.

§ 192.603 General provisions.

(a) No person may operate a segment of pipeline unless it is operated in accordance with this subpart.

(b) Each operator shall keep records necessary to administer the procedures established under § 192.605.

(c) The Administrator or the State Agency that has submitted a current certification under the pipeline safety laws, (49 U.S.C. 60101 *et seq.*) with respect to the pipeline facility governed by an operator's plans and procedures may, after notice and opportunity for hearing as provided in 49 CFR 190.237 or the relevant State procedures, require the operator to amend its plans and procedures as necessary to provide a reasonable level of safety.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-66, 56 FR 31090, July 9, 1991; Amdt. 192-71, 59 FR 6584, Feb. 11, 1994; Amdt. 192-75, 61 FR 18517, Apr. 26, 1996]

§ 192.605 Procedural manual for operations, maintenance, and emergencies.

(a) *General.* Each operator shall prepare and follow for each pipeline, a manual of written procedures for conducting operations and maintenance activities and for emergency response. For transmission lines, the manual must also include procedures for handling abnormal operations. This manual must be reviewed and updated by the operator at intervals not exceeding 15 months, but at least once each calendar year. This manual must be prepared before operations of a pipeline system commence. Appropriate parts of the manual must be kept at locations where operations and maintenance activities are conducted.

(b) *Maintenance and normal operations.* The manual required by paragraph (a) of this section must include procedures for the following, if applicable, to provide safety during maintenance and operations.

(1) Operating, maintaining, and repairing the pipeline in accordance with each of the requirements of this subpart and subpart M of this part.

(2) Controlling corrosion in accordance with the operations and maintenance requirements of subpart I of this part.

(3) Making construction records, maps, and operating history available to appropriate operating personnel.

(4) Gathering of data needed for reporting incidents under Part 191 of this chapter in a timely and effective manner.

(5) Starting up and shutting down any part of the pipeline in a manner designed to assure operation within the MAOP limits prescribed by this part, plus the build-up allowed for operation of pressure-limiting and control devices.

(6) Maintaining compressor stations, including provisions for isolating units or sections of pipe and for purging before returning to service.

(7) Starting, operating and shutting down gas compressor units.

(8) Periodically reviewing the work done by operator personnel to determine the effectiveness, and adequacy of the procedures used in normal operation and maintenance and modifying the procedures when deficiencies are found.

(9) Taking adequate precautions in excavated trenches to protect personnel from the hazards of unsafe accumulations of vapor or gas, and making available when needed at the excavation, emergency rescue equipment, including a breathing apparatus and, a rescue harness and line.

(10) Systematic and routine testing and inspection of pipe-type or bottle-type holders including—

(i) Provision for detecting external corrosion before the strength of the container has been impaired;

(ii) Periodic sampling and testing of gas in storage to determine the dew point of vapors contained in the stored gas which, if condensed, might cause internal corrosion or interfere with the safe operation of the storage plant; and

(iii) Periodic inspection and testing of pressure limiting equipment to determine that it is in safe operating condition and has adequate capacity.

(c) *Abnormal operation.* For transmission lines, the manual required by paragraph (a) of this section must include procedures for the following to provide safety when operating design limits have been exceeded:

(1) Responding to, investigating, and correcting the cause of:

(i) Unintended closure of valves or shutdowns;

(ii) Increase or decrease in pressure or flow rate outside normal operating limits;

(iii) Loss of communications;

(iv) Operation of any safety device; and

(v) Any other foreseeable malfunction of a component, deviation from normal operation, or personnel error, which may result in a hazard to persons or property.

(2) Checking variations from normal operation after abnormal operation has ended at sufficient critical locations in the system to determine continued integrity and safe operation.

(3) Notifying responsible operator personnel when notice of an abnormal operation is received.

(4) Periodically reviewing the response of operator personnel to determine the effectiveness of the procedures controlling abnormal operation and taking corrective action where deficiencies are found.

(5) The requirements of this paragraph (c) do not apply to natural gas distribution operators that are operating transmission lines in connection with their distribution system.

(d) *Safety-related condition reports.* The manual required by paragraph (a) of this section must include instructions enabling personnel who perform operation and maintenance activities to recognize conditions that potentially may be safety-related conditions that are subject to the reporting requirements of §191.23 of this subchapter.

(e) *Surveillance, emergency response, and accident investigation.* The procedures required by §§192.613(a), 192.615,

and 192.617 must be included in the manual required by paragraph (a) of this section.

[Amdt. 192-71, 59 FR 6584, Feb. 11, 1994, as amended by Amdt. 192-71A, 60 FR 14381, Mar. 17, 1995]

§ 192.607 [Reserved]

§ 192.609 Change in class location: Required study.

Whenever an increase in population density indicates a change in class location for a segment of an existing steel pipeline operating at hoop stress that is more than 40 percent of SMYS, or indicates that the hoop stress corresponding to the established maximum allowable operating pressure for a segment of existing pipeline is not commensurate with the present class location, the operator shall immediately make a study to determine:

(a) The present class location for the segment involved.

(b) The design, construction, and testing procedures followed in the original construction, and a comparison of these procedures with those required for the present class location by the applicable provisions of this part.

(c) The physical condition of the segment to the extent it can be ascertained from available records;

(d) The operating and maintenance history of the segment;

(e) The maximum actual operating pressure and the corresponding operating hoop stress, taking pressure gradient into account, for the segment of pipeline involved; and

(f) The actual area affected by the population density increase, and physical barriers or other factors which may limit further expansion of the more densely populated area.

§ 192.611 Change in class location: Confirmation or revision of maximum allowable operating pressure.

(a) If the hoop stress corresponding to the established maximum allowable operating pressure of a segment of pipeline is not commensurate with the present class location, and the segment is in satisfactory physical condition, the maximum allowable operating pressure of that segment of pipeline must be confirmed or revised according to one of the following requirements:

(1) If the segment involved has been previously tested in place for a period of not less than 8 hours, the maximum allowable operating pressure is 0.8 times the test pressure in Class 2 locations, 0.667 times the test pressure in Class 3 locations, or 0.555 times the test pressure in Class 4 locations. The corresponding hoop stress may not exceed 72 percent of the SMYS of the pipe in Class 2 locations, 60 percent of SMYS in Class 3 locations, or 50 percent of SMYS in Class 4 locations.

(2) The maximum allowable operating pressure of the segment involved must be reduced so that the corresponding hoop stress is not more than that allowed by this part for new segments of pipelines in the existing class location.

(3) The segment involved must be tested in accordance with the applicable requirements of subpart J of this part, and its maximum allowable operating pressure must then be established according to the following criteria:

(i) The maximum allowable operating pressure after the requalification test is 0.8 times the test pressure for Class 2 locations, 0.667 times the test pressure for Class 3 locations, and 0.555 times the test pressure for Class 4 locations.

(ii) The corresponding hoop stress may not exceed 72 percent of the SMYS of the pipe in Class 2 locations, 60 percent of SMYS in Class 3 locations, or 50 percent of SMYS in Class 4 locations.

(b) The maximum allowable operating pressure confirmed or revised in accordance with this section, may not exceed the maximum allowable operating pressure established before the confirmation or revision.

(c) Confirmation or revision of the maximum allowable operating pressure of a segment of pipeline in accordance with this section does not preclude the application of §§ 192.553 and 192.555.

(d) Confirmation or revision of the maximum allowable operating pressure that is required as a result of a study

under § 192.609 must be completed within 18 months of the change in class location. Pressure reduction under paragraph (a) (1) or (2) of this section within the 18-month period does not preclude establishing a maximum allowable operating pressure under paragraph (a)(3) of this section at a later date.

[Amdt. 192-63A, 54 FR 24174, June 6, 1989 as amended by Amdt. 192-78, 61 FR 28785, June 6, 1996]

§ 192.612 Underwater inspection and re-burial of pipelines in the Gulf of Mexico and its inlets.

(a) Each operator shall, in accordance with this section, conduct an underwater inspection of its pipelines in the Gulf of Mexico and its inlets. The inspection must be conducted after October 3, 1989 and before November 16, 1992.

(b) If, as a result of an inspection under paragraph (a) of this section, or upon notification by any person, an operator discovers that a pipeline it operates is exposed on the seabed or constitutes a hazard to navigation, the operator shall—

(1) Promptly, but not later than 24 hours after discovery, notify the National Response Center, telephone: 1-800-424-8802 of the location, and, if available, the geographic coordinates of that pipeline;

(2) Promptly, but not later than 7 days after discovery, mark the location of the pipeline in accordance with 33 CFR part 64 at the ends of the pipeline segment and at intervals of not over 500 yards long, except that a pipeline segment less than 200 yards long need only be marked at the center; and

(3) Within 6 months after discovery, or not later than November 1 of the following year if the 6 month period is later than November 1 of the year the discovery is made, place the pipeline so that the top of the pipe is 36 inches below the seabed for normal excavation or 18 inches for rock excavation.

[Amdt. 192-67, 56 FR 63771, Dec. 5, 1991]

§ 192.613 Continuing surveillance.

(a) Each operator shall have a procedure for continuing surveillance of its facilities to determine and take appropriate action concerning changes in class location, failures, leakage history, corrosion, substantial changes in cathodic protection requirements, and other unusual operating and maintenance conditions.

(b) If a segment of pipeline is determined to be in unsatisfactory condition but no immediate hazard exists, the operator shall initiate a program to recondition or phase out the segment involved, or, if the segment cannot be reconditioned or phased out, reduce the maximum allowable operating pressure in accordance with § 192.619 (a) and (b).

§ 192.614 Damage prevention program.

(a) Except for pipelines listed in paragraph (c) of this section, each operator of a buried pipeline shall carry out in accordance with this section a written program to prevent damage to that pipeline by excavation activities. For the purpose of this section, "excavation activities" include excavation, blasting, boring, tunneling, backfilling, the removal of aboveground structures by either explosive or mechanical means, and other earth moving operations. An operator may perform any of the duties required by paragraph (b) of this section through participation in a public service program, such as a "one-call" system, but such participation does not relieve the operator of responsibility for compliance with this section.

(b) The damage prevention program required by paragraph (a) of this section must, at a minimum:

(1) Include the identity, on a current basis, of persons who normally engage in excavation activities in the area in which the pipeline is located.

(2) Provide for general notification of the public in the vicinity of the pipeline and actual notification of the persons identified in paragraph (b)(1) of the following as often as needed to make them aware of the damage prevention program:

(i) The program's existence and purpose; and

(ii) How to learn the location of underground pipelines before excavation activities are begun.

(3) Provide a means of receiving and recording notification of planned excavation activities.

(4) If the operator has buried pipelines in the area of excavation activity, provide for actual notification of persons who give notice of their intent to excavate of the type of temporary marking to be provided and how to identify the markings.

(5) Provide for temporary marking of buried pipelines in the area of excavation activity before, as far as practical, the activity begins.

(6) Provide as follows for inspection of pipelines that an operator has reason to believe could be damaged by excavation activities:

(i) The inspection must be done as frequently as necessary during and after the activities to verify the integrity of the pipeline; and

(ii) In the case of blasting, any inspection must include leakage surveys.

(c) A damage prevention program under this section is not required for the following pipelines:

(1) Pipelines located offshore.

(2) Pipelines, other than those located offshore, in Class 1 or 2 locations until September 20, 1995.

(3) Pipelines to which access is physically controlled by the operator.

(4) Pipelines that are part of a petroleum gas system subject to § 192.11 or part of a distribution system operated by a person in connection with that person's leasing of real property or by a condominium or cooperative association.

[Amdt. 192-40, 47 FR 13824, Apr. 1, 1982, as amended by Amdt. 192-57, 52 FR 32800, Aug. 31, 1987; Amdt. 192-73, 60 FR 14650, Mar. 20, 1995; Amdt. 192-78, 61 FR 28785, June 6, 1996]

§ 192.615 Emergency plans.

(a) Each operator shall establish written procedures to minimize the hazard resulting from a gas pipeline emergency. At a minimum, the procedures must provide for the following:

(1) Receiving, identifying, and classifying notices of events which require immediate response by the operator.

(2) Establishing and maintaining adequate means of communication with appropriate fire, police, and other public officials.

(3) Prompt and effective response to a notice of each type of emergency, including the following:

(i) Gas detected inside or near a building.

(ii) Fire located near or directly involving a pipeline facility.

(iii) Explosion occurring near or directly involving a pipeline facility.

(iv) Natural disaster.

(4) The availability of personnel, equipment, tools, and materials, as needed at the scene of an emergency.

(5) Actions directed toward protecting people first and then property.

(6) Emergency shutdown and pressure reduction in any section of the operator's pipeline system necessary to minimize hazards to life or property.

(7) Making safe any actual or potential hazard to life or property.

(8) Notifying appropriate fire, police, and other public officials of gas pipeline emergencies and coordinating with them both planned responses and actual responses during an emergency.

(9) Safely restoring any service outage.

(10) Beginning action under § 192.617, if applicable, as soon after the end of the emergency as possible.

(b) Each operator shall:

(1) Furnish its supervisors who are responsible for emergency action a copy of that portion of the latest edition of the emergency procedures established under paragraph (a) of this section as necessary for compliance with those procedures.

(2) Train the appropriate operating personnel to assure that they are knowledgeable of the emergency procedures and verify that the training is effective.

(3) Review employee activities to determine whether the procedures were effectively followed in each emergency.

(c) Each operator shall establish and maintain liaison with appropriate fire, police, and other public officials to:

(1) Learn the responsibility and resources of each government organization that may respond to a gas pipeline emergency;

(2) Acquaint the officials with the operator's ability in responding to a gas pipeline emergency;

(3) Identify the types of gas pipeline emergencies of which the operator notifies the officials; and

(4) Plan how the operator and officials can engage in mutual assistance to minimize hazards to life or property.

[Amdt. 192-24, 41 FR 13587, Mar. 31, 1976, as amended by Amdt. 192-71, 59 FR 6585, Feb. 11, 1994]

§ 192.616 Public education.

Each operator shall establish a continuing educational program to enable customers, the public, appropriate government organizations, and persons engaged in excavation related activities to recognize a gas pipeline emergency for the purpose of reporting it to the operator or the appropriate public officials. The program and the media used must be as comprehensive as necessary to reach all areas in which the operator transports gas. The program must be conducted in English and in other languages commonly understood by a significant number and concentration of the non-English speaking population in the operator's area.

[Amdt. 192-71, 59 FR 6585, Feb. 11, 1994]

§ 192.617 Investigation of failures.

Each operator shall establish procedures for analyzing accidents and failures, including the selection of samples of the failed facility or equipment for laboratory examination, where appropriate, for the purpose of determining the causes of the failure and minimizing the possibility of a recurrence.

§ 192.619 Maximum allowable operating pressure: Steel or plastic pipelines.

(a) Except as provided in paragraph (c) of this section, no person may operate a segment of steel or plastic pipeline at a pressure that exceeds the lowest of the following:

(1) The design pressure of the weakest element in the segment, determined in accordance with subparts C and D of this part. However, for steel pipe in pipelines being converted under § 192.14 or uprated under subpart K of this part, if any variable necessary to determine the design pressure under the design formula (§ 192.105) is unknown, one of the following pressures is to be used as design pressure:

(i) Eighty percent of the first test pressure that produces yield under section N5.0 of Appendix N of ASME B31.8, reduced by the appropriate factor in paragraph (a)(2)(ii) of this section; or

(ii) If the pipe is 324 mm (12¾ in) or less in outside diameter and is not tested to yield under this paragraph, 1379 kPa (200 psig).

(2) The pressure obtained by dividing the pressure to which the segment was tested after construction as follows:

(i) For plastic pipe in all locations, the test pressure is divided by a factor of 1.5.

(ii) For steel pipe operated at 100 p.s.i.g. or more, the test pressure is divided by a factor determined in accordance with the following table:

Class location	Factors[1], segment—		
	Installed before (Nov. 12, 1970)	Installed after (Nov. 11, 1970)	Converted under § 192.14
1	1.1	1.1	1.25
2	1.25	1.25	1.25
3	1.4	1.5	1.5
4	1.4	1.5	1.5

[1]For offshore segments installed, uprated or converted after July 31, 1977, that are not located on an offshore platform, the factor is 1.25. For segments installed, uprated or converted after July 31, 1977, that are located on an offshore platform or on a platform in inland navigable waters, including a pipe riser, the factor is 1.5.

(3) The highest actual operating pressure to which the segment was subjected during the 5 years preceding July 1, 1970 (or in the case of offshore gathering lines, July 1, 1976), unless the segment was tested in accordance with paragraph (a)(2) of this section after July 1, 1965 (or in the case of offshore gathering lines, July 1, 1971), or the segment was uprated in accordance with subpart K of this part.

(4) The pressure determined by the operator to be the maximum safe pressure after considering the history of the segment, particularly known corrosion and the actual operating pressure.

(b) No person may operate a segment to which paragraph (a)(4) of this section is applicable, unless over-pressure protective devices are installed on the segment in a manner that will prevent the maximum allowable operating pressure from being exceeded, in accordance with § 192.195.

(c) Notwithstanding the other requirements of this section, an operator may operate a segment of pipeline found to be in satisfactory condition,

considering its operating and maintenance history, at the highest actual operating pressure to which the segment was subjected during the 5 years preceding July 1, 1970, or in the case of offshore gathering lines, July 1, 1976, subject to the requirements of § 192.611.

[35 FR 13257, Aug. 19, 1970]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting § 192.619, see the List of CFR Sections Affected in the Finding Aids section of this volume.

§ 192.621 Maximum allowable operating pressure: High-pressure distribution systems.

(a) No person may operate a segment of a high pressure distribution system at a pressure that exceeds the lowest of the following pressures, as applicable:

(1) The design pressure of the weakest element in the segment, determined in accordance with subparts C and D of this part.

(2) 60 p.s.i.g., for a segment of a distribution system otherwise designed to operate at over 60 p.s.i.g., unless the service lines in the segment are equipped with service regulators or other pressure limiting devices in series that meet the requirements of § 192.197(c).

(3) 25 p.s.i.g. in segments of cast iron pipe in which there are unreinforced bell and spigot joints.

(4) The pressure limits to which a joint could be subjected without the possibility of its parting.

(5) The pressure determined by the operator to be the maximum safe pressure after considering the history of the segment, particularly known corrosion and the actual operating pressures.

(b) No person may operate a segment of pipeline to which paragraph (a)(5) of this section applies, unless overpressure protective devices are installed on the segment in a manner that will prevent the maximum allowable operating pressure from being exceeded, in accordance with § 192.195.

§ 192.623 Maximum and minimum allowable operating pressure; Low-pressure distribution systems.

(a) No person may operate a low-pressure distribution system at a pressure high enough to make unsafe the operation of any connected and properly adjusted low-pressure gas burning equipment.

(b) No person may operate a low pressure distribution system at a pressure lower than the minimum pressure at which the safe and continuing operation of any connected and properly adjusted low-pressure gas burning equipment can be assured.

§ 192.625 Odorization of gas.

(a) A combustible gas in a distribution line must contain a natural odorant or be odorized so that at a concentration in air of one-fifth of the lower explosive limit, the gas is readily detectable by a person with a normal sense of smell.

(b) After December 31, 1976, a combustible gas in a transmission line in a Class 3 or Class 4 location must comply with the requirements of paragraph (a) of this section unless:

(1) At least 50 percent of the length of the line downstream from that location is in a Class 1 or Class 2 location;

(2) The line transports gas to any of the following facilities which received gas without an odorant from that line before May 5, 1975;

(i) An underground storage field;

(ii) A gas processing plant;

(iii) A gas dehydration plant; or

(iv) An industrial plant using gas in a process where the presence of an odorant:

(A) Makes the end product unfit for the purpose for which it is intended;

(B) Reduces the activity of a catalyst; or

(C) Reduces the percentage completion of a chemical reaction;

(3) In the case of a lateral line which transports gas to a distribution center, at least 50 percent of the length of that line is in a Class 1 or Class 2 location; or

(4) The combustible gas is hydrogen intended for use as a feedstock in a manufacturing process.

(c) In the concentrations in which it is used, the odorant in combustible gases must comply with the following:

(1) The odorant may not be deleterious to persons, materials, or pipe.

(2) The products of combustion from the odorant may not be toxic when breathed nor may they be corrosive or

harmful to those materials to which the products of combustion will be exposed.

(d) The odorant may not be soluble in water to an extent greater than 2.5 parts to 100 parts by weight.

(e) Equipment for odorization must introduce the odorant without wide variations in the level of odorant.

(f) Each operator shall conduct periodic sampling of combustible gases to assure the proper concentration of odorant in accordance with this section. Operators of master meter systems may comply with this requirement by—

(1) Receiving written verification from their gas source that the gas has the proper concentration of odorant; and

(2) Conducting periodic "sniff" tests at the extremities of the system to confirm that the gas contains odorant.

[35 FR 13257, Aug. 19, 1970]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting § 192.625, see the List of CFR Sections Affected in the Finding Aids section of this volume.

§ 192.627 Tapping pipelines under pressure.

Each tap made on a pipeline under pressure must be performed by a crew qualified to make hot taps.

§ 192.629 Purging of pipelines.

(a) When a pipeline is being purged of air by use of gas, the gas must be released into one end of the line in a moderately rapid and continuous flow. If gas cannot be supplied in sufficient quantity to prevent the formation of a hazardous mixture of gas and air, a slug of inert gas must be released into the line before the gas.

(b) When a pipeline is being purged of gas by use of air, the air must be released into one end of the line in a moderately rapid and continuous flow. If air cannot be supplied in sufficient quantity to prevent the formation of a hazardous mixture of gas and air, a slug of inert gas must be released into the line before the air.

Subpart M—Maintenance

§ 192.701 Scope.

This subpart prescribes minimum requirements for maintenance of pipeline facilities.

§ 192.703 General.

(a) No person may operate a segment of pipeline, unless it is maintained in accordance with this subpart.

(b) Each segment of pipeline that becomes unsafe must be replaced, repaired, or removed from service.

(c) Hazardous leaks must be repaired promptly.

§ 192.705 Transmission lines: Patrolling.

(a) Each operator shall have a patrol program to observe surface conditions on and adjacent to the transmission line right-of-way for indications of leaks, construction activity, and other factors affecting safety and operation.

(b) The frequency of patrols is determined by the size of the line, the operating pressures, the class location, terrain, weather, and other relevant factors, but intervals between patrols may not be longer than prescribed in the following table:

	Maximum interval between patrols	
Class location of line	At highway and railroad crossings	At all other places
1, 2	7½ months; but at least twice each calendar year.	15 months; but at least once each calendar year.
3	4½ months; but at least four times each calendar year.	7½ months; but at least twice each calendar year.
4	4½ months; but at least four times each calendar year.	4½ months; but at least four times each calendar year.

(c) Methods of patrolling include walking, driving, flying or other appropriate means of traversing the right-of-way.

[Amdt. 192-21, 40 FR 20283, May 9, 1975, as amended by Amdt. 192-43, 47 FR 46851, Oct. 21, 1982; Amdt. 192-78, 61 FR 28786, June 6, 1996]

§ 192.706 Transmission lines: Leakage surveys.

Leakage surveys of a transmission line must be conducted at intervals not

exceeding 15 months, but at least once each calendar year. However, in the case of a transmission line which transports gas in conformity with § 192.625 without an odor or odorant, leakage surveys using leak detector equipment must be conducted—

(a) In Class 3 locations, at intervals not exceeding 7½ months, but at least twice each calendar year; and

(b) In Class 4 locations, at intervals not exceeding 4½ months, but at least four times each calendar year.

[Amdt. 192-21, 40 FR 20283, May 9, 1975, as amended by Amdt. 192-43, 47 FR 46851, Oct. 21, 1982; Amdt. 192-71, 59 FR 6585, Feb. 11, 1994]

§ 192.707 Line markers for mains and transmission lines.

(a) *Buried pipelines.* Except as provided in paragraph (b) of this section, a line marker must be placed and maintained as close as practical over each buried main and transmission line:

(1) At each crossing of a public road and railroad; and

(2) Wherever necessary to identify the location of the transmission line or main to reduce the possibility of damage or interference.

(b) *Exceptions for buried pipelines.* Line markers are not required for the following pipelines:

(1) Mains and transmission lines located offshore, or at crossings of or under waterways and other bodies of water.

(2) Mains in Class 3 or Class 4 locations where a damage prevention program is in effect under § 192.614.

(3) Transmission lines in Class 3 or 4 locations until March 20, 1996.

(4) Transmission lines in Class 3 or 4 locations where placement of a line marker is impractical.

(c) *Pipelines aboveground.* Line markers must be placed and maintained along each section of a main and transmission line that is located aboveground in an area accessible to the public.

(d) *Marker warning.* The following must be written legibly on a background of sharply contrasting color on each line marker:

(1) The word "Warning," "Caution," or "Danger" followed by the words "Gas (or name of gas transported) Pipeline" all of which, except for markers in heavily developed urban areas, must be in letters at least one inch high with one-quarter inch stroke.

(2) The name of the operator and the telephone number (including area code) where the operator can be reached at all times.

[Amdt. 192-20, 40 FR 13505, Mar. 27, 1975; Amdt. 192-27, 41 FR 39752, Sept. 16, 1976, as amended by Amdt. 192-20A, 41 FR 56808, Dec. 30, 1976; Amdt. 192-44, 48 FR 25208, June 6, 1983; Amdt. 192-73, 60 FR 14650, Mar. 20, 1995]

§ 192.709 Transmission lines: Record keeping.

Each operator shall maintain the following records for transmission lines for the periods specified:

(a) The date, location, and description of each repair made to pipe (including pipe-to-pipe connections) must be retained for as long as the pipe remains in service.

(b) The date, location, and description of each repair made to parts of the pipeline system other than pipe must be retained for at least 5 years. However, repairs generated by patrols, surveys, inspections, or tests required by subparts L and M of this part must be retained in accordance with paragraph (c) of this section.

(c) A record of each patrol, survey, inspection, and test required by subparts L and M of this part must be retained for at least 5 years or until the next patrol, survey, inspection, or test is completed, whichever is longer.

[Amdt. 192-78, 61 FR 28786, June 6, 1996]

§ 192.711 Transmission lines: General requirements for repair procedures.

(a) Each operator shall take immediate temporary measures to protect the public whenever:

(1) A leak, imperfection, or damage that impairs its serviceability is found in a segment of steel transmission line operating at or above 40 percent of the SMYS; and

(2) It is not feasible to make a permanent repair at the time of discovery.

As soon as feasible, the operator shall make permanent repairs.

(b) Except as provided in § 192.717(a)(3), no operator may use a welded patch as a means of repair.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-27B, 45 FR 3272, Jan. 17, 1980]

§ 192.713 Transmission lines: Permanent field repair of imperfections and damages.

(a) Except as provided in paragraph (b) of this section, each imperfection or damage that impairs the serviceability of a segment of steel transmission line operating at or above 40 percent of SMYS must be repaired as follows:

(1) If it is feasible to take the segment out of service, the imperfection or damage must be removed by cutting out a cylindrical piece of pipe and replacing it with pipe of similar or greater design strength.

(2) If it is not feasible to take the segment out of service, a full encirclement welded split sleeve of appropriate design must be applied over the imperfection or damage.

(3) If the segment is not taken out of service, the operating pressure must be reduced to a safe level during the repair operations.

(b) Submerged offshore pipelines and submerged pipelines in inland navigable waters may be repaired by mechanically applying a full encirclement split sleeve of appropriate design over the imperfection or damage.

[Amdt. 192-27, 41 FR 34607, Aug. 16, 1976]

§ 192.715 Transmission lines: Permanent field repair of welds.

Each weld that is unacceptable under § 192.241(c) must be repaired as follows:

(a) If it is feasible to take the segment of transmission line out of service, the weld must be repaired in accordance with the applicable requirements of § 192.245.

(b) A weld may be repaired in accordance with § 192.245 while the segment of transmission line is in service if:

(1) The weld is not leaking;

(2) The pressure in the segment is reduced so that it does not produce a stress that is more than 20 percent of the SMYS of the pipe; and

(3) Grinding of the defective area can be limited so that at least ⅛-inch thickness in the pipe weld remains.

(c) A defective weld which cannot be repaired in accordance with paragraph (a) or (b) of this section must be repaired by installing a full encirclement welded split sleeve of appropriate design.

§ 192.717 Transmission lines: Permanent field repair of leaks.

(a) Except as provided in paragraph (b) of this section, each permanent field repair of a leak on a transmission line must be made as follows:

(1) If feasible, the segment of transmission line must be taken out of service and repaired by cutting out a cylindrical piece of pipe and replacing it with pipe of similar or greater design strength.

(2) If it is not feasible to take the segment of transmission line out of service, repairs must be made by installing a full encirclement welded split sleeve of appropriate design, unless the transmission line:

(i) Is joined by mechanical couplings; and

(ii) Operates at less than 40 percent of SMYS.

(3) If the leak is due to a corrosion pit, the repair may be made by installing a properly designed bolt-on-leak clamp; or, if the leak is due to a corrosion pit and on pipe of not more than 40,000 psi SMYS, the repair may be made by fillet welding over the pitted area a steel plate patch with rounded corners, of the same or greater thickness than the pipe, and not more than one-half of the diameter of the pipe in size.

(b) Submerged offshore pipelines and submerged pipelines in inland navigable waters may be repaired by mechanically applying a full encirclement split sleeve of appropriate design over the leak.

[Amdt. 192-27, 41 FR 34607, Aug. 16, 1976]

§ 192.719 Transmission lines: Testing of repairs.

(a) *Testing of replacement pipe.* If a segment of transmission line is repaired by cutting out the damaged portion of the pipe as a cylinder, the replacement pipe must be tested to the pressure required for a new line installed in the same location. This test

may be made on the pipe before it is installed.

(b) *Testing of repairs made by welding.* Each repair made by welding in accordance with §§ 192.713, 192.715, and 192.717 must be examined in accordance with § 192.241.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-54, 51 FR 41635, Nov. 18, 1986]

§ 192.721 Distribution systems: Patrolling.

(a) The frequency of patrolling mains must be determined by the severity of the conditions which could cause failure or leakage, and the consequent hazards to public safety.

(b) Mains in places or on structures where anticipated physical movement or external loading could cause failure or leakage must be patrolled—

(1) In business districts, at intervals not exceeding 4½ months, but at least four times each calendar year; and

(2) Outside business districts, at intervals not exceeding 7½ months, but at least twice each calendar year.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-43, 47 FR 46851, Oct. 21, 1982; Amdt. 192-78, 61 FR 28786, June 6, 1996]

§ 192.723 Distribution systems: Leakage surveys.

(a) Each operator of a distribution system shall conduct periodic leakage surveys in accordance with this section.

(b) The type and scope of the leakage control program must be determined by the nature of the operations and the local conditions, but it must meet the following minimum requirements:

(1) A leakage survey with leak detector equipment must be conducted in business districts, including tests of the atmosphere in gas, electric, telephone, sewer, and water system manholes, at cracks in pavement and sidewalks, and at other locations providing an opportunity for finding gas leaks, at intervals not exceeding 15 months, but at least once each calendar year.

(2) A leakage survey with leak detector equipment must be conducted outside business districts as frequently as necessary, but at intervals not exceeding 5 years. However, for cathodically unprotected distribution lines subject to § 192.465(e) on which electrical surveys for corrosion are impractical, survey intervals may not exceed 3 years.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-43, 47 FR 46851, Oct. 21, 1982; Amdt. 192-70, 58 FR 54528, 54529, Oct. 22, 1993; Amdt. 192-71, 59 FR 6585, Feb. 11, 1994]

§ 192.725 Test requirements for reinstating service lines.

(a) Except as provided in paragraph (b) of this section, each disconnected service line must be tested in the same manner as a new service line, before being reinstated.

(b) Each service line temporarily disconnected from the main must be tested from the point of disconnection to the service line valve in the same manner as a new service line, before reconnecting. However, if provisions are made to maintain continuous service, such as by installation of a bypass, any part of the original service line used to maintain continuous service need not be tested.

§ 192.727 Abandonment or deactivation of facilities.

(a) Each operator shall conduct abandonment or deactivation of pipelines in accordance with the requirements of this section.

(b) Each pipeline abandoned in place must be disconnected from all sources and supplies of gas; purged of gas; in the case of offshore pipelines, filled with water or inert materials; and sealed at the ends. However, the pipeline need not be purged when the volume of gas is so small that there is no potential hazard.

(c) Except for service lines, each inactive pipeline that is not being maintained under this part must be disconnected from all sources and supplies of gas; purged of gas; in the case of offshore pipelines, filled with water or inert materials; and sealed at the ends. However, the pipeline need not be purged when the volume of gas is so small that there is no potential hazard.

(d) Whenever service to a customer is discontinued, one of the following must be complied with:

(1) The valve that is closed to prevent the flow of gas to the customer must be provided with a locking device or other means designed to prevent the opening

of the valve by persons other than those authorized by the operator.

(2) A mechanical device or fitting that will prevent the flow of gas must be installed in the service line or in the meter assembly.

(3) The customer's piping must be physically disconnected from the gas supply and the open pipe ends sealed.

(e) If air is used for purging, the operator shall insure that a combustible mixture is not present after purging.

(f) Each abandoned vault must be filled with a suitable compacted material.

[Amdt. 192-8, 37 FR 20695, Oct. 3, 1972, as amended by Amdt. 192-27, 41 FR 34607, Aug. 16, 1976; Amdt. 192-71, 59 FR 6585, Feb. 11, 1994]

§ 192.731 Compressor stations: Inspection and testing of relief devices.

(a) Except for rupture discs, each pressure relieving device in a compressor station must be inspected and tested in accordance with §§ 192.739 and 192.743, and must be operated periodically to determine that it opens at the correct set pressure.

(b) Any defective or inadequate equipment found must be promptly repaired or replaced.

(c) Each remote control shutdown device must be inspected and tested at intervals not exceeding 15 months, but at least once each calendar year, to determine that it functions properly.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-43, 47 FR 46851, Oct. 21, 1982]

§ 192.735 Compressor stations: Storage of combustible materials.

(a) Flammable or combustible materials in quantities beyond those required for everyday use, or other than those normally used in compressor buildings, must be stored a safe distance from the compressor building.

(b) Aboveground oil or gasoline storage tanks must be protected in accordance with National Fire Protection Association Standard No. 30.

§ 192.736 Compressor stations: Gas detection.

(a) Not later than September 16, 1996, each compressor building in a compressor station must have a fixed gas detection and alarm system, unless the building is—

(1) Constructed so that at least 50 percent of its upright side area is permanently open; or

(2) Located in an unattended field compressor station of 1,000 horsepower or less.

(b) Except when shutdown of the system is necessary for maintenance under paragraph (c) of this section, each gas detection and alarm system required by this section must—

(1) Continuously monitor the compressor building for a concentration of gas in air of not more than 25 percent of the lower explosive limit; and

(2) If that concentration of gas is detected, warn persons about to enter the building and persons inside the building of the danger.

(c) Each gas detection and alarm system required by this section must be maintained to function properly. The maintenance must include performance tests.

[58 FR 48464, Sept. 16, 1993]

§ 192.739 Pressure limiting and regulating stations: Inspection and testing.

Each pressure limiting station, relief device (except rupture discs), and pressure regulating station and its equipment must be subjected at intervals not exceeding 15 months, but at least once each calendar year, to inspections and tests to determine that it is—

(a) In good mechanical condition;

(b) Adequate from the standpoint of capacity and reliability of operation for the service in which it is employed;

(c) Set to function at the correct pressure; and

(d) Properly installed and protected from dirt, liquids, or other conditions that might prevent proper operation.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-43, 47 FR 46851, Oct. 21, 1982]

§ 192.741 Pressure limiting and regulating stations: Telemetering or recording gauges.

(a) Each distribution system supplied by more than one district pressure regulating station must be equipped with telemetering or recording pressure gauges to indicate the gas pressure in the district.

(b) On distribution systems supplied by a single district pressure regulating station, the operator shall determine the necessity of installing telemetering or recording gauges in the district, taking into consideration the number of customers supplied, the operating pressures, the capacity of the installation, and other operating conditions.

(c) If there are indications of abnormally high or low pressure, the regulator and the auxiliary equipment must be inspected and the necessary measures employed to correct any unsatisfactory operating conditions.

§ 192.743 Pressure limiting and regulating stations: Testing of relief devices.

(a) If feasible, pressure relief devices (except rupture discs) must be tested in place, at intervals not exceeding 15 months, but at least once each calendar year, to determine that they have enough capacity to limit the pressure on the facilities to which they are connected to the desired maximum pressure.

(b) If a test is not feasible, review and calculation of the required capacity of the relieving device at each station must be made at intervals not exceeding 15 months, but at least once each calendar year, and these required capacities compared with the rated or experimentally determined relieving capacity of the device for the operating conditions under which it works. After the initial calculations, subsequent calculations are not required if the review documents that parameters have not changed in a manner which would cause the capacity to be less than required.

(c) If the relieving device is of insufficient capacity, a new or additional device must be installed to provide the additional capacity required.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-43, 47 FR 46851, Oct. 21, 1982; Amdt. 192-55, 51 FR 41634, Nov. 18, 1986]

§ 192.745 Valve maintenance: Transmission lines.

Each transmission line valve that might be required during any emergency must be inspected and partially operated at intervals not exceeding 15 months, but at least once each calendar year.

[Amdt. 192-43, 47 FR 46851, Oct. 21, 1982]

§ 192.747 Valve maintenance: Distribution systems.

Each valve, the use of which may be necessary for the safe operation of a distribution system, must be checked and serviced at intervals not exceeding 15 months, but at least once each calendar year.

[Amdt. 192-43, 47 FR 46851, Oct. 21, 1982]

§ 192.749 Vault maintenance.

(a) Each vault housing pressure regulating and pressure limiting equipment, and having a volumetric internal content of 200 cubic feet or more, must be inspected at intervals not exceeding 15 months, but at least once each calendar year, to determine that it is in good physical condition and adequately ventilated.

(b) If gas is found in the vault, the equipment in the vault must be inspected for leaks, and any leaks found must be repaired.

(c) The ventilating equipment must also be inspected to determine that it is functioning properly.

(d) Each vault cover must be inspected to assure that it does not present a hazard to public safety.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-43, 47 FR 46851, Oct. 21, 1982]

§ 192.751 Prevention of accidental ignition.

Each operator shall take steps to minimize the danger of accidental ignition of gas in any structure or area where the presence of gas constitutes a hazard of fire or explosion, including the following:

(a) When a hazardous amount of gas is being vented into open air, each potential source of ignition must be removed from the area and a fire extinguisher must be provided.

(b) Gas or electric welding or cutting may not be performed on pipe or on pipe components that contain a combustible mixture of gas and air in the area of work.

(c) Post warning signs, where appropriate.

§ 192.753 Caulked bell and spigot joints.

(a) Each cast-iron caulked bell and spigot joint that is subject to pressures of 25 p.s.i.g. or more must be sealed with:

(1) A mechanical leak clamp; or

(2) A material or device which:

(i) Does not reduce the flexibility of the joint;

(ii) Permanently bonds, either chemically or mechanically, or both, with the bell and spigot metal surfaces or adjacent pipe metal surfaces; and

(iii) Seals and bonds in a manner that meets the strength, environmental, and chemical compatibility requirements of §§ 192.53 (a) and (b) and 192.143.

(b) Each cast iron caulked bell and spigot joint that is subject to pressures of less than 25 p.s.i.g. and is exposed for any reason, must be sealed by a means other than caulking.

[35 FR 13257, Aug. 19, 1970, as amended by Amdt. 192-25, 41 FR 23680, June 11, 1976]

§ 192.755 Protecting cast-iron pipelines.

When an operator has knowledge that the support for a segment of a buried cast-iron pipeline is disturbed:

(a) That segment of the pipeline must be protected, as necessary, against damage during the disturbance by:

(1) Vibrations from heavy construction equipment, trains, trucks, buses, or blasting;

(2) Impact forces by vehicles;

(3) Earth movement;

(4) Apparent future excavations near the pipeline; or

(5) Other foreseeable outside forces which may subject that segment of the pipeline to bending stress.

(b) As soon as feasible, appropriate steps must be taken to provide permanent protection for the disturbed segment from damage that might result from external loads, including compliance with applicable requirements of §§ 192.317(a), 192.319, and 192.361(b)–(d).

[Amdt. 192-23, 41 FR 13589, Mar. 31, 1976]

APPENDIX A TO PART 192—INCORPORATED BY REFERENCE

I. List of Organizations and Addresses

A. American Gas Association (AGA), 1515 Wilson Boulevard, Arlington, VA 22209.

B. American National Standards Institute (ANSI), 11 West 42nd Street, New York, NY 10036.

C. American Petroleum Institute (API), 1220 L Street, NW., Washington, DC 20005.

D. The American Society of Mechanical Engineers (ASME), United Engineering Center, 345 East 47th Street, New York, NY 10017.

E. American Society for Testing and Materials (ASTM), 100 Barr Harbor Drive, West Conshohocken, PA 19428.

F. Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS), 127 Park Street, NW., Vienna, VA 22180.

G. National Fire Protection Association (NFPA), 1 Batterymarch Park, P.O. 9101, Quincy, MA 02269-9101.

II. Documents Incorporated by Reference (Numbers In Parentheses Indicate Applicable Editions)

A. American Gas Association (AGA):

(1). AGA Pipeline Research Committee, Project PR-3-805, "A Modified Criterion for Evaluating the Remaining Strength of Corroded Pipe" (December 22, 1989).

B. American Petroleum Institute (API):

(1) API Specification 5L "Specification for Line Pipe (41st edition, 1995).

(2). API Recommended Practice 5L1 "Recommended Practice for Railroad Transportation of Line Pipe" (4th edition, 1990).

(3) API Specification 6D "Specification for Pipeline Valves (Gate, Plug, Ball, and Check Valves)" (21st edition, 1994).

(4) API Standard 1104 "Welding of Pipelines and Related Facilities" (18th edition, 1994).

C. American Society for Testing and Materials (ASTM):

(1) ASTM Designation: A53 "Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless" (A53-95a).

(2) ASTM Designation A 106 "Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service" (A 106- 94a).

(3) ASTM Designation: A 333/A 333M "Standard Specification for Seamless and Welded Steel Pipe for Low-Temperature Service" (A 333/A 333M-94).

(4) ASTM Designation: A 372/A 372M "Standard Specification for Carbon and Alloy Steel Forgings for Thin-Walled Pressure Vessels" (A 372/A 372M-95).

(5) ASTM Designation: A 381 "Standard Specification for Metal-Arc-Welded Steel Pipe for Use With High-Pressure Transmission Systems (A 381-93).

(6) ASTM Designation: A 671 "Standard Specification for Electric-Fusion-Welded Steel Pipe for Atmospheric and Lower Temperatures" (A 671-94).

(7) ASTM Designation: A 672 "Standard Specification for Electric-Fusion-Welded

Steel Pipe for High-Pressure Service at Moderate Temperatures" (A 672-94).

(8) ASTM Designation A 691 "Standard Specification for Carbon and Alloy Steel Pipe, Electric-Fusion-Welded for High-Pressure Service at High Temperatures" (A 691-93).

(9) ASTM Designation D 638 "Standard Test Method for Tensile Properties of Plastics" (D 638-95).

(10) ASTM Designation D 2513 "Standard Specification for Thermoplastic Gas Pressure Pipe, Tubing and Fittings" (D 2513-87 edition for § 192.63(a)(1), otherwise D2513-95c).

(11) ASTM Designation D 2517 "Standard Specification for Reinforced Epoxy Resin Gas Pressure Pipe and Fittings" (D 2517-94).

(12) ASTM Designation: F1055 "Standard Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene Pipe and Tubing" (F1055-95).

D. The American Society of Mechanical Engineers (ASME):

(1) ASME/ANSI B16.1 "Cast Iron Pipe Flanges and Flanged Fittings" (1989).

(2) ASME/ANSI B16.5 "Pipe Flanges and Flanged Fittings" (1988 with October 1988 Errata and ASME/ANSI B16.5a-1992 Addenda).

(3) ASME/ANSI B31G "Manual for Determining the Remaining Strength of Corroded Pipelines" (1991).

(4) ASME/ANSI B31.8 "Gas Transmission and Distribution Piping Systems" (1995).

(5) ASME Boiler and Pressure Vessel Code, Section I "Power Boilers" (1995 edition with 1995 Addenda).

(6) ASME Boiler and Pressure Vessel Code, Section VIII, Division 1 "Pressure Vessels" (1995 edition with 1995 Addenda).

(7) ASME Boiler and Pressure Vessel Code, Section VIII, Division 2 "Pressure Vessels: Alternative Rules" (1995 edition with 1995 Addenda).

(8) ASME Boiler and Pressure Vessel Code, Section IX "Welding and Brazing Qualifications" (1995 edition with 1995 Addenda).

E. Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS):

1. MSS SP-44 "Steel Pipe Line Flanges" (1991).

2. [Reserved]

F. National Fire Protection Association (NFPA):

(1) ANSI/NFPA 30 "Flammable and Combustible Liquids Code" (1993).

(2) ANSI/NFPA 58 "Standard for the Storage and Handling of Liquefied Petroleum Gases" (1995).

(3) ANSI/NFPA 59 "Standard for the Storage and Handling of Liquefied Petroleum Gases at Utility Gas Plants" (1995).

(4) ANSI/NFPA 70 "National Electrical Code" (1996).

[58 FR 14521, Mar. 18, 1993, as amended by Amdt. 192-68, 58 FR 45268-45269, Aug. 27, 1993; Amdt. 192-76, 61 FR 26123, May 24, 1996; Amdt. 192-78, 61 FR 28786, June 6, 1996; 61 FR 41020, Aug. 7, 1996]

APPENDIX B TO PART 192—QUALIFICATION OF PIPE

I. Listed Pipe Specifications (Numbers in Parentheses Indicate Applicable Editions)

API 5L—Steel pipe (1995).
ASTM A 53—Steel pipe (1995a).
ASTM A 106—Steel pipe (1994a).
ASTM A 333/A 333M—Steel pipe (1994).
ASTM A 381—Steel pipe (1993).
ASTM A 671—Steel pipe (1994).
ASTM A 672—Steel pipe (1994).
ASTM A 691—Steel pipe (1993).
ASTM D 2513—Thermoplastic pipe and tubing (1995c).
ASTM D 2517—Thermosetting plastic pipe and tubing (1994).

II. *Steel pipe of unknown or unlisted specification.*

A. *Bending Properties.* For pipe 2 inches or less in diameter, a length of pipe must be cold bent through at least 90 degrees around a cylindrical mandrel that has a diameter 12 times the diameter of the pipe, without developing cracks at any portion and without opening the longitudinal weld.

For pipe more than 2 inches in diameter, the pipe must meet the requirements of the flattening tests set forth in ASTM A53, except that the number of tests must be at least equal to the minimum required in paragraph II-D of this appendix to determine yield strength.

B. *Weldability.* A girth weld must be made in the pipe by a welder who is qualified under subpart E of this part. The weld must be made under the most severe conditions under which welding will be allowed in the field and by means of the same procedure that will be used in the field. On pipe more than 4 inches in diameter, at least one test weld must be made for each 100 lengths of pipe. On pipe 4 inches or less in diameter, at least one test weld must be made for each 400 lengths of pipe. The weld must be tested in accordance with API Standard 1104. If the requirements of API Standard 1104 cannot be met, weldability may be established by making chemical tests for carbon and manganese, and proceeding in accordance with section IX of the ASME Boiler and Pressure Vessel Code. The same number of chemical tests must be made as are required for testing a girth weld.

C. *Inspection.* The pipe must be clean enough to permit adequate inspection. It must be visually inspected to ensure that it

is reasonably round and straight and there are no defects which might impair the strength or tightness of the pipe.

D. *Tensile Properties.* If the tensile properties of the pipe are not known, the minimum yield strength may be taken as 24,000 p.s.i. or less, or the tensile properties may be established by performing tensile tests as set forth in API Specification 5L. All test specimens shall be selected at random and the following number of tests must be performed:

NUMBER OF TENSILE TESTS—ALL SIZES

10 lengths or less	1 set of tests for each length.
11 to 100 lengths	1 set of tests for each 5 lengths, but not less than 10 tests.
Over 100 lengths	1 set of tests for each 10 lengths, but not less than 20 tests.

If the yield-tensile ratio, based on the properties determined by those tests, exceeds 0.85, the pipe may be used only as provided in § 192.55(c).

III. *Steel pipe manufactured before November 12, 1970, to earlier editions of listed specifications.* Steel pipe manufactured before November 12, 1970, in accordance with a specification of which a later edition is listed in section I of this appendix, is qualified for use under this part if the following requirements are met:

A. *Inspection.* The pipe must be clean enough to permit adequate inspection. It must be visually inspected to ensure that it is reasonably round and straight and that there are no defects which might impair the strength or tightness of the pipe.

B. *Similarity of specification requirements.* The edition of the listed specification under which the pipe was manufactured must have substantially the same requirements with respect to the following properties as a later edition of that specification listed in section I of this appendix:

(1) Physical (mechanical) properties of pipe, including yield and tensile strength, elongation, and yield to tensile ratio, and testing requirements to verify those properties.

(2) Chemical properties of pipe and testing requirements to verify those properties.

C. *Inspection or test of welded pipe.* On pipe with welded seams, one of the following requirements must be met:

(1) The edition of the listed specification to which the pipe was manufactured must have substantially the same requirements with respect to nondestructive inspection of welded seams and the standards for acceptance or rejection and repair as a later edition of the specification listed in section I of this appendix.

(2) The pipe must be tested in accordance with subpart J of this part to at least 1.25 times the maximum allowable operating pressure if it is to be installed in a class 1 location and to at least 1.5 times the maximum allowable operating pressure if it is to be installed in a class 2, 3, or 4 location. Notwithstanding any shorter time period permitted under subpart J of this part, the test pressure must be maintained for at least 8 hours.

[35 FR 13257, Aug. 19, 1970]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting appendix B of part 192, see the List of CFR Sections Affected in the Finding Aids section of this volume.

APPENDIX C TO PART 192—QUALIFICATION OF WELDERS FOR LOW STRESS LEVEL PIPE

I. *Basic test.* The test is made on pipe 12 inches or less in diameter. The test weld must be made with the pipe in a horizontal fixed position so that the test weld includes at least one section of overhead position welding. The beveling, root opening, and other details must conform to the specifications of the procedure under which the welder is being qualified. Upon completion, the test weld is cut into four coupons and subjected to a root bend test. If, as a result of this test, two or more of the four coupons develop a crack in the weld material, or between the weld material and base metal, that is more than ⅛-inch long in any direction, the weld is unacceptable. Cracks that occur on the corner of the specimen during testing are not considered.

II. *Additional tests for welders of service line connections to mains.* A service line connection fitting is welded to a pipe section with the same diameter as a typical main. The weld is made in the same position as it is made in the field. The weld is unacceptable if it shows a serious undercutting or if it has rolled edges. The weld is tested by attempting to break the fitting off the run pipe. The weld is unacceptable if it breaks and shows incomplete fusion, overlap, or poor penetration at the junction of the fitting and run pipe.

III. *Periodic tests for welders of small service lines.* Two samples of the welder's work, each about 8 inches long with the weld located approximately in the center, are cut from steel service line and tested as follows:

(1) One sample is centered in a guided bend testing machine and bent to the contour of the die for a distance of 2 inches on each side of the weld. If the sample shows any breaks or cracks after removal from the bending machine, it is unacceptable.

(2) The ends of the second sample are flattened and the entire joint subjected to a tensile strength test. If failure occurs adjacent to or in the weld metal, the weld is unacceptable. If a tensile strength testing machine is not available, this sample must also pass the

bending test prescribed in subparagraph (1) of this paragraph.

APPENDIX D TO PART 192—CRITERIA FOR CATHODIC PROTECTION AND DETERMINATION OF MEASUREMENTS

I. *Criteria for cathodic protection*—A. *Steel, cast iron, and ductile iron structures.* (1) A negative (cathodic) voltage of at least 0.85 volt, with reference to a saturated copper-copper sulfate half cell. Determination of this voltage must be made with the protective current applied, and in accordance with sections II and IV of this appendix.

(2) A negative (cathodic) voltage shift of at least 300 millivolts. Determination of this voltage shift must be made with the protective current applied, and in accordance with sections II and IV of this appendix. This criterion of voltage shift applies to structures not in contact with metals of different anodic potentials.

(3) A minimum negative (cathodic) polarization voltage shift of 100 millivolts. This polarization voltage shift must be determined in accordance with sections III and IV of this appendix.

(4) A voltage at least as negative (cathodic) as that originally established at the beginning of the Tafel segment of the E-log-I curve. This voltage must be measured in accordance with section IV of this appendix.

(5) A net protective current from the electrolyte into the structure surface as measured by an earth current technique applied at predetermined current discharge (anodic) points of the structure.

B. *Aluminum structures.* (1) Except as provided in paragraphs (3) and (4) of this paragraph, a minimum negative (cathodic) voltage shift of 150 millivolts, produced by the application of protective current. The voltage shift must be determined in accordance with sections II and IV of this appendix.

(2) Except as provided in paragraphs (3) and (4) of this paragraph, a minimum negative (cathodic) polarization voltage shift of 100 millivolts. This polarization voltage shift must be determined in accordance with sections III and IV of this appendix.

(3) Notwithstanding the alternative minimum criteria in paragraphs (1) and (2) of this paragraph, aluminum, if cathodically protected at voltages in excess of 1.20 volts as measured with reference to a copper-copper sulfate half cell, in accordance with section IV of this appendix, and compensated for the voltage (IR) drops other than those across the structure-electrolyte boundary may suffer corrosion resulting from the build-up of alkali on the metal surface. A voltage in excess of 1.20 volts may not be used unless previous test results indicate no appreciable corrosion will occur in the particular environment.

(4) Since aluminum may suffer from corrosion under high pH conditions, and since application of cathodic protection tends to increase the pH at the metal surface, careful investigation or testing must be made before applying cathodic protection to stop pitting attack on aluminum structures in environments with a natural pH in excess of 8.

C. *Copper structures.* A minimum negative (cathodic) polarization voltage shift of 100 millivolts. This polarization voltage shift must be determined in accordance with sections III and IV of this appendix.

D. *Metals of different anodic potentials.* A negative (cathodic) voltage, measured in accordance with section IV of this appendix, equal to that required for the most anodic metal in the system must be maintained. If amphoteric structures are involved that could be damaged by high alkalinity covered by paragraphs (3) and (4) of paragraph B of this section, they must be electrically isolated with insulating flanges, or the equivalent.

II. *Interpretation of voltage measurement.* Voltage (IR) drops other than those across the structure-electrolyte boundary must be considered for valid interpretation of the voltage measurement in paragraphs A(1) and (2) and paragraph B(1) of section I of this appendix.

III. *Determination of polarization voltage shift.* The polarization voltage shift must be determined by interrupting the protective current and measuring the polarization decay. When the current is initially interrupted, an immediate voltage shift occurs. The voltage reading after the immediate shift must be used as the base reading from which to measure polarization decay in paragraphs A(3), B(2), and C of section I of this appendix.

IV. *Reference half cells.* A. Except as provided in paragraphs B and C of this section, negative (cathodic) voltage must be measured between the structure surface and a saturated copper-copper sulfate half cell contacting the electrolyte.

B. Other standard reference half cells may be substituted for the saturated cooper-copper sulfate half cell. Two commonly used reference half cells are listed below along with their voltage equivalent to −0.85 volt as referred to a saturated copper-copper sulfate half cell:

(1) Saturated KCl calomel half cell: −0.78 volt.

(2) Silver-silver chloride half cell used in sea water: −0.80 volt.

C. In addition to the standard reference half cells, an alternate metallic material or structure may be used in place of the saturated copper-copper sulfate half cell if its potential stability is assured and if its voltage

equivalent referred to a saturated copper-copper sulfate half cell is established.

[Amdt. 192-4, 36 FR 12305, June 30, 1971]

PART 193—LIQUEFIED NATURAL GAS FACILITIES: FEDERAL SAFETY STANDARDS

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PRELIMINARY DECISION DOCUMENT

NATIONWIDE PERMIT NO. 3

This document constitutes the Environmental Assessment, 404(b)(1) Compliance Review and Statement of Findings for the Nationwide Permit (NWP) described below.

1. MAINTENANCE.

The repair, rehabilitation, or replacement of any previously authorized, currently serviceable, structure or fill, or of any currently serviceable structure or fill authorized by 33 CFR 330.3, provided that such repair, rehabilitation, or replacement does not result in a substantial change in the filled area or an increase in adverse impacts on waters of the United States, and further provided that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification. Deviations due to changes in materials or construction techniques which are necessary to make repair, rehabilitation, or replacement to current safety standards are permitted. Currently serviceable means useable as is or with some maintenance, but not so degraded as to essentially require reconstruction. It also includes those structures destroyed within the past two years by storms, floods, fire or other discrete events, but which were serviceable immediately preceding that event. Maintenance dredging and beach restoration are not authorized by this nationwide permit. (Sections 10 and 404)

General conditions of the NWP are contained in the Federal Register. Notification requirements, additional conditions, limitations and restrictions are contained in 33 CFR Part 330.

2. STATUTORY AUTHORITY:

a. Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403)

b. Section 404 of the Clean Water Act (33 U.S.C. 1344)

3. COMPLIANCE WITH RELATED LAWS (33 CFR 320.3):

a. General:

NWPs are a type of general permit designed to regulate certain activities that have minimal adverse impacts and generally comply with the related laws in 33 CFR 320.3. While an individual review of each activity authorized by a NWP will normally not be performed, potential adverse impacts and compliance with the laws in 33 CFR 320.3 are controlled by the terms and conditions of each NWP, additional provisions, and the review process that is undertaken prior to the issuance of NWPs.

b. Terms and Conditions:

Specific general conditions of all NWPs provide for a case-by- case review of activities that may adversely affect endangered species or historic properties. Certain NWPs also have a notification requirement that will trigger a case-by-case review of particular activities. Another condition prohibits use of NWPs for activities that are located in wild and scenic rivers. None of the NWPs authorize artificial reefs.

In some cases, activities authorized by a NWP may require other Federal, state or local authorizations. Examples of such cases include but are not limited to: activities that are in or affect marine sanctuaries or marine mammals; the ownership, construction, location and operation of ocean thermal energy conversion facilities or deepwater ports beyond the territorial seas; or the transfer of a lot in a subdivision that is part of a project that requires a DA permit. In such cases, a provision of the NWPs specifies that the NWP does not obviate the need to obtain other authorizations required by law. [33 CFR 330.4(b)]

An additional safeguard is a provision that allows the Chief of Engineers, division engineers and/or district engineers to: assert discretionary authority and require an individual permit for a specific action; modify NWPs for specific activities by requiring special conditions on a case-by-case basis; add special conditions on a regional basis for certain NWPs; or take action to suspend or revoke a NWP. [33 CFR 330.4(e) and 330.5]

c. Review Process:

The analyses contained in this document and coordination that will be undertaken prior to the issuance of all NWPs will fulfill the requirements of the National Environmental Policy Act, the Fish and Wildlife Coordination Act and other acts promulgated to protect the quality of the environment.

All NWPs that authorize activities which may result in a discharge into waters of the U.S. require a 401 water quality certification. NWPs that authorize an activity within, or affecting land or water uses within a state that has a Federally approved coastal zone management program must also be certified as being consistent with the state s program. The procedures for compliance of NWPs with these laws are contained in 33 CFR 330.4 (c) and (d), respectively.

4. INDIVIDUAL AND CUMULATIVE IMPACTS:

a. General evaluation criteria:

This evaluation constitutes the public interest review specified in 33 CFR 320.4 (a)(1) and (2), including environmental considerations of the National Environmental Policy Act and the impact analysis specified in Subparts C-F of the 404(b)(1) Guidelines (40 CFR 230).

The evaluation criteria that are relevant to this particular NWP are identified in the following matrixes. The determination that a particular factor is relevant or not is based upon consideration of the direct and indirect impacts that can be reasonably attributed to the authorized activity.

Because NWPs authorize activities on a nationwide basis, it is difficult to predict all of the indirect impacts that may be associated with each individual action. For example, the NWP for a 25 cubic yard discharge or small dock may be used to fulfill a variety of project purposes. Indication that a factor is not relevant to a particular NWP does not necessarily mean that the NWP would not have an effect on such factor(s), but that it is a factor not readily identified with the authorized activity. In any case, adverse impacts will be controlled by the terms, conditions and additional provisions of the NWP. For example, section 7 consultation will be required for activities that may adversely impact endangered species. In other cases, factors may be relevant, but have negligible impacts. For example, the impacts of a boat ramp on flood plain values, water level fluctuations or flood hazards.

Factors identified as being relevant, to the extent that potential impacts of the activity determined the terms and conditions of a NWP, are discussed at the end of the matrixes.

b. Public interest review (320.4(a)(1)):

FACTOR:	RELEVANT TO THIS ACTION: YES	NO
Conservation	X	
Economics	X	
Aesthetics	X	
General environmental concerns	X	
Wetlands	X	
Historic properties	X	
Fish and wildlife values	X	
Flood hazards		X
Flood plain values		X
Land use	X	
Navigation	X	
Shore erosion and accretion	X	
Recreation	X	
Water supply and conservation		X
Water quality	X	
Energy needs	X	
Safety	X	
Food and fiber production	X	
Mineral needs	X	
Considerations of property ownership	X	

c. Impact analysis (Subparts C-F):

FACTOR:	RELEVANT TO THIS ACTION: YES	NO
Substrate	X	
Suspended particulates/turbidity	X	
Water	X	
Current patterns/water circulation		X
Normal water level fluctuations		X
Salinity gradients		X
Threatened and endangered species	X	
Aquatic food web		X
Wildlife		X
Special aquatic sites	X	
Municipal and private water supplies	X	
Water related recreation	X	
Aesthetics	X	

Parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar areas	X

d. Potential impacts:

i. General:

As specified by the description of the NWP, the repair, rehabilitation, or replacement of any previously authorized, currently serviceable, structure or fill may be accomplished. Associated activities such as dredging or dewatering of construction sites may be authorized by multiple use of NWPs or regional permits issued by division or district engineers. The related work must meet the terms and conditions of the specified permit(s) (i.e. 20 cubic yards of dredging, etc.). If construction and use of reconfigured docking facilities is dependent on portions of a larger project that requires an individual permit, the NWP will not apply. [See 33 CFR 330.6 (c) and (d)]

ii. Physical, chemical and biological characteristics of the aquatic ecosystem:

The repair, rehabilitation, or replacement of structures may require the removal of existing fixed or floating structures. The removal of fixed structures may include the removal of existing piling at or below the mudline. Structures often provide habitat for various sessile and motile invertebrates as well as provide shelter, shade, breeding and rearing areas and feeding areas for various fish and other aquatic organisms. Sessile organisms and motile organisms that remain attached to structures that are removed will be destroyed. However, the adverse impacts of removing old structures are expected to be minimal.

The removal of old piling may be accomplished by jetting and pulling or cutting or breaking the piling at or below the mudline. Some excavation may be required to expose the piling below the mudline. New piling are typically placed by jetting or driving them into place. In some instances holes may have to be drilled or augered into hard substrate prior to placement of the piles. Equipment used during this phase of the construction may vary from hand held tools to heavy mechanical equipment. During construction fish and other motile aquatic organisms will most likely avoid the area until the work is complete. If the piling are driven into place the benthic organisms directly in the path of the piling would be destroyed. Likewise, immotile organisms in the path of a drill or auger would be destroyed. If the piling are jetted into place the benthic organisms would be jetted away from the path of the piling but may be smothered when suspended material settles to the bottom. Depending upon the type of materials used to repair, rehabilitate or replace the structure, sessile organisms as well as other aquatic organisms may recolonize submerged surfaces over time.

The discharge of dredged or excavated material for the repair or replacement of previously authorized fills will temporarily increase the turbidity of the water by suspending material in the water column. Benthic organisms that may have colonized the material since its placement or the substrate where repair or replacement is needed will be destroyed. Immotile organisms covered by the discharge of dredged or fill material will be smothered. After repair or replacement of the authorized fill has been completed benthic organisms will likely recolonize the project site.

Depending on the method of construction; equipment used; composition of the bottom substrate; and wind and current conditions during construction, material that is suspended in the water column will temporarily increase the turbidity of the water. The plume generated by the turbidity will normally be limited to the immediate vicinity of the disturbance and will dissipate shortly after this phase of the construction is complete.

Vegetation which may have established itself on authorized fill material or in areas subject to repair or replacement under the terms and conditions of the NWP will be destroyed when the site is restored. The discharge of dredged or fill material may affect upland and/or wetland vegetation.

Maintenance and use of the structure or fill may result in the discharge of small amounts of gas, oil and grease from inboard and outboard motors. Since the structures or fill are serviceable and may not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification, the frequency and concentration of these discharges are not expected to increase.

Commercial or recreational boating associated with the structures may litter the waterway with debris. Any use of the waterway by the public is likely to result in some littering. The degree of impact will depend upon the location and nature of the structures and values of the public using the waterway.

To further minimize adverse impacts of the authorized activity, the NWP specifically prohibits dredging or the expansion of the number of boat slips or the size of the marina. It also contains general conditions that will trigger special procedures for activities that may adversely affect historic properties, endangered species or marine sanctuaries.

iii. Effects on human use characteristics:

The maintenance of previously authorized structures or fill may alter the visual character of the general area. The extent and perception of the alteration will vary depending upon the nature of surrounding area and values of the public using or viewing the facilities. Limiting the activity so it does not result in a substantial change in the filled area or that the structure or fill is not to be put to uses differing from those uses specified or contemplated for it in the original permit or the most recently authorized modification will minimize visual impacts.

The issuance of a NWP to maintain previously authorized structures and fills could have a positive impact on the local economy. Construction would generate jobs and revenue for contractors and building materials supply businesses. The NWP will also provide the public with a form of authorization that can be obtained with little delay and paperwork.

If the activity is associated with water related recreation it will provide the public with a means by which they can gain safe access to waterways for recreational use.

iv. Cumulative impacts:

Cumulative impacts of the NWP will depend on the number of times the permit is used. Based upon a survey of division and district offices, we expect that the NWP may be used to authorize approximately 20,000 repair, rehabilitation or replacement of previously authorized structures or fill per year on a national basis. The demand for these types of activities could increase or decrease over the five year duration of the NWP. Using the current trend, approximately 100,000 maintenance activities could be authorized over a 5 year period. We expect that the time savings associated with the use of the NWP will encourage applicants to design their project within the scope of the permit rather than request an individual permit which could have a greater adverse impact. In addition, the NWP may encourage more efficient use of existing structures and fills rather than seeking individual permits for expanding or constructing new ones.

e. Additional Public Interest Review Factors 33 CFR 320.4(a)(2):

i. Relative extent of the public and private need for the proposed structure or work 33 CFR 320.4(a)(2):

Authorized structures and fills are some of the mechanisms by which the public can gain access to the waterway for a variety of purposes. Likewise, authorized structures and fills are essential for water dependent commercial activities. The primary use of the NWP is expected to be for recreational purposes. The need for the NWP is based upon the large number of authorized structures and fills that require periodic maintenance.

ii. Where there are unresolved conflicts as to resource use, the practicability of using reasonable alternative locations and methods to accomplish the objective of the proposed structure or work:

The objective of the proposed action is to develop a permit, that is readily obtained by the public and authorize an activity that has minimal adverse impacts on the aquatic environment and overall public interest.

Most situations in which there is an unresolved conflict as to resource use, arise when environmentally sensitive areas are involved (e.g. special aquatic sites, including wetlands) or there are competing uses of a resource (e.g. use of a waterway for commercial versus recreational purposes). The nature and scope of the proposed action as well as the terms and conditions of the NWP minimize the likelihood of such a conflict. In the event that there is a conflict, the NWP contains provisions that are capable of resolving the matter (see sections 1 and 3 of this document).

iii. The extent and permanence of the beneficial and/or detrimental effects which the proposed structure or work is likely to have on the public and private uses to which the area is suited:

The nature and scope of the work authorized by the NWP will most likely restrict the extent of the beneficial and detrimental effects to the area immediately surrounding the activity. Most detrimental effects are associated with construction and will be short term. Unless the structure or fill is removed, a permanent effect is alteration of the

bottom substrate and secondary effects related to use of the structure or fill. As long as it is maintained, the structure or fill will fulfill its stated purpose.

As previously stated, the terms, conditions and provisions of the NWP were developed to ensure that individual and cumulative adverse impacts are minimal. Specifically, NWPs do not obviate the need for the general permittee to obtain other Federal, state or local authorizations required by law. Conditions of the NWPs also specify that it does not grant any property rights or exclusive privileges (see section 3 of this document and 33 CFR 330.4 for further information).

Additional conditions, limitations, restrictions and provisions for discretionary authority as well as the ability to include activity specific or regional conditions on this NWP provide further safeguards to the aquatic environment and overall public interest. Provisions are also included to allow suspension, modification or revocation of the NWP. Refer to sections 1 and 3 of this document for further information and procedures.

5. EVALUATION OF COMPLIANCE WITH THE GUIDELINES PROMULGATED UNDER SECTION 404(b)(1) OF THE CLEAN WATER ACT (40 CFR 230):

The 404(b)(1) compliance criteria for general permits is contained in 40 CFR 230.7.

a. Evaluation Process 230.7(b)(1):

i. Alternatives 230.10(a):

The consideration of alternatives are not directly applicable to general permits.

ii. Prohibitions 230.10(b):

This NWP involves various activities, some of which may result in a discharge and require 401 water quality certification. State water quality certification requirements will be met in accordance with the procedures contained in 33 CFR 330.4(c).

No toxic discharges will be authorized by this NWP. Section 404 general condition no. 3 specifically states that the material discharged must be free from toxic pollutants in toxic amounts.

No adverse impact on endangered species will be authorized by this NWP. Refer to general condition no. 11 and 33 CFR 330.4(f) for information and procedures.

This NWP will not authorize the violation of any requirement to protect any marine sanctuary. Refer to section 3 of this document for further information.

iii. Findings of Significant Degradation 230.10(c):

Potential impact analysis (Subparts C-F):

The potential impact analysis specified in Subparts C-F is contained in section 4 of this document.

Evaluation and testing (Subpart G):

Because the terms and conditions of the NWP specify the type of discharges that are authorized as well as those that are prohibited, individual evaluation and testing for the presence of contaminants will normally not be required. If a situation warrants, provisions of the permit allow division or district engineers to further specify authorized/prohibited discharges and/or require testing.

Based upon Subparts B and G, after consideration of Subparts C-F the discharges authorized by this NWP will not cause or contribute to significant degradation of waters of the United States.

iv. Factual determinations 230.11:

The factual determinations required in 230.11 are contained in section 4 of this document.

v. Appropriate and practicable steps to minimize potential adverse impacts 230.10 (d):

As demonstrated by the information contained in this document as well as the terms, conditions and provisions of this NWP, actions to minimize adverse effects (Subpart H) have been thoroughly considered and incorporated into the authorization.

b. Evaluation process 230.7(b)(2):

i. Description of the permitted activities:

As indicated by the description of the NWP in section 1 of this document and the discussion of potential impacts in section 4, the activities to be regulated by this NWP are sufficiently similar in nature and environmental impact to warrant regulation under a single general permit. Specifically, the purpose of the activity is to provide authorization to repair, rehabilitate or replace previously authorized structures or fill. The nature and scope of the impacts are controlled by the terms and conditions of the NWP.

If a situation arises in which the activity requires further review or is more appropriately regulated under an individual permit, provisions of the NWP allow division and/or district engineers to take such action.

c. Cumulative effects 230.7(b)(3):

A discussion of cumulative effects, including the number of activities likely to be regulated under this NWP is contained in section 4 of this document.

6. PRELIMINARY DETERMINATIONS:

a. Need for an environmental impact statement (FONSI):

Based upon the information contained in this document, issuance of the NWP will not have a significant impact on the quality of the human environment and the preparation of an Environmental Impact Statement is not required.

b. 404 (b)(1) Compliance:

On the basis of the 404(b)(1) Guidelines (Subparts C-G), the discharges authorized by this NWP comply with the requirements of the Guidelines with the inclusion of appropriate and practicable conditions to minimize pollution or adverse effects on the affected aquatic ecosystems.

c. Public interest:

Based upon the information presented in this document, issuance of the NWP, as prescribed by the regulations contained in 33 CFR Parts 320 to 330, and 40 CFR 230, is not contrary to the public interest.

d. Provisional determination:

In accordance with 33 CFR 330.4, I have determined, based on the above, that issuance of the NWP will not have a significant impact on the environment nor will it contravene public interest.

FOR THE COMMANDER:

STANLEY G. GENEGA
Major General, USA
Director of Civil Works

Return to NWP Index
Return to Sacramento District Regulatory Home Page



Maintained by Chris Mayo (chrism@wetland.usace.mil), Sacramento District Corps of Engineers [URL: http://wetland.usace.mil /PDDs/pdd-03.html, last revised June 26, 1996]

Form 10-124
(Nov. March 1973)

TEX-KLEB-37 Page 1

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

This permit consists of 5 pages including attachments.

SPECIAL USE PERMIT

PERMIT NO.	EXPIRES
7490-37	11/30/83
PREVIOUS PERMIT NO.	

Padre Island National Seashore
(Area)

Florida Gas Trans. Co., of Box 44, Winter Park, FLA 32789 (305) 646-1267 is hereby authorized during the period from December 20, 1978, through November 30, 1983, to use the following-described land in the above-named area: A two rod wide right-of-way as it presently exists, being described in our old right-of-way contract with Albert R. Jones et al dated January 27, 1953 (copy of description and letter of application attached). The above lease remains in effect with this permit covering the interests of the Government in order that the mission of the National Park Service be continued.

for the purpose of operating and maintaining natural gas pipeline from the oil co. rig in the vicinity of Yarbrough Pass. (See attached letter of application and map for exact location and pipeline size.)

subject to the conditions on the reverse hereof and attached pages and to the payment to the Government of the United States of the sum of Twenty five and no/100 Dollars ($25.00), in advance one time preparation fee (Monthly, semiannually, etc.) or as follows:

payment to be made to the Superintendent by Express or Postal Money Order, Certified Check, or Draft payable to the National Park Service, or Cash.

Issued at Corpus Christi, Texas, this 28th day of December, 1978.

The undersigned hereby accepts this permit subject to the terms, covenants, obligations, and reservations, expressed or implied, therein.

FORM APPROVED

TWO WITNESSES TO SIGNATURES

ATTEST:

NAME W. J. Aberwald
Secretary

ADDRESS

NAME Executive Vice President
Florida Gas Transmission C

ADDRESS

APPROVED: (If approval is required by higher authority)

NAME

DATE January 3, 1979

*Sign name or names as written in body of permit; for copartnership, permittees should sign as "members of firm"; for corporation, the officer authorized to execute contracts, etc., should sign, with title, the sufficiency of such signature being attested by the Secretary, with corporate seal, in lieu of witnesses.

16—35968-8

(This copy for Permittee)

CONDITIONS OF THIS PERMIT

1. **Regulations.**—The permittee shall exercise this privilege subject to the supervision of the Superintendent, and shall comply with the regulations of the Secretary of the Interior, or other authorized officer of the Government, governing the area.

2. **Definition.**—The term "Director, National Park Service" as used herein shall include the appropriate Regional Director or Superintendent as the representative of the Director.

3. **Rights of the Director.**—Use by the permittee of the land covered hereby is subject to the right of the Director, National Park Service, to establish trails, roads, and other improvements and betterments over, upon, or through said premises, and further to the use by travelers and others of such roads and trails as well as of those already existing. If it is necessary to exercise such rights, every effort will be made by the National Park Service to refrain from unduly interfering or preventing use of the land by the permittee for the purpose intended under this permit.

4. **Nondiscrimination.**—See attachment A.

5. **Damages.**—The permittee shall pay the United States for any damage resulting from this use which would not reasonably be inherent in the use which the permittee is authorized to make of the land described in this permit.

6. **Construction.**—No building or other structure shall be erected under this permit except upon prior approval of plans and specifications by the Director, National Park Service, and the premises and all appurtenances thereto shall be kept in a safe, sanitary, and sightly condition.

7. **Removal of structures and improvements.**—Upon the expiration of this permit by limitation of time or its termination for any reason prior to its expiration date, the permittee, if all charges due the Government hereunder have been paid, shall remove within such reasonable period as is determinted by the Superintendent, but not to exceed 90 days unless otherwise stipulated in this permit, all structures and improvements placed on the premises by him, and shall restore the site to its former condition under the direction of the Superintendent. If the permittee fails to remove all such structures and improvements within the aforesaid period, they shall become the property of the United States, but that will not relieve the permittee of liability for the cost of their removal and the restoration of the site.

8. **Water rights.**—Water rights will be perfected, when necessary, by the United States in its own name for water developed or used in connection with this permit. The permittee will furnish to the United States such information as is necessary for perfection, including statutory fees, and for management and protection of the resource.

9. **Disposal of refuse.**—The permittee shall dispose of brush and other refuse as required by the Superintendent.

10. **Timber cutting.**—No timber may be cut or destroyed without first obtaining a permit therefor from the Director, National Park Service.

11. **Fire prevention and suppression.**—The permittee and his employees shall take all reasonable precautions to prevent forest, brush, grass, and structural fires and also shall assist the Superintendent in extinguishing such fires in the vicinity of any tract which may be used hereunder.

12. **Soil erosion.**—The permittee shall take adequate measures, as directed and approved by the Superintendent to restrict and prevent soil erosion on the lands covered hereby and shall so utilize such lands as not to contribute to erosion on adjoining lands.

13. **Benefit.**—Neither Members of, nor Delegates to Congress, or Resident Commissioners shall be admitted to any share or part of this permit or derive, either directly or indirectly, any pecuniary benefit to arise therefrom: *Provided however*, That nothing herein contained shall be construed to extend to any incorporated company, if the permit be for the benefit of such corporation.

14. **Assignment.**—This permit may not be transferred or assigned without the consent of the Director, National Park Service, in writing.

15. **Revocation.**—This permit may be terminated upon breach of any of the conditions hereof at the discretion of the Director, National Park Service.

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

SPECIAL USE PERMIT

PERMIT NO	EXPIRES
CE-0941	12/31/77

PREVIOUS PERMIT NO

Permittee's name and address (Number, street, city, State, and ZIP code)

Pedro Tolentino Martinez Gonzalez
P. O. Box 44, Mailbox Park, ERA 38588
(505) 648-1582

Permittee is hereby authorized to use the following-described tract of land in the above-named park for the following purposes during the period from December 01, 1976 through November 30, 1977:

Lot 1, Block 2, Tract 60, Mailbox Park Addition, Eldorado County, New Mexico, as it appears on the official plat of said addition, filed in the office of the County Clerk of said county.

Permittee shall pay to the Government in advance the sum of Two Hundred and 00/100 Dollars ($200.00) for the use of said premises.

This permit consists of 2 pages, including attachments A and B.

Page 1

CE-X-1283-76

Form 10-114a
(Dec. 1956)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

SPECIAL USE PERMIT CONTINUATION SHEET

AREA	PERMIT NO.	PAGE NO.
Padre Island National Seashore	7490-37	5

16. The permittee may not interfere with Park visitors in their use of the areas norma open for their use; however, for the sake of public safety and security reasons, the pe mittee may restrict access to those portions of the lease which contain above ground facilities or equipment.

17. The National Park Service may require the erection of signs as may be deemed necessary by the Service. Except where standardized signs are required all signs must be approved by the Superintendent and shall conform to the Padre Island sign design. The expense of signing will be borne by the permittee.

18. The permittee must abide by all applicable State and National Park Service rules and regulations except as specifically waived herein. His work shall be conducted in such a manner as to prevent unnecessary damage to any vegitation or polution of any water and to safeguard and protect Park visitors, wildlife, scenic features, recreational values and physical improvements.

19. No contaminents such as crude oil, Diesel fuel, salt brine, etc., which might be detrimental to aquatic or terrestrial life shall be discharged in or left within the boundaries of the National Seashore. Trash and debris must be removed from the Park or arrangements made with the National Seashore to handle disposal.

20. Any damage done by the permittee to roads or other facilities within the National Seashore will be repaired by the permittee as directed or approved by the National Park Service.

21. Any expansion of facilities, use of mobil equipment not a part of the normal operation or changes which will effect the size or scope of the operation must be approved by the Superintendent and depending on the scope may require a separate approved plan of operations (Title 36 Part 9 Code of Federal Regulations).

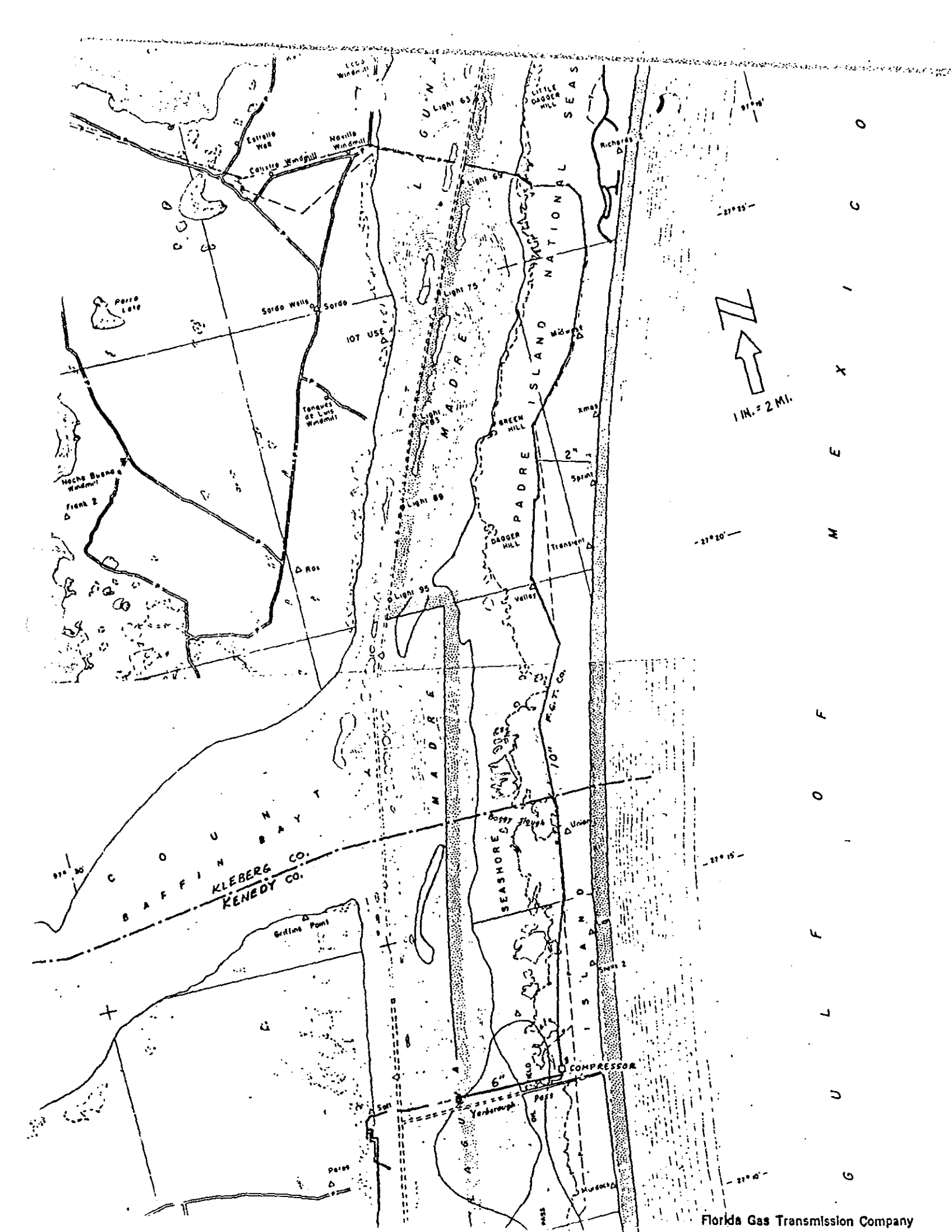
22. The use of aircraft at elevations below 2,000 feet is authorized for pipeline inspection; however, such use is not authorized over the beach, primary roads or developed areas and visitor use facilities.

23. The use of ground vehicles along pipeline right-of-way is permitted; however, prior to such use, the company must notify the National Park Service of the extend and circumstances of such use.

24. The National Park Service reserves the right to inspect the permittee's operation at any time during normal working hours.

25. In consideration for the privileges granted herein, the permittee agrees to indemnify and save harmless the United States from any loss to it, including not only damage to Government property and injury to Government employees, but also judgments, settlements or compromises for property damage or injury to all persons for which the United States may be liable, resulting from the exercise by the permittee and his employees of the privileges granted herein.

☆U. S. GOVERNMENT PRINTING OFFICE: 1976 624-691



Florida Gas Transmission Company

ATTACHMENT A

CONTINUATION OF CONDITIONS OF THIS PERMIT (FORM 10-114)

The following provisions constitute Condition 4 in accordance with Executive Order No. 11246 of September 24, 1965, as amended by Executive Order No. 11375 of October 13, 1967:

Nondiscrimination. If use of the resource covered by the permit will involve the employment by the permittee of a person or persons, the permittee agrees as follows:

(1) The Permittee will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Permittee will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Permittee agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Superintendent setting forth the provisions of this nondiscrimination clause.

(2) The Permittee will, in all solicitations or advertisements for employees placed by or on behalf of the Permittee, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(3) The Permittee will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the Superintendent, advising the labor union or workers' representative of the Permittee's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, as amended, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The Permittee will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The Permittee will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, as amended, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the Superintendent and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the Permittee's noncompliance with the nondiscrimination clauses of this permit or with any of such rules, regulations, or orders, this permit may be cancelled, terminated or suspended in whole or in part and the Permittee may be declared ineligible for further Government contracts or permits in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, as amended, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No. 11246 of September 24, 1965, as amended, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The Permittee will include the provisions of Paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order No. 11246 of September 24, 1965, as amended, so that such provisions will be binding upon each subcontract or purchase order as the Superintendent may direct as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the Permittee becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Superintendent, the Permittee may request the United States to enter into such litigation to protect the interests of the United States.

Area: Padre Island National Seashore
Permittee: Florida Gas Transmission Co.
Permit Number: 7490-37

Return to: Florida Gas Transmission Co.
333 Clay
3AC-3178
James Sanford
Houston, Tx 77002

FLORIDA GAS COMPANY

CALCULATION SHEET

Sheet _____ of _____

Made By EHH Date Jan 11/79

Checked By _____ Date Jan. 24/79

REFERS TO Padre Island National Seashore permit application

Form 79 Rev. 9/78

ROUTING INSTRUCTIONS

FROM B. Allison

DATE 1/11/79

	ABERWALD, W.J.		HALL, J. D.		SHANAHAN, E.P.
	ABRAMS, E.L.		HANSFORD, J.E.		SHEA, D.S.
	AIKEN, A.R.		HARP, J.D.		SILVER, R.P.
	ALLISON, W.V.		HARRISON, REX		SIMUNEK, J.D.
			HUGHES, R. C.		SMITH, T. D.
	BARNES, J.B.				SMITH, W.J.
	BARNHART, J.G.		KNEPPER, G.I.		STEINACKER, R.A.
	BARRON, R.		KNORPP, J.R.		SULLIVAN, S.W.
	BRILEY, L.R.		KRESKEY, F.J.		
	BURGIN, E.J.				TURLEY, D.L.
			LAY, K.L.		
	CHRISTENSEN, C.		LEWIS, J.L.		WETZEL, G.E.
	CLARK, J.L.				WHITE, D.O.
			McADAMS, R.C.		WOOD, W.B.
	DAVIS, C.R.		McCONN, T. P.		
	DAY, T.W.		McELWEE, F. D.		ZENZEL, K.M.
	DECK, J.E.				
	DIENER, W. P.		MACIULA, G.L.		CORP. RECORDS
	DOSH, R. N.		MARDIS, G. L.	ⓒ	Ed Spencer
	DROESSLER, C.L.		MORGAN, W.V.		
			MUCKLEROY, J.M.		
	EBERLY, J.H.				
	ECHON, J.C.		NEWLON, J.H.		
	ESHELMAN, J.H.				
			PARKER, T.D.		
	FROST, C.E.		PATTERSON, R.Y.		
	GILLETT, W.H.		REYNOLDS, R.J.		
	GUDE, A.		ROW, C. H.		

REMARKS Ed - spoke to Mary Hancock - the renewal/application date is only a formality - there will be no reason or attempt to have us remove the unit + appurtenant facilities as of 11/30/13 - he

INTER-OFFICE CORRESPONDENCE SHEET

SUN OIL COMPANY

SUBJECT: Murdock Pass Pipeline DATE: July 17, 1958

FROM: E. M. Cage OFFICE: Legal Department

TO: Mr. B. E. Warren
Mgr. Gas Dept.

Dear Sir:

I understand that in the near future you may have to furnish to a prospective purchaser a figure representing our total original cost of the Murdock Pass pipeline. In this connection, I would like to remind you of a contingent liability to Mr. Albert R. Jones as outlined in my letter of September 4, 1953 to Mr. Ralph E. Mullin, a copy of which letter was sent to you. You will recall our difficulty with Mr. Jones when he discovered that about three miles of our pipeline was closer to the Gulf than he had stipulated it should be. As a compromise and in order to avoid the expense of moving the line, we agreed to pay him $2500.00 as damages for 17,097 feet of the right of way in the "Midwest" area.

Our right of way agreement also contains an agreement on our part to pay for all damages to the land resulting from construction of the line. We have never paid the $2500.00 and we have never discussed with Mr. Jones or Mr. Mullin the damages to the surface. Probably this damage figure could be estimated at 50¢ per rod which was also the price we paid for the easement. The total length of this right of way is 92,931 feet but 17,097 feet would be covered by the $2500.00 payment rather than the 50¢ per rod.

I have no idea when if ever we will hear from Mr. Jones or Mr. Mullin on this subject but it seems to me that for our own protection we will be obliged to incorporate these additional items in our total line cost.

Yours truly,

E M Cage

EMC:fb

cc: Mr. James A. Kincaid

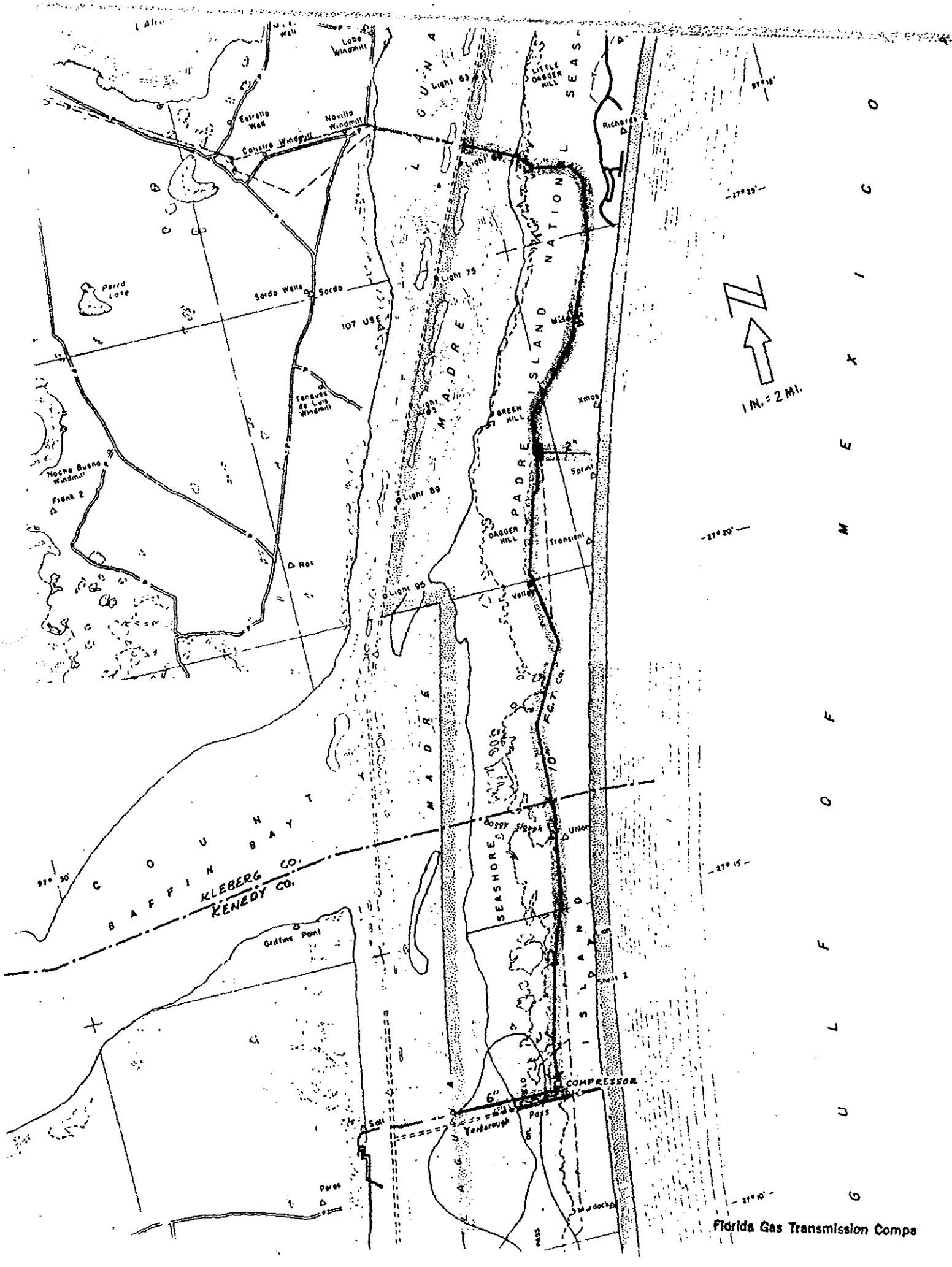
2/18/58 Cage says if claim presented Sun would have to pay M.A.B.

+ 20 ¢ per rod for cost of line + for setting stakes

92,931'
17,097
75,834

4550 rods
4½' 75834 ft

4550 x .75 3412.50
2500.00


LAGUNA MADRE
PADRE ISLAND NATIONAL SEASHORE
GULF OF MEXICO
BAFFIN BAY
KLEBERG CO.
KENEDY CO.
COUNTY
Lobo Windmill
Estrella Well
Noxilla Windmill
Celeste Windmill
Sarco Wells
Sarco
Parra Lake
IOT USE
Tenaues de Luis Windmill
Noche Buena Windmill
Front 2
Ros
Light 65
Light 75
Light 85
Light 95
LITTLE DAGGER HILL
Richards
GREEN HILL
Xmas
Sprint
DAGGER HILL
Transient
Valley
Union
Shell 2
Gidfins Point
Pass
Yarborough
COMPRESSOR
6"
Sall
Pass
Mudcracks
1 IN. = 2 MI.
Florida Gas Transmission Compa

Florida Gas Transmission

Packaging
Forest Products
Insurance
Energy

Inc. in O.O. 1968

January 6, 1982

Mr. Edwin R. Peck, Jr.
Houston Pipe Line Company
Houston Natural Gas Building
1200 Travis, Box 1188
Houston, Texas 77001

Re: Padre Island National Seashore
TEX-KELB-37

Dear Mr. Peck:

In reply to your letter of December 18, 1981 to our Maintenance Superintendent, Mr. Ken Arterburn, please be advised that we have no objection to Houston Pipe Line Company installing a fence across our line if a permanent access gate is provided to our piepline.

We enclose herewith a copy of our basic right-of-way easement contract and special use permit for your information.

Yours truly,

T. P. McPeake, Manager
Right-of-Way Department

TPMP:jf

Enclosures

cc: Mr. Gerald Mardis
Mr. Gene Dawkins

Florida Gas Transmission Company
The Continental Group, Inc.
PO Box 44
Winter Park FL 32790-0044
Telephone 305 646 1100

HOUSTON
PIPE LINE
COMPANY
Houston Natural Gas Building
1200 Travis, Box 1188
Houston, Texas 77001
(713) 654-6161

December 18, 1981

COPY TO G.L. MARDIS
DATE 1-4-82

Mr. Ken Arterburn
Maintenance Superintendent
Florida Gas Transmission Company
P. O. Box X
Refugio, TX 78377

Dear Mr. Arterburn:

Houston Pipe Line Company has been requested, by Texas Parks and Wildlife Department, to fence our trap facility on Padre Island, in Kleberg County. The proposed fence would be very close to your 10 inch line. We have enclosed a map showing the proposed fence location. In an effort to avoid any conflict with your use of the right of way, our Company would like to extend the fence across your pipeline to your east right of way line.

We have discussed this matter with Mr. Dawkins who advised this office to write this letter to your attention. It is our understanding your right of way is 50 feet wide. We would appreciate a copy of your easement covering this area.

If we may be of any assistance in this matter, please feel free to call Ed Peck at (713) 654-6994.

Yours very truly,

HOUSTON PIPE LINE COMPANY

Edwin R. Peck, Jr.
Right of Way Agent

ERPJr/as
Enclosure

RECEIVED
JAN 4 1982

(INITIAL)
TPMP
GHD
DLW

R/W
Padre Island Nat. Seashore

Florida Gas Transmission Company
Subsidiary of Florida Gas Company
Orlando and Orange Avenues • P. O. Box 44 • Winter Park, Florida 32790 • (305) 646-1391

January 11, 1979

Mr. Max Hancock
Chief Ranger
Padre Island National Seashore
9405 S. Padre Island Drive
Corpus Christi, Texas 78418

Re: Florida Gas Transmission Company,
Special Use Permit No. 7490-37

Dear Mr. Hancock:

Pursuant to our telephone conversation of this date, please find enclosed herein Florida Gas Transmission Company's application for a Special Use Permit. As agreed, I have eliminated Condition No. 7, Removal of Structures and Improvements, from the Permit. This deletion has been initialed by W. J. Smith, Executive Vice President of Florida Gas Transmission Company. We would appreciate it if you would also initial the deletion and forward the yellow copy to the undersigned.

Thank you for your help in this matter.

Very truly yours,

FLORIDA GAS TRANSMISSION COMPANY

William V. Allison

William V. Allison
Attorney

WVA/dpc
enclosure

1-9-53

KIWM 141

Kenedy & Kleberg Counties

VOL 102 PAGE 139

ON 30133 & A

1-22-53

RIGHT OF WAY CONTRACT

49948

For and in consideration of the sum of One Dollar, to us in hand paid, receipt of which is hereby acknowledged, and the further consideration of fifty cents per rod for each line, to be paid when such grant shall be used or occupied, Albert R. Jones and Harold H. Jones, both of Johnson County, Kansas, and Wayne V. Jones and Eleanor Jones Florance and R. Glenn Florance, her husband, all of Harris County, Texas, Grantors, do hereby grant unto Sun Oil Company, a corporation with offices at Dallas, Texas, its successors or assigns, the right of way to lay, maintain, alter, repair, operate, remove and relay additional pipe lines for the transportation of oil or gas, on, over and through certain lands situate in Kenedy County, Texas, and Kleberg County, Texas, described as follows:

Right of way two rods in width, the center line of which right of way is described as follows: commencing for the place of beginning at a point on Padre Island in Kenedy County, Texas, North 88° 52' East 127 feet from the northwest corner of a certain ten acre tract of land described as "Tract B" in lease of even date herewith from Albert R. Jones, et al, to Sun Oil Company;

Running thence North 0° 12' West 51 feet for angle point, which point is more than 4200 feet from the Gulf shore of Padre Island at mean high tide;

Running thence North 13° 41' West 555 feet for angle point, which point is more than 4400 feet from the Gulf Shore of Padre Island at mean high tide;

Running thence North 8° 18' West 60 feet for angle point, which point is more than 4400 feet from the Gulf Shore of Padre Island at mean high tide;

Running thence North 1° 08' West 994.8 feet for angle point, which point is more than 4600 feet from the Gulf Shore of Padre Island at mean high tide;

Running thence North 17° 15' East 3685.2 feet for angle point, which point is more than 4100 feet from the Gulf Shore of Padre Island at mean high tide;

Running thence North 13° 22' East 3606.0 feet for angle point, which point is more than 4000 feet from the Gulf Shore of Padre Island at mean high tide;

Running thence North 11° 39' East 1889.0 feet for angle point, which point is more than 4000 feet from the Gulf Shore of Padre Island at mean high tide;

Running thence North 19° 11' East 4828.0 feet for angle point, which point is more than 3300 feet from the Gulf Shore of Padre Island at mean high tide;

Running thence North 27° 53' East 1772.0 feet for angle point, which point is more than 2800 feet from the Gulf Shore of Padre Island at mean high tide;

Running thence North 9° 04' East 5964.8 feet for angle point, which point is more than 3200 feet from the Gulf Shore of Padre Island at mean high tide;

RIW #1 1416

Running thence North 5° 00' East 5550.2 feet for angle point, which point is more than 4000 feet from the Gulf Shore of Padre Island at mean high tide;

Running thence North 9° 17' East 1361.0 feet for angle point, which point is more than 4100 feet from the Gulf Shore of Padre Island at mean high tide;

Running thence North 11° 45' East 3224.0 feet for angle point, which point is more than 4300 feet from the Gulf Shore of Padre Island at mean high tide;

Running thence North 26° 23' East 7455.0 feet for angle point, which point is more than 2800 feet from the Gulf Shore of Padre Island at mean high tide;

Running thence North 5° 55' West 4105.0 feet for angle point, which point is more than 4200 feet from the Gulf Shore of Padre Island at mean high tide;

Running thence North 13° 56' West 2648.0 feet for angle point, which point is more than 5600 feet from the Gulf Shore of Padre Island at mean high tide;

Running thence North 12° 47' East 2892.0 feet for angle point, which point is more than 5700 feet from the Gulf Shore of Padre Island at mean high tide;

Running thence North 18° 38' East 4380.0 feet for angle point, which point is more than 5600 feet from the Gulf Shore of Padre Island at mean high tide;

Running thence North 40° 49' East 738.0 feet for angle point, which point is more than 5300 feet from the Gulf Shore of Padre Island at mean high tide;

Running thence North 19° 28' East 1882.0 feet for angle point, which point is more than 5200 feet from the Gulf Shore of Padre Island at mean high tide;

Running thence North 8° 54' East 5703.0 feet for angle point, which point is more than 5900 feet from the Gulf Shore of Padre Island at mean high tide;

SPRINT

Running thence North 42° 23' East 7381.0 feet for angle point, which point is more than 3000 feet from the Gulf Shore of Padre Island at mean high tide;

Running thence North 22° 03' East 9716.0 feet for angle point, which point is more than 2400 feet from the Gulf Shore of Padre Island at mean high tide;

Running thence North 8° 01' East 5600.0 feet for angle point, which point is more than 3600 feet from the Gulf Shore of Padre Island at mean high tide;

Running thence North 21° 02' West 1049.0 feet for angle point;

Running thence North 49° 44' West 951.0 feet for angle point;

R/W #1416

Running thence North 77° 09' West 1820.0 feet for angle point;

Running thence North 76° 07' West 1015.0 feet for angle point;

Running thence North 44° 52' West 2055.0 feet to intersection of pipeline alignment and west shore of Padre Island;

Being a total distance of 92,931 feet or 5632.18 rods,

with ingress and egress to and from the same. The said Grantors, their heirs or assigns, reserve unto themselves the right to fully use and enjoy the said premises in any manner not inconsistent with the purpose for which this easement way is granted.

It is understood and agreed that in event of conflict between any course and distance above described and the stated minimum distance of the angle point at the end thereof from the Gulf Shore of Padre Island at mean high tide, the said minimum distance shall control; so that if said course and distance as stated in the above description runs to an angle point which is less than the stated minimum distance from the Gulf Shore of Padre Island at mean high tide, the course shall, for purposes of the above description and grant, be deviated westerly a sufficient degree so that the angle point at the described distance along said course shall be at least the stated minimum distance from the Gulf Shore of Padre Island at mean high tide.

The words "the Gulf Shore of Padre Island at mean high tide" as set forth in the above description shall be taken to mean the line of the Gulf Shore at mean high tide as set forth in actual survey on the ground made by J. S. Boyles in 1941 and applicable to this portion of Padre Island lying in Kenedy County, Texas and Kleberg County, Texas, respectively, as is shown in the record in Cause No. 20707-B, styled The State of Texas vs. Alberto Balli, et al, in the 117th Judicial District Court of Nueces County, Texas.

It is a condition of this grant that Grantee, its successors and assigns, shall stabilize and maintain each road and access way used by Grantee for purpose of laying, maintaining, altering, repairing, operating, removing and relaying pipe lines in such condition that the use of such road and access way will not cut up the land to such an extent as to result in blow sand movement, and it is a condition of this grant that Grantee shall confine its traffic and use of land areas to such stabilized areas. All pipe lines shall be buried with at least eighteen inch cover.

Grantee further agrees to pay for all damages to land on Padre Island and to cattle and other personal property of Grantors or of Grantors' permittees or grantees on Padre Island resulting from laying, maintaining, altering, repairing, operating, removing or relaying said lines.

No trespassing, hunting, or carrying of firearms of any kind or character by the employees, agents, licensees, or any person on the premises with the consent of Grantee shall be permitted. Grantors and Grantors' employees shall have, and are hereby given, the right to search the person or automobile of any agent or employee of Grantee or any person coming on the premises hereby covered or on any other land of Grantors to determine if firearms are being carried on Grantors' property, and in the event there is any breach in the provisions of this paragraph,

R|W #1416

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Grantee agrees that it will, if requested by Grantors, refuse further permission of entry on the premises to any such persons guilty of such breach, and, in addition, Grantee will pay Grantors $250.00 liquidated damages for each breach hereof by employees of Grantee.

Grantee assumes full responsibility and liability in the construction, maintenance and operation of its properties and installations and agrees to indemnify and save harmless Grantors from all liability and expense on account of any and all damages, claims and actions, including injury to and death of persons arising from any acts or omissions, or otherwise, in connection with the installation, presence, maintenance and operation of the property or equipment of Grantee.

Albert R. Jones, whose address is 900 Riss Building, Kansas City 5, Missouri, is hereby designated Grantors' Agent for the receipt of said payments and Grantee is hereby authorized to deliver to such Agent any instruments or sums of money due hereunder, until such time as Grantors shall execute and deliver to Grantee at its office in Dallas, Texas, a recordable instrument designating another such Agent or address.

IN WITNESS WHEREOF, the said Grantors have set their hands and seals this the 22nd day of January, 1953.

Albert R. Jones
ALBERT R. JONES

Harold H. Jones
HAROLD H. JONES

Wayne V. Jones
WAYNE V. JONES

Eleanor Jones Florance
ELEANOR JONES FLORANCE

R. Glenn Florance
R. GLENN FLORANCE

The undersigned, holders of cattle lease on above land, hereby consent to above contract and waive and release all right to portion of said consideration provided to be paid hereunder and/or reduction of cattle lease rental.

David M. Coover
DAVID M. COOVER

Burton Dunn
BURTON DUNN

Ernest M. Poenisch Jr.
ERNEST M. POENISCH, JR.

This grant is hereby accepted on the conditions aforesaid and Grantee agrees to perform the agreements aforesaid on Grantee's part to be performed.

SUN OIL COMPANY

By _____
Agent and Attorney-in-Fact

E/M6

R/W # 1416

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STATE OF MISSOURI }
} SS
COUNTY OF JACKSON }

Before me, the undersigned, a Notary Public, within and for said County and State, on this 9th day of November, 1953, personally appeared Albert R. Jones to me personally known to be the identical person who executed the within and foregoing instrument and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year last above written.

Geraldine A. Bowen
Notary Public

My commission expires April 2, 1954

STATE OF MISSOURI }
} SS
COUNTY OF JACKSON }

Before me, the undersigned, a Notary Public, within and for said County and State, on this 9th day of November, 1953, personally appeared Harold H. Jones, to me personally known to be the identical person who executed the within and foregoing instrument and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year last above written.

Geraldine A. Bowen
Notary Public

My commission expires April 2, 1954

STATE OF TEXAS }
} SS
COUNTY OF HARRIS }

Before me, the undersigned, a Notary Public, within and for said County and State, on this 12 day of November, 1953, personally appeared Wayne V. Jones to me personally known to be the identical person who executed the within and foregoing instrument and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year last above written.

Louise Harless
Notary Public

My commission expires June 1, 1955

LOUISE HARLESS
Notary Public, in and for Harris County, Texas

STATE OF TEXAS }
} SS
COUNTY OF ~~HARRIS~~ Galveston }

Before me, the undersigned, a Notary Public, within and for said County and State, on this 16th day of November, 1953, personally appeared

R/W #1416

Eleanor Jones Florance and R. Glenn Florance, her husband, to me personally known to be the identical persons who executed the within and foregoing instrument and acknowledged to me that they executed the same as their free and voluntary act and deed for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year last above written.

Sara A Smith
Notary Public

My commission expires June 1, 1955.

STATE OF TEXAS }
COUNTY OF Dallas } SS

Be it remembered that on this 4th day of ~~November~~ December, 1953, before me, the undersigned, a Notary Public, duly commissioned, in and for the county and state aforesaid, came T. F. Hill, Agent and Attorney in fact president of Sun Oil Company, a corporation of the State of New Jersey, personally known to me to be such officer, and to be the same person who executed as such officer the foregoing instrument of writing in behalf of said corporation, and he duly acknowledged the execution of the same for himself and for said corporation for the uses and purposes therein set forth.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal on the day and year last above written.

Ruth DeWitt
Notary Public

My commission expires 6-1-55

R/W # 1416

THE STATE OF TEXAS §

COUNTY OF GALVESTON §

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BEFORE ME, the undersigned authority, on this day personally appeared R. Glenn Florance and Eleanor Jones Florance, his wife, both known to me to be the persons whose names are subscribed to the foregoing instrument, and the said R. Glenn Florance acknowledged to me that he executed the same for the purposes and consideration therein expressed. And the said Eleanor Jones Florance, wife of said R. Glenn Florance, having been examined by me privily and apart from her husband, and having the same fully explained to her, she, the said Eleanor Jones Florance, acknowledged such instrument to be her act and deed, and she declared that she had willingly signed the same for the purposes and consideration therein expressed, and that she did not wish to retract it.

Given under my hand and seal of office this 16 day of December, 1953.

Dara A. Smith

Notary Public in and for Galveston County, Texas

CERTIFICATE OF RECORD

THE STATE OF TEXAS }
COUNTY OF KLEBERG }

I, G. E. Redus, Clerk of the County Court in and for said County, do hereby certify that the foregoing instrument of Writing, dated the 23 day of January A. D., 1953 together with its certificate of authentication, was filed for record in my office the 27th day of January A. D., 1954 at 9:35 o'clock A M., and duly recorded on the 27th day of January A. D., 1954, in Deed records of Kleberg County, in Volume 102 on page 139 et seq

WITNESS MY HAND AND OFFICIAL SEAL at my office in Kingsville, Texas, this 27th day of January A. D., 1954

(L. S.)

G. E. REDUS
Clerk County Court, Kleberg County, Texas
By D. Dreyer Deputy.

2M—12-11-53—6413

DATA SHEET

UPDATE: 7/18/94

WORK ORDER#: COUNTY : KLEBERG & KENEDY STATE: TX
ACCT#/LINE#: TRACT #: KLEB-37
LINENAME/ID: MURDOCK PASS JCT. LATERAL
RECTYPE: PERMIT PERMIT#: 7490-37
GRANTOR: PADRE ISLAND NATIONAL SEASHORE

GRANTEE: FLORIDA GAS TRANSMISSION COMPANY

DOCDATE: 12/20/78	BOOK:	PAGE:	DOC#:	RECS:
RECDATE:				
AMENDED:	BOOK:	PAGE:	DOC#:	RECS:
PTL REL:	BOOK:	PAGE:	DOC#:	RECS:
FULLREL:	BOOK:	PAGE:	DOC#:	RECS:

LINESOK: 1 PRODLIMIT: NATURAL GAS WDTH: 33'
CONSENT: YES ASSIGNABLE: YES RODS:
RENTALS: TERM: *

DESCRIPTION: KLEBERG CO.: NICOLAS & JUAN JOSE BALLI SURVEY, A-10; KENEDY CO.: NICOLAS L& JUAN JOSE BALLI SURVEY, A-4

REMARKS:* PERMIT NO LONGER REQUIRED PER PAUL EUBANK, RESOURCE MANAGEMENT, PADRE ISLAND NATIONAL SEASHORE.

OWNER :
ADDRESS:
PHONE #:

TENANT :
ADDRESS:
PHONE #:

DRAFTS:

NO: 7633E DATE: 12/20/78 AMOUNT: 25.00
TO WHOM PAID: U.S. DEPARTMENT OF THE INTERIOR, PADRE ISLAND NAT'L SEASHORE
PURPOSE: SPECIAL USE PERMIT

NO: DATE: AMOUNT:
TO WHOM PAID:
PURPOSE:

NO: DATE: AMOUNT:
TO WHOM PAID:
PURPOSE:

NO: DATE: AMOUNT:
TO WHOM PAID:
PURPOSE:

NO: DATE: AMOUNT:
TO WHOM PAID:
PURPOSE:

SCANNED ☑
VERIFIED ☑ SF 7-18-94
INDEXED ☑
COMMITTED ☑

DATA SHEET

UPDATE: 4/20/94

WORK ORDER#: COUNTY : KLEBERG & KENEDY STATE: TX
ACCT#/LINE#: TRACT #: KLEB-37
LINENAME/ID: MURDOCK PASS JCT. LATERAL
RECTYPE: RW PERMIT#:
GRANTOR: ALBERT R. JONES; HAROLD H. JONES; WAYNE V. JONES; ELEANOR JONES FLORANCE; R. GLENN FLORANCE

GRANTEE: SUN OIL COMPANY

DOCDATE: 1/22/53	BOOK: 102	PAGE: 139	DOC#: 49948	RECS: DR
RECDATE: 1/27/54				
AMENDED:	BOOK:	PAGE:	DOC#:	RECS:
PTL REL:	BOOK:	PAGE:	DOC#:	RECS:
FULLREL:	BOOK:	PAGE:	DOC#:	RECS:

LINESOK: MULT PRODLIMIT: NO WDTH: 33'
CONSENT: NO ASSIGNABLE: YES RODS:
RENTALS: TERM: PERM

DESCRIPTION: KLEBERG CO.: NICOLAS & JUAN JOSE BALLI SURVEY, A-10; KENEDY CO.: NICOLAS L& JUAN JOSE BALLI SURVEY, A-4

REMARKS: SEE ASSIGNMENT IN FILE FROM SUN OIL COMPANY TO COASTAL TRANSMISSION CORPORATION DATED 6/12/59, RECORDED IN THE DEED RECORDS OF KENEDY COUNTY AT VOL. 7, PAGE 7; THE DEED RECORDS OF NUECES COUNTY AT VOL. 856, PAGE 469; AND THE DEED RECORDS OF KLEBERG COUNTY AT VOL. 138, PAGE 246. NO DRAFTS IN FILE. SEE SPECIAL USE PERMIT FROM PADRE ISLAND NATIONAL SEASHORE LOCATED IN FILE.

OWNER : TENANT :
ADDRESS: ADDRESS:
PHONE #: PHONE #:

DRAFTS:

NO: DATE: AMOUNT:
TO WHOM PAID:
PURPOSE:

NO: DATE: AMOUNT:
TO WHOM PAID:
PURPOSE:

NO: DATE: AMOUNT:
TO WHOM PAID:
PURPOSE:

NO: DATE: AMOUNT:
TO WHOM PAID:
PURPOSE:

NO: DATE: AMOUNT:
TO WHOM PAID:
PURPOSE:

TO File - Murd k Pass Jct
TEX-KLEB-37

SUBJECT Padre Island National Seashore

DATE 6-27-94

MESSAGE According to Paul Eubanks - Resource Management - Padre Island Nat. Seashore - 512-949-8173, we are there under grandfather clause and we are not required to have a permit for the right-of-way

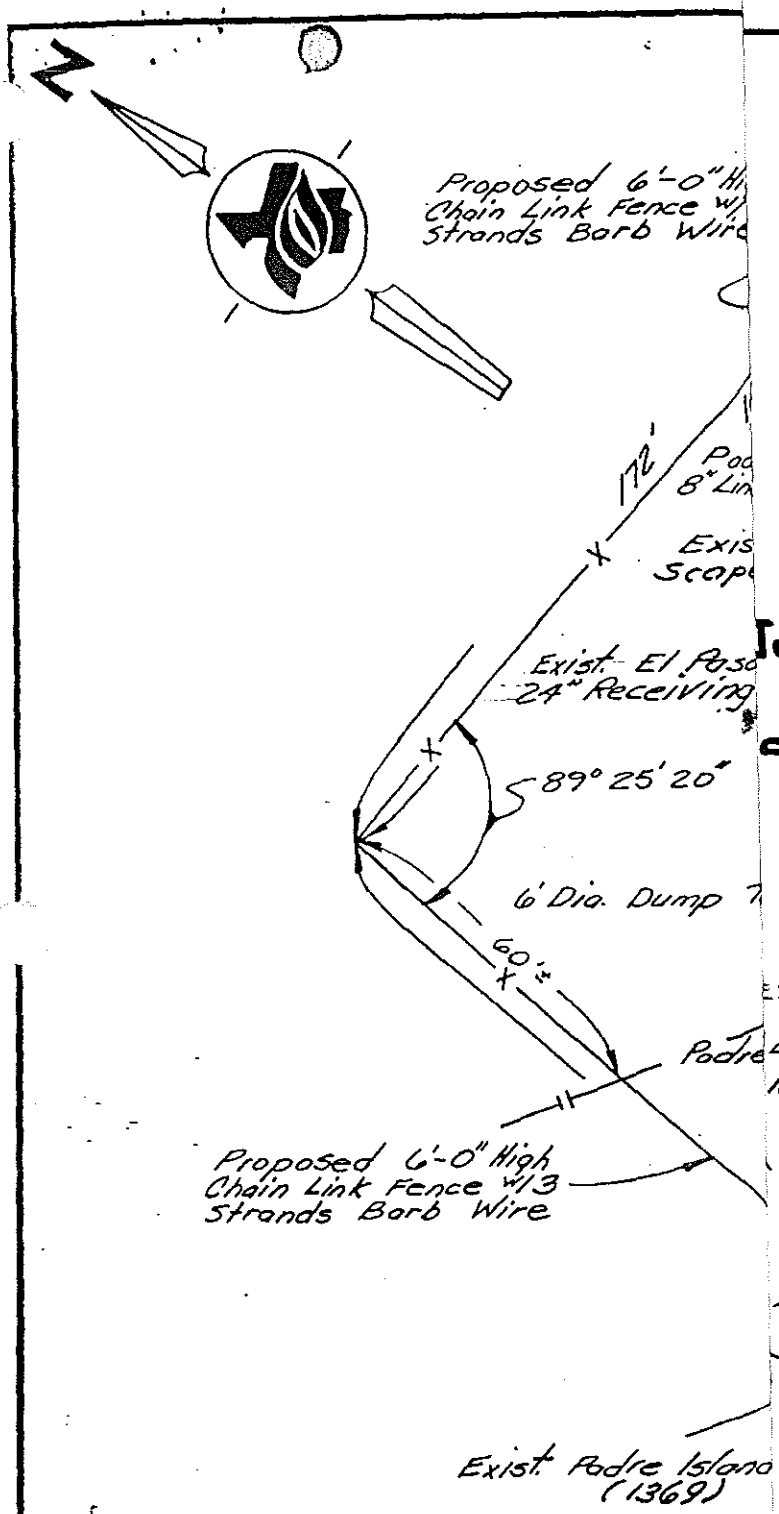
SIGNED Debbie Loftin

DATE

REPLY

SIGNED

RECIPIENT: REPLY ON PINK COPY — RETAIN WHITE COPY



JOSE BALLI

ORE PARK

ESTED FENCE MODIFICATION

Padre Line (3075)
10" Line

N PIPE LINE COMPANY
DEPARTMENT - HOUSTON, TEXAS

) TO LEHMAN SITE 20" LINE
ED FENCE LAYOUT
G COUNTY, TEXAS

TR	APPROVED BY	DATE
TE 12-61	APPROVED BY	DATE
TE	APPROVED BY	
TE	CHIEF ENGINEER	

LE 1"=30'
EET OF
HB-1369-05-H

062TXBAS 14" MURDOCK PASS LATERAL STATUS: INCOMPLETE BS-52 ISSUE

SEC	SEG NO.	TYP E	REMARKS	OD	WALL	LENG FEET	ALIGNMENT STATIONING	PO/MO	IN-SERV DATE	M F R	LONG JNT	JNT FAC	CON/ SPEC	SMYS OR WOG	MILL PRES	--FIELD TEST-- PREV TEST	PRES	DATE	N R D	MTL & CJ	CLAS DATE	I CLS	P / S	INIT DSGN FAC	CLS CHG %	R P L	C 3	CT I N	MAOP BASED ON X DSGN	MILL	TEST	SEG MAOP	V R P Y	DT
1	103.00	A	SANTA PETRONILA	10.750	0.3070	197	975+86	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	E	1151	1020	0	1080		NG	
1	103.01	X	CR C/L WATERCUT																														
1	104.00	A	HIGH BANK	10.750	0.3070	387	979+73	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	E	1151	1020	0	1080		NG	
1	105.00	Q	MP 18.94	10.750	0.3070	2027	1000+00	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	E	1151	1020	0	1080		NG	
1	105.10	P	MP.1.5C																														
1	106.00	Q	MP 19.00	10.750	0.3070	320	1003+20	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	E	1151	1020	0	1080		NG	
1	106.10	P	MP.1.6C																														
1	107.00	Q	MP 20.00	10.750	0.3070	5280	1056+00	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	E	1151	1020	0	1080		NG	
1	108.00	Q	MP 21.00	10.750	0.3070	5280	1108+80	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	E	1151	1020	0	1080		NG	
1	109.00	Q	MP 22.00	10.750	0.3070	5280	1161+60	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	E	1151	1020	0	1080		NG	
1	110.00	Q	MP 23.00	10.750	0.3070	5280	1214+40	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	E	1151	1020	0	1080		NG	
1	111.00	Q	MP 24.00	10.750	0.3070	5280	1267+20	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	E	1151	1020	0	1080		NG	
1	112.00	A		10.750	0.3070	1183	1279+03	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	E	1151	1020	0	1080		NG	
1	113.00	A	C/L CREEK	10.750	0.3070	69	1279+72	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	E	1151	1020	0	1080		NG	
1	114.00	A	CREEK	10.750	0.3070	1035	1290+07	16215	5413	#	-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	E	1151	1020	0	1080		NG	
1	115.00	A	END WATE KOTE	10.750	0.3070	629	1296+36	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	E	1151	1020	0	1080		NG	
1	116.00	Q	MP 24.62	10.750	0.3070	364	1300+00	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	E	1151	1020	0	1080		NG	
1	116.10	P	MP.1.6C																														
1	117.00	Q	MP 25.00	10.750	0.3070	2000	1320+00	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	E	1151	1020	0	1080		NG	
1	118.00	Q	MP 26.00	10.750	0.3070	5280	1372+80	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	E	1151	1020	0	1080		NG	
1	119.00	Q	MP 27.00	10.750	0.3070	5280	1425+60	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	E	1151	1020	0	1080		NG	
1	120.00	X	VOID SEG																														
1	121.00	A		10.750	0.3070	1141	1437+01	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	C	1151	1020	0	1080		NG	
1	122.00	A	WATE KOTE CTG	10.750	0.3070	693	1443+94	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	E	1151	1020	0	1080		NG	
1	123.00	A		10.750	0.3070	1663	1460+57	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	C	1151	1020	0	1080		NG	
1	124.00	A	WATE KOTE CTG	10.750	0.3070	295	1463+52	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	E	1151	1020	0	1080		NG	
1	125.00	Q	MP 28.00	10.750	0.3070	1488	1478+40	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	C	1151	1020	0	1080		NG	
1	126.00	Q	MP 29.00	10.750	0.3070	5280	1531+20	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	C	1151	1020	0	1080		NG	
1	127.00	A		10.750	0.3070	2117	1552+37	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	C	1151	1020	0	1080		NG	
1	128.00	A	WATE KOTE CTG	10.750	0.3070	328	1555+65	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	E	1151	1020	0	1080		NG	
1	129.00	Q	MP 29.55	10.750	0.3070	435	1560+00	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	E	1151	1020	0	1080		NG	
1	129.10	P	MP.1.7C																														
1	130.00	A	C/L RCH RD/PVD	10.750	0.3070	437	1564+37	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	E	1151	1020	0	1080		NG	
1	131.00	A		10.750	0.3070	893	1573+30	16215	5413		-UNK	0.8	A-SL	35000	1200		0		S	7012	1	1	P	0.72		B	C	1151	1020	0	1080		NG	
1	132.00	A		10.750	0.3070	5	1573+35	16215	5413		-UNK	0.8	A-SL	35000	0		0		S	7012	1	1	P	0.60		B	C	960	0	0	1080		NG	

062IXBAS 14" MURDOCK PASS LATERAL STATUS: INCOMPLETE BS-52 ISSUE

SEC	SEG NO.	TYPE	REMARKS	OD	WALL	LENG FEET	ALIGNMENT STATIONING	PO/WO	IN-SERV DATE	M R	LONG JNT	JNT FAC	COM/SPEC	SMYS OR WOG	MILL PRES	--FIELD TEST-- PREV TEST	PRES	DATE	M D	MIL & CJ	CLAS DATE	I CLS	P S	P / FAC	INIT DSGN	CLS CHG %	R P	C L	CT 3	I N	MAOP X	MAOP DSGN	BASED ON MILL	TEST	SEG MAOP	VR FY	DT
1	133.00	A	TEE 10X2 RED	10.750		1	1573+36	16215	5413				T-TEE	35000	0	0			S	7012	1	1	P	0.60		B	C		488			0	1080		NG
1	133.10	S	BPV FLD PER	2.000		1	1573+36	16215	5413				V-VALV		0	0			S	7012	1	1	P			B	C		0			0	1080		NG
1	134.00	A		10.750	0.3070	1	1573+37	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.60		B	C		960	1020		0	1080		NG
1	135.00	V	LLV 0-51G NORTH	10.000		2	1573+39	16215	5413	ND			V-VALV		0	0			S	7012	1	1	P				C		0			0	1080		NG
1	135.01	Z	SIDE LAGUNA																																	
1	135.02	Z	MADRE																																	
1	136.00	A	BEGIN WATE KOTE	10.750	0.3070	1	1573+40	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.60		B	E		960	1020		0	1080		NG
1	137.00	A	TEE 10X2 RED	10.750		1	1573+41	16215	5413				T-TEE	35000	0	0			S	7012	1	1	P	0.60			E		488			0	1080		NG
1	137.10	S	BPV	2.000		1	1573+41	16215	5413				V-VALV		0	0			S	7012	1	1	P				E		0			0	1080		NG
1	137.11	Z	FLD VER SEGS																																	
1	137.12	Z	133.00 THRU																																	
1	137.13	Z	137.10																																	
1	138.00	A		10.750	0.3070	5	1573+46	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.60		B	E		960	1020		0	1080		NG
1	139.00	A	WATER'S EDGE	10.750	0.3070	538	1578+84	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.72		B	E		1151	1020		0	1080		NG
1	139.01	Z	LAGUNA MADRE																																	
1	140.00	Q	MP 30.00	10.750	0.3070	516	1584+00	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.72		B	E		1151	1020		0	1080		NG
1	141.00	A		10.750	0.3070	1829	1602+29	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.72		B	E		1151	1020		0	1080		NG
1	142.00	Q	MP 31.00	10.750	0.5000	3451	1636+80	16215	5413		-UNK	0.8	A-5L	35000	1950	0			S	7012	1	1	P	0.72		B	E		1875	1658		0	1080		NG
1	143.00	A	C/L INTR COASTL	10.750	0.5000	2459	1661+39	16215	5413		-UNK	0.8	A-5L	35000	1950	0			S	7012	1	1	P	0.72		B	E		1875	1658		0	1080		NG
1	143.01	Z	CANAL CHANNEL																																	
1	144.00	A	WATERWAY R/W &	10.750	0.5000	163	1663+02	16215	5413		-UNK	0.8	A-5L	35000	1950	0			S	7012	1	1	P	0.72		B	E		1875	1658		0	1080		NG
1	144.01	Z	W.BOUNDARY PADR																																	
1	144.02	Z	ISL NAT SEASHOR																																	
1	145.00	Q	MP 32.00	10.750	0.5000	2658	1689+60	16215	5413		-UNK	0.8	A-5L	35000	1950	0			S	7012	1	1	P	0.72		B	E		1875	1658		0	1080		NG
1	146.00	A		10.750	0.5000	1208	1701+68	16215	5413		-UNK	0.8	A-5L	35000	1950	0			S	7012	1	1	P	0.72		B	E		1875	1658		0	1080		NG
1	147.00	A	WATERS EDGE	10.750	0.3070	1219	1713+87	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.72		B	E		1151	1020		0	1080		NG
1	148.00	A	END WATE KOTE	10.750	0.3070	898	1722+85	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.72		B	E		1151	1020		0	1080		NG
1	149.00	Q	MP 33.00	10.750	0.3070	1955	1742+40	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.72		B	C		1151	1020		0	1080		NG
1	149.90	A		10.750	0.3070	4218	1784+58	16215	5413	#	-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.72		B	C		1151	1020		0	1080		NG
1	150.00	A		10.750	0.3070	5	1784+63	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.60		B	C		960	1020		0	1080		NG
1	151.00	F	SAD 2X10 FBS	10.750	0.3650	1	1784+64	23151	6406				T-TEE	35000	0	0			S	7012	1	1	P	0.60			C		1426			0	1080		NG
1	151.01	Z	SPLIT WELD TEE																																	
1	151.02	Z	SUNN DUNN TAP																																	
1	151.10	S	NIP	2.375	0.2180	1	1784+64	23151	6406		S-SML	1.0	A-5L	35000	2500	0			S	7012	1	1	P	0.60			C		3855	2125		0	1080		NG
1	151.20	S	SV S#G-44379	2.000		1	1784+64	23151	6406	GR			V-VALV	1440	0	0			S	7012	1	1	P				C		1440			0	1080		NG

062IXBAS 14" MURDOCK PASS LATERAL STATUS: INCOMPLETE B5-52 ISSUE

SEC	SEG NO.	TYPE	REMARKS	OD	WALL	LENG FEET	ALIGNMENT STATIONING	PO/WO	IN-SERV DATE	M F R	LONG JNT	JNT FAC	CON/ SPEC	SMYS OR WOG	MILL PRES	--FIELD TEST-- PREV TEST	PRES	DATE	M E D	MTL & CLAS CJ	DATE	I CLS	P S	P / DSGN FAC	INIT CLS CHG %	R P	C L	CT I N	E X	MAOP BASED ON DSGN	MILL TEST	SEG MAOP	V R F Y	DT
1	151.21	Z	0-51Q W/BF																															
1	151.90	A		10.750	0.3070	5	1784+69	16215	5413	#	-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.60		B	C	960	1020	0	1080		NG
1	152.00	A		10.750	0.3070	155	1786+24	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.72		B	C	1151	1020	0	1080		NG
1	153.00	A		10.750	0.3070	5	1786+29	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.60		B	C	960	1020	0	1080		NG
1	154.00	A	TEE 10X2 RED	10.750	0.3650	1	1786+30	16215	5413				T-TEE	35000	0	0			S	7012	1	1	P	0.60		B	C	1426		0	1080		NG
1	154.10	S	BPV	2.000		1	1786+30	16215	5413				V-VALV		0	0			S	7012	1	1	P			B	C	0		0	1080		NG
1	155.00	A		10.750	0.3070	1	1786+31	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.60		B	C	960	1020	0	1080		NG
1	156.00	V	BV 0-51H SOUTH	2.000		2	1786+33	16215	5413	ND			V-VALV		0	0			S	7012	1	1	P				C	0		0	1080		NG
1	156.01	Z	SIDE LAGUNA																															
1	156.02	Z	MADRE																															
1	157.00	A		10.750	0.3070	1	1786+34	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.60		B	C	960	1020	0	1080		NG
1	158.00	A	TEE 10X2 RED	10.750	0.3650	1	1786+35	16215	5413				T-TEE	35000	0	0			S	7012	1	1	P	0.60			C	1426		0	1080		NG
1	158.10	S	BPV	2.000		1	1786+35	16215	5413				V-VALV		0	0			S	7012	1	1	P				C	0		0	1080		NG
1	158.11	Z	FLD VER SEGS																															
1	158.12	Z	154.00 THRU																															
1	158.13	Z	158.10																															
1	159.00	A		10.750	0.3070	5	1786+40	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.60		B	C	960	1020	0	1080		NG
1	160.00	Q	MP 34.00	10.750	0.3070	880	1795+20	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.72		B	C	1151	1020	0	1080		NG
1	161.00	Q	MP 34.28	10.750	0.3070	1480	1810+00	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.72		B	C	1151	1020	0	1080		NG
1	161.10	P	MP.1.8C																															
1	162.00	Q	MP 35.00	10.750	0.3070	3800	1848+00	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.72		B	C	1151	1020	0	1080		NG
1	163.00	Q	MP 36.00	10.750	0.3070	5280	1900+80	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.72		B	C	1151	1020	0	1080		NG
1	164.00	Q	MP 37.00	10.750	0.3070	5280	1953+60	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.72		B	C	1151	1020	0	1080		NG
1	165.00	Q	MP 38.00	10.750	0.3070	5280	2006+40	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.72		B	C	1151	1020	0	1080		NG
1	166.00	A		10.750	0.3070	3867	2045+07	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.72		B	C	1151	1020	0	1080		NG
1	166.90	A		10.750	0.3070	5	2045+12	16215	5413	#	-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.60		B	C	960	1020	0	1080		NG
1	167.00	T	TEE 10X2 RED	10.750	0.3650	1	2045+13	16215	5413				T-TEE	35000	0	0			S	7012	1	1	P	0.72			C	1711		0	1080		NG
1	167.10	S	BV 0-51R SPRINT	2.000		1	2045+13	16215	5413				V-VALV		0	0			S	7012	1	1	P				C	0		0	1080		NG
1	167.11	Z	LATERAL																															
1	167.90	A		10.750	0.3070	5	2045+18	16215	5413	#	-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.60		B	C	960	1020	0	1080		NG
1	168.00	Q	MP 39.00	10.750	0.3070	1402	2059+20	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.72		B	C	1151	1020	0	1080		NG
1	169.00	A		10.750	0.3070	2602	2085+22	16215	5413		-UNK	0.8	A-5L	35000	1200	0			S	7012	1	1	P	0.72		B	C	1151	1020	0	1080		NG
1	169.01	Z	2" SV 0-51S BU																															
1	169.02	Z	RIED LOST IN																															
1	169.03	Z	DUNES																															

062TXBAS 14" MURDOCK PASS LATERAL STATUS: INCOMPLETE B5-52 ISSUE

SEC	SEG NO.	TYP E	REMARKS	OD	WALL	LENG FEET	ALIGNMENT STATIONING	PO/MO	IN-SERV DATE	M F R	LONG JNT	JNT FAC	COM/ SPEC	SMYS OR WOG	MILL PRES	--FIELD TEST-- PREV TEST	PRES	DATE	M E & D	MTL CJ	CLAS DATE	CLS	I S	P / P	INIT DSGN FAC	CLS CHG %	R P	C L	CT I	MAOP DSGN	BASED ON MILL	TEST	SEG MAOP	V R P Y	DT
1	170.00	Q	MP 39.77	10.750	0.3070	1478	2100+00	16215	5413		-UNK	0.8	A-5L	35000	1200		0		S	7012	1	1	P	0.72		B	C	1151	1020		0	1080		NG
1	170.10	P	MP.1.9C																																
1	171.00	Q	MP 40.00	10.750	0.3070	1200	2112+00	16215	5413		-UNK	0.8	A-5L	35000	1200		0		S	7012	1	1	P	0.72		B	C	1151	1020		0	1080		NG
1	172.00	Q	MP 41.00	10.750	0.3070	5280	2164+80	16215	5413		-UNK	0.8	A-5L	35000	1200		0		S	7012	1	1	P	0.72		B	C	1151	1020		0	1080		NG
1	173.00	Q	MP 42.00	10.750	0.3070	5280	2217+60	16215	5413		-UNK	0.8	A-5L	35000	1200		0		S	7012	1	1	P	0.72		B	C	1151	1020		0	1080		NG
1	174.00	A	TRAIL	10.750	0.3070	3267	2250+27	16215	5413		-UNK	0.8	A-5L	35000	1200		0		S	7012	1	1	P	0.72		B	C	1151	1020		0	1080		NG
1	175.00	Q	MP 43.00	10.750	0.3070	2013	2270+40	16215	5413		-UNK	0.8	A-5L	35000	1200		0		S	7012	1	1	P	0.72		B	C	1151	1020		0	1080		NG
1	176.00	Q	MP 44.00	10.750	0.3070	5280	2323+20	16215	5413		-UNK	0.8	A-5L	35000	1200		0		S	7012	1	1	P	0.72		B	C	1151	1020		0	1080		NG
1	176.10	A	KLEBERG-KENNEDY	10.750	0.3070	5254	2375+74	16215	5413		-UNK	0.8	A-5L	35000	1200		0		S	7012	1	1	P	0.72		B	C	1151	1020		0	1080		NG
1	176.11	N	CO. LINE																																
1	177.00	Q	MP 45.00	10.750	0.3070	26	2376+00	16215	5413		-UNK	0.8	A-5L	35000	1200		0		S	7012	1	1	P	0.72		B	C	1151	1020		0	1080		NG
1	178.00	Q	MP 45.38	10.750	0.3070	2000	2396+00	16215	5413		-UNK	0.8	A-5L	35000	1200		0		S	7012	1	1	P	0.72		B	C	1151	1020		0	1080		NG
1	178.10	P	MP.1.10C																																
1	179.00	Q	MP 46.00	10.750	0.3070	3280	2428+80	16215	5413		-UNK	0.8	A-5L	35000	1200		0		S	7012	1	1	P	0.72		B	C	1151	1020		0	1080		NG
1	180.00	Q	MP 47.00	10.750	0.3070	5280	2481+60	16215	5413		-UNK	0.8	A-5L	35000	1200		0		S	7012	1	1	P	0.72		B	C	1151	1020		0	1080		NG
1	181.00	Q	MP 48.00	10.750	0.3070	5280	2534+40	16215	5413		-UNK	0.8	A-5L	35000	1200		0		S	7012	1	1	P	0.72		B	C	1151	1020		0	1080		NG
1	182.00	Q	MP 49.00	10.750	0.3070	5280	2587+20	16215	5413		-UNK	0.8	A-5L	35000	1200		0		S	7012	1	1	P	0.72		B	C	1151	1020		0	1080		NG
1	182.50	Q	MP 50.00	10.750	0.3070	5280	2640+00	16215	5413	#	-UNK	1.0	B-5LX	35000	1200		0		S	7012	1	1	P	0.50		B	C	1000	1020		0	1080		NG
1	183.00	A		10.750	0.3070	898	2648+98	16215	5413		-UNK	0.8	A-5L	35000	1200		0		S'	7012	1	1	P	0.72		B	C	1151	1020		0	1080		NG
1	184.00	A		10.750	0.3070	5	2649+03	16215	5413		-UNK	0.8	A-5L	35000	1200		0		S	7012	1	1	P	0.50		B	C	800	1020		0	1080		NG
1	185.00	T	TEE	10.750		1	2649+04	16215	5413				T-TEE	35000	0		0		S	7012	1	1	P	0.50		B	C	407			0	1080		NG
1	185.10	S	APPROX	10.750	0.3070	3	2649+04	16215	5413		-UNK	0.8	A-5L	35000	1200		0		S	7012	1	1	P	0.50		B	C	800	1020		0	1080		NG
1	185.20	S	90DEG BEND NO ELL	10.750	0.3070	2	2649+04	16215	5413		-UNK	0.8	A-5L	35000	1200		0		S	7012	1	1	P	0.50		B	C	800	1020		0	1080		NG
1	185.30	S	APPROX	10.750	0.3070	1	2649+04	16215	5413		-UNK	0.8	A-5L	35000	1200		0		S	7012	1	1	P	0.50		B	C	800	1020		0	1080		NG
1	185.40	S	RED 12X10 CONC	12.750	0.3750	1	2649+04	16215	5413				R-REDR	35000	0		0		S	7012	1	1	P	0.50			C	1029			0	1080		NG
1	185.50	S	SV 0-51T AT PLD	12.000		2	2649+04	16215	5413	CA			V-VALV		0		0		S	7012	1	1	P				C	0			0	1080		NG
1	185.51	X	COMP NO 64 TIES																																
1	185.52	X	INTO DISCH LN &																																
1	185.53	X	PENESCAL LAT																																
1	186.00	A		10.750	0.3070	56	2649+60	16215	5413		-UNK	0.8	A-5L	35000	1200		0		S	7012	1	1	P	0.50		B	C	800	1020		0	1080		NG
1	187.00	A	90DEG BEND NO ELL	10.750	0.3070	3	2649+63	16215	5413		-UNK	0.8	A-5L	35000	1200		0		S	7012	1	1	P	0.50		B	C	800	1020		0	1080		NG
1	188.00	A	RED 6X10 CONC	10.750		0	2649+63	16215	5413				R-REDR	35000	0		0		S	7012	1	1	P	0.50		B	C	407			0	1080		NG
1	189.00	V	BV 0-51J METER	6.000		2	2649+65	16215	5413	ND			V-VALV		0		0		S	7012	1	1	P				C	0			0	1080		NG

062TXBAS 14" MURDOCK PASS LATERAL STATUS: INCOMPLETE B5-52 ISSUE

SEC	SEG NO.	TYPE	REMARKS	OD	WALL	LENG FEET	ALIGNMENT STATIONING	PO/MO	IN-SERV DATE	M F R	LONG JNT	JNT FAC	COM/SPEC	SMYS OR WOG	MILL PRES	--FIELD TEST-- PREV TEST	PRES	DATE	M E D	& CJ	MTL CLAS DATE	I CLS	P S	P / FAC	INIT DSGN	CLS CHG %	R P	C L	I 3	CT N	E X	MAOP BASED ON DSGN	MILL TEST	SEG MAOP	VRFY DT
1	189.01	Z	STA VALVE																															
1	190.00	R	RED 10X6 CONC	10.750		0	2649+65	16215	5413				R-REDR	35000	0	0		S	7012	1	1	P	0.50			C	407		0	1080		NG
1	191.00	F	TEE 12X10 RED	12.750		1	2649+66	16215	5413				T-TEE	35000	0	0		S	7012	1	1	P	0.50			C	428		0	1080		NG
1	191.10	S	SV 0-51V AT FLD	12.000		2	2649+66	16215	5413	CA			V-VALV		0	0		S	7012	1	1	P				C	0		0	1080		NG
1	191.11	Z	COMP NO 64 TIRS																															
1	192.00	F	TEE 10X2 RED	10.750		1	2649+67	16215	5413				T-TEE	35000	0	0		S	7012	1	1	P	0.50			C	407		0	1080		NG
1	192.10	S	SV	2.000		1	2649+67	16215	5413				V-VALV		0	0		S	7012	1	1	P				C	0		0	1080		NG
1	193.00	A	FLG W/BF	10.000		0	2649+67	16215	5413				F-FLAN		0	0		S	7012	1	1	P				C	0		0	1080		NG
1	193.01	Z	FLD VER SEGS																															
1	193.02	Z	185.00 THRU																															
1	193.03	Z	193.00																															
1	193.04	Z	DEFICIENT RE-																															
1	193.05	Z	PORT; FLD VER																															
1	193.06	Z	WT/FOR TEE'S,																															
1	193.07	Z	SAD'S & NIP'S																															
1	193.08	Z	MISSING HYDRO-																															
1	193.09	Z	STATIC TEST,																															
1	193.10	Z	CLASS SURVEY																															
1	193.11	Z	REV #1 4/7/94 DD, ADDED WO C23467																															

[redacted]

Lowest Segment MAOP: 1080 psig

PIPELINE SUMMARY

OD	WALL	SMYS/WOG	CLS	75% SMYS	#SEG	FEET	MILES
2.000		0	1		1	2	
						2 =	0.000
6.000		0	1		3	6	
						6 =	0.001
6.625	0.2800	35000	1	2219	2	2	
6.625	0.4320	35000	1	3423	3	5	
						7 =	0.001
8.625	0.0000	35000	1	0	5	3	
8.625	0.2800	35000	1	1704	12	3010	
8.625	0.3220	35000	1	1960	1	0	
						3013 =	0.571
10.000		0	1		5	8	
10.000	0.0000	42000	1	0	2	0	
						8 =	0.002
10.750	0.0000	35000	1	0	10	7	
10.750	0.3070	35000	1	1499	125	213457	
10.750	0.3650	35000	1	1783	14	118	
10.750	0.5000	35000	1	2442	5	9939	
10.750	0.5000	42000	1	2930	1	1	
						223522 =	42.334
12.750	0.0000	35000	1	0	1	1	
						1 =	0.000

062TXBAS 14" MURDOCK PASS LATERAL STATUS: INCOMPLETE BS-52 ISSUE

Lowest Segment MAOP: 1080 psig

PIPELINE SUMMARY

OD	WALL	SMYS/WOG	CLS	75% SMYS	#SEG	FEET	MILES
14.000	0.0000	35000	1	0	2	3	
14.000	0.2500	35000	1	938	1	1	
14.000	0.2500	42000	1	1125	31	38399	
						38403 =	7.273
20.000	0.3750	35000	1	984	2	5	
						5 =	0.001
					TOTAL:	264967 =	50.183

PanEnergy™

PADRE ISLAND NATURAL GAS PIPELINE

SPILL PREVENTION CONTROL AND COUNTERMEASURE (SPCC) PLAN
&
PREPAREDNESS, PREVENTION, AND CONTINGENCY (PPC) PLAN

FOR

PANENERGY FIELD SERVICES, INC.
Rt. 1 BOX 97
FALFURRIAS, TEXAS

PADRE ISLAND NATIONAL SEASHORE

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Attachment I - Internal/External Notification References

Appendix A - Material Safety Data Sheets (MSDS)

Appendix B - Miscellaneous Forms

1.0 GENERAL DESCRIPTION OF CONSTRUCTION ACTIVITY

Pipe replacements, in general, are required by the U.S. Department of Transportation (DOT) due to an increase in housing or a change in land-use adjacent to PanEnergy's existing right-of-way. Pipe replacements may also be required to insure the integrity of the pipeline. The installation of new looped pipeline is installed to better serve the customer.

Erosion and sedimentation control structures for the project will be constructed in accordance with the Erosion and Sedimentation Control Plan.

Table II, in Section 3.0 Material and Waste Inventory of this plan, provides an anticipated inventory of oils and hazardous substances to be utilized during construction activities which, when released, may pose a threat to human health or the environment. This table must be completed by the Contractor prior to construction. In addition, this table provides the Reportable Quantity (RQ) for each of these materials. Material Safety Data Sheets (MSDS) for each of these chemicals is provided in Appendix A.

Other potential waste from this site, not included in Table II, would include construction debris, rock and excess spoil.

FIGURE 1.1

INFORMATION SUMMARY

GENERAL INFORMATION PADRE ISLAND NATURAL GAS PIPELINE	
Facility Name:	PanEnergy Field Services, Inc. Rt. 1, Box 97 Falfurrias, TX 78355
Owner Name:	PanEnergy Pipeline Company A Unit of Panhandle Eastern Corporation 5400 Westheimer Court Houston, TX 77056
Telephone/FAX:	Additional telephone references, including 24 hour numbers, for the Facility, Owner, and QI/AQI are provided in Figure 2.2 and repeated below for the QI/AQI.
Date Owner/Operator Commenced Operations:	PanEnergy purchased the Murdock Pass Lateral from Enron Pipeline Company in November 1996.

QUALIFIED INDIVIDUALS			
	Address and Telephone Numbers		
Name/Title	Office	Home	Emergency
Mike Lloyd *Area Supervisor*	Rt. 1 Box 97 Falfurrias, TX 78355 (512) 325-9331		(800) 435-1679
Neal Coffey *Alternate Area Supervisor*	Rt. 1 Box 97 Falfurrias, TX 78355 (512) 325-9330		(800) 435-1679

2.0 EMERGENCY RESPONSE PROGRAM

This section provides a description of emergency response procedures to be performed to address hazardous material releases at the site.

2.1 Organizational Structure

Both PanEnergy and the Contractor will designate an Emergency Coordinator (EC) for the site. The Contractor Superintendent will act as the EC for the Contractor. The Area Supervisor (AS) will act as the EC for PanEnergy. The responsibilities of the EC's will be as follows:

2.1.1 Contractor Responsibilities

(1) The Contractor Superintendent will act as the Contractor's EC for the site.

(2) The Contractor is responsible for cleaning and addressing all spills that occur as a result of their operations, except for spills of pipeline liquids, which will be handled by PanEnergy.

(3) For small spills (less than the Reportable Quantity), the notification requirements of this plan need not be followed. However, this does not relieve the contractor from correcting these releases in an environmentally sound manner.

(4) The Contractor shall supply necessary manpower and equipment to address releases resulting from their operations.

(5) The Contractor is responsible for immediately notifying the PanEnergy AS of any release.

2.1.2 PanEnergy Responsibilities

(1) PanEnergy AS will act as the Company's EC for the site.

(2) PanEnergy will be responsible for cleaning and addressing all spills of pipeline liquids.

(3) PanEnergy will be responsible for notifying appropriate agencies of releases in excess of reportable quantities, including follow-up written notification.

(4) PanEnergy will provide supporting personnel and equipment to address reportable quantity releases.

(5) PanEnergy will be responsible for contacting outside remedial response firms and emergency response teams should their services be required.

2.1.3 Area Supervisor Responsibilities

(1) Determine the source, character, amount and extent of the release or incident.

(2) Assess the potential hazards to the site, environment, and neighboring community due to the incident, including possible toxic gases, hazardous runoff, etc.

2.1.3 Area Supervisor Responsibilities (Continued)

(3) Sound the alarm and/or evacuation command to alert personnel, when required.

(4) If necessary, notify the local fire department, law enforcement authority, or health authority as appropriate. The following information should be provided:

a. Name of the caller and callback number;

b. The exact location and nature of the incident;

c. The extent of personnel injuries and damage;

d. The extent of release; and

e. The materials involved, and appropriate safety information.

(5) If evacuation of local areas is needed related to a spill or release of oils, hazardous waste, or hours a day.

(6) Notify the PFS at 1-800-435-1679 (24 hr. hot line) and the PanEnergy Field Office listed on Figure 2.1 to coordinate clean up.

(7) Contact outside remediation services, in coordination with the PanEnergy Field Office, to assist with incidents too serious to be addressed by the contractor or PanEnergy personnel (Figure 2.2).

(8) Commit manpower and equipment for minor incidents that can be reasonably corrected by PanEnergy and Contractor personnel.

(9) Complete a "Field Spill Cleanup Report" (Appendix B) and transmit the original copy of the report to PanEnergy.

2.1.4 Contractor Superintendent Responsibilities

(1) Immediately notify the PanEnergy Field AS of any spills.

(2) Direct remediation efforts to contain and control releases in accordance with this plan.

(3) Document the remedial effort, including taking photographs if possible.

(4) Coordinate cleaning and disposal activities as described in Section 4.0 Spill and Leak Prevention and Response.

(5) Ensure that all emergency equipment used during the incident is clean and fit for use prior to placing these devices back into service. Replace spent response equipment and materials when necessary.

2.1.5 Environmental Compliance Department Responsibilities

(1) Upon receiving spill information from the PanEnergy Field Office, determine if the release requires reporting to regulatory agencies.

(2) If the incident requires reporting, notify the appropriate regulatory agencies. This includes both verbal and written reports.

(3) Contact outside remediation services, in coordination with the PanEnergy Field Office, to assist with incidents too serious to be addressed by the contractor or PanEnergy personnel.

(4) If the incident is a spill involving pipeline liquids, arrange for the waste transport to an approved disposal facility within the applicable federal and state regulatory requirements.

2.2 Notification Requirements

Oil spills and hazardous substance releases are to be immediately reported to the Field Construction Office, Padre Island Nation Seashore and the PanEnergy AS. A Field Spill Cleanup Form will also be completed as soon as technically feasible by the AS. The AS will determine if the release constitutes a:

a. Reportable Quantity under CERCLA;
b. Reportable release under the Clean Water Act or RCRA; or
c. Reportable Threshold Quantity under SARA Title III.

If reporting is necessary, the EC will be responsible for immediately contacting the appropriate federal and state authorities.

2.2.1 Chain of Command

The list of key personnel who will be contacted in the event of an emergency or spill incident include the following:

1. PanEnergy EC

   Not available at this time. Information to be supplied prior to construction.

2. Contractor EC

   Not available at this time. Information to be supplied prior to construction.

3. Field Construction Office

   Not available at this time. Information to be supplied prior to construction.

4. Environmental Compliance Department

   Ms. Margaret Ash : 1-303-605-1716

2.2.1 Chain of Command (Continued)

5. Area Office

PanEnergy Pipeline, Rt. 1 Box 97, Falfurrias, TX.

2.2.2 List of Agencies to be Notified

If reporting is necessary, the PanEnergy EC will be responsible for immediately contacting the appropriate federal and state agencies. The following provides a list of local agencies and telephone numbers that may be notified in case of an emergency or spill incident:

See Attachment I.

2.3 Employee Training

All personnel involved in the construction of the proposed facilities will be aware of the PPC Plan. Training briefings will be conducted daily by the Contractor Superintendent and the PanEnergy AS on the job site.

2.4 Emergency Equipment

The construction site will have adequate manpower and equipment necessary to divert any spill from reaching water bodies and wetland areas. Emergency equipment shall include, but is not limited to shovels, oil absorbent booms, pillows, socks and/or mats and chemical absorbent pulp, pillows, socks and/or mats. A list of emergency response equipment and personnel protection equipment is provided in Table 1.

TABLE I
EMERGENCY RESPONSE AND PERSONNEL PROTECTION EQUIPMENT

Spill Response:

Equipment	Quantity	Location

Fire Protection:

Equipment	Quantity	Location

Personnel Protection:

Equipment	Quantity	Location

THIS TABLE TO BE COMPLETED BY CONTRACTOR.

3.0 MATERIAL AND WASTE INVENTORY

Table II will be completed by the Contractor prior to construction. This table provides a list of the locations, sources and quantities of chemicals used or stored at the site that have the potential of causing environmental degradation or endangerment of public health and safety through accidental releases. This list includes nutrients, such as fertilizers and sanitary wastes; solid waste, such as scrap metals, masonry products and other construction raw materials and debris; construct on chemicals, such as paints, soil additives and acids for cleaning; petroleum products, such as fuels and lubricants; and other materials including concrete wash from mixers, etc.

Material Safety Data Sheets (MSDS) for all substances used are included in Appendix A. Solid wastes, such as food wrappings, cigarette butts and packets, styrofoam cups and plates, and similar wastes will be disposed of appropriately daily.

TABLE II

MATERIAL AND WASTE INVENTORY

Oil/Fuel:

Quantity (Gallons)	Storage Location	Reportable Quantity

Commercial Chemicals:

Quantity (Gallons)	Storage Location	Reportable Quantity

Hazardous Wastes:

Quantity (Gallons)	Storage Location	Reportable Quantity

4.0 SPILL AND LEAK PREVENTION AND RESPONSE

4.1 Spill Prevention

The Contractor will take the following precautions to ensure that a release of unsafe materials to the environment is prevented or contained:

4.1.1 Containers

(1) All containers, 55 gallons or greater, shall be stored on pallets and surrounded with temporary containment.

(2) No incompatible materials shall be stored in the same containment area.

(3) Containment will include, but will not be limited to, temporary earthen berms with polyethylene underlining of sufficient mil thickness or a portable steel containment system.

(4) Containment areas shall be capable of containing 110% of the volume of material stored in these areas.

(5) All container storage areas shall be inspected daily for leaks and deterioration.

(6) Leaking and/or deteriorated containers shall be replaced as soon as the condition is first detected.

(7) No storage area shall be unattended for periods longer than two (2) days.

4.1.2 Tanks

(1) The contractor shall operate only those tanks for fuel and material storage which meet the approval of PanEnergy.

(2) Self-supporting tanks shall be constructed of carbon steel or other materials compatible with the contents of each tank.

(3) All tanks will be elevated a maximum of two (2) feet above grade and inspected daily for leaks and/or deterioration.

(4) Vehicle mounted tanks shall be equipped with flame/spark arrestors on all vents to ensure that self ignition does not occur.

(5) Tanks will not be used to store incompatible materials in sequence unless first thoroughly decontaminated.

Any tank utilized at different construction locations will be thoroughly decontaminated between locations.

4.1.3 Unloading/Loading Areas

(1) Transferring of liquids and refueling shall only occur in pre-designated locations at least 100 feet from all waterbodies and wetlands and 200 feet from any water well.

(2) Any service vehicle used to transport lubricants and fuel must be equipped with an emergency response kit. At a minimum, this kit must include:

- 10, 48" x 3" oil socks,
- 5, 17" x 17" oil pillows,
- 1, 10" x 4" oil boom,
- 20, 24" x 24" x 3/8" oil mats,
- Garden size, 6 mil. polyethylene bags,
-10 pair of latex gloves, and
- 1, 55-gallon polyethylene open-head drum.

In addition a smaller chemical response kit shall be available which contains:

- 1 bag of loose chemical pulp,
- 2 to 3, 17" x 17" chemical pillows,
- 2, 48" x 3" chemical socks,
- S. 18" x 18" x 3/8" adsorbent mats,
- garden size. 6 mil. polyethylene bags,
- 10 pair of latex gloves,
- 1. 30-gallon polyethylene open-head drum. and
- hazardous waste labels

Finally, each refueling vehicle shall have a sufficient number of shovels, brooms, 10 mil polyethylene sheeting, and fire protection equipment to contain a moderate oil/fuel spill.

(3) The area beneath loading/unloading location shall be inspected for spills before and after each use.

4.1.4 Concrete Coating of Field Joints

(1) Concrete coating of field joints for road, rail, waterbody, and wetland crossings shall be performed at least 100 feet from all waterbodies.

(2) Where topographic conditions and/or work space limitations necessitate application of concrete coating within 100 feet of a waterbody, the following containment measures shall be performed

4.1.4 Concrete Coating of Field Joints (Continued)

a. Concrete coating materials shall be temporarily stored in an earthen berm with polyethylene underling of sufficient mil thickness, or in a portable containment tray constructed of steel plate measuring a minimum of four (4) feet square by one (1) foot deep.

b. Portable-mechanical mixing equipment, if required, shall be operated within a containment area constructed of temporary earthen berms and polyethylene underling of sufficient mil thickness.

c. Manual mixing of concrete materials in a portable container (such as a SS gallon drum cut in half or equivalent) shall be performed within *M* earthen berm with polyethylene underling of sufficient mil thickness, or within a portable containment tray constructed of steel plate, measuring a minimum of four (4) feet square by one (1) foot deep.

4.2 Spill Clean-up Procedures

The following identifies the cleanup and control measures to be utilized in the event of a spill of oil, fuel or a unsafe substance on the construction right-of-way.

4.2. l Oil/Fuel Spills

(1) Small spills and leaks must be remediated as soon as feasible. Use adsorbent pads wherever possible to reduce the amount of impacted articles.

(2) Restrict spill to containment area if possible by stopping or diverting flow to the oil/fuel tank.

(3) If the release exceeds the containment system capacity, immediately construct additional containment using sandbags or fill material. Every effort must be exhausted to prevent the seepage of oil into soils and waterways.

(4) If a release occurs into a facility drain or nearby stream, immediately pump the floating layer into drums. For high velocity streams, place oil booms or hay bales between the release area and the site boundary. As soon as possible, excavate impacted soils and sediments.

(5) After all recoverable oil has been collected and drummed, place impacted soils and articles in containers.

(6) For larger quantity of soils, construct temporary waste piles using plastic liners. Plastic lined roll-off bins should be leased for storing this material as soon as feasible.

(7) Dispose of oily soils and impacted articles in accordance with applicable federal, state, and local regulations.

(8) Decontaminate all emergency response equipment used during the incident before storing.

(9) Document and report activities to the PanEnergy Environmental as soon as feasible.

4.2.2 Substance Releases

(1) Identify the material and quantity released.

(2) Block off drains and containment areas to limit the extent of the spill. Never use water to disperse the spill.

(3) Ensure that personnel protection equipment (PPE) and containers are compatible with the material released.

(4) Collect and reclaim as much of the spill as possible using a hand pump or similar device. Containerize impacted soils. Never place incompatible materials in the same drum.

(5) Take a sample of the substance for analysis and waste profiling.

(6) Place a non-classified waste label with appropriate waste code on the drums containing impacted materials. Move drum to secure staging or storage area.

(7) Decontaminate all equipment in a contained area. Collect and containerize decontamination fluids.

(8) Document and report activities to the EC as soon as feasible.

4.3 Disposal of Impacted Materials/Soils

(1) The contractor is responsible for the proper disposal of wastes generated by their actions, including obtaining applicable authorizations, registrations and/or EPA ID. Numbers.

(2) All impacted articles and soils recovered during a release event shall be properly handled and stored in approved DOT containers.

(3) All wastes generated as a result of spill response activities will be analyzed to determine if hazardous.

(4) Those wastes determined hazardous will be properly labeled, profiled and manifested to an authorized hazardous waste treatment, storage, and disposal facility approved by PanEnergy.

(5) PanEnergy may utilize a remediation firm to initiate waste disposal activities. At no time will hazardous waste be stored on-site for a period exceeding 90 days.

(6) Hazardous wastes shall be stored in a secured location (i.e., fenced, locked, etc.) until such time as this material is transported off-site. At no time will hazardous waste be stored for a period exceeding 90 days.

(7) Non-hazardous, oil-impacted soils and articles will be properly disposed of at an authorized non-hazardous land disposal facilities. While on-site, these materials will be managed in accordance with the procedures outlined previously, and with applicable federal, state and local regulations.

(8) Depending upon quantity, lined roll-off bins will be leased to temporarily store

impacted soils off-site prior to disposal.

4.4 Equipment Cleaning/Storage

(1) Upon completion on of remedial activities. the contractor shall be responsible for disposing of and/or decontaminating emergency response equipment.

(2) The contractor shall be responsible for replacing all spent emergency response equipment prior to resuming construction activities.

(3) Decontamination fluids shall be handled in the same manner as wastes generated, including performing necessary analyses.

(4) Reusable personnel protection equipment will be tested and inventoried prior to being placed back into service.

5.0 INSPECTION PROGRAM

All loading and unloading operations of fuels. etc. will be closely monitored to ensure proper response to prevent spills. All hose connections shall be inspected for leaks. If leaks should occur. the operation shall cease until the leak is repaired or a containment pan is placed under the leaking connection. All container storage areas and tanks will be inspected daily for leaks and deterioration. The area beneath loading/unloading locations will be inspected for spills before and after each use.

6.0 HOUSEKEEPING PROGRAM

The construct on area will be maintained in a neat and orderly manner Any spills or leaks will be cleaned up as expeditiously as possible. Trash will be routinely collected for off-site disposal. Container storage areas will be maintained in a neat and orderly manner

7.0 SECURITY

Hazardous wastes will be stored in a secured location (i.e., fenced, locked. etc.). Temporary fencing will be installed around fuel storage areas to prevent tampering by unauthorized personnel during non-operational hours.

8.0 EXTERNAL FACTORS

There will be no direct effect on the construction site due to a power outage or snowstorm. In the event of a flood or strike, all tanks and containers would be removed from the right-of-way and placed in a secure area

ATTACHMENT I

INTERNAL NOTIFICATION REFERENCES
PADRE ISLAND NATURAL GAS PIPELINE

GENERAL FACILITY			
FACILITY AREA	**ADDRESS**	**OFFICE**	**FAX NUMBER**
Padre Island Pipeline Padre National Seashore	PanEnergy Field Services, Inc. Rt. 1 Box 97 Falfurrias, TX 78355	(512) 325-2558	(512) 325-9347

LOCAL RESPONSE TEAM					
POSITION/TITLE	**NAME**	**RESPONSE TIME**	**OFFICE**	**HOME**	**OTHER**
Qualified Individual / Area Supervisor	Mike Lloyd	2 hours	(512) 325-9331	(512)798-4194	(512) 550-5797 Mobil
Alt. Qualified Individual / Plant Supervisor	Neal Coffey	2 hours	(512) 325-9330	(405) 282-3624	(800) 435-1679 (512-850-0665 MBL

ATTACHMENT I (Continued)

INTERNAL NOTIFICATION REFERENCES
PADRE ISLAND NATURAL GAS PIPELINE

HEADQUARTERS SPILL MANAGEMENT TEAM/OTHER COMPANY CONTACTS					
POSITION/TITLE	NAME	RESPONSE TIME	OFFICE	HOME	OTHER
Safety Coordinator	Pete Barraiea	2 Hours	(512) 325-2558		
Safety Manager	Mike Moore	8 Hours	(303) 595-3331	(303) 353-3520	(800) 435-1679 24 HR (970) 396-4537 Mobil
Environmental Manager	Robert Pearson	8 Hours	(303) 595-3331		(800) 435-1679 24 HR (303) 810-2951 Mobil
Senior VP Operations	Keith A. Knipp	8 Hours	(303) 595-3331	(303) 688-3690	(303) 478-0541 Mobil (800) 435-1679 24 HR
Senior Media Relations - Public Affairs	John Barnett	4 Hours	(713) 627-5011		(713) 627-4091 FAX
Claims Advisor - Treasury Department	Al Schroeder	4 Hours	(713) 989-3813		(713) 989-3808 FAX

ATTACHMENT I (Continued)

EXTERNAL NOTIFICATION REFERENCES
PADRE ISALND NATURAL GAS PIPELINE

REQUIRED EXTERNAL NOTIFICATIONS (refer to Section 2.2 for Detailed reporting requirements)			
AGENCY	LOCATION	OFFICE	ALTERNATE
PINS - Superintendent	Corpus Christi, TX	(512)-949-8173 Ext 222	
PINS - Environmental Protection Specialist	PINS	(512)-949-8173 Ext 224	(512)-937-0705 after hours
National Response Center (NRC)	Washington, D. C.	(800) 424-8802	(202) 267-2675
EPA Region VI	Dallas, TX	(214) 655-2222	
Texas Emergency Response Center (TERC)	Austin, TX	(800) 832-8224	(512) 465-2277
(Hotline answered by the Texas Department		24 Hr Hotline	
of Public Safety which will in turn notify GLO,			
TNRCC, and TRRC as applicable -- follow-up			
calls to all applicable agencies is always			
advisable)			
Texas Natural Resource Conservation Commission (TNRCC)	Austin, TX	(512) 463-7727	
Texas Railroad Commission (TRC)	Austin, TX	(512) 463-6788	24 Hrour
	District 1 & 2 (San Antonio)	(210) 227-1313	
	District 3 (Houston)	(713) 460-0631	
Texas General Land Office (GLO)	Port Lavaca, TX	(512) 552-8081	(800) 832-8224
Sheriff	Padre Island, TX	911	
Medical Services	Padre Island, TX	911	
Fire Department	Padre Island, TX	911	(800) 832-8224

OSRO RESPONSE CAPABILITIES

Garner Environmental Services, 314 Allen Street, Houston, Texas 77017
Telephone: (713) 920-1300
FAX: (713) 920-1359

COTP Zone	River/Canal					
	Equipment	A	B	C	D	E
Houston	Boom (ft.)	34,700	80,850	80,850	116,250	116,250
	Effective Daily Recovery (bbls)	30,947	73,667	73,667	105,828	105,828
	Temporary Storage (bbls)	44,377	56,639	56,639	90,603	132,136

A – Fastest response time, but least amount of equipment.

E – Slowest response time, but greatest amount of total equipment.

B - C- D – Classification falls in the middle.

OSRO 0027 – Garner Environmental Service, Inc.
Classification Summary Sheet

Classifications are based on response times to CG MSO Houston
Latitude: 29° 44' 16"
Longitude: 95° 14' 24"

	Facility Classification Levels					Vessel Classification Levels				
Environments	A	B	C	D	E	A	B	C	D	E
River/Canal	X	X	X	X	X	X	X	X	X	X
Inland	X	X	X	X	X	X	X	X	X	X

A – Average Most Probable Discharge (AMPD)
B – Maximum Most Probably Discharge (MMPD)
C - Worst Case Discharge Tier 1
D – Worst Case Discharge Tier 2
E – Worst Case Discharge Tier 3
X – an indicator that the OSRO has received a classification(s) for a specific environment.

APPENDIX A

MATERIAL SAFETY DATA SHEET(S)

(MSDS)

APPENDIX B

MISCELLANEOUS FORMS

Page

Site Safety and Health Plan B-2

Notification Data Sheet B-8

Incident Event Log B-9

Reportable Oil Spill History (Sample) B-10

Crude Oil, Gas Well Liquids, or Associated Products Loss Report (H-8) B-11

Interim H-8 Crude Oil Spill Sheet B-12

TGLO Oil Spill Response Completion Report B-14

DOT Form 7000-1 ..... B-15

EMERGENCY RESPONSE AND CLEAN-UP OPERATION
SITE SAFETY AND HEALTH PLAN

Date: _____

Location: _____

A. **Site Characterization and Analysis** - (*This will be Attachment 1 if maps or other are available*)

Description of site and topography

Material(s) released: _____

_____

Pathways to hazardous substances dispersion (*water, soil, air*): _____

_____

B. **Organizational Structure**

Incident Commander(s): _____

Contractor's Project Manager(s): _____

_____

Safety Monitor(s): _____

Public Affairs Representative: _____

C. **Workplan** (*brief description of clean-up activities, tasks, approximate work force, tools to be used, and special equipment required*).

_____

_____

_____

Expected duration of clean-up: _____

Control boundaries have been set and are identified by (*Specify tape, barricade or other*): _____

_____

D. Safety and Health Hazards (*description of safety and health hazards which may be associated with the clean-up activities described above*).

Potential hazards may include (*check those that apply*):

- ☐ Skin contact with hazardous substance. List: _____
- ☐ Inhalation of hazardous substance. List: _____
- ☐ Water hazards (including high winds and/or water
- ☐ Heat stress and/or exhaustion. cold
- ☐ Hazards to the eyes
- ☐ Cuts and abrasions
- ☐ Vehicular/pedestrian traffic
- ☐ Flammable or toxic vapor clouds
- ☐ Confined space entry
- ☐ Trenching
- ☐ Other _____

E. Training Program
Other:

_____

_____

F. Pre-entry Briefing (*As necessary to ensure employees are apprised of situation*):

_____

_____

_____

_____

G. Effectiveness of Site Safety & Health Plan (*Periodic inspection of the site by Safety Monitor in which deficiencies are noted and changes made to plan to correct these deficiencies*):

_____

_____

_____

H. Site Control (*security*):

_____

_____

I. Engineering Controls (*None feasible. or specify*): _____

J. **Work Practices** (*Specify work practice instruction may be given by the site supervisor during orientation or safety meetings*):

K. **Personal Protective Equipment Required** (*Check those that apply*):

- ☐ Boots
- ☐ Work Gloves
- ☐ Slicker Suit
- ☐ Tyvek Suit
- ☐ Goggles
- ☐ Life jacket or personal flotation devise (PFD) used when there is possibility of falling into deep water
- ☐ Hard hats
- ☐ Rubber/Neoprene gloves
- ☐ Respirators: Type
  - ☐ Half-mask
  - ☐ Full-mask
  - ☐ SCBA/Airline
  - ☐ Other (specify)

L. **Medical Surveillance required** (*Urine phenol analysis after 8 hour shift or other*):

M. **Monitoring Program**

Type	Time Intervals
Flammability	
Benzene (Detector Tube)	
Benzene (Organic Vapor Badge)	
H_2S	
CO_2/O_2	
Other	
Other	
Other	

Remarks: _____

_____

_____

N. **Decontamination** Specify procedures for site:

The following decontamination equipment is required on site:

☐ Detergent

☐ Water

☐ Other _____

_____

ALL PROTECTIVE CLOTHING TO BE DISCARDED IN HEAVY PLASTIC BAGS

O. Emergency Response:

Central Meeting Location: _____

_____

Nearest Emergency Assistance Available and How to Contact:

Fire: _____

Hazardous Materials Response: _____

Medical: _____

Transportation: _____

First Aid Supplies (*Location and type*): _____

_____

DRUM HANDLING REQUIRED: ☐ Yes ☐ No Specify _____

_____

_____

POTENTIAL FOR EMERGENCY RELEASE: ☐ Yes ☐ No

Specify _____

_____

_____

RISK IDENTIFICATION AND EMPLOYEE NOTIFICATION: This site characterization and analysis summarizes the health and safety risks that may be encountered. It must be available to workers before clean-up begins.

(Preparer Signature) (Date)

(Incident Commander Signature) (Date)

ATTACH MATERIAL SAFETY DATA SHEET

FOR APPROPRIATE MATERIALS

FIGURE 2.3

NOTIFICATION DATA SHEET

SPILL RESPONSE NOTIFICATION FORM

Reporter's Last Name: _____ First: _____ M.I. _____
Reporter's Daytime Phone Number:(_____)_____
Evening Phone Number:(_____)_____
Home Phone Number: (_____)_____
Reporter's Company: _____
Reporter's Department/Section: _____
Reporter's Position: _____
Owner's Address: _____
Owner's City, State and Zip: _____
Initial or Follow-up Notification:
Were Materials Released _____ (Y/N)?
Confidential _____ (Y/N)?
Meeting Federal Obligations to Report _____ (Y/N)?
Call Made to National Response Center _____ (Y/N)?
Date: _____ Time: _____
Call for Qualified Individual: _____ (Y/N)?

INCIDENT DESCRIPTION

Source and Cause of Incident: _____
_____
_____
Date of Incident: _____ Time of Incident: _____
Incident Address/Location: _____
_____
Incident Location Section, Township and Range: _____
Facility Latitude (degrees, minutes, and seconds): _____
Facility Longitude (degrees, minutes and seconds): _____
Nearest City (also list the County, State and Zip Code): _____
_____
Distance from the Nearest City (give units): _____
Direction from the Nearest City: _____
Container Type: _____
Tank Capacity (include units): _____
Facility Capacity (include units): _____

MATERIAL

CHRIS Code: _____
Released Quantity (with units): _____
Material Released in Water? If so, quantity (include units): _____

RESPONSE ACTION

Actions Being Taken On -site to Correct, Control, or Mitigate Incident: _____

RESPONSE ACTION

Actions Planned By Personnel On-Site To Correct, Control Or Mitigate Incident _____

WEATHER CONDITIONS:

IMPACT

Number of Injuries: _____

Number of Deaths: _____

Were there Evacuations: _____(Y/N)? If yes, the number of people evacuated: _____

Was there any damage: ___ (Y/N)? If yes, describe the damage including the medium affected and the approximate dollar amount of damage. (Be complete): _____

ADDITIONAL INFORMATION

Any information about the incident not recorded elsewhere in the report?: _____

CALLER NOTIFICATIONS

EPA (Y/N)?_____ (Name) State (Y/N)?_____(Name)

NRC (Y/N)?_____ (Name) Other (Y/N)?_____ (Name)

SAMPLE INCIDENT EVENT LOG

Incident Description: _____ Sheet of

Date/Time	Action Taken	By	Additional Comments

Reportable Oil Spill History (Sample)

Date of discharge.	
Location of discharge.	
Discharge cause(s).	
Material(s) discharged.	
Amount discharged.	
Amount of discharge that reached navigable waters.	
Amount recovered.	
Effectiveness and capacity of secondary containment.	
Clean-up actions taken.	
Steps taken to reduce possibility of recurrence.	
Total storage capacity of the tank(s) or impoundment(s) from which the material discharged.	
Enforcement actions.	
Effectiveness of monitoring equipment.	
Description of how spill was detected.	

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: NATURAL GAS - DRY
ANGI MSDS NO: ANG001

THE FOLLOWING INFORMATION IS FURNISHED SUBJECT TO THE DISCLAIMER ON THE BOTTOM OF THIS FORM

SECTION 1 - PRODUCT IDENTIFICATION

PRODUCT
NAME: NATURAL GAS - DRY

SYNONYMS:
NATURAL GAS - DRY
GAS PLANT NATURAL GAS

MANUFACTURER / DISTRIBUTOR:
ANGI / ATTCO
900 REPUBLIC PLAZA
370 17TH ST.
DENVER, CO 80202

EMERGENCY PHONE NUMBERS:
(303) 595-3331 (ANGI / ATTCO)
(800) 424-9300 (CHEMTREC)

CHEMICAL FAMILY: NATURAL GAS
CHEMICAL FORMULA: MIXTURE

CAS NO: 68410-63-9

SECTION 2 - PHYSICAL PROPERTIES

BOILING POINT	MELTING POINT	SPECIFIC GRAVITY (H2O= 1)
-259 TO -43 F	N. A. F	.37-.50 LIQ
% SOLUBILITY IN WATER	VAPOR DENSITY (AIR= 1)	VAPOR PRESSURE
SLIGHT	0.55 - 0.62	N. A.
PH	ODOR	APPERANCE
N. A.	MERCAPTAN	COLORLESS GAS

SECTION 3 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	AUTOIGNITION TEMP	EXPLOSIVE LIMITS (% BY VOLUME IN AIR)
N. A.	N. D. A. F	LOWER / UPPER 3.2 / 14.0

NFPA CLASSIFICATION: HEALTH: 1 FIRE: 4 REACTIVITY: 1 OTHER:

EXTINGUISHING MEDIA:

CLASS B FIRE EXTINGUISHING MEDIA SUCH AS HALON, CO2 OR DRY CHEMICAL CAN BE USED. FIRE FIGHTING SHOULD BE ATTEMPTED ONLY BY THOSE WHO ARE ADEQUATELY TRAINED.

SPECIAL FIRE FIGHTING PROCEDURES:

STOP THE FLOW OF GAS AND ALLOW FIRE TO BURN OUT. EXTINGUISHING THE FLAME BEFORE SHUTTING OFF THE SUPPLY CAN CAUSE THE FORMATION OF EXPLOSIVE MIXTURES. IN SOME CASES IT MAY BE PREFERRED TO ALLOW THE FLAME TO CONTINUE TO BURN. KEEP THE SURROUNDING AREA COOL WITH WATER SPRAY AND PREVENT FURTHER IGNITION OF COMBUSTIBLE MATERIAL.

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: NATURAL GAS - DRY
ANGI MSDS NO: ANG001

SECTION 3 - FIRE AND EXPLOSION HAZARD DATA (cont.)

STABILITY: THE MATERIAL IS STABLE AT 70 F, 760MM PRESSURE
CONDITIONS TO AVOID: SOURCES OF HEAT OR IGNITION

HAZARDOUS DECOMPOSITION PRODUCTS: CARBON MONOXIDE, CARBON DIOXIDE

INCOMPATIBLE MATERIALS: STRONG OXIDIZERS (E. G. CHLORINE), MINERAL ACIDS

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SECTION 4 - PRODUCT COMPOSITION AND EXPOSURE LIMITS

EXPOSURE LIMITS FOR PRODUCT:		TLV			SOURCE
NATURAL GAS - DRY		NONE ESTABLISHED			
COMPONENTS:	PERCENT RANGE	TLV			SOURCE
METHANE	50.00-95.00	0.00			
ETHANE	1.00-20.00	0.00			
PROPANE	.10-12.00	0.00			
CARBON DIOXIDE	.50-5.00	1000.00	PPM	8HR TWA	OSHA
		5000.00	PPM	8HR TWA	ACGIH
		30000.00	PPM	8HR TWA	OSHA
		30000.00	PPM	STEL	OSHA
NITROGEN	.10-18.00	0.00			

COMPLEX COMBINATION OF HYDROCARBONS (PREDOMINANTLY C1 THROUGH C4) SEPARATED FROM GAS. CONSISTS PREDOMINANTLY OF METHANE AND ETHANE.
***
METHANE, ETHANE AND PROPANE ARE SIMPLE ASPHYXIANTS BY ACGIH, OXYGEN LIMITING FACTOR. NITROGEN IS AN INERT GAS.

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: NATURAL GAS - DRY
ANGI MSDS NO: ANG001

SECTION 5 - POTENTIAL HEALTH EFFECTS

EYE:

NATURAL GAS IS GENERALLY NON-IRRITATING TO EYES. PRESSURIZED GAS CAN CAUSE MECHANICAL INJURY TO THE EYE.

SKIN:

NATURAL GAS IS GENERALLY NON-IRRITATING TO SKIN.

INGESTION:

INGESTION NOT LIKELY

ADDITIONAL TOXICITY INFORMATION:

AT EXTREMELY HIGH CONCENTRATIONS AND EXCESSIVE EXPOSURE CONDITIONS, COMPONENTS OF NATURAL GAS MAY PRODUCE CARDIAC SENSITIZATION.

EMERGENCY FIRST AID PROCEDURES

EYE:

CALL A PHYSICIAN IF SYMPTOMS OR IRRITATION OCCUR.

SKIN:

CALL A PHYSICIAN IF SYMPTOMS OR IRRITATION OCCUR.

INHALATION:

MOVE PERSON TO FRESH AIR IF NOT BREATHING OR IF NO HEARTBEAT, GIVE ARTIFICIAL RESPIRATION OR CARDIOPULMONARY RESUSCITATION. IMMEDIATELY CALL PHYSICIAN.

INGESTION:

INGESTION NOT LIKELY.

SECTION 6 - SPECIAL PROTECTION INFORMATION

VENTILATION:

LOCAL OR GENERAL EXHAUST REQUIRED IF USED IN AN ENCLOSED AREA IN ORDER TO KEEP CONCENTRATIONS BELOW THE LOWER EXPLOSIVE LIMIT.

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: NATURAL GAS - DRY
ANGI MSDS NO: ANG001

SECTION 6 - SPECIAL PROTECTION INFORMATION (CONT.)

RESPIRATORY:

USE ATMOSPHERE SUPPLIED RESPIRATORS IN THE EVENT OF OXYGEN DEFICIENCY. SELF-CONTAINED BREATHING APPARATUS SHOULD BE USED FOR FIRE FIGHTING.

EYE PROTECTION:

GOGGLES OR FACE SHIELD MAY BE NEEDED WHEN HANDLING PRESSURIZED GASES.

OTHER PROTECTIVE EQUIPMENT:

USE EXPLOSION-PROOF EQUIPMENT.

SECTION 7 - SPILL OR LEAK PROCEDURES

ENVIRONMENTAL EFFECTS:

MOST COMPONENTS OF NATURAL GAS ARE LIGHTER THAN AIR AND SHOULD DISSIPATE RAPIDLY IN UNCONFINED AREAS.

STEPS TO BE TAKEN IN CASE OF SPILL, LEAK OR RELEASE:

KEEP PUBLIC AWAY. SHUT OFF SOURCE IF POSSIBLE TO DO SO WITHOUT HAZARD. ADVISE LOCAL AND STATE EMERGENCY SERVICES AGENCIES, IF APPROPRIATE.

WASTE DISPOSAL METHOD:

PREFERRED METHOD OF DISPOSAL IS BURNING AS A VAPOR IN A PROPERLY DESIGNED FLARE. SPECIAL CARE MUST BE TAKEN TO ENSURE COMPLETE DISSIPATION OF GAS BELOW LOWER EXPLOSIVE LIMIT.

SECTION 8 - HANDLING AND STORAGE PRECAUTIONS

PRODUCT SHOULD BE HANDLED AND STORED IN ACCORDANCE WITH INDUSTRY ACCEPTED PRACTICES. IN THE ABSENCE OF SPECIFIC LOCAL CODE REQUIREMENTS, NFPA OR OSHA REQUIREMENTS SHOULD BE FOLLOWED. USE APPROPRIATE GROUNDING AND BONDING PRACTICES. STORE IN PROPERLY CLOSED CONTAINERS THAT ARE APPROPRIATELY LABELED. DO NOT EXPOSE TO HEAT, OPEN FLAME, STRONG OXIDIZERS OR OTHER SOURCES OF IGNITION.

SECTION 9 - HAZARD WARNING

DANGER!
EXTREMELY FLAMMABLE
GAS UNDER PRESSURE

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: NATURAL GAS - DRY
ANGI MSDS NO: ANG002

SECTION 10 - COMMENTS

SECTION 11 - REGULATORY INFORMATION

SARA TITLE III / SUPERFUND AMENDMENTS AND RE-AUTHORIZATION ACT OF 1986 - SECTIONS 302, 304, 311, 312 AND 313.

THE FOLLOWING REGULATIONS APPLY TO THIS PRODUCT:

SECTIONS 311 AND 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS:

40 CFR PART 370 (52 FR 38344 - OCTOBER 15, 1987).

DEPENDING ON LOCAL, STATE, AND FEDERAL REGULATIONS, MATERIAL SAFETY DATA SHEETS (MSD'S) OR LIST OF MSD'S (PRODUCT NAMES) MAY BE REQUIRED TO BE SUBMITTED TO THE STATE EMERGENCY RESPONSE COMMISSION, LOCAL EMERGENCY PLANNING COMMITTEE, AND LOCAL FIRE DEPARTMENT IF YOU HAVE:

10,000 POUNDS OR MORE OF AN OSHA HAZARDOUS SUBSTANCE* OR
500 POUNDS OR THE THRESHOLD PLANNING QUANTITY WHICHEVER IS LESS, OF AN EXTREMELY HAZARDOUS SUBSTANCE.

* REPORTABLE QUANTITY LEVELS CAN VARY FROM STATE TO STATE AND YEAR TO YEAR DEPENDING ON APPLICABLE STATE AND/OR FEDERAL REGULATIONS.

THIS PRODUCT IS COVERED UNDER THE CRITERIA DEFINED IN OSHA'S HAZARD COMMUNICATION STANDARD 29 CFR 1910.1200 (52 FR 31852 - AUGUST 24, 1987) AND SHOULD BE REPORTED UNDER THE FOLLOWING EPA HAZARD CATEGORIES:

	IMMEDIATE (ACUTE) HEALTH HAZARD
	DELAYED (CHRONIC) HEALTH HAZARD
XX	FIRE HAZARD
XX	SUDDEN RELEASE OF PRESSURE HAZARD
	REACTIVE HAZARD

DEPARTMENT OF TRANSPORTATION:

49 CFR 172.01 AS REVISED ON OCTOBER 1, 1993.

PROPER SHIPPING NAME:	NAURAL GAS , COMPRESSED
DOT CLASSIFICATION:	FLAMMABLE GAS
DOT IDENTIFICATION NUMBER:	UN 1071
PLACARD:	FLAMMABLE GAS / 1071
HAZARD CLASS:	2.1

SECTION 12 - REGULATIONS / COMMENTS

MSDS DATE: 02 / 22 / 94

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: NATURAL GAS - DRY
ANGI MSDS NO: ANG001

*** DISCLAIMER ***

THIS INFORMATION RELATES ONLY TO THE SPECIFIC MATERIAL DESIGNATED AND MAY NOT BE VALID FOR SUCH MATERIAL USED IN COMBINATION WITH ANY OTHER MATERIALS OR IN ANY PROCESS. SUCH INFORMATION IS, TO THE BEST OF ANGI / ATTCO'S KNOWLEDGE AND BELIEF, ACCURATE AND RELIABLE AS OF THE DATE INDICATED. HOWEVER, NO REPRESENTATION, WARRANTY OR GUARANTEE IS MADE AS TO ITS ACCURACY RELIABILITY OR COMPLETENESS. IT IS THE USER'S RESPONSIBILITY TO SATISFY HIMSELF AS TO THE SUITABLENESS AND COMPLETENESS OF SUCH INFORMATION FOR HIS OWN PARTICULAR USE.

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: NATURAL GASOLINE
ANGI MSDS NO: ANG007

THE FOLLOWING INFORMATION IS FURNISHED SUBJECT TO THE DISCLAIMER ON THE BOTTOM OF THIS FORM

SECTION 1 - PRODUCT IDENTIFICATION

PRODUCT
NAME: NATURAL GASOLINE

SYNONYMS:
NATURAL, PENTANES PLUS, 12#, 14#, ..32#,
HYDROCARBON MIXTURE.

MANUFACTURER / DISTRIBUTOR:
ANGI / ATTCO
900 REPUBLIC PLAZA
370 17TH ST.
DENVER, CO 80202

EMERGENCY PHONE NUMBERS:
(303) 595-3331 (ANGI / ATTCO)
(800) 424-9300 (CHEMTREC)

CHEMICAL FAMILY: HYDROCARBON
CHEMICAL FORMULA: MIXTURE

CAS NO: 8006-61-9

SECTION 2 - PHYSICAL PROPERTIES

BOILING POINT	MELTING POINT	SPECIFIC GRAVITY (H2O= 1)
96 F ESTIMATED	N. A. F	0.642 ESTIMATED
% SOLUBILITY IN WATER	VAPOR DENSITY (AIR= 1)	VAPOR PRESSURE
NEGLIGIBLE	>1	9.3 PSIA AT 70 F
PH	ODOR	APPEARANCE
N. A.	NONE	COLORLESS LIQUID GAS

SECTION 3 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	AUTOIGNITION TEMP	EXPLOSIVE LIMITS (% BY VOLUME IN AIR)
-50 F TO -70 F	NDA F	NE

NFPA CLASSIFICATION: HEALTH: 1 FIRE: 3 REACTIVITY: 0 OTHER:

EXTINGUISHING MEDIA:

CLASS B FIRE EXTINGUISHING MEDIA SUCH AS HALON, CO2 OR DRY CHEMICAL CAN BE USED. FIRE FIGHTING SHOULD BE ATTEMPTED ONLY BY THOSE WHO ARE ADEQUATELY TRAINED.

SPECIAL FIRE FIGHTING PROCEDURES:

STOP THE FLOW OF GAS AND ALLOW FIRE TO BURN OUT. EXTINGUISHING THE FLAME BEFORE SHUTTING OFF THE SUPPLY CAN CAUSE THE FORMATION OF EXPLOSIVE MIXTURES. IN SOME CASES IT MAY BE PREFERRED TO ALLOW THE FLAME TO CONTINUE TO BURN. KEEP THE SURROUNDING AREA COOL WITH WATER SPRAY AND PREVENT FURTHER IGNITION OF COMBUSTIBLE MATERIAL.

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: NATURAL GASOLINE
ANGI MSDS NO: ANG007

SECTION 3 - FIRE AND EXPLOSION HAZARD DATA (cont.)

STABILITY: THE MATERIAL IS STABLE
CONDITIONS TO AVOID: SOURCES OF HEAT OR IGNITION

HAZARDOUS DECOMPOSITION PRODUCTS: CARBON MONOXIDE, CARBON DIOXIDE.

INCOMPATIBLE MATERIALS: STRONG OXIDIZERS (E. G. CHLORINE), MINERAL ACIDS

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SECTION 4 - PRODUCT COMPOSITION AND EXPOSURE LIMITS

COMPONENTS:	PERCENT RANGE	TLV (ACGIH)	PEL (OSHA)
ISOPENTANE	0 - 18	NE	NE
PENTANE	1 - 20	600 PPM	600 PPM
ISOHEXANE	25 - 95	500 PPM	500 PPM
HEXANE	2 - 13	50 PPM	50 PPM
BUTANE	2 - 6	800 PPM	800 PPM *
CYCLOPENTANE	1 - 8	600 PPM	600 PPM
CYCLOHEXANE	1 - 5	300 PPM	300 PPM
BENZENE	0 - 2	10 PPM	1 PPM **

* FOR N-BUTANE

** OPERATIONS EXEMPTED BY THE BENZENE STANDARD, 29 CFR 1910.1028, WILL HAVE A 10 PPM 8 HOUR TWA.

SECTION 5 - POTENTIAL HEALTH EFFECTS

EYE:

MAY CAUSE MILD IRRITATION.

SKIN:

MAY CAUSE SLIGHT IRRITATION. REPEATED OR PROLONGED CONTACT MAY RESULT IN DE-FATTENING OF TISSUE.

INGESTION:

MAY BE MILDLY IRRITATING TO INTESTINES. MAY BE ASPIRATED INTO LUNGS IF SWALLOWED, WHICH MAY RESULT IN PULMONARY EDEMA AND CHEMICAL PNEUMONITIS.

INHALATION:

MAY CAUSE HEADACHE, DIZZINESS, TIREDNESS, SEDATION AND UNCONSCIOUSNESS.

ADDITIONAL TOXICITY INFORMATION:

BENZENE IS DESIGNATED A CARCINOGEN BY IRAC, NIP, AND OSHA. BENZENE MAY PRODUCE BLOOD CHANGES WHICH INCLUDE REDUCED PLATELETS, REDUCED, RED BLOOD CELLS, REDUCED WHITE BLOOD CELLS, APLASTIC ANEMIA, LEUKEMIA AND ERYTHROLEUKEMIA. FETAL DEATHS IN LABORATORY ANIMALS. CHROMOSOME CHANGES WERE PRODUCED IN HUMANS AND MUTATION CHANGED OCCURRED IN CELLS OF OTHER ORGANISMS.

N-HEXANE HAS CAUSED NERVE DAMAGE PRODUCING A LACK OF FEELING IN EXTREMITIES AND MORE SEVERE NERVE INJURY.

OTHER HEALTH EFFECT:

SOME ISOPARAFFINS HAVE PRODUCED KIDNEY DAMAGE IN MALE RATS ONLY. NO COMPARABLE HEALTH HAZARD FOR KIDNEY DISEASE IS KNOWN TO OCCUR IN HUMANS.

EMERGENCY FIRST AID PROCEDURES

EYE:
IMMEDIATELY FLUSH EYES WITH RUNNING WATER FOR AT LEAST FIFTEEN MINUTES.
CALL A PHYSICIAN IF SYMPTOMS OR IRRITATION OCCUR.

SKIN:
WASH WITH SOAP AND WATER. IF IRRITATION DEVELOPS, SEEK MEDICAL ATTENTION.
CALL A PHYSICIAN IF SYMPTOMS OR IRRITATION OCCUR.

INHALATION:

MOVE PERSON TO FRESH AIR IF NOT BREATHING OR IF NO HEARTBEAT,
GIVE ARTIFICIAL RESPIRATION OR CARDIOPULMONARY RESUSCITATION.
IMMEDIATELY CALL PHYSICIAN.

INGESTION:

DO NOT INDUCE VOMITING. SEEK IMMEDIATE MEDICAL ATTENTION.

SECTION 6 - SPECIAL PROTECTION INFORMATION

VENTILATION:
LOCAL OR GENERAL EXHAUST REQUIRED IF USED IN AN ENCLOSED AREA IN ORDER TO KEEP CONCENTRATIONS BELOW THE LOWER EXPLOSIVE LIMIT.

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: NATURAL GASOLINE
ANGI MSDS NO: ANG007

SECTION 6 - SPECIAL PROTECTION INFORMATION (cont.)

RESPIRATORY:

USE ATMOSPHERE SUPPLIED RESPIRATORS IN THE EVENT OF OXYGEN DEFICIENCY. SELF-CONTAINED BREATHING APPARATUS SHOULD BE USED FOR FIRE FIGHTING.

USE A NIOSH / MSHA APPROVED SCBA.

EYE PROTECTION:

GOGGLES OR FACE SHIELD MAY BE NEEDED WHEN HANDLING PRESSURIZED GASES.

SKIN PROTECTION:

USE FULL-BODY, LONG-SLEEVED GARMENTS. USE RUBBER OR OTHER IMPERVIOUS GLOVES.

OTHER PROTECTIVE EQUIPMENT:

USE EXPLOSION-PROOF EQUIPMENT.

SECTION 7 - SPILL OR LEAK PROCEDURES

ENVIRONMENTAL EFFECTS:

MOST COMPONENTS OF NATURAL GASOLINE ARE HEAVIER THAN AIR AND WILL STAY IN LOW LYING AREAS IF VENTILATION OR WIND IS NOT PRESENT.

STEPS TO BE TAKEN IN CASE OF SPILL, LEAK OR RELEASE:

KEEP PUBLIC AWAY. SHUT OFF SOURCE IF POSSIBLE TO DO SO WITHOUT HAZARD. WEAR APPROPRIATE SAFETY EQUIPMENT IF CONDITIONS WARRANT. PROTECT FROM IGNITION. VENTILATE AREA THOROUGHLY. ADVISE LOCAL AND STATE EMERGENCY SERVICES AGENCIES, IF APPROPRIATE.

WASTE DISPOSAL METHOD:

PREFERRED METHOD OF DISPOSAL IS INCINERATE IN A PROPERLY DESIGNED FLARE. SPECIAL CARE MUST BE TAKEN TO ENSURE COMPLETE DISSIPATION OF NATURAL GAS LIQUIDS BELOW LOWER EXPLOSIVE LIMIT.

SECTION 8 - HANDLING AND STORAGE PRECAUTIONS

PRODUCT SHOULD BE HANDLED AND STORED IN ACCORDANCE WITH INDUSTRY ACCEPTED PRACTICES. IN THE ABSENCE OF SPECIFIC LOCAL CODE REQUIREMENTS, NFPA OR OSHA REQUIREMENTS SHOULD BE FOLLOWED. USE APPROPRIATE GROUNDING AND BONDING PRACTICES. STORE IN PROPERLY CLOSED CONTAINERS THAT ARE APPROPRIATELY LABELED. DO NOT EXPOSE TO HEAT, OPEN FLAME, STRONG OXIDIZERS OR OTHER SOURCES OF IGNITION.

SECTION 9 - HAZARD WARNING

DANGER !
EXTREMELY FLAMMABLE
FLAMMABLE LIQUID

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: NATURAL GASOLINE
ANGI MSDS NO: ANG007

SECTION 10 - COMMENTS

SECTION 11 - REGULATORY INFORMATION

SARA TITLE III / SUPERFUND AMENDMENTS AND RE-AUTHORIZATION ACT OF 1986 - SECTIONS 302, 304, 311, 312 AND 313.

THE FOLLOWING REGULATIONS APPLY TO THIS PRODUCT:

SECTIONS 311 AND 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS:

40 CFR PART 370 (52 FR 38344 - OCTOBER 15, 1987).

DEPENDING ON LOCAL, STATE, AND FEDERAL REGULATIONS, MATERIAL SAFETY DATA SHEETS (MSDS) OR LIST OF MSDS (PRODUCT NAMES) MAY BE REQUIRED TO BE SUBMITTED TO THE STATE EMERGENCY RESPONSE COMMISSION, LOCAL EMERGENCY PLANNING COMMITTEE, AND LOCAL FIRE DEPARTMENT IF YOU HAVE:

10,000 POUNDS OR MORE OF AN OSHA HAZARDOUS SUBSTANCE* OR
500 POUNDS OR THE THRESHOLD PLANNING QUANTITY WHICHEVER IS LESS, OF AN EXTREMELY HAZARDOUS SUBSTANCE.

* REPORTABLE QUANTITY LEVELS CAN VARY FROM STATE TO STATE AND YEAR TO YEAR DEPENDING ON APPLICABLE STATE AND/OR FEDERAL REGULATIONS.

THIS PRODUCT IS COVERED UNDER THE CRITERIA DEFINED IN OSHA'S HAZARD COMMUNICATION STANDARD 29 CFR 1910.1200 (52 FR 31852 - AUGUST 24, 1987) AND SHOULD BE REPORTED UNDER THE FOLLOWING EPA HAZARD CATEGORIES:

	IMMEDIATE (ACUTE) HEALTH HAZARD
XX	DELAYED (CHRONIC) HEALTH HAZARD
XX	FIRE HAZARD
	SUDDEN RELEASE OF PRESSURE HAZARD
	REACTIVE HAZARD
XX	KNOWN CARCINOGEN
XX	MUTAGEN

DEPARTMENT OF TRANSPORTATION:

49 CFR 172.01 AS REVISED ON OCTOBER 1, 1993.

PROPER SHIPPING NAME:	FLAMMABLE LIQUID
DOT CLASSIFICATION:	FLAMMABLE LIQUID
DOT IDENTIFICATION NUMBER:	UN 1257
PLACARD:	FLAMMABLE LIQUID / 1257
HAZARD CLASS:	3
PACKING GROUP:	II

SECTION 12 - REGULATIONS / COMMENTS

MSDS DATE: 02 / 22 / 94

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: NATURAL GASOLINE
ANGI MSDS NO: ANG007

*** DISCLAIMER ***

THIS INFORMATION RELATES ONLY TO THE SPECIFIC MATERIAL DESIGNATED AND MAY NOT BE VALID FOR SUCH MATERIAL USED IN COMBINATION WITH ANY OTHER MATERIALS OR IN ANY PROCESS. SUCH INFORMATION IS, TO THE BEST OF ANGI / ATTCO'S KNOWLEDGE AND BELIEF, ACCURATE AND RELIABLE AS OF THE DATE INDICATED. HOWEVER, NO REPRESENTATION, WARRANTY OR GUARANTEE IS MADE AS TO ITS ACCURACY RELIABILITY OR COMPLETENESS. IT IS THE USER'S RESPONSIBILITY TO SATISFY HIMSELF AS TO THE SUITABLENESS AND COMPLETENESS OF SUCH INFORMATION FOR HIS OWN PARTICULAR USE.

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: NATURAL GAS LIQUIDS
ANGI MSDS NO: ANG005

THE FOLLOWING INFORMATION IS FURNISHED SUBJECT TO THE DISCLAIMER ON THE BOTTOM OF THIS FORM

SECTION 1 - PRODUCT IDENTIFICATION

PRODUCT
NAME: NATURAL GAS LIQUIDS

SYNONYMS:
NGL'S, Y-GRADE, RAW PRODUCT

MANUFACTURER / DISTRIBUTOR:
ANGI / ATTCO
900 REPUBLIC PLAZA
370 17TH ST.
DENVER, CO 80202

EMERGENCY PHONE NUMBERS:
(303) 595-3331 (ANGI / ATTCO)
(800) 424-9300 (CHEMTREC)

CHEMICAL FAMILY: MIXTURE
CHEMICAL FORMULA: MIXTURE

CAS NO: 64741 - 48 - 6

SECTION 2 - PHYSICAL PROPERTIES

BOILING POINT	MELTING POINT	SPECIFIC GRAVITY (H2O= 1)
NE F	N.A. F	0.5 - 0.7 ESTIMATED
% SOLUBILITY IN WATER	VAPOR DENSITY (AIR= 1)	VAPOR PRESSURE
NEGLIGIBLE	>1	NE
PH	ODOR	APPEARANCE
N.A.	ROTTEN EGG *	COLORLESS LIQUID

* IF HYDROGEN SULFIDE IS PRESENT

SECTION 3 - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	AUTOIGNITION TEMP	EXPLOSIVE LIMITS (% BY VOLUME IN AIR)
<-100 F	NDA F	NE

NFPA CLASSIFICATION: HEALTH: 1 FIRE: 3 REACTIVITY: 0 OTHER:

EXTINGUISHING MEDIA:

CLASS B FIRE EXTINGUISHING MEDIA SUCH AS HALON, CO2 OR DRY CHEMICAL CAN BE USED. FIRE FIGHTING SHOULD BE ATTEMPTED ONLY BY THOSE WHO ARE ADEQUATELY TRAINED.

SPECIAL FIRE FIGHTING PROCEDURES:

STOP THE FLOW OF GAS AND ALLOW FIRE TO BURN OUT. EXTINGUISHING THE FLAME BEFORE SHUTTING OFF THE SUPPLY CAN CAUSE THE FORMATION OF EXPLOSIVE MIXTURES. IN SOME CASES IT MAY BE PREFERRED TO ALLOW THE FLAME TO CONTINUE TO BURN. KEEP THE SURROUNDING AREA COOL WITH WATER SPRAY AND PREVENT FURTHER IGNITION OF COMBUSTIBLE MATERIAL.

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: NATURAL GAS LIQUIDS
ANGI MSDS NO: ANG005

SECTION 3 - FIRE AND EXPLOSION HAZARD DATA (cont.)

STABILITY: THE MATERIAL IS STABLE
CONDITIONS TO AVOID: SOURCES OF HEAT OR IGNITION

HAZARDOUS DECOMPOSITION PRODUCTS: CARBON MONOXIDE, CARBON DIOXIDE AND SULFUR OXIDES IF HYDROGEN SULFIDE IS PRESENT.

INCOMPATIBLE MATERIALS: STRONG OXIDIZERS (E. G. CHLORINE), MINERAL ACIDS

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SECTION 4 - PRODUCT COMPOSITION AND EXPOSURE LIMITS

COMPONENTS:	PERCENT RANGE	TLV (ACGIH)	PEL (OSHA)
PROPANE	1 - 80	*	1000 PPM
NITROGEN	0 - 5	*	NE
CARBON DIOXIDE	0 - 5	5000 PPM	10000 PPM
HYDROGEN SULFIDE	0 - 10	10 PPM	10 PPM
METHANE	0 - 30	*	NE
ETHANE	1 - 80	*	NE
ISOBUTANE	0 - 40	NE	NE
NORMAL BUTANE	0 - 40	800 PPM	800 PPM
ISOPENTANE	0 - 25	NE	NE
PENTANE	0 - 25	600 PPM	600 PPM
ISOHEXANE	0 - 40	500 PPM	500 PPM
HEXANE	0 - 60	50 PPM	50 PPM

* SIMPLE ASPHYXIANT

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: NATURAL GAS LIQUIDS
ANGI MSDS NO: ANG005

SECTION 5 - POTENTIAL HEALTH EFFECTS

EYE:

MAY CAUSE IRRITATION INCLUDING PAIN , BLURRED VISION , REDNESS , TEARING AND SUPERFICIAL CORNEAL DAMAGE.

SKIN:

MAY CAUSE SLIGHT IRRITATION. DIRECT CONTACT WITH LIQUEFIED GAS MAY CAUSE FREEZE BURNS.

INGESTION:

LIQUEFIED GAS MAY CAUSE FREEZE BURNS TO MUCOUS MEMBRANES.

INHALATION:

SIMPLE ASPHYXIANT

ADDITIONAL TOXICITY INFORMATION:

EXTREME OVER EXPOSURE MAY PRODUCE DIZZINESS, HEADACHE, DISORIENTATION, EXCITATION, FATIGUE, INABILITY TO CONCENTRATE, VOMITING, COUGHING, ANESTHESIA, UNCONSCIOUSNESS AND DEATH.

THE COMPONENTS ISOBUTANE, BUTANE AND PROPANE WERE NOT FOUND TO BE MUTAGENIC WHEN TESTED IN THE AMES ASSAY. HEXANE WAS ALSO NEGATIVE IN BOTH THE AMES AND SCE MUTAGENIC ASSAYS. A WEAKLY POSITIVE RESPONSE WAS SEEN IN THE MOUSE LYMPHOMA MUTAGENIC ASSAY FOR HEXANE.

ISOPENTANE DID NOT,BUT ISOHEXANE DID, PRODUCE KIDNEY DAMAGE IN MALE RATS ONLY IN A SUBCHRONIC ORAL LABORATORY STUDY. ISOPENTANE DID NOT PRODUCE KIDNEY DAMAGE IN A SUBCHRONIC INHALATION EXPOSURE TO 4500 PPM AND 1000 PPM OF A 50/50 MIXTURE OF ISOBUTANE AND ISOENTANE. NO COMPARABLE HEALTH HAZARD FOR KIDNEY DISEASE TO OCCUR IN HUMANS.

EMERGENCY FIRST AID PROCEDURES

EYE:
IMMEDIATELY FLUSH EYES WITH RUNNING WATER FOR AT LEAST FIFTEEN MINUTES.
CALL A PHYSICIAN IF SYMPTOMS OR IRRITATION OCCUR.

SKIN:
IMMEDIATELY FLUSH EYES WITH RUNNING WATER FOR AT LEAST FIFTEEN MINUTES.
CALL A PHYSICIAN IF SYMPTOMS OR IRRITATION OCCUR.

INHALATION:

MOVE PERSON TO FRESH AIR IF NOT BREATHING OR IF NO HEARTBEAT,
GIVE ARTIFICIAL RESPIRATION OR CARDIOPULMONARY RESUSCITATION.
IMMEDIATELY CALL PHYSICIAN.

INGESTION:

SEEK IMMEDIATE MEDICAL ATTENTION.

SECTION 6 - SPECIAL PROTECTION INFORMATION

VENTILATION:

LOCAL OR GENERAL EXHAUST REQUIRED IF USED IN AN ENCLOSED AREA IN ORDER TO KEEP CONCENTRATIONS BELOW THE LOWER EXPLOSIVE LIMIT.

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: NATURAL GAS LIQUIDS
ANGI MSDS NO: ANG005

SECTION 6 - SPECIAL PROTECTION INFORMATION (cont.)

RESPIRATORY:

USE ATMOSPHERE SUPPLIED RESPIRATORS IN THE EVENT OF OXYGEN DEFICIENCY. SELF-CONTAINED BREATHING APPARATUS SHOULD BE USED FOR FIRE FIGHTING.

USE A NIOSH / MSHA APPROVED SCBA.

EYE PROTECTION:

GOGGLES OR FACE SHIELD MAY BE NEEDED WHEN HANDLING PRESSURIZED GASES.

SKIN PROTECTION:

USE RUBBER OR OTHER IMPERVIOUS GLOVES.

OTHER PROTECTIVE EQUIPMENT:

USE EXPLOSION-PROOF EQUIPMENT.

SECTION 7 - SPILL OR LEAK PROCEDURES

ENVIRONMENTAL EFFECTS:

MOST COMPONENTS OF NATURAL GAS LIQUIDS ARE HEAVIER THAN AIR AND WILL STAY IN LOW LYING AREAS IF VENTILATION OR WIND IS NOT PRESENT.

STEPS TO BE TAKEN IN CASE OF SPILL, LEAK OR RELEASE:

KEEP PUBLIC AWAY. SHUT OFF SOURCE IF POSSIBLE TO DO SO WITHOUT HAZARD. WEAR APPROPRIATE SAFETY EQUIPMENT IF CONDITIONS WARRANT. PROTECT FROM IGNITION. VENTILATE AREA THOROUGHLY. ADVISE LOCAL AND STATE EMERGENCY SERVICES AGENCIES, IF APPROPRIATE.

WASTE DISPOSAL METHOD:

PREFERRED METHOD OF DISPOSAL IS BURNING AS A VAPOR IN A PROPERLY DESIGNED FLARE. SPECIAL CARE MUST BE TAKEN TO ENSURE COMPLETE DISSIPATION OF NATURAL GAS LIQUIDS BELOW LOWER EXPLOSIVE LIMIT.

SECTION 8 - HANDLING AND STORAGE PRECAUTIONS

PRODUCT SHOULD BE HANDLED AND STORED IN ACCORDANCE WITH INDUSTRY ACCEPTED PRACTICES. IN THE ABSENCE OF SPECIFIC LOCAL CODE REQUIREMENTS, NFPA OR OSHA REQUIREMENTS SHOULD BE FOLLOWED. USE APPROPRIATE GROUNDING AND BONDING PRACTICES. STORE IN PROPERLY CLOSED CONTAINERS THAT ARE APPROPRIATELY LABELED. DO NOT EXPOSE TO HEAT, OPEN FLAME, STRONG OXIDIZERS OR OTHER SOURCES OF IGNITION.

SECTION 9 - HAZARD WARNING

DANGER !
EXTREMELY FLAMMABLE
GAS UNDER PRESSURE

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: NATURAL GAS LIQUIDS
ANGI MSDS NO: ANG005

SECTION 10 - COMMENTS

SECTION 11 - REGULATORY INFORMATION

SARA TITLE III / SUPERFUND AMENDMENTS AND RE-AUTHORIZATION ACT OF 1986 - SECTIONS 302, 304, 311, 312 AND 313.

THE FOLLOWING REGULATIONS APPLY TO THIS PRODUCT:

SECTIONS 311 AND 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS:

40 CFR PART 370 (52 FR 38344 - OCTOBER 15, 1987).

DEPENDING ON LOCAL, STATE, AND FEDERAL REGULATIONS, MATERIAL SAFETY DATA SHEETS (MSD'S) OR LIST OF MSD'S (PRODUCT NAMES) MAY BE REQUIRED TO BE SUBMITTED TO THE STATE EMERGENCY RESPONSE COMMISSION, LOCAL EMERGENCY PLANNING COMMITTEE, AND LOCAL FIRE DEPARTMENT IF YOU HAVE:

10,000 POUNDS OR MORE OF AN OSHA HAZARDOUS SUBSTANCE* OR
500 POUNDS OR THE THRESHOLD PLANNING QUANTITY WHICHEVER IS LESS, OF AN EXTREMELY HAZARDOUS SUBSTANCE.

* REPORTABLE QUANTITY LEVELS CAN VARY FROM STATE TO STATE AND YEAR TO YEAR DEPENDING ON APPLICABLE STATE AND/OR FEDERAL REGULATIONS.

THIS PRODUCT IS COVERED UNDER THE CRITERIA DEFINED IN OSHA'S HAZARD COMMUNICATION STANDARD 29 CFR 1910.1200 (52 FR 31852 - AUGUST 24, 1987) AND SHOULD BE REPORTED UNDER THE FOLLOWING EPA HAZARD CATEGORIES:

	IMMEDIATE (ACUTE) HEALTH HAZARD
	DELAYED (CHRONIC) HEALTH HAZARD
XX	FIRE HAZARD
XX	SUDDEN RELEASE OF PRESSURE HAZARD
	REACTIVE HAZARD

DEPARTMENT OF TRANSPORTATION:

49 CFR 172.01 AS REVISED ON OCTOBER 1, 1993.

PROPER SHIPPING NAME:	LIQUEFIED PETROLEUM GAS
DOT CLASSIFICATION:	FLAMMABLE GAS
DOT IDENTIFICATION NUMBER:	UN 1075
PLACARD:	FLAMMABLE GAS / 1075
HAZARD CLASS:	2.1
PACKING GROUP:	

SECTION 12 - REGULATIONS / COMMENTS

MSDS DATE: 02/22/94

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: NATURAL GAS LIQUIDS
ANGI MSDS NO: ANG005

*** DISCLAIMER ***

THIS INFORMATION RELATES ONLY TO THE SPECIFIC MATERIAL DESIGNATED AND MAY NOT BE VALID FOR SUCH MATERIAL USED IN COMBINATION WITH ANY OTHER MATERIALS OR IN ANY PROCESS. SUCH INFORMATION IS, TO THE BEST OF ANGI / ATTCO'S KNOWLEDGE AND BELIEF, ACCURATE AND RELIABLE AS OF THE DATE INDICATED. HOWEVER, NO REPRESENTATION, WARRANTY OR GUARANTEE IS MADE AS TO ITS ACCURACY RELIABILITY OR COMPLETENESS. IT IS THE USER'S RESPONSIBILITY TO SATISFY HIMSELF AS TO THE SUITABLENESS AND COMPLETENESS OF SUCH INFORMATION FOR HIS OWN PARTICULAR USE.

CITGO Petroleum Corporation
P.O. Box 3758
Tulsa, Oklahoma 74102

Material Safety Data Sheet

Trade Name: CITGARD 500 Motor Oil, SAE 10W-30

Commodity Code: 22-310

Synonyms: Motor Oil

Date: June 29, 1993

CAS No.: Mixture
(Refer to Section 1)

Technical Contact: (918) 495-5933
Medical Emergency: (918) 495-4700
Chemtrec Emergency: (800) 424-9300

Citgo Index No.: 0583

Material Hazard Evaluation

(Per OSHA Hazard Communication
Standard [29 CFR Part 1910.1200]) (OHCS)

Health: Final Product Non-Hazardous.

Precautionary Statement: Avoid prolonged skin contact with used motor oils. Do not inhale mists or fumes.

HMIS Rating[1]: Health 0 Flammability 1 Reactivity 0

1.0 Generic Composition / Components

Components	CAS #	%	Hazard Data
Refined Petroleum Oils	64742-57-0 64742-65-0 64741-88-4 64741-89-5 64742-54-7	> 70	Oral LD50(rat): > 5g/kg
Dispersant, detergent Inhibitor (contains Zinc Dialkyldithiophosphate)	Mixture	< 15	Eye and skin irritant Dermal irritant
VI Improver	Mixture	< 15	Oral LD50(rat): > 5g/kg
Pour Depressant	Mixture	< 1	LD50(oral-rat): > 5g/kg Skin and eye irritant

[1] Hazard Rating: least-0; slight-1; moderate-2; high-3; extreme-4
Citgo assignment based on our evaluation per NFPA and NPCA guidelines.

NA - Not Applicable ND - No Data NE - Not Established

2.0 Physical Data

Physical Hazard Classification (Per 29 CFR Part 1910.1200)

No	Combustible	No	Flammable	No	Pyrophoric
No	Compressed Gas	No	Organic Peroxide	No	Reactivity
No	Explosive	No	Oxidizer	Yes	Stable

Boiling Point, 760 mmHg, °C(°F):	~343(~650)
Specific Gravity (60/60°F) ($H_2O.$ = 1):	0.88
Vapor Density (Air = 1):	> 1
% Volatiles by Volume:	Negligible
Melting Point, °C(°F):	NA
Vapor Pressure, mmHg (25°C):	$< 1x10^{-3}$
Solubility in $H_2O.$, % by Weight:	Negligible
Evaporation Rate (Butyl Acetate = 1):	< 1
pH of Undiluted Product:	NA
Appearance and Odor:	Amber liquid, mild odor.

3.0 Fire and Explosion Data

Flash Point, COC, °C(°F)	210(410)
Flash Point, PM, °C(°F)	196(385)
Fire Point, COC, °C(°F)	232(450)
NFPA Rating[2]	Health: 0 Flammability: 1 Reactivity: 0
Flammable Limits (% by volume in air)	Lower: ND Upper: ND
Extinguishing Media	CO_2, dry chemical, foam, water fog
Special Fire Fighting Procedure	None.
Unusual Fire or Explosion Hazard	Water may cause frothing.

4.0 Reactivity Data

Stability:	Stable.
Conditions Contributing to Instability:	None.
Incompatibility:	Strong oxidants, strong acids, caustics.
Hazardous Decomposition Products: (thermal, unless otherwise specified)	CO_2, (CO under incomplete combustion), Traces of oxides of S, P, Zn and Ca.
Conditions Contributing to Hazardous Polymerization:	None.

[2] Hazard Rating: least-0; slight-1; moderate-2; high-3; extreme-4
Citgo assignment based on our evaluation per NFPA guidelines.

NA - Not Applicable ND - No Data NE - Not Established

5.0 Spill or Leak Procedures

Procedures if Material is Spilled:

- Remove sources of heat or ignition.
- Provide adequate ventilation.
- *Small Spills*: Take up with noncombustible absorbant such as fullers earth or sand. Place into containers for later disposal.
- *Large Spills*: Contain spill in earthen dikes for later recovery. Control ignition sources around spill area. Report spills as required to appropriate authorities.

Waste Disposal:

- It is the responsibility of the user to determine if the material is a hazardous waste at the time of disposal.
- Check before disposing to be sure you are in compliance with all applicable laws and regulations.
- Treat used oil according to current rules and regulations.
- RCRA Emergency Hotline Number: 800-424-9346.

Protective Measures During Repair and Maintenance of Contaminated Equipment:

- Refer to Section 7.0 - Special Protection Information.
- Wash exposed skin thoroughly with soap and water.
- Remove soiled clothing.
- Use polymer gloves if extended, direct contact is expected.
- Avoid prolonged contact with used oil.

6.0 Health Hazard Data

Health Hazard Classification

(Per 29 CFR Part 1910.1200)

No	Carcinogen	No	Corrosive
No	Animal Carcinogen	No	Irritant
No	Suspect Carcinogen	No	Sensitizer
No	Mutagen	No	Teratogen
No	Highly Toxic	No	Target Organ
No	Toxic		

Product listed as Carcinogen or Potential Carcinogen by:

NTP No IARC No OSHA No Other No

Toxicity Summary: Practically non-toxic.

Major Route(s) of Entry: Inhalation of incidental mists or vapors.

Acute Exposure Symptoms

Inhalation:	Low risk at ambient temperatures. Mists or fumes may cause dizziness, headache, nausea, respiratory irritation, or chemical pneumonitis.
Dermal Contact:	Transient, slight irritation.
Eye Contact:	Practically non-irritant.
Ingestion:	Low toxicity. If less than one ounce is ingested, material may pass through the system without harm. On ingestion of large quantities slight GI discomfort, diarrhea, and headache may occur.
Injection:	Subcutaneous or intramuscular injection may cause irritation, erythema, edema.

Chronic Exposure

Dermal, prolonged and repeated exposure may cause drying of the skin.

Other Special Effects

None.

Medical Conditions Aggravated by Exposure

None.

First Aid and Emergency Procedures for Acute Effect

Inhalation:	Remove from exposure to incidental fumes and provide respiratory support if necessary.
Dermal:	Wash with soap and water.
Eyes:	Flush with large volumes of water.
Ingestion:	Induce vomiting and seek medical aid.
Injection:	Seek medical aid.

Notes to Physician: Following ingestion, at a Saybolt viscosity of approximately 375 at 100°F, the risk of aspiration into the lungs is reduced. For quantities above 1 oz., emesis or lavage may be considered. Subcutaneous injection requires prompt surgical debridement. If not familiar with technique, seek skilled advice.

7.0 Special Protection Information

Ventilation Requirements: Use in well ventilated area. In confined spaces, mechanical ventilation may be required to keep levels of certain components below mandated standards. Responsible individuals should evaluate air concentrations of specific regulated chemicals.

Permitted Threshold Air Concentrations:

Mineral Oil Mist	TLV-TWA	5 mg/m³	OSHA-PEL	5/mg/m³
	TLV-STEL	10 mg/m³	OSHA-STEL	ND
	TLV-Ceiling	ND	OSHA-Ceiling	ND
			OSHA-Peak	ND

Specific Personal Protective Equipment:

Respiratory: If high vapor concentration is expected, use respirator approved for organic vapors.

Eyes: Safety goggles, or chemical splash goggles if splashing is anticipated.

Dermal: Oil impervious gloves if frequent or prolonged contact is expected.

Other Clothing or Equipment: Wear body-covering work clothes to avoid prolonged or repeated exposure. Launder soiled work clothes before reuse.

8.0 Transportation and Special Precautions

Storage: Keep container tightly closed and away from heat and flame.

Caution: Avoid prolonged skin contact with used motor oils. Continuous contact with used oil has caused skin cancer in laboratory animals. After draining oil, wash skin thoroughly with soap and water. Empty containers may contain product residue which could include flammable or explosive vapors.

Consult appropriate Federal, State and Local authorities before reusing, reconditioning, reclaiming, recycling or disposing of empty containers and/or waste residues of this product.

DOT Information

Proper Shipping Name:	Petroleum Lubrication Oil
Hazard Class:	Non-Hazardous
Hazard Identification Number:	None assigned
Placard:	None
Compatibility Category:	Group 33
CHRIS Code:	OMT

9.0 Environmental Data

Product Name: CITGARD 500 Motor Oil, SAE 10W-30
Commodity Code: 22-310

SARA TITLE III

Section 313 - Toxic Chemicals

This product does contain toxic chemicals of Section 313 of Title III of Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40 CFR Part 372.

Components	CAS#	%
Zinc Dialkyldithiophosphates	68649-42-3	< 4

Section 311 - Hazard Categories

Yes Not Applicable
No Acute (Immediate Health Hazard)
No Chronic (Delayed Health Hazard)
No Fire Hazard
No Sudden Release of Pressure Hazard
No Reactive Hazard

Section 302 (a) - Extremely Hazardous Substances

(RQ = Reportable Quantity)
(TPQ = Threshold Planning Quantity)

This product does not contain Extremely Hazardous Substances of Section 302/(A).

Component	CAS#	%	RQ lbs.	TPQ lbs.
None	-	-	-	-

Clean Water Act

Under Section 311 (b) (4) of the Clean Water Act, discharges of crude oil and petroleum products in any kind or form to surface waters must be immediately reported to the National Response Center: 800-424-8802.

Comprehensive Environmental, Response, Compensation & Liability Act (CERCLA) - Section 102 Hazardous Substances

Component	CAS#	%	RQ lbs.

Petroleum and petroleum fractions are excluded from the list of CERCLA hazardous substances by Section 101(14) of CERCLA.

New Jersey Worker and Community Right-to-Know Act

Petroleum Oil

Federal Regulations

Reported in TSCA Inventory:

Product	____ Yes	____ No	__x__ NA (Mixture)
Components	__x__ Yes	____ No	____ NA

10.0 Labeling

NOTE

This product has been determined not to be a physical or a health hazard as defined by the OSHA Hazard Communication Standard.

Avoid prolonged skin contact with used motor oil. Continuous contact has caused skin cancer in laboratory animals. After draining oil, wash skin thoroughly with soap and water. Clean oil soaked clothing before reuse.

ALL STATEMENTS, INFORMATION, AND DATA PROVIDED IN THIS MATERIAL SAFETY DATA SHEET ARE BELIEVED TO BE ACCURATE AND RELIABLE, BUT ARE PRESENTED WITHOUT GUARANTEE, REPRESENTATION, WARRANTY, OR RESPONSIBILITY OF ANY KIND, EXPRESSED OR IMPLIED. ANY AND ALL REPRESENTATIONS AND/OR WARRANTIES OF MERCHANTIBILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE SPECIFICALLY DISCLAIMED. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION OR PRODUCTS FOR THEIR PARTICULAR PURPOSE. NOTHING CONTAINED HEREIN IS INTENDED AS PERMISSION, INDUCEMENT, OR RECOMMENDATION TO VIOLATE ANY LAWS OR TO PRACTICE ANY INVENTION COVERED BY EXISTING PATENTS, COPYRIGHTS OR INVENTIONS.

U.S. DEPARTMENT OF LABOR
OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

MATERIAL SAFETY DATA SHEET

CONDENSATE

IDENTITY (As Used on Label and List): CONDENSATE

SECTION I

Manufacturer's Name:	Energy Minerals Corp. A Subsidiary of HS Resources, Inc.
Emergency Telephone Number:	(303) 572-1400
Address:	216-Sixteenth Street, Suite 1400 Denver, CO 80202-3218
Telephone Number for Information:	(303) 572-1400
Date Prepared:	September 21, 1993

SECTION II - Hazardous Ingredients/Identity Information

Hazardous Components	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (Optional)
Hydrocarbons (aromatic & paraffinic)	n/a	3000 ppm for gasoline	n/a	
Benzene	1 ppm *	10 ppm	n/a	

* Short Term Exposure Limit (STEL) 5 ppm/averaged over any 15 minute period

Hydrogen Sulfide (may or may not contain)	20 ppm *	10 ppm	n/a	

* 50 ppm peak/10 minutes once only, if no other measurable exposure occurs

SECTION III - Physical/Chemical Characteristics

Boiling Point:	80 - 700° F
Specific Gravity (H_2O = 1):	0.8
Vapor Pressure (mm Hg.):	200 - 500
Melting Point:	n/a
Vapor Density (AIR = 1):	> 1
Evaporation Rate (Butly Acetate = 1)	n/a
Solubility in Water:	Negligible, below 0.1%
Appearance and Odor:	Clear & light to dark viscous liquid. Odor from mild hydrocarbon smell to strong sulfurous odor.

SECTION IV -Fire and Explosion Hazard Data

Flash Point (Method Used):	-50° F
Flammable Limits - Lower Exposure Limit (LEL)	5%

Waste Disposal Method:	Disposal must be in accordance with applicable Federal, State or local regulations.
Precautions to Be Taken in Handling and Storing:	Store away from heat, ignition sources and open flame in accordance with appliable Federal, State or local regulations.
Other Precautions:	Wash thoroughly with soap and water after contact. Avoid ignition sources.

SECTION VIII - Control Measures

Respiratory Protection (*Specify Type*):	Use air supplied self contained breathing equipment in confined or enclosed spaces.
Ventilation -	
Local Exhaust:	Avoid accumulation of explosive vapors
Special:	No smoking
Mechanical (*General*):	Use explosion proof equipment
Other:	n/a
Protective Gloves:	Use chemical resistant gloves
Eye Protection:	Goggles or face shields
Other Protective Clothing or Equipment:	Chemical resistant apron
Work/Hygienic Practices:	Wash hands, soiled clothing should be removed and laundered.

Material Safety Data Sheet

IDENTITY *(As Used on Label and List)*	*Note:* *Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.*
Codell Crude oil	

Section I

Manufacturer's Name Gerrity Oil and Gas	Emergency Telephone Number 303-785-0352 or 303-939-8585
Address (Number, Street, City, State, and ZIP Code) 804 Grand Ave.	Telephone Number for Information 303-939-8585
Platteville, CO 80651	Date Prepared 23 June 1994
	Signature of Preparer *(Optional)*

Section II—Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Petroleum distillates (naphtha) CAS No. 8002-05-9			500 ppm—8-h TWA	
Oil Mist (mineral) CAS No.8012-95-1			5 mg/M3—8-h TWA	
Benzene CAS No. 71-43-2			10 ppm—8-h TWA 25 ppm—STEL & Ceiling 50 ppm—10-min peak	
Hydrogen Sulfide CAS No.7783-06-4			10 ppm—8-h TWA 15 ppm—STEL 20 ppm—Ceiling 50 ppm—10-min peak	

Section III—Physical/Chemical Characteristics

Boiling Point	1100 °F	Specific Gravity (H_2O = 1) (60/60 °F)	0.79
Vapor Pressure (psi @ 100 °F)	5.0	Melting Point	Not applicable
Vapor Density (Air = 1)	Heavier than air	Evaporation Rate (Butyl Acetate = 1)	Slower than Ether

Solubility in Water Negligible

Appearance and Odor A dark amber to black oily liquid with a petroleum odor.

Section IV—Fire and Explosion Hazard Data

Flash Point (Method Used) < 0 °F (TCC)	Flammable Limits	LEL 1.4%	UEL 7.6%

Extinguishing Media Carbon dioxide, dry chemical, foam, and water spray

Special Fire Fighting Procedures Fire fighters should wear self-contained breathing apparatus and full protective equipment and clothing for fires involving this material. Water spray may be used to cool fire-exposed containers, to dilute and disperse vapors, protect personnel, and to flush un-ignited spills from the fire.

Unusual Fire and Explosion Hazards This material may be a fire and explosion hazard anytime it is exposed to an ignition source with a temperature higher than its flash point. Vapors are heavier than air and may travel to an ignition source and flash back. A vapor explosion hazard may exist indoors, outdoors, or in sewers. Emptied containers may contain residues that can generate flammable and explosive vapors.

Section V—Reactivity Data

Stability	Unstable		Conditions to Avoid None
	Stable	✓	

Incompatibility *(Materials to Avoid)* Strong oxidizing agents.

Hazardous Decomposition of Byproducts Burning produces carbon dioxide, carbon monoxide, and possible trace amounts of oxides of sulfur and nitrogen.

Hazardous Polymerization	May Occur		Conditions to Avoid None
	Will Not Occur	✓	

Section VI—Health Hazard Data

Routes of Entry: Inhalation and contact with the skin

Health Hazards (*Acute and Chronic*)

Chronic: Repetitive, long-term skin application of similar petroleum crude oils has been shown to cause skin cancer in laboratory animals. Benzene, a minor component, has been associated with blood disorders, leukemia and chromosome damage in humans, and adverse reproductive effects in laboratory animals. Hydrogen sulfide paralyzes the respiratory center of the brain and directly paralyzes the lungs resulting in anoxia, unconsciousness, coma, and death. It also paralyzes the sense of smell.

Carcinogenicity: Benzene is listed by IARC, NTP, NIOSH, and ACGIH as a known human carcinogen.

Signs and Symptoms of Exposure

EYES: This material may cause eye irritation. Contact may cause burning, tearing, and redness. Exposure to hydrogen sulfide vapors may cause irritation.

SKIN: This material is a skin irritant. Prolonged or repeated contact may cause burning, redness, drying and cracking of the skin, dermatitis, and skin damage. Benzene may be absorbed through the skin.

LUNGS: Exposure to mist of to excessive vapor concentrations may irritate the upper respiratory tract and cause signs of central nervous system depression. Hydrogen sulfide exposure causes shortness of breath, headache, nausea, dizziness and anoxia which may lead to unconsciousness, coma, and death.

STOMACH: Accidental swallowing of this material can cause irritation of the stomach and digestive tract. Larger ingestions may cause signs of central nervous system depression.

Medical Conditions Generally Aggravated by Exposure Pre-existing skin, blood, liver, kidney, nervous system, and respiratory conditions.

Emergency and First Aid Procedures Attention: If the victim is not breathing of if breathing difficulties develop, artificial respiration of oxygen should be administered by qualified personnel.

EYE CONTACT: Flush the affected eye(s) with water. If irritation develops, seek medical assistance.

SKIN CONTACT: Immediately remove contaminated clothing and wash the skin thoroughly with soap and water. Use a waterless skin cleanser, if necessary. If irritation develops and persists, seek medical assistance.

INHALATION: Immediately move the victim away from the source of the vapor or mist exposure and into fresh air. If symptoms of exposure develop, seek medical assistance.

INGESTION: If the victim is conscious and alert, give milk or water to drink. Seek medical assistance.

Section VII—Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled Evacuate the area for larger spills. Wear recommended protective clothing and equipment. Provide explosion-proof ventilation. Eliminate or remove all sources of ignition. Do not allow spills to enter sewers, streams, or surface waters. Dike and contain spills. Pick up large spills for later reclamation or disposal. Use an inert absorbent to pick up small spills or residue and collect it for later disposal.

Waste Disposal Method Dispose of spilled materials in accordance with federal, state, and local regulations. Empty containers must be commercially cleaned and reconditioned before they can be reused.

Precautions to Be Taken in Handling and Storing

ROUTINE OPERATIONS: Use in a well-ventilated area and wear recommended protective clothing and equipment. Use non-sparking tools and equipment. Avoid eye contact, breathing vapors, and prolonged skin contact. Wash thoroughly after handling. Clean or launder contaminated shoes and clothing before reusing them. Electrically ground and bond all transfer equipment. Label all unattended containers.

NON-ROUTINE OPERATIONS: Enclosed spaces, tankage head spaces, pipes, and containers may contain explosive or hazardous vapor concentrations. Exercise caution and wear recommended protective clothing and equipment: when opening valves, tanks, or container lids; when entering empty tanks; or during any operation such as repair, cleaning, maintenance, or sampling where there is a potential for exposure to these vapors.

STORAGE: Store this material in closed tanks or containers in cool, dry, well-ventilated areas and away from heat, ignition sources, and strong oxidizing agents. Electrically ground and bond all transfer lines and equipment.

Other Precautions Emptied containers can be hazardous. Containers must be completely emptied and commercially cleaned before they can be reused. Keep emptied containers closed and do not use them to store or mix other materials until they have been commercially cleaned. Do not cut, weld, drill or expose emptied containers to heat or flame.

Section VIII—Control Measures

Respiratory Protection (*Specify Type*) Use a NIOSH-approved organic vapor cartridge when the naphtha vapor concentration exceeds the exposure limit. Use a self-contained supplied air respirator when hydrogen sulfide concentrations exceed limits.

Ventilation Use explosion-proof mechanical or local ventilation to maintain gas concentrations below the exposure limits.

Protective Gloves Protective gloves or barrier cream is recommended | **Eye Protection** Chemical goggles are recommended

Other Protective Clothing or Equipment An eye wash and a source of running water should be available

Work/Hygienic Practices None specified

Acetylene Material Safety Data Sheet

Industrial Gas Division
Air Products and Chemicals, Inc.
Allentown, PA 18195
Tel. (215) 481-4911 · TWX 510-651-3686
Cable-AIRPROD · Telex 847416
Fax (215) 481-5900

AIR PRODUCTS

EMERGENCY PHONE: 800—523-9374	IN PENNSYLVANIA: 800—322-9092		
ISSUE DATE: Issued: 31 January 1978		TRADE NAME AND SYNONYMS: Acetylene, Ethyne, Ethine	CHEMICAL NAME AND SYNONYMS: Acetylene, Ethyne, Ethine
REVISIONS: Rev: 1 June 1990		FORMULA: C_2H_2 MW: 26.04	CHEMICAL FAMILY: Alkynes CAS#74-86-2

HEALTH HAZARD DATA

EXPOSURE LIMITS
OSHA: None established. ACGIH: Simple Asphyxiant. Acetylene is not listed as a carcinogen by NTP, IARC or OSHA.

SYMPTOMS IF INGESTED, CONTACTED WITH SKIN, OR VAPOR INHALED
Symptoms such as headaches, dizziness, shortness of breath, and loss of consciousness may occur if the gas is present in quantities sufficient to dilute the oxygen concentration in air. Symptoms of anoxia occur only when the gas concentrations are within the flammable range and the mixture has not ignited. (DO NOT ENTER AREAS WITHIN THE FLAMMABLE RANGE DUE TO THE IMMEDIATE FIRE AND EXPLOSION HAZARD.) Use a suitable flammable gas meter (explosimeter) calibrated for acetylene to measure concentrations of gas in the air.

TOXICOLOGICAL PROPERTIES
Acetylene is a simple asphyxiant, irritant, and anesthetic. About 100 mg per liter may be tolerated for 0.5–1.0 hour. There is no experimental evidence of chronic harmful effects.

RECOMMENDED FIRST AID TREATMENT
First degree and minor second degree thermal burns from fires should be immersed in cool water for 30 minutes. Major second and third degree burns should be covered in the cleanest material available. Seek immediate aid of a physician. Persons suffering from lack of oxygen should be moved to areas with normal atmosphere. Assisted respiration and supplemental oxygen should be given if the victim is not breathing.

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	AUTO IGNITION TEMP	FLAMMABLE LIMITS	LEL	UEL
0F (–18C) (CC)	581F (305C)	In air @ 1 atm	2.5%	100%

EXTINGUISHING MEDIA	ELECTRICAL CLASSIFICATION
Carbon dioxide, dry chemical, Halon	GROUP Class I, Group A

SPECIAL FIRE FIGHTING PROCEDURES
Stop gas flow and fight fire conventionally. Use water spray to keep cylinders or other containers cool if exposed to fire. Keep personnel well away since containers can rupture violently when exposed to fire. For additional information, see Compressed Gas Association Safety Bulletin SB-4.

UNUSUAL FIRE AND EXPLOSION HAZARDS
ACETYLENE IS EXTREMELY FLAMMABLE AND EXPLOSIVE. IT MAY DECOMPOSE VIOLENTLY IN ITS FREE STATE UNDER PRESSURE IN EXCESS OF 15 PSIG. It burns with an intensely hot flame. Potential explosion hazard exists from reignition if fire is extinguished without shutting off acetylene source. Ignites very easily due to low minimum ignition energy; very wide flammable limits. Acetylene gas has an approximate specific gravity of 1.0 and tends to stay in pockets rather than dissipate.

PHYSICAL DATA

BOILING POINT (°F.)	FREEZING POINT (°F)
@ 1 atm –119.2F (–84.0C)	@ 1 atm –113.4F (–80.8C)
VAPOR PRESSURE (psia)	SOLUBILITY IN WATER
@ 62.2F (16.8C) 590 psia (40 atm)	@ 64F (18C), 1 atm 1.0 CuFt/CuFtH_2O

VAPOR DENSITY (lb/cu ft)	SPECIFIC GRAVITY (AIR = 1)	LIQUID DENSITY (lb/cu ft)	SPECIFIC GRAVITY (H_2O = 1)
@ 68F (20C), 1 atm 0.0681	@ 68F (20C), 1 atm 0.906	@ –116F (–82C), 1 atm 38.76	@ –116F (–82C), 1 atm 0.621

APPEARANCE AND ODOR
Pure acetylene is colorless and odorless. Impurities in carbide generated acetylene impart a characteristic garlic-like odor.

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Printed in U.S.A. 310-813 (Rev. 6/90)

(017592-0176@ -40154544-60525901)	DATE OF ISSUE 12/18/90	SUPERSEDES 12/13/89

SECTION I - GENERAL INFORMATION

CHEMICAL NAME & SYNONYMS	TRADE NAME & SYNONYMS
N/A	AS-201 BRUSH TOP
CHEMICAL FAMILY	FORMULA
METAL/PETROLEUM BLEND	X<--MIXTURE

MANUFACTURERS NAME:
DYNA SYSTEMS A PARTSMASTER CO DIV OF NCH

ADDRESS (NUMBER, STREET, CITY, STATE & ZIP CODE)
P.O. BOX 655326
DALLAS, TEXAS 75265-5326

PREPARED BY:	PRODUCT CODE NUMBER	EMERGENCY TELEPHONE NUMBER
RICHARD STOLLEY/T.S.CHEM.	60525901	214-438-1381

SECTION II- HAZARDOUS INGREDIENTS

THE HAZARDS PRESENTED BELOW ARE THOSE OF THE INDIVIDUAL COMPONENTS.

CHEMICAL NAME (INGREDIENTS) :		
HYDROTREATED, LIGHT NAPHTHENIC DISTILLATE,PETROLEUM		
HAZARD----->OIL MIST	TLV--->5MG/M3 1.	PEL-->5MG/M3 2.
STEL(TWA)* ->NOT EST	CAS#-->64742-53-6	
CHEMICAL NAME (INGREDIENTS) :		
HYDROTREATED HEAVY NAPHTHENIC		
HAZARD----->OIL MIST	TLV--->5MG/M3 1.	PEL-->5MG/M3 2.
STEL(TWA)* ->NOT EST	CAS#-->64742-52-5	
CHEMICAL NAME (INGREDIENTS) :		
PROPYLENE GLYCOL		
HAZARD----->EYE IRR.	TLV--->NOT EST.1	PEL-->NOT EST.2
STEL(TWA)* ->NOT EST	CAS#-->57-55-6	

NON-HAZARDOUS INGREDIENT NAMES AND CAS NUMBERS ARE PROTECTED UNDER NJ TRADE SECRET REGISTRY # 409363-5064P

SECTION III - PHYSICAL DATA

BOILING PT.(FAHRENHEIT)	N/A	SPEC GRAVITY (H2O=1)	:1.12
VAPOR PRESSURE (MM HG).	N/A	COLOR	SILVER
VAPOR DENSITY (AIR=1)	N/A	ODOR	PETROLEUM
PH @ 100%	N/A	CLARITY	PASTE
PERCENT VOLATILE BY VOLUME (%)	< 5	EVAPORATION RATE (BU AC = 1)	N/A
SOLUBILITY IN WATER	NEGLIGIBLE		
VISCOSITY	VISCOUS		

SECTION IV - FIRE AND EXPLOSION HAZARD

FLASH POINT (METHOD USED)	FLAMMABLE LIMITS	LEL	UEL
300 F. T.C.C.		N/A	N/A

EXTINGUISHING MEDIA	*ALCOHOL*		DRY		WATER	
X<--FOAM	<--FOAM	X<--CO2	X<--CHEMICAL		<--SPRAY	<--OTHER

SPECIAL FIRE FIGHTING PROCEDURES

WEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE WHEN FIGHTING FIRES.

UNUSUAL FIRE & EXPLOSION HAZARDS

N/A

NFPA HAZARD RATING (0=INSIGNIFICANT;1=SLIGHT;2=MODERATE;3=HIGH;4=EXTREME):

1 <--HEALTH	1 <--FLAMMABILITY	0 <--REACTIVITY	<--SPECIAL

(CONTINUED) SECTION IX - SPECIAL PROTECTION

PROTECTIVE GLOVES
NEOPRENE OR NITRILE RUBBER GLOVES SHOULD BE WORN TO MINIMIZE SKIN CONTACT.

EYE PROTECTION
CHEMICAL GOGGLES SHOULD BE WORN DEPENDING ON SEVERITY OF EXPOSURE.

OTHER PROTECTION
N/A

SECTION X - STORAGE AND HANDLING INFORMATION

STORAGE TEMPERATURE 120 F.<--MAX 0 F.<--MIN	INDOOR	HEATED	REFRIGERATED	OUTDOOR
	X			

PRECAUTIONS TO BE TAKEN IN HANDLING & STORING
STORE AT MODERATE TEMPERATURES.

OTHER PRECAUTIONS
KEEP AWAY FROM CHILDREN. READ ENTIRE LABEL BEFORE USING PRODUCT.

SECTION XI - REGULATORY INFORMATION

CHEMICAL NAME	C.A.S. NUMBER	UPPER % LIMIT
N/A		

THOSE INGREDIENTS LISTED ABOVE ARE SUBJECT TO THE REPORTING REQUIREMENTS OF 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372.
IF UE (USE EXEMPTION) APPEARS UNDER UPPER % LIMIT, END USERS ARE EXEMPT FROM NOTIFICATION BECAUSE THE PRODUCT IS USED AND LABELED FOR ROUTINE JANITORIAL WORK, OR THE PRODUCT IS USED AND LABELED FOR FACILITY GROUNDS MAINTENANCE (SUCH AS FERTILIZERS AND HERBICIDES), OR THE PRODUCT IS USED AND LABELED FOR MAINTAINING MOTOR VEHICLES.

CALIFORNIA PROPOSITION 65
WARNING: THIS PRODUCT CONTAINS THE FOLLOWING CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE (1) CANCER OR (2) BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM:
NONE

SECTION XII - TRANSPORTATION * (FOR FUTURE USE)

AS-201 BRUSH TOP

(CONTINUED) SECTION XII - TRANSPORTATION * (FOR FUTURE USE) PAGE : 06

APPLICABLE REGULATIONS
<--49 CFR <--IMCO <--TARIFF 6 D <--IATA <--MILITARY AIR (AFR 71-4)

SHIPPING NAME

HAZARD CLASS	ID NUMBER	REPORT QTY
LABELS	LIMITED QTY	

UNIT CONTAINER

DOT SPS CONTAINER	NET EXPLOSIVE WT.
AEROSOL PROPELLANT(S)	

SECTION XIII - REFERENCES

1. THRESHOLD LIMITS VALUES FOR CHEMICAL SUBSTANCES AND PHYSICAL AGENTS AND BIOLOGICAL EXPOSURE INDICES, ACGIH, 1990-1991.
2. OSHA PEL
3. DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS, 6TH EDITION, N. IRVING SAX.
4. VENDOR'S MSDS.

*SHORT TERM EXPOSURE LIMIT (TWA) LISTED AS FINAL RULE LIMITS PUBLISHED IN THE FEDERAL REGISTER/VOL.54 NO.12, 1-19-89

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(076833-0425e -40158756-60015064)	DATE OF ISSUE 01/06/92	SUPERSEDES 11/26/91

SECTION I - GENERAL INFORMATION

CHEMICAL NAME & SYNONYMS	TRADE NAME & SYNONYMS
N/A	AS-201 AEROSOL
CHEMICAL FAMILY	FORMULA
ANTI-GALLING CHEMICAL	X<--MIXTURE

MANUFACTURERS NAME:
DYNA SYSTEMS A PARTSMASTER CO DIV OF NCH

ADDRESS (NUMBER, STREET, CITY, STATE & ZIP CODE)
P.O. BOX 655326
DALLAS, TEXAS 75265-5326

PREPARED BY:	PRODUCT CODE NUMBER	EMERGENCY TELEPHONE NUMBER
G ZIMMERMAN/CHEMIST	60015064	214-438-1361

SECTION II- HAZARDOUS INGREDIENTS

THE HAZARDS PRESENTED BELOW ARE THOSE OF THE INDIVIDUAL COMPONENTS.

CHEMICAL NAME (INGREDIENTS) :		
HYDROTREATED LT. NAPHTHENIC OIL HAZARD----->OIL MIST STEL(TWA)* ->NOT EST	TLV--->5MG/L 1. CAS#-->64742-53-6	PEL-->5MG/M3 2.
CHEMICAL NAME (INGREDIENTS) :		
HYDROTREATED HV. NAPHTHENIC OIL HAZARD----->OIL MIST STEL(TWA)* ->NOT EST	TLV--->5MG/L 1. CAS#-->64742-52-5	PEL-->5MG/M3 2.
CHEMICAL NAME (INGREDIENTS) :		
MINERAL SPIRITS HAZARD----->COMBUST. STEL(TWA)* ->NOT EST	TLV--->100 PPM 3. CAS#-->64742-48-9	PEL-->NOT EST.2
CHEMICAL NAME (INGREDIENTS) :		
PROPANE HAZARD----->ASPHYXIANT STEL(TWA)* ->NA	TLV--->NOT EST.1. CAS#-->74-98-6	PEL-->1000PPM 2

CHEMICAL NAME (INGREDIENTS) :		
ISOBUTANE HAZARD----->FLAMM. STEL(TWA)* ->NOT EST	TLV--->NOT EST.1 CAS#-->75-28-5	PEL-->NOT EST.2

SECTION IIA - NON-HAZARDOUS INGREDIENTS

NON-HAZARDOUS INGREDIENT NAMES AND CAS NUMBERS ARE PROTECTED UNDER NJ TRADE SECRET REGISTRY # 409363-5114P

SECTION III - PHYSICAL DATA

BOILING PT.(FAHRENHEIT)	N/A	SPEC GRAVITY (H2O=1)	:N/A
VAPOR PRESSURE (MM HG).	N/A	COLOR	SILVER
VAPOR DENSITY (AIR=1)	N/A	ODOR	ALCOHOL
PH @ 100%	N/A	CLARITY	OPAQUE
PERCENT, VOLATILE BY VOLUME (%)	11	EVAPORATION RATE (BU AC = 1)	N/A
SOLUBILITY IN WATER	NEGLIGIBLE		
VISCOSITY	VISCOUS		

SECTION IV - FIRE AND EXPLOSION HAZARD

FLASH POINT (METHOD USED)	FLAMMABLE LIMITS	LEL	UEL
300 F. C.O.C.		N/A	N/A

EXTINGUISHING MEDIA *ALCOHOL*			DRY		WATER	
X<--FOAM	X<--FOAM	X<--CO2	X<--CHEMICAL	<--SPRAY		<--OTHER

SPECIAL FIRE FIGHTING PROCEDURES
WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE GEAR.
COOL EXPOSED SURFACE OF CONTAINERS WITH WATER TO PROTECT PERSONNEL.

UNUSUAL FIRE & EXPLOSION HAZARDS
NONE

(CONTINUED) SECTION IX - SPECIAL PROTECTION INFO.

RESPIRATORY PROTECTION
NONE.

PROTECTIVE GLOVES
NEOPRENE RUBBER FOR PROLONGED OR REPEATED SKIN CONTACT.

EYE PROTECTION
CHEMICAL GOGGLES IF METHOD OF USE PRESENTS THE LIKELIHOOD OF EYE CONTACT.

OTHER PROTECTION
N/A

SECTION X - STORAGE AND HANDLING INFORMATION

STORAGE TEMPERATURE 120 F.<--MAX 50 F.<--MIN	INDOOR	HEATED	REFRIGERATED	OUTDOOR
	X			

PRECAUTIONS TO BE TAKEN IN HANDLING & STORING
DO NOT OVER HEAT CONTAINER.
FOLLOW LABEL DIRECTIONS.

OTHER PRECAUTIONS
KEEP OUT OF REACH OF CHILDREN.

SECTION XI - REGULATORY INFORMATION

CHEMICAL NAME	C.A.S. NUMBER	UPPER % LIMIT
N/A		

THOSE INGREDIENTS LISTED ABOVE ARE SUBJECT TO THE REPORTING REQUIREMENTS OF 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372.
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NONE

SECTION XII - TRANSPORTATION * (FOR FUTURE USE)

APPLICABLE REGULATIONS <--49 CFR	<--IMCO	<--TARIFF 6 D	<--IATA	<--MILITARY AIR (AFR 71-4)
SHIPPING NAME				
HAZARD CLASS			ID NUMBER	REPORT QTY
LABELS			LIMITED QTY	
UNIT CONTAINER				
DOT SPS CONTAINER		NET EXPLOSIVE WT.		
AEROSOL PROPELLANT(S)				

SECTION XIII - REFERENCES

1. THRESHOLD LIMIT VALUES FOR CHEMICAL SUBSTANCES AND PHYSICAL AGENTS AND BIOLOGICAL EXPOSURE INDICES, ACGIH, 1991-1992.
2. OSHA PEL.
3. VENDOR'S MSDS

*SHORT TERM EXPOSURE LIMIT (TWA) LISTED AS FINAL RULE LIMITS PUBLISHED IN THE FEDERAL REGISTER/VOL.54 NO.12, 1-19-89

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PRODUCT: ETHYLENE GLYCOL (REGULAR)

ORDER NO: 168501
PROD NO : 263280

DEAN LUBRICATION
122 E. 4TH ST RD

GREELEY ,CO 80631

VAN WATERS & ROGERS INC. , SUBSIDIARY OF UNIVAR (206)889-3400
6100 CARILLON POINT , KIRKLAND , WA 98033

---------- EMERGENCY ASSISTANCE ----------

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL -- CHEMTREC
(800)424-9300

---------- FOR PRODUCT AND SALES INFORMATION ----------

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE AT
VW&R DENVER 303-388-5651 DENVER , CO

Product Name:
ETHYLENE GLYCOL (REGULAR)

VW&R MSD Number: DZ30478

1. INGREDIENTS: (% w/w, unless otherwise noted)

Ethylene glycol CAS# 000107-21-1 >99%

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

2. PHYSICAL DATA:

BOILING POINT: 387.1F 197C
VAP PRESS: 0.12 mmHg @ 25C
VAP DENSITY: 2.14
SOL. IN WATER: Completely miscible.
SP. GRAVITY: 1.1155 @ 20/20C
APPEARANCE: Colorless liquid.
ODOR: Practically odorless.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: 247F, 119C
METHOD USED: Setaflash

FLAMMABLE LIMITS
LFL: 3.2%
UFL: Not determined.

EXTINGUISHING MEDIA: Water fog, alcohol foam, CO2, and dry chemical.

FIRE & EXPLOSION HAZARDS: None expected under normal storage and handling conditions (i.e. ambient temperatures). However, ethylene glycol or solutions of ethylene glycol and water can form flammable vapors with air if heated sufficiently.

FIRE-FIGHTING EQUIPMENT: Wear positive-pressure, self-contained breathing apparatus.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Will ignite in air at 775F, (413C).

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Oxidizing material.

HAZARDOUS DECOMPOSITION PRODUCTS: Burning produces normal products of combustion, such as carbon monoxide, carbon dioxide, and water.

HAZARDOUS POLYMERIZATION: Will not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Avoid entry into sewers or natural waters. Small spills: Soak up with absorbent material. Large spills: Dike and pump into suitable containers for disposal.

DISPOSAL METHOD: Burn in an approved incinerator in accordance with all local, state, and federal requirements, or salvage.

6. HEALTH HAZARD DATA:

EYE: May cause slight transient (temporary) eye irritation. Corneal injury is unlikely. Vapors or mists may irritate eyes.

SKIN CONTACT: Essentially nonirritating to skin.

SKIN ABSORPTION: Repeated skin exposure to large quantities may result in absorption of harmful amounts. The dermal LD50 has not been determined.

INGESTION: Single dose oral toxicity is moderate. Excessive exposure may cause central nervous system effects, cardio-pulmonary effects (metabolic acidosis), and kidney failure. The estimated lethal dose for an average person is 100 ml. The oral LD50 for rats is in the 6000-13,000 mg/kg range. Amounts ingested incidental to industrial handling are not likely to cause injury; however ingestion of larger amounts could cause serious injury, even death.

INHALATION: At room temperature, vapors are minimal due to low vapor pressure. If heated or sprayed as an aerosol, concentrations may be attained that are sufficient to cause irritation and other effects.

SYSTEMIC & OTHER EFFECTS: Excessive exposure may cause irritation to upper respiratory tract. Observations in animals include kidney and liver effects and deposition of calcium salts in various tissues after long-term dietary intake of ethylene glycol. Did not cause cancer in long-term animal studies. Based on animal studies, ingestion of ethylene glycol appears to be the major and possibly only route of exposure to produce birth defects. Exposures by inhalation (tested nose-only in animals) or skin contact, the primary routes of occupational exposure, have minimal or essentially no effect on the fetus. In studies on rats, ethylene glycol has been shown not to interfere with reproduction. In studies on mice, ingestion of ethylene glycol in large amounts caused a small decrease in the number of litters per pair, live pups per litter, and in live pup weight. Results of in vitro (test tube) mutagenicity tests have been negative. Results of mutagenicity tests in animals have been negative.

7. FIRST AID:

EYES: Irrigate immediately with water for at least 5 minutes.

SKIN: Wash off in flowing water or shower.

INGESTION: If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.

REGULATORY INFORMATION: (Not meant to be all-inclusive--selected regulations represented).
NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See MSD Sheet for health and safety information.

U.S. REGULATIONS

SARA 313 INFORMATION: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372:

CHEMICAL NAME	CAS NUMBER	CONCENTRATION
ETHYLENE GLYCOL	000107-21-1	99 %

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard
A delayed health hazard

CANADIAN REGULATIONS

The Workplace Hazardous Materials Information System (W.H.M.I.S.) Classification for this product is:

A

INHALATION: Remove to fresh air if effects occur. Consult a physician.

NOTE TO PHYSICIAN: Early administration of ethanol may counter the toxic effects of ethylene glycol--metabolic acidosis and renal damage. Hemodialysis or peritoneal dialysis have been of benefit. New Eng. J. Med. 304:21 1981. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): OSHA PEL and ACGIH TLV are 50 ppm Ceiling for ethylene glycol vapor.

VENTILATION: Good general ventilation should be sufficient for most conditions. Local exhaust ventilation may be necessary for some operations.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator.

SKIN PROTECTION: Use impervious gloves when prolonged or frequently repeated contact could occur.

EYE PROTECTION: Use safety glasses. If vapor exposure causes eye discomfort, use a full-face respirator.

9. ADDITIONAL INFORMATION:

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Avoid ingestion. Practice reasonable caution and personal cleanliness. Avoid skin and eye contact.

Trace quantities of ethylene oxide (EO) may be present in this product. While these trace quantities could accumulate in headspace areas of storage and transport vessels, they are not expected to create a condition which will result in EO concentrations greater than 0.5 ppm (8 hour TWA) in the breathing zone of the workplace for appropriate applications. OSHA has established a permissible exposure limit of 1.0 ppm 8 hr TWA for EO. (Code of Federal Regulations Part 1910.1047 of Title 29)

MSDS STATUS: Revised section 9 and regsheet.

The Transportation of Dangerous Goods Act (T.D.G.A.) classification for this product is:

Not regulated

FOR ADDITIONAL INFORMATION

CONTACT: MSDS COORDINATOR VW&R DENVER
DURING BUSINESS HOURS, PACIFIC TIME (206)889-3400

05/20/93 10:11 PRODUCT: 263280 CUST NO: 292878 ORDER NO: 168501

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*** END OF MSDS ***

MATERIAL SAFETY
DATA SHEET

AMOCO 2-K KEROSENE

MSDS NO: 02001522

MANUFACTURER/SUPPLIER:
Amoco Oil Company
200 East Randolph Drive
Chicago, Illinois 60601

EMERGENCY HEALTH INFORMATION: (800) 447-8735
EMERGENCY SPILL INFORMATION: (800) 424-9300
CHEMTREC, U.S.A.
OTHER PRODUCT SAFETY INFORMATION: (312) 856-3907

IMPORTANT COMPONENTS: Petroleum distillate (CAS 8008-20-6).
No exposure limit established.
Naphthalene (CAS 91-20-3) ACGIH TLV 10 ppm, STEL 15 ppm;
OSHA PEL 10 ppm, STEL 15 ppm.
Xylene (CAS 1330-20-7) ACGIH TLV 100 ppm, STEL 150 ppm;
OSHA PEL 100 ppm, STEL 150 ppm.

WARNING STATEMENT: Warning! Combustible. Harmful if swallowed and/or aspirated into the lungs. Can cause skin irritation on prolonged or repeated contact.

HMIS/NFPA CODES:(HEALTH;1)(FLAMMABILITY;2)(REACTIVITY;0)

APPEARANCE AND ODOR: Clear, bright liquid.

HEALTH HAZARD INFORMATION

EYE

EFFECT: No significant health hazards identified.

FIRST AID: Flush eyes with plenty of water. Get medical attention if irritation persists.

PROTECTION: None required; however, use of eye protection is good industrial practice.

SKIN

EFFECT: Can cause skin irritation on prolonged or repeated contact. See Toxicology Section.

FIRST AID: Wash exposed skin with soap and water. Remove contaminated clothing, including shoes, and thoroughly clean and dry before reuse. Get medical attention if irritation develops.

PROTECTION: Avoid prolonged or repeated skin contact. Wear protective clothing and gloves if prolonged or repeated contact is likely.

INHALATION

EFFECT: No significant health hazards identified. See Toxicology Section.

FIRST AID: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get medical attention.

PROTECTION: Avoid breathing vapor and/or mist. Use with adequate ventilation. If ventilation is inadequate, use NIOSH/MSHA certified respirator which will protect against organic vapor/mist.

HEALTH HAZARD INFORMATION - CONTINUED

INGESTION

EFFECT: Low viscosity product. Harmful or fatal if aspirated into lungs. See Toxicology Section.

FIRST AID: If swallowed, do NOT induce vomiting. Get immediate medical attention.

FIRE AND EXPLOSION INFORMATION

FLASHPOINT: 122°F TO 150°F, (TCC) Range

EXTINGUISHING MEDIA: Agents approved for Class B hazards (e.g., dry chemical, carbon dioxide, halogenated agents, foam, steam) or water fog.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Combustible liquid.

PRECAUTIONS: Keep away from ignition sources (e.g., heat and open flames). Keep container closed. Use with adequate ventilation.

REACTIVITY INFORMATION

HAZARDOUS REACTIONS: None identified.

HAZARDOUS DECOMPOSITION: Burning can produce carbon monoxide and/or carbon dioxide and other harmful products.

STABILITY: Stable.

CHEMICAL AND PHYSICAL PROPERTIES

BOILING POINT: 345°F TO 550°F, Approximate range.

SOLUBILITY IN WATER: Negligible, below 0.1%.

SPECIFIC GRAVITY (WATER = 1): 0.83

VISCOSITY: 1.0-1.9 cSt @ 104°F.

STORAGE AND ENVIRONMENTAL PROTECTION

STORAGE REQUIREMENTS: Store in combustible liquids storage area. Store away from heat, ignition sources, and open flame in accordance with applicable federal, state, or local regulations.

SPILLS AND LEAKS: Remove or shut off all sources of ignition. Prevent spreading by diking, ditching, or absorbing on inert materials. Increase ventilation, if possible. Keep out of sewers and waterways.

DISPOSAL: Disposal must be in accordance with applicable federal, state, or local regulations. Enclosed-controlled incineration is recommended unless directed otherwise by applicable ordinances.

SPECIAL PRECAUTIONS: Avoid strong oxidizers. Not suitable for use in nonvented space heaters.

TOXICOLOGICAL INFORMATION

EYE: Primary eye irritation score for similar materials have ranged from 0.0 to 3.3/110 (rabbits).

SKIN: Similar products have produced skin irritation scores ranging from 1.96 to 6.30/8.0 (rabbits). Dermal LD50 for similar products was greater than 2 g/kg (rabbits).

INHALATION: Inhalation LC50 for a similar material was greater than 6.4 g/m3 (rats).

INGESTION: Oral LD50 for similar products was greater than 10 g/kg (rats).

From skin-painting studies of petroleum distillates of similar composition and distillate range, it has been shown that these types of materials often possess weak carcinogenic activity in laboratory animals. In these tests, the material is painted on the shaved backs of mice twice a week for their lifetime. The material is not washed off between applications. Therefore, there may be a potential risk of skin cancer from prolonged or repeated skin contact with this product in the absence of good personal hygiene. This particular product has not been tested for carcinogenic activity, but we have chosen to be cautious in light of the findings with other distillate streams.

Occasional skin contact with this product is not expected to have serious effects, but good personal hygiene should be practiced and repeated skin contact avoided. This product can also be expected to produce skin irritation upon prolonged or repeated skin contact. Personal hygiene measures taken to prevent skin irritation are expected to be adequate to prevent risk of skin cancer.

s product has a sufficiently low vapor pressure to prevent a hazardous buildup of vapors unless the product is heated, used in a confined space with inadequate ventilation or misted. Inhalation of mist or high concentrations of vapors can produce dizziness, headache, and nausea and possibly irritation of the eye, nose and throat.

Aspiration of this product into the lungs can cause chemical pneumonia and can be fatal. Aspiration into the lungs can occur while vomiting after ingestion of this product. Do not siphon by mouth.

Materials of this type have been shown to produce kidney damage in male rats following prolonged inhalation exposures. Following extensive research, this effect appears to be unique to the male rat and is considered to be of little or no relevance in terms of human health risk.

No component of this product present at levels greater than 0.1% is identified as a carcinogen by NTP, IARC or OSHA.

REGULATORY INFORMATION

CERCLA REPORTABLE QUANTITY:
This product is exempt from the CERCLA reporting requirements under 40 CFR Part 302.4. However, if spilled into waters of the United States, it may be reportable under 40 CFR Part 153 if it produces a sheen.

PROPER SHIPPING NAME: Kerosene, Combustible Liquid, UN1223.

OSHA HAZARD COMMUNICATION STANDARD: Combustible liquid. Irritant.

REGULATORY INFORMATION - CONTINUED

A STATUS:
This product is subject to the 40 CFR Part 268.30 land ban on the disposal of certain hazardous wastes because it contains the following substance(s):

COMPONENT/CAS NUMBER
Xylene (1330-20-7)

SARA STATUS:
This product is regulated under the following section(s) of SARA Title III, 42 USC 9601. Spills or releases of the product may be reportable as determined by the information given below:

SECTIONS 311 AND 312 OF SARA AND 40 CFR PART 370:
This product is defined as hazardous by OSHA under 29 CFR Part 1910.1200(d).

SECTION 313 OF SARA AND 40 CFR PART 372:
This product contains the following substances, which are on the Toxic Chemicals List in 40 CFR Part 372:

COMPONENT/CAS NUMBER	WEIGHT PERCENT
Naphthalene (91-20-3)	1
Xylene (1330-20-7)	1

STATUS: All of the components of this product are listed on the TSCA Inventory.

ISSUE INFORMATION

Y:

R G Farmer

. G. Farmer, Director,
oduct Safety & Toxicology

ISSUED: July 25, 1989
SUPERSEDES: July 18, 1989

is material safety data sheet and the information it contains is offered to you in od faith as accurate. We have reviewed any information contained in this data sheet ich we received from sources outside our company. We believe that information to be rrect but cannot guarantee its accuracy or completeness. Health and safety ecautions in this data sheet may not be adequate for all individuals and/or tuations. It is the user's obligation to evaluate and use this product safely and comply with all applicable laws and regulations. No statement made in this data eet shall be construed as a permission or recommendation for the use of any product a manner that might infringe existing patents. No warranty is made, either express implied.

Material Safety Data Sheet

Lion Oil Company
1000 McHenry Street
El Dorado Ar 71730

Product: LION NOKORODE SEAL KOTE MEDIUM GRADE
Internal ID: G.26

MSDS No: LION / LO0168
Revision: 9
Date: May 27, 1993

National Paint and Coatings Association

Hazardous Material Identification System

HEALTH HAZARD	2 - Moderate
FLAMMABILITY HAZARD	2 - Moderate
REACTIVITY HAZARD	0 - Minimal
PERSONAL PROTECTION	SEE SECTION 8

SECTION I. MATERIAL IDENTIFICATION

Trade/Material Name: LION NOKORODE SEAL KOTE MEDIUM GRADE

Description: Black asphalt mastic; hydrocarbon solvent odor

Other Designations: Petroleum Asphalt Mastic

CAS: Mixture

Chemical Name: Petroleum Hydrocarbon

Manufacturer: Lion Oil Company
1000 McHenry Street
El Dorado, AR. 71730

Phone: 501-862-8111
Chemtrec: 1-800-424-9300

SECTION II. INGREDIENTS AND HAZARDS

Ingredient Name:	CAS Number:	Percent:	Exposure Limits:
Asphalt	64742-93-4	40.4	PEL 5 mg/m³; TLV 5 mg/m³
300/360 Naphtha	8030-30-6	35.6	PEL 500 ppm; TLV 100 ppm

SECTION III. PHYSICAL DATA

Appearance & Odor: Black asphalt mastic; hydrocarbon solvent odor

Boiling point: 300-360°F
Vapor pressure: 26 mmHg @ 100°F
Water solubility (%): Negligible
Vapor density (air=1): 4+

Evaporation rate: (Butyl Acetate = 1) 0.19
Specific gravity (H_2O=1): 1.024
% volatile by volume: 46

MSDS LO0168 continues on page 2

Lion Oil Company
1000 McHenry Street
El Dorado Ar 71730

Product: LION NOKORODE SEAL KOTE MEDIUM GRADE
Internal ID: G.26

MSDS No: LION / LO0168
Revision: 9
Date: May 27, 1993

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point (method): 102°F (PMCC) Limits: LEL %: 0.5 UEL %: 6.0

Extinguishing Media: Water, Carbon Dioxide, foam, or dry chemicals

Unusual fire or explosion hazards: Do not store near strong oxidants or open flame. Smoke from fire may be hazardous.

Special fire-fighting procedures: Use air supplied rescue equipment. Cool exposed containers with water.

SECTION V. REACTIVITY DATA

Material is stable Hazardous polymerization will not occur

Chemical incompatibilities: Do not store near strong oxidants.

Conditions to avoid: Do not store near open flame.

Hazardous decomposition Products: H_2S may be formed when heated or burned. CO may be formed with incomplete combustion.

SECTION VI. HEALTH HAZARD INFORMATION

Summary of risks: This product is an irritant, a skin hazard, an eye hazard, and a toxic agent.

Target organs: Blood, Nervous System, Lungs, Kidneys

Signs & symptoms of overexposure:

Eye contact: Irritation

Skin contact: Irritation and Dermatitis

Inhalation: Dizziness, headaches, nausea and respiratory irritation

First aid:

Eye contact: Flush with water. CONTACT PHYSICIAN.

Skin contact: Wash with soap and water.

Inhalation: Move to fresh air. Use artificial respiration if necessary. CONTACT PHYSICIAN.

Lion Oil Company
1000 McHenry Street
El Dorado Ar 71730

Product: LION NOKORODE SEAL KOTE MEDIUM GRADE
Internal ID: G.26

MSDS No: LION / LO0168
Revision: 9
Date: May 27, 1993

SECTION VII. SPILL, LEAK AND DISPOSAL PROCEDURES

Spill / Leak procedures: Shut off sources of ignition. Shut off leak, if possible without risk. Take up with sand or other non-combustible, absorbant material.

Waste management / Disposal: Dispose of at an approved site, complying with all federal, state, and local regulations.

SECTION VIII. SPECIAL PROTECTION INFORMATION

Personal protective equipment:

Goggles: Chemical-type goggles or face shield.

Gloves: Yes, impervious in nature.

Respirator: Self-contained, positive-pressure breathing apparatus when used in confined or enclosed space or when exposure limits are exceeded or hydrogen sulfide is unknown or exceeds 20 ppm. Organic vapor respirators can be used with good ventilation when organic vapors are less than 1000 ppm or ten (10) times permissible exposure limit, which ever is less.

Other: none

Workplace considerations:

Ventilation: General mechanical with local exhaust; sufficient to maintain exposure levels below recommended TLV.

SECTION IX. SPECIAL PRECAUTIONS

Storage segregation: Do not store near strong oxidants and avoid water contamination.

Special handling / storage: Stay up wind to avoid vapors and do not store near flame.

Other precautions: While OSHA does not require labeling of this product, good hygiene should be practiced when handling any petroleum product. The International Agency for Research on Cancer (IARC) states that there is inadequate evidence that petroleum bitumens alone are carcinogenic to humans. However, it states that extracts of steam-refined petroleum bitumens, air-refined petroleum bitumens, and pooled mxitures of steam and air-refined petroleum bitumens have caused tumors in experimental animals (mice) when painted on the animals frequently over long periods of time.

Prepared/revised by: Bobby Lee, Chief Chemist

May 27, 1993

The information and recommendations contained herein are to the best of Lion Oil Company's knowledge and belief, accurate and reliable as of the date issued. Lion does not warrant or guarantee their accuracy or reliability, and shall not be liable for any loss or damage arising out of the use thereof. User should satisfy himself that he has all current data relevant to his particular use.

Synthetic

Mobil Product Data Sheet

Mobil Rarus® 824, 826, 827

Synthetic, Di-Ester Air Compressor Lubricants

Description

Mobil Rarus 824, 826, and 827 lubricants are made from synthesized di-esters to which specific inhibitors have been added to extend life and to improve their ability to protect against corrosion.

Each product provides improved air separation and possesses low foaming tendencies. With higher autogenous ignition temperatures, higher flash points, and a lesser tendency to form deposits, they also offer increased protection against fires in compressors, compared to mineral-oil-based lubricants. The lubricants have a broad temperature application range from −20°F ambient startup to +400°F discharge air.

Application

Mobil Rarus 824, 826, and 827 lubricants are recommended for use in rotary screw, vane, reciprocating, and centrifugal compressors.

Typical Characteristics

Physical characteristics are listed in the table. Values not shown as maximum or minimum are typical and may vary slightly.

Health and Safety

Based on available toxicological information, these products have little potential adverse effects on health when properly handled and used. No special precautions are suggested beyond attention to good personal hygiene, including avoiding prolonged, repeated skin contact. A Material Safety Data Bulletin is available from Mobil Commercial Division offices.

	Mobil Rarus		
	824	826	827
Product Number	60623-6	60625-1	60624-4
Gravity, API	24.7	18.9	18.2
Specific Gravity	0.906	0.941	0.945
Density, lb/gal	7.54	7.84	7.87
Flash °F, min.	450	430	430
Pour, °F, max.	−65	−35	−35
Color, ASTM	1.5	1.5	1.5
Viscosity			
SUS at 0°F	4400	—	—
SUS at 100°F	137	348	422
SUS at 210°F	43.8	51.4	53.3
cSt at 40°C	28.2	66.5	87
cSt at 100°C	5.27	7.48	8.20
Viscosity Index	100	63	50
ISO Viscosity Grade	32	68	100
TAN, max.	0.2	0.2	0.2
Demulsibility, ASTM D-1401, minutes to 0 ml emulsion at 130°F	30	60	60
ASTM Rust, 48 hr, distilled water	Pass	Pass	Pass
Copper Corrosion, ASTM D-130, 3 hr at 250°F	2A	2A	2A
RBOT, ASTM D-2272, minutes	1000 +	1000 +	1000 +
Air Release, ASTM D-3427, minutes to 0.2% air	1	1.2	2.3

Mobil Oil Corporation
TECHNICAL PUBLICATIONS
3225 GALLOWS ROAD, FAIRFAX, VIRGINIA 22037-0001

Due to continual product research and development, the information contained herein is subject to formulation changes without notification.

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Synthetic

Mobil Product Data Sheet

Mobil Rarus® 824, 826, 827, 829

Synthetic, Di-Ester Air Compressor Lubricants

Description

Mobil Rarus 824, 826, 827, and 829 lubricants are made from synthesized di-esters to which specific inhibitors have been added to extend life and to improve their ability to protect against corrosion.

Each product provides improved air separation and possesses low foaming tendencies. With higher autogenous ignition temperatures, higher flash points, and a lesser tendency to form deposits, they also offer increased protection against fires in compressors, compared to mineral-oil-based lubricants. The lubricants have a broad temperature application range from -20°F ambient startup to +400°F discharge air.

Application

Mobil Rarus 824 and 826 are recommended for use in rotary screw compressors. Mobil Rarus 827 and 829 are for reciprocating compressors. Occasionally, depending on the manufacturer's recommendations for viscosity, Mobil Rarus 826 and 827 may be used with either design.

Typical Characteristics

Physical characteristics are listed in the table. Values not shown as maximum or minimum are typical and may vary slightly.

Health and Safety

Based on available toxicological information, these products produce no adverse effects on health when properly handled and used. No special precautions are suggested beyond attention to good personal hygiene, including laundering oil-soaked clothing and washing skin-contact areas with soap and water. Material Safety Data Bulletins are available from Mobil Commercial Division offices or by calling 1-800-227-0707, ext. 3265.

	Mobil Rarus			
	824	826	827	829
Product Number	60623-6	60625-1	60624-4	60626-9
Gravity, API	24.7	19.9	18.2	14.6
Specific Gravity	0.906	0.941	0.945	0.972
Density, lb/gal	7.54	7.84	7.87	8.07
Flash Point, °C (°F), min	232 (450)	221 (430)	221 (430)	221 (430)
Pour Point, °C (°F), max	-54 (-65)	-37 (-35)	-37 (-35)	-29 (-20)
Color, ASTM D 1500	1.5	1.5	1.5	3.0
Viscosity				
cSt at 40°C	28.2	66.5	87	158
cSt at 100°C	5.27	7.48	8.20	13.2
SUS at 0°F	4400	–	–	–
SUS at 100°F	137	348	422	839
SUS at 210°F	43.8	51.4	53.3	72.5
Viscosity Index	100	63	50	70
ISO VG	32	68	100	150
TAN, ASTM D 664, max	0.2	0.2	0.2	0.25
Demulsibility, ASTM D 1401, min to 0 ml emulsion	30	60	60	60
Rust Protection, ASTM D 665	Pass	Pass	Pass	Pass
Copper Strip Corrosion, ASTM D 130, 3 hr at 121°C (250°F)	2A	2A	2A	2A
RBOT, ASTM D 2272, minutes	1000+	1000+	1000+	1400+
Air Release, ASTM D 3427, min to 0.2%	1	1.2	2.3	2.2

MOBIL OIL CORPORATION MATERIAL SAFETY DATA BULLETIN

REVISED:03/15/94

********** I. PRODUCT IDENTIFICATION **********

MOBIL MULTI-PURPOSE ATF

SUPPLIER:
MOBIL OIL CORP.

CHEMICAL NAMES AND SYNONYMS:
PET. HYDROCARBONS AND ADDITIVES

USE OR DESCRIPTION:
AUTOMATIC TRANSMISSION FLUID

24-HOUR EMERGENCY (CALL COLLECT):
(609) 737-4411

CHEMTREC:
(800) 424-9300

PRODUCT AND MSDS INFORMATION:
(800) 662-4525

********** II. TYPICAL CHEMICAL AND PHYSICAL PROPERTIES **********

APPEARANCE: Red Liquid ODOR: Mild PH: NA
VISCOSITY AT 40 C, CS: 35.0
VISCOSITY AT 100 C, CS: < 7.8
FLASH POINT F(C): > 338(170) (ASTM D-92)
MELTING POINT F(C): NA POUR POINT F(C): < -49(-45)
BOILING POINT F(C): > 600(316) VOC: NE
RELATIVE DENSITY, 15/4 C: 0.866 SOLUBILITY IN WATER: Negligible
VAPOR PRESSURE-mm Hg 20C: < 0.1

NA=Not Applicable NE=Not Established D=Decomposes

FOR FURTHER INFORMATION, CONTACT YOUR MARKETING REPRESENTATIVE.

********** III. POTENTIALLY HAZARDOUS INGREDIENTS **********

None

See Sections XII and XIII for regulatory and further compositional data.

********** IV. HEALTH HAZARD DATA **********

--- INCLUDES AGGRAVATED MEDICAL CONDITIONS, IF ESTABLISHED ---

THRESHOLD LIMIT VALUE: 5.00 mg/m3 Suggested for Oil Mist
EFFECTS OF OVEREXPOSURE: No significant effects expected.

********** V. EMERGENCY AND FIRST AID PROCEDURES **********

--- FOR PRIMARY ROUTES OF ENTRY ---

EYE CONTACT: Flush thoroughly with water. If irritation occurs, call a physician.

SKIN CONTACT: Wash contact areas with soap and water.

INHALATION: Not expected to be a problem.

INGESTION: Not expected to be a problem. However, if greater than 1/2 liter(pint) ingested, immediately give 1 to 2 glasses of water and call a physician, hospital emergency room or poison control center for assistance. Do not induce vomiting or give anything by mouth to an unconscious person.

********** VI. FIRE AND EXPLOSION HAZARD DATA **********

FLASH POINT F(C): > 338(170) (ASTM D-92)
FLAMMABLE LIMITS. LEL: 0.6% UEL: 7.0%
EXTINGUISHING MEDIA: Carbon dioxide, foam, dry chemical and water fog.
SPECIAL FIRE FIGHTING PROCEDURES: Water or foam may cause frothing. Use water to keep fire exposed containers cool. Water spray may be used to flush spills away from exposure. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.
SPECIAL PROTECTIVE EQUIPMENT: For fires in enclosed areas, fire fighters must use self-contained breathing apparatus.
UNUSUAL FIRE AND EXPLOSION HAZARDS: None.
NFPA HAZARD ID: Health: 0, Flammability: 1, Reactivity: 0

********** VII. REACTIVITY DATA **********

STABILITY (Thermal, Light, etc.): Stable
CONDITIONS TO AVOID: Extreme heat.
INCOMPATIBILITY (Materials to Avoid): Strong oxidizers.
HAZARDOUS DECOMPOSITION PRODUCTS: Metal oxides. Carbon monoxide.
HAZARDOUS POLYMERIZATION: Will not occur.

********** VIII. SPILL OR LEAK PROCEDURE **********

ENVIRONMENTAL IMPACT: Report spills as required to appropriate authorities. U. S. Coast Guard regulations require immediate reporting of spills that could reach any waterway including intermittent dry creeks. Report spill to Coast Guard toll free number (800) 424-8802. In case of accident or road spill notify CHEMTREC (800) 424-9300.

PROCEDURES IF MATERIAL IS RELEASED OR SPILLED: Adsorb on fire retardant treated sawdust, diatomaceous earth, etc. Shovel up and dispose of at an appropriate waste disposal facility in accordance with current applicable laws and regulations, and product characteristics at time of disposal.

WASTE MANAGEMENT: Product is suitable for burning in an enclosed, controlled burner for fuel value or disposal by supervised incineration. Such burning may be limited pursuant to the Resource Conservation and Recovery Act. In addition, the product is suitable for processing by an approved recycling facility or can be disposed of at any government approved waste disposal facility. Use of these methods is subject to user compliance with applicable laws and regulations and consideration of product characteristics at time of disposal.

********** IX. SPECIAL PROTECTION INFORMATION **********

EYE PROTECTION: Normal industrial eye protection practices should be employed.
SKIN PROTECTION: No special equipment required. However, good personal hygiene practices should always be followed.
RESPIRATORY PROTECTION: No special requirements under ordinary conditions of use and with adequate ventilation.
VENTILATION: No special requirements under ordinary conditions of use and with adequate ventilation.

********** X. SPECIAL PRECAUTIONS **********

No special precautions required.

********** XI. TOXICOLOGICAL DATA **********

---ACUTE TOXICOLOGY---

ORAL TOXICITY (RATS): Practically non-toxic (LD50: greater than 2000 mg/kg). ---Based on testing of similar products and/or the components.

DERMAL TOXICITY (RABBITS): Practically non-toxic (LD50: greater than 2000 mg/kg). ---Based on testing of similar products and/or the components.

INHALATION TOXICITY (RATS): Not applicable ---Harmful concentrations of mists and/or vapors are unlikely to be encountered through any customary or reasonably foreseeable handling, use, or misuse of this product.

EYE IRRITATION (RABBITS): Practically non-irritating. (Draize score: greater than 6 but 15 or less). ---Based on testing of similar products and/or the components.

SKIN IRRITATION (RABBITS): Practically non-irritating. (Primary Irritation Index: greater than 0.5 but less than 3). ---Based on testing of similar products and/or the components.

---SUBCHRONIC TOXICOLOGY (SUMMARY)---

Severely solvent refined and severely hydrotreated mineral base oils have been tested at Mobil Environmental and Health Sciences Laboratory by dermal application to rats 5 days/week for 90 days at doses significantly higher than those expected during normal industrial exposure. Extensive evaluations including microscopic examination of internal organs and clinical chemistry of body fluids, showed no adverse effects.

---CHRONIC TOXICOLOGY (SUMMARY)---

The base oils in this product are severely solvent refined and/or severely hydrotreated. Chronic mouse skin painting studies of severely treated oils showed no evidence of carcinogenic effects. These results are confirmed on a continuing basis using the Mobil Modified Ames Test.

********** XII. REGULATORY INFORMATION **********

GOVERNMENTAL INVENTORY STATUS: All components comply with TSCA, EINECS/ELINCS and AICS.

Transport Information: Please see Section XIV.

US OSHA HAZARD COMMUNICATION STANDARD: Product assessed in accordance with OSHA 29 CFR 1910.1200 and determined not to be hazardous.

RCRA INFORMATION: The disposal of the unused product may be subject to RCRA regulations per 40 CFR Part 261 for the reasons including but not limited to ignitability, corrosivity, reactivity or formulation with the contaminants listed in the Toxicity Characteristic (TC) Rule as determined by the Toxicity Characteristic Leaching Procedure (TCLP). Disposal of the used product may be regulated.

CADMIUM: .0001 PCT (TCLP)

U.S. Superfund Amendments and Reauthorization Act (SARA) Title III:
This product contains no "EXTREMELY HAZARDOUS SUBSTANCES".

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None

This product contains no chemicals reportable under
SARA (313) toxic release program.

THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE LISTS BELOW:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
PSEUDOCUMENE	95-63-6	11, 15
TOLUENE (0.11%)	108-88-3	17, 22
MEDIUM ALIPHATIC PETROLEUM SOLVENT	64742-88-7	18, 19, 20, 23, 25

--- REGULATORY LISTS SEARCHED ---

1 = ACGIH ALL	6 = IARC 1	11 = TSCA 4	17 = CA P65	22 = MI 293
2 = ACGIH A1	7 = IARC 2A	12 = TSCA 5a2	18 = CA RTK	23 = MN RTK
3 = ACGIH A2	8 = IARC 2B	13 = TSCA 5e	19 = FL RTK	24 = NJ RTK
4 = NTP CARC	9 = OSHA CARC	14 = TSCA 6	20 = IL RTK	25 = PA RTK
5 = NTP SUS	10 = OSHA Z	15 = TSCA 12b	21 = LA RTK	26 = RI RTK

CARC = CARCINOGEN; SUS = SUSPECTED CARCINOGEN

NOTE: MOBIL PRODUCTS ARE NOT FORMULATED TO CONTAIN PCBS.

********** XIII. INGREDIENTS **********

See container label for ingredient information.

********** XIV. TRANSPORT AND LABEL INFORMATION **********

USA DOT: NOT REGULATED BY USA DOT.

IMO: NOT REGULATED BY IMO.

IATA: NOT REGULATED BY IATA.

********** APPENDIX **********

PRECAUTIONARY EEC LABEL TEXT:

* - EC labeling not required. .

FOR MOBIL USE ONLY: MHC: 1* 1* NA 1* 1*, MPPEC: A, PPEC:, US931213
APPROVE CCODE:3 02/16/94 REQ: US - MARKETING

****

INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT WITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PRODUCT FOR PARTICULAR USES ARE BEYOND OUR CONTROL; ALL RISKS OF USE OF THE PRODUCT ARE THEREFORE ASSUMED BY THE USER AND WE EXPRESSLY DISCLAIM ALL WARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE USE OR SUITABILITY OF THE PRODUCT. NOTHING IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS OR AS EXTENDING LICENSE UNDER VALID PATENTS. APPROPRIATE WARNINGS AND SAFE HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS.

****

PREPARED BY: MOBIL OIL CORPORATION
ENVIRONMENTAL HEALTH AND SAFETY DEPARTMENT, PRINCETON, NJ
FOR FURTHER INFORMATION, CONTACT:
MOBIL OIL CORPORATION, PRODUCT FORMULATION AND QUALITY CONTROL
3225 GALLOWS ROAD, FAIRFAX, VA 22037 (800) 227-0707 X3265

Mobil

MOBIL OIL CORPORATION MATERIAL SAFETY DATA BULLETIN

REVISED:12/30/92

********** I. PRODUCT IDENTIFICATION **********

MOBILGLYGOYLE 11

SUPPLIER:
MOBIL OIL CORP.

24-HOUR EMERGENCY (CALL COLLECT):
(609) 737-4411

CHEMICAL NAMES AND SYNONYMS:
SYN. HYDROCARBONS AND ADDITIVES

CHEMTREC:
(800) 424-9300

USE OR DESCRIPTION:
INDUSTRIAL LUBRICANT

PRODUCT AND MSDS INFORMATION:
(800) 662-4525

********** II. TYPICAL CHEMICAL AND PHYSICAL PROPERTIES **********

APPEARANCE: Dark Amber Liquid ODOR: Mild PH: NA
VISCOSITY AT 40 C, CS: 85.0
VISCOSITY AT 100 C, CS: 12.0
FLASH POINT F(C): > 410(210) (ASTM D-93)
MELTING POINT F(C): NA POUR POINT F(C): -20(-29)
BOILING POINT F(C): NE VOC: < 2.00(Wt. %); 0.168 lbs/gal
RELATIVE DENSITY, 15/4 C: 1.009 SOLUBILITY IN WATER: Slight
VAPOR PRESSURE-mm Hg 20C: NE

NA-Not Applicable NE-Not Established D-Decomposes
FOR FURTHER INFORMATION, CONTACT YOUR LOCAL MARKETING OFFICE.

********** III. POTENTIALLY HAZARDOUS INGREDIENTS **********

None

SEE SECTIONS XII AND XIII FOR REGULATORY AND FURTHER COMPOSITIONAL DATA.

********** IV. HEALTH HAZARD DATA **********

--- INCLUDES AGGRAVATED MEDICAL CONDITIONS, IF ESTABLISHED ---

EFFECTS OF OVEREXPOSURE: Slight eye irritation. Slight skin irritation.

********** V. EMERGENCY AND FIRST AID PROCEDURES **********

--- FOR PRIMARY ROUTES OF ENTRY ---

EYE CONTACT: Flush thoroughly with water. If irritation persists, call a physician.

SKIN CONTACT: Wash contact areas with soap and water.

INHALATION: Remove from further exposure. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance and call a physician. If breathing has stopped, use mouth to mouth resuscitation.

INGESTION: Not expected to be a problem. However, if greater than 1/2 liter(pint) ingested, immediately give 1 to 2 glasses of water and call a physician, hospital emergency room or poison control center for assistance. Do not induce vomiting or give anything by mouth to an unconscious person.

********** VI. FIRE AND EXPLOSION HAZARD DATA **********

FLASH POINT F(C): > 410(210) (ASTM D-93)
FLAMMABLE LIMITS. LEL: NE UEL: NE
EXTINGUISHING MEDIA: Carbon dioxide, foam, dry chemical and water fog.
SPECIAL FIRE FIGHTING PROCEDURES: Water or foam may cause frothing. Use water to keep fire exposed containers cool. Water spray may be used to flush spills away from exposure. For fires in enclosed areas, firefighters must use self-contained breathing apparatus. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.
UNUSUAL FIRE AND EXPLOSION HAZARDS: None.
NFPA HAZARD ID: Health: 0, Flammability: 1, Reactivity: 0

********** VII. REACTIVITY DATA **********

STABILITY (Thermal, Light, etc.): Stable
CONDITIONS TO AVOID: Extreme heat.
INCOMPATIBILITY (Materials to Avoid): Strong oxidizers.
HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide.
HAZARDOUS POLYMERIZATION: Will not occur.

********** VIII. SPILL OR LEAK PROCEDURE **********

ENVIRONMENTAL IMPACT: Report spills as required to appropriate authorities. U. S. Coast Guard regulations require immediate reporting of spills that could reach any waterway including intermittent dry creeks. Report spill to Coast Guard toll free number (800) 424-8802. In case of accident or road spill notify CHEMTREC (800) 424-9300.
PROCEDURES IF MATERIAL IS RELEASED OR SPILLED: Adsorb on fire retardant treated sawdust, diatomaceous earth, etc. Shovel up and dispose of at an appropriate waste disposal facility in accordance with current applicable laws and regulations, and product characteristics at time of disposal.
WASTE MANAGEMENT: Product is suitable for burning in an enclosed, controlled burner for fuel value or disposal by supervised incineration. Such burning may be limited pursuant to the Resource Conservation and Recovery Act. In addition, the product is suitable for processing by an approved recycling facility or can be disposed of at any government approved waste disposal facility. Use of these methods is subject to user compliance with applicable laws and regulations and consideration of product characteristics at time of disposal.

********** IX. SPECIAL PROTECTION INFORMATION **********

EYE PROTECTION: Normal industrial eye protection practices should be employed.
SKIN PROTECTION: No special equipment required. However, good personal hygiene practices should always be followed.
RESPIRATORY PROTECTION: No special requirements under ordinary conditions of use and with adequate ventilation.
VENTILATION: Use in well ventilated area.

********** X. SPECIAL PRECAUTIONS **********

No special precautions required.

********** XI. TOXICOLOGICAL DATA **********

---ACUTE TOXICOLOGY---

ORAL TOXICITY (RATS): Slightly toxic ---Based on testing of similar products and/or the components.

DERMAL TOXICITY (RABBITS): Slightly toxic ---Based on testing of similar products and/or the components.

INHALATION TOXICITY (RATS): Not established

EYE IRRITATION (RABBITS): May cause slight irritation, ---Based on testing of similar products and/or the components.

SKIN IRRITATION (RABBITS): May cause slight irritation on prolonged or repeated contact. ---Based on testing of similar products and/or the components.

********** XII. REGULATORY INFORMATION **********

GOVERNMENTAL INVENTORY STATUS: All components registered in accordance with TSCA.

Transport Information:

DOT:

Shipping Name: Not applicable
Hazard Class: Not applicable

US OSHA HAZARD COMMUNICATION STANDARD: Product assessed in accordance with OSHA 29 CFR 1910.1200 and determined not to be hazardous.

RCRA INFORMATION: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity, or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

U.S. Superfund Amendments and Reauthorization Act (SARA) Title III:
This product contains no "EXTREMELY HAZARDOUS SUBSTANCES".

SARA (311/312 - FORMERLY 302) REPORTABLE HAZARD CATEGORIES: None

This product contains no chemicals reportable under SARA (313) toxic release program.

THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE LISTS BELOW:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
POLYPROPYLENE GLYCOL	25322-69-4	23

-- REGULATORY LISTS SEARCHED --

1 = ACGIH ALL	6 = IARC 1	11 = TSCA 4	17 = CA P65	22 = MI 293	
2 = ACGIH A1	7 = IARC 2A	12 = TSCA 5a2	18 = CA RTK	23 = MN RTK	
3 = ACGIH A2	8 = IARC 2B	13 = TSCA 5e	19 = FL RTK	24 = NJ RTK	
4 = NTP CARC	9 = OSHA CARC	14 = TSCA 6	20 = IL RTK	25 = PA RTK	
5 = NTP SUS	10 = OSHA Z	15 = TSCA 12b	21 = LA RTK	26 = RI RTK	
		16 = WHMIS			

CARC = CARCINOGEN; SUS = SUSPECTED CARCINOGEN

NOTE: MOBIL PRODUCTS ARE NOT FORMULATED TO CONTAIN PCBS.

********** XIII. INGREDIENTS **********

INGREDIENT DESCRIPTION :	PERCENT	CAS NUMBER
CONTAINS THE FOLLOWING BASE OILS:	> 90.00	
POLY(OXY-1,2-ETHANEDIYL), A-HYDRO-W-HYDROXY-		25322-68-3
BENZENAMINE, 4-OCTYL-N-(4-OCTYLPHENYL)-	< 4.00	101-67-7
BENZENEPROPANOIC ACID, 3,5-BIS(1,1-DIMETHYLETHYL)-4-HYDROXY-,2,2-BIS(3-(3,5-BIS(1,1-DIMETHYLETHYL)-4-HYDROXYPHENYL)-1-OXOPROPOXY) METHYL)-1,3-PROPANEDIYL ESTER	< 2.00	6683-19-8
PHOSPHORIC ACID, METHYLPHENYL DIPHENYL ESTER	< 2.00	2644-49-5

********** APPENDIX **********

FOR MOBIL USE ONLY: MHC: 1* 1* NE 1* 1*, MPPEC: A, PPEC: A, US91-707
APPROVE CCODE:3 10/08/92 REQ: US - MARKETING

****

INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT WITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PRODUCT FOR PARTICULAR USES ARE BEYOND OUR CONTROL; ALL RISKS OF USE OF THE PRODUCT ARE THEREFORE ASSUMED BY THE USER AND WE EXPRESSLY DISCLAIM ALL WARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE USE OR SUITABILITY OF THE PRODUCT. NOTHING IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS OR AS EXTENDING LICENSE UNDER VALID PATENTS. APPROPRIATE WARNINGS AND SAFE HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS.

****

PREPARED BY: MOBIL OIL CORPORATION
ENVIRONMENTAL HEALTH AND SAFETY DEPARTMENT, PRINCETON, NJ
FOR FURTHER INFORMATION, CONTACT:
MOBIL OIL CORPORATION, PRODUCT FORMULATION AND QUALITY CONTROL
3225 GALLOWS ROAD, FAIRFAX, VA 22037 (800) 227-0707 X3265

MATERIAL SAFETY DATA SHEET (M S D S) Printed : 06/30/94
For Oils, Greases and Related Lubricating Materials
Revised : 11/21/91

SECTION I - PRODUCT IDENTIFICATION

Manufacturer: CATO OIL AND GREASE CO.
P.O. BOX 26868
915 M.L. KING BLVD.
OKLAHOMA CITY OK 73126

Information Phone: 405-270-6200
Emergency Phone: 800-424-9300
CHEMTREC Phone: 800-424-9300

Trade Name : MYSTIK AW/AL HYDRAULIC OIL, ISO 32, SAE 10W
Product Class: ISO 32 LUBRICANT

Hazard Ratings: Health - 1
none -> extreme Fire - 1
0 ---> 4 Reactivity - 0

Product Code : 1822B-001
C.A.S. Number: COMPLEX MIXTURE

Personal Protection - B

SECTION II - HAZARDOUS INGREDIENTS

Ingredients	CAS #	Weight %	--- Exposure Limits ---- ACGIH/TLV	OSHA/PEL	VP mm HG
PETROLEUM HYDROCARBON	64742-65-0	5-20	5 mg/M3 STEL= 10	5 mg/M30 10	

IMMEDIATELY ABOVE PETROLEUM HYDROCARBON COMPONENT CONTAINS 155PPM TOLUENE (CAS#108-88-3) WHICH IS LISTED ON THE CALIFORNIA SAFE WATER AND TOXIC ENFORCEMENT ACT KNOWN AS PROPOSITION 65.

PETROLEUM HYDROCARBON	64742-54-7	> 75	5 mg/M3 STEL= 10	5 mg/M30 10	

ALL Ingredients in this product are listed in the T.S.C.A. Inventory.

SARA 311/312 CATEGORY - HEALTH HAZARD IMMEDIATE.

SARA 313 - NOT APPLICABLE.

INGREDIENTS ARE PROPRIETARY. POTENTIAL HAZARDS HAVE BEEN EVALUATED AND PERTINENT INFORMATION HAS BEEN INCLUDED IN SECTIONS III-IX. EACH PROPRIETARY MATERIAL IS EITHER: 1. HELD A TRADE SECRET FROM CATO, 2. OSHA-NON-HAZARDOUS OR BELOW 1% IF OSHA HAZARDOUS AND 3. BELOW 0.1% IF POTENTIALLY CARCINOGENIC.

-> These items are listed on the SARA TITLE III Section 313 inventory

SECTION III - PHYSICAL DATA

Boiling Range: EST.>600 Deg. F
Evap. Rate: Slower than n-Butyl Acetate
Volatiles volume: N/AV %

Vapor Density: Heavier than Air.
Liquid Density: Lighter than Water.
Wgt per gallon: 7.219 Pounds.
Spec. Gravity: 0.87

Appearance: GREEN LIQUID
V.O.C.: N/AV

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flammability Class: 1 Flash Point: 420 'F COC LEL: N/AV

-EXTINGUISHING MEDIA:
CARBON DIOXIDE, DRY CHEMICAL OR FOAM.

-SPECIAL FIREFIGHTING PROCEDURES:
WATER STREAM MAY SPREAD FIRE, USE WATER SPRAY ONLY TO COOL CONTAINERS NOT ON FIRE.

-UNUSUAL FIRE & EXPLOSION HAZARDS:
WILL FORM FLAMMABLE MIXTURES WITH AIR WHEN HEATED TO ABOUT THE FLASH POINT. WILL NOT FLASH SPONTANEOUSLY.

SECTION V - HEALTH HAZARD DATA

-PERMISSIBLE EXPOSURE LEVEL:
TWA = 5 MG/M3; STEL = 10 MG/M3--AS OIL MIST--RESPIRATORY IRRITANT. SEE SECTION II FOR CONCISE INFORMATION CONCERNING INGREDIENTS HAVING A PEL.

-EFFECTS OF OVEREXPOSURE:
INHALATION: NOT EXPECTED TO BE ACUTELY TOXIC BY INHALATION. BREATHING PETROLEUM OIL MIST AT CONCENTRATIONS IN AIR THAT EXCEED THE RECOMMENDED EXPOSURE STANDARD CAN CAUSE RESPIRATORY IRRITATION OR DISCOMFORT.

SKIN: EXPECTED TO CAUSE NO MORE THAN MINOR SKIN IRRITATION WITH PROLONGED OR REPEATED CONTACT, UNDER CONDITIONS OF NORMAL USE.

EYES: UNDER NORMAL CONDITIONS OF USE, EXPECTED TO CAUSE NO MORE THAN MINOR, IF ANY, EYE IRRITATION BASED ON DATA FROM COMPONENTS.

SWALLOWING/INGESTION: MAY CAUSE IRRITATION, NAUSEA OR DIARRHEA. POSSIBLE ASPIRATION HAZARD.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: NONE KNOWN, BUT MAY AGGRAVATE PREVIOUSLY EXISTING SKIN DISORDERS. LISTED AS A POTENTIAL CARCINOGEN OR CARCINOGEN? NOT LISTED BY IARC, NTP, OR OSHA.

-FIRST AID:
INHALATION: IF RESPIRATORY DISCOMFORT OR IRRITATION OCCURS, MOVE PERSON TO FRESH AIR. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION AND GET MEDICAL ATTENTION IMMEDIATELY.

SKIN: WASH EXPOSED PORTION WITH SOAP AND WATER. LAUNDER SOILED CLOTHES BEFORE REUSE.

EYES: IMMEDIATELY FLUSH EYES WITH WATER FOR A MINIMUM OF 15 MINUTES OCCASIONALLY LIFTING THE LOWER AND UPPER LIDS. IF FILM OR IRRITATION PERSISTS, SEEK MEDICAL ATTENTION.

SWALLOWING/INGESTION: DO NOT INDUCE VOMITING; CONTACT A PHYSICIAN.

SECTION VI - REACTIVITY DATA

STABILITY: [ ] Unstable [x] Stable
HAZARDOUS POLYMERIZATION: [ ] May occur [x] Will not occur
-INCOMPATIBILITY
STRONG OXIDIZERS.
-CONDITIONS TO AVOID:
AVOID CONDITIONS THAT COULD GENERATE AN OIL MIST. DO NOT EXPOSE THE PRODUCT TO STRONG OXIDIZERS OR EXCESSIVE HEAT.
-HAZARDOUS DECOMPOSITION PRODUCTS:
INCOMPLETE COMBUSTION CAN YIELD CARBON (SMOKE), CARBON MONOXIDE, VARIOUS HYDROCARBONS AND EVOLVE OTHER TOXIC GASES OR VAPORS.

SECTION VII - SPILL OR LEAK PROCEDURES

-STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
NOTIFY EMERGENCY RESPONSE PERSONNEL. EVACUATE AREA AND REMOVE IGNITION SOURCES. BUILD DIKE TO CONTAIN FLOW. REMOVE FREE LIQUID, DO NOT FLUSH TO SEWER OR OPEN WATER. PICK UP RESIDUE WITH INERT-ABSORBANT AND PLACE IN CLOSED CONTAINER FOR DISPOSAL.
-WASTE DISPOSAL METHOD:
EPA HAZARDOUS WASTE? NO
EPA HAZARDOUS WASTE CODE NUMBER--NOT APPLICABLE
EPA WASTE CHARACTERISTIC OR HAZARD CODE--NOT APPLICABLE

UTILIZE LICENSED WASTE DISPOSAL COMPANY. CONSIDER RECYCLING OR CONTROLLED INCINERATION. UTILIZE PERMITTED INDUSTRIAL WASTE DISPOSAL SITE. FOLLOW ALL LOCAL, STATE AND FEDERAL GUIDELINES. REMEMBER THAT LIQUIDS ARE BANNED FROM LANDFILLING.

SECTION VIII - SPECIAL PROTECTION INFORMATION:

-RESPIRATORY PROTECTION:
UP TO 25 MG/M3, HALF-MASK ORGANIC VAPOR RESPIRATOR. UP TO 50 MG/M3, FULL-FACE ORGANIC VAPOR RESPIRATOR OR FULL-FACE SELF-CONTAINED RESPIRATOR. GREATER THAN 50 MG/M3, FIRE FIGHTING OR UNKNOWN CONCENTRATION, USE SELF-CONTAINED BREATHING APPARATUS WITH POSITIVE PRESSURE.
VENTILATION:
MAINTAIN LOCAL OR DILUTION VENTILATION TO KEEP AIR CONCENTRATION BELOW TLV/PEL. REQUEST ASSISTANCE OF SAFETY AND INDUSTRIAL HYGIENE PERSONNEL TO DETERMINE AIR CONCENTRATION.
PROTECTIVE GLOVES:
FOR PROLONGED OR REPEATED CONTACT, USE NITRILE OR NEOPRENE GLOVES OR OTHER MATERIAL RESISTANT TO PETROLEUM OILS.
EYE PROTECTION:
SAFETY GLASSES, CHEMICAL GOGGLES OR FACE SHIELD AS APPROPRIATE FOR EXPOSURE.

SECTION VIII - SPECIAL PROTECTION INFORMATION: (cont.)

-OTHER PROTECTIVE EQUIPMENT:
NONE NORMALLY REQUIRED.

SECTION IX - SPECIAL PRECAUTIONS

-PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:
STORE CLEAN, DRY, BELOW 120'F (50'C) TO PRESERVE FOR INTENDED USE. DO NOT STORE WITH STRONG OXIDIZERS. STORE AS OSHA CLASS III COMBUSTIBLE LIQUID.

-OTHER PRECAUTIONS:
DOT HAZARDOUS MATERIAL? NO
DOT SHIPPING NAME AND NUMBER - NOT APPLICABLE
DOT HAZARD CLASS - NOT APPLICABLE

RECOMMENDED CONSUMER WARNING
WARNING: CONTAINS PETROLEUM HYDROCARBON LUBRICANT. MAY BE HARMFUL IF INHALED OR SWALLOWED. USE ONLY WITH ADEQUATE VENTILATION. IF INGESTED, DO NOT INDUCE VOMITING; CONTACT A PHYSICIAN.

KEEP AWAY FROM CHILDREN.

RECOMMENDED OSHA WARNING
WARNING: CONTAINS PETROLEUM HYDROCARBON LUBRICANT. MAY BE HARMFUL IF INHALED OR SWALLOWED. USE ONLY WITH ADEQUATE VENTILATION.
FIRST AID: INHALATION - REMOVE TO FRESH AIR. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION AND GET MEDICAL ATTENTION IMMEDIATELY. EYE CONTACT - FLUSH WITH WATER FOR AT LEAST 15 MINUTES. IF FILM OR IRRITATION PERSISTS, SEEK MEDICAL ATTENTION. SKIN CONTACT - WASH EXPOSED PORTIONS WITH SOAP AND WATER. INGESTION - DO NOT INDUCE VOMITING; CONTACT A PHYSICIAN.
CAUTION: EMPTY CONTAINERS RETAIN RESIDUE. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE THIS CONTAINER TO HEAT, FLAME, SPARKS OR OTHER SOURCES OF IGNITION. DO NOT ATTEMPT TO CLEAN. EMPTY DRUMS SHOULD BE COMPLETELY DRAINED, PROPERLY BUNGED, AND PROPERLY RETURNED TO A DRUM RECONDITIONER.

KEEP AWAY FROM CHILDREN.

REFER TO THE MATERIAL SAFETY DATA SHEET FOR ADDITIONAL INFORMATION.

DISCLAIMER

THE INFORMATION AND RECOMMENDATIONS CONTAINED IN THIS PUBLICATION HAVE BEEN COMPILED FROM SOURCES BELIEVED TO BE RELIABLE AND TO REPRESENT THE BEST CURRENT OPINION ON THE SUBJECT AT THE TIME OF PUBLICATION. SINCE WE CANNOT ANTICIPATE OR CONTROL THE MANY DIFFERENT CONDITIONS UNDER WHICH THIS INFORMATION OR OUR PRODUCTS MAY BE USED, WE
(cont.)

SECTION IX - SPECIAL PRECAUTIONS (cont.)

OTHER PRECAUTIONS: (cont.)

MAKE NO GUARANTEE THAT THE RECOMMENDATIONS WILL BE ADEQUATE FOR ALL INDIVIDUALS OR SITUATIONS. EACH USER OF THE PRODUCT DESCRIBED HEREIN SHOULD DETERMINE THE SUITABILITY OF THE DESCRIBED PRODUCT FOR HIS PARTICULAR PURPOSE AND SHOULD COMPLY WITH ALL FEDERAL, STATE AND LOCAL RULES AND REGULATIONS CONCERNING THE DESCRIBED PRODUCT.

ABBREVIATIONS:

N/A	NOT APPLICABLE	PEL	PERMISSIBLE EXPOSURE LIMIT
N/K	NOT KNOWN	TWA	TIME WEIGHTED AVERAGE
N/AV	NOT AVAILABLE	TLV	THRESHOLD LIMIT VALUE
COC	CLEVELAND OPEN CUP	STEL	SHORT TERM EXPOSURE LIMIT
PMCC	PENSKI-MARTENS CLOSED CUP		
G	GRAM	DOT	DEPARTMENT OF TRANSPORTATION
MG	MILLIGRAM	OSHA	OCCUPATIONAL SAFETY & HEALTH ADMIN.
M3	CUBIC METER	SARA	SUPERFUND AMEND. & REAUTHORIZ. ACT
LD 50	LETHAL DOSE 50%		
LC 50	LETHAL CONCENTRATION 50%		
EPA	ENVIRONMENTAL PROTECTION AGENCY		
SAE	SOCIETY OF AUTOMOTIVE ENGINEERS		
ISO	INTERNATIONAL STANDARDS ORGANIZATION		

UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC.

Industrial Chemicals Division

MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE 11/06/92

Union Carbide urges each customer or recipient of this MSDS to study it carefully to become aware of and understand the hazards associated with the product. The reader should consider consulting reference works or individuals who are experts in ventilation, toxicology, and fire prevention, as necessary or appropriate to use and understand the data contained in this MSDS.

To promote safe handling, each customer or recipient should: (1) notify its employees, agents, contractors and others whom it knows or believes will use this material or the information in this MSDS and any other information regarding hazards or safety; (2) furnish this same information to each of its customers for the product; and (3) request its customers to notify their employees, customers, and other users of the product of this information.

I. IDENTIFICATION

PRODUCT NAME:	[redacted] NorKool
CHEMICAL NAME:	Aqueous Inhibited Ethylene Glycol Solution
CHEMICAL FAMILY:	Glycols
FORMULA:	Not Applicable
MOLECULAR WEIGHT:	Not Applicable
SYNONYMS:	PM 225
CAS # AND NAME:	Not Applicable (mixture)

II. PHYSICAL DATA (Determined on Typical Material)

BOILING POINT, 760 mm Hg:	107.3 C (225.14 F)
SPECIFIC GRAVITY(H2O = 1):	1.07860 AT 20 °C
FREEZING POINT:	-38 °C (-36 °F)
VAPOR PRESSURE AT 20°C:	13.3 mm Hg
VAPOR DENSITY (AIR = 1):	0.99
EVAPORATION RATE (Butyl Acetate = 1):	0.79
SOLUBILITY IN WATER by wt:	100%

Copyright 1992, Union Carbide Chemicals & Plastics Technology Corp.
NORKOOL is a Trademark of Union Carbide Chemicals and Plastics Tech. Corp.
EMERGENCY PHONE NUMBERS: 1-800-UCC-HELP (NUMBER AVAILABLE AT ALL TIMES) OR (304) 744-3487

UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC
Industrial Chemicals Division
39 Old Ridgebury Road, Danbury, CT 06817-0001

Distributed by:

Dyce Chemical Inc.
Dickinson, North Dakota

PRODUCT NAME: NORKOOL Dilute SLH 2250

APPEARANCE: Translucent green

ODOR: Mild

PHYSICAL STATE: Liquid

PERCENT VOLATILES (by weight): 98.0

III. INGREDIENTS

%	MATERIAL	CAS#	EXPOSURE LIMIT
45-55	Ethylene Glycol	107-21-1	50 PPM ceiling OSHA & ACGIH
45-55	Water and Processing Additives		Not Applicable

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT(test method(s)): None
Pensky-Martens Closed Cup ASTM D 93

FLAMMABLE LIMITS IN AIR % by volume: LOWER: Not determined
UPPER: Not determined

SPECIAL FIRE FIGHTING PROCEDURES: Use self-contained breathing apparatus and protective clothing.

EXTINGUISHING MEDIA: Non-flammable (aqueous solution): After water evaporates, remaining material will burn. Use alcohol-type or all-purpose-type foam, applied by manufacturer's recommended techniques for large fires. Use carbon dioxide or dry chemical media for small fires.

UNUSUAL FIRE AND EXPLOSION HAZARDS: During a fire, ammonia and nitrogen-containing compounds may be produced.

V. HEALTH HAZARD DATA

EXPOSURE LIMIT(S): See Section III.

EFFECTS OF SINGLE OVEREXPOSURE:

SWALLOWING: May cause abdominal discomfort or pain, nausea, vomiting, dizziness, drowsiness, malaise, blurring of vision, irritability, lumbar pain, oliguria, uremia, and central nervous system effects, including irregular eye movements, convulsions and coma. Cardiac failure and pulmonary edema may develop. Severe kidney damage follows the swallowing of large volumes of ethylene glycol. May be fatal. A few reports have been published describing the development of weakness of the facial muscles, diminished hearing, and

difficulty with swallowing, during the late stages of severe poisoning.

SKIN ABSORPTION: No evidence of harmful effects from available information.

INHALATION: May cause irritation of the nose and throat with headache, particularly from mist. High vapor concentrations caused, for example, by heating the material in an enclosed and poorly ventilated workplace, may produce nausea, vomiting, headache, dizziness, and irregular eye movements.

SKIN CONTACT: No evidence of harmful effects from available information.

EYE CONTACT: Injury to the cornea is not expected.
Liquid, vapor, or mist causes irritation, experienced as stinging, excess blinking and tear production, with excess redness of the conjunctiva.

EFFECTS OF REPEATED OVEREXPOSURE:
Repeated inhalation of ethylene glycol mist may produce signs of central nervous system involvement, particularly dizziness and nystagmus.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:
May aggravate an existing kidney disease.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:
Ethylene glycol has been shown to produce dose-related teratogenic effects in rats and mice when given by gavage or in drinking water at high concentrations or doses. The no-effect doses for developmental toxicity for ethylene glycol given by gavage over the period of organogenesis has been shown to be 150 mg/kg/day for the mouse and 500 mg/kg/day for the rat. Also, in a preliminary study to assess the effects of exposure of pregnant rats and mice to aerosols at concentrations of 150, 1000 and 2500 mg/m3 for 6 hours a day throughout the period of organogenesis, teratogenic effects were produced at the highest concentration, but only in mice. The conditions of these latter experiments did not allow a conclusion as to whether the developmental toxicity was mediated by inhalation of aerosol, percutaneous absorption of ethylene glycol from contaminated skin, or swallowing of ethylene glycol as a result of grooming the wetted coat. In a further study, comparing effects from high aerosol concentration by whole-body or nose-only exposure, it was shown that nose-only exposure resulted in maternal toxicity (1000 and 2500 mg/m3) and developmental toxicity with minimal evidence of teratogenicity (2500 mg/m3). The no-effects concentration (based on maternal toxicity) was 500 mg/m3. In a further study in mice, no teratogenic effects could be produced when ethylene glycol was applied to skin of pregnant mice over the period of organogenesis. The above observations suggest that ethylene glycol is to be regarded as an animal teratogen. There is currently no available information to suggest that ethylene glycol has caused birth defects in humans. Cutaneous application of ethylene glycol is ineffective in producing developmental toxicity. Exposure to high aerosol concentrations is only minimally effective in producing developmental toxicity. The major route for producing developmental toxicity is perorally.

Two chronic feeding studies, using rats and mice, have not produced any evidence that ethylene glycol causes dose-related increases in tumor incidence, or a different pattern of tumors compared with untreated controls. The absence of a carcinogenic potential for ethylene glycol has been supported by numerous in vitro genotoxicity studies showing that it does not produce mutagenic or clastogenic effects.

Contains an inorganic nitrite which may react with amines to form a nitrosamine. Some nitrosamines have been shown to be carcinogenic in laboratory animals.

OTHER EFFECTS OF OVEREXPOSURE:
Repeated skin contact with ethylene glycol may, in a very small proportion of cases, cause sensitization with the development of allergic contact dermatitis. The incidence is significantly less than 1% with the undiluted material.

PRODUCT NAME: NORKOOL Dilute SLH 2250

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING:	If patient is fully conscious, give two glasses of water. Induce vomiting. Obtain medical attention without delay. If medical advice is delayed, and if the person has swallowed a moderate volume of material (a few ounces), then give three to four ounces of hard liquor, such as whiskey. For children, give proportionally less liquor, according to weight.
SKIN:	Remove contaminated clothing. Wash skin with soap and water. If irritation persists or if contact has been prolonged, obtain medical attention.
INHALATION:	Remove to fresh air. Obtain medical attention if symptoms persist.
EYES:	Flush eyes thoroughly with water for several minutes.
NOTES TO PHYSICIAN:	It is estimated that the lethal oral dose of ethylene glycol to adults is of the order of 1.0 ml/kg. Ethylene glycol is metabolized by alcohol dehydrogenase to various metabolites including glycoaldehyde, glycolic acid, and oxalic acid, which cause an elevated anion-gap metabolic acidosis and renal tubular injury. The signs and symptoms in ethylene glycol poisoning are those of metabolic acidosis, CNS depression, and kidney injury. Urinalysis may show albuminuria, hematuria and oxaluria. Clinical chemistry may reveal anion-gap metabolic acidosis and uremia. The currently recommended medical management of ethylene glycol poisoning includes elimination of ethylene glycol and metabolites, correction of metabolic acidosis, and prevention of kidney injury. It is essential to have immediate and follow-up urinalysis and clinical chemistry. There should be particular emphasis on acid-base balance and renal function tests. A continuous infusion of 5% sodium bicarbonate with frequent monitoring of electrolytes and fluid balance is used to achieve correction of metabolic acidosis and forced diuresis. As a competitive substrate for alcohol dehydrogenase, ethanol is antidotal. Given in the early stages of intoxication, it blocks the formation of nephrotoxic metabolites. A therapeutically effective blood concentration of ethanol is in the range 100-150 mg/dl, and should be achieved by a rapid loading dose and maintained by intravenous infusion. For severe and/or deteriorating cases, hemodialysis may be required. Dialysis should be considered for patients who are symptomatic, have severe metabolic acidosis, a blood ethylene glycol concentrations greater than 25 mg/dl, or compromise of renal functions. 4-Methylpyrazole, a potent inhibitor of alcohol dehydrogenases, has been effectively used to decrease the metabolic consequences of ethylene glycol poisoning before metabolic acidosis, coma, seizures, and renal failure have occurred. Additional therapeutic measures may include the administration of cofactors involved in the metabolism of ethylene glycol. Thiamine (100 mg) and pyridoxine (50 mg) should be given every six hours. Pulmonary edema with hypoxemia has been described in a number of patients following poisoning with ethylene glycol. The mechanism of production has not been elucidated, but it appears to be non-cardiogenic in origin in several cases. Respiratory support with mechanical ventilation and positive end-expiratory pressure may be required. There may be cranial nerve involvement in the late stages of toxicity from swallowed ethylene glycol. In particular, effects have been reported involving the seventh, eighth and ninth cranial nerves, presenting with bilateral facial paralysis, diminished hearing, and dysphagia.

VI. REACTIVITY DATA

STABILITY: Stable

PRODUCT NAME: NORKOOL Dilute SLH 225D

CONDITIONS TO AVOID: None known.

INCOMPATIBILITY (materials to avoid):
Explosive decomposition may occur if combined with strong acids or strong bases and subjected to elevated temperatures. Therefore, avoid strong acids and strong bases at elevated temperatures. Avoid contamination with strong oxidizing agents and materials reactive with hydroxyl compounds.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:
Burning can produce carbon monoxide and/or carbon dioxide; ammonia and nitrogen-containing compounds.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID: None known.

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:
Wear suitable protective equipment. Large spills should be contained and collected. Small spills can be collected or may be absorbed with appropriate liquid absorbing materials. All spill response and disposal should be carried out in accordance with Federal, State, and local requirements.

WASTE DISPOSAL METHOD:
Incinerate concentrated liquids, where permitted, under appropriate Federal, State, and local regulations. Where permitted under appropriate regulations, low concentrations of this material in water may be discharged to a biological wastewater treatment plant.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type):
If personnel exposure exceeds exposure limits 50 ppm (aerosol and vapor combined) at any time, select respiratory protection equipment in accordance with 29CFR1910.134. NIOSH-approved atmosphere-supplying respirator or a NIOSH-approved air-purifying respirator with organic vapor cartridge and dust/mist pre-filter is recommended.

VENTILATION: General (mechanical) room ventilation may be adequate, if handled at ambient temperatures or in covered equipment. If ambient temperatures are exceeded or operations exist which may produce misting, local exhaust ventilation or other engineering controls may be required.

PROTECTIVE GLOVES:
Natural Rubber
Neoprene
Nitrile (NBR)
PVC-coated
Butyl

EYE PROTECTION: Monogoggles or Faceshield

OTHER PROTECTIVE EQUIPMENT:
Eye Bath, Safety Shower

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

DANGER!
Harmful or fatal if swallowed.
Causes eye and skin irritation.
Prolonged or repeated breathing of mist or vapor harmful.
May cause kidney and nervous system damage.
Contains ethylene glycol which causes birth defects in laboratory animals.
Do not swallow.
Avoid contact with eyes, skin and clothing.
Avoid prolonged or repeated breathing of mist or vapor.
Keep container closed.
Use with adequate ventilation.
Wash thoroughly after handling.
Do not mix with amines.
A nitrosamine, which may cause cancer, may be formed.
FOR INDUSTRY USE ONLY

OTHER PRECAUTIONS: None known.

X. REGULATORY INFORMATION

STATUS ON SUBSTANCE LISTS:

The concentrations shown are maximum or ceiling levels (weight %) to be used for calculations for regulations. Trade Secrets are indicated by "TS".

FEDERAL EPA

Comprehensive Environmental Response Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal to or greater than the reportable quantities (RQs) in 40 CFR 302.4.

Components present in this product at a level which could require reporting under the statute are:

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
Ethylene Glycol	107-21-1	55.0
Potassium Hydroxide	1310-58-3	0.2
Sodium Nitrite	7632-00-0	0.2

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40 CFR 355 (used for SARA 302, 304, 311 and 312).

Components present in this product at a level which could require reporting under the statute are:

"NONE"

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This information must be included in all MSDSs that are copied and distributed for this material.

Components present in this product at a level which could require reporting under the statute are:

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
Ethylene Glycol	107-21-1	55.0

PRODUCT NAME: NORKOOL Dilute SLH 225D

Toxic Substances Control Act (TSCA) STATUS:
The ingredients of this product are on the TSCA inventory.

STATE RIGHT-TO-KNOW

CALIFORNIA Proposition 65

This product contains less than 1 PPM 1,4-Dioxane which the State of California has found to cause cancer, birth defects or other reproductive harm.

MASSACHUSETTS Right-To-Know, Substance List (MSL) Hazardous Substances and Extraordinarily Hazardous Substances on the MSL must be identified when present in products.
Components present in this product at a level which could require reporting under the statute are:

HAZARDOUS SUBSTANCES (=> 1%)

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
Ethylene Glycol	107-21-1	55.0

PENNSYLVANIA Right-to-Know, Hazardous Substance List Hazardous Substances and Special Hazardous Substances on the List must be identified when present in products.
Components present in this product at a level which could require reporting under the statue are:

HAZARDOUS SUBSTANCES (=> 1%)

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
Ethylene Glycol	107-21-1	55.0

CALIFORNIA SCAQMD RULE 443.1 VOC'S:
VOC 537.04 g/L; Vapor Pressure 13.3 mmHg at 20°C.

NOTE ----
The opinions expressed herein are those of qualified experts within Union Carbide. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of the use of the product are not under the control of Union Carbide, it is the user's obligation to determine conditions of safe use of the product.

REVISED SECTIONS:

Revisions occurred in the following Sections:
Section V - Significant Laboratory Data and Other Effects of Overexposure
Section VI - Spill or Leak Procedures
Section VII - Special Protection
Section IX - Special Precautions
Section X - Regulatory Information

PRODUCT: 50225
F NUMBER: N0499C

UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC.

Industrial Chemicals Division

MATERIAL SAFETY DATA SHEET

EFFECTIVE DATE 11/18/92

Union Carbide urges each customer or recipient of this MSDS to study it carefully to become aware of and understand the hazards associated with the product. The reader should consider consulting reference works or individuals who are experts in ventilation, toxicology, and fire prevention, as necessary or appropriate to use and understand the data contained in this MSDS.

To promote safe handling, each customer or recipient should: (1) notify its employees, agents, contractors and others whom it knows or believes will use this material or the information in this MSDS and any other information regarding hazards or safety; (2) furnish this same information to each of its customers for the product; and (3) request its customers to notify their employees, customers, and other users of the product of this information.

I. IDENTIFICATION

PRODUCT NAME:	NORKOOL DG/E-803
CHEMICAL NAME:	Aqueous Solution of Nonionic and Anionic Surfactants.
CHEMICAL FAMILY:	Not Applicable
FORMULA:	Not Applicable
MOLECULAR WEIGHT:	Not Applicable
SYNONYMS:	PM 803
CAS # AND NAME:	Not Applicable (mixture)

II. PHYSICAL DATA(Determined on Typical Material)

BOILING POINT, 760 mm Hg:	100'C (212'F)
SPECIFIC GRAVITY(H2O = 1):	1.04031 AT 20 'C
FREEZING POINT:	-1 'C (30 'F)
VAPOR PRESSURE AT 20'C:	18.459 mmHg

Copyright 1992, Union Carbide Chemicals & Plastics Technology Corp.
NORKOOL is a Trademark of Union Carbide
EMERGENCY PHONE NUMBERS: 1-800-UCC-HELP (NUMBER AVAILABLE AT ALL TIMES) OR (304) 744-3487

UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC
Industrial Chemicals Division
39 Old Ridgebury Road, Danbury, CT 06817-0001

Distributed by:

Dyce Chemical Inc.
Dickinson, North Dakota

PRODUCT NAME: NORKOOL DG/E-803

EVAPORATION RATE (Butyl Acetate = 1): 0.86

VAPOR DENSITY (AIR = 1): 0.73

SOLUBILITY IN WATER by wt: 100%

APPEARANCE: Transparent amber

ODOR: Mild

PHYSICAL STATE: Liquid

PERCENT VOLATILES (by weight): 100

III. INGREDIENTS

%	MATERIAL	CAS#	EXPOSURE LIMIT
60-75	Water	7732-18-5	Not Applicable
25-40	Nonionic and Anionic Surfactant Mixture		None established

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT(test method(s)): None

FLAMMABLE LIMITS IN AIR % by volume: LOWER: Not determined (Aqueous System) UPPER: Not determined (Aqueous System)

SPECIAL FIRE FIGHTING PROCEDURES: Use self-contained breathing apparatus when fighting fires in enclosed areas.

EXTINGUISHING MEDIA: Non-flammable: Use appropriate extinguishing media for surrounding volatile materials.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None

V. HEALTH HAZARD DATA

PRODUCT NAME: NORKOOL DG/E-803

EXPOSURE LIMIT(S): None established

EFFECTS OF SINGLE OVEREXPOSURE:

SWALLOWING:	Moderately toxic. May cause stinging or burning sensation in the mouth and throat, discomfort in the chest and abdomen, nausea, vomiting and diarrhea.
SKIN ABSORPTION:	No information available.
INHALATION:	Short-term harmful health effects are not expected from vapor generated at ambient temperature.
SKIN CONTACT:	Brief contact of a few hours is unlikely to cause any local irritation. Sustained contact of many hours may result in local swelling, and development of fissures.
EYE CONTACT:	Liquid causes severe irritation, experienced as discomfort or pain, excess blinking and tear production, with marked excess redness and swelling of the conjunctiva. Corneal injury may occur. Effects may be delayed.

EFFECTS OF REPEATED OVEREXPOSURE:
No adverse effects anticipated from available information.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:
Skin contact may aggravate an existing dermatitis.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:
None currently known.

OTHER EFFECTS OF OVEREXPOSURE:
None currently known.

EMERGENCY AND FIRST AID PROCEDURES:

SWALLOWING:	If patient is fully conscious, give two glasses of water at once. Do not induce vomiting. Obtain medical attention without delay.
SKIN:	Remove contaminated clothing. Wash skin with soap and water. If irritation persists or if contact has been prolonged, obtain medical attention.
INHALATION:	Remove to fresh air.
EYES:	Immediately flush eyes with water and continue washing for at least 15 minutes.

Obtain medical attention without delay, preferably from an ophthalmologist.

NOTES TO PHYSICIAN: There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.
Moderate eye irritant.
Corneal injury may be delayed in onset. Therefore, those with liquid contamination of the eye should be observed for several days to detect any latent corneal injury.
Any material aspirated during vomiting may cause lung injury. Therefore, emesis should not be induced mechanically or pharmacologically. If it is considered necessary to evacuate the stomach contents, this should be done by means least likely to cause aspiration (e.g., gastric lavage after endotracheal intubation).

VI. REACTIVITY DATA

STABILITY: Stable

CONDITIONS TO AVOID: None known.

INCOMPATIBILITY (materials to avoid):
Avoid concentrated strong acids.

HAZARDOUS COMBUSTION OR DECOMPOSITION PRODUCTS:
Sulfur dioxide, hydrogen sulfide, carbon monoxide, carbon dioxide, and ammonia may be liberated but only after water content has been evaporated.

HAZARDOUS POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID: None known.

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:
Wear suitable protective equipment; avoid contact with eyes and skin.
Collect for disposal. Toxic to fish; avoid runoff to natural waters.
If spilled on a walking surface, material is very slippery; addition of water can increase slipperiness. Apply sorbent material.

WASTE DISPOSAL METHOD:
At very low concentration in water, this material is readily biodegradable in a biological wastewater treatment system. For large amounts, incineration is the preferred method of disposal.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type):
None expected to be needed.

VENTILATION: General (mechanical) room ventilation is expected to be satisfactory.

PROTECTIVE GLOVES: PVC-coated

EYE PROTECTION: Monogoggles or Faceshield

OTHER PROTECTIVE EQUIPMENT:
Eye bath, safety shower, chemical apron

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:
DANGER: Harmful if swallowed.
Causes eye burns.
Aspiration may cause lung damage.
Do not swallow.
Do not get in eyes.
Keep container closed.
Use with adequate ventilation.
Wash thoroughly after handling.
FOR INDUSTRY USE ONLY

OTHER PRECAUTIONS: None known.

X. REGULATORY INFORMATION

STATUS ON SUBSTANCE LISTS:
The concentrations shown are maximum or ceiling levels (weight %) to be used for calculations for regulations.
Trade Secrets are indicated by "TS".

FEDERAL EPA

Comprehensive Environmental Response Compensation, and Liability Act of 1980 (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal to or greater than the reportable quantities (RQs) in 40 CFR 302.4.
Components present in this product at a level which could require reporting under the statute are:

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
Ethylene Oxide	75-21-8	<.0010
Dioxane	123-91-1	<.0150

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III
requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on Reportable Quantities (RQs) in 40 CFR 355 (used for SARA 302, 304, 311 and 312).
Components present in this product at a level which could require reporting under the statute are:
*** NONE ***

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III
requires submission of annual reports of release of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This information must be included in all MSDSs that are copied and distributed for this material.
Components present in this product at a level which could require reporting under the statute are:

PRODUCT NAME: NORKOOL DG/E-803

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
Glycol Ether	Not applic.	<4.5

Toxic Substances Control Act (TSCA) STATUS:
The ingredients of this product are on the TSCA inventory.

STATE RIGHT-TO-KNOW

CALIFORNIA Proposition 65

This product contains Dioxane and Ethylene Oxide which the State of California has found to cause cancer, birth defects or other reproductive harm.

MASSACHUSETTS Right-To-Know, Substance List (MSL) Hazardous Substances and Extraordinarily Hazardous Substances on the MSL must be identified when present in products.
Components present in this product at a level which could require reporting under the statute are:

EXTRAORDINARILY HAZARDOUS SUBSTANCES (=> 0.0001%)

CHEMICAL	CAS NUMBER	UPPER BOUND CONCENTRATION %
Ethylene Oxide	75-21-8	<.0010
Dioxane	123-91-1	<.0150

PENNSYLVANIA Right-to-Know, Hazardous Substance List Hazardous Substances and Special Hazardous Substances on the List must be identified when present in products.
Components present in this product at a level which could require reporting under the statue are:
*** NONE ***

CALIFORNIA SCAQMD RULE 443.1 VOC'S:
VOC 364.19 G/L; Vapor Pressure 15.459 mmHg at 20C.

NOTE —
The opinions expressed herein are those of qualified experts within Union Carbide. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of the use of the product are not under the control of Union Carbide, it is the user's obligation to determine conditions of safe use of the product.
REVISED SECTIONS:

The format of this MSDS has been altered slightly. In addition, the text of several statements have been changed to enhance consistency among products with similar characteristics. Please review the entire MSDS to insure safe handling and use of this material.

PRODUCT: 50803
F NUMBER: N0526C

Belaire Environmental, Inc.
Planning • Permitting • Habitat Creation

January 14, 1998

Mr. Jim Gilmore
U.S. Army Corps of Engineers
P.O. Box 2948
Corpus Christi, TX 78403-2948

Dear Jim:

Re: Duke Energy (formerly PanEnergy) Pipeline Project,
Padre Island National Seashore

Since our August, 1997, field visit to the referenced project, Duke Energy personnel and Paul Eubank of PINS returned to the site to locate points of exposed pipe. Urban Engineering utilized the GPS data they provided to estimate survey station locations for exposed pipe. I used Urban's information to estimate impacts to wetlands that would result from lowering exposed portions of the pipelines. Lowering the line is required for safety purposes.

I have enclosed two tables which summarize the estimated wetland impacts due to the proposed pipeline lowering work. The sizes of trenches and temporary soil placement areas will be as small as practical in order to minimize wetland impacts. All impact areas will be restored to PINS standards.

Based on our prior discussions, it appears that most of the work may be authorized by Nationwide Permit (NWP) No. 3. Once you have reviewed the enclosed material, please inform me in writing whether the proposed work is authorized by NWP No. 3.

Thank you for your helpful assistance.

Sincerely,

Charles E. Belaire /sps

Charles E. Belaire

Encl.

P.O. Box 741
Rockport, TX 78381

512-729-2948

Fax 512-729-2970

cc: Tom Stotler
Bob Pearson
Margaret Ash
Duke Energy Field Services, Inc.
P.O. Box 5493
Denver, CO 80217

Mike Lloyd
Neal Coffee
Duke Energy Field Services, Inc.
Rt. 1, Box 97
Falfurrias, TX 78355

Paul Eubank
Padre Island National Seashore
9405 S. Padre Island Drive
Corpus Christi, TX 78418-5597

United States Department of the Interior

NATIONAL PARK SERVICE
Padre Island National Seashore
9405 South Padre Island Drive
Corpus Christi, Texas 78418

IN REPLY REFER TO:
L3025

June 18, 1997

Mr. Thomas R. Stotler, P.G.
Environmental Specialist
PanEnergy Field Services, Inc.
P.O. Box 5493
Denver, Colorado 80202

Dear Mr. Stotler:

I have completed my review of the Draft Plan of Operations for the Existing Gas Pipeline at Padre Island National Seashore. I must commend you for the preparation of this Plan of Operations. The professional and comprehensive work that went into the document is quite evident.

My comments are minor in nature and are as follows:

1. Page 8, section C. a. Access road dimensions: The road, approximately **26** feet wide and approximately **7** miles long ...

   Same page, subsection b, last sentence : ..the excavated area would be mulched and allowed to revegetate.

2. Page 12, Timetable for Operations : The 2 inch Sprint Lateral is briefly mentioned, however, a time frame for the work is not mentioned. On page 24 under Reclamation Plan there is mention of restoration of sea grass beds. I do not believe this 2 inch lateral is anywhere near the Laguna Madre where sea grass meadows are observed. I believe this line terminates somewhere west of the dune line between the access road to 6-pigs and the 4-wheel drive sign. This portion of the plan could use more discussion to the abandonment in place of the line after cleaning, flushing, possibly pigging the line, and filling with an inert gas such as nitrogen.. All waters, chemicals, etc. would have to be collected in a enclosed tank and disposed of at a proper facility.

3. Page 39, Environmental Consequences, last sentence : ... vegetated areas are **mapped** vs. napped.

4. Page 43, first sentence after : The stated PINS management objectives are to: ...National Seashore in a manner that is ...

5. Page 45, Literature Cited : Boswell, C., should be **Boswell, K.**

6. Appendix E (SPCC)Plan & (PPC) Plan : Padre Island National Seashore is not listed for notification of a spill event. However, the Sheriff, medical services, and the fire department is listed. Padre Island National Seashore is the primary jurisdiction within the three counties in the park for law enforcement, emergency response, fire response and overhead of the federal park mission. Through cooperative agreements, the Corpus Christi Fire Department does respond for emergency medical transport of the injured and structural fire protection. The Superintendent at 512-949-8173, extension 222 should be listed and Paul Eubank at 512-949-8173 extension 224, Mon - Friday 8:00 Am - 4:30 PM. After normal working hours, weekends, and holidays Paul Eubank at 512-937-0705. Prior to any response effort the park should be notified.

After these corrections are made, I will need 15 copies for distribution to the interested public, federal agencies, and internal park service technical review. We will reserve the right to request an additional 10 copies if the 15 are not sufficient during the public review.

Upon receipt of the 15 copies, I will accept the Plan of Operations as complete in the context of meeting the information requirements for a Plan of Operations. At this point a 60-day clock will began in which Padre Island National Seashore will conduct a 30-day public review period by publishing notice in the Federal Register that a Plan of Operation has been received for approval by the National Park Service. We will solicit comments from interested parties about the Plan of Operation. At the end of the 60 days the Regional Director will make a decision as to whether or not to approve or disapprove the Plan of Operations. If the Plan of operations is disapproved then Pan Energy will have the option of appealing that decision. The Regional Director has the option for approving the Plan of Operations as submitted or adding stipulations for approval as a result of the public review and comments received.

If you have any questions, please contact me at 512-949-8173, extension 224.

Sincerely,

Paul H. Eubank

Paul H. Eubank
Environmental Protection Specialist

Belaire Environmental, Inc.
Planning • Permitting • Habitat Creation
May 16, 1997

Mr. Lloyd Mullins
Texas General Land Office
TAMU-CC, Natural Resources Center
6300 Ocean Drive
Corpus Christi, TX 78412

Dear Lloyd:

Re: PanEnergy Field Services, Pipelines at Padre Island National Seashore

PanEnergy recently acquired pipelines at the Padre Island National Seashore (PINS). Due to safety concerns and federal regulations, some portions of the lines must be lowered or buried to achieve required ground cover.

It is my understanding that so long as the proposed work meets PINS and U.S. Army Corps of Engineers requirements, no suthorization is needed under provisions of the Texas Coastal Management Plan.

Please let me know if the GLO needs any further information regarding this proposed work.

Sincerely,

Charles E. Belaire /sps

Charles E. Belaire

cc: Tom Stotler
Margaret Ash
Bob Pearson
PanEnergy Field Services, Inc.
P.O. Box 5493
Denver, CO 80217

Mike Lloyd
Neal Coffee
PanEnergy Field Services, Inc.
Rt. 1, Box 97
Falfurrias, TX 78355

Paul Eubank
Padre Island National Seashore
9405 South Padre Island Drive
Corpus Christi, TX 78418-5597

P.O. Box 741
Rockport, TX 78381
512-729-2948 Fax 512-729-2970

Belaire Environmental, Inc.
Planning • Permitting • Habitat Creation
March 14, 1997

Mr. Jim Gilmore
U.S. Army Corps of Engineers
5151 Flynn Parkway, Suite 624
Corpus Christi, TX 78411

Dear Jim:

Re: PanEnergy 10" Pipeline Project, Padre Island National Seashore

As you and I discussed by telephone on February 28, 1997, PanEnergy acquired an existing pipeline at the Padre Island National Seashore (PINS). Substantial portions of the 23 mile-long pipeline must be lowered or buried in order to comply with federal safety standards. Much of the required work will take place in wetlands.

Based on our discussions, it appears that most, or perhaps all, of the work may be authorized by Nationwide Permit (NWP) No. 3 and other NWPs. Once we have definite plans for the proposed work, I will prepare a formal request for NWP applicability, jurisdictional determinations, and other pertinent authorizations or verifications.

Thank you for your helpful assistance.

Sincerely,

Charles E. Belaire

cc: Tom Stotler ✓
Bob Pearson
Margaret Ash
PanEnergy Field Services, Inc.
P.O. Box 5493
Denver, CO 80217

Mike Lloyd
Neal Coffee
PanEnergy Field Services, Inc.
Rt. 1, Box 97
Falfurrias, TX 78355

Paul Eubank
Padre Island National Seashore
9405 S. Padre Island Drive
Corpus Christi, TX 78418-5597

P.O. Box 741
Rockport, TX 78381
512-729-2948 Fax 512-729-2970

United States Department of the Interior

NATIONAL PARK SERVICE
Padre Island National Seashore
9405 South Padre Island Drive
Corpus Christi, Texas 78418

RECEIVED
FEB 2 9 1997

IN REPLY REFER TO:

L3025

February 14, 1997

Mr. Thomas R. Stotler, P.G.
Environmental Specialist
PanEnergy Field Services, Inc.
P.O. Box 5493
Denver, Colorado 80217

Dear Mr. Stotler:

In accordance with 36 CFR 9.38(a)(2), I am granting PanEnergy a 60-day extension to the 120-day Temporary Permit to continue Operations. PanEnergy has worked diligently in attaining the needed information to prepare a Plan of Operations, in spite of less than ideal environmental conditions. The 60-day extension will expire May 22, 1997. PanEnergy should be able to prepare a substantially complete Plan of Operations by that date.

If we can be of further assistance, please contact Mr. Paul Eubank at (512) 949-8173, extension 224.

Sincerely,

Patrick C. McCrary
Superintendent

Belaire Environmental, Inc.

Planning • Permitting • Habitat Creation

February 5, 1997

Mr. Tom Stotler
PanEnergy Field Services
P.O. Box 5493
Denver, CO 80217

Dear Tom:

Re: List of Information Needs, Plan of Operations,
Padre Island National Seashore, TX

Per our telephone conversation of today, I have prepared and enclosed a list of information needs for the referenced project. In addition to the enclosed list, we will, of course, need a completed survey plat and aerial photographs.

If you have any questions, please give me a call.

Sincerely,

Charles E. Belaire/sjr

Charles E. Belaire

Encl.

cc: Mike Lloyd
Neal Coffee
PanEnergy Field Services, Inc.
Rt. 1, Box 97
Falfurrias, TX 78355

Bob Pearson
Margaret Ash
PanEnergy Field Services, Inc.
P.O. Box 5493
Denver, CO 80217

Dan Urban
Urban Engineering
2725 Swatner
Corpus Christi, TX 78404

P.O. Box 741
Rockport, TX 78381

512-729-2948 Fax 512-729-2970

INFORMATION NEEDS
PANENERGY PLAN OF OPERATIONS
PADRE ISLAND NATIONAL SEASHORE, TX
February 5, 1997

1. If the line needs to be (a) lowered or (b) repaired, what would be the dimensions of the worst-case soil disturbance: excavation (length, surface width, bottom width, depth); fill (length, bottom width, top width, height). We will need these dimensions for the following three scenarios: Padre Island upland, Padre Island wetland, and Laguna Madre.

2. If the line needs to be (a) lowered or (b) repaired, where will excavated soil be temporarily stockpiled prior to backfilling for the three scenarios listed in no. 1, above (i.e., Padre Island upland, Padre Island wetland, and/or Laguna Madre).

3. If the line needs to be (a) lowered or (b) repaired, please list the equipment and personnel that would be used (1) on Padre Island uplands; (2) on Padre Island wetlands; and (3) in the Laguna Madre. Also, please provide a schedule and cost estimate for each scenario.

4. If the line needs to be (a) lowered or (b) repaired, what would be the equipment access routes for the Padre Island and Laguna Madre portions of the line?

5. If new construction is going to occur (e.g., a new line from the Gulf of Mexico to the Padre Island section of the pipeline), the evaluation of alternative routes should include consideration of wetland avoidance, as well as minimization of other environmental impacts. A Corps of Engineers' permit will be required for any new pipeline. Information outlined in nos. 1-4, above, will be needed for the installation and repiar of the pipeline. A Gulf of Mexico repair scenario would also be needed.

6. All of the above information will be needed for preparation of the "Reclamation" and "Environmental Consequences" sections of the Plan of Operations. The information outlined in sections I, II, IV, V, VI, VIII, and XIII of the "Plan of Operations Information Requirements" (forwarded to PanEnergy by copy of a December 13, 1996, letter from BEI to Paul Eubank of the PINS) will also be needed to prepare the remaining sections of the plan.

7. To accomodate the project schedule, it would be desirable to have the above information available in early March, 1997.

PanEnergy™

PanEnergy Field Services, Inc.
P.O. Box 5493
Denver, Colorado 80217
370 17th Street, Suite 900
Denver, Colorado 80202
303 595-3331
Fax: 303 595-0480

January 22, 1997

Mr. Patrick C. McCrary
Superintendent
National Park Service
Padre Island National Seashore
9405 South Padre Island Drive
Corpus Christi, Texas 78418

RE: REQUEST FOR EXTENSION TO SUBMIT A PLAN OF OPERATIONS FORMER FLORIDA GAS TRANSMISSION NATURAL GAS PIPELINE PARDE ISLAND NATIONAL SEASHORE

Dear Mr. McCrary:

PanEnergy Field Services, Inc., (PanEnergy) in accordance with the National Parks System (NPS) regulations at Title 36 of the Code of Federal Regulations (CFR), Part 9, Subpart B (36 CFR 9B) is respectfully submitting this request for extension for the above referenced natural gas pipeline located within the Padre Island National Seashore boundaries. PanEnergy request an additional 120 days to submit a draft Plan of Operations.

Work has progressed and the majority of the data has been collected, but due to the unseasonable weather conditions, additional time will be required to complete the necessary field work. Communications will continue to up-date the Park Service as to the progress of the Plan.

If you have any questions or need additional information, please telephone Mr. Bob Pearson at (303) 605-1726 or Mr. Tom Stotler at (303) 605-1725.

Sincerely,
PanEnergy Field Services, Inc.

Thomas R. Stotler, P. G.
Environmental Specialist

cc: Mr. Paul Eubank
Padre Island National Seashore
9405 S. Padre Island Drive
Corpus Christi, TX 78418-5597

Mr. Michael L. Lloyd
PanEnergy Field Services, Inc.
Rt. 1, Box 97
Falfurrias, TX 78355

Mr. Jim Rintamaki
PanEnergy Field Services, Inc.
P. O. Box 5493
Denver, Colorado 80217

Mr. Charles E. Belaire
Belaire Environmental Consulting, Inc.
P. O. Box 741
Rockport, TX 78381

Mr. Bob Pearson
PanEnergy Field Services, Inc.
P. O. Box 5493
Denver, Colorado 80217

Belaire Environmental, Inc.
Planning • Permitting • Habitat Creation

December 13, 1996

Mr. Paul Eubank
Padre Island National Seashore
9405 South Padre Island Drive
Corpus Christi, TX 78418-5597

Dear Paul:

Re: PanEnergy Plan of Operations, Scope of Work

Thank you for taking time this morning to discuss the referenced project with me. Based on our conversation, we will take the following approach in collecting data and in preparing the Plan of Operations document:

* PanEnergy will use the Texas Eastern Transmission Corporation Plan of Operations (September 25, 1995) as general guidance for collection of field data and preparation of the Plan of Operations document. A "Table of Contents" and "Information Requirements" from Texas Eastern's Plan are enclosed.

* The surveying of the line will include any tie-in points, valves, and other surface structures.

* Access routes to the pipeline will be identified.

* A "worst-case" spill scenario will be evaluated.

* The vegetation mapping and vegetation coverage evaluation will include a corridor 200 ft to either side of the pipeline. Vegetation transects may be spaced at 1000-ft intervals except where vegetation community changes occur between transects.

* The archaeological survey will include an area 100 ft either side of the pipeline.

If I have omitted or misunderstood any important items, please let me know.

As you are aware, Urban Engineering is currently surveying the pipeline. Belaire Environmental, Inc. (BEI) will start the vegetation mapping on Monday, December 16, 1996. SWCA, Inc. will start the archaeological field work the week of January 6, 1997.

Thank you very much for your helpful assistance.

Sincerely,

Charles E. Belaire

Encl.

P.O. Box 741
Rockport, TX 78381

512-729-2948 Fax 512-729-2970

cc: Mike Lloyd
Neal Coffee
PanEnergy Field Services, Inc.
Rt. 1, Box 97
Falfurrias, TX 78355

Tom Stotler
Bob Pearson
Margaret Ash
PanEnergy Field Services, Inc.
P.O. Box 5493
Denver, CO 80217

Dan Urban
Urban Engineering
2725 Swatner
Corpus Christi, TX 78404

Jim Jones
SWCA, Inc.
1712 Rio Grande, Suite C
Austin, TX 78701

United States Department of the Interior

NATIONAL PARK SERVICE
Padre Island National Seashore
9405 South Padre Island Drive
Corpus Christi, Texas 78418

IN REPLY REFER TO:

L3025

November 27, 1996

Mr. Tom Stotler
PanEnergy Field Services, Inc.
P.O. Box 5493
Denver, Colorado 80202

Dear Tom:

The Field Director, Intermountain Field Area, has granted PanEnergy Field Services, Inc.(PanEnergy) a 120-day permit to continue operations of the former Florida Gas Transmission Pipeline. This permit will expire March 22, 1997. The permit is contingent upon the following conditions:

1. Operations must be properly signed;

2. The release of any fluids, i.e., oil or brine is not permitted;

3. No additional surface disturbance is permitted; and

4. Within 60 days from November 23, 1996, the operator is required to submit a substantially complete Plan of Operations to the Superintendent.

If you have any questions please telephone Mr. Paul Eubank at 512-949-8173, extension 224.

Sincerely,

Patrick C, McCrary
Superintendent

PanEnergy™

PanEnergy Field Services, Inc.
P.O. Box 5493
Denver, Colorado 80217
370 17th Street, Suite 900
Denver, Colorado 80202
303 595-3331
Fax: 303 595-0480

November 7, 1996

Mr. Patrick C. McCrary
Superintendent
National Park Service
Padre Island National Seashore
9405 South Padre Island Drive
Corpus Christi, Texas 78418

**RE: NOTIFICATION OF TRANSFER OF INTERESTS,
REQUEST FOR TEMPOARY OPERATING PERMIT,
AND EXTENSION TO SUBMIT A PLAN OF OPERATIONS
FORMER FLORIDA GAS TRANSMISSION NATURAL GAS PIPELINE
PARDE ISLAND NATIONAL SEASHORE**

Dear Mr. McCrary:

PanEnergy Field Services, Inc., (PanEnergy) in accordance with the National Parks System (NPS) regulations at Title 36 of the Code of Federal Regulations (CFR), Part 9, Subpart B (36 CFR 9B) is respectfully submitting this notice of Transfer of Interests for the above referenced natural gas pipeline located within the Padre Island National Seashore boundaries (Figure 1). PanEnergy also requests the Field Director, Intermountain Field Area, grant temporary approval for this operation, provided that within sixty (60) days of the granting of temporary approval PanEnergy submits an initial substantially complete plan of operations pursuant to NPS regulations found at 36 CFR Part 9, Subpart B. PanEnergy understands that the Field Director can approve a temporary operating permit for 120 days.

PanEnergy assumed operations of the natural gas pipeline, which consist of the Penescal Lateral (a 6-inch pipeline) and the Sprint/Murdock Pass Lateral (a 10-inch pipeline) from Florida Gas Transmission Company (FGTC) on November 1, 1996. Currently PanEnergy is in the process of gathering the data necessary to submit a *Plan of Operations* in accordance with the NPS regulations 36 CFR 9B. Belaire Consulting, Inc. of Rockport, Texas will help PanEnergy prepare the necessary paper work required by the NPS.

Attached is an *Emergency Notification List*, Table 1, which may be used to contact company personnel. The 800 number is a Gas Control Office that is staffed 24 hours a day and personnel are available to facilitate in any additional contact of company personnel.

If you have any questions or need additional information, please telephone Mr. Bob Pearson at (303) 605-1726 or Mr. Tom Stotler at (303) 605-1713.

Sincerely,
PanEnergy Field Services, Inc.

Keith Knipp
Senior Vice President - Operations

Attachment Figure 1 - Pipeline Location map
Table 1 - Emergency Notification List

cc: Mr. Paul Eubank
Padre Island National Seashore
9405 S. Padre Island Drive
Corpus Christi, TX 78418-5597

Mr. Michael L. Lloyd
PanEnergy Field Services, Inc.
Rt. 1, Box 97
Falfurrias, TX 78355

Mr. Jim Rintamaki
PanEnergy Field Services, Inc.
P. O. Box 5493
Denver, Colorado 80217

Mr. Charles E. Belaire
Belaire Consulting, Inc.
P. O. Box 741
Rockport, TX 78381

Mr. Bob Pearson
PanEnergy Field Services, Inc.
P. O. Box 5493
Denver, Colorado 80217

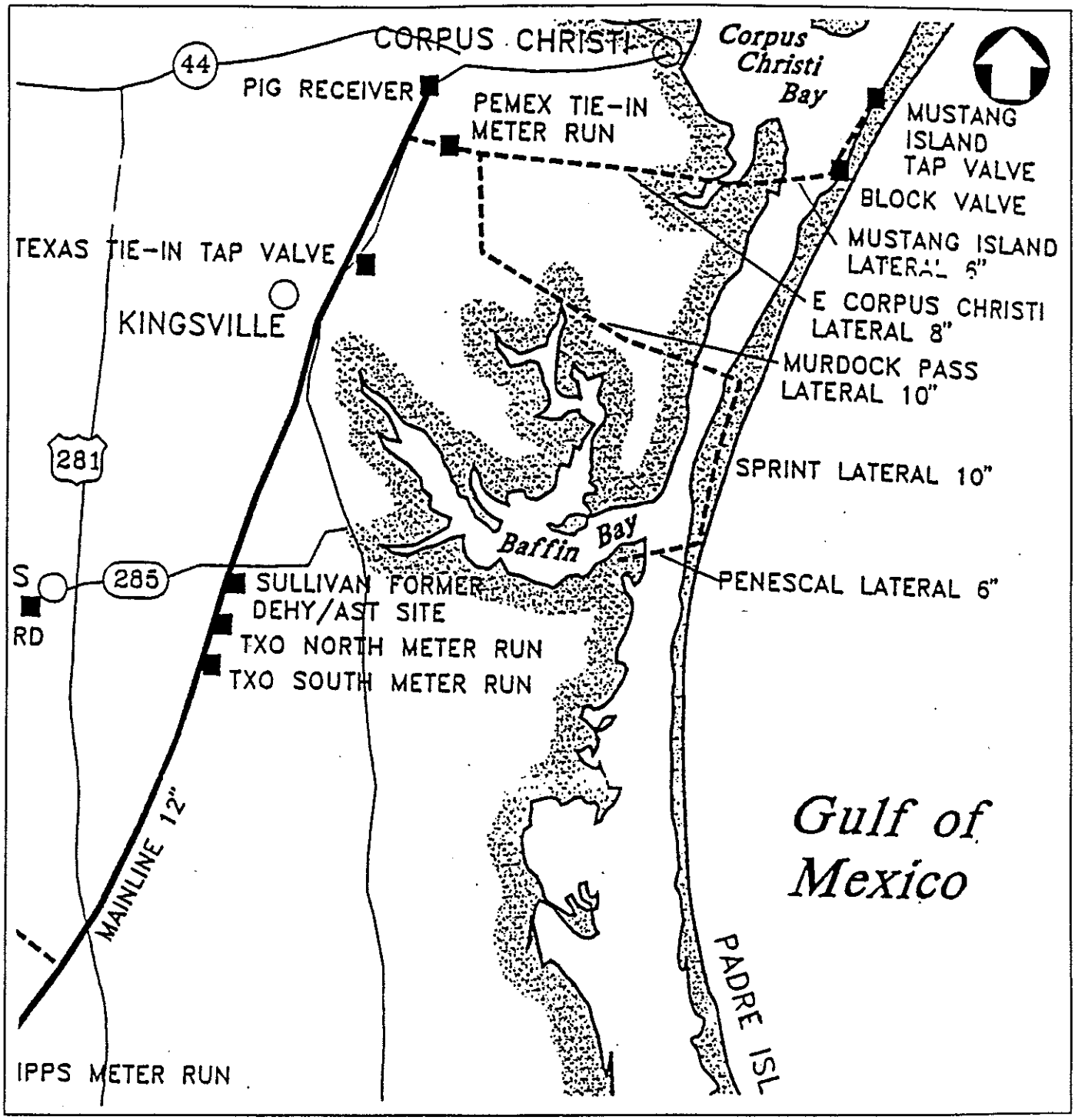


FIGURE 1

GENERAL LOCATION OF PIPELINES
PADRE ISLAND, TEXAS
PANENERGY FIELD SERVICES, INC.

TABLE 1

EMERGENCY NOTIFICATION LIST
PADRE ISLAND PIPELINE
PANENERGY FIELD SERVICES, INC.
ROUTE 1 BOX 97
FALFURRIAS, TEXAS 78355

LOCATION	NAME	TELEPHONE NUMBER
		(800) 435-1679 (24 hour)
LaGloria Station Falfurrias, TX.		(512) 325-2558 (512) 325-9347 (FAX)
	Mike Lloyd Neil Coffee	(512) 325-9331 (512) 325-9330
Denver, Colorado	Main Telephone	(303) 595-3331
	Keith Knipp Bob Pearson Jim Rintamaki Tom Stotler	(303) 605-1786 (303) 605-1726 (303) 605-1698 (303) 605-1713 (303) 629-7822 (FAX)

United States Department of the Interior

NATIONAL PARK SERVICE
Padre Island National Seashore
9405 South Padre Island Drive
Corpus Christi, Texas 78418

IN REPLY REFER TO:

L3025

July 26, 1996

Mr. James Sanford, Contract Agent
Florida Gas Transmission Company
P.O. Box 1188
Houston, TX 77251-1188

Dear Mr. Sanford:

I have received your letter of July 9, 1996 advising the National Park Service (NPS) that Florida Gas Transmission Company (FGT) has agreed to sell to Panenergy Field Services (PEFS) its interest in and to certain easements, permits, licenses and other assets. Your letter specifically requests the NPS's consent to the assignment of certain easements from FGT to PEFS.

Initially, I note that the NPS is not required to consent to an assignment of the subject easements. Condition 14 of Special Use Permit No. 7490-37 states that the NPS Director must consent only to assignment of the permit, not the easements. Further, the NPS's records indicate that SUP No. 7490-37 expired by its own terms on or about November 30, 1983. If this is not correct, please forward to me any documentation demonstrating that this permit term has been extended, renewed, or otherwise indicating that the permit is now valid.

In the event the permit has indeed expired, the Field Director, Intermountain Field Area, may grant FGT temporary approval for this operation, provided that within sixty (60) days of the granting of temporary approval FGT submits an initial substantially complete plan of operations pursuant to NPS regulations found at 36 CFR Part 9, Subpart B. The Field Director, can approve a temporary operating permit for 120 days.

Until such time as the assignment of the rights in and to the easement becomes effective, FGT shall remain responsible for compliance with the plan of operations requirements. At such time as the assignment is completed, we would appreciate notification

so that we may immediately inform your assignee of these requirements.

I am available to meet with Panenergy Field Services to review the requirements of 36 CFR Part 9, Subpart B. Please feel free to contact me at 512-949-8173.

Sincerely,

Paul H. Eubank

Paul H. Eubank
Environmental Protection Specialist

Florida Gas Transmission Company

P. O. Box 1188 Houston, Texas 77251-1188 (713) 853-6161

Panenergy Services, Inc.
323 Angi Road
Minden, LA 71055

Attn.: Pete Schuler

Dear Mr. Schuler,

Please find attached a letter from Paul H. Eubanks, with the Padre Island National Seashore Department. He is very concerned about the assignment and requests a Plan of Operations from your company. Please contact him, by phone 512-949-8173 or mail and let him know that your company is aware of their requirement.

Thank you for your help with this matter. Please call me if you have any questions, at 713-646-7270 or James Sanford, at 713-646-7670.

Sincerely,

Nancy E. Cunningham

Nancy E. Cunningham
Contract Agent

Adopted by
Trans Republic Energy, L.C.
7/21/93

Adopted by Petrotex Eng. Company
12/95



ESPEY,
HUSTON &
ASSOCIATES, INC.
Engineering & Environmental Consultants

Petrotex Engineering Company ★ Petroleum Management Services

777 Jones Road ★ Suite 360 ★ Houston, Texas 77070 ★ (713) 517-0065 ★ fax (713) 517-0660

December 6, 1995

Mr. Paul H. Eubank
Environmental Protection Specialist
United States Department of the Interior
National Park Service
Padre Island National Seashore
9405 South Padre Island Drive
Corpus Christi, TX 78418-5597

Re: Updated Material for Complete Plan of Operations
Chartex Petroleum Company

Dear Mr. Eubank:

Pursuant to the letter of September 11, 1995 by Mr. Charles R. Farabee, Jr., Petrotex Engineering Company as Agent/Operator for its client, Chartex Petroleum Company, wishes to adopt the previously approved Plan of Operations submitted by Samedan Pipeline Company by submitting updated material.

Enclosed is the updated material. Attached is a list and description of the enclosures with a number in parenthesis that corresponds the requirement outlined in the attachment to Mr. Farabee's letter. Although Enclosure 7 satisfies requirement no. 3, it is in the process of being updated to include the facilities in the Park. The updated version will be sent to you at the same time it is submitted to the Texas General Land Office in the next week or two. Requirement no. 4 requests a SPCC Plan, however, there is no above ground storage vessel over 660 gallons capacity on the site, therefore, a SPCC plan is not required. Requirement no. 6, the Performance Bond, has already been met. Enclosure 8 is a requirement of the Texas Railroad Commission.

We hope this satisfies the requirements for continuing operations by Chartex Petroleum Company in the Park. Please contact me if you have any questions or need any more information.

Sincerely yours,

PETROTEX ENGINEERING COMPANY AS
AGENT FOR CHARTEX PETROLEUM COMPANY

Charles M. Green
President

CMG
NPS12595.CTX

Attachment to
December 6, 1995 letter to
Mr. Paul Eubank

Enclosure 1	Names and addresses of owners and operators (1).	
Enclosure 2	Memorandum of Engagement for Petrotex Engineering Company to Act as Agent for Chartex Petroleum Company (1).	
Enclosure 3	Copy of Assignment, Bill of Sale and Conveyance from Trans Republic Energy to Chartex Petroleum Company effective July 1, 1995 (2)	
Enclosure 4	Assignment and Assumption Agreement of ME 890058 from the State of Texas to Petrotex Engineering Company (2).	
Enclosure 5	Railroad Commission of Texas letter of October 6, 1995 transferring T-4 Permit 04022 to Petrotex Engineering Company (2).	
Enclosure 6	Affidavit of Compliance for Petrotex Engineering Company (5).	
Enclosure 7	Copy of Petrotex Engineering Company's current Discharge Prevention & Response Plan (3).	
Enclosure 8	Copy of Petrotex Engineering Company's Inspection, Operating and Maintenance Manual for the Block 818 Pipeline.	(Sent in separate Federal Express Box)

ENCLOSURE 1

PETROTEX ENGINEERING COMPANY

2.0 DESCRIPTION OF THE PROJECT

2.1 SURFACE OWNER OR JURISDICTIONAL AUTHORITY

U.S. Department of the Interior
National Park Service
Padre Island National Seashore
9405 South Padre Island Drive
Corpus Christi, Texas 78418
(512) 949-8173

2.2 PIPELINE OWNER AND OPERATOR

OWNER

Chartex Petroleum Company
12777 Jones Road, Suite 360
Houston, Texas 77070
(713) 517-0065
Susan K. Green, President

OPERATOR

Petrotex Engineering Company
12777 Jones Road, Suite 360
Houston, Texas 77070
(713) 517-0065
Charles M. Green, President

ENCLOSURE 2

CHARTEX PETROLEUM COMPANY
12777 JONES ROAD, SUITE 360
HOUSTON, TEXAS 77070

December 5, 1995

MEMORANDUM OF ENGAGEMENT TO ACT AS AGENT

TO WHOM IT MAY CONCERN:

This letter will serve as notice to all interested parties that effective December 28, 1987, Petrotex Engineering Company, 12777 Jones Road, Suite 360, Houston, Texas 77070, was engaged to act as Agent/Operator for Chartex Petroleum Company, a Texas Corporation engaged in exploration for and production of oil and gas only in the States of Texas and Louisiana and offshore such states in the Gulf of Mexico. On behalf of the Corporation, such Agent is authorized to incur expenses related to the Corporation's usual course of business and remit payment therefor. Chartex Petroleum Company bears ultimate financial responsibility for such expenses.

If the recipient of this notice requires any further information, please contact the undersigned.

Yours very truly,

CHARTEX PETROLEUM COMPANY

By Susan K. Green
Susan K. Green
President

STATE OF TEXAS §

COUNTY OF HARRIS §

This instrument was acknowledged before me this the 5TH day of DECEMBER, 1995 by Susan K. Green, President of Chartex Petroleum Company, a Texas Corporation, on behalf of said corporation.

SUSAN K. OSBORNE
Notary Public, State of Texas
My Commission Expires
03/30/99

Susan K. Osborne
Notary Public in and for the
State of Texas

My Commission Expires: 3/30/99

ENCLOSURE 3

DOC# 972048

UNITED STATES OF AMERICA
OFFSHORE TEXAS

ASSIGNMENT, BILL OF SALE AND CONVEYANCE

THIS AGREEMENT effective from and after 7:00 a.m., July 1, 1995 (said date and time hereinafter referred to as the "Effective Date"), by and between TRANS REPUBLIC ENERGY, a Texas Limited Liability Company, with a permanent mailing address of 415 West Wall, Suite 703, Midland, TX 79702, hereinafter called "ASSIGNOR" and CHARTEX PETROLEUM COMPANY, with a permanent mailing address of 13430 Northwest Freeway, Suite 316, Houston,TX 77040, hereinafter called "ASSIGNEE".

WITNESSETH:

That for and in consideration of the sum of Ten and No/100 Dollars ($10.00), cash in hand paid, and other valuable consideration, including the hereinbelow described assumption by ASSIGNEE of certain described obligations and liabilities, the receipt and sufficiency of which are hereby acknowledged, ASSIGNOR, subject to the terms, conditions and reservations hereof, does hereby sell, transfer, assign, convey, set over and deliver all of its working interest in and to the oil and gas lease(s) described on Exhibit "A" attached hereto and made a part hereof. Said lease(s) are hereinafter collectively referred to as the "Lease".

TO HAVE AND TO HOLD unto ASSIGNEE, its heirs, successors, sublessees, and assigns forever, subject to the terms, conditions and reservations hereinbelow recounted:

1. Wells, Equipment Included: It is understood and agreed that by conveying the Lease, it is the intent of the parties hereto that ASSIGNOR also convey to ASSIGNEE the wells located on the depths or waterbottoms subject to the Lease, the production of oil and/or gas therefrom (to the extent such is produced subsequent to the Effective Date), the personal property, machinery, and equipment located therein and thereon, and all related facilities and equipment including equipment, pipelines and facilities within the Mustang Island Gathering System (said wells, personal property, machinery, and equipment, subject to all exceptions mentioned hereinbelow, hereinafter sometimes being referred to as the "Wells and Equipment"); production runs attributable or accruing to the Lease prior to the Effective Date remaining the property of ASSIGNOR; and ASSIGNOR does hereby sell, transfer, assign, convey, set over and deliver such Wells and Equipment unto ASSIGNEE, its heirs, successors, sublessees, and assigns forever, subject to the terms, conditions and reservations herein recounted.

2. Agreements Included: It is understood and agreed that by conveying the Lease, it is the intent of the parties hereto that ASSIGNOR also convey to ASSIGNEE all agreements, whether recorded or unrecorded, affecting the Lease, the depths or waterbottoms subject thereto, the onshore equipment, pipelines and facilities subject thereto and/or the Wells and Equipment, including but not limited to, those agreements listed in Exhibit "A", attached hereto and made a part hereof (said agreements, subject to all exceptions mentioned hereinbelow, hereinafter sometimes referred to as the "Agreements"); and ASSIGNOR does hereby sell, transfer, assign, convey, set over and deliver such Agreements unto ASSIGNEE, its heirs, successors, sublessees, and assigns forever, subject to the terms, conditions and reservations herein recounted.

   Said Lease, said Wells and Equipment, and said Agreements are hereinafter sometimes referred to as the "Assets."

3. Exclusions: The Assets do not include:

   3.1 Accounts receivable or payable associated with the Assets and relating to operations prior to the Effective Date;

3.2 Gas produced through the designated sales meter and associated liquid hydrocarbon inventory produced prior to the Effective Date.

4. Assumption of Obligations and Liabilities: ASSIGNEE accepts this Assignment, Bill of Sale and Conveyance and acknowledges delivery of the Assets. ASSIGNEE hereby assumes and acknowledges sole responsibility for satisfaction and discharge at its sole cost, risk and expense, of all obligations and liabilities of ASSIGNOR specified herein, associated with or accompanying the Assets, including any leasehold royalty, overriding royalties or other burdens affecting the Lease, subsequent to the Effective Date hereof (except that the accounting and reporting thereof shall be assumed immediately as of the Closing Date, and except that ASSIGNOR shall retain responsibility to disburse or escheat any suspense funds for production prior to the Closing Date, and except that royalties, lease rentals, and ad valorem taxes shall be prorated as of the Effective Date hereof, and any obligation associated with an agreement for the supply of material or service shall be assumed only to the extent that the material or service with respect to which such payment is due is received by ASSIGNEE after the Effective Date hereof), and generally and specifically all obligations relating to the ownership or use thereof.

Specifically, but not by way of limitation, ASSIGNEE assumes the following obligations:

4.1 ASSIGNEE shall plug and abandon all wells located on the depths or waterbottoms subject to the Lease, whether or not said wells were drilled prior to or subsequent to the Effective Date hereof. Such plugging and abandonment, shall be performed by ASSIGNEE within such time as required by, in conformance with, and satisfying the terms and conditions of the Lease, Agreements, and/or any permits or agreements pertinent thereto, or as required by law, order, rule or regulation of any governmental authority having jurisdiction.

4.2 ASSIGNEE shall remove all abandoned or unused personal property, equipment, pipelines and facilities located on the depths or waterbottoms subject to the Lease, or surface areas used in connection with the Lease, or appurtenant to the wells referred to in Section 4.1 hereinabove, pipelines and facilities were constructed and/or located on the premises prior to or subsequent to the Effective Date hereof. ASSIGNEE shall remove such facilities and equipment within such time as required by, in conformance with, and satisfying the terms and conditions of the Lease, Agreements and/or any permits or agreements pertinent thereto, or as required by law, order, rule or regulation of any governmental authority having jurisdiction.

4.3 ASSIGNEE shall restore associated or affected surface areas, depths or waterbottoms within such time as required by, in conformance with, and satisfying the terms and conditions of the Lease, Agreements and/or any permits or agreements pertinent thereto, or as required by law, order, rule or regulation of any governmental authority having jurisdiction. ASSIGNEE expressly assumes ALL responsibility and liability for the environmental condition of the depths and waterbottoms or surface areas subject to or affected by the Assets.

4.4 ASSIGNEE shall pay all costs, as such costs relate to the Assets herein assigned, of all plugging and abandonment of wells, all removal of facilities, equipment and pipelines, all restoration of depths or waterbottoms, and all restoration of surface areas, which may be performed by third parties on any wells, facilities, equipment, or pipelines located on the depths or waterbottoms subject to or affected by the Assets or surface areas used in connection with the Lease on the Effective Date hereof or thereafter.

Such plugging and abandonment of wells, removal of facilities or equipment and restoration of surface areas or waterbottoms by ASSIGNEE shall be performed in a good and workmanlike manner and in accordance with the rules and regulations

of the State of Texas, General Land Office and all other laws, orders, rules and regulations of a governmental body, agency, or department of competent jurisdiction.

5. ASSIGNOR'S Retention of Liability: ASSIGNOR retains its sole responsibility for satisfaction and discharge, at its sole cost, risk and expense, of all obligations and liabilities specified in, associated with or accompanying the Assets, prior to the Effective Date hereof, except those expressly assumed by ASSIGNEE herein, it being expressly understood that ASSIGNOR retains no liability for reclamation and plugging and abandonment of any wells, removal of facilities, equipment and pipelines whether now or hereafter located on the Lease, or surface areas used in connection with the Lease, nor does ASSIGNOR retain any liability with regard to the environmental condition of the property, which condition ASSIGNEE accepts as elsewhere herein provided.

6. Assumption of Agreement Obligations: This agreement is made subject to the terms of the Lease; existing operating agreements; existing surface lease agreements; as well as any and all other agreements, whether recorded or unrecorded, affecting the property herein transferred, including but not limited to those agreements listed in Exhibit "A". ASSIGNEE shall assume and be responsible for all obligations of ASSIGNOR accruing under such agreements after the Effective Date; provided, however, that ASSIGNEE shall not be responsible for any liabilities arising from any breach by ASSIGNOR of its obligations under such agreements prior to the Effective Date.

7. Indemnity:

   7.1 ASSIGNOR shall indemnify and defend ASSIGNEE, its officers, directors, agents or employees against any and all losses, claims, suits, controversies, liability and expense arising directly or indirectly out of ASSIGNOR'S ownership and use of the Assets; and

   7.2 ASSIGNEE shall indemnify and defend ASSIGNOR, its officers, directors, agents or employees against any and all losses, claims, suits, controversies, liability and expense arising directly or indirectly out of ASSIGNEE's ownership and use of the Assets;

   7.3 Except that nothing in this Section 7 shall in any way diminish or limit any obligations assumed by ASSIGNEE herein or any other indemnities provided to ASSIGNOR by ASSIGNEE elsewhere herein, specifically including but not limited to the indemnities provided for in Section 11.6.

8. Approvals, Consents and Preferential Rights: This Assignment, Bill of Sale and Conveyance is given expressly subject to any right of prior consent or approval that may be reserved to any lessor, firm, person or persons, or to any governmental agency having jurisdiction. ASSIGNOR is not aware of any consent, approval, preferential right or right of first refusal that pertains to this Assignment, Bill of Sale and Conveyance that has not been disclosed in writing to ASSIGNEE. If this Assignment, Bill of Sale and Conveyance, or any portion thereof, is subject to the approval of a Lessor or any governmental agency having jurisdiction or is subject to rights of first refusal, preferential rights to purchase, or any other form of consent, the process of obtaining such approvals and consents, and obtaining the release or waiver of such rights of first refusal and preferential rights to purchase may continue hereafter. ASSIGNEE and ASSIGNOR shall be jointly responsible for obtaining the releases or waivers of any such rights of first refusal and preferential rights to purchase. ASSIGNEE shall be responsible for obtaining any other approvals and consents.

9. ASSIGNOR'S Representations and Warranties: ASSIGNOR represents and warrants that:

   9.1 ASSIGNOR has the corporate power and authority to own property and to carry on business as now conducted and to enter into and to carry out the terms of this agreement.

9.2 The execution and delivery of this agreement has been duly authorized by all necessary corporate action on behalf of ASSIGNOR, and ASSIGNOR is not subject to any charter, by-law, lien, or encumbrance of any kind, agreement, instrument, order, or decree of any court or governmental body (other than any governmental approval required) which would prevent execution of this agreement.

9.3 No Hazardous Substances or wastes have been released by ASSIGNOR or by any party acting on behalf of ASSIGNOR in, on or under the Lease.

9.4 Operations on the Lease are in full compliance with all Applicable Laws.

9.5 ASSIGNOR has not entered into any agreements, consent orders, decrees, judgments, licenses, or permit conditions, or other directives of governmental authorities, that are based on or arise out of Applicable Laws, that would materially or adversely affect the future use of the Lease.

9.6 There are no actions, suits, claims, or proceedings pending except as specified in Exhibit "B" attached hereto, or to the best of ASSIGNOR'S knowledge threatened against ASSIGNOR seeking money damages, injunctive relief, remedial actions, or other remedy relating to (a) a violation or noncompliance with any applicable law by ASSIGNOR; (b) the disposal, discharge, or release of Hazardous Substances by ASSIGNOR; or (C) exposure to Hazardous Substances or any other solid waste, pollutants, or chemical substances to the extent the same will arise from ASSIGNOR'S ownership or use of the Lease.

9.7 ASSIGNOR is not aware of the existence of any obligations, liabilities or claims of the type described in Section 4 hereof that have not been disclosed in writing to ASSIGNEE.

10. Waiver of Warranties: ASSIGNEE acknowledges that it has had the opportunity to visually inspect and to examine the Assets and to question ASSIGNOR as to the fitness and quality thereof. It is specifically understood between ASSIGNOR and ASSIGNEE that the Assets are sold as is, and ASSIGNOR make no warranty whatsoever, whether expressed or implied, in fact or by law, whether of title (except against those claiming by, through or under ASSIGNOR'S title), operating condition, safety, compliance with government regulations, merchantability, fitness for any particular purposes, condition or otherwise, concerning any of the Assets. The Wells and Equipment are conveyed by ASSIGNOR and accepted by ASSIGNEE precisely and only on an "As Is" and "Where Is" basis. ASSIGNOR does not warrant the Assets free from redhibitory vices or defects nor does ASSIGNOR warrant against eviction therefrom. ASSIGNEE HEREBY DECLARES AND ACKNOWLEDGES THAT ASSIGNOR HAS BROUGHT THE ABOVE WAIVER OF WARRANTY PROVISIONS TO THE ATTENTION OF ASSIGNEE, WHO HAS READ, UNDERSTANDS AND CHOOSES TO ACCEPT SAID PROVISIONS.

11. ASSIGNEE'S Representations and Warranties: ASSIGNEE represents and warrants that:

11.1 ASSIGNEE is a corporation duly organized and validly existing, in good standing under the laws of the State of Texas and has the corporate power and authority to own its property and to carry on its business as now conducted and to enter into and to carry out the terms of this agreement.

11.2 The execution and delivery of this agreement has been duly authorized by all necessary corporate action on behalf of ASSIGNEE, and ASSIGNEE is not subject to any charter, by-law, lien or encumbrance of any kind, agreement, instrument, order or decree of any court of governmental body which would prevent execution of this agreement.

11.3 ASSIGNEE is not a party to, or in any way obligated under, nor does ASSIGNEE have any knowledge of, any contract or outstanding claim for

payment of any broker's or finder's fee in connection with the origin, negotiation, execution or performance of this agreement.

11.4 ASSIGNEE shall comply with all applicable laws, ordinances, rules and regulations and shall promptly obtain and maintain all permits required by public authorities in connection with the Assets.

11.5 ASSIGNEE has made or arranged for others to make an inspection of the Assets. Subject to ASSIGNOR'S representations and warranties and the waiver of warranties, ASSIGNEE accepts the Assets in "as is and where is" condition, with an express acceptance and understanding of the representations and disclaimers contained herein.

11.6 ASSIGNEE acknowledges that the Assets have been used for oil and gas drilling and producing operations, related oil field operations and possibly the storage and disposal of waste materials incidental to or occurring in connection with such operations, and that physical changes in the affected depths or waterbottoms or surface areas may have occurred as a result of such uses and that ASSIGNEE has entered into this agreement on the basis of ASSIGNEE's own investigation of the physical condition of the Assets, including subsurface conditions. ASSIGNEE is acquiring the Assets precisely, and only in "as is and where is" condition and assumes the risk that adverse physical conditions including, but not limited to, the presence of unknown abandoned oil and gas wells, water wells and sumps which may not have been revealed by ASSIGNEE'S investigation, may be located thereon. ASSIGNEE assumes full responsibility for compliance with all obligations or regulations concerning all such conditions, known or unknown, and agrees to indemnify ASSIGNOR for same.

12. NORM:

12.1 It is expressly recognized and acknowledged that naturally occurring radioactive material (NORM) is normally associated with oil and gas producing operations, and as a result the facilities and production equipment transferred herein may be contaminated by NORM. Accordingly, ASSIGNEE shall comply with the applicable federal and applicable state laws and regulations governing (i) NORM and (ii) facilities and equipment contaminated by or containing NORM.

13. Costs and Expenses; Certified Copies: ASSIGNEE and ASSIGNOR each shall bear their own costs and expenses, including but not limited to attorneys' fees incurred in the execution of this agreement; provided, however, ASSIGNEE shall pay all recording fees or transfer taxes in connection with the recording hereof. ASSIGNEE further agrees to provide ASSIGNOR, within 15 days of recordation, a certified copy of this Assignment, Bill of Sale and Conveyance.

14. Assignment: ASSIGNEE may not assign any interest it acquires hereunder, assign any rights acquired, or delegate any duties assumed herein without any such transferee, assignee, sublessee or delegee having agreed in writing to be bound by all of the terms and provisions contained herein; and any such transferee, assignee, sublessee or delegee shall assume all duties and obligations set forth therein or arising therefrom; and any such transfer, assignment, sublease or delegation shall so provide. Notwithstanding anything herein to the contrary, ASSIGNEE shall remain responsible to ASSIGNOR for all ASSIGNEE'S obligations and liabilities under this agreement.

15. Governing Law: This agreement shall be governed by the law of the State of Texas, without regard to rules concerning conflicts of law.

16. Topical Headings: The topical headings used herein are for convenience only and shall not be construed as having any substantive significance or as indicating that all of the provisions of this agreement relating to any topic are to be found in any particular section.

IN WITNESS WHEREOF, each party hereto has executed this agreement in the presence of the indicated witnesses, to be effective as of the Effective Date.

ASSIGNOR:

TRANS REPUBLIC ENERGY, L. C.

BY: R. F. Bailey
NAME/TITLE: R. F. Bailey, President

ASSIGNEE:

CHARTEX PETROLEUM COMPANY

BY: Susan K. Green
NAME/TITLE: Susan K. Green, President

STATE OF TEXAS §

COUNTY OF MIDLAND §

This instrument was acknowledged before me on the 27th day of June, 1995 by R. F. BAILEY, President of TRANS REPUBLIC ENERGY, L. C., a Texas Limited Liability Company, on behalf of said company.

REX BARKER
MY COMMISSION EXPIRES
July 26, 1998

Notary Public, State of Texas

STATE OF TEXAS §

COUNTY OF HARRIS §

This instrument was acknowledged before me on the 25TH day of July, 1995 by SUSAN K. GREEN, President of CHARTEX PETROLEUM COMPANY, on behalf of said company.

SUSAN K. OSBORNE
Notary Public, State of Texas
My Commission Expires
03/30/98

Susan K. Osborne
Notary Public, State of Texas

EXHIBIT "A"

Attached to and made a part of that certain Assignment, Bill of Sale and Conveyance dated effective July 1, 1995 by and between TRANS REPUBLIC ENERGY, a Texas Limited Liability Company, "ASSIGNOR", and CHARTEX PETROLEUM COMPANY, "ASSIGNEE", covering Mustang Island Block 818-L.

OIL AND GAS LEASES

Oil and Gas Lease No. 71368 dated October 1, 1974 from the Commissioner of the General Land Office of the State of Texas, as Lessor, to Samedan Oil Corporation, as Lessee, recorded in Volume 292, Page 5, Kleberg County, Texas, said Lease being Tract 818-L NW/4, Gulf of mexico, Kleberg County, Texas, containing 1440 acres, as shown on the official map of the Gulf of Mexico now on file in the General Land Office, INSOFAR AND ONLY INSOFAR AS SAID LEASE COVERS THE S/2 NW/4, CONTAINING 720 ACRES, MORE OR LESS.

Oil and Gas Lease No. 71369 dated October 1, 1974 from the Commissioner of the General Land Office of the State of Texas, as Lessor, to Samedan Oil Corporation, as Lessee, recorded in Volume 292, Page 1, Kleberg County, Texas, said Lease being Tract 818-L SW/4, Gulf of Mexico, Kleberg County, Texas, containing 1440 acres, as shown on the official map of the Gulf of Mexico now on file in the General Land Office.

Surface Lease Agreement dated effective August 1, 1992, by and between Frost National Bank of San Antonio, San Antonio, Texas, Trustee of the Ruth Chapman Cowles, et al "Lessors", and Samedan Pipeline Corporation, New England Energy, Inc. and Trans Republic Energy, L. C., as "Lessee", containing 12.54 acres in Section 48, Laureles Farm Tracts Subdivision, El Rincon De Corpus Christi Grant, A-411, Nueces County, Texas.

WELLS, PLATFORMS AND RELATED EQUIPMENT AND FACILITIES

State Tract 818L A1
State Tract 818L A2
State Tract 818L A4
State Tract 818L B1
State Tract 818L B2
State Tract 818L B3
State Tract 818L F1
State Tract 818L F2
State Tract 818L F3
State Tract 818L I1
State Tract 818L A5
State Tract 818L B4
State Tract 818L B5
State Tract 818L A6
State Tract 818L A7
State Tract 818L A PLATFORM
State Tract 818L F PLATFORM
State Tract 818L B PLATFORM
State Tract 818L I Satellite Platform
Slug Catcher and all other related equipment located on the site
Mustang Island Gathering System
Mustang Island Pipeline Maintenance Facility
Six Pigs Facility

RIGHTS-OF-WAY, SURFACE LEASES, JOINT OPERATING AGREEMENTS AND OTHER MISCELLANEOUS AGREEMENTS

Letter Agreement dated March 2, 1995 and Amendments dated April 6, 1995, May 10, 1995 and May 29, 1995 by and between Trans Republic Energy, L. C. and Petrotex Engineering Company, covering Block 818L and Mustang Island Pipeline System.

Operating Agreement dated September 21, 1978, by and between Samedan Oil Corporation, Home Petroleum Corporation, Texas Pacific Oil Company, Inc., New England Energy Incorporated and NI-Gas Supply, Inc.

Surface Lease Agreement dated effective August 1, 1992, by and between Frost National Bank of San Antonio, San Antonio, Texas, Trustee of the Ruth Chapman Cowles, et al "Lessors", and Samedan Pipeline Corporation, et al as "Lessee", containing 12.54 acres in Section 48, Laureles Farm Tracts Subdivision, El Rincon De Corpus Christi Grant, A-411, Nueces County, Texas.

Sublease Agreement dated December 1, 1980 by and between El Paso Natural Gas Company and Houston Pipeline Company covering 0.18 acres tract out of Section 48 of the Laureles Farm Tracts Subdivision in the El Rincon de Corpus Christi Grant, Abstract A-411.

Amendment to Sublease Agreement dated March 17, 1981 amends Sublease (above) to include additional .064 acres.

The State of Texas Miscellaneous Easement MR-83-060 dated May 11, 1983 by and between the General Land Office, The State of Texas and El Paso Natural Gas Company for pipeline right of way.

Assignment of Miscellaneous Easement ME-83-060 dated June 1, 1989, by and between El Paso Natural Gas Company "Assignor" and Samedan Pipe Line Corporation, et al "Assignee".

The State of Texas Miscellaneous Easement No. ME-890058 (Renewal of ME 4150-A) dated April 16, 1989 by and between the General Land Office, The State of Texas and El Paso Natural Gas Company for pipeline right of way.

Assignment of Miscellaneous Easement ME-890058 dated June 1, 1989, by and between El Paso Natural Gas Company "Assignor" and Samedan Pipe Line Corporation, et al "Assignee".

Bill of Sale effective June 1, 1989 by and between El Paso Natural Gas Company as "Seller" and Samedan Pipe Line Corporation, et al as "Buyers" conveying certain natural gas pipelines, being a portion of Seller's "Mustang Island Gathering System" located in Kleberg and Nueces Counties, Texas.

(END OF EXHIBIT "A")

EXHIBIT "B"

Attached to and made a part of that certain Assignment, Bill of Sale and Conveyance dated effective July 1, 1995 by and between TRANS REPUBLIC ENERGY, a Texas Limited Liability Company, "ASSIGNOR", and CHARTEX PETROLEUM COMPANY, "ASSIGNEE", covering Mustang Island Block 818-L.

ACTIONS, SUITS, CLAIMS OR PROCEEDINGS PENDING:

NONE

Doc# 972048
Pages: 9
Date : 08-02-1995
Time : 08:49:32 A.M.
Filed & Recorded in
Official Records
of NUECES County, TX.
ERNEST M. BRIONES
COUNTY CLERK
Rec. $ 23.00

Any provision herein which restricts the Sale, Rental or use of the described REAL PROPERTY because of Race, Color, Religion, Sex, Handicap, Familial Status or National Origin is invalid and unenforceable under FEDERAL LAW, 3/12/89.

STATE OF TEXAS
COUNTY OF NUECES
I hereby certify that this instrument was FILED in File Number Sequence on the date and at the time stamped herein by me, and was duly RECORDED, in the Official Public Records of Nueces County, Texas on

AUG 2 1995

COUNTY CLERK
NUECES COUNTY, TEXAS

19/4

Petroleum Engineering Co.
13430 Northwest Freeway
Suite 316
Houston, TX 77040

The State of Texas

Austin, Texas

ASSIGNMENT AND ASSUMPTION AGREEMENT

WHEREAS, by Miscellaneous Easement No. 890058, effective April 16, 1989, (the "Easement"), the State of Texas, acting by and through the General Land Office, herein referred to as the "State", granted to Trans Republic Energy, herein called "Assignor", the right to use certain real property located in Kleberg County, Texas, and more particularly described on Exhibit A to such Easement, for a term of ten (10) years, commencing April 16, 1989, and terminating April 16, 1999, reference being here made to such Easement for all relevant purposes; and

WHEREAS, Assignor now desires to assign its interest as holder of the aforesaid Easement to Petrotex Engineering Company, hereinafter referred to as "Assignee", and Assignee desires to accept such assignment and to assume the benefits and duties of Assignor under such Easement;

NOW, THEREFORE, in consideration of the premises, the parties agree as follows:

1.

Assignor does hereby sell, assign and transfer unto Assignee, effective as of the date of execution of this instrument by Commissioner Garry Mauro of the General Land Office of the State of Texas, (hereinafter called "Effective Date") all of Assignor's right, title, and interest under the aforesaid Easement hereinabove referred to for the remainder of the term of the subject Easement,

TO HAVE AND TO HOLD the same unto the said Assignee, for and during that remaining portion of the term under said Easement.

2.

Assignee hereby accepts this Assignment and agrees to assume and perform the covenants, duties and obligations of "Assignor" as "Grantee" under the

Easement and agrees that Assignee shall be fully, directly and primarily liable for performance as Grantee under the Easement. It is agreed that the liability of Assignor and Assignee is joint and several and may be enforced against either without any notice to, demand upon, proceeding against or judgment against the other. Assignee agrees to accept the premises in an "AS-IS" condition as same may exist when vacated by Assignor.

3.

The State hereby consents to this Assignment with the express understanding that this consent shall in no way relieve Assignor of liability for the performance of the covenants, duties and obligations of Grantee under said Easement, including any liability for the full amount of rental and any additional charges, provided to be paid pursuant to said Easement; **provided, however,** Assignor's liability shall be secondary to Assignee's and shall continue in effect only during the original, primary term of the said Easement. **Provided, further,** that any sum paid by Assignee to the State as required by the said Easement shall be credited on the aforesaid obligation of Assignor, if any. The State shall not be obligated to give any notice to Assignee which is not presently provided for as a duty to Assignor under said Easement.

4.

Assignor does hereby release and relinquish any and all claims which Assignor has or might hereafter have to any sum paid the State with respect to the premises, whether as rent for any portion of the term which has heretofore accrued, future rent, or otherwise. Assignor acknowledges and agrees that the State has fully performed all of its covenants, duties and obligations heretofore accruing under such Easement and does hereby release the State from any and all claims for non-performance with respect thereto.

5.

Assignor will, promptly upon execution of this instrument, pay to the State the sum of $50.00 as a fee for each assignment.

6.

Any notice which may or shall be given under the terms of the Easement or this assignment shall be in writing and shall either be delivered by hand or sent by U. S. Registered or Certified Mail, adequate postage prepaid, if for the State, to it at the Notice Address stated in the Easement; if for Assignee, to it at 13430 Northwest freeway, suite 316, Houston, Texas 77040-6001. Either party's address may be changed from time to time by such party by giving notice as provided above, except that the premises address may not be used by Assignee as the sole notice address. No change of address of either party shall be binding on the other party until notice of such change of address is given as herein provided. A post office receipt for registration of such notice or signed return receipt shall be conclusive that such notice was delivered in due course if mailed as provided above.

EXCEPT as otherwise specifically provided herein, all of the terms and provision of the Easement shall remain in full force and effect during the remaining term of the easement. All defined terms used herein shall have the same meaning as when used in the Easement unless another meaning is clearly indicated.

EXECUTED on this the 7th day of November, 1995
(Date of the Commissioner's signature)

ASSIGNOR	**ASSIGNEE**
Trans Republic Energy	Petrotex Engineering Company
R. F. Bailey	Charles M. Green
Signature	Signature
R. F. BAILEY	Charles M. Green
Name (Printed)	Name (Printed)
PRESIDENT	President
Title	Title
P. O. Box 3595	13430 N.W. Frwy., #316
MIDLAND, TX 79702	Houston, TX 77040
Address	Address

CONSENT TO ASSIGNMENT

THE UNDERSIGNED, as Grantor in the above-described Miscellaneous Easement (890058), subject to the conditions stated in Paragraph 3 above, does hereby consent to the assignment of the said easement from Trans Republic Energy to Petrotex Engineering Company.

THE STATE OF TEXAS

by: Garry Mauro
Garry Mauro, Commissioner of the
Texas General Land Office

APPROVED
Contents
Deputy Com
Sr. Deputy
Executive

ACKNOWLEDGEMENTS

STATE OF TEXAS §
§
COUNTY OF MIDLAND §

This instrument was acknowledged before me, the undersigned authority, on September, 21, 1995, by R. F. Bailey (NAME),
President (TITLE) of Trans Republic Energy, L. C. (COMPANY),
a Limited Liability company, on behalf of the said company.

REX BARKER
MY COMMISSION EXPIRES
July 26, 1998

Notary Public

My commission expires: _____.

ACKNOWLEDGEMENTS

STATE OF TEXAS §
§
COUNTY OF HARRIS §

This instrument was acknowledged before me, the undersigned authority, on September, 27, 1995, by Charles M. Green (NAME),
President (TITLE) of Petrotex Engineering Company (COMPANY),
a Texas corporation, on behalf of the said corporation.

SUSAN K. OSBORNE
Notary Public, State of Texas
My Commission Expires
03/30/99

Susan K. Osborne
Notary Public

My commission expires: March 30, 1999.

ENCLOSURE 5

BARRY WILLIAMSON, CHAIRMAN
CAROLE KEETON RYLANDER, COMMISSIONER
CHARLES R. MATTHEWS, COMMISSIONER

JERRY MARTIN
ACTING DIRECTOR

RAILROAD COMMISSION OF TEXAS

GAS SERVICES DIVISION

October 6, 1995

Mr. Charles M. Green
President
Petrotex Engineering Company
13430 N.W. Freeeway, Suite 316
Houston, Texas 77040

file

Re: T-4 Permit No. 04022

Dear Mr. Green:

Thank you for the Certificate regarding the operations of Petrotex Engineering Company, filed pursuant to TEX. REV. CIV. STAT. ANN. art. 6050 Sec. 4 (Vernon Supp. 1995). Based on the Certificate, your company appears to qualify to be treated as a non-utility and therefore, is not subject to rate regulation by the Railroad Commission.

If the nature of your operations changes, particularly if you exercise the right of eminent domain to acquire rights of way, you may become subject to Commission regulations. You should report to the Transportation/Gas Utilities Division any changes in your operations which may affect the statements made on the Certificate.

If I may be of further assistance, please do not hesitate to call.

Sincerely,

Edward Abrahamson

Edward Abrahamson
Manager, Gas Utility Audit

EA/SLT

cc: Kathy Arnold

RECEIVED
OCT 10 1995

ENCLOSURE 6

Petrotex Engineering Company ★ Petroleum Management Services

777 Jones Road ★ Suite 360 ★ Houston, Texas 77070 ★ (713) 517-0065 ★ fax (713) 517-0660

AFFIDAVIT OF COMPLIANCE

Petrotex Engineering Company, its contractors and its sub-contractors will fully comply with the Plan of Operations, if approved by the National Park Service, and will further comply with all standards and stipulations issued by the Field Director, Intermountain Field Area, in accordance with regulations contained at Title 36 of the Code of Federal Regulations, Part 9, Subpart B (36 CFR 9B). Chartex Petroleum Company is fully accountable for its contractors and sub-contractors compliance.

PETROTEX ENGINEERING COMPANY

Charles M. Green
President

December 5, 1995
Date

STATE OF TEXAS §

COUNTY OF HARRIS §

On this 5th day of December, 1995, before me appeared Charles M. Green, to me personally known, who, being by me duly sworn, did say that he is the President of Petrotex Engineering Company, a Texas Corporation, and that said instrument was signed on behalf of said corporation by authority of its Board of Directors and said appearer acknowledged said instrument to be the free act and deed of said corporation.

SUSAN K. OSBORNE
Notary Public, State of Texas
My Commission Expires
03/30/99

Susan K. Osborne
Notary Public in and for
the State of Texas

wp50\compliance.ctx

TRANS REPUBLIC ENERGY, L. C.
A Texas Limited Liability Company

415 W. Wall, Suite 703
Midland, Texas 79701

P. O. Box 3595
Midland, Texas 79702

Phone 915-686-9669
FAX 915-683-1649

July 21, 1993

Superintendent
Padre Island National Seashore
9405 South Padre Island Drive
Corpus Christi, TX 78418-5597

Re: Mustang Island Gathering System
Notification of Acquisition

To Whom It Might Concern:

Trans Republic Energy, L.C. has recently acquired the interests of Samedan Pipe Line Corporation and New England Energy, Inc. in the Mustang Island Gathering System. Prior to this acquisition, Trans Republic owned approximately 29 percent of the system; after the acquisition, Trans Republic owns 100%. Attached is a copy of the Assignment, Bill of Sale and Conveyance documenting this acquisition. Approximately 1.6 miles of the existing underground gas pipeline plus an above-ground pigging facility are within the Padre Island National Seashore.

The gathering system has been operated by Samedan under Special Use Permit No. 7490-43. Trans Republic and its operating agent, Phoenix Hydrocarbon Operating Corp., hereby notify you, pursuant to the requirements of Paragraph 9.34 of NPS, 36 CFR, of this acquisition and of our desire to continue the operation in accordance with the Plan of Operations as submitted by Samedan in March, 1992. To our knowledge, there have been no physical changes in the facilities as detailed in said Plan. Further, we hereby adopt the March, 1992 Plan of Operations in all respects and commit to be bound thereby. As soon as instructions are received from your office, per my discussion with Mr. Paul Eubank, Trans Republic will complete any additional paper work and will comply with the necessary financial suitability requirements.

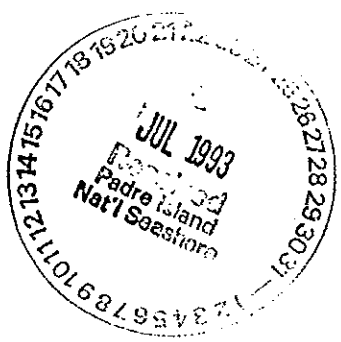
Attached is a list of contacts, both onsite and in Midland, that are authorized to act on our behalf in the event of emergencies. We appreciate your assistance; please contact me with any questions, comments or additional requirements.

Sincerely,

R. F. Bailey

R. F. Bailey
Manager

cc: Mr. Roger Souders
Samedan Oil Corp., Houston



MUSTANG ISLAND GATHERING SYSTEM

1. OWNER

Trans Republic Energy, L.C.
P. O. Box 3595
Midland, Texas 79702
Phone: 915-686-9869 or 800-375-9869
FAX: 915-683-1649

2. OPERATOR

Phoenix Hydrocarbon Operating Corp.
P. O. Box 3595
Midland, Texas 79702
Phone: 915-682-1186
FAX: 915-683-1649

3. EMERGENCY CONTACTS

The 24-hour emergency contact number is:
512-289-8872
(This is our MI 818A platform, the closest 24-hour manned facility.)

Other contacts are:

Richard Jennings with Gainco, Inc. in Corpus Christi
Phones: Office - 512-882-9966
Home - 512-643-4267
Mobile - 512-813-1715

Pat Yocham - Production Superintendent in Midland
Phones: Office - 915-686-9869
Home - 915-682-3257

Bob Bailey - Overall Management in Midland
Phones: Office - 915-686-9869
Home - 915-686-0558

ESPEY,
HUSTON &
ASSOCIATES, INC.
Engineering & Environmental Consultants
Document No. 900229
EH&A Job No. 12646

PLAN OF OPERATIONS
SAMEDAN PIPE LINE CORPORATION
EXISTING GAS PIPELINE AND
ABOVE-GROUND FACILITY
PADRE ISLAND NATIONAL SEASHORE
KLEBERG COUNTY, TEXAS

Prepared for:

Samedan Pipe Line Corporation
350 Glenborough, Suite 240
Houston, Texas 77067-3299

Prepared by:

Espey, Huston & Associates, Inc.
P.O. Box 519
Austin, Texas 78767

March 1992

Printed on Recycled Paper

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1.0 INTRODUCTION

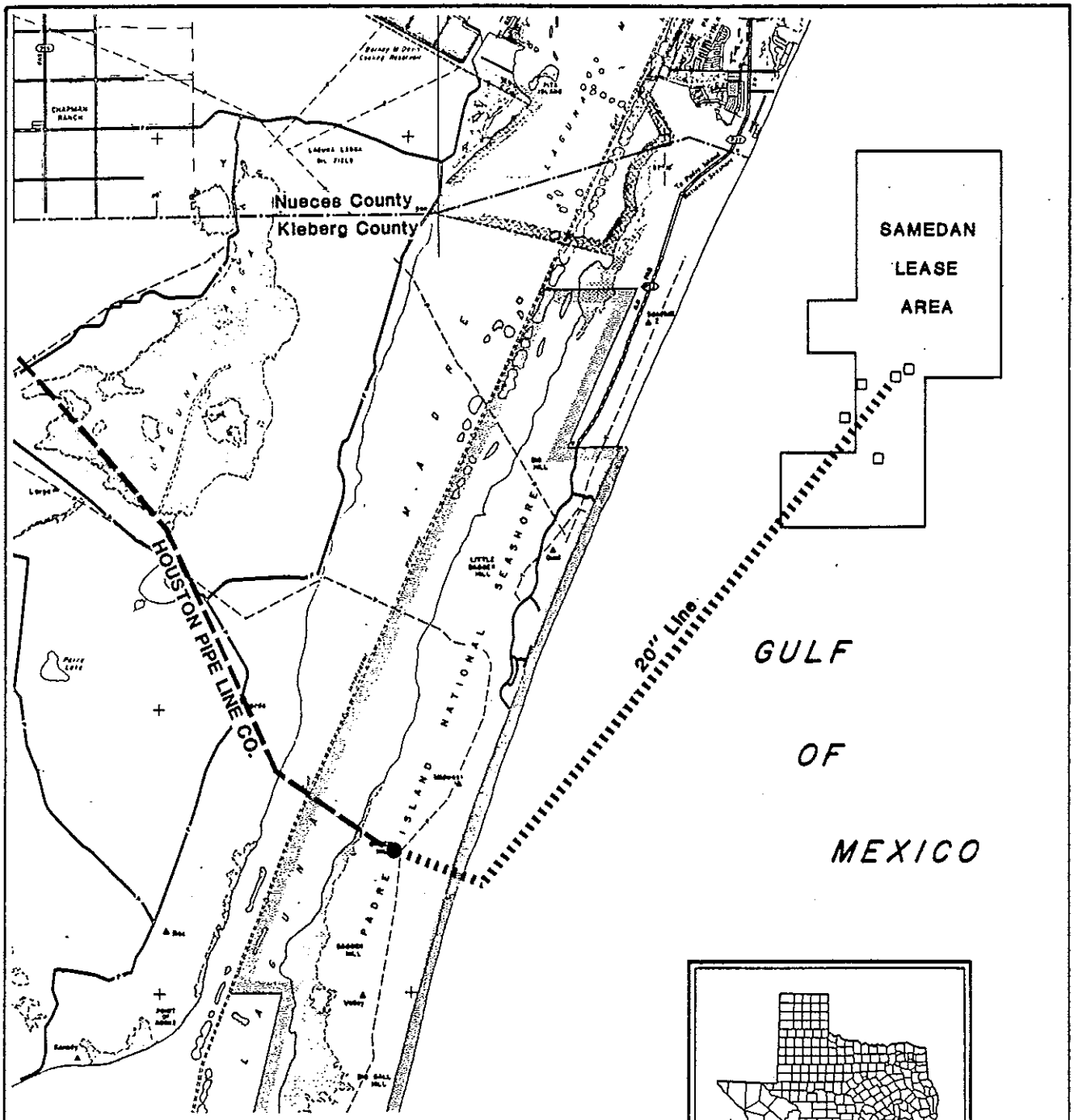
In 1989 an existing 20-inch natural gas pipeline and its associated surface facility in Kleberg County, Texas were purchased by Samedan Pipe Line Corporation (a wholly owned subsidiary of Samedan Oil Corporation), New England Energy Incorporated, and Home Petroleum Corporation (now owned by Presidio Oil Company). These three companies shall hereinafter in this Plan of Operations be referred to as Samedan, as co-owners of the facility in Gulf of Mexico Tract 818L, the gas pipeline leading from that tract and the associated surface facility.

The pipeline begins in Gulf of Mexico State Tract 818L, extends southward, and turns west to enter Padre Island National Seashore approximately 1,500 feet (ft) offshore and approximately six miles (mi) south of the Gulf Ranger Station (Figure 1). The pipeline terminates at an above-ground facility referred to as "six pigs" (Figure 2). At this site, Samedan's pipeline ties in with an existing natural gas pipeline operated by Houston Pipe Line Company. Approximately 1.6 mi of the existing pipeline is within the boundaries of the National Seashore. The "six pigs" facility is located within a fenced area approximately 0.6 acres (ac) in size.

The 20-inch natural gas pipeline was emplaced in 1979 by Houston Pipe Line Company. The access road and above-ground facility were constructed at this time. In 1980 El Paso Natural Gas applied for an assumption of Special Use Permit 3:613:010 with the transfer of interest of operation of the pipeline to El Paso Natural Gas. Before granting the permit assumption, the National Park Service prepared an Environmental Review and Analysis dated 10 October 1980. A Finding of No Significant Impact was issued 28 October 1980. Prior to writing the Environmental Review and Analysis and issuance of the permit, a Plan of Operations was discussed in correspondence between El Paso Natural Gas Company and the National Park Service. However, all attempts to locate a copy of the Plan of Operations, if it was completed, have failed. Special Use Permit No. 7490-43 was issued by the United States Department of the Interior, National Park Service on 1 July 1980 with an expiration date of 1 July 1990.

In accordance with the Comprehensive Regulations of the National Park Service, U.S. Department of Interior (NPS, 36 CFR 9.3(B) 1988), this Plan of Operations is being submitted to the National Park Service, Padre Island National Seashore, in order to extend Special Use Permit 7490-43.

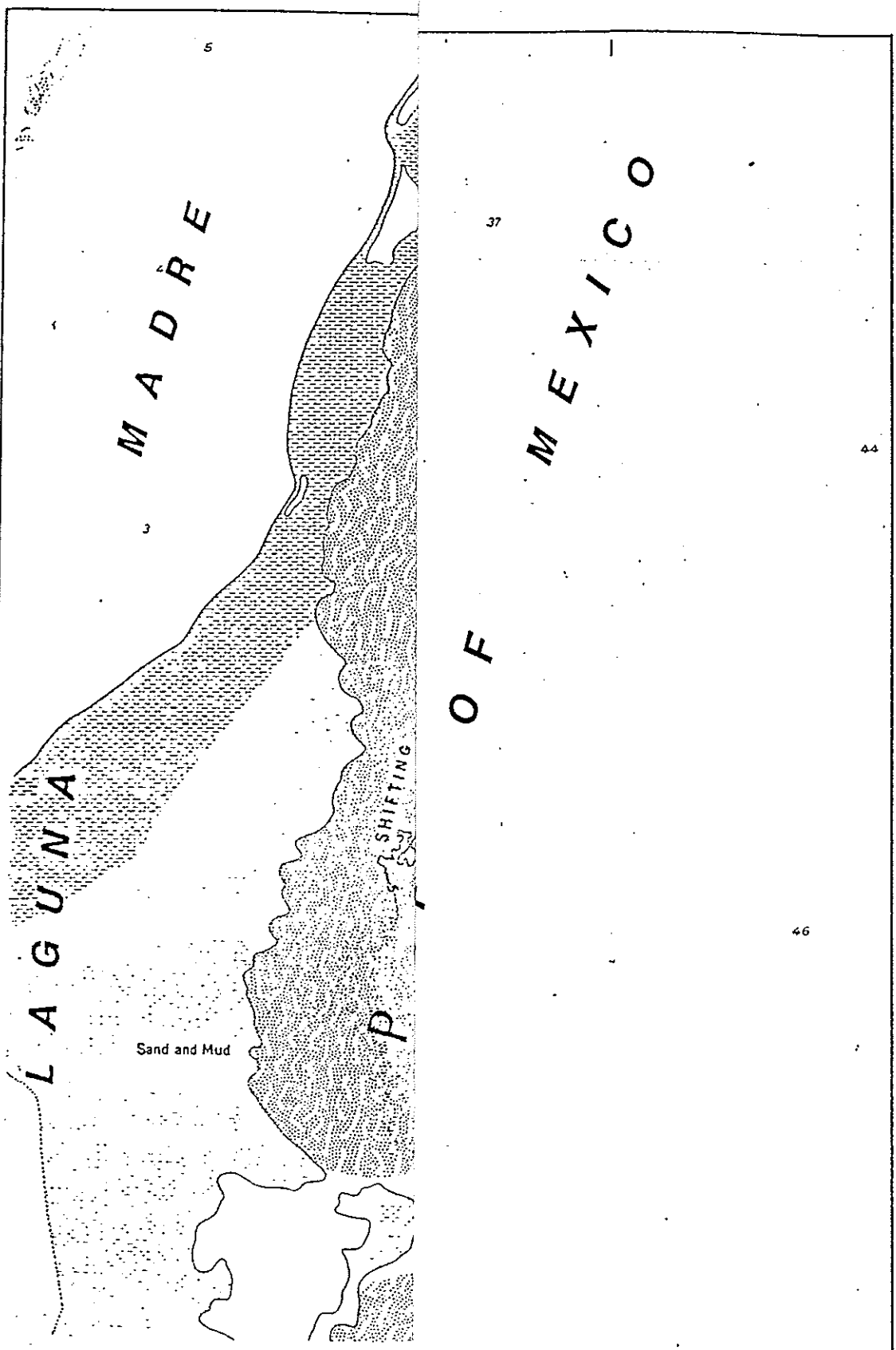
PROJECT NO. 12646



Base Map: SDH&PT General Hwy. Map, Kleberg, Texas

ESPEY, HUSTON & ASSOCIATES, INC.
Engineering & Environmental Consultants

Figure 1
LOCATION MAP
GAS PIPELINE
PADRE ISLAND NATIONAL SEASHORE
KLEBERG COUNTY, TEXAS
SAMEDAN



ESPEY, HUSTON & ASSOCIATES, INC.
Engineering & Environmental Consultants

Figure 2
PIPELINE ROUTE
& ABOVE-GROUND FACILITY
PADRE ISLAND NATIONAL SEASHORE
KLEBERG COUNTY, TEXAS
SAMEDAN

Base Map: USGS 7.5' Quadrangle, South Bird

2.0 DESCRIPTION OF THE PROJECT

2.1 SURFACE OWNER OR JURISDICTIONAL AUTHORITY

U.S. Department of the Interior
National Park Service
Padre Island National Seashore
9405 South Padre Island Drive
Corpus Christi, Texas 78418
(512) 949-8173

2.2 PIPELINE OWNER AND OPERATOR

Samedan
350 Glenborough, Suite 240
Houston, Texas 77067-3299
(713) 876-6250

Samedan is composed of:

Samedan Pipe Line Corporation
350 Glenborough, Suite 240
Houston, Texas 77067-3299
(713) 876-6250

New England Energy, Incorporated
25 Research Drive
Westborough, Mississippi 01582
(508) 898-2665

Presidio Oil Company
5613 OTC Parkway
Suite 780
P.O. Box 65
Englewood, Colorado 80155
(303) 773-0100

Division Landman:
J.M. Ables
(713) 876-6223

Engineer:
Steve Molbert
(713) 876-6250

2.3 BILL OF SALE, ASSIGNMENT OF EASEMENT, AND PERMITS

A copy of the Bill of Sale is in Appendix A. Although the Bill of Sale covers the entire "Mustang Island Gathering System", only the Bill of Sale itself and the attachment dealing with that portion of the 20-inch pipeline which extends across National Park Service property are included in Appendix A.

The pipeline originates offshore in state waters. Appendix B contains copies of the Texas General Land Office (GLO) Miscellaneous Easement (ME-890058), granted 15 May 1989 to El Paso Natural Gas, and the Assignment of that Easement to Samedan on 1 June 1989. GLO jurisdiction ends at the National Seashore boundary, which is approximately 1,500 ft gulfward from the shoreline. ME-890058 is included to provide a more complete description of the subject pipeline and its origins.

A copy of Railroad Commission of Texas Form T-4C, Pipeline and Gathering System Form of Certification, is in Appendix C.

A copy of National Park Service Special Use Permit 7490-43, issued 1 July 1980, is also in Appendix C. This permit authorizes the operation and maintenance of a 100-ft pipeline right-of-way (ROW) and an existing access road. This Plan of Operations is being submitted to the National Park Service, Padre Island National Seashore, by Samedan in order to extend Special Use Permit 7490-43.

No other federal, state, or local permits are required to operate this pipeline and its associated above-ground facility.

2.4 PIPELINE LOCATION

The general location of the existing pipeline is shown in Figure 1. A more detailed map showing the location of the pipeline in the National Seashore is shown in Figure 2. This Plan of Operations is concerned with that portion of the pipeline that traverses the Padre Island National Seashore and with the associated "six pigs" facility.

2.5 DESCRIPTION OF THE EXISTING PIPELINE AND ACCESS ROAD

The 20-inch gas pipeline which crosses Padre Island National Seashore serves to transport gas from offshore production facilities to distribution facilities on the mainland. Samedan's portion of the pipeline terminates at the point where it emerges from the ground within the National Seashore at "six pigs". From this facility, the continuing pipeline is operated by Houston Pipe Line Company.

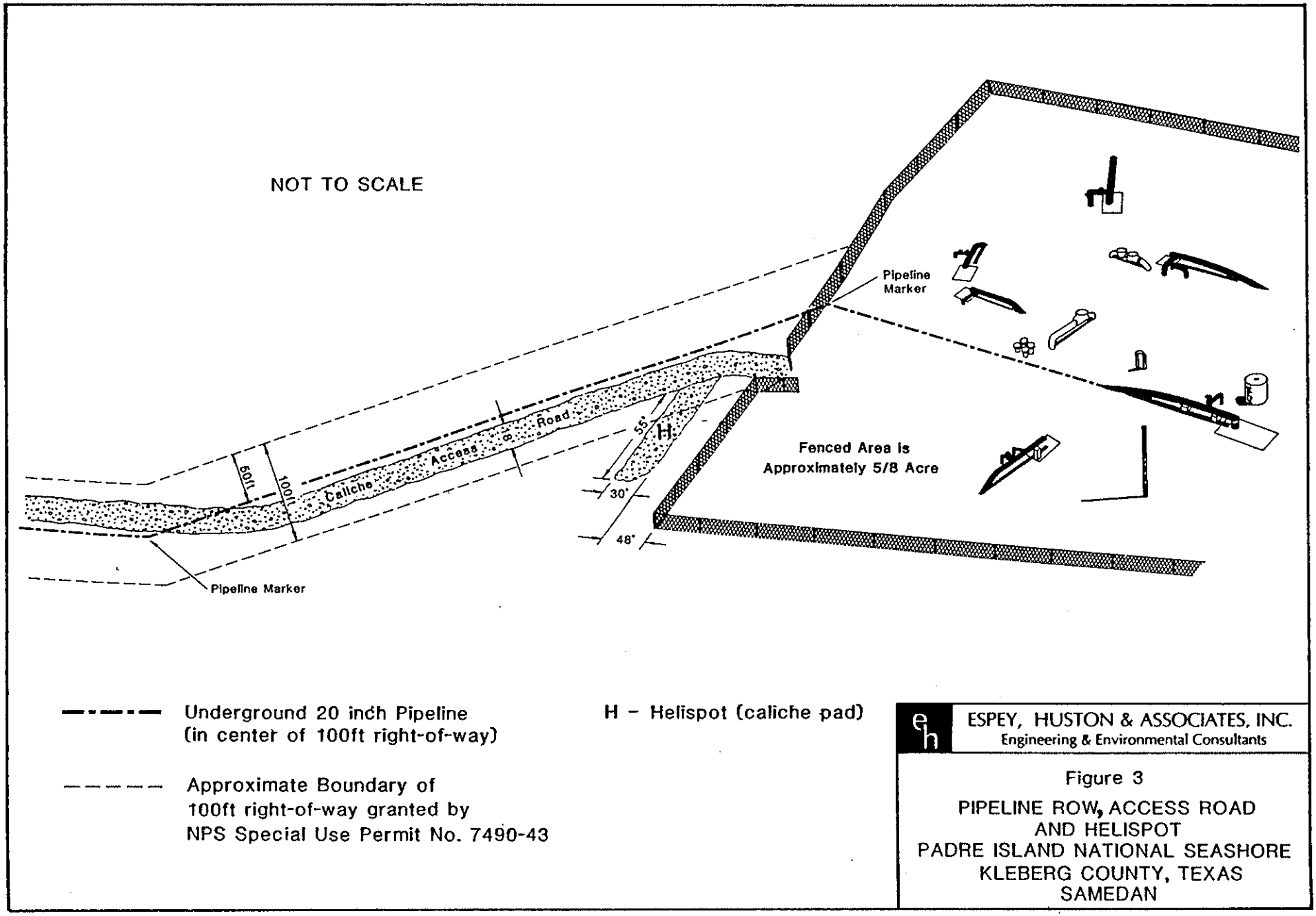
The pipeline has a 20-inch outside diameter and is rated at 84.96 pounds/foot (lbs/ft). It is coated with a 5/8-inch thick somatic coating (37.97 lbs/ft) and a 2.4-inch thick concrete coating (173 lbs/ft) (Photo 4, Appendix D). The pipeline is protected by eleven 20-inch anode bracelets, weighing 512 lbs each. The buried pipeline has approximately 36 inches of substrate (offshore) or soil (onshore) cover.

The portion of the pipeline that is now owned by Samedan is clearly marked along the pipeline route with metal signs per 36 CFR 9.41(d) (Photo 2, Appendix D). The pipeline ROW is 100-ft (50 ft on either side of the pipeline).

Within this 100-ft ROW, there is an existing 18-ft wide caliche access road (Photo 1, Appendix D). The access road and pipeline ROW are approximately 6 miles south of the National Seashore Ranger Station. A locked steel gate at the foredunes controls access to the 1.2-mile long road. The pipeline parallels the access road approximately 20 ft to the north. Thus, the access road is within the 100-ft pipeline ROW. As the access road and pipeline approach the above-ground facility, the road crosses the buried line (see Figure 3 and Photo 7, Appendix D). A caliche helispot, approximately 30 ft by 55 ft, is located adjacent to the access road near the fenced facility (Figure 3 and Photo 3, Appendix D).

2.6 DESCRIPTION OF THE ABOVE-GROUND FACILITY

All above-ground equipment, within the Padre Island National Seashore, that is owned and operated by Samedan is located at the terminus of Samedan's pipeline prior to the interconnection with Houston Pipe Line Company facilities. As mentioned above, the above-ground equipment is located at "six pigs" (Figure 4 and photos 6-13, Appendix D). The entire site



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Engineering & Environmental Consultants

Figure 3

PIPELINE ROW, ACCESS ROAD AND HELISPOT
PADRE ISLAND NATIONAL SEASHORE
KLEBERG COUNTY, TEXAS
SAMEDAN

is approximately 0.6 acres in size and is surrounded by proper fencing as called for in 36 CFR 9.41(m). A locked gate within the chain-link fence and barbed wire atop the fence control access to the facility. Samedan's portion of the facility consists of the valves and the retrieval system necessary for periodic cleaning of the pipeline (see areas outlined in red and white on photographs in Appendix D). Access to the area is gained by a caliche road from the beach. Samedan's facility at "six pigs" includes a 20-inch line block valve and an 8-inch blowdown valve, a 25-barrel liquid storage tank, a pig receiver and a 20-ft wooden antenna pole for two-way radio communication. Structures operated by Samedan are painted orange and white in contrast to the blue and white markings of the remainder of the facility. Samedan's equipment, as well as the pipeline route, is properly marked with hazard warning signs, where applicable, and the operator's name and number as called for by 36 CFR 9.41(d) and (m).

2.7 OPERATIONS

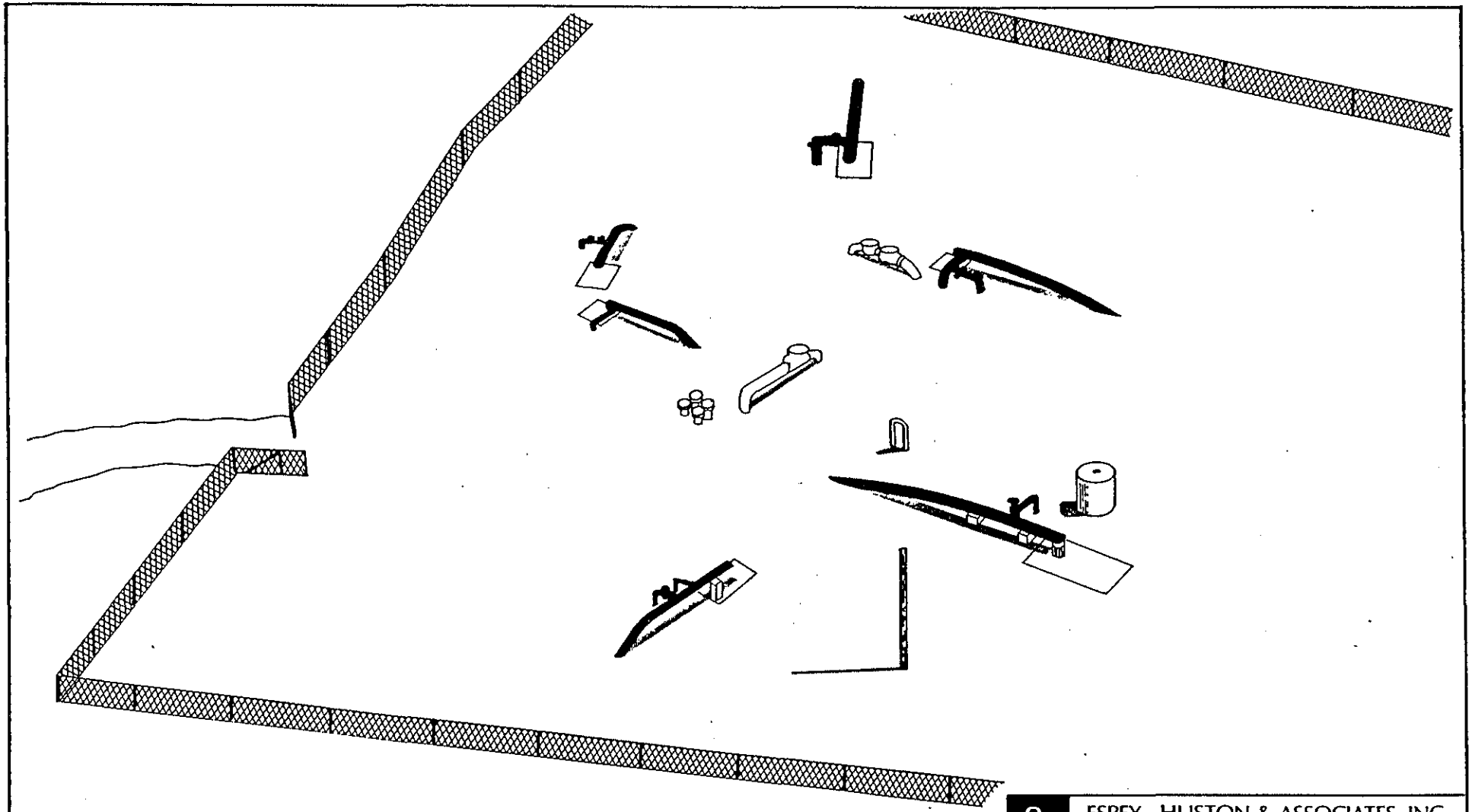
2.7.1 General Description

Samedan will use the existing 20-inch pipeline to continue transporting natural gas and condensate from offshore leases to a connecting pipeline onshore. All applicable operating standards under 36 CFR 9.41 have been met and are addressed below.

Samedan's portion of the facility consists of the valves and the retrieval system (described above) for the necessary periodic cleaning of the pipeline (see Figure 4 and photos 5, 6, 12 and 13, Appendix D).

A metal slug or "pig" is sent through the pipeline to clear the line. This "pig" is retrieved where the pipeline emerges for this purpose within the fenced site. The valves necessary to control line pressure are also located at this site. Any liquids (condensate and produced water) that accumulate in the pig trap are drained to the twenty-five barrel tank on the premises and ultimately transported by vacuum truck for proper disposal offsite. The condensate generally consists of volatile hydrocarbons such as propane and butane, as well as water.

Normal operating pressure for the pipeline is currently 350 psig (pounds per square inch gauge pressure). The line has been hydrostatically tested in place to 1,600 psig. The volume



ESPEY, HUSTON & ASSOCIATES, INC.
Engineering & Environmental Consultants

Figure 4
CONFIGURATION OF
ABOVE-GROUND FACILITY ("SIX PIGS")
PADRE ISLAND NATIONAL SEASHORE
KLEBERG COUNTY, TEXAS
SAMEDAN

of gas contained between the valves at normal pressure is approximately 10,311 mcf (thousand cubic feet).

The superintendent of the Padre Island National Seashore will be assured access to the site, as necessary, to monitor the operations and to ensure compliance with the Plan of Operations per 36 CFR 9.36(10). A functional key to the access gate at the "six pigs" location will be provided to the Park Service with the provision that Samedan is held harmless for any negligence or impact due to this access.

2.7.2 Schedule of Maintenance and Operations

The actual "pigging" operation takes place twice a month.

Inspection of the valves at "six pigs" occurs twice a month. At present, normal maintenance activities include valve inspection and lubrication, water dew point testing, and pressure gauge reading. Periodically, pipeline pigs will be removed from this location.

Maintenance of the above-ground facility and its access road is carried out in accordance with 36 CFR 9.41(f) on an as-needed basis by a third party lease service. Whether or not maintenance is needed at the facility is determined by motor vehicle trips to the site every three to six months. Routine maintenance includes the removal of sand which may have blown onto the access road and the mowing and cleaning of the fenced facility.

Once a month a helicopter is flown along the pipeline route to inspect for leaks. All helicopter flights are announced to the ranger station at Padre Island prior to commencement. At this time adjustments in the flight schedule can be made so as to avoid disturbance to migratory birds during certain times of the year. The flights begin at the origin of the pipeline in the Gulf of Mexico MU 818 field at latitude 27° 31′ north, longitude 97° 10′ west. The flight path continues in a southwesterly direction until latitude 27° 22′ north, longitude 97° 18′ west is reached. The flight path continues onshore on a westerly heading maintaining a minimum altitude of 300 ft to the caliche helispot at the "six pigs" site: latitude 27° 22′ north, longitude 97° 20′ west. The flight path is reversed to return to the MU 818 field.

2.7.3 Maintenance and Preventive Measures

The pressure and flow in the pipeline is monitored at the offshore platforms. The pipeline is protected against over-pressure and abnormal under-pressure by safety sensing devices at the source of flow. The valves located at "six pigs" are manual and also control flow in the pipeline. In the event of an emergency, the automatic valves at the platform activate. The valves at "six pigs" are operated to maintain the integrity of the pipeline facilities by pressure reduction through the valve isolation procedures.

For successful retrieval of a "pig", all valves must be in good operating order and must not leak. The valves are tested twice per month to ensure that they work properly. At present, normal maintenance activities include valve inspection and lubrication, water dew point testing, and pressure gauge reading.

Precautions are taken to ensure that no liquids are released to the environment during "pigging" operations. Liquids (condensate and produced water) that may accumulate in the pig trap are drained to the twenty-five barrel tank on the site and are ultimately disposed of by vacuum truck. The condensate generally consists of volatile hydrocarbons such as propane and butane, as well as water. Any minute amounts that may be swept out of the trap when the pig is retrieved are caught in the skid pan at the opening of the pipeline and quickly evaporate. The pipeline is protected against over-pressure and abnormal under-pressure by safety sensing devices at the source of flow.

In accordance with 36 CFR 9.41(f), the access road and fenced site are maintained. Blown sand is periodically cleared from the access road and the fenced site is kept clean and mowed. The operators are on notice that they are accountable for all contractor and subcontractor compliance with the requirements of the approved Plan of Operations per 36 CFR 9.41(g).

2.7.4 Contingency Plan

Upon discovery of a leak or break in the pipeline, Samedan personnel will notify the National Park Service, the U.S. Coast Guard, Houston Pipe Line Company, or any other receiver of gas, and any other parties deemed necessary at that time. Simultaneously, Samedan personnel

will be dispatched to Padre Island and to the offshore production facilities to assure the positive shut-off of gas by the automatic and manual equipment at those locations. These personnel will make an assessment of danger and this information will be relayed to the necessary parties. An appropriate employee will dispatch necessary personnel, equipment, tools, and material to the location. It should take approximately 45 minutes for pressure in the pipeline to equalize in the event of a total break in the line.

If fire occurs, the fire will burn itself out after the main line valves are closed, shutting off the gas supply. Attention will be given to the control of any secondary fires that might occur. Firefighting equipment and personnel will be flown in by helicopter, if necessary, and action will be immediately taken to minimize damage to property and to the environment..

An appropriate company employee will be responsible for the deployment and coordination of employees, public emergency personnel, and Park Service employees to ascertain the safety of all persons in the endangered area. The above-ground facility is not open to the general public, nor should tourists be using the access road. However, if unauthorized persons are in the area at the time of an emergency, they would be informed, evacuated, or otherwise protected to the extent possible.

Normal company maintenance personnel and equipment will be able to perform any necessary repairs to the pipeline. If additional equipment is needed, a list of rental agencies in the area is available so that the necessary equipment can be rented. A list of contractors who can perform the work, if required, is also kept.

National Weather Bureau notification of the initiation of specific hurricane procedures would activate the following procedures: disconnecting the 1-inch line from the pig receiver to the 250-barrel tank (on both ends), shutting all valves and bleeding down the supply lines, securing any loose items, and arranging for a pump truck to remove excess liquids (if necessary and it time allows).

Samedan will reimburse the National Park Service for damages to the local resources due to a main line or secondary fire that are directly attributed to the facilities owned and operated by Samedan. Further, Samedan will reimburse the National Park Service for any expenses incurred

for the dispatching of personnel and equipment by the National Park Service to contain and control a main line or secondary fire.

2.7.5 Emergency Contact

The 24-hour emergency contact number is as follows:

(512) 289-8872
MU 818A Platform (This is the closest location and is manned 24 hours a day)

Additional emergency contacts are:

Steve Molbert, Production Supervisor
350 Glenborough, Suite 240
Houston, Texas 77067-3299
(713) 876-6250 (24 hours a day: (713) 876-6201)

Steve Shuman
350 Glenborough, Suite 240
Houston, Texas 77067-3299
(713) 876-6250 (24 hours a day: (713) 876-6201)

3.0 DESCRIPTION OF THE ENVIRONMENT

3.1 GEOMORPHOLOGY

Padre Island is the longest barrier island in the United States and is separated from the mainland by the Laguna Madre. The island, broken only by Mansfield Channel, stretches 113 miles southward from Corpus Christi almost to Mexico and varies in width from 1,000 yards to 2.5 miles within the Seashore boundary. A common sequence of environments from the Gulf to the Laguna Madre includes the sand and shell beach; a stable ridge of fore-island dunes;

vegetated flats with scattered stabilized grass-covered dunes; the barren shifting sand of back-island dunes; and the featureless plains of wind-tidal flats. The Padre Island sand body overlies Pleistocene muds and sands on the barrier island.

3.2 CLIMATE

The climate of the Padre Island/Laguna Madre area is subtropical and semiarid. Average water temperatures in the Laguna range from 72°F in the north to 74°F in the south. Average annual rainfall ranges from approximately 29 inches at the northern end to 26 inches at the southern end. Southeasterly winds are dominant from March to November along Padre Island, carrying beach sand across Padre Island to form the back-island dunes. These dunes supply sediment to the Laguna Madre and to the wind tidal flats of the area (CSA, 1985).

3.3 BIOLOGY

3.3.1 Flora

The beaches, for the most part, are barren, although salt-spray-tolerant plants such as sea purslane (*Sesuvium portulacastrum*), beach morning glory (*Ipomoea stolonifera*) and the spreading vines of goatfoot morning glory (*Ipomoea pes-caprae*) are found growing in sparse patches on the backbeach (Weise and White, 1980; GCAGS, 1972). In the proposed project area, the foredunes of the seashore are drier and more sparsely vegetated than those further north. Vegetation that is present and helps to stabilize the foredunes includes the above-noted species plus sea oats (*Uniola paniculata*).

The vegetative cover of the fore-island dune ridge, when present, and of the backside of the fore-island dunes includes sea oats, bitter panicum (*Panicum amarum*), gulf croton (*Croton punctatus*), beach evening primrose (*Oenothera drummondii*), and seacoast bluestem (*Andropogon scoparius littoralis*) (Weise and White, 1980). In the immediate vicinity of the pipeline route, the foredune height ranges from approximately 9 to 18 feet. After the pipeline was emplaced,

"vegetational recovery on the reconstructed foredune appears to be approximately 70%, which is more impressive" (NPS, 1980).

As stated in the Continental Shelf Associates, Inc. (CSA) report (1985):

> The greatest diversity of plant species is found in the barrier flat and secondary dune zone. The most common species in this zone belong to the grasses. Dominant species include Gulfdune paspalum and sea oat (McAtee and Drawe, 1980). Other frequently found species include several panicum species, bluestem sp. (*Andropogon glomeratus*), seacoast bluestem (*Schizachyrium scoparium*), marshhay cordgrass, and plains wild indigo (*Baptisia leucophaea*). Sedges (*Cyperus* spp.), spike sedge (*Eleocharis obtusa*), and water pennywort (*Hydrocotyle bonariensis*) inhabit low moist areas.

The wind-tidal flats are, for the most part, barren, "although blue-green and red alga can be found on some of the tidal flats" (CSA, 1985).

The existing pipeline ROW passes through approximately 1.6 miles of Padre Island National Seashore, crossing many of the above-described environments. The buried pipeline crosses the National Seashore Boundary approximately 1,500 ft gulfward of the beach. Once on land, the 100-ft wide ROW crosses the sand beach, foredunes which are sparsely vegetated on the gulf side and more heavily vegetated on the back side, and a narrow dune field of unstabilized sand. The majority of the ROW, approximately 1.1 miles, passes through heavily vegetated grasslands and stabilized dune fields with almost 100% vegetative cover (Photo 1, Appendix D). Grasses and small shrubs dominate this cover. Samedan's pipeline terminates at the "six pigs" above-ground facility which is located in a heavily vegetated, stabilized dune field/grassland somewhat midway between the forebeach and the Laguna Madre (Photographs, Appendix D).

In the thirteen years since the pipeline was emplaced, the ROW has revegetated (except for the access road and helispot). It is difficult to determine where the actual pipeline is buried just by scanning the vegetative cover. A slight rise in elevation is evident over portions of the pipeline and the route can be traced by the proper signage which marks the center of the ROW.

3.3.2 Fauna

The dominant species of wildlife found on the Texas coast are birds, of which more than 350 species may be found within the region at various times of the year. Common birds of the region include roseate spoonbill; great and snowy egrets; little blue, great blue, and Louisiana herons; and numerous species of gulls and terns. Approximately 70 to 80% of the redhead duck population of the United States winters at Laguna Madre, along with many other waterfowl species.

According to NPS (1980), "migratory wildlife observed in the vicinity of the existing pipeline route consists primarily of the sandhill crane (*Grus canadensis*), waterfowl and passerines". The endangered peregrine falcon (*Falco peregrinus tundrius*) normally prefers back-island habitats further south, although these birds have been observed in the vicinity of the pipeline route.

According to the CSA (1985) report:

> Invertebrates in this zone tend to be small and inconspicuous. Polychaetes and haustoriid amphipods (Thebeau and Kana, 1981), *Donax* spp., and the mole crabs (*Emerita* spp.) are primarily residents of the intertidal zone. The ghost crab (*Ocypode quadrata*) is commonly found in the backshore zone. Kemp's ridley turtle (*Lepidochelys kempi*) have reportedly used Padre Island beaches for nesting (Shew et al., 1981).
>
> Common vertebrates of the foredune ridge include the keeled earless lizard (*Holbrookia propinqua propinqua*), the spotted ground squirrel (*Spermophilus spilosoma*) and kangaroo rats (*Dipodyms* spp.) in mid to upper elevations, and the south Texas pocket gopher (*Geomys personatus*) in low areas between dunes (Pelto Oil Company, 1981; Shew et al., 1981). Other mammals found in the foredune ridge and barrier flat zones of Padre Island include coyote (*Canis latrans*), California jackrabbit (*Leups californicus*), hispid cotton rat (*Sigmodon hispidus*), short-tailed grasshopper mouse (*Onychomys leucogaster*), white-footed deer mouse (*Peromyscus leucopus*), eastern mole (*Scalopus aquaticus*), raccoon (*Procyon lotor*), white-tailed deer (*Odocoileus virginianus*) and eastern cottontail (*Sylvilagus floridanus*) (Pelto Oil Company, 1981; Shew et al., 1981). Reptile species are few in number on the island although some species are common, particularly the western diamondback rattlesnake (*Crotalus atrox*) and the western coachwhip (*Masticophis flagellum testaceus*) (Shew et al., 1981). Other occasionally observed

reptiles include the western massassagua rattlesnake (*Sistrurus catenatus*), hog-nosed snake (*Heterodon nasicus*), glassy snake (*Arizona elegans*), Marcy's gartersnake (*Thamnophis marcianus*), and the slender glass lizard (*Ophisaurus ventralis*) (Woods, 1980). The ornate box turtle (*Terrapene ornata*) has also been reported on the island (Shew et al., 1981).

3.4 CULTURAL RESOURCES

Archaeologically, Padre Island is within the Texas Coastal cultural area as defined by Suhm et al. (1954). Although this cultural area contains an archaeological sequence that includes Paleo-Indian, Archaic and Late Prehistoric stages, evidence of Paleo-Indian sites is lacking due to the recent formation of the barrier island. Historically, Padre Island was occupied by Indians, then Spanish, and eventually became part of the State of Texas.

The Archaic is known from shell middens along the vicinity of Aransas and San Antonio bays and is represented primarily by tools made of shell and small dart points. The heaviest concentration tends to be seen around the above-mentioned bays but may also be found throughout the northern and northwestern coast of the Gulf of Mexico, Florida, the southern Atlantic coast, and the Caribbean Islands (Suhm et al., 1954).

Most of the coastal regions of Texas along with northeastern Mexico, including some inland areas of Texas, were inhabited by the Karankawa and Cohuiltecans of the western gulf culture (Newcomb, 1961).

A review of the archaeological site records on file at the Texas Archaeological Research Laboratory, Balcones Research Center, University of Texas at Austin, revealed that no previously recorded sites are within 1,000 feet of the pipeline route or the above-ground facility known as "six pigs". There is a recorded site approximately 1,200 feet from the existing pipeline, but there is no possibility of impact to this site from the operating and maintenance procedures employed by Samedan.

4.0 IMPACTS TO THE ENVIRONMENT

Continuing use of the pipeline for the transport of natural gas and of the above-ground facility for "pigging operations" will have no adverse impact on the regional geology or land features.

There will be no direct or cumulative harmful effects of the operation on the wildlife, vegetation, soils, water resources, noise or air quality. There will be no detrimental impact to the social or economic environments in the immediate area.

Indirect impacts, such as raised dust or sand, to the natural environment will be very slight as all vehicles will be confined to the established access road or along the prescribed flight path. While the access road, helispot and fenced facility are in use, these areas will not be allowed to revegetate. Some animals may be temporarily displaced due to vehicular or air traffic or normal operation of the facility.

Impacts on the islands' aquatic ecosystems (freshwater ponds and marine) should be nonexistent. The liquids (condensate) contained in the pipeline were discussed in Section 2.7.1. Precautions will be taken to ensure that no liquids will spill onto the ground or enter the soil during "pigging" operations. Liquids that would accumulate in the pig trap are drained to the 25 barrel tank on the site and would ultimately be disposed of by vacuum truck. Any minute amounts that may be swept out of the trap when the pig is retrieved would be caught in the skid pan at the opening of the pipeline and would quickly evaporate. The pipeline is protected against over-pressure and abnormal under-pressure by safety sensing devices at the source of flow. Although the potential does exist for a leak or break in the line, the contingency plan outlined in Section 2.7.4 and routine inspection and maintenance of the pipeline and facility should prevent or significantly minimized any adverse impact to the environment.

Wildlife species, including waterfowl, will not be endangered by the operation. The flight path, altitude, and time of any helicopter monitoring will be adjusted to avoid disturbance of colonial waterbirds which annually nest on spoil islands in the Laguna Madre. More specific

information regarding flight path can be found in Section 2.7.2. There may be some temporary displacement of birds due to vehicular traffic on the access road.

A minimum amount of particulates (i.e., sand or dust) may result from vehicle travel on the access road; however, visibility will not be impaired to any measurable degree. Emissions from combustion engines employed during maintenance activities will rapidly disperse and, therefore, the air quality related values should not increase significantly.

No historical or archaeological sites have been reported on or in close proximity to the pipeline route, the access road or the above-ground facility (see Section 3.4). Therefore, continued use of the access road and the above-ground facility will not impact any known or suspected cultural resources.

5.0 MITIGATION AND RECLAMATION

Any potential adverse effects from the transport of natural gas through the existing pipeline or operation of the above-ground facility will be mitigated by routine inspection and maintenance of the pipeline and equipment and by the operating guidelines (e.g., approved flight path, careful handling of the pigging operation) followed by Samedan. Further mitigation is provided by the contingency plan.

If the pipeline is abandoned by Samedan, the following reclamation would occur. The pipeline would be flushed sufficiently to clean it of any hydrocarbon residue, filled with fresh water or inert gas, and capped at the shoreline. The pipeline would remain in place, so there would be no disturbance to the vegetation which now covers the pipeline route.

If Samedan becomes sole user of the access road, helispot and/or Samedan's portion of the above-ground facility, Samedan will assume reclamation responsibility for those areas. Within 60 days of becoming sole user, Samedan will submit to the National Park Service an amended reclamation plan addressing routine maintenance and reclamation of the access road,

helispot, and that portion of the above-ground facility for which Samedan has been sole operator. In order to comply with 36 CFR 9.39, reclamation would begin as soon as possible and not later than six months after abandonment. Reclamation of these areas would be under the supervision of the Park Service and would include removal of the caliche, recontouring where appropriate with native sand, and revegetation with native plants and seeds. This revegetation would be monitored for two years to ensure at least 85% survival of the selected species.

A Performance Bond in the amount of $25,000 has been posted by Samedan.

6.0 REFERENCES CITED

Continental Shelf Associates, Inc. (CSA). 1985. Plan of Operations, Union Oil Company of California State Lease 83801, Well No. 1. Padre Island National Seashore. Galveston, Texas.

Gulf Coast Association of Geological Societies (GCAGS). 1972. Padre Island National Seashore National Seashore Field Guide.

National Park Service (NPS). 1980. Environmental Review and Analysis. Assumption of Special Use Permit 3:613:010 by El Paso Natural Gas Company from Houston Pipe Line Company. Padre Island National Seashore, Texas.

Newcomb, W.W. *The Indians of Texas: From Prehistoric to Modern Times.* University of Texas, Austin.

Suhm, et al. 1954. An Introductory handbook of Texas Archaeology. *Bulletin of the Texas Archaeological Society.* 25:119-133.

Weise, B.R. and W.A. White. 1980. *Padre Island National Seashore-Guidebook 17.* Bureau of Economic Geology. Austin.

APPENDIX A

Bill of Sale

BILL OF SALE

STATE OF TEXAS

COUNTIES OF KLEBERG & NUECES

KNOW ALL MEN BY THESE PRESENTS: That EL PASO NATURAL GAS COMPANY, a Delaware corporation (hereinafter called "Seller"), for and in consideration of Ten Dollars ($10.00) and other good and valuable consideration in hand paid by SAMEDAN PIPE LINE CORPORATION, a corporation; NEW ENGLAND ENERGY, INC., a corporation; and HOME PETROLEUM CORPORATION, a corporation (hereinafter called "Buyers"), receipt of which is hereby acknowledged, does hereby grant, bargain, sell and convey unto Buyers, their successors and assigns, those certain natural gas pipelines, together with all appurtenances to such property (hereinafter called Pipeline Facilities), being a portion of Seller's "Mustang Island Gathering System," located in Kleberg and Nueces Counties, Texas, which Pipeline Facilities are more fully described in Exhibit "A" attached hereto and made a part hereof. Buyers hereby purchase and accept, in as is condition, the Pipeline Facilities conveyed herein.

This Bill of Sale is effective as of the 1st day of June, 1989.

EL PASO NATURAL GAS COMPANY

Walter G. Henderson
Executive Vice President

SAMEDAN PIPE LINE CORPORATION

Mr. Boyce Perry
Vice President

NEW ENGLAND ENERGY, INC.
By: Samedan Oil Corporation,
its Attorney-in-Fact

By:
Mr. Boyce Perry
Vice President

HOME PETROLEUM CORPORATION

E. C. Hambrook
President/Chief Executive
Officer

THE STATE OF TEXAS

COUNTY OF EL PASO

This instrument was acknowledged before me on this 31st day of December, 1989, by Walter G. Henderson, Executive Vice President of EL PASO NATURAL GAS COMPANY, a Delaware corporation, on behalf of said corporation.

My Commission Expires:

10-4-92

Notary Public

JAN ROSS
NOTARY PUBLIC
STATE OF TEXAS
EXPIRES
10-04-92

THE STATE OF

COUNTY OF

This instrument was acknowledged before me on this 5th day of June, 1989, by Boyce Perry, Vice President of SAMEDAN PIPE LINE CORPORATION, a corporation, on behalf of said corporation.

My Commission Expires

Oct. 6, 1990

Notary Public

THE STATE OF

COUNTY OF

This instrument was acknowledged before me on this 5th day of June, 1989, by Boyce Perry, Vice President of Samedan Oil Corporation, Attorney-in-Fact for NEW ENGLAND ENERGY, INC., a corporation, on behalf of said corporation.

My Commission Expires:

Oct. 6, 1990

Notary Public

THE STATE OF Colorado

COUNTY OF Denver

This instrument was acknowledged before me on this 7th day of June, 1989, by E. C. Hambrook, President/Chief Executive Officer of HOME PETROLEUM CORPORATION, a corporation, on behalf of said corporation.

My Commission Expires:

My Commission expires January 24, 1992

Notary Public
1225 17th St.
Denver, Co 80202

This Assignment of Lease is specifically subject to Sublease Agreement dated December 1, 1980, between EL PASO NATURAL GAS COMPANY and HOUSTON PIPELINE COMPANY, recorded in Volume 341, Page 527, Records of Nueces County; and Amendment to said Sublease Agreement dated March 17, 1981, between EL PASO NATURAL GAS COMPANY and HOUSTON PIPELINE COMPANY, recorded in Volume 344, Page 835, Records of Nueces County, Texas.

Assignee hereby assumes the obligations contained in the above-mentioned Surface Lease from and after the date of this assignment.

This Assignment is effective the 1st day of June, 1989.

IN WITNESS WHEREOF, Assignor and Assignee have caused this instrument to be executed this 7th day of June, 1989.

EL PASO NATURAL GAS COMPANY

Walter G. Henderson
Executive Vice President

SAMEDAN PIPELINE CORPORATION

Mr. Boyce Perry
Vice President

NEW ENGLAND ENERGY, INC.
By: Samedan Oil Corporation,
its Attorney-in-Fact

By
Mr. Boyce Perry
Vice President

HOME PETROLEUM CORPORATION

E. C. Hambrook
President/Chief Executive Officer

December 21, 1988

EL PASO NATURAL GAS COMPANY

TRANSFER OF MUSTANG ISLAND GATHERING SYSTEM
20" O.D. TRUNK LINE, COMMONLY CALLED "TRUNK A"
IN THE MUSTANG ISLAND GATHERING SYSTEM
15.107 MILES OF 20" O.D. PIPE

Beginning at a point in Block A-10, Nicholas & Juan Jose Balli Survey, Kleberg County, Texas, said point being 2,377,584.6 "x" coordinate and 622,412.4 "y" coordinate based on the South Zone of the Texas Lambert Grid System; thence in an easterly direction across Block A-10, to a point on the East boundary of said Block A-10.

Continuing thence in a northeasterly direction across Blocks 975, 974, 967, 965, 964, 959, 960, 955, 954, 953, 840-L, 819-L, 942 & 818-L, Mustang Island Area, ending at a point in said Block 818-L, said point being on Samedan Platform "A" 2,431,565.0 "x" coordinate and 673,553.4 "y" coordinate based on the South Zone of the Texas Lambert Grid System

Dwg. No. A853.0-1 thru 5
853.1-1,2&3
853.0-X-1
A853.4-X-1 thru 8

R/W No. 790074

APPENDIX B

GLO ME-890058 and Assignment of Easement

VOL 24 PAGE 510

185273

R/W 79074 G

VOL 30 PAGE 462

The State of Texas

Austin, Texas

EASEMENT ON STATE LAND

MISCELLANEOUS EASEMENT NO. ME 890058

RENEWAL OF ME 4150-A

STATE OF TEXAS §

KNOW ALL MEN BY THESE PRESENTS:

COUNTY OF KLEBERG §

(1) By virtue of the authority granted by the Texas Natural Resources Code, Section 51.291, et seq. (Vernon 1978), and by Land Resources, Title 31, Texas Administrative Code, Chapter 13, and subject to all rules and regulations promulgated by the Commissioner of the Texas General Land Office pursuant thereto and all other statutes and amendments to the Texas Natural Resources Code, the STATE OF TEXAS, hereinafter called GRANTOR, acting by and through Garry Mauro, Commissioner of the General Land Office, hereby grants to El Paso Natural Gas Company, P.O. Box 1492, El Paso, Texas 79978-1492, (915) 541-2600, hereinafter called GRANTEE, GRANTEE's heirs, successors, and assigns, an easement for a right-of-way to maintain, operate, inspect, and repair two (2) 8 5/8, one (1) 10 3/4, and one (1) 20 inch (O.D.) pipelines for the purpose of transporting natural gas on and across the following public school land in Kleberg County, Texas:

A fifty (50) foot wide right-of-way being twenty-five (25) feet either side of the pipeline.

Right-of-way No. 1: A 20" pipeline beginning in State Tract 818L, SW/4 with the easement beginning at X=2,431,585; Y=673,553 and proceeding to the southwest for 4,359.85 rods to a point on the Padre Island National Seashore boundary at X=2,385,154; Y=620,229 in State Tract 975s, the Gulf of Mexico. See Exhibits A, B, C, D, E, F, G, and H attached to and made part of this contract.

RECORDER'S MEMORANDUM:
All Or Parts Of The Text On This Page Was Not Clearly Legible For Satisfactory Recordation

R/W 79074

REG NO. 66413

EXHIBIT A

Right-of-way No 2: A 8 5/8" pipeline beginning in State Tract 820L NW/4 with the easement beginning at X=2,430,621; Y=665,530 and proceeding in a curved direction to the west for 322.93 rods to terminate at X=2,426,184; Y=666,589 in State Tract 942s at a tie-in point on the 20" pipeline. See Exhibits A & I attached to and made a part of this contract.

Right-of-Way No. 3: A 8 5/8" pipeline beginning in State Tract 818L SW/4 with the easement beginning at 2,427,783; Y=673,388 and proceeding southeast for 190.52 rods to terminate at X=2,430,149; Y=671,400 in State Tract 818L SW/4 at a tie-in point on the 20" pipeline. See Exhibits A & J attached to and made a part of this contract.

Right-of-Way No. 4: A 10" pipeline in State Tract 818L SW/4 with the easement beginning at X=2,433,064; Y=674,731 and proceeding in a curved direction to the southwest for 316.77 rods to terminate at X=2,430,576; Y=671,981 at a tie-in point on the 20" pipeline. See Exhibits A & K attached to and made part of this contract.

(2) This easement is for a total period of ten (10) years, beginning on the 16th day of April, 1989, unless the same be renewed, extended, cancelled, or changed by the proper official of the State of Texas as authorized by law.

(3) As consideration for the granting of this easement, GRANTEE agrees to pay to the Commissioner of the Texas General Land Office at Austin, Texas, the sum of Sixty Thousand Eight Hundred Twenty-nine and 15/100 Dollars ($60,829.15).

(4) Provided that GRANTEE has complied with the terms of this contract to the complete satisfaction of the Commissioner of the Texas General Land Office, GRANTOR grants to GRANTEE the option to extend and renew this easement contract for an additional term of ten (10) years at a cost of Thirty Thousand Four Hundred Fourteen and 58/100 Dollars ($30,414.58) based on fifty percent (50%) of the amount assessed according to the fee schedule of the Texas General Land Office in effect on the effective date of this contract.

(5) In addition to the rental, GRANTEE shall pay and discharge all taxes, general and special assessments, and other charges of every description which during the term of this easement may be levied on or assessed against the land or the improvements constructed upon the above-described premises, provided that such taxes result from this easement. GRANTEE shall pay all such taxes, charges, and assessments to the public office charged with the collection thereof not less than five (5) days before the same shall become delinquent, and GRANTEE agrees to indemnify and hold GRANTOR harmless from all such taxes, charges, and assessments. GRANTEE shall have the right in good faith at his sole cost and expense to contest any such taxes, charges, and assessments, and shall be obligated to pay the contested amount only if and when finally determined to be owed.

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(6) It is agreed that when any structure is placed on the right-of-way herein granted, the location of the easement shall thereby become fixed at the location of such structure, and the course and location of said easement shall not be changed except by agreement with the Commissioner of the Texas General Land Office and any other governmental agency with jurisdiction over same.

(7) GRANTEE is hereby granted the right of ingress and egress to and from said right-of-way for the purpose of maintaining, operating, repairing, said pipelines, and such right is not granted for any other purpose. GRANTEE agrees to occupy the land only to the extent and for the length of time necessary to maintain, operate, repair said pipelines.

(8) GRANTEE shall not assign or sublease the rights granted in this easement in whole or in part to any third party for any purpose without the prior written approval of the Commissioner of the Texas General Land Office.

(9) GRANTEE shall permit GRANTOR's agents, representatives, and employees to enter into and on the above-described premises at all reasonable times for the purpose of inspection and for any other reasonable purpose necessary to protect GRANTOR's interest in the above-described premises.

(10) GRANTOR reserves the right to use any or all of the area contained within the above-described premises for any purpose not inconsistent with the use of the easement by the GRANTEE.

(11) GRANTEE shall use the highest degree of care and all proper safeguards to prevent pollution of air, ground, and water in and around the above-described premises and shall comply with all rules or orders which the Commissioner of the Texas General Land Office deems necessary for the protection and preservation of public lands and waters. In the event of pollution which is the result of GRANTEE's use of the above-described premises, GRANTEE shall use all means available to recapture all pollutants which have escaped and shall be responsible for all damage of any nature arising from such pollution.

(12) If a leak occurs in a pipeline, the flow shall be stopped at once and immediate notice shall be given to the Commissioner of the Texas General Land Office.

(13) GRANTEE agrees to keep the Commissioner of the Texas General Land Office informed of GRANTEE's current address and agrees to inform the Commissioner of any change of address of GRANTEE prior to any such change.

(14) GRANTEE shall not use, or permit the use of, the premises for any illegal purposes. GRANTEE will comply, and will cause its officers, employees, agents, and invitees to comply, with all applicable laws, ordinances, rules, and regulations of governing agencies concerning the use of the premises.

(15) GRANTEE agrees to indemnify and hold GRANTOR harmless for liability or damages of any kind or character based on the claims of any person which result directly or indirectly from the use of the right-of-way herein granted and/or any breach by GRANTEE of the terms, covenants, or conditions provided herein.

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(16) In the event that GRANTEE fails to pay any money due under the terms of this agreement when the same becomes due, or is in breach of any condition or covenant set forth herein, the Commissioner of the Texas General Land Office shall have the right, at his option, to forfeit this agreement and terminate all rights inuring to the GRANTEE herein by sending written notice of such forfeiture by United States Mail to the last known address of GRANTEE. Upon sending of such written notice, this agreement shall terminate and all rights granted herein to GRANTEE shall revert to GRANTOR (subject to reinstatement by the Commissioner of the Texas General Land Office at his option). Such forfeiture and termination shall not prejudice the rights of GRANTOR for any claim of payments due.

(17) GRANTEE shall remove personal property, structures, and man-made improvements authorized by this agreement within one hundred twenty (120) days from the date of termination of this easement. GRANTEE shall take whatever measures necessary to restore the area involved as nearly as practicable to the same condition that existed before GRANTEE entered thereon. Upon written request from GRANTEE, the Commissioner of the Texas General Land Office may grant a written waiver of the requirements in this paragraph, if he deems such waiver is in the best interest of the State.

(18) GRANTEE further agrees to comply with the following condition(s):

(A) to bury the pipeline below the bottom of the gulf or bay at a depth of no less than twenty-four (24) inches or to place the pipeline on a structure of sufficient height to insure reasonable safety from flood damage;

(B) to construct a steel line from new or reconditioned pipe in first-class condition;

(C) to hydrostatically test pipelines to be in compliance with Title 49 of the Code of Federal Regulations, Part 192;

(D) to electrically test or x-ray any steel line field weld to insure reasonable safety from leaks;

(E) to dope and treat any steel line, before it is submerged, to offer reasonable resistance to the corrosive effect of salt water (it is not necessary to dope and treat the portion of a steel line that will not be submerged);

(F) to bury the pipeline by evenly backfilling the sand, gravel, soil, or other material excavated during construction onto the disturbed area to conform as much as is reasonably possible with the bottom profile of the adjacent natural submerged land; and

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(G) to select a right-of-way, when feasible, that avoids shell reefs, submerged grass beds, and marshes.

IN TESTIMONY WHEREOF, witness my hand and the seal of the Texas General Land Office this 15th day of May, 19 89.
(Date of the Commissioner's signature)

El Paso Natural Gas Company

By: Wayne C. Stephens

Wayne C. Stephens
PRINT NAME
Attorney-in-Fact
TITLE
GRANTEE

Approved
Audit .....
Engineering
Contents
Execution

THE STATE OF TEXAS

By: [signature]
GARRY MAURO
Commissioner of the
Texas General Land Office
GRANTOR

STATE OF TEXAS

COUNTY OF EL PASO

This instrument was acknowledged before me on April 28, 19 89,

by Wayne C. Stephens, Attorney-in-Fact of El Paso Natural Gas Company,
(Name of Officer/Title of Officer) (Name of Corporation)

a Delaware Corporation, on behalf of said corporation.
(State of corporation)

O. Cynthia Jauregui
Notary Public

O. CYNTHIA JAUREGUI
Print Name

My commission expires:

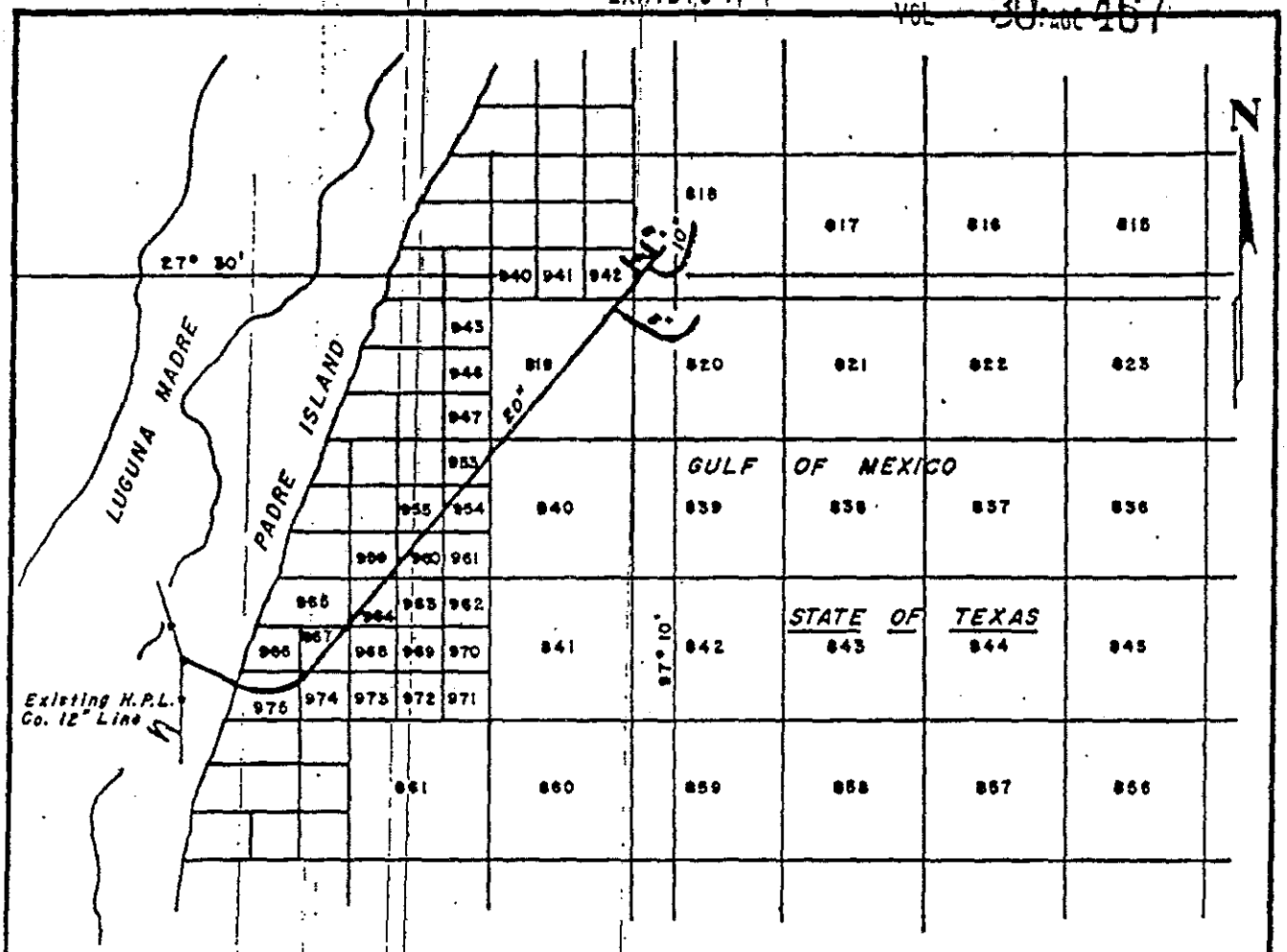
OFFICIAL SEAL
O. CYNTHIA JAUREGUI
NOTARY PUBLIC
In and for the State of Texas
My commission expires 05-22-93

RECORDER'S MEMORANDUM:
All Or Parts Of The Text On This Page
Was Not Clearly Legible For Satisfactory
Recordation

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Exhibit A

VOL ~~30~~ PAGE ~~467~~



Scale in Feet

20,000 0 20,000

RECORDER'S MEMORANDUM:
All Or Parts Of The Text On This Page Was Not Clearly Legible For Satisfactory Recordation

THIS PIPELINE TO BE USED TO TRANSPORT NATURAL GAS FROM VARIOUS GAS FIELDS OFFSHORE TEXAS TO VARIOUS DISTRIBUTION POINTS

El Paso NATURAL GAS COMPANY

MUSTANG ISLAND GATHERING SYSTEM
ROUTE MAP
AS-BUILT
KLEBERG COUNTY, TEXAS

DATE: 1-28-80 SHEET 1 OF 12

Earl L. Montgomery
LOCATION ENGINEER

TEXAS REGISTERED ENGINEER NO. 12791

CORPS OF ENGINEERS PERMIT NO. 13553

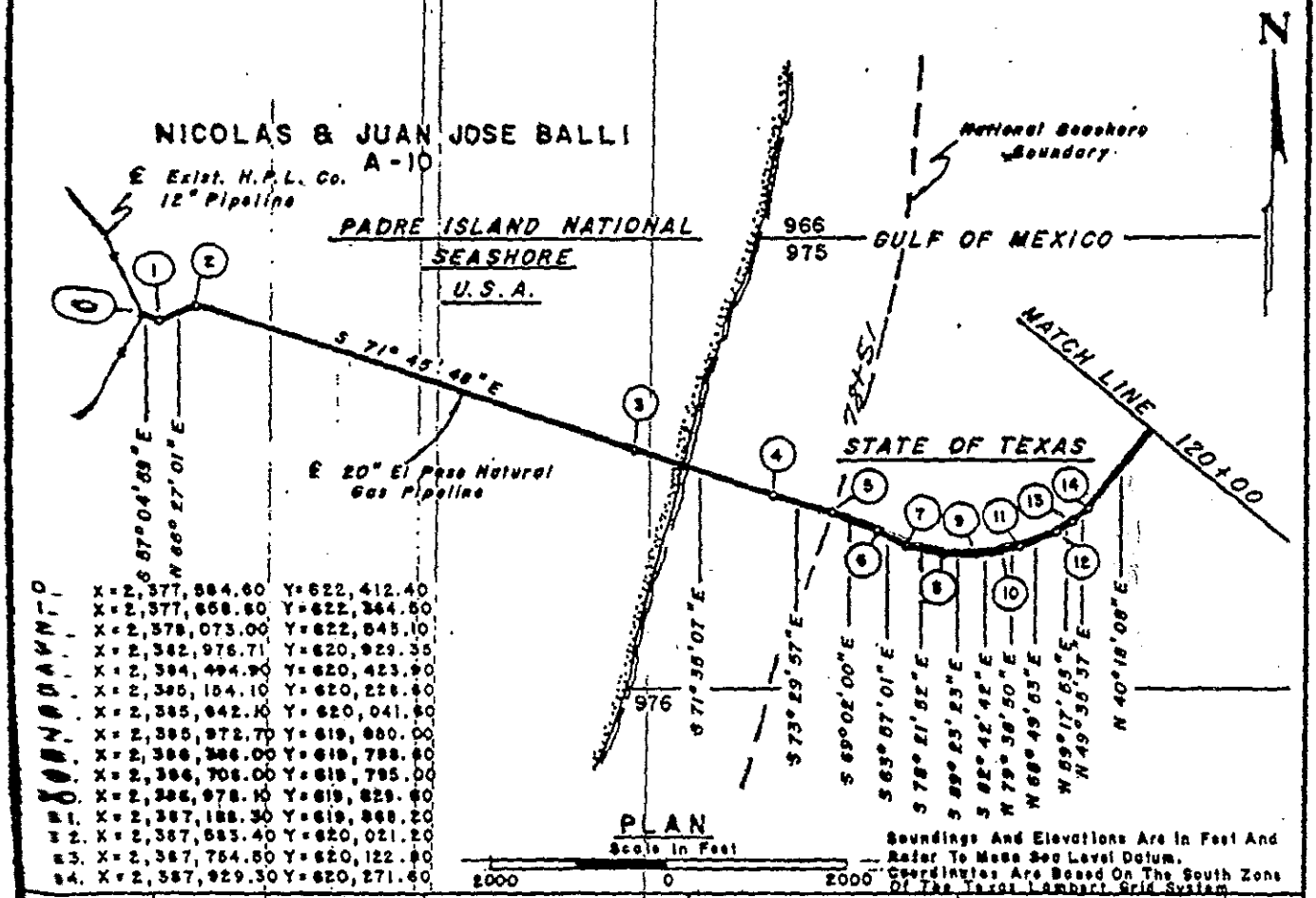
DWG. NO. A853.4-X-1

VOL 30 PAGE 468
VOL 24 PAGE 516

RECORDER'S MEMORANDUM
All Or Parts Of The Text On This Page Was Not Clearly Legible For Satisfactory Recordation

Exhibit B

KLEBERG COUNTY, TEXAS



MAXIMUM OPERATING PRESSURE:

PIPE IS 20" O.D. x .406" W.T. (84.94 LBS./FT.) A.P.I. 5LX GR. X-42 D.S.A.W. BLACK LINE PIPE, COATED WITH 3/16" BOMASTIC (37.87 LBS./FT.) & 2.4" THICK CONCRETE (175 LBS./FT.) PIPE WAS HYDROSTATICALLY TESTED IN PLACE TO 1000 P.S.I.G.

THIS PIPELINE TO BE USED TO TRANSPORT NATURAL GAS FROM VARIOUS GAS FIELDS OFFSHORE TEXAS TO VARIOUS DISTRIBUTION POINTS

NATURAL GAS COMPANY

MUSTANG ISLAND GATHERING SYSTEM
TRUNK A
AS-BUILT
KLEBERG COUNTY, TEXAS

DATE: 1-15-80 SHEET 2 OF 12

Earl L. Montgomery
LOCATION ENGINEER

TEXAS REGISTERED ENGINEER NO. 12791

CORPS OF ENGINEERS
PERMIT NO. 13553

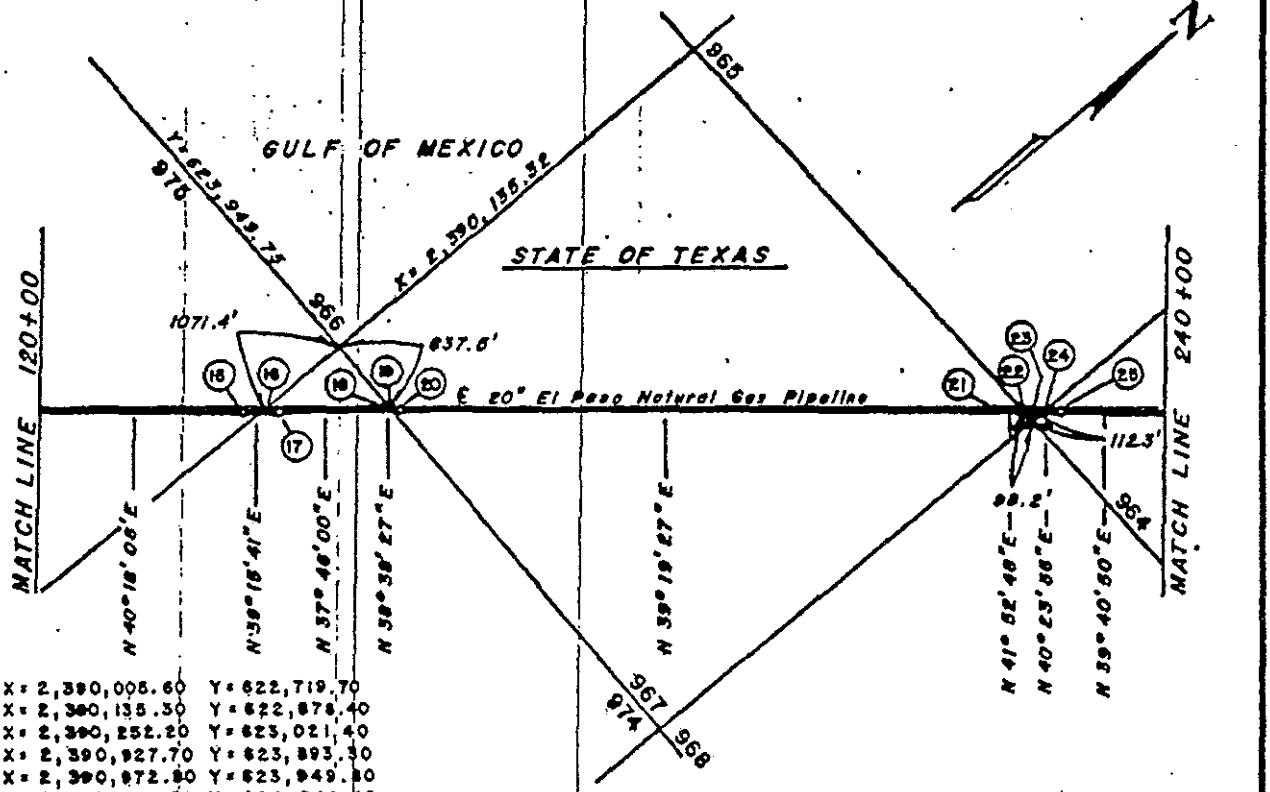
DWG. NO. A853.4-X-2

VOL NO. 30 PAGE 469

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Exhibit C

KLEBERG COUNTY, TEXAS



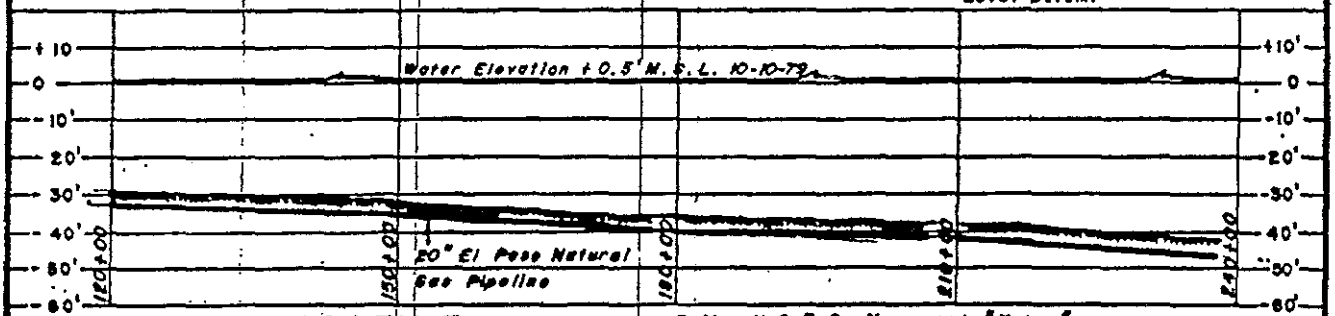
15. X = 2,390,005.60 Y = 622,719.70
16. X = 2,390,135.30 Y = 622,878.40
17. X = 2,390,252.20 Y = 623,021.40
18. X = 2,390,927.70 Y = 623,893.30
19. X = 2,390,972.80 Y = 623,949.80
20. X = 2,391,045.30 Y = 624,040.40
21. X = 2,395,076.30 Y = 628,961.10
22. X = 2,395,317.20 Y = 629,229.70
23. X = 2,395,367.70 Y = 629,286.10
24. X = 2,395,415.30 Y = 629,342.10
25. X = 2,395,565.10 Y = 629,518.10

PLAN

Scale in Feet

2000 0 2000

---Soundings And Elevations Are In Feet And Refer To Mean Sea Level Datum.



PROFILE

Horiz.

Vert.

50 0 50

B.M. - U.S.E.D. Monument "Kenny" Elev. 17.37' M.S.L.

Coordinates Are Based On The South Zone Of The Texas Lambert Grid System.

PIPE IS 20" O.D. x .406" W.T. (84.96 LBS./FT.) A.P.I. 5LX GR. X-42 D.S.A.W. BLACK LINE PIPE, COATED WITH 5/8" BOMASTIC (37.97 LBS./FT.) & 2.4" THICK CONCRETE (173 LBS./FT.) PIPE WAS HYDROSTATICALLY TESTED IN PLACE TO 1800 P.S.I.G.

MAXIMUM OPERATING PRESSURE:

THIS PIPELINE TO BE USED TO TRANSPORT NATURAL GAS FROM VARIOUS GAS FIELDS OFFSHORE TEXAS TO VARIOUS DISTRIBUTION POINTS

NATURAL GAS COMPANY

MUSTANG ISLAND GATHERING SYSTEM
TRUNK A
AS-BUILT
KLEBERG COUNTY, TEXAS

DATE: 1-18-80 SHEET 3 OF 12

E. J. Montalbo
LOCATION ENGINEER

TEXAS REGISTERED ENGINEER NO. 12791

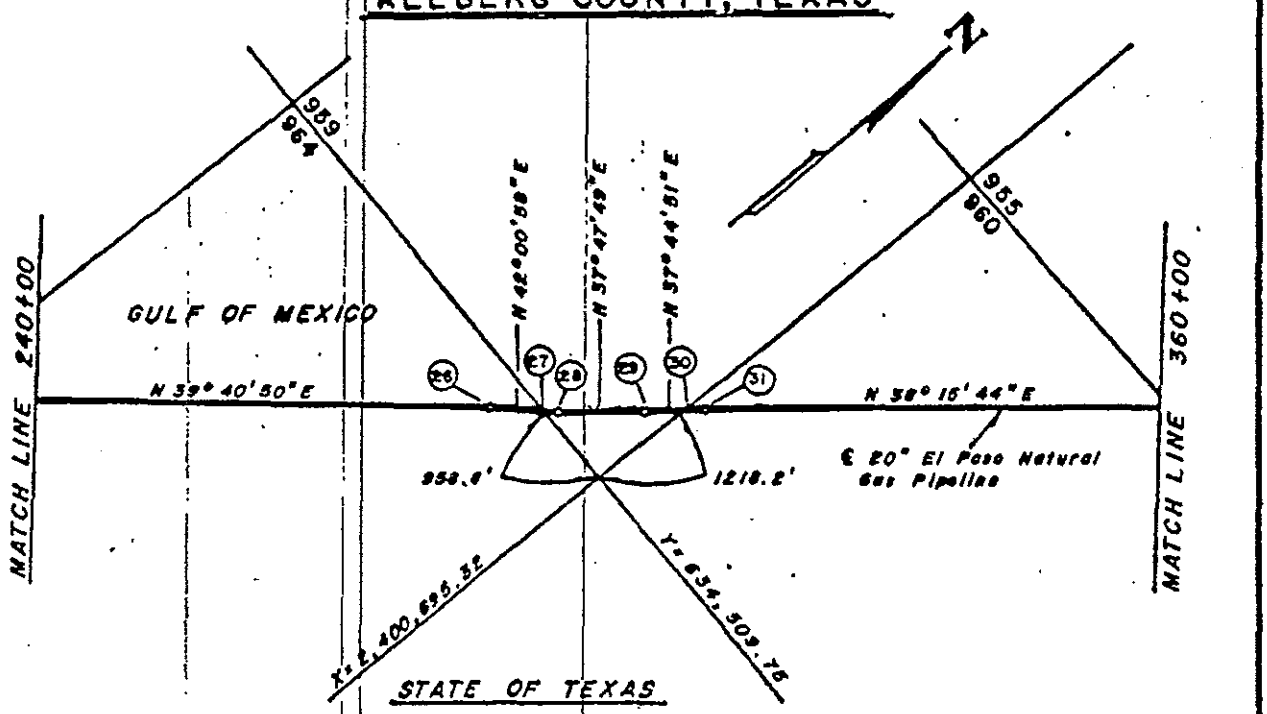
CORPS OF ENGINEERS
PERMIT NO. 13553

DWG. NO. AB53.4-X-3

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VOL. 30 PAGE 470

Exhibit D

KLEBERG COUNTY, TEXAS



PLAN

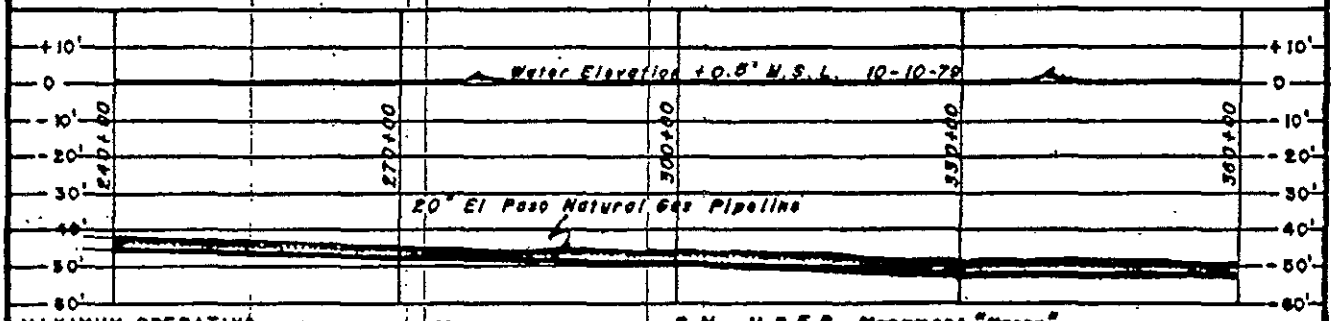
Scale in Feet

2000 0 2000

26.	X = 2,399,356.00	Y = 634,067.40
27.	X = 2,399,736.50	Y = 634,509.80
28.	X = 2,399,840.60	Y = 634,625.30
29.	X = 2,400,405.70	Y = 635,353.90
30.	X = 2,400,695.30	Y = 635,728.00
31.	X = 2,400,787.00	Y = 635,846.40

Soundings And Elevations Are In Feet And Refer To Mean Sea Level.

Coordinates Are Based On The South Zone Of The Texas Lambert Grid System.



PROFILE

Horiz. 2000 0 2000

Vert. 90 0 60

MAXIMUM OPERATING PRESSURE:

PIPE IS 20" O.D. x .406" W.T. (84.96 LBS./FT.) A.P.I. 5LX GR. X-42 D.S.A.W. BLACK LINE PIPE, COATED WITH 5/8" BOMASTIC (37.97 LBS./FT.) & 2.4" THICK CONCRETE (175 LBS./FT.) PIPE WAS HYDROSTATICALLY TESTED IN PLACE TO 1800 P.S.I.G.

THIS PIPELINE TO BE USED TO TRANSPORT NATURAL GAS FROM VARIOUS GAS FIELDS OFFSHORE TEXAS TO VARIOUS DISTRIBUTION POINTS

B.M. - U.S.E.P. Monument "Kenny" Elev. 17.37' M.S.L.

NATURAL GAS COMPANY

MUSTANG ISLAND GATHERING SYSTEM
TRUNK A
AS-BUILT
- KLEBERG COUNTY, TEXAS

DATE: 1-18-80 SHEET 4 OF 12

Earl D. Hamilton
LOCATION ENGINEER

TEXAS REGISTERED ENGINEER NO. 12791

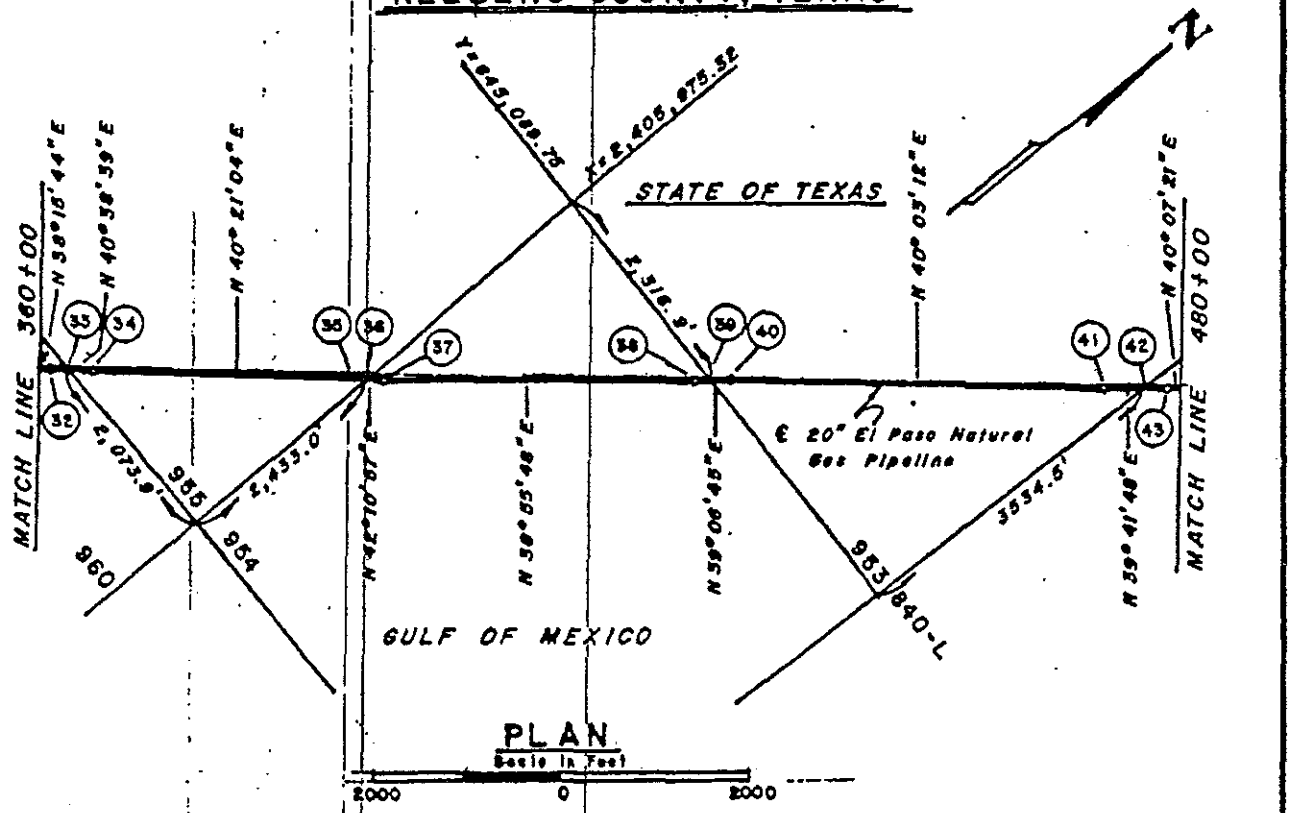
CORPS OF ENGINEERS
PERMIT NO. 13553

DWG. NO. A853.4-X-4
RW NO. 79074

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Exhibit E

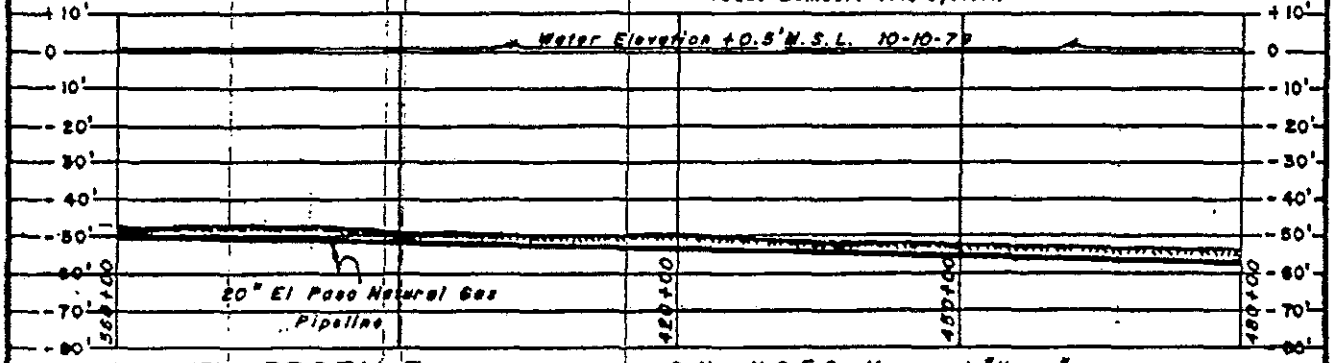
KLEBERG COUNTY, TEXAS



32. X = 2,403,848.2 Y = 639,727.8
33. X = 2,403,901.4 Y = 639,789.9
34. X = 2,404,141.7 Y = 640,069.7
35. X = 2,405,905.3 Y = 642,143.5
36. X = 2,405,976.3 Y = 642,222.8
37. X = 2,406,129.4 Y = 642,392.8
38. X = 2,408,215.7 Y = 644,976.6
39. X = 2,408,292.2 Y = 645,069.7
40. X = 2,408,451.4 Y = 645,265.8
41. X = 2,411,022.9 Y = 648,324.3
42. X = 2,411,255.3 Y = 648,604.3
43. X = 2,411,436.3 Y = 648,822.8

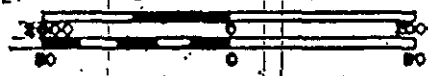
Soundings And Elevations Are In Feet And Refer To Mean Sea Level Datum.

Coordinates Are Based On The South Zone Of The Texas Lambert Grid System.



PROFILE

MAXIMUM OPERATING PRESSURE:



PIPE IS 20" O.D. x .406" W.T. (84.96 LBS./FT.) A.P.I. 5LX GR. X-42 D.S.A.W. BLACK LINE PIPE, COATED WITH 5/8" BOMASTIC (37.97 LBS./FT.) & 2.4" THICK CONCRETE (173 LBS./FT.) PIPE WAS HYDROSTATICALLY TESTED IN PLACE TO 1600 P.S.I.G.

THIS PIPELINE TO BE USED TO TRANSPORT NATURAL GAS FROM VARIOUS GAS FIELDS OFFSHORE TEXAS TO VARIOUS DISTRIBUTION POINTS

S.M. - U.S.E.D. Monument "Kenny." Elev. 17.37' M.S.L.

NATURAL GAS COMPANY

MUSTANG ISLAND GATHERING SYSTEM
-TRUNK A
AS-BUILT
-KLEBERG COUNTY, TEXAS

DATE: 1-21-80 SHEET 5 OF 12

Earl D. Montieth
LOCATION ENGINEER

TEXAS REGISTERED ENGINEER NO. 12791

CORPS OF ENGINEERS PERMIT NO. 13553

DWG. NO. A853.4-X-5

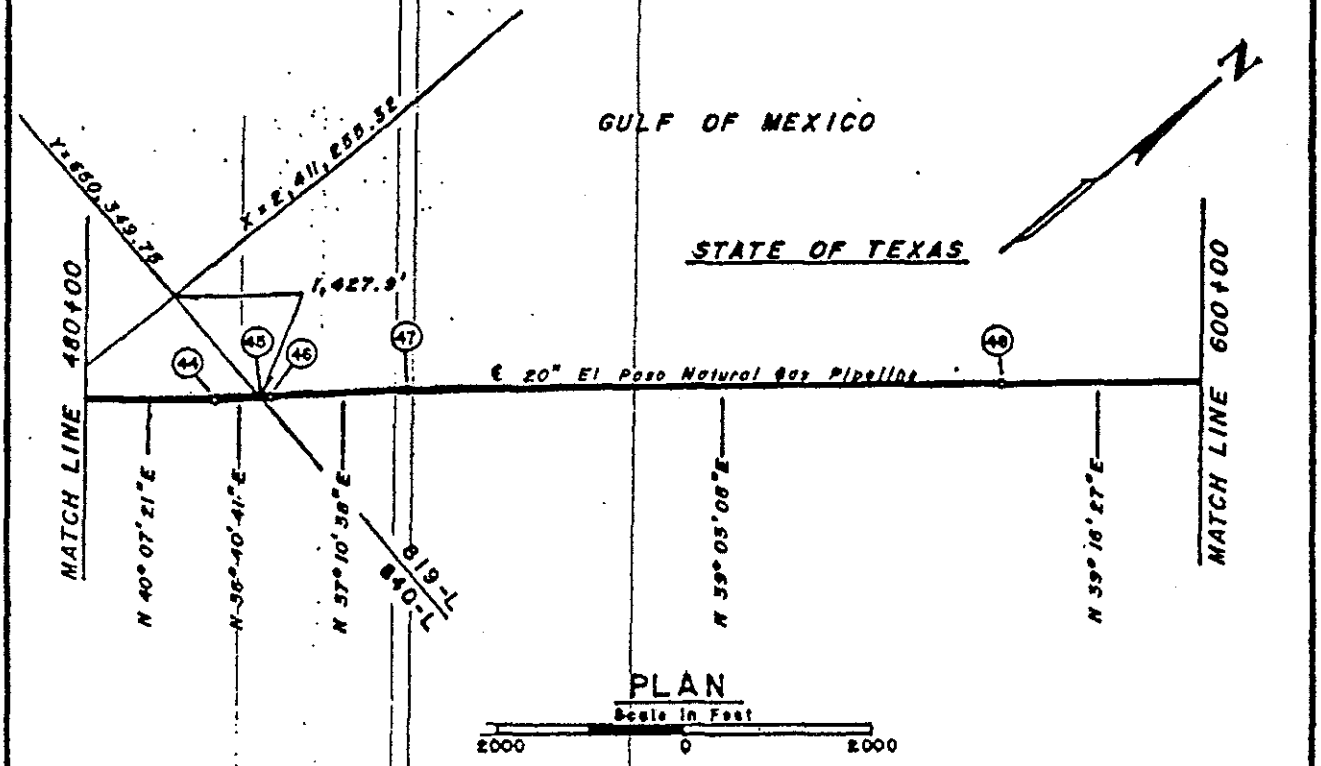
R/W NO. 79074

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VOL 30 PAGE 472

Exhibit F

KLEBERG COUNTY, TEXAS



PLAN

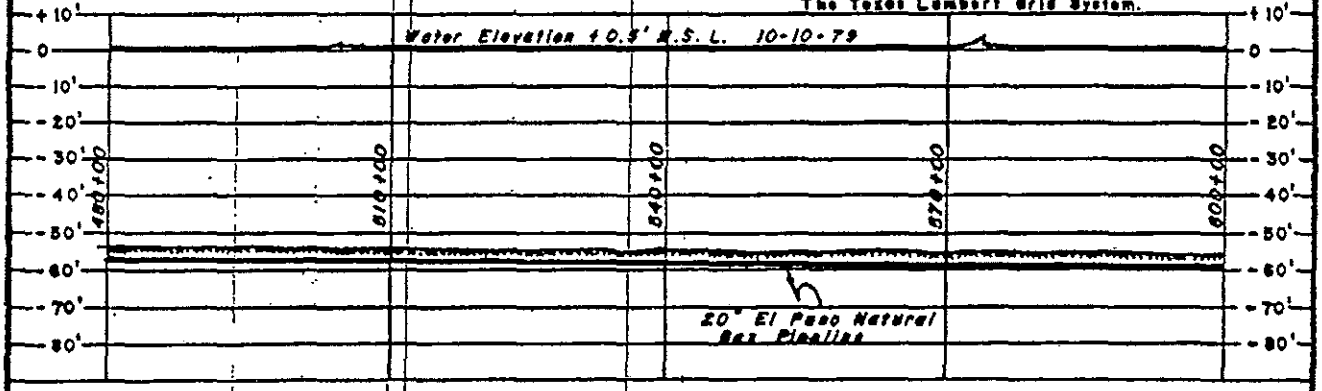
Scale in Feet

2000 0 2000

44. X = 2,412,376.3 Y = 649,937.7
45. X = 2,412,683.2 Y = 650,349.8
46. X = 2,412,729.7 Y = 650,412.2
47. X = 2,413,615.0 Y = 651,879.5
48. X = 2,417,648.0 Y = 656,847.0

Soundings And Elevations Are In Feet And Refer To Mean Sea Level.

Coordinates Are Based On The South Zone Of The Texas Lambert Grid System.



PROFILE

Horiz. 2000 0 2000

Vert. 80 0 80

S.M. - U.S.E.D. Monument "Kenny" Elev. 47.57' M.S.L.

PIPE IS 20" O.D. x .406" W.T. (84.96 LBS./FT.) A.P.I. 5LX GR. X-42 D.S.A.W. BLACK LINE PIPE, COATED WITH 5/8" BOMASTIC (37.97 LBS./FT.) & 2.4" THICK CONCRETE (175 LBS./FT.) PIPE WAS HYDROSTATICALLY TESTED IN PLACE TO 1600 P.S.I.G.

MAXIMUM OPERATING PRESSURE:

THIS PIPELINE TO BE USED TO TRANSPORT NATURAL GAS FROM VARIOUS GAS FIELDS OFFSHORE TEXAS TO VARIOUS DISTRIBUTION POINTS

NATURAL GAS COMPANY

MUSTANG ISLAND GATHERING SYSTEM TRUNK A AS-BUILT KLEBERG COUNTY, TEXAS

DATE: 1-21-80 SHEET 6 OF 12

Earl D. Monteith — TEXAS REGISTERED ENGINEER NO. 12791

LOCATION ENGINEER

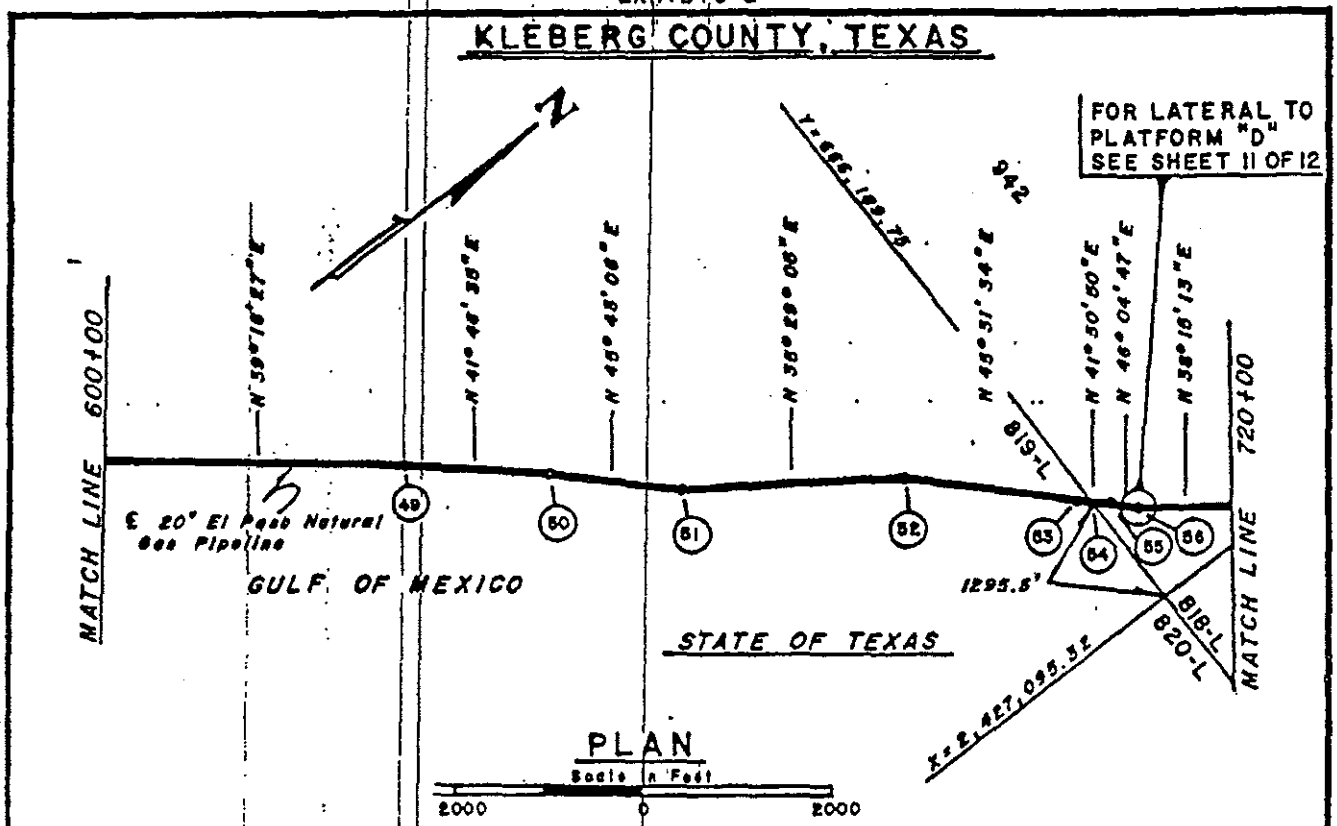
CORPS OF ENGINEERS PERMIT NO. 13553

DWG. NO. A853-4-X-6

RW NO. 79074

Exhibit G

KLEBERG COUNTY, TEXAS



PLAN

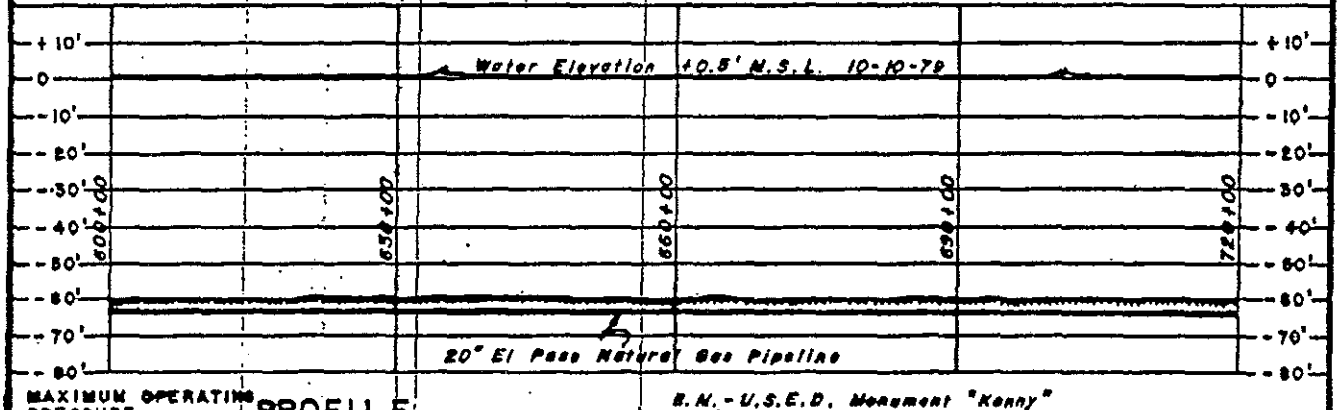
Scale in Feet

2000 0 2000

49.	X = 2,421,046.8	Y = 650,707.0
50.	X = 2,422,089.8	Y = 661,874.5
51.	X = 2,423,095.5	Y = 662,855.1
52.	X = 2,424,477.8	Y = 664,794.1
53.	X = 2,425,744.2	Y = 666,127.6
54.	X = 2,425,799.8	Y = 666,189.7
55.	X = 2,426,977.8	Y = 666,388.1
56.	X = 2,426,777.8	Y = 666,880.7

Soundings And Elevations Are In Feet And Refer To Mean Sea Level Datum.

Coordinates Are Based On The South Zone Of The Texas Lambert Grid System.



PROFILE

B.M. - U.S.E.D. Monument "Kenny" Elev. 47.37' M.S.L.

MAXIMUM OPERATING PRESSURE:

Horiz. Vert.

80 0 80

PIPE IS 20" O.D. x .406" W.T. (84.96 LBS./FT.) A.P.I. 5LX, GR. X-42 E.R.W. BLACK LINE PIPE, COATED WITH 5/8" BITUMASTIC (37.97 LBS./FT.) & 2.4" THICK CONCRETE (173 LBS./FT.) PIPE WAS HYDROSTATICALLY TESTED IN PLACE TO 1800 P.S.I.G.

THIS PIPELINE TO BE USED TO TRANSPORT NATURAL GAS FROM VARIOUS GAS FIELDS OFFSHORE TEXAS TO VARIOUS DISTRIBUTION POINTS

SAMEDAN NATURAL GAS COMPANY

MUSTANG ISLAND GATHERING SYSTEM TRUNK A AS-BUILT KLEBERG COUNTY, TEXAS

DATE: 1-22-80 SHEET 7 OF 12

Earl K. Montalbo
LOCATION ENGINEER

TEXAS REGISTERED ENGINEER NO. 12791

CORPS OF ENGINEERS PERMIT NO. 13553

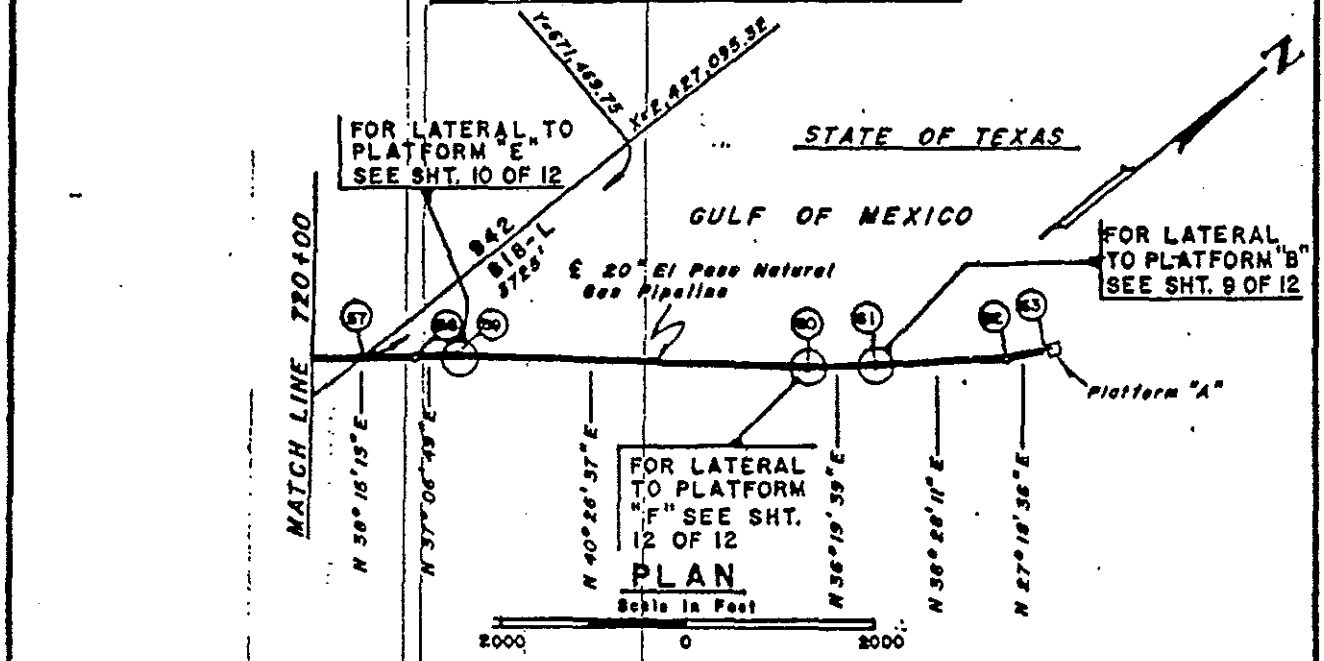
DWG. NO. A853.4-X-7

R/W NO. 79074

VOL 30 PAGE 474
VOL 24 PAGE 522

Exhibit H

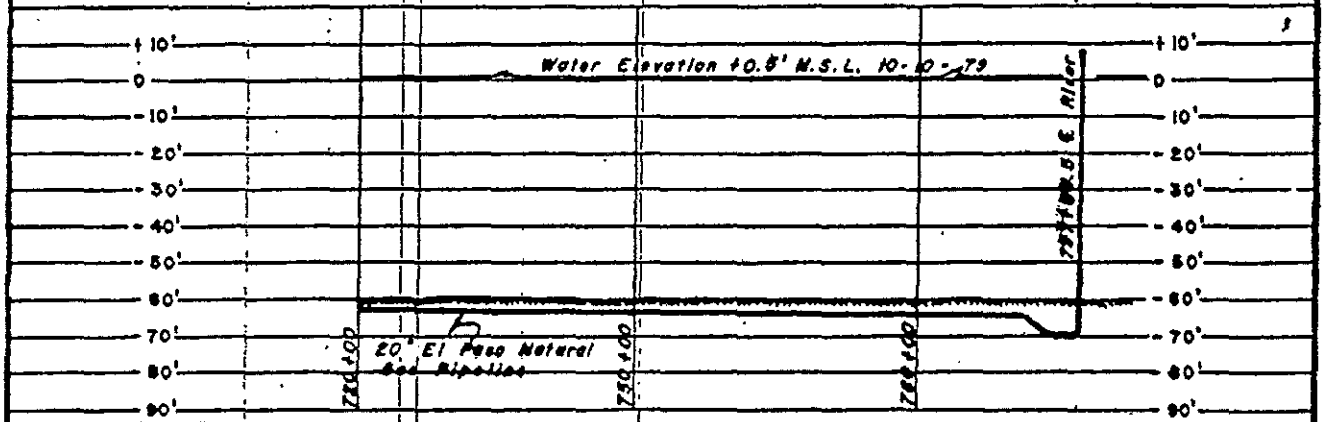
KLEBERG COUNTY, TEXAS



57. X= 2,427,095.5 Y= 667,744.8
58. X= 2,427,452.4 Y= 668,197.7
59. X= 2,427,722.0 Y= 668,554.0
60. X= 2,430,186.2 Y= 671,408.6
61. X= 2,430,571.9 Y= 671,876.5
62. X= 2,431,401.0 Y= 673,097.0
63. X= 2,431,885.0 Y= 673,553.4

Soundings And Elevations Are In Feet And Refer To Mean Sea Level Datum.

Coordinates Are Based On The South Zone Of The Texas Lambert Grid System.



MAXIMUM OPERATING PRESSURE:

B.M. - U.S.E.D. Monument "Kenny" Elev. 47.37' M.S.L.

PIPE IS 20" O.D. x .406" W.T. (84.98 LBS./FT.) A.P.I. 5LX GR. X-42 D.S.A.W. BLACK LINE PIPE, COATED WITH 5/8" MASTIC (37.97 LBS./FT.) & 2.4" THICK CONCRETE (173 LBS./FT.) PIPE WAS HYDROSTATICALLY TESTED IN PLACE TO 1600 P.S.I.G.

THIS PIPELINE TO BE USED TO TRANSPORT NATURAL GAS FROM VARIOUS GAS FIELDS OFFSHORE TEXAS TO VARIOUS DISTRIBUTION POINTS

NATURAL GAS COMPANY

MUSTANG ISLAND GATHERING SYSTEM
TRUNK A
AS-BUILT
KLEBERG COUNTY, TEXAS

DATE: 1-23-79 SHEET 8 OF 12

Earl R. Monteith
LOCATION ENGINEER.

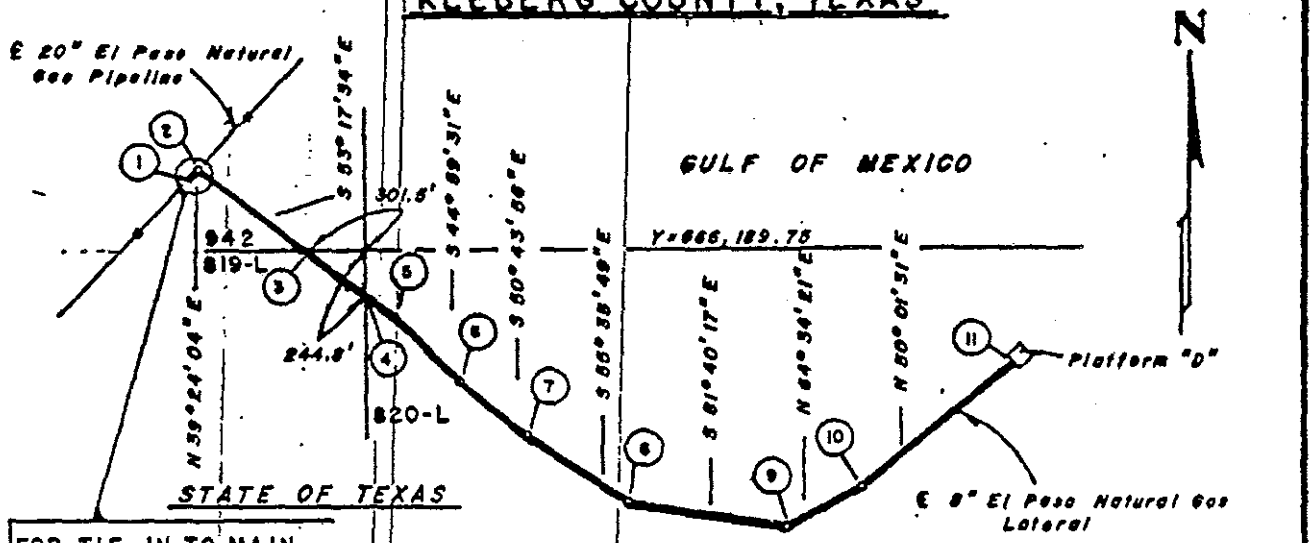
TEXAS REGISTERED ENGINEER NO. 12791

CORPS OF ENGINEERS
PERMIT NO. 13553

DWG. NO. A853.4-X-8
RW NO 79074

Exhibit I VOL 30 PAGE 475

KLEBERG COUNTY, TEXAS



FOR TIE-IN TO MAIN LINE SEE SHT. 7 OF 12

PLAN

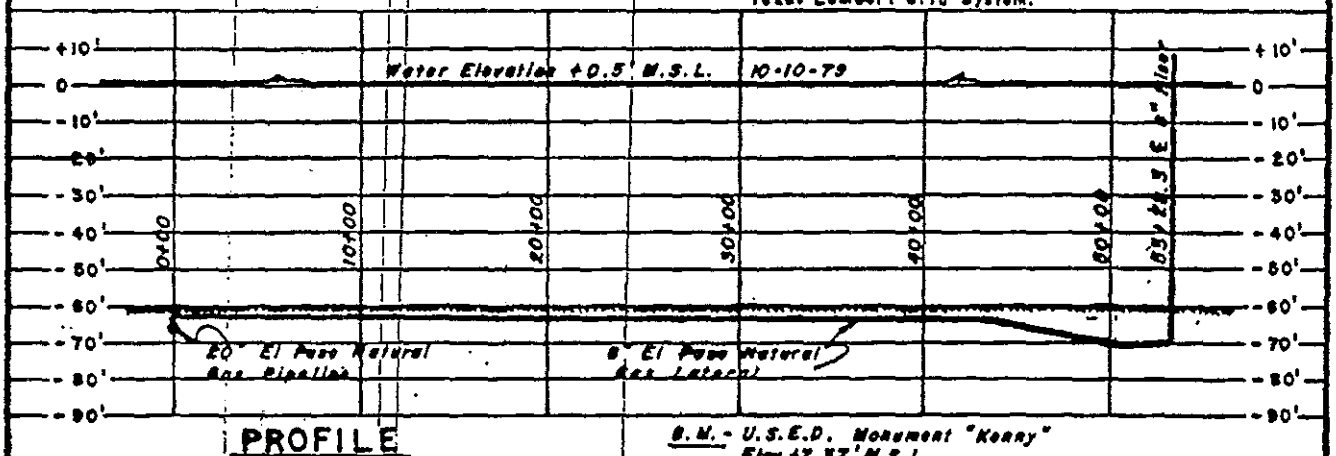
Scale in Feet

1000 0 1000

1.	X = 2,425,184.16	Y = 866,698.81	7.	X = 2,427,959.70	Y = 865,203.90
2.	X = 2,426,212.41	Y = 866,623.20	8.	X = 2,428,493.00	Y = 864,838.70
3.	X = 2,426,793.80	Y = 866,189.73	9.	X = 2,429,320.90	Y = 864,717.50
4.	X = 2,427,095.32	Y = 865,964.92	10.	X = 2,430,085.90	Y = 865,081.20
5.	X = 2,427,255.10	Y = 865,845.80	11.	X = 2,430,621.50	Y = 865,630.10
6.	X = 2,427,615.50	Y = 865,485.30			

Soundings And Elevations Are In Feet And Refer To Mean Sea Level Datum.

Coordinates Are Based On The South Zone Of The Texas Lambert Grid System.



PROFILE

Horizontal
Vertical
50 0 50

B.M. - U.S.E.D. Monument "Kenny" Elev. 47.37' M.S.L.

MAXIMUM OPERATING PRESSURE:
PIPE IS 8.625" O.D. x .322" W.T. (28.06 LBS./FT.) A.P.I. 5L GR. "B" SMLS. BLACK STEEL LINE PIPE, COATED WITH .500" DOMASTIC (13.49 LBS./FT.) & 1" THICK CONCRETE (52 LBS./FT.) PIPE WAS HYDROSTATICALLY TESTED IN PLACE TO 1050 P.S.I.G.

THIS PIPELINE TO BE USED TO TRANSPORT NATURAL GAS FROM VARIOUS GAS FIELDS OFFSHORE TEXAS TO VARIOUS DISTRIBUTION POINTS

NATURAL GAS COMPANY

MUSTANG ISLAND GATHERING SYSTEM
LATERAL A-1
AS-BUILT
KLEBERG COUNTY, TEXAS

DATE: 1-24-80 SHEET 11 OF 12

LOCATION ENGINEER

TEXAS REGISTERED ENGINEER NO. 12781

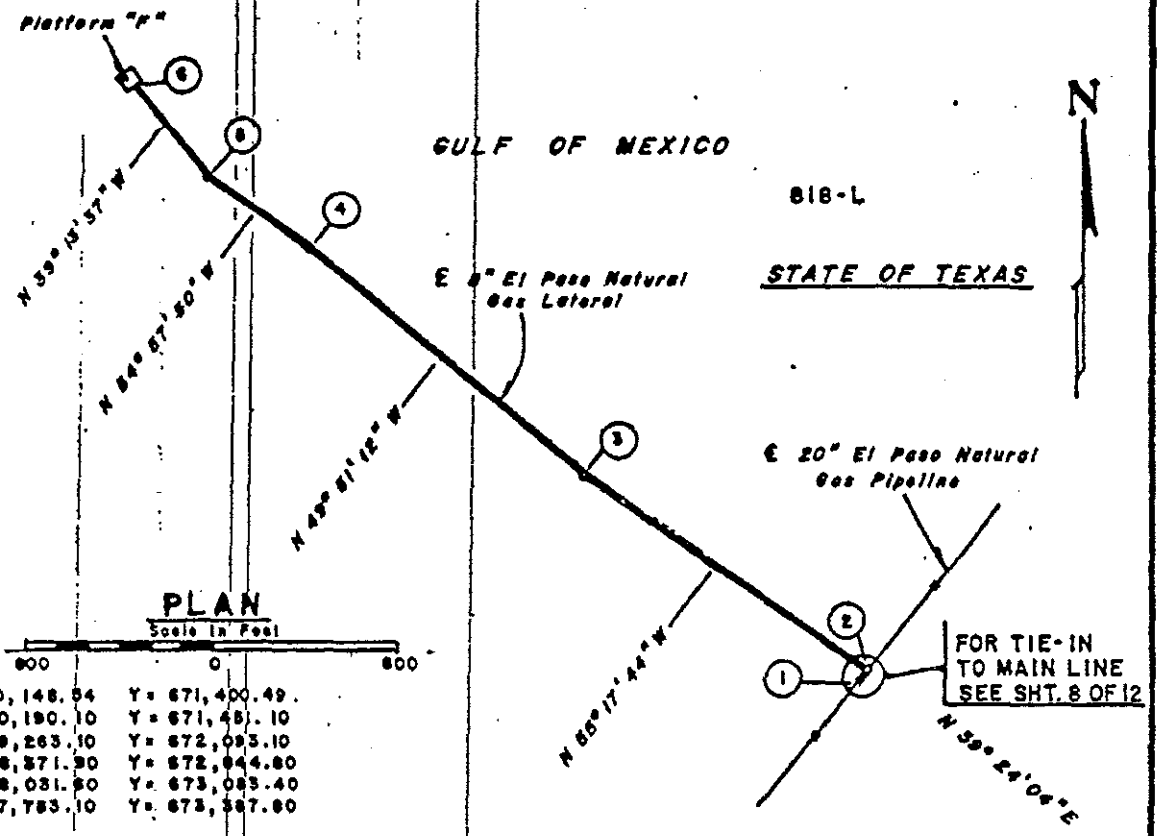
CORPS OF ENGINEERS PERMIT NO. 13553

DWG. NO. 1A853.4-X-1

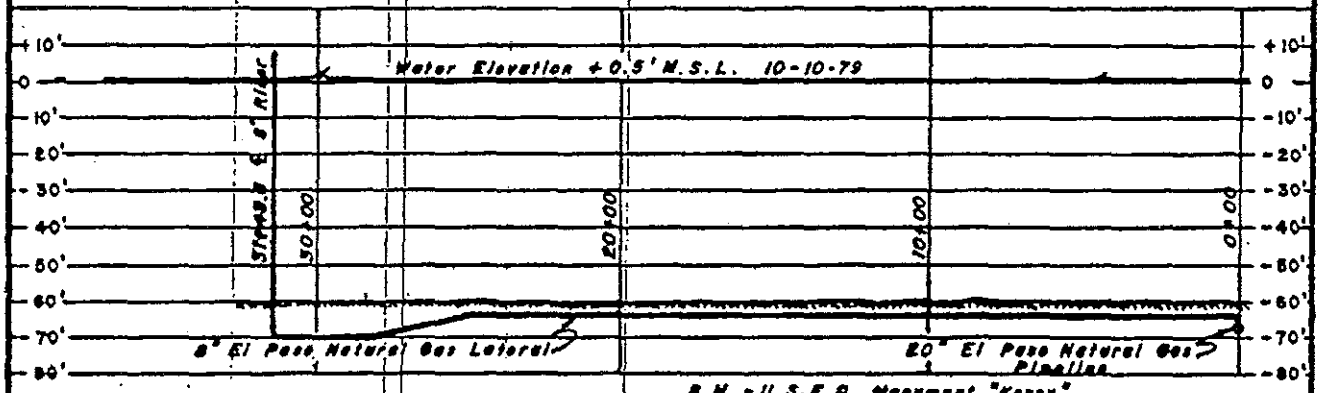
VOL 30 PAGE 476
VOL 24 PAGE 524

Exhibit J

KLEBERG COUNTY, TEXAS



1. X = 2,430,148.54 Y = 671,400.49
2. X = 2,430,190.10 Y = 671,481.10
3. X = 2,429,263.10 Y = 672,093.10
4. X = 2,428,371.90 Y = 672,644.80
5. X = 2,428,031.60 Y = 673,083.40
6. X = 2,427,783.10 Y = 673,387.80



PROFILE

Horiz. Vert.

B.M. - U.S.E.G. Monument "Kenny" Elev. 47.37' M.S.L.

Soundings And Elevations Are In Feet And Refer To Mean Sea Level Datum.

Coordinates Are Based On The South Zone Of The Texas Lambert Grid System.

PIPE IS 8.625" O.D. x .322" W.T. (66.86 LBS./FT.) A.P.I. 5L GR. "B" SMLS. BLACK STEEL LINE PIPE, COATED WITH .800" BOMASTIC (13.43 LBS./FT.) & 1" THICK CONCRETE (32 LBS./FT.) PIPE WAS HYDROSTATICALLY TESTED IN PLACE TO 1850 P.S.I.G. MAXIMUM OPERATING PRESSURE

THIS PIPELINE TO BE USED TO TRANSPORT NATURAL GAS FROM VARIOUS GAS FIELDS OFFSHORE TEXAS TO VARIOUS DISTRIBUTION POINTS

NATURAL GAS COMPANY

MUSTANG ISLAND GATHERING SYSTEM
LATERAL A-3
AS-BUILT
KLEBERG COUNTY, TEXAS

DATE: 1-25-80 SHEET 12 OF 12

LOCATION ENGINEER

TEXAS REGISTERED ENGINEER NO. 12791

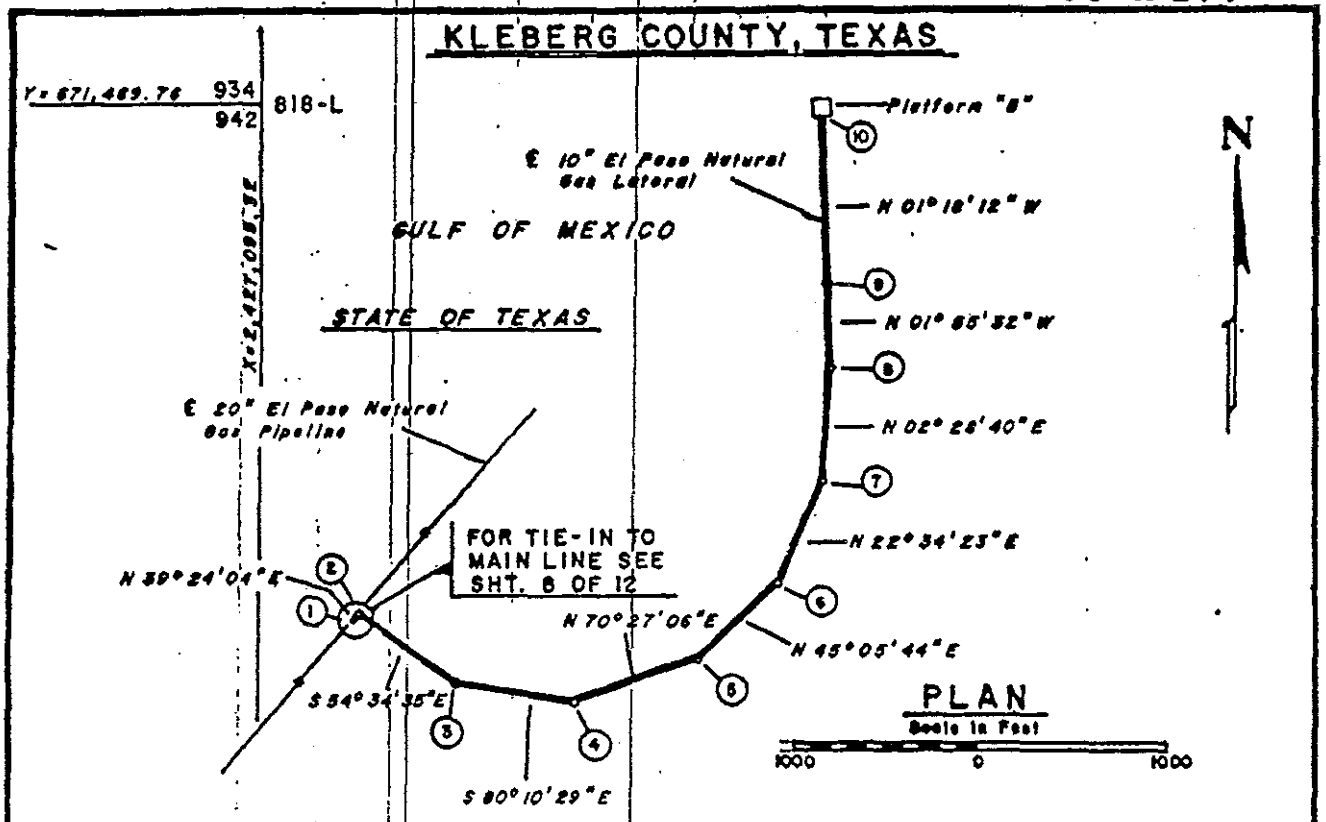
CORPS OF ENGINEERS PERMIT NO. 13553

DWG. NO. SA853.4-X-1

VOL 24 PAGE 525

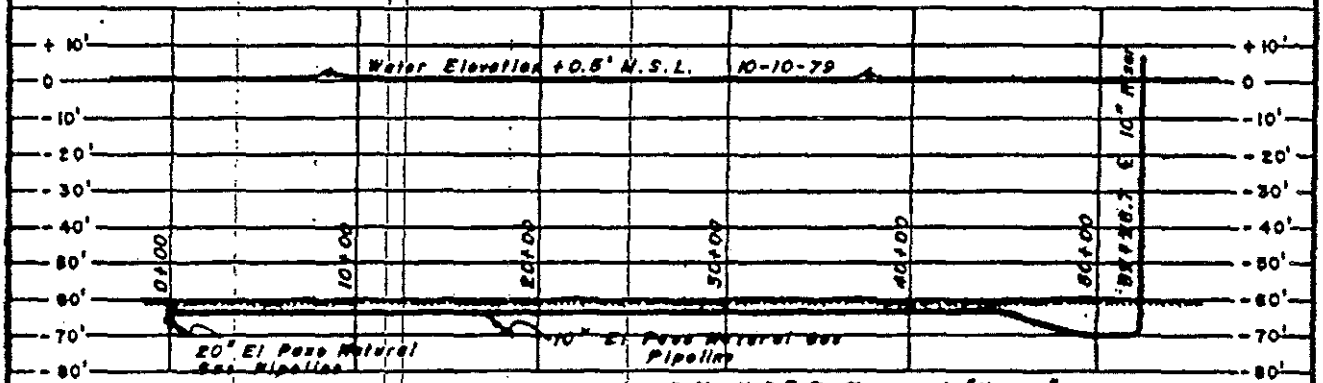
Exhibit K VOL 30 PAGE 477

KLEBERG COUNTY, TEXAS

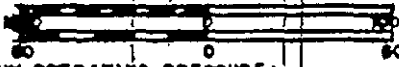


1.	X = 2,430,676.43	Y = 671,930.91	6.	X = 2,432,839.00	Y = 672,176.10
2.	X = 2,430,605.50	Y = 672,016.50	7.	X = 2,433,074.00	Y = 672,741.40
3.	X = 2,431,145.30	Y = 671,632.30	8.	X = 2,433,100.30	Y = 673,349.20
4.	X = 2,431,764.30	Y = 671,625.10	9.	X = 2,433,094.00	Y = 673,834.00
5.	X = 2,432,419.10	Y = 671,767.60	10.	X = 2,433,083.80	Y = 674,730.70

Coordinates Are Based On The South Zone Of The Texas Lambert Grid System.



PROFILE



B.M. - U.S.E.E. Monument "Kenny" Elev. 7.37' M.S.L.

Soundings And Elevations Are In Feet And Refer To Mean Low Lower Datum.

MAXIMUM OPERATING PRESSURE: PIPE IS 10.750" O.D. x .365" W.T. (40.48 LBS./FT.) A.P.I. 5LX GR. X-42 S.S.A.W. BLACK LINE PIPE, COATED WITH .500" COMASTIC (16.66 LBS./FT.) & 1" THICK CONCRETE (39 LBS./FT.) PIPE WAS HYDROSTATICALLY TESTED IN PLACE TO 1660 P.S.I.G.

THIS PIPELINE TO BE USED TO TRANSPORT NATURAL GAS FROM VARIOUS GAS FIELDS OFFSHORE TEXAS TO VARIOUS DISTRIBUTION POINTS

NATURAL GAS COMPANY

MUSTANG ISLAND GATHERING SYSTEM
LATERAL A-4
AS-BUILT
KLEBERG COUNTY, TEXAS

DATE: 1-23-80 SHEET 9 OF 12

LOCATION ENGINEER

TEXAS REGISTERED ENGINEER NO. 12791

CORP OF ENGINEERS PERMIT NO. 13553

DWG. NO. 4A853.4-X-1

RW NO. 79074

VOL 30 PAGE 478

185273

Indexed

Compared

STATE OF TEXAS COUNTY OF KLEBERG

I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the OFFICIAL RECORDS of Kleberg County, Texas

VOL 24 PAGE 510

6-16-89

Recording Date

Sam D. Deanda

County Clerk, Kleberg County

Any provision herein which restricts the sale, rental, or use of the described real property because of color or race is invalid and unenforceable under federal law.

RECORDER'S MEMORANDUM:
All Or Parts Of The Text On This Page Was Not Clearly Legible For Satisfactory Recordation

FILED FOR RECORD

1989 JUN 12 P 3:25

SAM D. DEANDA
COUNTY CLERK KLEBERG CTY.
BY Alicia Gamez
DEPUTY
ALICIA GAMEZ

RECORDER'S MEMORANDUM

At the time of recordation, this instrument was found to be inadequate for the best photographic reproduction because of illegibility, carbon or photo copy, discolored paper, etc. All blockouts, additions and changes were present at the time the instrument was filed and recorded.

Indexed

Compared

El Paso Natural Gas Co.
P.O. Box 1492
El Paso, Tx. 79978
Attn: Right of Way Dept.

VOL 30 PAGE 479

EXHIBIT "B"

1. SAMEDAN PIPE LINE CORPORATION
2. NEW ENGLAND ENERGY, INC.
3. HOME PETROLEUM CORPORATION

VOL 30 PAGE 480

EXHIBIT "C"

A fifty (50) foot wide right-of-way being twenty-five (25) feet either side of the pipeline.

Right-of-way No. 1: A 20" pipeline beginning in State Tract 818L, SW/4 with the easement beginning at X=2,431,585; Y=673,553 and proceeding to the southwest for 4,359.85 rods to a point on the Padre Island National Seashore boundary at X=2,385,154; Y=620,229 in State Tract 975s, the Gulf of Mexico.

Right-of-way No. 2: A 8-5/8" pipeline beginning in State Tract 820L NW/4 with the easement beginning at X=2,430,621; Y=665,530 and proceeding in a curved direction to the west for 322.93 rods to terminate at X=2,426,184; Y=666,589 in State Tract 942s at a tie-in point on the 20" pipeline.

Right-of-way No. 3: A 8-5/8" pipeline beginning in State Tract 818L SW/4 with the easement beginning at 2,427,783; Y=673,388 and proceeding southeast for 190.52 rods to terminate at X=2,430,149; Y=671,400 in State Tract 818L SW/4 at a tie-in point on the 20" pipeline.

Right-of-way No. 4: A 10" pipeline in State Tract 818L SW/4 with the easement beginning at X=2,433,064; Y-674,731 and proceeding in a curved direction to the southwest for 316.77 rods to terminate at X-2,430,576; Y=671,981 at a tie-in point on the 20" pipeline.

VOL. 30 PAGE 481

187162

FILED FOR RECORD
1989 NOV 13 P 5:07
SAM D. DEANDA
COUNTY CLERK KLEBERG CTY.
BY Leticia Garcia
DEPUTY
LETICIA GARCIA

Indexed

Compared

STATE OF TEXAS COUNTY OF KLEBERG
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the OFFICIAL RECORDS of Kleberg County, Texas
VOL. 30 PAGE 458
11-15-89
Recording Date
Sam D. Deanda
County Clerk, Kleberg County

Any provision herein which restricts the sale, rental, or use of the described real property because of color or race is invalid and unenforceable under federal law.

(EXPIRATION DATE)

(LEGAL DESCRIPTION FOLLOWS:)

(See Exhibit "C")

REG. NO. 66658

VOL 30 PAGE 460

The undersigned is the GRANTOR in the above-described assigned document. The undersigned consents to the assignment of the miscellaneous easement to Assignee and waives no rights under the terms of the miscellaneous easement as to GRANTEE or the Assignee.

IN TESTIMONY WHEREOF, witness my hand and the seal of the Texas General Land Office this 18th day of October 1989.
(Date of the Commissioner's signature)

STATE OF TEXAS

By: _____

Commissioner of the Texas General Land Office

GRANTOR

Approved
Audit .....
Engineering .....
Contents .....
~~Legal~~ .....
Execution ....

THE STATE OF TEXAS

COUNTY OF EL PASO

This instrument was acknowledged before me on this 7th day of June, 1989, by Walter G. Henderson, Executive Vice President of EL PASO NATURAL GAS COMPANY, a Delavare corporation, on behalf of said corporation.

JAN ROSS NOTARY PUBLIC STATE OF TEXAS EXPIRES 10-04-92

Jan Ross
Notary Public

My Commission Expires:

10-4-92

VOL 30 PAGE 461

THE STATE OF

COUNTY OF

This instrument was acknowledged before me on this 28th day of June 1989, by Boyce Perry, Vice President of SAMEDAN PIPE LINE CORPORATION, a corporation, on behalf of said corporation.

Peggy R. Foree
Notary Public

My Commission Expires:

10/6/90

THE STATE OF

COUNTY OF

This instrument was acknowledged before me on this 28th day of June 1989, by Boyce Perry, Vice President of Samedan Pipe Line Corporation, Attorney-in-Fact for NEW ENGLAND ENERGY, INC., a corporation, on behalf of said corporation.

Peggy R. Foree
Notary Public

My Commission Expires:

10/6/90

THE STATE OF COLORADO

COUNTY OF DENVER

This instrument was acknowledged before me on this 30th day of June, 1989, by B.L. Peterson, Vice President, Explo. & Prod. of HOME PETROLEUM CORPORATION, a corporation, on behalf of said corporation.

Debra Lohde
Notary Public
1225-17th St., Denver, CO 80202

My Commission Expires:
January 24, 1992

VOL 32 PAGE 321

187766

The State of Texas

Austin, Texas

TEXAS GENERAL LAND OFFICE

ASSIGNMENT OF ME-890058

STATE OF TEXAS §

COUNTY OF KLEBERG §

THIS AGREEMENT is made this 1st day of June, 19 89 between EL PASO NATURAL GAS COMPANY (ASSIGNOR), hereinafter called Assignor, and (See attached Exhibit "B") (ASSIGNEE), hereinafter called Assignee.

WHEREAS ME-890058 (LEASE #) was executed by GARRY MAURO, Commissioner of the General Land Office of the State of Texas, as GRANTOR, and by Assignor as GRANTEE, by the terms of which the following state land was leased/granted to Assignor as GRANTEE for a term of 10 (TERM) years, commencing on 16th day of April, 1989 (DATE OF EXECUTION), and ending on 15th day of April, 1999. (EXPIRATION DATE)

(LEGAL DESCRIPTION FOLLOWS:)

(See Exhibit "C")

WHEREAS, Assignor now desires to assign ME-890058 to Assignee, and Assignee desires to accept the assignment thereof:

NOW, THEREFORE, for and in consideration of the sum of Ten Dollars ($10.00) and other good and valuable consideration, the receipt of which is hereby acknowledged, Assignor assigns to Assignee all of its right, title and interest in and to the instrument hereinbefore described, a copy of which is attached hereto as Exhibit "A," Assignee hereby agrees to and does accept the assignment and expressly assumes and agrees to keep, perform, and fulfill all the terms, covenants, conditions, and obligations required to be kept, performed, and fulfilled by Assignor as Grantee thereunder, including the making of all payments due to or payable to Grantor under said ME-890058 when due and payable.

This agreement shall be binding on and inure to the benefit of the parties hereto, their heirs, executors, administrators, successors, and assigns.

THIS ASSIGNMENT IS EFFECTIVE UPON THE DATE OF APPROVAL OF GRANTOR.

SAMEDAN PIPE LINE CORPORATION

Boyce Perry
ASSIGNEE'S SIGNATURE
Boyce Perry
Vice President
P. O. Box 909
Ardmore, OK 73402
Address
405/223-4110
Telephone

EL PASO NATURAL GAS COMPANY

Walter G. Henderson
ASSIGNOR'S SIGNATURE
Walter G. Henderson
Executive Vice President
P. O. Box 1492
El Paso, TX 79978
Address
915/541-2600
Telephone

NEW ENGLAND ENERGY, INC.
By: Samedan Pipe Line Corporation,
its Attorney-in-Fact

Boyce Perry
ASSIGNEE'S SIGNATURE
Boyce Perry
Vice President
P. O. Box 909
Ardmore, OK 73402
Address
405/223-4110
Telephone

HOME PETROLEUM CORPORATION

B. L. Peterson
ASSIGNEE'S SIGNATURE
B. L. Peterson
Vice Presidnet, Explo. & Production
1225 17th St., Suite 3200
17th Street Plaza
Denver, CO 80202-5589
Address
303/296-5031
Telephone

The undersigned is the GRANTOR in the above-described assigned document. The undersigned consents to the assignment of the miscellaneous easement to Assignee and waives no rights under the terms of the miscellaneous easement as to GRANTEE or the Assignee.

IN TESTIMONY WHEREOF, witness my hand and the seal of the Texas General Land Office this 18th day of October 1989.
(Date of the Commissioner's signature)

STATE OF TEXAS

By: _____

Commissioner of the
Texas General Land Office

GRANTOR

Approved
Audit .....
Engineering .....
Contents .....
Execution .....

THE STATE OF TEXAS

COUNTY OF EL PASO

This instrument was acknowledged before me on this 7th day of June, 1989, by Walter G. Henderson, Executive Vice President of EL PASO NATURAL GAS COMPANY, a Delaware corporation, on behalf of said corporation.

_____
Notary Public

My Commission Expires:

10-4-92

10-04-92

VOL. 32 PAGE 324

THE STATE OF

COUNTY OF

This instrument was acknowledged before me on this 28th day of June 1989, by Boyce Perry, Vice President of SAMEDAN PIPE LINE CORPORATION, a corporation, on behalf of said corporation.

Peggy L. Hall
Notary Public

My Commission Expires:

10/6/90

THE STATE OF

COUNTY OF

This instrument was acknowledged before me on this 28th day of June 1989, by Boyce Perry, Vice President of Samedan Pipe Line Corporation, attorney-in-Fact for NEW ENGLAND ENERGY, INC., a corporation, on behalf of said corporation.

Peggy L. Hall
Notary Public

My Commission Expires:

10/6/90

THE STATE OF COLORADO

COUNTY OF DENVER

This instrument was acknowledged before me on this 30th day of June, 1989, by B.L.Peterson, Vice Presidnet, Explo. & Prod. of HOME PETROLEUM CORPORATION, a corporation, on behalf of said corporation.

Debra Lohde
Notary Public
1225-17th St., Denver, CO 80202

My Commission Expires:

January 24, 1992

[illegible] boundary at X=2,383,154; Y=620,229 in State Tract 975s, the Gulf of Mexico. See Exhibits A, B, C, D, E, F, G, and H attached to and made part of this contract.

R/W 79074

REG NO. 66413

EXHIBIT A

Right-of-way No 2: A 8 5/8" pipeline beginning in State Tract 820L NW/4 with the easement beginning at X=2,430,621; Y=665,530 and proceeding in a curved direction to the west for 322.93 rods to terminate at X=2,426,184; Y=666,589 in State Tract 942s at a tie-in point on the 20" pipeline. See Exhibits A & I attached to and made a part of this contract.

Right-of-Way No. 3: A 8 5/8" pipeline beginning in State Tract 818L SW/4 with the easement beginning at 2,427,783; Y=673,388 and proceeding southeast for 190.52 rods to terminate at X=2,430,149; Y=671,400 in State Tract 818L SW/4 at a tie-in point on the 20" pipeline. See Exhibits A & J attached to and made a part of this contract.

Right-of-Way No. 4: A 10" pipeline in State Tract 818L SW/4 with the easement beginning at X=2,433,064; Y=674,731 and proceeding in a curved direction to the southwest for 316.77 rods to terminate at X=2,430,576; Y=671,981 at a tie-in point on the 20" pipeline. See Exhibits A & K attached to and made part of this contract.

(2) This easement is for a total period of ten (10) years, beginning on the 16th day of April, 1989, unless the same be renewed, extended, cancelled, or changed by the proper official of the State of Texas as authorized by law.

(3) As consideration for the granting of this easement, GRANTEE agrees to pay to the Commissioner of the Texas General Land Office at Austin, Texas, the sum of Sixty Thousand Eight Hundred Twenty-nine and 15/100 Dollars ($60,829.15).

(4) Provided that GRANTEE has complied with the terms of this contract to the complete satisfaction of the Commissioner of the Texas General Land Office, GRANTOR grants to GRANTEE the option to extend and renew this easement contract for an additional term of ten (10) years at a cost of Thirty Thousand Four Hundred Fourteen and 58/100 Dollars ($30,414.58) based on fifty percent (50%) of the amount assessed according to the fee schedule of the Texas General Land Office in effect on the effective date of this contract.

(5) In addition to the rental, GRANTEE shall pay and discharge all taxes, general and special assessments, and other charges of every description which during the term of this easement may be levied on or assessed against the land or the improvements constructed upon the above-described premises, provided that such taxes result from this easement. GRANTEE shall pay all such taxes, charges, and assessments to the public office charged with the collection thereof not less than five (5) days before the same shall become delinquent, and GRANTEE agrees to indemnify and hold GRANTOR harmless from all such taxes, charges, and assessments. GRANTEE shall have the right in good faith at his sole cost and expense to contest any such taxes, charges, and assessments, and shall be obligated to pay the contested amount only if and when finally determined to be owed.

(6) It is agreed that when any structure is placed on the right-of-way herein granted, the location of the easement shall thereby become fixed at the location of such structure, and the course and location of said easement shall not be changed except by agreement with the Commissioner of the Texas General Land Office and any other governmental agency with jurisdiction over same.

(7) GRANTEE is hereby granted the right of ingress and egress to and from said right-of-way for the purpose of maintaining, operating, repairing, said pipelines, and such right is not granted for any other purpose. GRANTEE agrees to occupy the land only to the extent and for the length of time necessary to maintain, operate, repair said pipelines.

(8) GRANTEE shall not assign or sublease the rights granted in this easement in whole or in part to any third party for any purpose without the prior written approval of the Commissioner of the Texas General Land Office.

(9) GRANTEE shall permit GRANTOR's agents, representatives, and employees to enter into and on the above-described premises at all reasonable times for the purpose of inspection and for any other reasonable purpose necessary to protect GRANTOR's interest in the above-described premises.

(10) GRANTOR reserves the right to use any or all of the area contained within the above-described premises for any purpose not inconsistent with the use of the easement by the GRANTEE.

(11) GRANTEE shall use the highest degree of care and all proper safeguards to prevent pollution of air, ground, and water in and around the above-described premises and shall comply with all rules or orders which the Commissioner of the Texas General Land Office deems necessary for the protection and preservation of public lands and waters. In the event of pollution which is the result of GRANTEE's use of the above-described premises, GRANTEE shall use all means available to recapture all pollutants which have escaped and shall be responsible for all damage of any nature arising from such pollution.

(12) If a leak occurs in a pipeline, the flow shall be stopped at once and immediate notice shall be given to the Commissioner of the Texas General Land Office.

(13) GRANTEE agrees to keep the Commissioner of the Texas General Land Office informed of GRANTEE's current address and agrees to inform the Commissioner of any change of address of GRANTEE prior to any such change.

(14) GRANTEE shall not use, or permit the use of, the premises for any illegal purposes. GRANTEE will comply, and will cause its officers, employees, agents, and invitees to comply, with all applicable laws, ordinances, rules, and regulations of governing agencies concerning the use of the premises.

(15) GRANTEE agrees to indemnify and hold GRANTOR harmless for liability or damages of any kind or character based on the claims of any person which result directly or indirectly from the use of the right-of-way herein granted and/or any breach by GRANTEE of the terms, covenants, or conditions provided herein.

(16) In the event that GRANTEE fails to pay any money due under the terms of this agreement when the same becomes due, or is in breach of any condition or covenant set forth herein, the Commissioner of the Texas General Land Office shall have the right, at his option, to forfeit this agreement and terminate all rights inuring to the GRANTEE herein by sending written notice of such forfeiture by United States Mail to the last known address of GRANTEE. Upon sending of such written notice, this agreement shall terminate and all rights granted herein to GRANTEE shall revert to GRANTOR (subject to reinstatement by the Commissioner of the Texas General Land Office at his option). Such forfeiture and termination shall not prejudice the rights of GRANTOR for any claim of payments due.

(17) GRANTEE shall remove personal property, structures, and man-made improvements authorized by this agreement within one hundred twenty (120) days from the date of termination of this easement. GRANTEE shall take whatever measures necessary to restore the area involved as nearly as practicable to the same condition that existed before GRANTEE entered thereon. Upon written request from GRANTEE, the Commissioner of the Texas General Land Office may grant a written waiver of the requirements in this paragraph, if he deems such waiver is in the best interest of the State.

(18) GRANTEE further agrees to comply with the following condition(s):

(A) to bury the pipeline below the bottom of the gulf or bay at a depth of no less than twenty-four (24) inches or to place the pipeline on a structure of sufficient height to insure reasonable safety from flood damage;

(B) to construct a steel line from new or reconditioned pipe in first-class condition;

(C) to hydrostatically test pipelines to be in compliance with Title 49 of the Code of Federal Regulations, Part 192;

(D) to electrically test or x-ray any steel line field weld to insure reasonable safety from leaks;

(E) to dope and treat any steel line, before it is submerged, to offer reasonable resistance to the corrosive effect of salt water (it is not necessary to dope and treat the portion of a steel line that will not be submerged);

(F) to bury the pipeline by evenly backfilling the sand, gravel, soil, or other material excavated during construction onto the disturbed area to conform as much as is reasonably possible with the bottom profile of the adjacent natural submerged land; and

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(G) to select a right-of-way, when feasible, that avoids shell reefs, submerged grass beds, and marshes.

IN TESTIMONY WHEREOF, witness my hand and the seal of the Texas General Land Office this 6th day of May, 19 89.
(Date of the Commissioner's signature)

El Paso Natural Gas Company

By: Wayne C. Stephens

Wayne C. Stephens
PRINT NAME
Attorney-in-Fact
TITLE
GRANTEE

Approved
Audit
Engineering
Contents
Execution

THE STATE OF TEXAS

By: [signature]
GARRY MAURO
Commissioner of the
Texas General Land Office
GRANTOR

STATE OF TEXAS

COUNTY OF EL PASO

This instrument was acknowledged before me on April 28, 19 89,

by Wayne C. Stephens, Attorney-in-Fact of El Paso Natural Gas Company,
(Name of Officer/Title of Officer) (Name of Corporation)

a Delaware Corporation, on behalf of said corporation.
(State of corporation)

[signature]
Notary Public

Print Name

My commission expires:

OFFICIAL SEAL
C. CYNTHIA JAURIGUE
NOTARY PUBLIC
In and for the State of Texas
My Commission expires 05-22-93

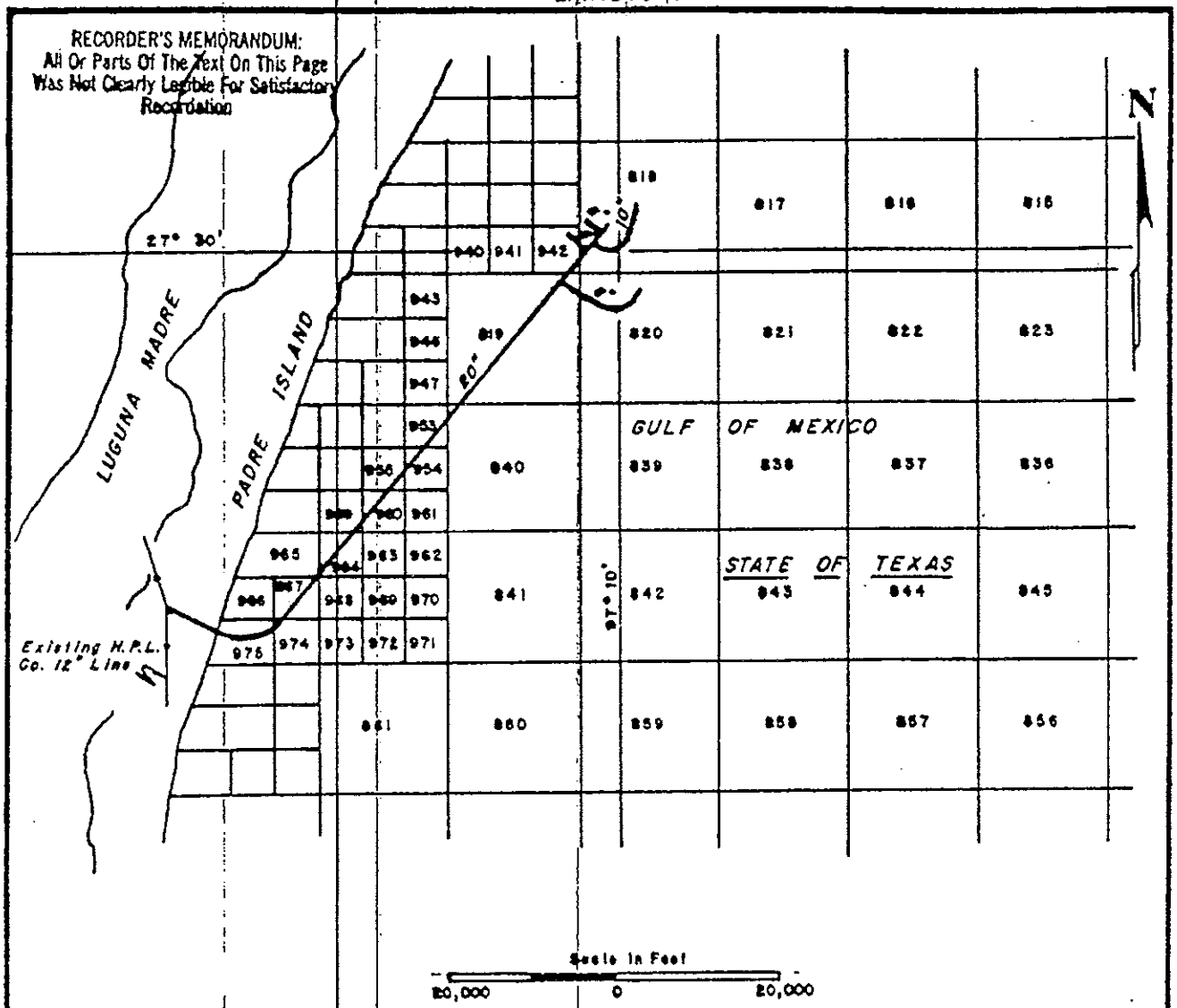
DIM ORIGINAL

VOL 32 PAGE 330

VOL 24 PAGE 515

Exhibit A

RECORDER'S MEMORANDUM:
All Or Parts Of The Text On This Page Was Not Clearly Legible For Satisfactory Recordation



THIS PIPELINE TO BE USED TO TRANSPORT NATURAL GAS FROM VARIOUS GAS FIELDS OFFSHORE TEXAS TO VARIOUS DISTRIBUTION POINTS

NATURAL GAS COMPANY

MUSTANG ISLAND GATHERING SYSTEM
ROUTE MAP
AS-BUILT
KLEBERG COUNTY, TEXAS

DATE: 1-28-80 SHEET 1 OF 12

Earl F. Montieth
LOCATION ENGINEER

TEXAS REGISTERED ENGINEER NO. 12781

CORPS OF ENGINEERS PERMIT NO. 13553

DWG. NO. A853.4-X-1

RECORDER'S MEMORANDUM:
Or Parts Of The Text On This Page
Was Not Clearly Legible For Satisfactory
Recordation

Exhibit B

KLEBERG COUNTY, TEXAS

RECORDER'S MEMORANDUM:
All Or Parts Of The Text On This Page
Was Not Clearly Legible For Satisfactory
Recordation

NICOLAS & JUAN JOSE BALLI
A-10

℄ Exist. H.P.L. Co.
12" Pipeline

PADRE ISLAND NATIONAL SEASHORE
U.S.A.

National Seashore Boundary

966
975
976

GULF OF MEXICO

STATE OF TEXAS

MATCH LINE 120+00

N

S 87°04'59" E
N 88°27'01" E
S 71° 45' 48" E
S 71°38'07" E
S 73°29'57" E
S 69°02'00" E
S 83°57'01" E
S 78°21'52" E
S 88°23'23" E
S 82°42'42" E
W 79°38'50" E
W 68°49'89" E
W 89°17'53" E
N 49°55'37" E
N 40°18'08" E

℄ 20" El Paso Natural Gas Pipeline

0.	X = 2,377,884.60	Y = 622,412.40
1.	X = 2,377,858.60	Y = 622,344.50
2.	X = 2,378,073.00	Y = 622,643.10
3.	X = 2,382,976.71	Y = 620,925.35
4.	X = 2,384,494.90	Y = 620,423.90
5.	X = 2,385,154.10	Y = 620,223.60
6.	X = 2,385,642.10	Y = 620,041.60
7.	X = 2,385,972.70	Y = 619,880.00
8.	X = 2,386,286.00	Y = 619,796.60
9.	X = 2,386,706.00	Y = 619,795.00
10.	X = 2,386,978.10	Y = 619,829.80
11.	X = 2,387,188.30	Y = 619,868.20
12.	X = 2,387,583.40	Y = 620,02[illegible].20
13.	X = 2,387,784.80	Y = 620,122.80
14.	X = 2,387,929.30	Y = 620,271.60

PLAN
Scale in Feet
2000 0 2000

Soundings And Elevations Are In Feet And Refer To Mean Sea Level Datum.
Coordinates Are Based On The South Zone Of The Texas Lambert Grid System.

+20'
+10'
0
-10'
-20'
-30'
-40'
-50'
-60'
-70'

Water Elevation ± O.E' M.S.L. 10-10-79

20" El Paso Natural Gas Pipeline

0+00 40+00 80+00 120+00

PROFILE

MAXIMUM OPERATING PRESSURE:

Horiz. 80 0 80
Vert.

PIPE IS 20" O.D. x .406" W.T. (84.28 LBS./FT.) A.P.I. 5LX GR. X-42 D.S.A.W. BLACK LINE PIPE COATED WITH 3/8" BONDASTIC (37.97 LBS./FT.) & 2.4" THICK CONCRETE (173 LBS./FT.) PIPE WAS HYDROSTATICALLY TESTED IN PLACE TO [illegible] P.S.I.G.

B.M. - U.S.E.B. Monument "Kenny" Elev. 17.97 M.S.L.

THIS PIPELINE TO BE USED TO TRANSPORT NATURAL GAS FROM VARIOUS GAS FIELDS OFFSHORE TEXAS TO VARIOUS DISTRIBUTION POINTS

[redacted]
NATURAL GAS COMPANY

MUSTANG ISLAND GATHERING SYSTEM
TRUNK A
AS-BUILT
KLEBERG COUNTY, TEXAS

DATE: 1-15-80 SHEET 2 OF 12

E. L. Hunter
LOCATION ENGINEER

TEXAS REGISTERED ENGINEER
NO. 12791

CORPS OF ENGINEERS
PERMIT NO. 13553

DWG. NO. A853.4-X-2

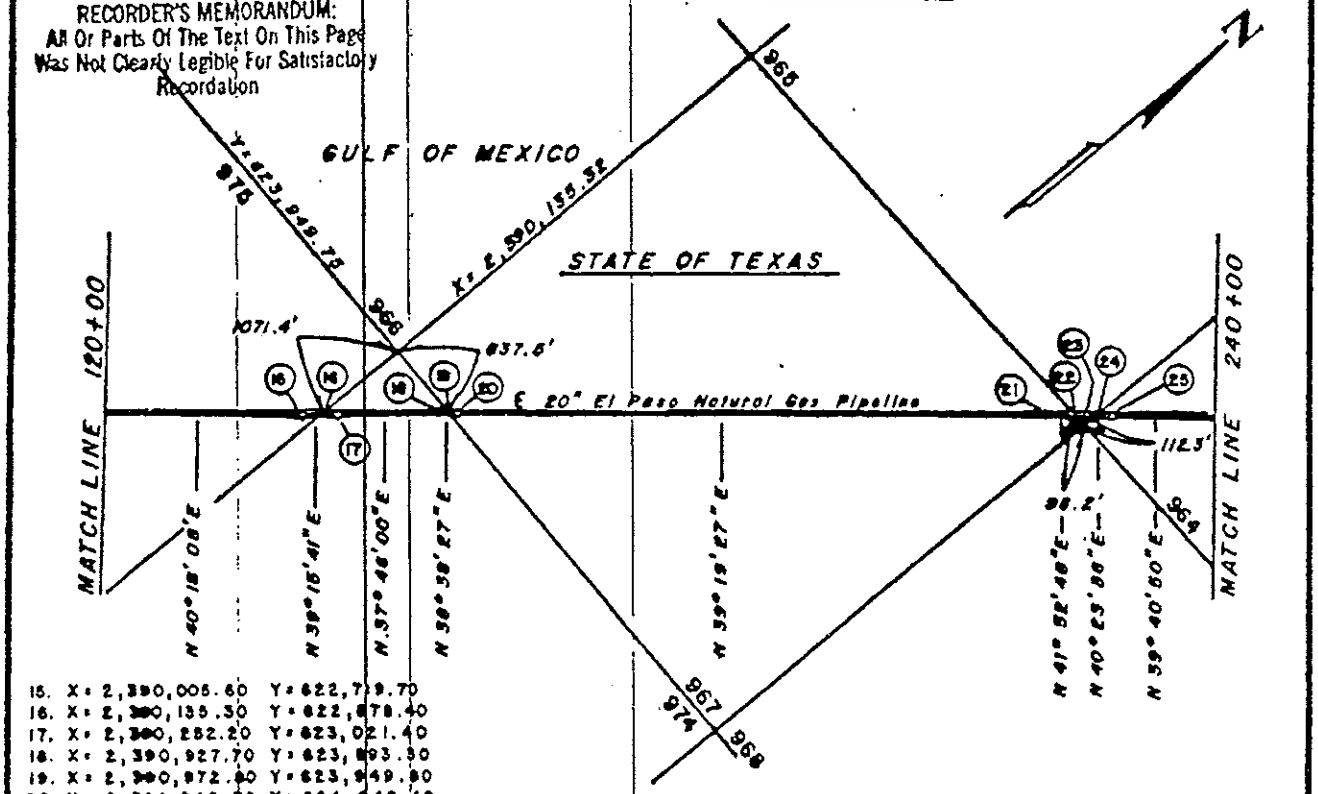
VOL. 32 PAGE 332

VOL. 24 PAGE 517

Exhibit C

KLEBERG COUNTY, TEXAS

RECORDER'S MEMORANDUM:
All Or Parts Of The Text On This Page Was Not Clearly Legible For Satisfactory Recordation



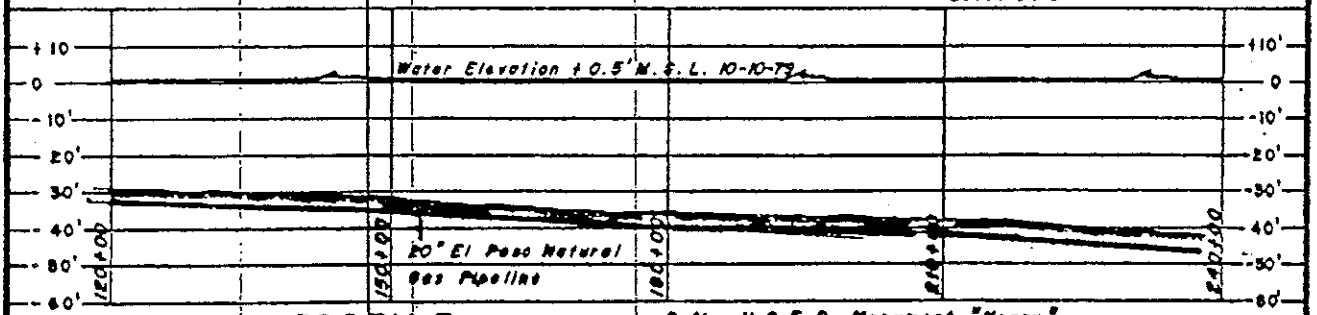
15.	X = 2,390,005.60	Y = 822,719.70
16.	X = 2,390,135.30	Y = 822,878.40
17.	X = 2,390,252.20	Y = 823,021.40
18.	X = 2,390,927.70	Y = 823,893.30
19.	X = 2,390,972.60	Y = 823,949.80
20.	X = 2,391,046.30	Y = 824,040.40
21.	X = 2,395,076.30	Y = 828,961.10
22.	X = 2,395,317.20	Y = 829,229.70
23.	X = 2,395,367.70	Y = 829,286.10
24.	X = 2,395,415.30	Y = 829,342.10
25.	X = 2,395,865.10	Y = 829,5[illegible]8.10

PLAN

Scale In Feet

2000 0 2000

Soundings And Elevations Are In Feet And Refer To Mean Sea Level Datum.



PROFILE



B.M. - U.S.E.D. Monument "Kenny" Elev. 17.37' M.S.L.

Coordinates Are Based On The South Zone Of The Texas Lambert Grid System.

PIPE IS 20" O.D. x .406" W.T. (84.96 LBS./FT.) A.P.I. 5LX GR. X-42 D.S.A.W. BLACK LINE PIPE, COATED WITH 5/8" BOMASTIC (37.97 LBS./FT.) & 2.4" THICK CONCRETE (173 LBS./FT.) PIPE WAS HYDROSTATICALLY TESTED IN PLACE TO 1800 P.S.I.G.
MAXIMUM OPERATING PRESSURE:

THIS PIPELINE TO BE USED TO TRANSPORT NATURAL GAS FROM VARIOUS GAS FIELDS OFFSHORE TEXAS TO VARIOUS DISTRIBUTION POINTS

NATURAL GAS COMPANY

MUSTANG ISLAND GATHERING SYSTEM
TRUNK A
AS-BUILT
KLEBERG COUNTY, TEXAS

DATE: 1-18-80 SHEET 3 OF 12

E. D. Wortham
LOCATION ENGINEER

TEXAS REGISTERED ENGINEER NO. 12791

CORPS OF ENGINEERS
PERMIT NO. 13553

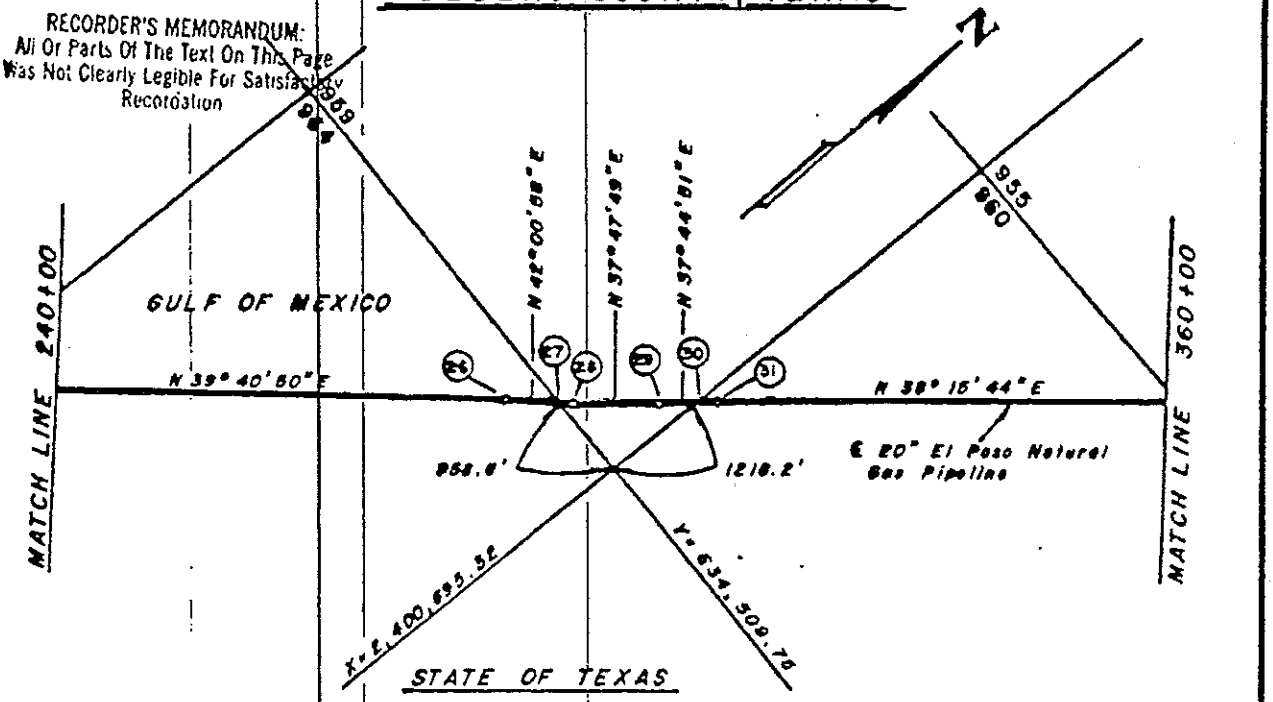
DWG. NO. A853.4-X-3

VOL 24 PAGE 518 VOL 32 PAGE 333

Exhibit D

KLEBERG COUNTY, TEXAS

RECORDER'S MEMORANDUM:
All Or Parts Of The Text On This Page Was Not Clearly Legible For Satisfactory Recordation



PLAN

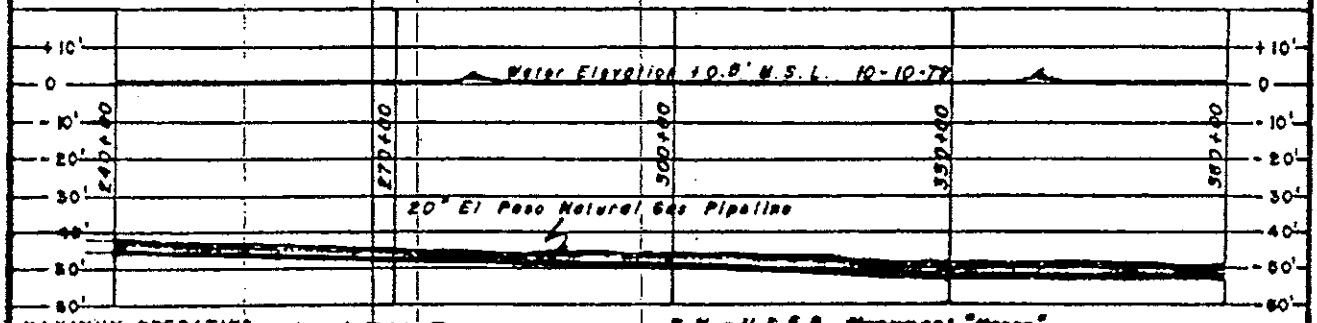
Scale in Feet

2000 0 2000

26. X = 2,399,356.00 Y = 634,087.40
27. X = 2,399,736.80 Y = 634,809.80
28. X = 2,399,840.80 Y = 634,825.30
29. X = 2,400,405.70 Y = 635,353.90
30. X = 2,400,695.30 Y = 635,726.00
31. X = 2,400,787.00 Y = 635,846.40

Soundings And Elevations Are In Feet And Refer To Mean Sea Level.

Coordinates Are Based On The South Zone Of The Texas Lambert Grid System.



PROFILE

MAXIMUM OPERATING PRESSURE:



B.M. - U.S.E.S. Benchmark "Honey" Elev. 47.87' M.S.L.

PIPE IS 20" O.D. x .406" W.T. (84.96 LBS./FT.) A.P.I. 5LX GR. X-42 D.S.A.W. BLACK LINE PIPE, COATED WITH 6/8" BONASTIC (37.97 LBS./FT.) & 2.4" THICK CONCRETE (173 LBS./FT.) PIPE WAS HYDROSTATICALLY TESTED IN PLACE TO 1000 P.S.I.G.

THIS PIPELINE TO BE USED TO TRANSPORT NATURAL GAS FROM VARIOUS GAS FIELDS OFFSHORE TEXAS TO VARIOUS DISTRIBUTION POINTS

INTERNATIONAL GAS COMPANY

MUSTANG ISLAND GATHERING SYSTEM
TRUNK A
AS-BUILT
- KLEBERG COUNTY, TEXAS

DATE: 1-18-80 SHEET 4 OF 12

Earl D. Hamilton
LOCATION ENGINEER

TEXAS REGISTERED ENGINEER NO. 12791

CORPS OF ENGINEERS PERMIT NO. 15553

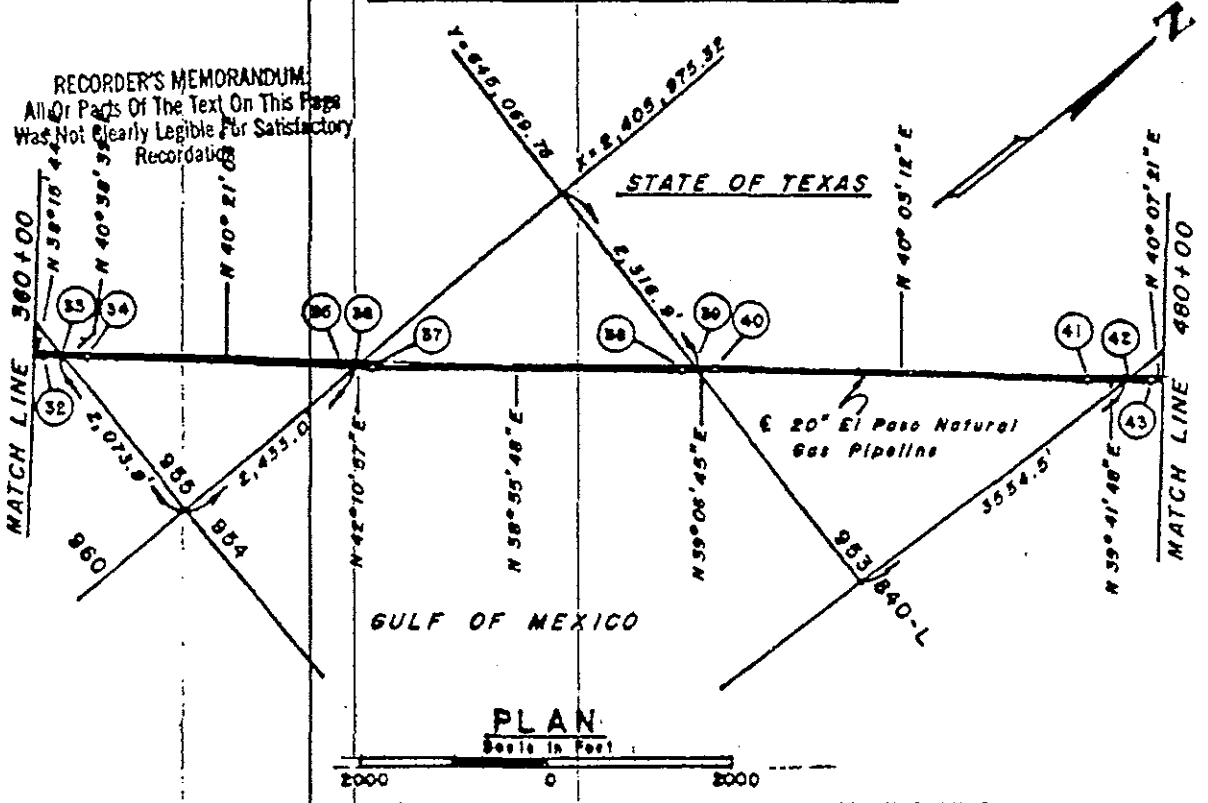
DWG. NO. A853.4-X-4

VOL 32 PAGE 334 VOL 24 PAGE 519

Exhibit E

KLEBERG COUNTY, TEXAS

RECORDER'S MEMORANDUM:
All Or Parts Of The Text On This Page Was Not Clearly Legible For Satisfactory Recordation



PLAN

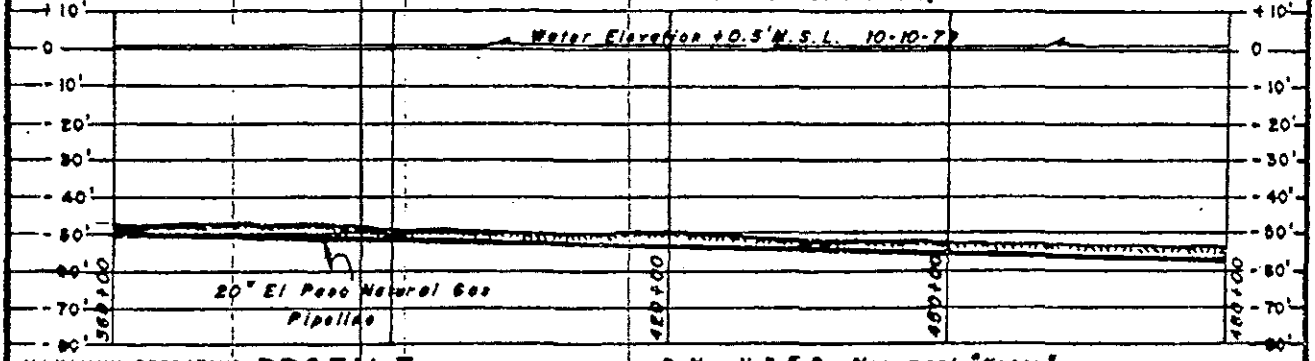
Scale In Feet

2000 0 2000

32. X = 2,403,848.2 Y = 639,727.8
33. X = 2,403,901.4 Y = 639,789.8
34. X = 2,404,141.7 Y = 640,069.7
35. X = 2,405,905.3 Y = 642,145.5
36. X = 2,405,975.3 Y = 642,222.9
37. X = 2,406,129.4 Y = 642,392.8
38. X = 2,408,215.7 Y = 644,975.6
39. X = 2,408,292.2 Y = 645,069.7
40. X = 2,408,451.4 Y = 645,265.5
41. X = 2,411,022.9 Y = 648,324.3
42. X = 2,411,255.3 Y = 648,604.3
43. X = 2,411,436.3 Y = 648,822.3

Soundings And Elevations Are In Feet And Refer To Mean Sea Level Datum.

Coordinates Are Based On The South Zone Of The Texas Lambert Grid System.



PROFILE

MAXIMUM OPERATING PRESSURE:



PIPE IS 20" O.D. x .406" W.T. (84.96 LBS./FT.) A.P.I. 5LX GR. X-42 D.S.A.W. BLACK LINE PIPE, COATED WITH 5/8" MASTIC (37.97 LBS./FT.) & 2.4" THICK CONCRETE (173 LBS./FT.) PIPE WAS HYDROSTATICALLY TESTED IN PLACE TO 1000 P.S.I.G.

THIS PIPELINE TO BE USED TO TRANSPORT NATURAL GAS FROM VARIOUS GAS FIELDS OFFSHORE TEXAS TO VARIOUS DISTRIBUTION POINTS

B.M. - U.S.E.D. Monument "Kenny." Elev. 47.37' M.S.L.

NATURAL GAS COMPANY

MUSTANG ISLAND GATHERING SYSTEM
--TRUNK A
AS-BUILT
KLEBERG COUNTY, TEXAS

DATE: 1-21-80 SHEET 5 OF 12

Earl D. Mountcastle
LOCATION ENGINEER

TEXAS REGISTERED ENGINEER NO. 12781

CORPS OF ENGINEERS
PERMIT NO. 13553

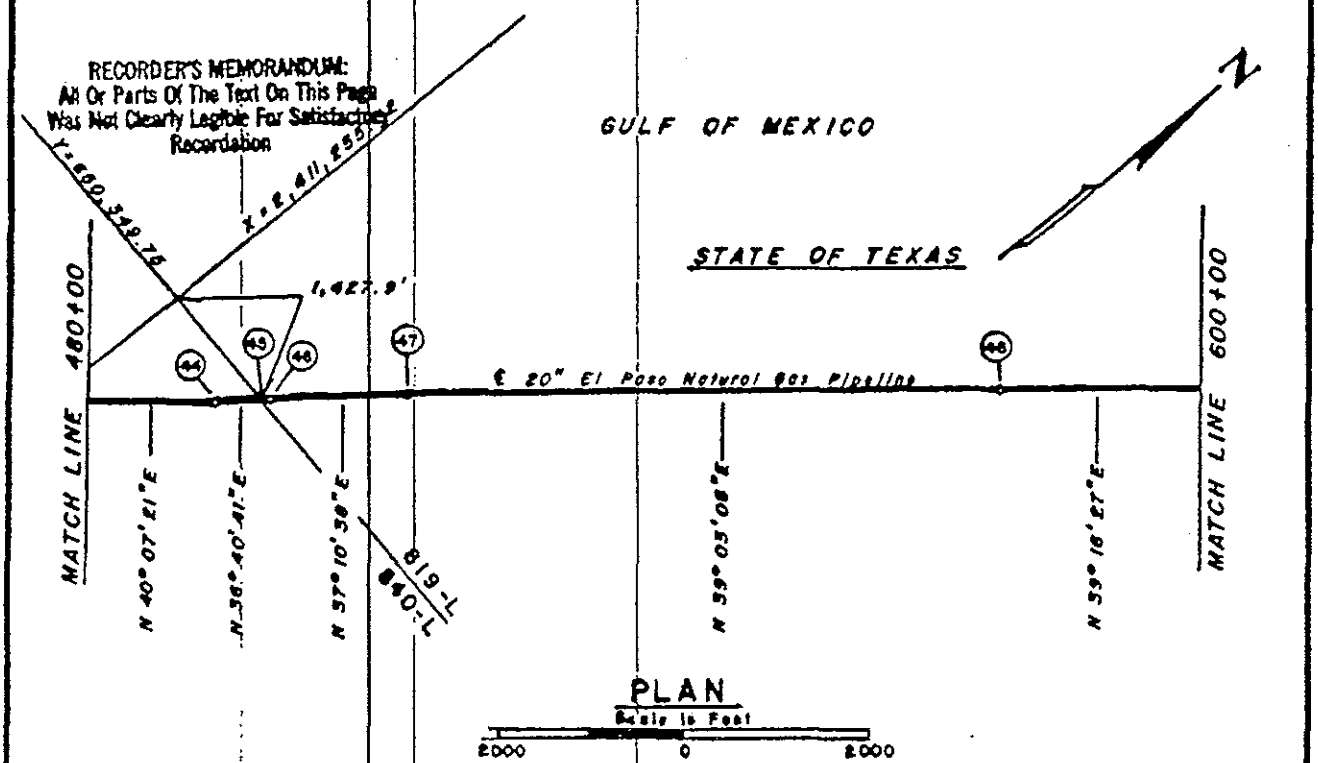
DWG. NO. A853.4-X-5

P.W. NO. 79074

Exhibit F

KLEBERG COUNTY, TEXAS

RECORDER'S MEMORANDUM:
All Or Parts Of The Text On This Page Was Not Clearly Legible For Satisfactory Recordation



PLAN

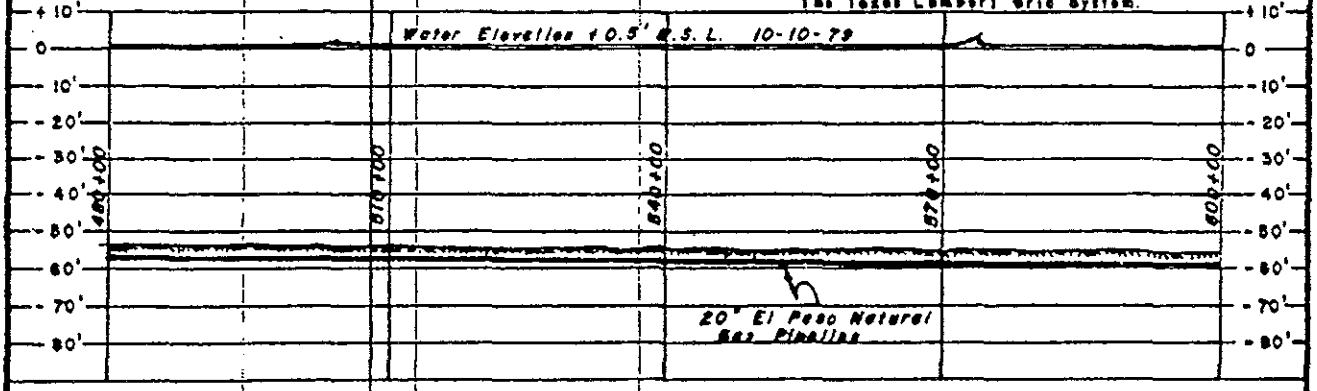
Scale in Feet

2000 0 2000

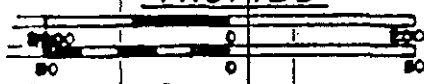
44.	X = 2,412,376.3	Y = 649,937.7	47.	X = 2,413,615.0	Y = 651,679.8
45.	X = 2,412,683.2	Y = 650,349.8	48.	X = 2,417,845.0	Y = 656,847.0
46.	X = 2,412,729.7	Y = 650,412.2			

Soundings And Elevations Are In Feet And Refer To Mean Sea Level.

Coordinates Are Based On The South Zone Of The Texas Lambert Grid System.



PROFILE



B.M. - U.S.E.D. Monument "Kenny" Elev.+7.37' M.S.L.

PIPE IS 20" O.D. x .406" W.T. (84.96 LBS./FT.) A.P.I. 5LX GR. X-42 D.S.A.W. BLACK LINE PIPE, COATED WITH 5/8" BITUMASTIC (37.97 LBS./FT.) & 2.4" THICK CONCRETE (173 LBS./FT.) PIPE WAS HYDROSTATICALLY TESTED IN PLACE TO 1500 P.S.I.G.
MAXIMUM OPERATING PRESSURE:

THIS PIPELINE TO BE USED TO TRANSPORT NATURAL GAS FROM VARIOUS GAS FIELDS OFFSHORE TEXAS TO VARIOUS DISTRIBUTION POINTS

NATURAL GAS COMPANY

MUSTANG ISLAND GATHERING SYSTEM
TRUNK A
AS-BUILT
KLEBERG COUNTY, TEXAS

DATE: 1-21-80 SHEET 6 OF 12

LOCATION ENGINEER

TEXAS REGISTERED ENGINEER NO. 12791

CORPS OF ENGINEERS PERMIT NO. 13553

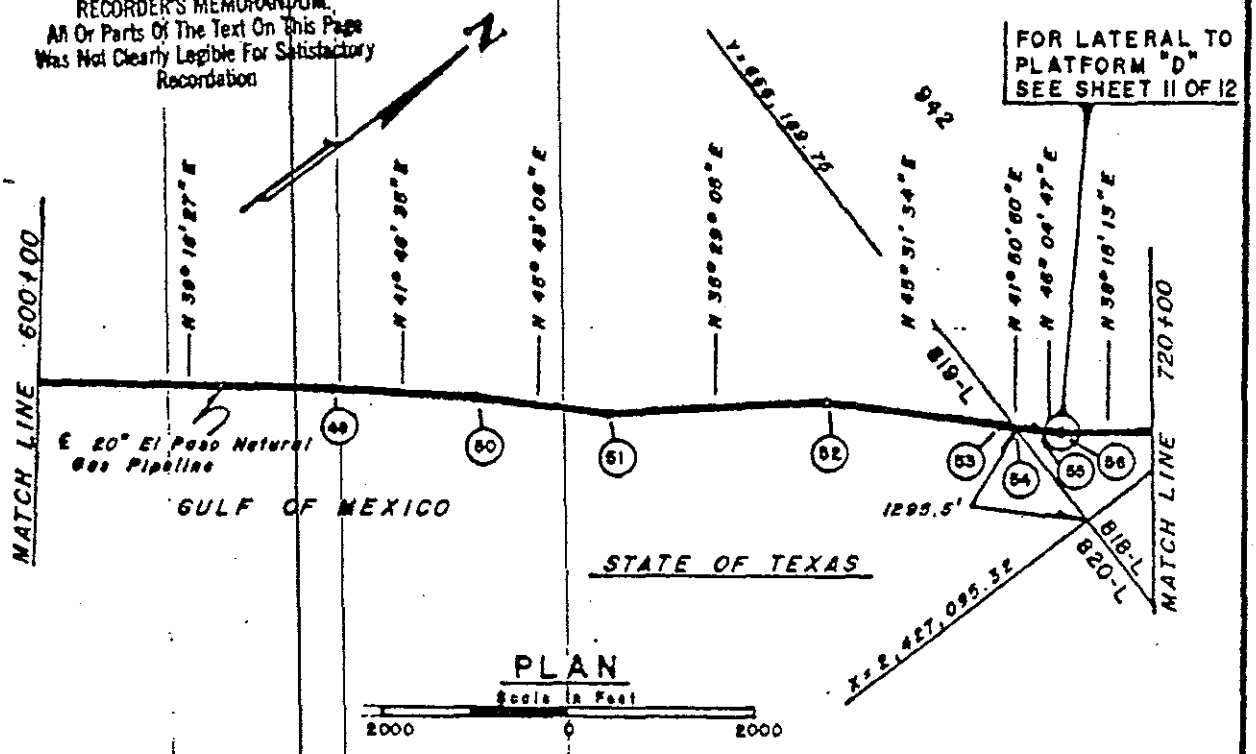
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R/W NO. 79074

VOL. 32 PAGE 336 VOL 24 PAGE 521

Exhibit G

KLEBERG COUNTY, TEXAS

RECORDER'S MEMORANDUM:
All Or Parts Of The Text On This Page Was Not Clearly Legible For Satisfactory Recordation



PLAN

Scale in Feet

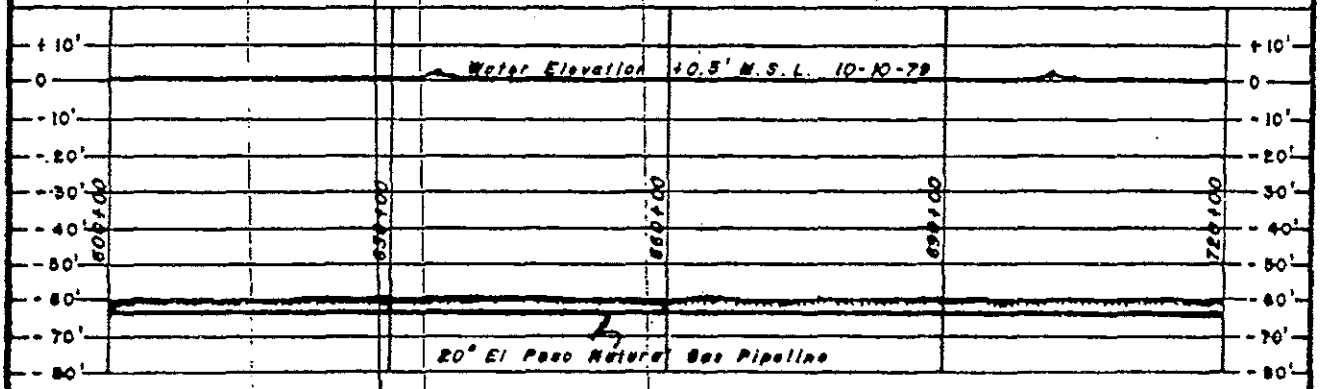
2000 0 2000

49.	X = 2,421,046.8	Y = 860,707.0
50.	X = 2,422,089.8	Y = 861,674.8
51.	X = 2,423,095.3	Y = 862,655.1
52.	X = 2,424,477.9	Y = 864,794.1
53.	X = 2,425,744.2	Y = 866,127.8
54.	X = 2,426,799.8	Y = 866,889.7
55.	X = 2,425,977.8	Y = 866,388.1

54. X = 2,426,177.8 Y = 866,860.7

Soundings And Elevations Are In Feet And Refer To Mean Sea Level Datum.

Coordinates Are Based On The South Zone Of The Texas Lambert Grid System.



PROFILE

MAXIMUM OPERATING PRESSURE:



PIPE IS 20" O.D. x .406" W.T. (194.98 LBS./FT.) A.P.I. 5LX, GR. X-42 D.S.A.W. BLACK LINE PIPE, COATED WITH 5/8" MASTIC (57.97 LBS./FT.) & 2.5" THICK CONCRETE (173/LBS./FT.) PIPE WAS HYDROSTATICALLY TESTED IN PLACE TO 3960 P.S.I.G.

THIS PIPELINE TO BE USED TO TRANSPORT NATURAL GAS FROM VARIOUS GAS FIELDS OFFSHORE TEXAS TO VARIOUS DISTRIBUTION POINTS

B.M. - U.S.E.D. Monument "Kenny" Elev. 17.37' M.S.L.

NATURAL GAS COMPANY

MUSTANG ISLAND GATHERING SYSTEM
TRUNK A
AS-BUILT
KLEBERG COUNTY, TEXAS

DATE: 1-22-80 SHEET 7 OF 12

Earl E. Workman
LOCATION ENGINEER

TEXAS REGISTERED ENGINEER NO. 12791

CORPS OF ENGINEERS PERMIT NO. 13553

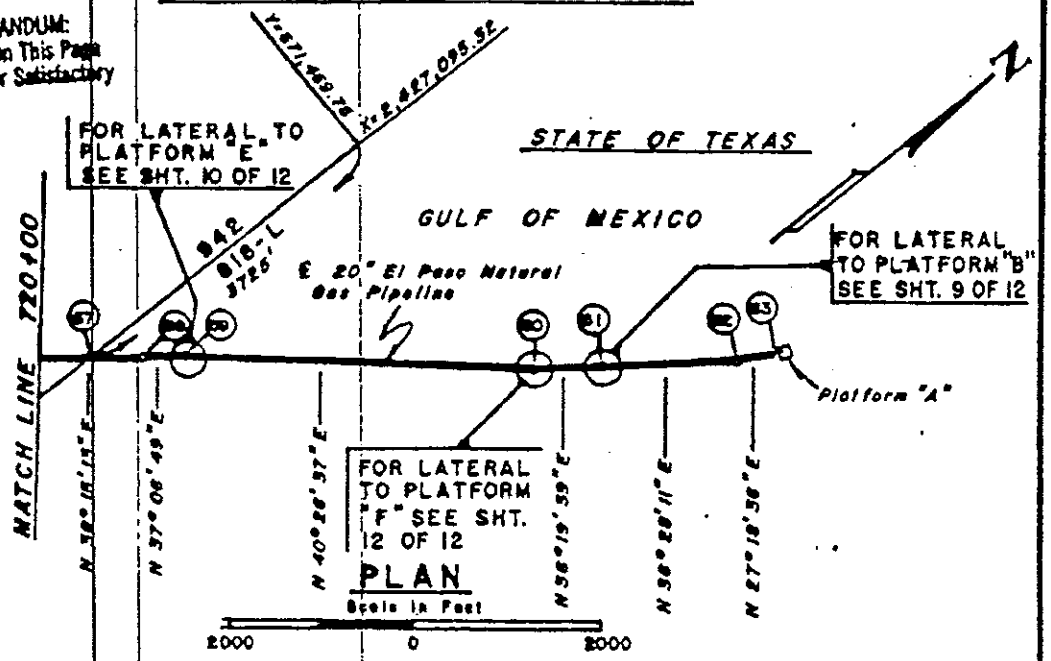
DWG. NO. A853.4-X-7

VOL 24 PAGE 522 VOL 32 PAGE 337

Exhibit H

KLEBERG COUNTY, TEXAS

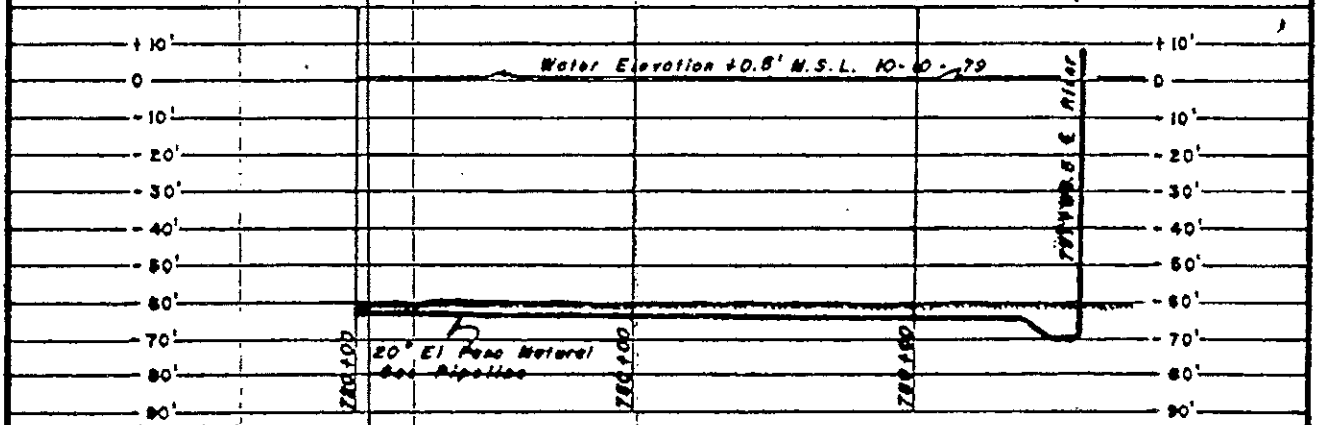
RECORDER'S MEMORANDUM:
All Or Parts Of The Text On This Page Was Not Clearly Legible For Satisfactory Recordation



57. X= 2,427,095.3 Y= 867,744.8
58. X= 2,427,482.4 Y= 868,197.7
59. X= 2,427,722.0 Y= 868,554.0
60. X= 2,430,185.2 Y= 871,406.6
61. X= 2,430,871.8 Y= 871,975.3
62. X= 2,431,401.0 Y= 873,097.0
63. X= 2,431,585.0 Y= 873,353.4

Soundings And Elevations Are In Feet And Refer To Mean Sea Level Datum.

Coordinates Are Based On The South Zone Of The Texas Lambert Grid System.



MAXIMUM OPERATING PRESSURE:

B.M. - U.S.E.D. Monument "Kenny" Elev. 47.57' M.S.L.

PIPE IS 20" O.D. x .406" W.T. (84.96 LBS./FT.) A.P.I. 5LX GR. X-42 D.S.A.W. BLACK LINE PIPE, COATED WITH 5/8" BONASTIC (37.97 LBS./FT.) & 2.4" THICK CONCRETE (173 LBS./FT.) PIPE WAS HYDROSTATICALLY TESTED IN PLACE TO 1800 P.S.I.G.

THIS PIPELINE TO BE USED TO TRANSPORT NATURAL GAS FROM VARIOUS GAS FIELDS OFFSHORE TEXAS TO VARIOUS DISTRIBUTION POINTS

NATURAL GAS COMPANY

MUSTANG ISLAND GATHERING SYSTEM
TRUNK A
AS-BUILT
KLEBERG COUNTY, TEXAS

DATE: 1-23-79 SHEET 8 OF 12

LOCATION ENGINEER.

TEXAS REGISTERED ENGINEER NO. 12791

CORPS OF ENGINEERS PERMIT NO. 13553

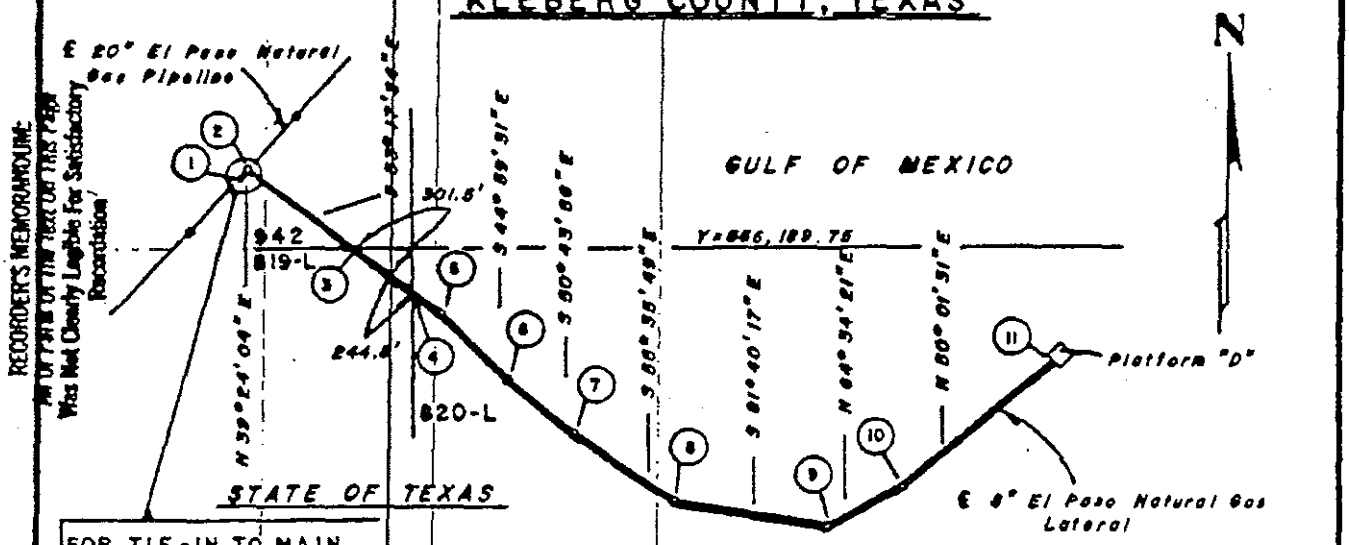
DWG. NO. A853.4-X-8

R/W NO. 79074

VOL 32 PAGE 338 VOL 24 PAGE 523

Exhibit I

KLEBERG COUNTY, TEXAS



FOR TIE-IN TO MAIN LINE SEE SHT. 7 OF 12

PLAN

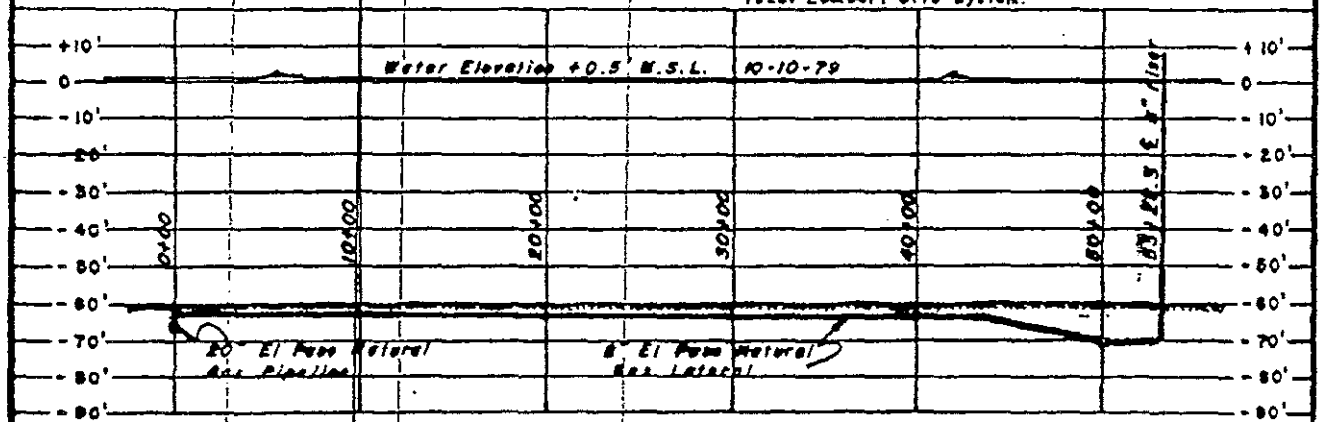
Scale in Feet

1000 0 1000

1. X = 2,426,184.16	Y = 865,898.81	7. X = 2,427,959.70	Y = 865,203.90
2. X = 2,426,212.41	Y = 865,823.20	8. X = 2,428,493.00	Y = 864,838.70
3. X = 2,426,793.80	Y = 866,189.75	9. X = 2,429,320.90	Y = 864,717.80
4. X = 2,427,085.52	Y = 865,964.92	10. X = 2,430,086.90	Y = 865,081.20
5. X = 2,427,285.10	Y = 865,845.80	11. X = 2,430,621.30	Y = 865,530.10
6. X = 2,427,615.90	Y = 865,485.30		

Soundings And Elevations Are In Feet And Refer To Mean Sea Level Datum.

Coordinates Are Based On The South Zone Of The Texas Lambert Grid System.



PROFILE

Horizontal

Vertical

B.M. - U.S.E.D. Monument "Kenny" Elev. 47.37' M.S.L.

MAXIMUM OPERATING PRESSURE: PIPE IS 8.625" O.D. x .322" W.T. (28.06 LBS./FT.) A.P.I. 5L GR. "B" SMLS. BLACK STEEL LINE PIPE, COATED WITH .600" BITUMASTIC (19.48 LBS./FT.) & 1" THICK CONCRETE (32 LBS./FT.) PIPE WAS HYDROSTATICALLY TESTED TO PLACE TO 1050 P.S.I.G.

THIS PIPELINE TO BE USED TO TRANSPORT NATURAL GAS FROM VARIOUS GAS FIELDS OFFSHORE TEXAS TO VARIOUS DISTRIBUTION POINTS

NATURAL GAS COMPANY

MUSTANG ISLAND GATHERING SYSTEM LATERAL A-1 AS-BUILT KLEBERG COUNTY, TEXAS

DATE: 1-24-80 SHEET 11 OF 12

LOCATION ENGINEER

TEXAS REGISTERED ENGINEER NO. 12981

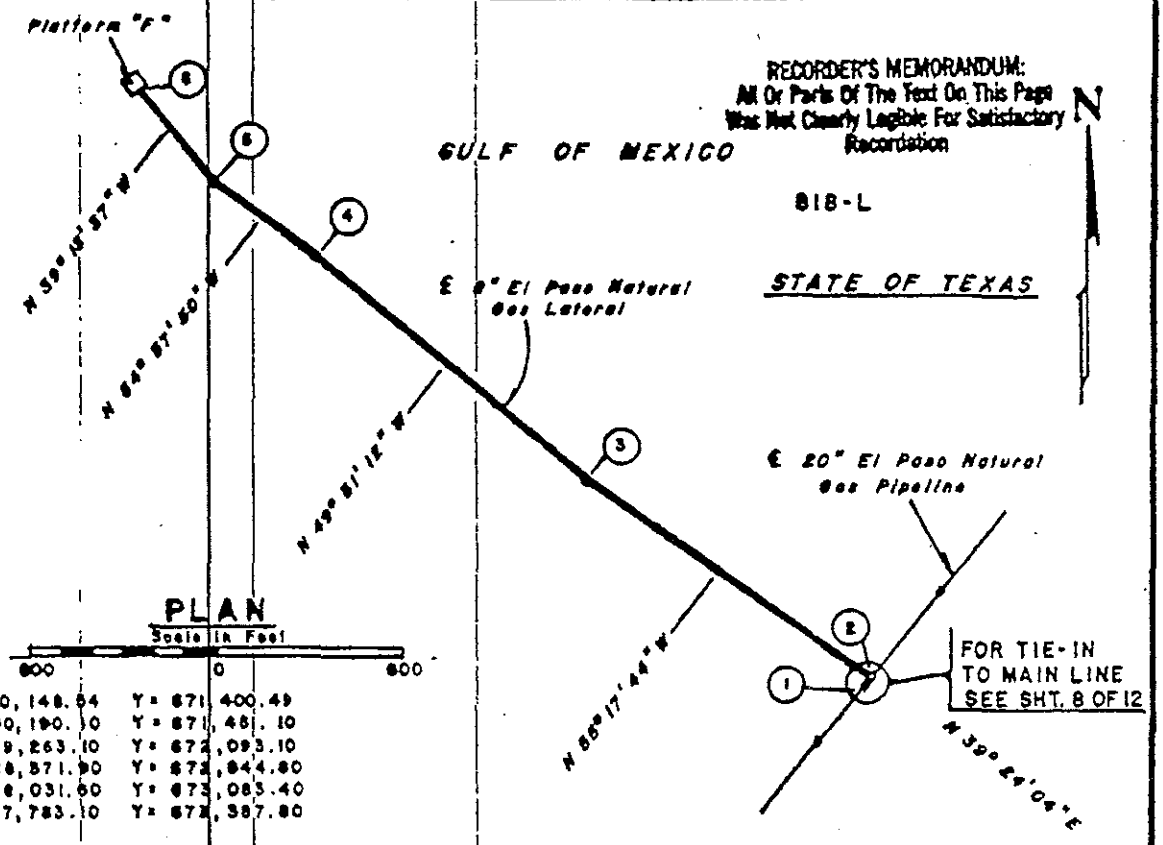
CORPS OF ENGINEERS PERMIT NO. 13553

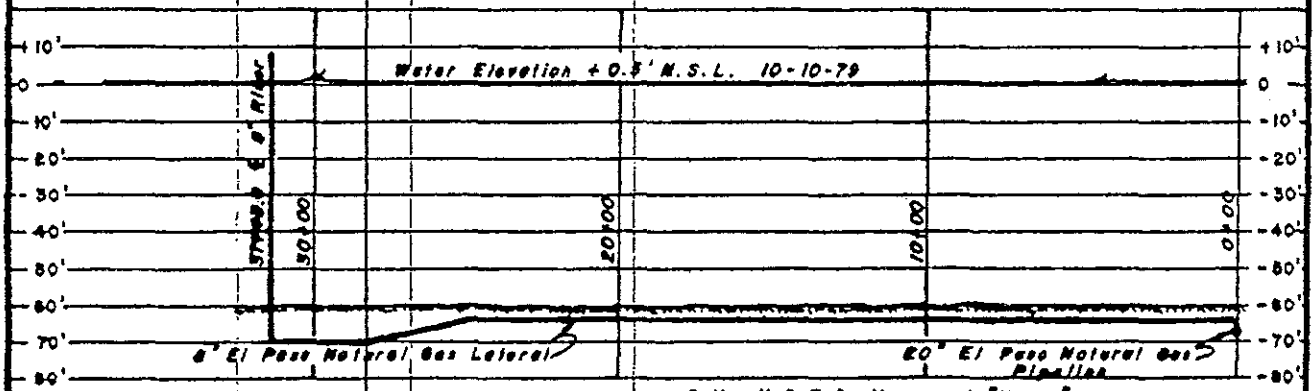
DWG. NO. IA853.4-X-1

VOL 24 PAGE 524 VOL 32 PAGE 339

Exhibit J

KLEBERG COUNTY, TEXAS





PROFILE

Horiz. 800 0 800
Vert. 80 0 80

B.M. - U.S.E.D. Monument "Kenny" Elev. 47.37' M.S.L.

Soundings And Elevations Are In Feet And Refer To Mean Sea Level Datum.

Coordinates Are Based On The South Zone Of The Texas Lambert Grid System.

PIPE IS 8.625" O.D. x .322" W.T. (26.84 LBS./FT.) A.P.I. 5L GR. "B" SMLS. BLACK STEEL LINE PIPE, COATED WITH .500" BITUMASTIC (13.43 LBS./FT.) & 1" THICK CONCRETE (32 LBS./FT.) PIPE WAS HYDROSTATICALLY TESTED IN PLACE TO 1680 P.S.I.G.

MAXIMUM OPERATING PRESSURE:

THIS PIPELINE TO BE USED TO TRANSPORT NATURAL GAS FROM VARIOUS GAS FIELDS OFFSHORE TEXAS TO VARIOUS DISTRIBUTION POINTS

NATURAL GAS COMPANY

MUSTANG ISLAND GATHERING SYSTEM
LATERAL A-3
AS-BUILT
KLEBERG COUNTY, TEXAS

DATE: 1-25-80 SHEET 12 OF 12

LOCATION ENGINEER

TEXAS REGISTERED ENGINEER NO. 12791

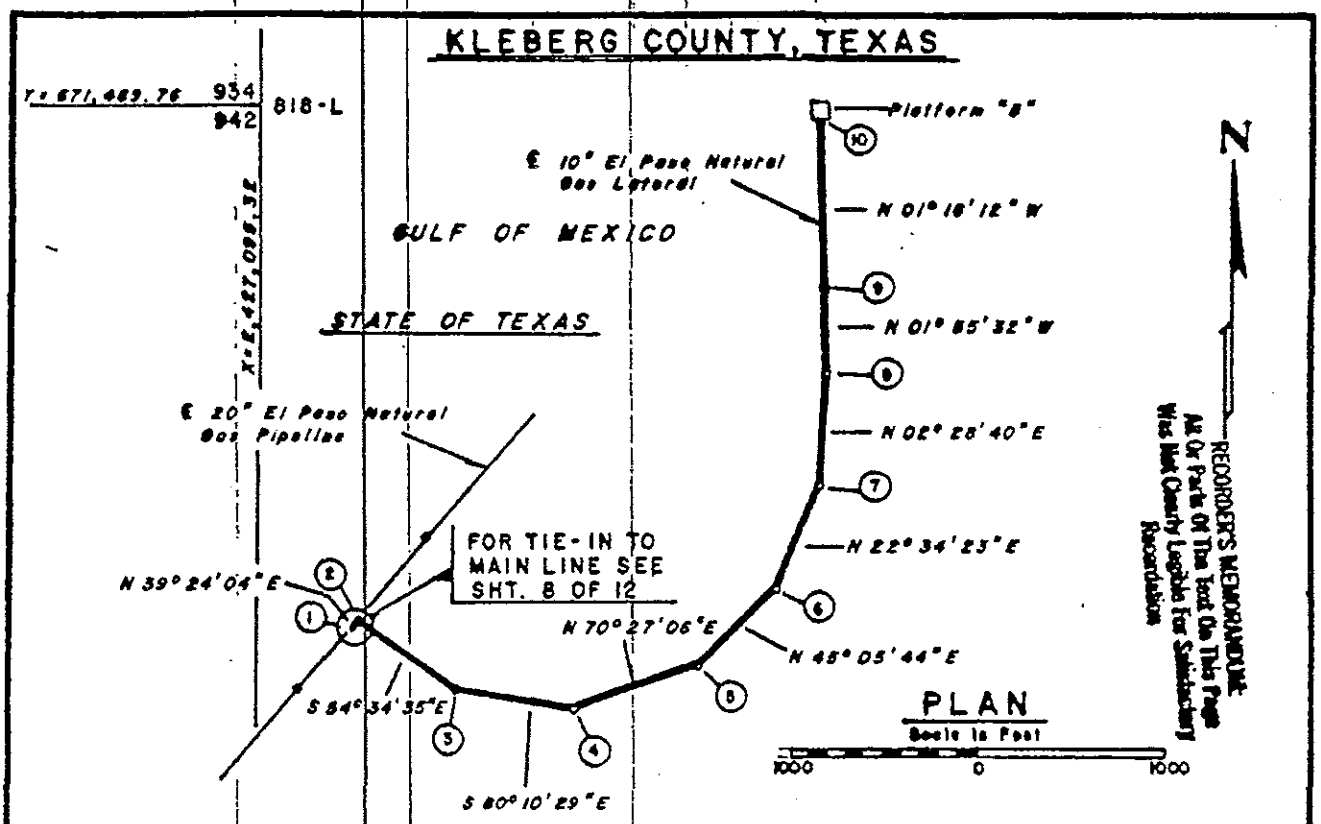
CORPS OF ENGINEERS PERMIT NO. 13553

DWG. NO. 3A853.4-X-1

R/W NO. 79074

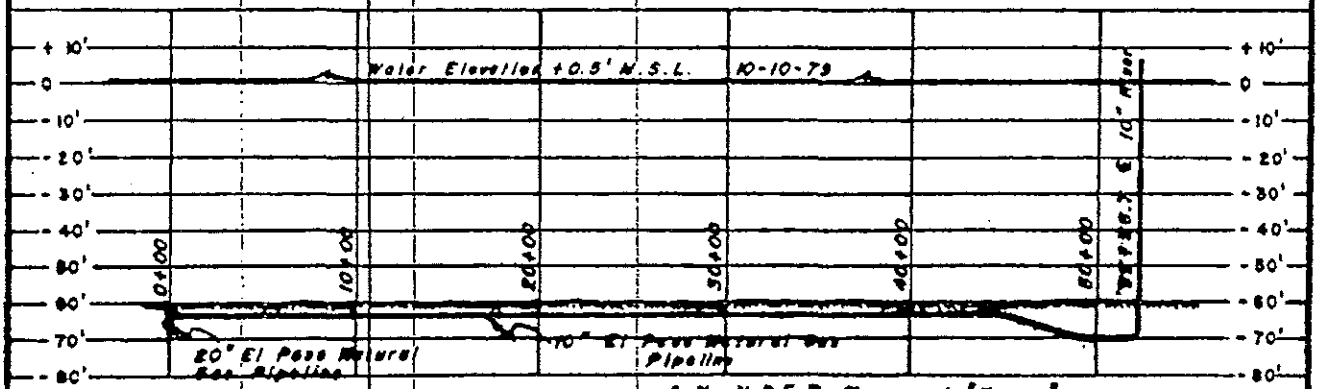
Exhibit K

KLEBERG COUNTY, TEXAS



1.	X = 2,430,676.43	Y = 671,980.91	6.	X = 2,432,839.00	Y = 672,176.10
2.	X = 2,430,605.80	Y = 672,016.30	7.	X = 2,433,074.00	Y = 672,741.40
3.	X = 2,431,143.30	Y = 671,632.30	8.	X = 2,433,100.30	Y = 673,349.20
4.	X = 2,431,764.30	Y = 671,525.10	9.	X = 2,433,084.00	Y = 673,834.00
5.	X = 2,432,419.10	Y = 671,757.80	10.	X = 2,433,063.80	Y = 674,730.70

Coordinates Are Based On The South Zone Of The Texas Lambert Grid System.



PROFILE

Horizontal 0 60
Vertical 60 0 60

B.M. - U.S.E.E. Monument "Kenny" Elev. 7.37' M.S.L.

Soundings And Elevations Are In Feet And Refer To Mean Low Water Datum

MAXIMUM OPERATING PRESSURE: PIPE IS 10.750" O.D. x .365" W.T. (40.48 LBS./FT.) A.P.I. 5LX GR. X-42 S.S.A.W. BLACK LINE PIPE, COATED WITH .600" COMCASTIC (16.96 LBS./FT. & 1" THICK CONCRETE (36 LBS./FT.) PIPE WAS HYDROSTATICALLY TESTED IN PLACE TO 1660 P.S.I.G.

THIS PIPELINE TO BE USED TO TRANSPORT NATURAL GAS FROM VARIOUS GAS FIELDS OFFSHORE TEXAS TO VARIOUS DISTRIBUTION POINTS

NATURAL GAS COMPANY

MUSTANG ISLAND GATHERING SYSTEM LATERAL A-4 AS-BUILT KLEBERG COUNTY, TEXAS

DATE: 1-23-80 SHEET 9 OF 12

LOCATION ENGINEER

TEXAS REGISTERED ENGINEER NO. 12791

CORP OF ENGINEERS PERMIT NO. 13553

DWG. NO. 4A853.4-X-1

VOL 32 PAGE 341

185273

Indexed

Compared

STATE OF TEXAS COUNTY OF KLEBERG

I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the OFFICIAL RECORDS of Kleberg County, Texas.

VOL 94 PAGE 510

6-16-89

Recording Date

County Clerk, Kleberg County

Any provision herein which restricts the sale, rental, or use of the described real property because of color or race is invalid and unenforceable under federal law.

FILED FOR RECORD

1989 JUN 12 P 3:25

SAM D. DEANDA
COUNTY CLERK KLEBERG CTY.
BY Alicia Gamez, DEPUTY
ALICIA GAMEZ

RECORDER'S MEMORANDUM

At the time of recordation, this instrument was found to be inadequate for the best photographic reproduction because of illegibility, carbon or photo copy, discolored paper, etc. All blockouts, additions and changes were present at the time the instrument was filed and recorded.

El Paso Natural Gas Co.
P.O. Box 1492
El Paso, Tx. 79978
Attn: Right of Way Dept.

VOL 32 PAGE 342

EXHIBIT "B"

1. SAMEDAN PIPE LINE CORPORATION
2. NEW ENGLAND ENERGY, INC.
3. HOME PETROLEUM CORPORATION

EXHIBIT "C"

A fifty (50) foot wide right-of-way being twenty-five (25) feet either side of the pipeline.

Right-of-way No. 1: A 20" pipeline beginning in State Tract 818L, SW/4 with the easement beginning at X=2,431,585; Y=673,553 and proceeding to the southwest for 4,359.85 rods to a point on the Padre Island National Seashore boundary at X=2,385,154; Y=620,229 in State Tract 975s, the Gulf of Mexico.

Right-of-way No. 2: A 8-5/8" pipeline beginning in State Tract 820L NW/4 with the easement beginning at X=2,430,621; Y=665,530 and proceeding in a curved direction to the west for 322.93 rods to terminate at X=2,426,184; Y=666,589 in State Tract 942s at a tie-in point on the 20" pipeline.

Right-of-way No. 3: A 8-5/8" pipeline beginning in State Tract 818L SW/4 with the easement beginning at 2,427,783; Y=673,388 and proceeding southeast for 190.52 rods to terminate at X=2,430,149; Y=671,400 in State Tract 818L SW/4 at a tie-in point on the 20" pipeline.

Right-of-way No. 4: A 10" pipeline in State Tract 818L SW/4 with the easement beginning at X=2,433,064; Y-674,731 and proceeding in a curved direction to the southwest for 316.77 rods to terminate at X-2,430,576; Y=671,981 at a tie-in point on the 20" pipeline.

RECORDER'S MEMORANDUM

At the time of recordation, this instrument was found to be inadequate for the best photographic reproduction because of illegibility, carbon or photo copy, discolored paper, etc. All blockouts, additions and changes were present at the time the instrument was filed and recorded.

187766

FILED FOR RECORD

1992 JAN 15 P 3:42

SAM D. DEANDA
COUNTY CLERK KLEBERG CTY.
BY _____ DEPUTY
JOSE E. GUERRA

Indexed

Compared

STATE OF TEXAS COUNTY OF KLEBERG

I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the OFFICIAL RECORDS of Kleberg County, Texas

VOL 32 PAGE 321

1-16-90
Recording Date

Sam D. Deanda
County Clerk, Kleberg County

Any provision herein which restricts the sale, rental, or use of the described real property because of color or race is invalid and unenforceable under federal law.

SAMEDAN OIL CORP.
350 GLENBOROUGH SUITE 240
ATTN STEVEN O'BRIEN
HOUSTON, TX 77067-3299

State of Texas
Assignment of M.E. 890058

I, SAM D. DEANDA, County Clerk in and for Kleberg County, Texas, do hereby certify that the State of Texas Assignment of M.E. 890058, was recorded on November 13th, 1989, in Volume 30, Page 458, in the records of Kleberg County, Texas.

WITNESS my hand and seal of office this 14th day of November, 1989.

File # 187162

SAM D. DEANDA
County Clerk, Kleberg County, TX
By Leticia Garcia
Leticia Garcia

R/W 890234

APPENDIX C

RRC Form T-4C

Special Use Permit 7490-43

RAILROAD COMMISSION OF TEXAS
OIL AND GAS DIVISION
PIPELINE SECTION

Form T-4C
(Rev 3-73)

PIPELINE AND GATHERING SYSTEM FORM OF CERTIFICATION

P/L CRUD/CND GAS
SAMEDAN PIPE LINE CORPORATION PMT 04022
P.O. BOX 909 PRIVATE
ARDMORE OK 73402

Permit No.

PIPELINE CLASSIFICATION

COMMON CARRIER	☐
GAS UTILITY	☐
PRIVATE	☒

FLUID TRANSPORTED

CRUDE/CONDENSATE	☒
GAS	☒ *
PRODUCTS	☐
OTHER	☐

SPECIFY

Location of Lines
OFFSHORE TEXAS, KLEBURG CO., TEXAS, MUSTANG ISLAND AREA BLOCKS 818,820,926,927,796,
942,819,953,954,955,960,964,967,974,975

Issuance Date of Last Permit
7-30-90

This will certify that the installations described above have not been subject to any modifications, either extensions or abandonments since the issuance date of last permit.

REMARKS. * THE SUBJECT PIPELINE IS A NATURAL GAS GATHERING BUT ALSO CARRIES CONDENSATE ASSOCIATED WITH PRODUCED GAS.

CERTIFICATE:

I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that data and facts stated therein are true, correct, and complete, to the best of my knowledge.

Boyce Perry
Signature

BOYCE PERRY
Name of Person (type or print)

6/12/91
Date

VICE PRESIDENT
Title

Telephone Number (405) 223-4110
Area Code Number

Form 10-114a
(Rev. March 1971)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

Including attachments.

SPECIAL USE PERMIT

PERMIT NO.	EXPIRES
7490-43	7/1/90
PREVIOUS PERMIT NO.	
3-613-010	

Padre Island National Seashore
(Area)

El Paso Natural Gas Co, of P.O. Box 1492, El Paso TX 79978 is hereby authorized during the period from July 1, 1980, through July 1, 19 90, to use the following-described land in the above-named area:

The area up to 50' on each side of a line connecting the following State coordinates:

x2,377,584.6; y622,412.4
x2,377,658.6; y622,864.5
x2,378,073.0; y622,545.1
x2,382,976.71; y620,929.35
x2,384,494.9; y620,423.9
x2,385,154.1; y620,228.6

Plus an existing access route through the dunes approximately 0.2 miles south of the right-of-way which connects with the right-of-way behind the foredunes.

for the purpose of: operation and maintenance of a 20" natural gas pipeline and maintenance of a caleche access road.

subject to the conditions on the reverse hereof and attached pages and to the payment to the Government of the United States of the sum of One thousand four hundred sixty-four and no/100 Dollars ($1464.00), in advance for full permit period (Monthly, semiannually, etc.), or as follows:

~~The above fee computed at $3.00/rod/ten years for 488 rods.~~
payment to be made to the Superintendent by Express or Postal Money Order, Certified Check, or Draft payable to the National Park Service, or Cash.

Issued at ~~Corpus Christi, Texas~~, this 4th day of November, 19 80

William M. Lewis
Superintendent

The undersigned hereby accepts this permit subject to the terms, covenants, obligations, and reservations, expressed or implied, therein.

TWO WITNESSES TO SIGNATURES	*PERMITTEE (Signature)
NAME Norman L. Winkley	NAME Roland G. Tayler, Attorney-in-Fact
ADDRESS El Paso Natural Gas Company, P. O. Box 1492, El Paso, Texas 79978	ADDRESS El Paso Natural Gas Company, P. O. Box 1492, El Paso, Texas 79978
NAME Alan A. Winter	NAME
ADDRESS El Paso Natural Gas Company, P. O. Box 1492, El Paso, Texas 79978	ADDRESS

APPROVED: (If approval is required by higher authority)

NAME	TITLE	DATE

*Sign name or names as written in body of permit; for copartnership, permittee should sign as "members of firm"; for corporation, the officer authorized to execute contracts, etc., should sign, with title, the sufficiency of such signature being attested by the Secretary, with corporate seal, in lieu of witnesses.

(This copy for Permittee)

P.G. RD. 60/1/7

CONDITIONS OF THIS PERMIT

1. **Regulations.**—The permittee shall exercise this privilege subject to the supervision of the Superintendent, and shall comply with the regulations of the Secretary of the Interior, or other authorized officer of the Government, governing the area.

2. **Definition.**—The term "Director, National Park Service" as used herein shall include the appropriate Regional Director or Superintendent as the representative of the Director.

3. **Rights of the Director.**—Use by the permittee of the land covered hereby is subject to the right of the Director, National Park Service, to establish trails, roads, and other improvements and betterments over, upon, or through said premises, and further to the use by travelers and others of such roads and trails as well as of those already existing. If it is necessary to exercise such right, every effort will be made by the National Park Service to refrain from unduly interfering or preventing use of the land by the permittee for the purpose intended under this permit.

4. **Nondiscrimination.**—See attachment A.

5. **Damages.**—The permittee shall pay the United States for any damage resulting from this use which would not reasonably be inherent in the use which the permittee is authorized to make of the land described in this permit.

6. **Construction.**—No building or other structure shall be erected under this permit except upon prior approval of plans and specifications by the Director, National Park Service, and the premises and all appurtenances thereto shall be kept in a safe, sanitary, and sightly condition.

7. **Removal of structures and improvements.**—Upon the expiration of this permit by limitation of time or its termination for any reason prior to its expiration date, the permittee, if all charges due the Government hereunder have been paid, shall remove within such reasonable period as is determinted by the Superintendent, but not to exceed 90 days unless otherwise stipulated in this permit, all structures and improvements placed on the premises by him, and shall restore the site to its former condition under the direction of the Superintendent. If the permittee fails to remove all such structures and improvements within the aforesaid period, they shall become the property of the United States, but that will not relieve the permittee of liability for the cost of their removal and the restoration of the site.

~~8. **Water rights.**—Water rights will be perfected, when necessary, by the United States in its own name for water developed or used in connection with this permit. The permittee will furnish to the United States such information as is necessary for perfection, including statutory fees, and for management and protection of the resource.~~

9. **Disposal of refuse.**—The permittee shall dispose of brush and other refuse as required by the Superintendent.

~~10. **Timber cutting.**—No timber may be cut or destroyed without first obtaining a permit therefor from the Director, National Park Service.~~

11. **Fire prevention and suppression.**—The permittee and his employees shall take all reasonable precautions to prevent forest, brush, grass, and structural fires and also shall assist the Superintendent in extinguishing such fires in the vicinity of any tract which may be used hereunder.

12. **Soil erosion.**—The permittee shall take adequate measures, as directed and approved by the Superintendent to restrict and prevent soil erosion on the lands covered hereby and shall so utilize such lands as not to contribute to erosion on adjoining lands.

13. **Benefit.**—Neither Members of, nor Delegates to Congress, or Resident Commissioners shall be admitted to any share or part of this permit or derive, either directly or indirectly, any pecuniary benefit to arise therefrom: *Provided however,* That nothing herein contained shall be construed to extend to any incorporated company, if the permit be for the benefit of such corporation.

above ground

14. **Assignment.**—This permit may not be transferred or assigned without the consent of the Director, National Park Service, in writing.

15. **Revocation.**—This permit may be terminated upon breach of any of the conditions herein or at the discretion of the Director, National Park Service.

*Number all succeeding pages and attachments in consecutive order and identify each with the permit number.

U.S. GOVERNMENT PRINTING OFFICE

16. All operations and maintenance will be conducted in accordance with the plan of operations approved on October 29, 1980 and attached here-to.

17. In consideration for obtaining the privileges granted herein, the permittee agrees to indemnify and save harmless the United States from any loss to it, including not only damage to Government property and injury to Government employees but also judgements, settlements or compromises for property damage or injury to all persons for which the United States may be liable, resulting from the exercise by the permittee and his employees of the privileges granted herein.

ATTACHMENT A

CONTINUATION OF CONDITIONS OF THIS PERMIT (FORM 10-114)

The following provisions constitute Condition 4 in accordance with Executive Order No. 11246 of September 24, 1965, as amended by Executive Order No. 11375 of October 13, 1967.

Nondiscrimination. If use of the resource covered by the permit will involve the employment by the permittee of a person or persons, the permittee agrees as follows:

(1) The Permittee will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Permittee will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Permittee agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Superintendent setting forth the provisions of this nondiscrimination clause.

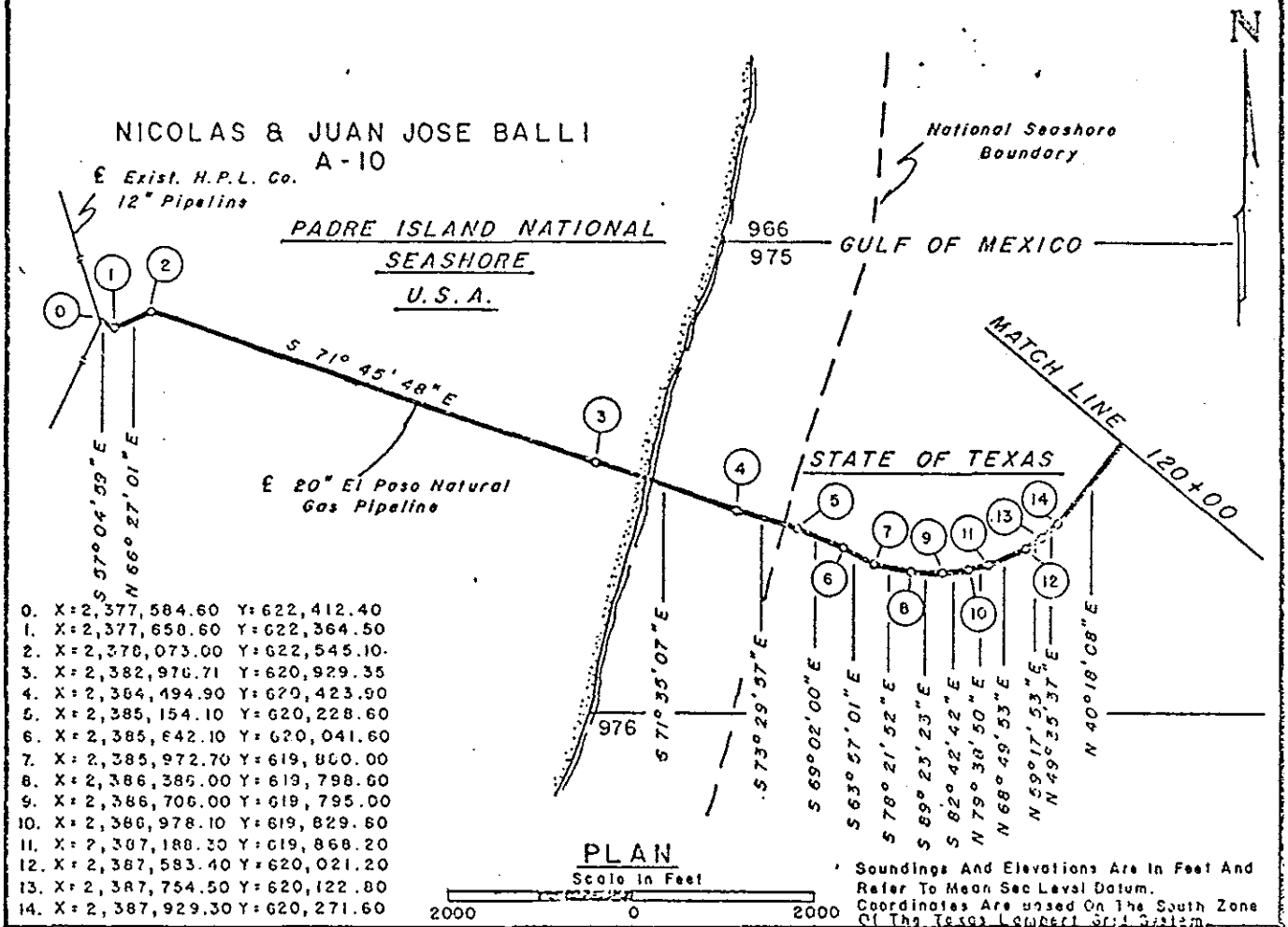
(2) The Permittee will, in all solicitations or advertisements for employees placed by or on behalf of the Permittee, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(3) The Permittee will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the Superintendent, advising the labor union or workers' representative of the Permittee's commitments under Section 202 of Executive Order No. 11246 of September 24, 1965, as amended, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The Permittee will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The Permittee will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, as amended, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the Superintendent and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

KLEBERG COUNTY, TEXAS



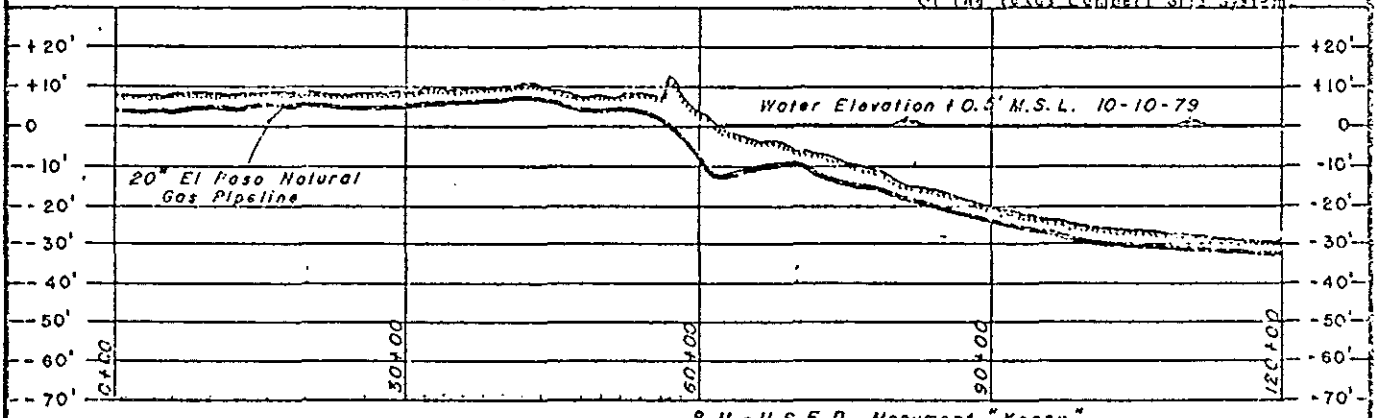
0. X = 2,377,584.60 Y = 622,412.40
1. X = 2,377,650.60 Y = 622,364.50
2. X = 2,378,073.00 Y = 622,545.10
3. X = 2,382,976.71 Y = 620,929.35
4. X = 2,384,494.90 Y = 620,423.90
5. X = 2,385,154.10 Y = 620,228.60
6. X = 2,385,642.10 Y = 620,041.60
7. X = 2,385,972.70 Y = 619,860.00
8. X = 2,386,385.00 Y = 619,798.60
9. X = 2,386,706.00 Y = 619,795.00
10. X = 2,386,978.10 Y = 619,829.60
11. X = 2,387,188.30 Y = 619,868.20
12. X = 2,387,583.40 Y = 620,021.20
13. X = 2,387,754.50 Y = 620,122.80
14. X = 2,387,929.30 Y = 620,271.60

PLAN

Scale in Feet

2000 0 2000

* Soundings And Elevations Are In Feet And Refer To Mean Sea Level Datum. Coordinates Are based On The South Zone Of The Texas Lambert Grid System.



PROFILE

Horiz. 2000 0 2000

Vert. 50 0 50

MAXIMUM OPERATING PRESSURE:

PIPE IS 20" O.D. x .406" W.T. (84.96 LBS./FT.) A.P.I. 5LX GR. X-42 D.S.A.W. BLACK LINE PIPE, COATED WITH 5/8" SOMASTIC (37.97 LBS./FT.) & 2.4" THICK CONCRETE (173 LBS./FT.) PIPE WAS HYDROSTATICALLY TESTED IN PLACE TO 1600 P.S.I.G.

THIS PIPELINE TO BE USED TO TRANSPORT NATURAL GAS FROM VARIOUS GAS FIELDS OFFSHORE TEXAS TO VARIOUS DISTRIBUTION POINTS

S.M. - U.S.E.D. Monument "Kenny" Elev. 7.37' M.S.L.

El Paso NATURAL GAS COMPANY

MUSTANG ISLAND GATHERING SYSTEM
TRUNK A
AS-BUILT
KLEBERG COUNTY, TEXAS

DATE: 1-15-80 SHEET 2 OF 12

Ewell D. Lo... TEXAS REGISTERED ENGINEER NO. 12791
LOCATION ENGINEER

CORPS OF ENGINEERS
PERMIT NO. 13553

DWG NO. A85? 4-X-2

APPENDIX D

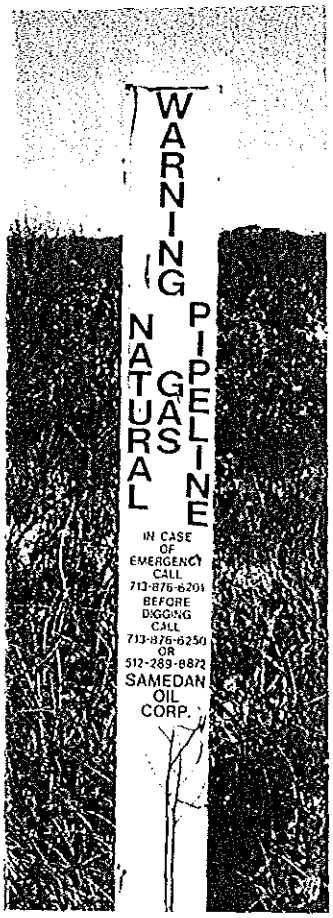
Photographs



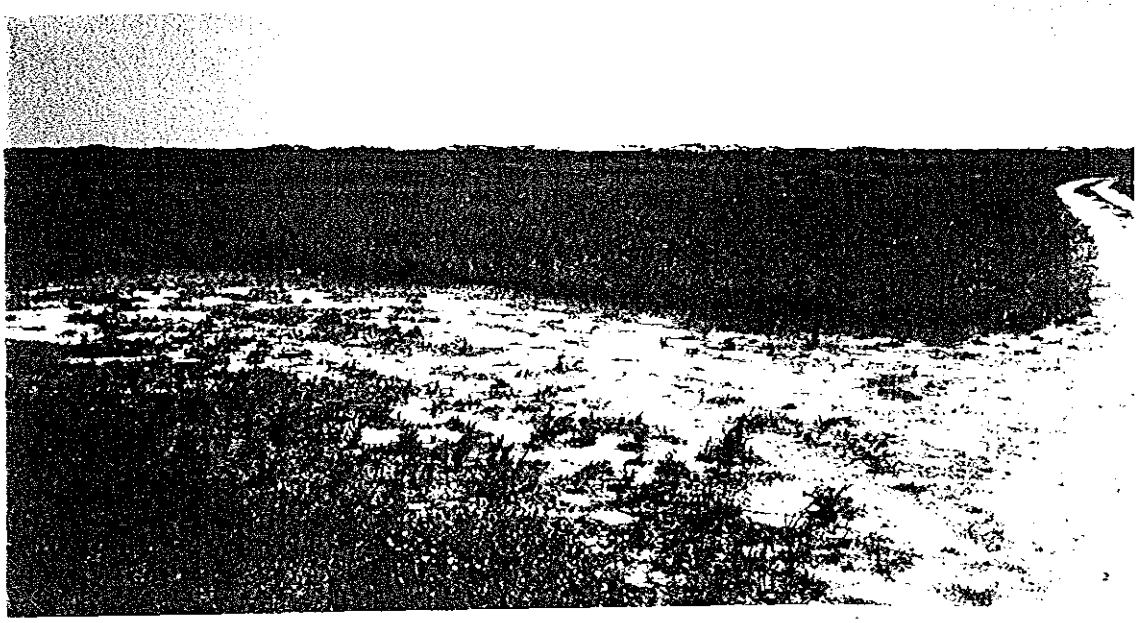
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Caliche access road, looking northeast

PADRE ISLAND NATIONAL SEASHORE

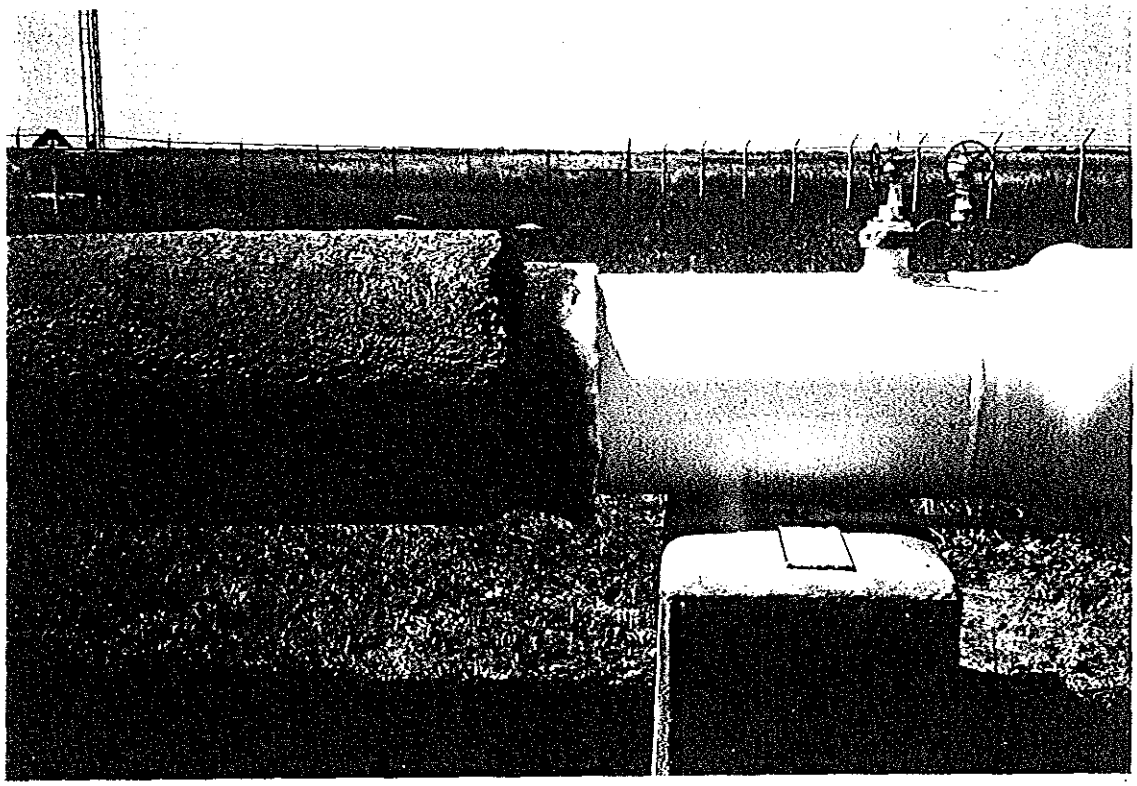


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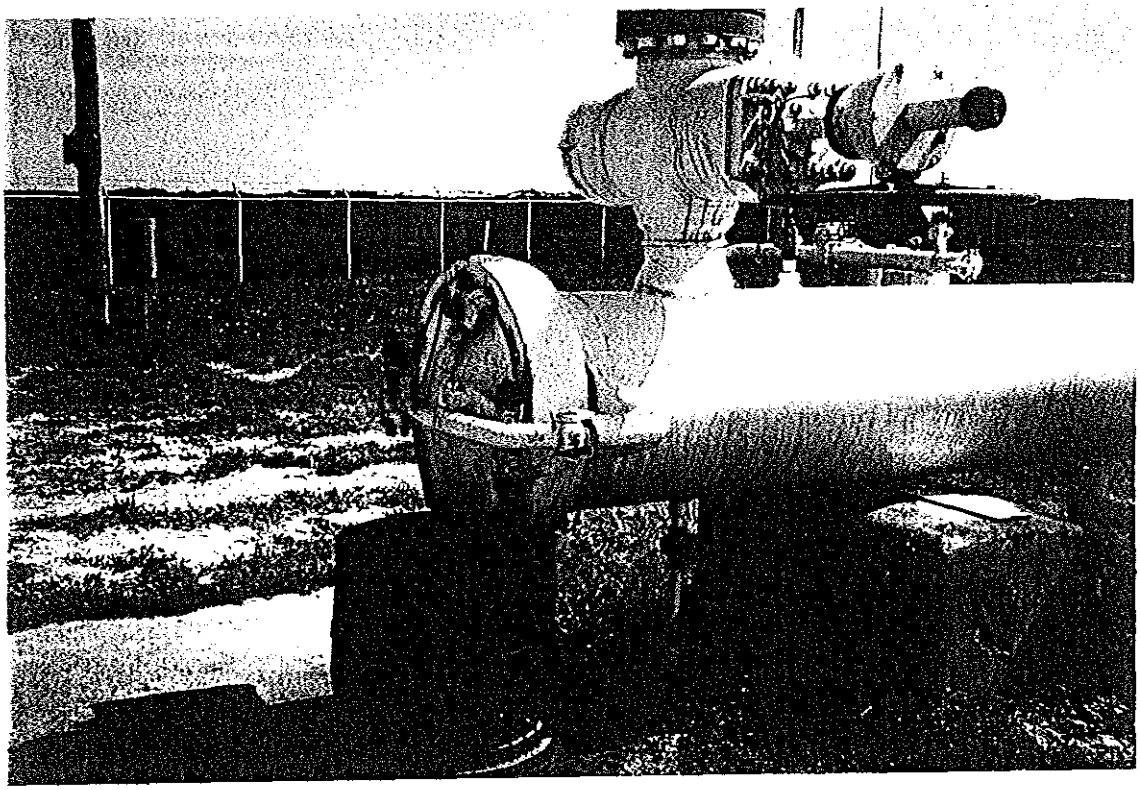
Caliche helispot adjacent to access road, looking southwest



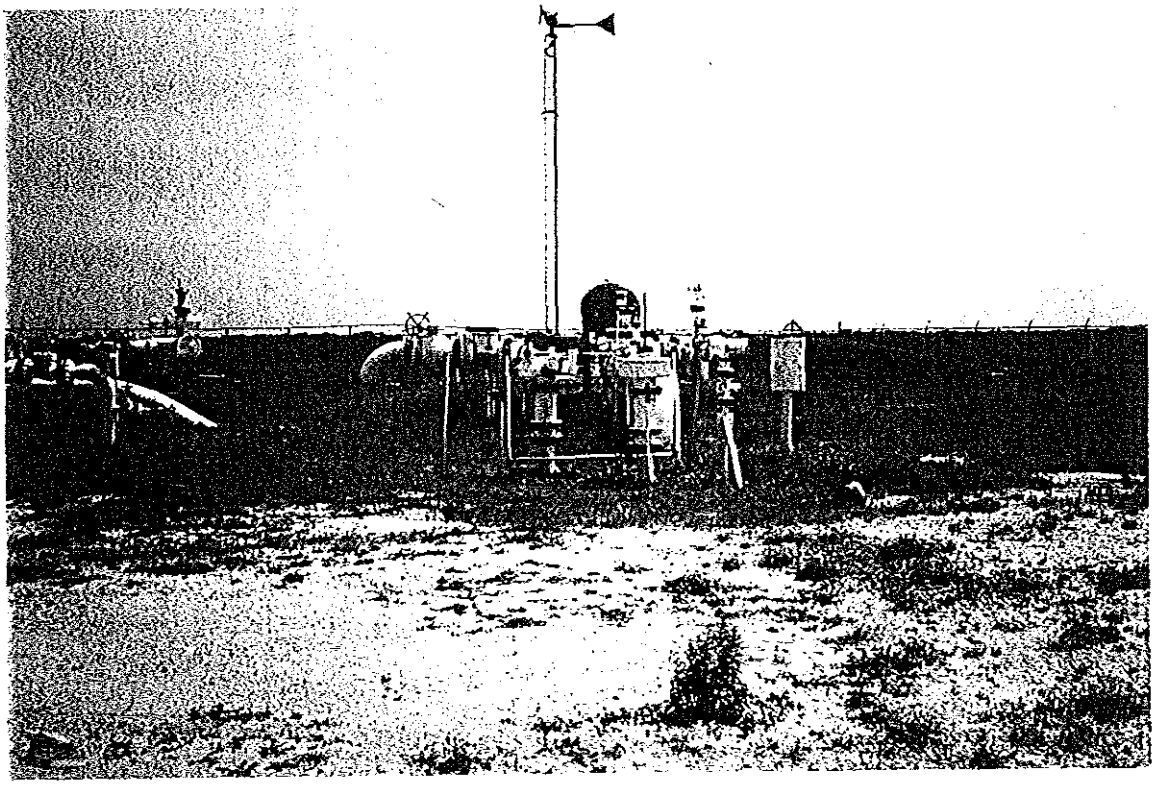
Pipe at the surface showing somatic and concrete coating 4

SAMEDAN'S ABOVE-GROUND EQUIPMENT

"SIX PIGS" - PADRE ISLAND NATIONAL SEASHORE



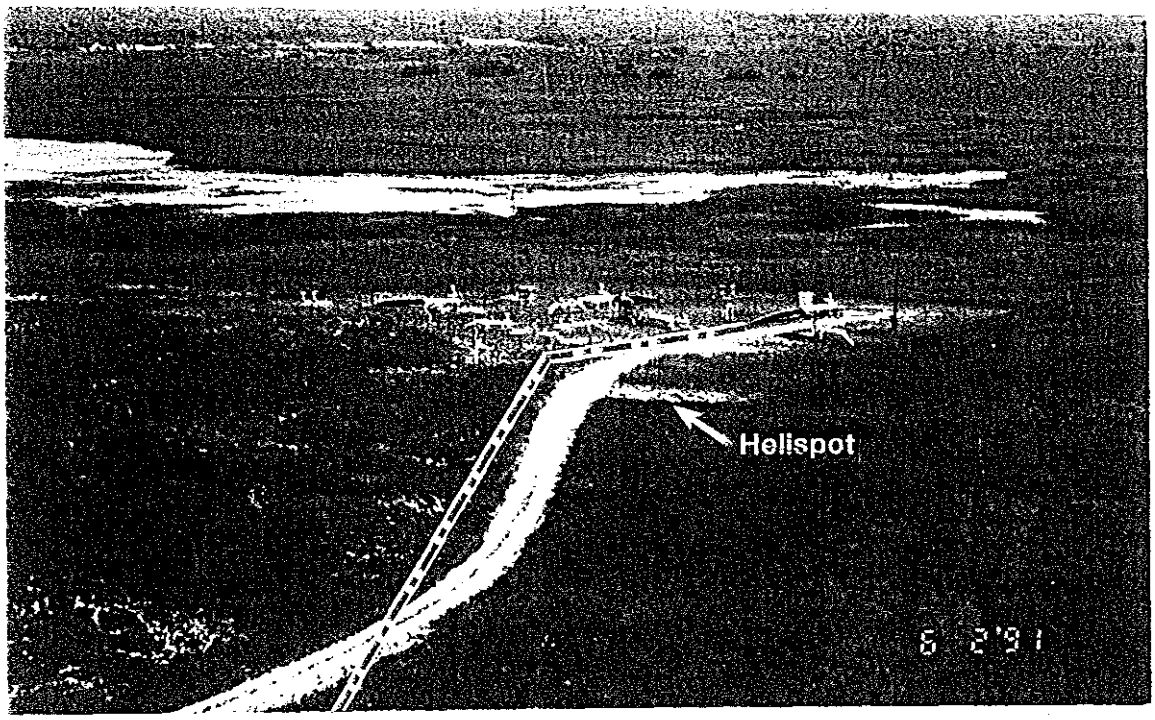
End of pipe where "pig" exits 5



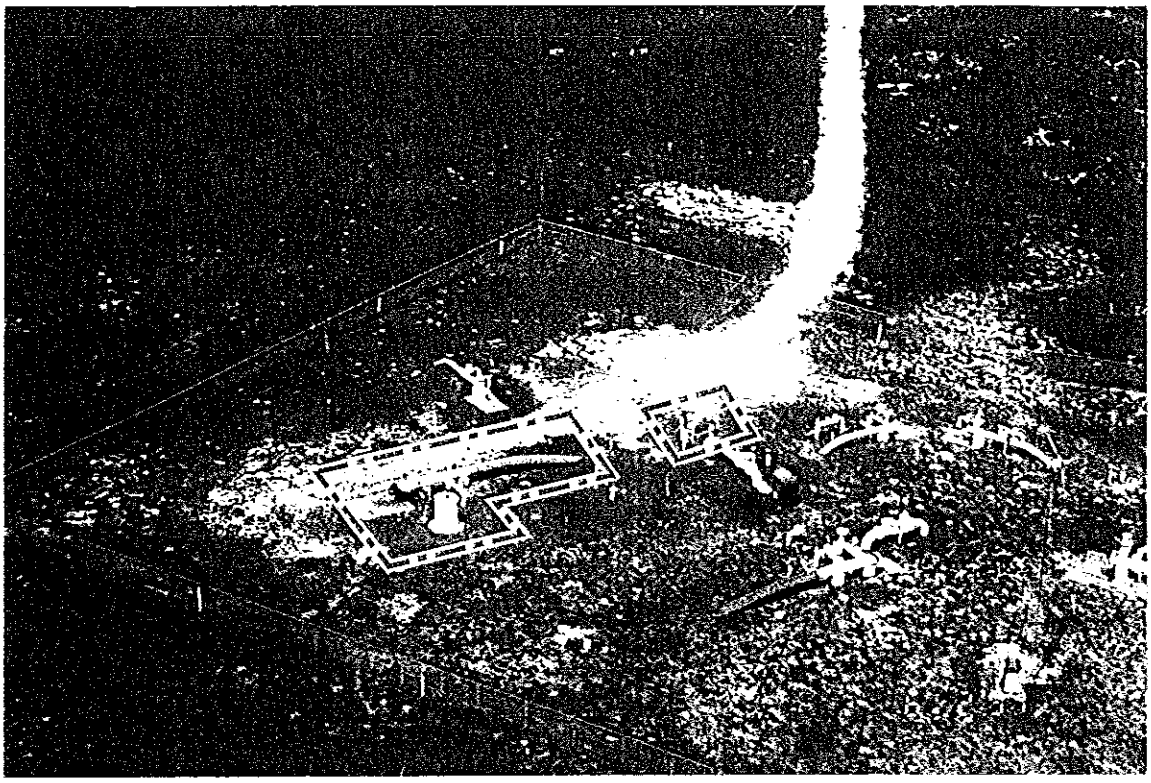
Underground Valve Controls (those painted orange and white) 6

SAMEDAN'S ABOVE-GROUND EQUIPMENT

"SIX PIGS" - PADRE ISLAND NATIONAL SEASHORE

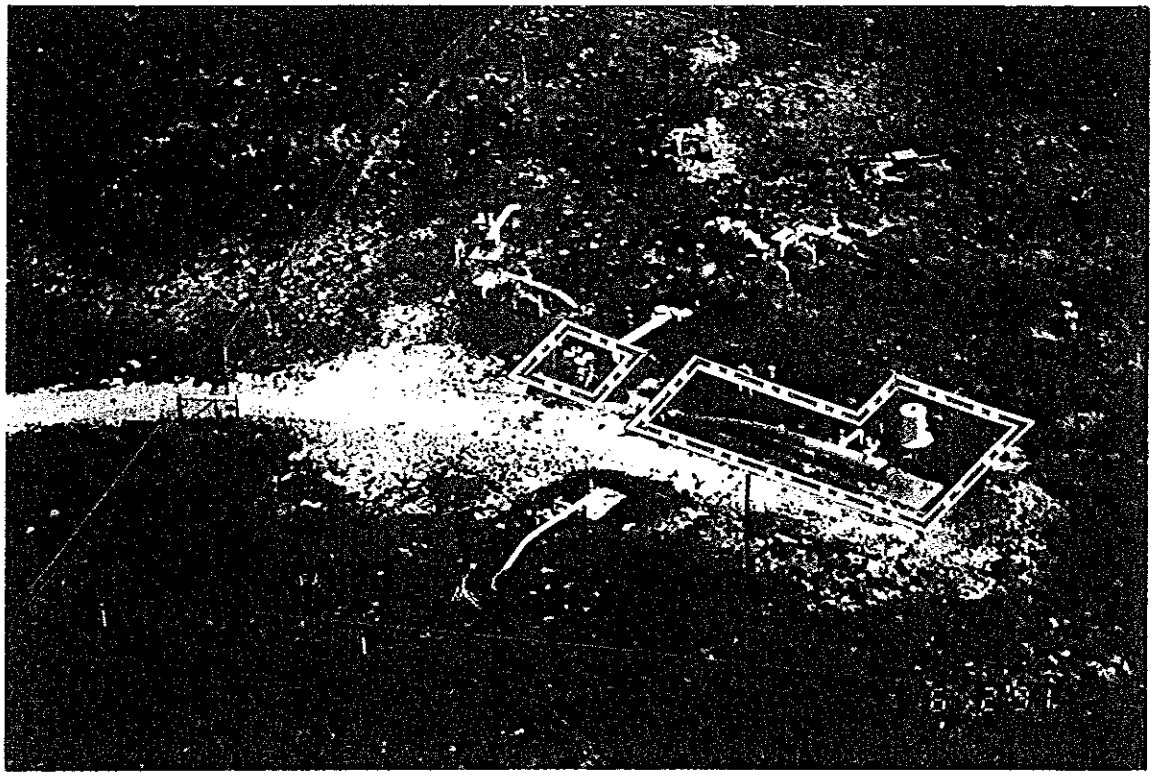


Pipeline route marked in red and white tape 7

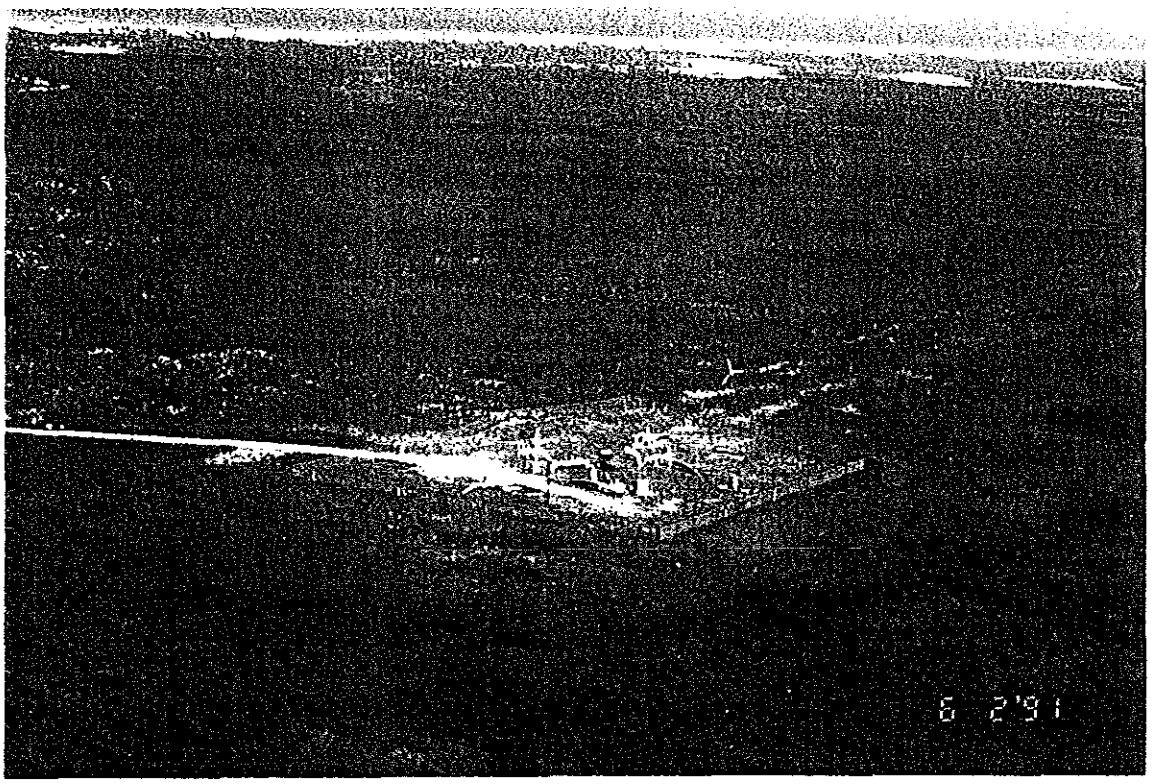


8

SAMEDAN PIPE LINE CORPORATION'S ABOVE-GROUND EQUIPMENT
(circled)
"SIX PIGS" - PADRE ISLAND NATIONAL SEASHORE



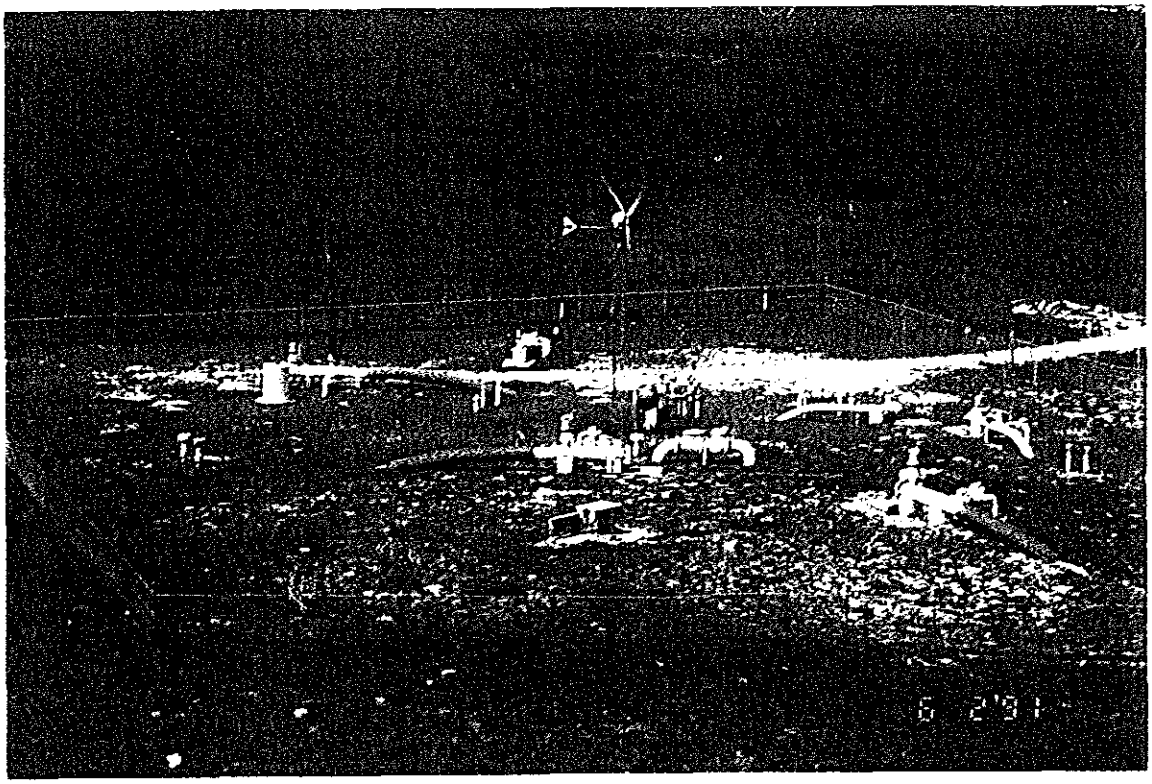
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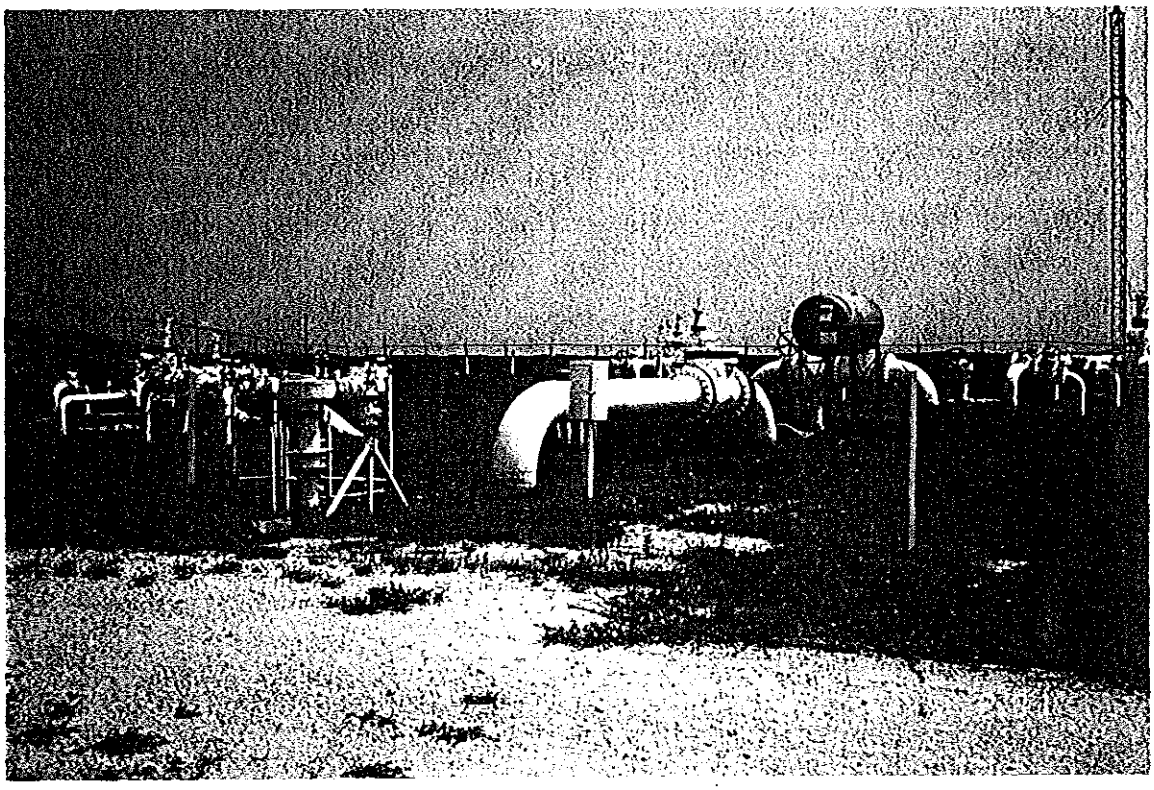
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SLUG-CATCHER ABOVE-GROUND FACILITY

"SIX PIGS" - PADRE ISLAND NATIONAL SEASHORE



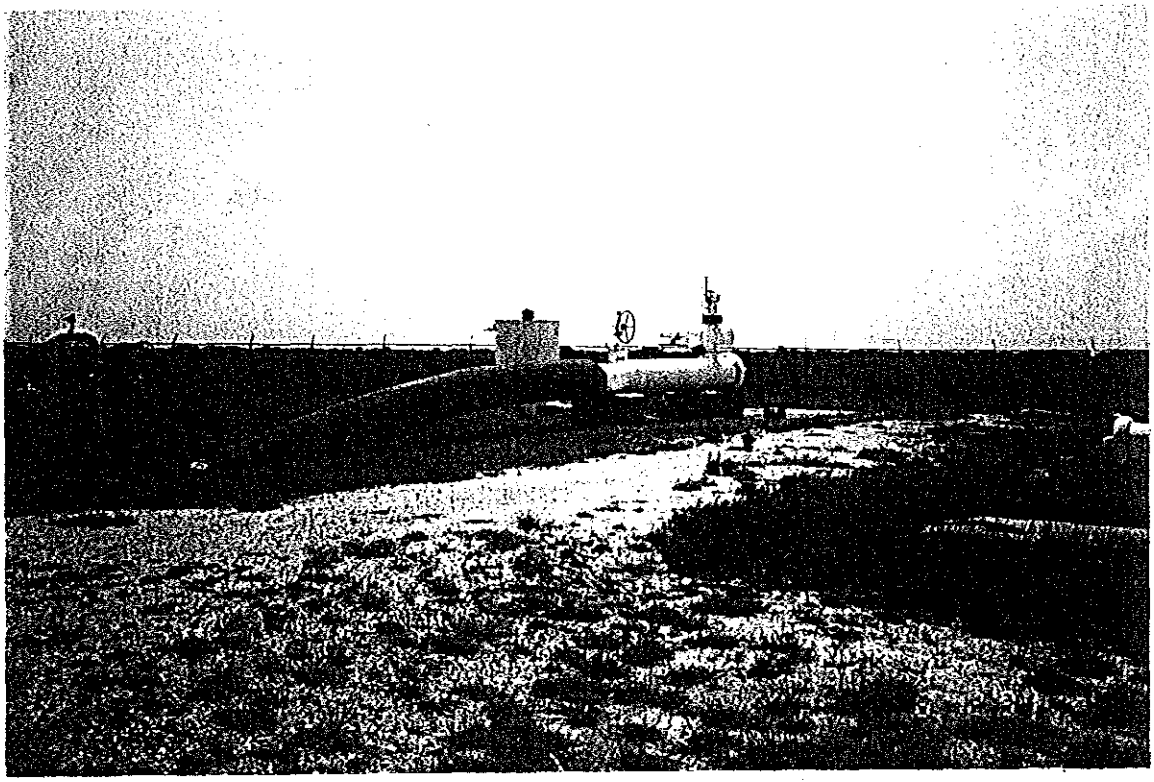
11



Valve Controls and Check Valve 12

SAMEDAN PIPE LINE CORPORATION'S ABOVE-GROUND EQUIPMENT

"SIX PIGS" - PADRE ISLAND NATIONAL SEASHORE



Pig Return 13

APPENDIX E

Affidavit of Compliance

SAMEDAN OIL CORPORATION
350 GLENBOROUGH, SUITE 240
HOUSTON, TEXAS 77067-3299
(713) 876-6250

AFFIDAVIT OF COMPLIANCE

Samedan will comply with all applicable operating standards under 36 CFR 9.41.

Samedan will comply with the approved Plan of Operations and all standards, stipulations, demands and orders issued by the Regional Director of the National Park Service.

Samedan agrees that its operations are and will be in compliance with all applicable Federal, State and local laws and regulations.

SAMEDAN PIPE LINE CORPORATION

Boyce Perry
Vice President

4-3-92
Date

STATE OF TEXAS)
)
COUNTY OF HARRIS)

On this 3rd day of April, 1992, before me appeared Boyce Perry, to me personally known, who, being by me duly sworn, did say that he is the Vice President of SAMEDAN PIPE LINE CORPORATION, a Delaware corporation, and that said instrument was signed on behalf of said corporation by authority of its Board of Directors and said appearer acknowledged said instrument to be the free act and deed of said corporation.

Nancy K. Champagne
Notary Public

NANCY K. CHAMPAGNE
MY COMMISSION EXPIRES
December 27, 1993