

# Standard Operating Procedure (SOP) 3: CON Calibration Files (OC\_A Creation) version 3

## Glacier Bay National Park and Preserve Oceanographic Monitoring Protocol

### Change History

| Previous Version # | Revision Date  | Revised By | Changes                                                                                                                                                                                     | Justification                                                                                                                                    | New Version # |
|--------------------|----------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| 2                  | February 2020  | B. Johnson | Replace actions referencing integration website with Data Store. Changes references to “certified” with “accepted”. Rename GLBA server path to \\nps\akrdfs\GLBA\Science\Data\Oceanography. | Integration website was deprecated. Terminology guidance changed by CO. The GLBA file server share had been renamed since the prior SOP version. | 3             |
| 1                  | September 2018 | B. Johnson | Address new “XMLCON” file structure                                                                                                                                                         | Vendor imposed new file format.                                                                                                                  | 2             |
| -                  |                | B. Johnson | Initial version                                                                                                                                                                             | For original protocol                                                                                                                            | 1             |

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### Summary

Be aware there are two different internal file types used by the Sea-Bird vendor to hold calibration information. The type having extension CON was used through 2013. Beginning in 2014, SEAN adopted the newer format having extension “.XMLCON”. The methods for using them are basically the same. For simplicity, the term CON is used when referring to either of these file types.

OC\_A is built in one of two ways, depending on circumstances. Case one occurs when the Project Leader receives a vendor-supplied CD or DVD containing a CON file, typically after an annual full recalibration of all sensors. In this case, the CON file is packaged by the project leader, submitted through the Data Steward to The Data Manager for the validation and quality assurance process, and eventually accepted.

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Case two occurs when a single sensor undergoes recalibration (or initial installation). The sensor is shipped with paper documentation that must be used along with vendor software to create an updated CON file. In this case the project leader passes the new calibration parameters to the Data Steward, who creates a new CON file combining the new calibration data as well as the existing parameters for other sensors.

Regardless of which case necessitated creation of the deliverable, a common procedure is used for validating and disseminating the final product. It is possible for a year to contain multiple CON files. Also, the content of a CON file may span a year boundary: the year a CON file is named and accounted for is the latest year for any instrument calibration residing inside the file.

Be aware the submission unit to book OC\_A under can be confusing. A best practice is it to record it in the cruise year the CTD with that calibration will be put to use. For example, CTD #6 went through calibration in January 2019. It was put to use beginning in cruise year 2020. The submission unit should be “CTD#6 2020 pre”. It should be recorded in the status spreadsheet under the year 2020 tab.

SOP 3 requires users to work in the internal NPS network under valid Active Directory accounts. Access questions should be directed to the Data Manager.

### Detailed Steps

#### A. Case one: Full calibration file set is received

1. Project Leader tasks
  1. Receive CD/DVD supplied by vendor with recalibrated CTD.
  2. Open the CON file using the vendor’s SBEDataProcessing.exe tool, following these instructions:
    1. Start the SBEDataProc.exe program. It should be on the Project Leader’s computer under the “Start” button.
    2. Select “Configure” from the top menu. On the dropdown menu click on the subject CTD type, such as “SBE 19plus V2 Seacat CTD.” A Windows form will appear on screen.
    3. Press the OPEN button on the form. Navigate to the new copy of the CON file supplied by the vendor. Open it. The Windows form will now list the sensors defined in the latest CON file.
    4. Press the REPORT button to display the inner contents of the file.
  3. Verify that the CON file calibration coefficients exactly match those given on the paper or PDF file versions. If discrepancies are found, use the software to make the CON file match the documents as described under case two.
  4. Copy the CON file from CD to  
\\nps\akrdfs\GLBA\Science\Data\Oceanography\Data\YYYY\CON\_calibration, where YYYY is the last year of calibration mentioned inside the file, e.g., 2009. The vendor’s file is typically named on the CD using the format YYMM.CON (or, as of 2014, YYMM.XMLCON), where YY stands for year and MM is month. In order to distinguish this calibration from those of any other CTDs employed, the filename must be changed.

Rename the local copy to the form C\_YYMM.CON, where C stands for CTD number. The YY and MM are taken from the *last* date of an instrument calibration in the file, which may or may not match the vendor's name. For example, a file whose last sensor was calibrated for CTD #5 on February 18, 2010 would be named 5\_1002.CON. Also, multiple CON files may exist in this folder for other purposes than building an OC\_A.

5. Notify the Data Steward a new deliverable OC\_A is ready for validation, specifying the exact filename used.
2. Data Steward tasks
  1. Review that the filename of the OC\_A is properly formed. This entails using SBEDataprocc software to view the internal contents in order to ascertain the correct month and year. SBEDataprocc is available in the Toolbox section of the website.
  2. Submit the GLBA-situated file via email attachment to the Data Manager for validation, specifying in the message body it is deliverable OC\_A, as defined in protocol OC-2014.1.

## **B. Case two: Paper addendum to calibration is received**

1. Project Leader tasks
  1. Create, validate, accept, and disseminate any additional OC\_G calibration form image(s) deliverable.
  2. Notify the Data Steward of the specific new images that must be represented in a new CON file.
2. Data Steward tasks
  1. Make a new copy of the CON file that directly preceded this revision effort. Calibration files are located on \\nps\akrdfs\GLBA\Science\Data\Oceanography\Data\YYYY\CON\_calibration\ where YYYY is the year of last calibration embedded in the CON file, e.g., 2009. Name the file C\_YYMM.CON (or C\_YYMM.XMLCON) where C is the CTD number and YYMM reflect the latest year and month for which calibration was done as depicted in the new paper addendum. In the unlikely event this name collides with an existing accepted CON file, name it C\_YYMMx.CON where x is a letter used to distinguish this latest update from its predecessor. Begin the sequence with "a" and use sequential letters for additional updates. For example, the first revision to original calibration file 1\_0903.CON would be 1\_0903a.CON. The next revision (which must be based on 1\_0903a.CON) would be 1\_0903b.CON.
  2. Determine the exact parameters needed to go into the revised CON file.
    1. While Sea-Bird calibration forms generally spell out the exact values to use, third party documentation for certain sensors may require additional values to be calculated for inclusion into the CON file.
    2. Most recent Licor type SA PAR sensor:
      1. See Sea-Bird application note # 11LICOR.
      2. For M, use the existing value in CON. It is specific to the CTD's Log Amplifier and not the sensor itself.
      3. For B, use the existing value in CON.
      4. Calibration Constant is stated on the Licor certificate.
      5. Multiplier = 1.0.

6. Offset = 0.
3. Most recent Biospherical PAR sensor
  1. Calibration Constant = (100000 / Wet Calibration Factor on sheet in  $\mu\text{Einsteins per cm}^2 \cdot \text{sec per volt}$ ).
  2. Offset = - (10000 \* Wet Calibration Factor on sheet \* 10 raised to the Average Dark on sheet power).
3. Using the Sea-Bird program SBEDDataProc.exe, revise the calibration parameters in the new CON file to exactly match the new information in the new OC\_G, while not changing items that define other aspects of the CTD. Errors in the CON file will produce erroneous results in other deliverables, and the fact that results are incorrect may not be obvious.
  1. Start the SBEDDataProc.exe program. It should be on the Data Steward's computer under the "Start" button.
  2. Select Configure from the top menu. On the dropdown menu, click on the subject CTD type, such as "SBE 19plus V2 Seacat CTD." A Windows form will appear on screen.
  3. Press the OPEN button on the form. Navigate to the new copy of the CON file made in the preceding step. Open it.
    1. The Windows form will now list the sensors defined in the latest CON file.
    2. If a new sensor is being added to the configuration, select its channel, press the SELECT button, highlight the new device in the list, and press OK.
  4. Double-click the name of the first sensor needing parameters adjusted. A dialog box will be displayed showing the latest calibration entry for that particular sensor. Each sensor takes different types of values. The calibration document should have values that match the dialog box entries for a particular sensor.
  5. Revise the screen entries so they match the corresponding new document.
  6. Press the OK button when the sensor has been fully defined.
  7. Back on the Windows form, press the SAVE button to permanently write the new information to the CON file.
  8. If there are additional sensor calibrations to enter, do this in the same manner as the first adjustment.
  9. When done, press the EXIT button and then close the SBEDataproce.exe application.
4. Submit the new file via email attachment to the Data Manager for validation, specifying in the message body it is deliverable OC\_A, as defined in protocol OC-2014.1.

### **C. Regardless of which case**

1. Data Manager tasks
  1. On receipt of the submission, assign the next formal submission number to this file, as found in the master Submission\_Log table.
    1. Use the "Update Submission Log" web tool on the NPS network at [http://sean-dm.glba.nps.gov/0\\_submission\\_update.aspx](http://sean-dm.glba.nps.gov/0_submission_update.aspx)
    2. Complete Submission\_Log details up through the Submission\_Date column.
      1. Due to the nature of this deliverable, there is no submission unit scope. The filename is sufficient to distinguish it.

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2. It would aid future users if the submission unit is entered as a comment listing the CTD and year involved. Follow existing entries as examples.
2. Save the email attachment in the staging area for validation at \\sean.glba.nps.gov\data\SEAN\_Data\Staging\OC\OC\_A\NNNN, where NNNN is the submission number assigned above.
3. If this is the preseason calibration at the start of the cruise year, update the deliverable tracking spreadsheet row “Preseason calibration assessment” to reflect the date of the latest instrument calibration embedded in the CON file (viewed by using SBEDataProcessing.exe).
4. If this is the postseason calibration after completion of the cruise year, update the deliverable tracking spreadsheet row “Postseason calibration assessment” to reflect the date of the latest instrument calibration embedded in the CON file (viewed by using SBEDataProcessing.exe).
5. If this is the first OC\_A submission for the calendar year indicated in the filename, update the deliverable tracking spreadsheet with the date of first submission under OC\_A.
6. Validate the submission according to current criteria specified in the data dictionary (SOP 19).
  1. Criteria are minimal because this deliverable’s form is proprietary to the CTD vendor.
  2. Ensure its name meets the standards defined in the data dictionary.
  3. Record validation summary data in the Submission\_Log using the web tool.
    1. Set status code to V if mandatory validation passed. Then update the deliverable tracking spreadsheet with the date of validation for OC\_A.
    2. Set status code to F if mandatory validation failed.
7. If submission fails mandatory criteria, reply to the original submission with a “failure email” that includes:
  1. The submission number assigned
  2. The deliverable ID
  3. The protocol ID
  4. Documentation listing all the specific mandatory criteria failed
8. If submission passes mandatory criteria, reply to the original submission with a “success email” that includes:
  1. The submission number assigned
  2. The deliverable ID
  3. The protocol ID
  4. Documentation listing any specific optional criteria failed
  5. Request to accept deliverable for dissemination
2. Data Steward tasks
  1. On receipt of failure email:
    1. If failure is due to filenames, typos, or other readily correctible issue, perform correction and resubmit.

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2. If failure is due to other reasons, request Project Leader obtain corrected materials from the vendor. Then restart the process from the beginning.
  2. On receipt of a success email, confer with Project Leader regarding any failed optional criteria:
    1. If these are acceptable:
      1. Reply to both Project Leader and Data Manager with an “acceptance email,” stating the deliverable is accepted and may be disseminated.
      2. Notify Project Leader to store related forms or CDs in a physical file at GLBA.
    2. If these are unacceptable:
      1. Reply to both Project Leader and Data Manager with a “withdrawal email,” stating the deliverable is withdrawn.
      2. Take remedial action to obtain a corrected deliverable.
      3. Restart the process from the beginning.
3. Data Manager tasks
  1. On receipt of a withdrawal email:
    1. Mark the withdrawal in the Submission\_Log’s Status column using the web tool at [http://sean-dm.glba.nps.gov/0\\_submission\\_update.aspx](http://sean-dm.glba.nps.gov/0_submission_update.aspx)
    2. Terminate the process.
  2. On receipt of an acceptance email:
    1. Verify no sensitive information is in the deliverable. Products containing sensitive information cannot be disseminated. OC\_A is never expected to be sensitive.
    2. Update the submission log with date of acceptance and initials of the person who accepted it. Mark as decertified any obsolete prior accepted submission for this CTD in this cruise year.
    3. Update the deliverable tracking spreadsheet with the date of acceptance for OC\_A. Book it under the cruise year tab the CTD is next expected to be used in.
    4. Update Data Store with the new file:
      1. Open the Data Store reference for OC\_A (currently assemblage 2258286).
      2. Under Files and Links, open the hyperlink specific for the relevant CTD.
      3. In the generic dataset reference upload the CON digital file.
      4. Update the generic dataset reference to indicate a new Date of Issue and Content End Date.
      5. Verify deliverable(s) are downloadable from Data Store.
      6. Update the deliverable tracking spreadsheet with dates for the upload and accessibility milestones.