OKEANOS EXPLORER ROV DIVE SUMMARY

Site Name	Southern slopes of Mt. Dent		
ROV Lead	Dave Lovalvo		
General Area Descriptor	100 km SSW of Grand Cayman Island		
ROV Dive Name	Cruise Season	Leg	Dive Number
	EX1104	-	DIVE05
Equipment Deployed	ROV:	Little Hercules	
	Camera Platfom:	Seirios	
ROV Measurements	☒ CTD	☒ Depth	☒ Altitude
	☒ Scanning Sonar	☒ USBL Position	☒ Heading
	☒ Pitch	☒ Roll	☒ HD Camera
	☒ Low Res Cam 1	☒ Low Res Cam 2	
Equipment Malfunctions	Stbd vertran oriented vertically; starboard and port pie connectors switched for dive. ROV Starboard vertran thruster failure during dive.		
ROV Dive Summary (From processed ROV data)	Dive Summary: EX1104_DIVE05 ^^ In Water at: 2011-08-08T13:46:05.741000 18°, 20.226' N ; 081°, 49.244' W Out Water at: 2011-08-08T22:54:29.857000 18°, 20.758' N ; 081°, 48.967' W Off Bottom at: 2011-08-08T20:31:58.209000 18°, 20.743' N ; 081°, 49.420' W On Bottom at: 2011-08-08T15:52:32.415000 18°, 20.133' N ; 081°, 49.154' W Dive duration: 9:8:24 Bottom Time: 4:39:25 Max. depth: 3461.8 m		
Special Notes	Click here to enter text.		
Scientists Involved *(please provide name / location / affiliation / email)*	Chris German (Science team lead), EX, WHOI, cgerman@whoi.edu Paul Tyler, EX, Uni. Southampton, pat8@noc.soton.ac.uk Cameron McIntyre, EX, WHOI, cmcintyre@whoi.edu Diva Amon, URI, Uni. Southampton, dja605@noc.soton.ac.uk Bobbie John, URI, Uni. Wyoming, BJohn@uwyo.edu Jameson Clarke, URI, Duke, jamesonclarke@gmail.com Mike Cheadle, URI, Uni. Wyoming, cheadle@uwyo.edu Jill McDermott, URI, WHOI, jmcdermott@whoi.edu Sarah Bennett, Home, NASA JPL, Sarah.A.Bennett@jpl.nasa.gov Cindy Van Dover, Home, Duke, clv3@duke.edu Santiago Hererra, WHOI, WHOI, shererra@whoi.edu Chip Breier, URI, WHOI, jbreier@whoi.edu		

Teresa Meza, URI, MBL, auburnaugirl@gmail.com
Julie Huber, URI, MBL, jhuber@mbl.edu

Purpose of the Dive

The plan for Dive 05 is to conduct a Geo-Transect from South to North up the South Flank of Mt Dent

Start:	18°	20.155'N,	81°	49.138'W,	3450m
WP:	18°	20.666'N,	81°	49.296'W,	3040m

Continue uphill from there

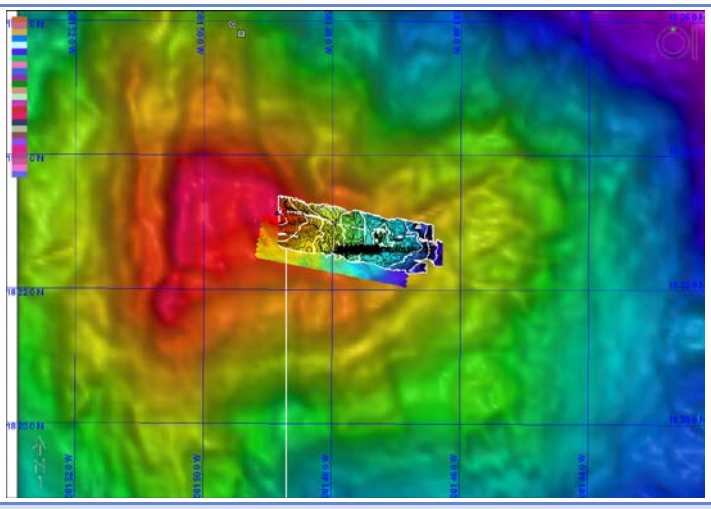
Overall plan – start deep, head uphill all day. Exact distance to be traversed will understandably depend on steepness of terrain encountered at the seafloor. Overview is to proceed as far upslope as possible in a reasonably straight line with ship and *Seirios* and take advantage of sonar to identify any particularly bright targets along with the freedom of the tether between *Little Herc* and *Seirios* to deviate to port and starboard (West and East, across track) as we move uphill to investigate any specific targets encountered. In the event that we only encounter sediment at any locale with no sonar targets nearby we will just proceed uphill as swiftly as possible.

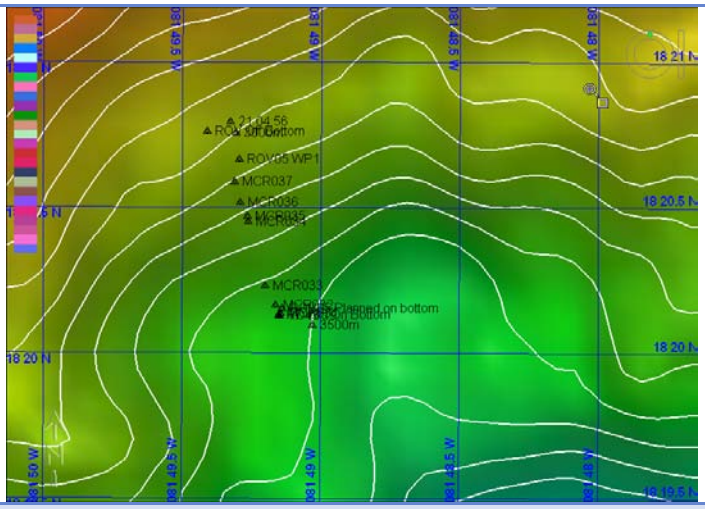
Description of the Dive:

Little Herc was deployed and landed on seabed at 3461m in biogenic carbonate ooze. After establishment at the seabed Little Herc carried out a video traverse up the Southern Wall of Mt Dent in a direction of 345°. Seirios was oriented approximately due north, with Little Herc "slaloming" to either side beneath to maximize coverage over the seafloor. The dive was guided by sonar from both Little Herc, and Seirios, in addition to imagery from Seirios indicating location of potential outcrop. The seafloor was highly varied, from ooze (up to meters thick), to huge angular boulders up to tens of meters across on steep to overhanging slopes. Exposures of moderately south dipping (<40°), highly foliated (and layered?) rock did crop out at 3441, 3436, 3214, and 3171m. This is likely the detachment fault surface, and some spectacular images were collected. One exposure of likely fault breccia was also noted. On a broad-scale the traverse covered sections with outcrop and huge boulders, up- or down-slope from regions hosting thick sedimentary cover. These variations in sedimented and none (or little) sedimented slopes possibly correlate with the rise and flat bathymetry, or spreading parallel 'corrugations' typical of oceanic core complexes, noted on the perspective view in the dive plan along the south wall of Mt Dent. Two outcrops of apparently fine-grained, highly fractured rock with joints normal to a boundary with coarser-grained rocks (dike-like jointing), suggests rare basaltic (?) dikes potentially dipping parallel to any foliation in the host rocks. Toward the end of the dive, meter-scale pock-mark sediment was noted, possibly due to thick biogenic ooze draping huge, angular boulders below.

Fauna observed were distributed infrequently along the dive, and include rare lone fish, red shrimp, gorgonian corals, squat lobster, anemone, and numerous sponges, holothurians, sea grass, and pteropod shells. Star-shaped tracks and deep burrows were also seen but it was not possible to assign these causes to a particular species.

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





Representative Photos of the Dive

Boulder-strewn seabed on the southern slope of Mount Dent

Enigmatic hollows and holes in the sediment on terraces on the southern side of Mount Dent

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