

**HAWAI'I UNDERSEA RESEARCH LABORATORY  
QUICK LOOK REPORT  
DIVE: P5-618**

**MISSION STATUS**

**Location:** Giggenbach volcano, Kermadec arc

**Latitude:** *Landing point* 30°02.240'S      **Longitude:** *Leave bottom* 178°43.226'W

**Mission Date:** April 15, 2005      **Duration:** 7 hours 8 mins (bottom time)

**Maximum Depth (m):** 276 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:** Matthew Stott      **Observer 2:** None

**Address:** GNS, PO Box 31-312, Lower Hutt, New Zealand

**Pilot 1:** Terry Kirby      **Pilot 2:** Max Cremer

**Scientific Data Acquired:**

**Objectives:**

- (1) Reconnoiter volcano summit crater(s) and cone(s); map geological and hydrothermal-related features,
- (2) Measure fluid temperatures, take representative video and stills,
- (3) Sample vent fluids, rocks, mineralization and animals.

**Observations, findings, etc:**

Diffuse and focused low temperature venting was found along a NE/SW line bisecting the main cone. Phase separation of fluids was observed at 2 sites (Mkr #10 & Mkr #12), the most vigorous field (Mkr 12) contained both diffuse and focused venting at 205°C. The mkr #12 field was made up of an extensive wall (~30m x >50m(LxH)) of white sulfur (and presumably microbial biofilm) and vigorous venting. Geologically this field had a mixed morphology exhibiting a pumice scree slope and ash terraced features (E & W edges respectively). The central cone comprised mainly of new talus and was dominated by fish, soft corals and extensive purple algal carpeting near the summit. Some shimmering water was observed. However, strong surface surges and a malfunctioning compass meant that no further exploration was possible. Large numbers of chimney structures were found at Mkr #10 (primarily composed of siliceous material with some sulphide (perhaps pyrite) material. Of note at both markers, but in particular in the vicinity of mkr #12, were outcrops of mussels covered in a thick white microbial biofilm. The outcrop of mussels near mkr #12 were perhaps 1 acre in size. Fun was had by all.

**Species List:**

**MISSION EVALUATION:**

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

Navigation was effected by a lack of a reliable compass especially around the cone area. Directions were given by headings given by the tracking on the ship. All directions in the log are given as an approximate and should not be taken as gospel.

**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.**

Everything we set out to do was achieved.

**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
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PV-618-1-R	9:17	2.424	43.226	276	pumice "ejecta" with hypha & algae
PV-618-2-R	9:38	2.297	43.994	164	Small hydrothermal vent with reasonable venting
PV-618-3-MS-blue	10:11	"	"	"	oxide/hydroxide) bacterial mat and outcrops of
PV-618-4-GT-green	10:14	"	"	"	taken from a vent below a shelf. Vent temperat
PV-618-5-SS1	9:49	"	"	"	
PV-618-6-R	10:44	(~10m E of below position)		189	rock with white matting
PV-618-7-B	11:06	2.289	42.864	191	venting with phase separation (T=99.1C). 3 wh
PV-618-8-R	11:42	(~10-15m N of HURL marker 10)		186	Sulphide vent piece?
PV-618-9-R	12:13	no position (~30S 2.20 178W 42.8)		95	purple encrusted algae and barnicle covering ba
PV-618-10-B	13:11	2.024	42.651	160	3-4x white mat encrusted mussels
PV-618-11-MSwhite	14:17	2.062	42.654	158	diffuse vent at bottom of mussel field: temperat
PV-618-12-GTwhite	14:35	"	"	"	diffuse vent at bottom of mussel field: temperat
PV-618-13-B	14:55	(~10m east of above position)		161	sponge
PV-618-14-R	15:30	2.178	42.627	163	scoop #1: hard sulfur crust below 205C vent. D
PV-618-15-R	15:35	"	"	"	scoop #2: glassy black sand next to 205C vent
PV-618-16-R	"	"	"	"	thermocouple holder: pumice