HAWAI'I UNDERSEA RESEARCH LABORATORY
QUICK LOOK REPORT
DIVE: PV-635

MISSION STATUS

Location: Volcano 19, South Tonga (Tofua) Arc

Latitude: ***Begin*** 24° 48.068'S **Longitude:** ***Begin*** 177° 00.827'W

Mission Date: June 12, 2005 **Duration:** 1 hours 38 min (Bottom Time)

Maximum Depth (m): 1026 m

Project Title: SITKAP
(Submersible Investigations of the Tonga-Kermadec arc using PISCES)

Principal Investigator: Prof. Peter Stoffers, Kiel University
Guest Scientist from New Zealand, Gary J. Massoth

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Observer 1: Gary J. Massoth **Observer 2:** None
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Pilot 1: Terry Kerby **Pilot 2:** Steve Price

Scientific Data Acquired: Video, hand-held still photos, CTD, rock sample

Objectives:
The goals of this dive were to (1) Explore east wall of explosion pit to locate source of 880 ± 35 m plume, (2) explore the main pit crater atop Volcano 19, pit ~ 50 m deep, floor depth 550 m, (3) explore rock outcrops on east wall of explosion pit, and (4) sample hydrothermal fluids, minerals, and biota.

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

Summary: The dive was launched in marginal weather conditions, which degraded shortly into the dive, resulting in a early recall to the surface and only 1.7 h of bottom time. Only the first objective was accomplished, by reconnaissance along the planned depth horizon (~890 m), which was determined during the dive to be too shallow, ~ 960 m being more appropriate.

Species List:

Small rat tail fish (blue)
Unknown shrimp
Tripod-like fish with long vertical antannae
Natastoma hertaseps fish
Anenomae
Sanaptibranchid fish (eating sl. smaller fish)
Sledenia fish (large)

MISSION EVALUATION:

A. Limitations, failures, or operational problems noted:

Weather deteriorated shortly after dive reached the seafloor, dive ended after 1 hr 13 min. on bottom.

B. Recommendations for corrective action or improvement:

Valuable time on the seafloor could be saved when working in confined areas by communicating only the decimal minutes when sending and confirming position information.

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

Yes, for objective 1.

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

Objective 1 (primary vent reconnaissance) was accomplished per plan, other objectives were not accomplished only because dive was ended prematurely..

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

Sample Number	Time (L)	Latitude	Longitude	Depth(m)	Comments
		Min/decM 24degS	Min/decM 177degW		Volcano 19: N. floor of pit and lower N
PV-635-1R	1104	48.19	0.64	903	Vessicular basalt fragment, Marker 33

Time (L)	Z (m)	Lat. S	Long. W	Observations
		24º	177º	
	1025	48.000	00.800	Landing Target (WP1)
08:27				Dive, Dive, Dive (on deck go-ahead, depth 1024 m)
08:30				PISCES in water
08:33				"Clear to Dive"
08:35				"Tower Awash"
09:32	1026	48.068	00.827	On bottom, ~150 m SE of drop target (WP1) and 370 m, bearing 070º to WP2 at base of northern escarpment, which we decided to go directly to. Seafloor at landing site was flat and covered in tan pelagic seds, lightly wave rippled with what looked like small black hyaloclastite fragments in the depressions. Occasional angular pieces (.3 m scale) of basalt were on the seafloor. Thre was no observable sessile biota, numerous small ratail (blue colored) fish. T=5.5ºC.
09:43	1025			Moving to the NE. Half-m basalt pieces, see 'old-looking' floc-iberries.
09:46	1025			Shrimp, flat, unusual photographed.
09:49	1024			Tripod-like fish photographed, super antennae, ~30 cm long; can see basket skid marks with homogeneous color of seds (tan), not ash-like. No evidence for bioturbation, no sessile fauna.
09:56	1022			See more frequent occurrence of talus blocks as start upslope, still mostly sedimented bottom.
09:57	1022			Netastoma hertaseps fish sighted (long, eel-like, blue); whip coral
09:59	1015			Starting to move noticably upslope, still in heavily sedimented terrain, as earlier. Note that some of the fragments are columnar. Receive word from KoK that we are on notice due to deteriorating wx.
10:00	1006			Terry notes that visibility has become murkier, possibly into plume trace.
10:01	1002			See dike in place, all columnar basalt
10:02	990			Continuing upslope, sediments