

University of Colorado Boulder ILL



ILLiad TN: 1013144

Borrower: RAPID:MAC

Lending String:

Patron:

Journal Title: NASA technical memorandum

Volume: Issue: 84211

Month/Year: 1981**Pages:** 189-

Article Author: Economou, H;King, J S

Article Title: Inferno Chasm, a construct on the great rift, Idaho

Imprint:

ILL Number: -15610490



Call #: NAS 1.15:X-

Location: govus

0499-9320

ODYSSEY ENABLED

Charge

Maxcost:

Shipping Address:

NEW: DeWitt Wallace Library

Fax:

Ariel:

Email:

Odyssey Address: 206.107.42.108

Inferno Chasm, A Construct on the Great Rift, Idaho

Harris Economou and John S. King, Department of Geological Sciences, State University of New York at Buffalo

Inferno Chasm is a volcanic construct associated with the Pleistocene-Holocene basaltic flows of the south central Snake River Plain. The Chasm is located in southeast Idaho approximately 50 km west of American Falls. Inferno Chasm, as well as several other vents, lie along Idaho's Great Rift System, an 80 km long extensional fracture zone which trends N 35 W (King, 1977). The alignment of these vents clearly shows that the rift zone is inherently associated with volcanism.

Field studies have indicated that early in its eruption Inferno Chasm was a low, broad shield volcano with slope angles of 2° - 6° . This is typical of other shield volcanoes on the Snake River Plain. In the later stages of eruption, withdrawal of the magma occurred back into the main conduit leaving the central portion of the volcano unsupported. This in turn lead to a rapid inward collapse of the roof along radial lines of weakness. Fault scarps ringing the collapse zone indicate approximately 20 m of downward movement. The collapsed material was reincorporated into the partially molten crater floor.

Field studies have also indicated that Inferno Chasm's sinuous kilometer and a half long channel was formed by a single large outpouring of very fluid lava prior to collapse of the summit region. Furthermore these studies indicate that most of the lava vented at Inferno Chasm flowed westward through the channel. This suggests that the channel of Inferno as well as the regional land slope determined the general direction of lava flowage. However, some lava did flow in directions other than to the west. This occurred primarily prior to the formation of the channel and during periods of high volume lava extrusion when the transport capacity of the channel was exceeded. The levees bounding the channel attain a maximum height of approximately 30 m near the vent and progressively decline in height with increasing distance from the vent.

Several volcanic features similar to the Inferno Chasm channel have been located on the eastern Snake River Plain. Also similar volcanic constructs are known to exist on the Moon and Mars (Greeley and Schultz, 1977). Examination of Inferno Chasm's eruptive history and morphology will therefore aid in a clearer understanding of similar terrestrial and extraterrestrial volcanic processes.

King, J.S., 1977, Regional setting of the Snake River Plain Idaho, in Greeley and King, eds, *Volcanism of the Eastern Snake River Plain, Idaho: A Comparative Planetary Guidebook*, NASA, P. 45-58.

Greeley, R. and P. H. Schultz, 1977, Possible Planetary Analogs to Snake River Plain Basalt Features, In Greeley and King, eds, *Volcanism of the Eastern Snake River Plain, Idaho: A Comparative Planetary Guidebook*, NASA, p. 233-251.