HAWAI'I UNDERSEA RESEARCH LABORATORY
QUICK LOOK REPORT
DIVE: P5-621

MISSION STATUS

Location: Volcano "W", Kermadec Arc

Latitude: ***Begin*** 31° 51.891'S **Longitude:** ***Begin*** 179° 11.245'W

Mission Date: April 18, 2005 **Duration:** 5 hours 59mins (Bottom Time)

Maximum Depth (m): 1299 m

Project Title: New Zealand American Submarine Ring of Fire Leg I

Principal Investigator: Bob Embley

Address: NOAA/PMEL, 2115 SE O.S.U. Dr., Newport, OR 97365

Phone: (541) 867-0275

Observer 1: Ian Wright **Observer 2:** None
Address: NIWA, PO Box 14-901, Wellington, New Zealand

Pilot 1: Terry Kirby **Pilot 2:** Colin Wollerman

Scientific Data Acquired:

Objectives:
The goals of this dive were to (1) Explore the northern rim and wall of the southern caldera (Volcano W), (2) explore the southern rim and wall of the northern caldera (Volcano W), and (3) explore and sample hydrothermal vents on the central resurgent cone of the northern caldera.

Observations, findings, etc: (Also see Appended Dive Log)

The northern wall of the southern caldera comprises precipitous slopes with pillow lavas, pillow tubes, and localised sheet flows with minimal sediment cover and epifaunal encrustation. The upper part of the wall also has columnar cooling joints. On the upper part of the wall localised bacterial mats occur, with dead mussel shells, and live worm tubes. At separate sites bacterial mats with diffuse venting at 8.9°C and tube worms were collected. The crest of the caldera rim is covered with ?dead bacterial mats. The southern wall of the northern caldera comprises rugged volcanic topography. The lower slopes of the central resurgent cone comprise blocky talus and some in situ lavas. The upper flanks

are covered in bacterial floc, which includes diffuse venting and small Fe finger chimneys. Bacterial floc was recovered from a diffuse vent with 28.0°C venting at a depth 1047 m. The crest of the cone comprises a ~16 m wide and 15 m deep pit. Diffuse low temperature venting also occurs inside the pit with temperatures of 10.0°C. Major fluids were sampled from this pit.

Species List:
Tubeworms

MISSION EVALUATION:

A. Limitations, failures, or operational problems noted:

None

B. Recommendations for corrective action or improvement:

C. In your opinion, did the mission essentially achieve its purpose?

Yes

D. Compare actual work accomplished with the work that was expected to be accomplished.

Same

E. List specimens or samples collected on the mission. (See Sample List Below):

Sample Number	Time (L)	Latitude Min/decM 31°S	Longitude Min/decM 179°W	Depth(m)	Comments
PV-621-1-R1	9:51	51.891	11.245	1293	20 m upslope of position; basalt with surficial alteration
PV-621-2-B	10:52	51.645	11.293	1165	50 m south of position; tube worms
PV-621-3-SS-jar #1	12:10	51.478	11.172	1052	Bacterial mat on southern caldera wall; temp 8.9°C
PV-621-4-R2	12:27	51.478	11.172	1013	40 m upslope from position; rock from caldera wall
PV-621-5-SS-#2&3	14:01	50.855	11.044	1047	Bacterial mat on cone flank; temp 28.0°C
PV-621-6-MIN	14:14	50.855	11.044	1039	Sediment scoop of ash/bacteria (scoop 2); 8 upslope of position
PV-621-7-SS-jar #4	14:30	50.872	11.066	1047	5 m from position; bacterial mat at orifice; vent temp 10.0°C
PV-621-8-MS-white	14:45	50.872	11.066	1045	5 m from position; sampled diffuse venting; temp 10.0°C

PV-621-9-R3	14:54	50.873	11.102	1031	Cone rim at Marker 13; glassy basalt from cone rim