**HAWAI'I UNDERSEA RESEARCH LABORATORY**
**QUICK LOOK REPORT**
# DIVE: P5-613

## MISSION STATUS

**Location:** Monowai Caldera, Kermadec Arc

**Latitude:** ***Begin*** 25° 48.313'S **Longitude:** ***Begin*** 177° 09.843'W

**Mission Date:** April 8, 2005 **Duration:** 6 hours 23mins (Bottom Time)

**Maximum Depth (m):** 1297 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:** Max Cremer

**Scientific Data Acquired:**

**Objectives:**
The goals of this dive were to (1) Explore the western and eastern flanks of Mussel Ridge, (2) sample any discovered hydrothermal vent fields on the ridge flanks, and (3) sample the diffuse venting associated with the dense mussels beds at the crest of the ridge.

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

The dive started on the lower southeastern flanks of the ridge imaging pillow lavas and associated talus. The western flanks of the ridge comprised a similar geology on the lower slopes. The upper slopes consisted of volcanic talus and mussel shell detritus. The northeastern flank comprises a NE-SW structurally controlled hydrothermal vent field extending from a depth of 1170 m to the ridge crest. The field consists of discrete vents with associated mussels beds, crabs, shrimps, and tube worms. Most vents occur at outcrop bases (though not exclusively) with evidence of elemental sulphur extrusion on

the seafloor. Vent temperatures ranged between 47°C and 55°C. Major fluids, gas tights, and bacterial mat sampling were attempted at various vent sites.

**Species List:**

## MISSION EVALUATION:

### A. Limitations, failures, or operational problems noted:

None

### B. Recommendations for corrective action or improvement:

Probably not possible – but observer position means neck is strained – lowering the bench or raising the port would help.

### 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 25degS | Longitude Min/decM 177degW | Depth(m) | Comments |
|---|---|---|---|---|---|
| PV-613-1-SS1 | 11:40 | 48.432 | 10.287 | 1064 | Suction sample of shrimps |
| PV-613-2-MS-Blue | 13:44 | 48.236 | 10.075 | 1171 | Sample from vent; temperature 55.6°C |
| PV-613-3-SS3 | 13:50 | 48.236 | 10.075 | 1168 | Suction sample of shrimp / filamentous mats |
| PV-613-4-B | 13:55 | 48.236 | 10.075 | 1168 | Sample of crabs |
| PV-613-5-B | 14:10 | 48.255 | 10.082 | 1152 | Sample of tube worms |
| PV-613-6-R | 14:17 | 48.255 | 10.082 | 1152 | Rock sample |
| PV-613-7-GT-Red | 15:05 | 48.233 | 10.073 | 1165 | Sample from vent; temperature 57.4°C |
| PV-613-8-MS-Failed | 15:31 | 48.233 | 10.073 | 1165 | |
| PV-613-9-GT-Silver | 15:33 | 48.233 | 10.073 | 1165 | Sample from vent; temperature 53.6°C |

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|---|---|---|---|---|---|
| PV-613-10-SS4 | 15:35 | 48.233 | 10.073 | 1165 | Suction sample of shrimp / ?filamentous mats |
| PV-613-10-SS5 | 15:37 | 48.233 | 10.073 | 1165 | Suction sample of vent; temperature 53.6°C |
| PV-613-10-SS6 | 15:39 | 48.233 | 10.073 | 1165 | Suction sample of shrimp / ?filamentous mats |
| PV-613-11-R | 15:40 | 48.233 | 10.073 | 1165 | Rock sample from vent orifice |
| PV-613-12-R | 15:46 | 48.233 | 10.073 | 1165 | Rock sample from vent orifice |
| PV-613-13-R | 13:07 | 48.370 | 10.166 | 1220 | Rock sample |