# OKEANOS EXPLORER ROV DIVE SUMMARY

Site Name	Fina Nagu Caldera A				
ROV Lead/ Expedition Coordinator	Jim Newman / Ke	Garan			
Science Team Leads	Deborah Glickson & Diva Amon				
General Area Descriptor	Southern Marianas				
ROV Dive Name	Cruise Season	Leg	Dive Number		
	EX1605	1	DIVE 07		
Equipment	ROV: Deep Discoverer		scoverer		
Deployed	Camera Platform:	orm: Seirios			
	☑ D2 CTD	⊠ Depth			
	Scanning Sonar	□ USBL Position			
ROV Measurements	□ Pitch     □	⊠ Roll			
mododi omonio		⊠ ROV HD 2	⊠ Seirios CTD		
	Temperature Probe	□ D2 DO Sensor	⊠ Seirios DO sensor		
Equipment Malfunctions					
ROV Dive Summary (From processed ROV data)	Dive Summary: EX1605L1_DIVE07  Mater: 2016-04-27T20:24:09.039000 12°, 51.689' N; 143°, 49.771' E  Out Water: 2016-04-28T04:27:13.816000 12°, 51.844' N; 143°, 50.116' E  Off Bottom: 2016-04-28T03:09:33.589000 12°, 51.694' N; 143°, 49.700' E  On Bottom: 2016-04-27T21:51:01.723000 12°, 51.685' N; 143°, 49.857' E  Dive duration: 8:3:4  Bottom Time: 5:18:31  Max. depth: 2379.1 m				
Special Notes  Scientists Involved (please provide name / location / affiliation / email)	Stace Beaulieu, WHOI; sbeaulieu@whoi.edu  Maryjo Brounce, CA Institute of Technology, mbrounce@gps.caltech.edu  Ben Frable, OSU; ben.frable@oregonstate.edu  Scott France, UL Lafayette; france@louisiana.edu  Patty Fryer, UH; pfryer@soest.hawaii.edu  Tara Harmer Luke, Stockton University; Tara.Luke@stockton.edu  Chris Kelley, UH; ckelley@hawaii.edu  Chris Mah, Smithsonian; brisinga@gmail.com				

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#### Purpose of the Dive

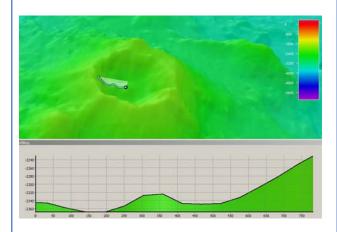
The Fina Nagu Volcanic Chain is poorly studied, and none of its several calderas have been examined by ROV or manned submersible for signs of hydrothermal activity or biological communities. Based on location, we thought that volcanic activity would increase northward but are not sure. Fina Nagu A is the most likely of the chain to harbor hydrothermal activity. This dive was planned to begin at 2321 m and to traverse 760 m upslope to the west, ending at a depth of 2234 m.

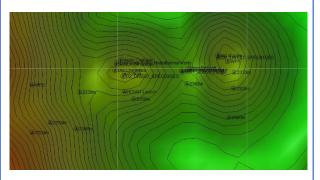
#### **Description of the Dive:**

The dive began on a saddle between two resurgent domes in the center of the caldera. We traversed east to the top of Dome #1, the central dome of the caldera. The traverse upslope was mostly volcaniclastic sediment and isolated blocks of Mn-coated basalt. Almost immediately upon landing, we saw evidence of hydrothermal alteration – iron oxidation. At the top of the dome, we encountered a 14-m tall extinct hydrothermal vent chimney and collected a sample (D2\_DIVE07\_SPEC01GEO). After imaging the chimney, we flew back to the saddle and traversed the eastern slope of Dome #2. As we moved upwards, we saw more volcaniclastics and outcrops of either sedimentary or igneous rock. The Mn crust was so heavy that it was hard to determine. We picked up a rock sample that appeared to be basalt (D2\_DIVE07\_SPEC03GEO). At the top of Dome #2, there was a rim of volcaniclastics and a small depression, upon which we found hydrothermal vent sulfides with several very small patches of very weak, diffuse hydrothermal flow (3-5.5 degrees C).

The biology on the extinct hydrothermal vent chimney was mainly comprised of suspension feeders except for some *Desbruyeresia* gastropods that were observed on exposed rocks of the interior of the hydrothermal-vent chimney. After moving off the chimney into the saddle between re-emergent domes where holothurians, predatory ascidians (*Megalodicopia* sp.), pectinid bivalves and an *Umbellula* sea pen (among other species) were noted. On the other re-emergent dome visited, in the area of diffuse hydrothermal flow, patches of polychaete tubes were observed.

#### Map of ROV Dive Area





Fledermaus map of planned dive EX1605L1-DIVE07 track

Hypack screengrab of actual dive EX1605L1-DIVE07 track

#### Representative Photos of the Dive





The extinct high-temperature chimney with D2 as viewed by Seirios

Pectinidae bivalves with mantles extended.

### **Samples Collected**

Sample ID	D2_DIVE07_SPEC01GEO
Date (UTC)	20160427
Time (UTC)	23:18:03
Depth (m)	2297
Temperatur e (°C)	1.992
Field ID(e)	Hydrothermal vent sulfide pieces
Field ID(s)	



### Comments No commensals.

Sample ID	D2_DIVE07_SPEC02BIO		
Date (UTC)	20160427		
Time (UTC)	00:41:26		
Depth (m)	2378		
Temperatur e (°C)	2.013		
	Ascidiacea: Megalodicopia sp.		
Field ID(s)			



## Comments

No commensals.

Sample ID

D2\_DIVE07\_SPEC03GEO

Date (UTC)	20160427		1 2 3	ALIENALES.	
Time (UTC)	01:33:40		570000	-	
Depth (m)	2294				
Temperatur e (°C)	2.004				4
Field ID(s)	Mn-encrusted	ropy basalt			
Comments	No commensals.				
Please direct inquiries to:  NOAA Office of Ocean Exploration & Research 1315 East-West Highway (SSMC3 10 <sup>th</sup> Floor) Silver Spring, MD 20910 (301) 734-1014					