

**HAWAI'I UNDERSEA RESEARCH LABORATORY
QUICK LOOK REPORT
DIVE: P5-620**

MISSION STATUS

Location: Giggenbach volcano, Kermadec arc

Latitude: *Landing point* 30°02.265'S **Longitude:** *Leave bottom* 178°42.774'W

Mission Date: April 17, 2005 **Duration:** 6 hours 26mins (bottom time)

Maximum Depth (m): 178 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:** Ron Greene

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

Pilot 1: Terry Kirby **Pilot 2:** none

Scientific Data Acquired:

Objectives:

- (1) Traverse southern slope of volcano, heading upslope towards crater at summit,
- (2) Map geological and hydrothermal-related features in the southern crater and head north to main crater,
- (3) Map geological and hydrothermal-related features in the main crater with emphasis on field of silica-rich chimneys and reconnoiter NW part of crater, take representative video and stills,
- (4) Move ~NE around base of summit cone at ~165 m ('venting depth') and reconnoiter small NE crater just S of Marker #12 crater, then finish dive on small cone further to NE, and
- (5) Sample vent fluids, rocks, mineralization (especially chimneys) and animals.

Observations, findings, etc:

Started dive on southern slope of main summit cone, landing much further north than anticipated. Worked around NW slope of cone (fresh basaltic talus), then headed ~S down NW margin of main depression where lower (~180 m) slopes were covered in bacterial mat (sampled). Moved ~SE and eventually found silica chimneys are getting

lost navigating around numerous holes that mark the boundary of the eastern side of the depression. Sampled silica chimney, moved to Marker #10 and sampled fluids and sediments. Then moved ~NE to Marker #12 in smaller depression and sampled rock, boiling vent fluids (203 °C @ 156 m) and gases. Much fewer animals than at Macauley.

Species List:

MISSION EVALUATION:

A. Limitations, failures, or operational problems noted:

Dive launch postponed ~2 hours due to leaking hydraulic hose/connection on A-frame. Some confusion at beginning of dive as to where we landed. Ended up being considerably (several hundred m) further N than intended landing point. Meant had to double back to main summit depression. Also, had great difficulty finding Marker #10 when approached from W and found numerous deep holes that bound the eastern side of the depression. No time stamp first part of the dive!

Also, Fornari camera did not work.

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.

Some difficulty was incurred with navigation as landed in spot ~500 NW of where we thought we would land (and where we thought we were); thereafter slightly confused for 30 mins until we established our correct position. Otherwise achieved all we set out to do.

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

Sample Number	Time (L)	Latitude	Longitude	Depth(m)	Comments
		Min/decM 30°S	Min/decM 178°W		
PV-620-1-SS-jar #1	11:54	2.205	42.910	178	Massive orange/yellow bacterial mat (3
PV-620-2-MIN	13:36	2.251	42.836	183	Top of ~1 m tall silica chimney; indura
PV-620-3-MS-white	14:06	2.289	42.864	191	Sampled diffuse venting at Marker #10

PV-620-4-GT-white	14:12	2.289	42.864	191	Sampled diffuse venting at Marker #10
PV-620-5-MIN	14:37	2.289	42.864	191	Sediment scoop of ash/bacteria at Mark
PV-620-6-R	15:38	2.023	42.627	163	S coated volcaniclastic rock from Mark
PV-620-7-MS-blue	15:48	upslope Mkr #12	upslope Mkr #12	156	Collected from boiling vent ~12 m from
PV-620-8-GT-blue	15:48	upslope Mkr #13	upslope Mkr #13	156	Collected from boiling vent ~12 m from
PV-620-9-B	16:00	upslope Mir #13	upslope Mkr #13	156	Collected near boiling vent ~12 m from
PV-620-10-bubbler	16:26	below #620-7	below #620-7	166	Collected from boiling vent below #620