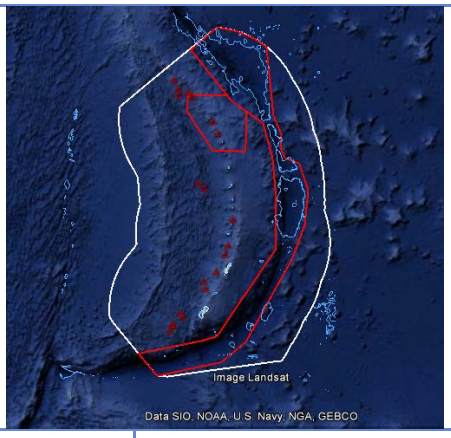
OKEANOS EXPLORER ROV DIVE SUMMARY

Site Name	Explorer Ridge - Shallow	
ROV Lead/Expedition Coordinators	Jim Newman/ Kasey Cantwell	
Science Team Leads	Shirley Pomponi (HBOI-FAU, CIOERT) Patty Fryer (UH)	
General Area Descriptor	Areas in and around the Marianas Trench Marine National Monument	

ROV Dive Name	Cruise	Leg	Dive Number
	EX1605	3	DIVE15
Equipment Deployed	ROV:	Deep Discoverer	
	Camera Platform:	Seirios	
ROV Measurements	☒ CTD	☒ Depth	☒ Altitude
	☒ Scanning Sonar	☒ USBL Position	☒ Heading
	☒ Pitch	☒ Roll	☒ HD Camera 1
	☒ HD Camera 2	☒ Low Res Cam 1	☒ Low Res Cam 2
	☒ Low Res Cam 3	☒ Low Res Cam 4	☒ Low Res Cam 2
Equipment Malfunctions			

ROV Dive Summary (From processed ROV data)

Dive Summary: EX1605L3_DIVE15

^^

In Water:	2016-07-01T20:34:16.806000 20°, 43.418' N ; 145°, 03.768' E
Out Water:	2016-07-02T04:35:10.404000 20°, 43.545' N ; 145°, 03.515' E
Off Bottom:	2016-07-02T03:40:55.005000 20°, 43.601' N ; 145°, 03.578' E
On Bottom:	2016-07-01T21:49:00.847000 20°, 43.396' N ; 145°, 03.706' E
Dive duration:	8:0:53
Bottom Time:	5:51:54
Max. depth:	1915.3 m

Special Notes			
Scientists Involved	Maryjo Brounce	California Institute of Technology	mbrounce@gps.caltech.edu

(please provide name / location / affiliation / email)			
	William Clancey	HBOI/IHMC	wclancey@ihmc.us
	Jeffrey Drazen	University of Hawaii	jdrazen@hawaii.edu
	Scott France	University of Louisiana at Lafayette	france@louisiana.edu
	Patricia Fryer	Univ. Hawai'i at Mānoa (UHM)	pfryer@hawaii.edu
	Deborah Glickson	FAU-Harbor Branch Oceanographic Institute	dglickson@fau.edu
	Tara Harmer Luke	Stockton University	luket@stockton.edu
	Chris Kelley	University of Hawaii Manoa	ckelley@hawaii.edu
	Asako Matsumoto	Chiba Institute of Technology (Chitech)	amatsu@gorgonian.jp
	Tina Molodtsova	P.P.Shirshov Institute of Oceanology RAS	tina@ocean.ru, tina.molodtsova@gmail.com
	Bruce Mundy	NOAA NMFS PIFSC	bruce.mundy@noaa.gov
	Shirley Pomponi	FAU	spomponi@fau.edu
	Bob Stern	U TX Dallas	rjstern@utdallas.edu
	Hongpeng Tong	University of Hawaii	hongpeng@hawaii.edu
	Les Watling	University of Hawaii at Manoa	watling@hawaii.edu
	Matt Dornback	NCEI	matt.dornback@noaa.gov
	Charlie Wilkins	OMAO	charles.e.wilkins@noaa.gov
	Jason Meyer	Meyer Hydrographic	jason7seas@gmail.com
	Derek Sowers	OER	derek.sowers@noaa.gov

Purpose of the Dive

This dive focused on an unstudied complex structural high east of the volcanoes in the MTMNM Islands Unit. This ridge is in an analogous tectonic setting to the better developed high that stretches from Guam in the south through the uplifted islands of Rota, Tinian, and Saipan to Farallon de Medinilla, although it is more poorly developed and appears to broken up by E-W faults. Much of this region was mapped during Leg 2; two dives are planned on the largest (and shallowest) such highs, which we informally named "Okeanos Ridge—Deep and Shallow". The objective is to study the geology and biology of this region. This dive investigated one of the shallower (~2500 m) terraces to build upon the information collected from Dive 14 on a lower part of the feature.

Description of the Dive:

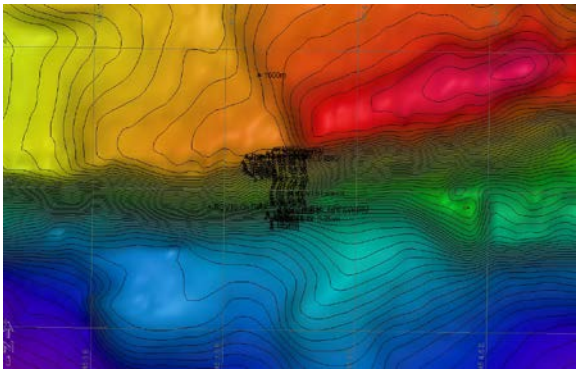
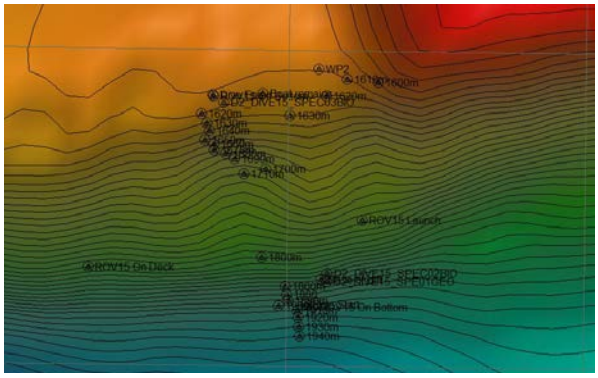
This dive started at 1908 m part way up a fault-controlled wall with a dive track that covered about 300 m of vertical relief on the wall. The ROV set down a pile of talus, sediment-covered on the left side of the field of view and entirely comprised of sub-angular boulders on the right. At 1888 m ROV *Deep Discoverer (D2)* approached the base of a steep outcrop of angular fractured rock and collected a rock sample right below the steep outcrop. It is a layered sedimentary rock with coarser grain size on top and bottom and much finer grain size between. The entire dive consisted of layer after layer of ever-changing texture and degree of fracturing. We saw faulted sequences ("normal" faults) near the top of the wall and what appeared to be a decrease in the degree of induration (hardening) of the sediment layers as the ROV rose up the wall. Near the top of the wall the layers were very thin and had crumbled into slabs that lay on a more heavily sedimented surface.

The corals really seem to like this type of geology. The most abundant taxa were chrysogorgiid octocorals and antipatharians. We collected two corals: a *Chrysogorgia* (likely a new species, based on its upward curving branches), and a *Stauropathes* sp. that also showed unusual branching. *Metallogorgia* sp. were especially abundant—along with the brittlestar, *Ophiocreas oedipus*, that is always associated with it—just one, and only one, on every live *Metallogorgia*. The presumption is that the ophiuroid is keeping other things from settling on the colony, but there may also be some chemical defense as a result of the symbiosis. We were dazzled by the large, swirling *Iridigorgia* sp. Other cnidarians included a lyrate bamboo coral—likely a range extension, "rock pens", and the *Umbellula* seapens.

We spotted an isopod, camouflaged with sediment. Scott France checked a recent publication and learned that the isopod is likely a *Thylakogaster* sp.—a very "peculiar" genus that has never been seen alive! It may be adapted for an epibenthic life, sifting sediment for food using modified legs that form a spiny basket under its mouth.

Carnivorous sponges appeared when we zoomed in close to the rocks or other organisms. Other sponge fauna included several species of hexactinellids, thinly encrusting demosponges (white and blue), and some more lobate species on a large piece of debris (boat? plane?).

We got a brief look at what is likely a sorcerer eel, a halosaur, and a rattail (*Kumba*—the name has interesting etymology), but in general, there were not many fish today (but the ichthyologists are still reeling –pun intended —over the aphyonid fish we discovered yesterday).

Overall Map of ROV Dive Area	**Close-up Map of Main Dive Site**
	

Representative Photos of the Dive

Although most of the outcrops of the layered rocks on this dive were more sediment covered, and the edges of the fractures in them were smoothed by interaction with the talus falling down the steep wall, the remarkable orthogonal fracture patterns in the sequences created perfect stair-step outcrops, like this one, toward the upper part of the wall.

Metallogorgia sp. and its commensal brittlestar, *Ophiocreas oedipus*, were among the most common organisms on this dive. This species—and only one individual—is ALWAYS associated with this chrysogorgiid coral.

Samples Collected

Sample ID	SPEC01GEO
Date (UTC)	20160701
Time (UTC)	223158
Depth (m)	1888.45
Temperature (ºC)	2.19
Field ID(s)	ROCK

Comments	30x15x14cm, appears to be a sedimentary rock.

Sample ID	SPEC02BIO
Date (UTC)	20160701
Time (UTC)	233448
Depth (m)	1842.22
Temperature (ºC)	2.12
Field ID(s)	CHRYSOGORGIA N SP

Comments	

Sample ID	SPEC03BIO	
Date (UTC)	20160702	
Time (UTC)	033425	
Depth (m)	1607.96	
Temperature (ºC)	2.53	
Field ID(s)	STAUROPATHES SP.	
Comments		

Please direct inquiries to:	NOAA Office of Ocean Exploration & Research 1315 East-West Highway (SSMC3 10th Floor) Silver Spring, MD 20910 (301) 734-1014