HAWAI'I UNDERSEA RESEARCH LABORATORY
QUICK LOOK REPORT
DIVE: P5-617

MISSION STATUS

Location: Macauley cone, Kermadec arc

Latitude: ***Landing point*** 30°12.619'S **Longitude:** ***Leave bottom*** 178°27.064'W

Mission Date: April 14, 2005 **Duration:** 5 hours 29 mins (bottom time)

Maximum Depth (m): 438 m

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

Principal Investigator: Bob Embley

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Observer 1: Cornel de Ronde **Observer 2:** None
Address: GNS, PO Box 31-312, Lower Hutt, New Zealand

Pilot 1: Terry Kirby **Pilot 2:** Steve Price

Scientific Data Acquired:

Objectives:
(1) Reconnoiter cone western flank and move upslope to summit crater; map geological and hydrothermal-related features,
(2) Measure fluid temperatures, take representative video and stills, especially of 'hydraulic' veins in crater wall, and
(3) Sample vent fluids, rocks (especially silica chimneys, Fe-oxide crusts, and any of the veins mentioned in [2] above), mineralization and animals (especially the 'flat' fish).

Observations, findings, etc:
Started dive on ~NW slope and traversed up slope. Collected numerous animals (mussels, gastropods and starfish) on slope above ~365 m. Also collected non-vent related animals (urchin and cup coral) and piece of old Fe-oxide crust. Inside main crater, sampled diffuse vent fluids ~8 m E of Marker #9 (30.1°C) and also re-sampled vent fluids at Marker #9 (103.8°C). Collected two different pieces of layered volcaniclastic rock, one with Fe-oxide coating and both with abundant elemental S binding the rock matrix. Reconnoitered crater at ~365 m (crater ~80 x 40 m) depth and

again at 290 m depth (rim not continuous at this depth). Finished by moving to northern rim of crater

Species List:

MISSION EVALUATION:

A. Limitations, failures, or operational problems noted:

None

B. Recommendations for corrective action or improvement:

Observer position meant incurred reasonably severe neck strain – not sure how that could be over come, perhaps by lowering the bench(?) as observer has to have head down below bench level and then often peer upwards.

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

Yes, although difficult with visibility did hamper the mission somewhat

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

Everything we set out to do was achieved, before the dive time was up, allowing us to further reconnoiter (twice) the inside walls of the crater, at different depths

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

Sample Number	Time (L)	Latitude Min/decM 30°S	Longitude Min/decM 178°W	Depth(m)	Comments
PV-617-1-B	9:07	12.619	27.064	438	Collect 'cup' coral from landing spot (NW slope)
PV-617-2-B	9:30	12.619	27.064	438	Red-brown urchin
PV-617-3-R	9:38	12.696	27.007	345	Old(?) Fe-oxide crust from NW slope
PV-617-4-B	9:50	no position	no position	316	3 long brown mussels, small piece of Fe-oxide crust,
PV-617-5-B	10:02	no position	no position	315	Up slope ~2 m, yellow starfish, 1 gastropod, mussel
PV-617-6-R	10:58	no position	no position	338	Piece of massive crust with S - volcaniclastic
PV-617-7-B	11:13	no position	no position	338	Suctioned flat fish same site as #617-6-R (jars 2&3)
PV-617-8-R	11:32	12.773	26.968	336	Fe-stained, boxwork textured, volcaniclastic
PV-617-9-MS-green	12:01	no position	no position	335	~8m E of Marker #9; diffuse venting (30.1°C)
PV-617-10-GT-blue	12:10	no position	no position	335	~8m E of Marker #9; diffuse venting (30.1°C)
PV-617-11-B	12:41	no position	no position	332	Moving clockwise from Mkr #10; 3 black mussels

PV-617-12-MS-blue	13:33	12.773	26.968	336	Re-sampled Mkr #9 vents (103.8°C)
PV-617-13-GT-yellow	13:43	12.773	26.968	336	Re-sampled Mkr #9 vents (103.8°C)
PV-617-14-SS	14:23	12.779	26.896	260	Suctioned bacterial mat of black mussels (jars 4&5)