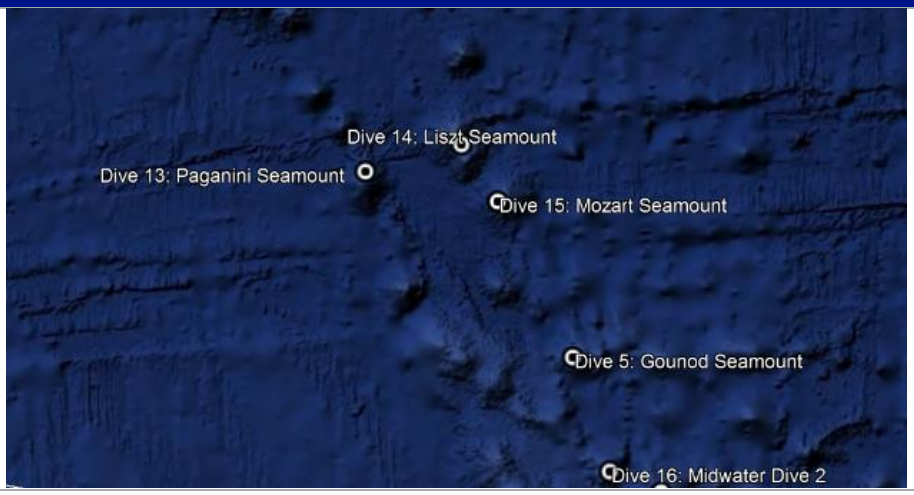
Ocean Exploration and Research

Okeanos Explorer ROV Dive Summary

Dive Information			
General Location			
General Area Descriptor	Musicians Seamounts		
Site Name	Liszt Seamount		
Science Team Leads	John R. Smith/Meagan Putts		
Expedition Coordinator	Kasey Cantwell		
ROV Dive Supervisor	Karl McLetchie		
Mapping Lead	Mike White		
ROV Dive Name			
Cruise	EX1708		
Leg	-		
Dive Number	DIVE14		
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 5
Equipment Malfunctions	DO sensor??		
ROV Dive Summary (from processed ROV data)	Dive Summary: EX1708_DIVE14 ^^^ In Water: 2017-09-20T18:27:30.486000 28°, 57.610' N ; 162°, 04.405' W Out Water: 2017-09-21T02:32:27.343000 28°, 57.455' N ; 162°, 03.691' W Off Bottom: 2017-09-21T01:16:51.240000 28°, 57.767' N ; 162°, 04.319' W On Bottom: 2017-09-20T19:57:03.855000 28°, 57.523' N ; 162°, 04.279' W Dive duration: 8:4:56 Bottom Time: 5:19:47 Max. depth: 2564.5 m		
Special Notes			

Scientists Involved (please provide name, location, affiliation, email)

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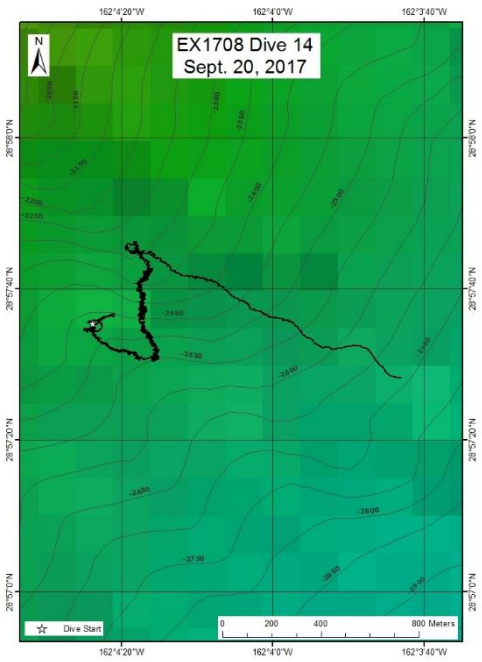
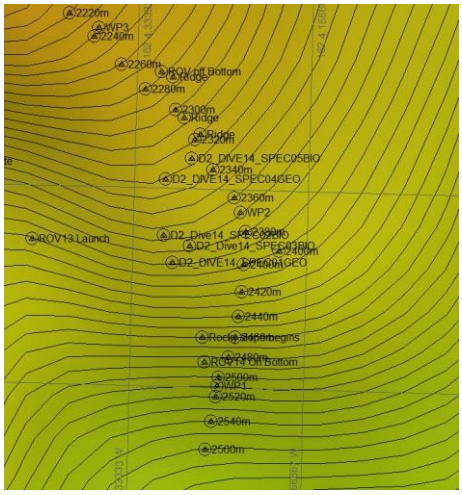
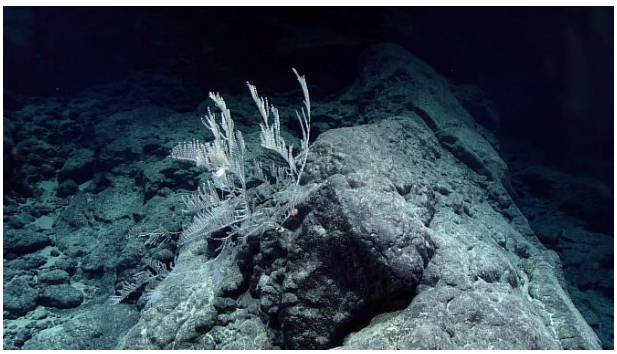
	Tom Hansknecht	tjhansk@comcast.net	Barry Vittor and Associates, Inc. retired
Purpose of the Dive	This dive was the first of two dives to investigate the interaction between hot spot volcanism and fracture zones. Lizst Seamount is directly over the closely-spaced fracture zones. Specifically, this dive investigated the geomorphology and targeted rock collections to look for evidence of different magma types or rock composition at areas close to the Murray Fracture Zone. Another goal was to seek evidence of post-emplacement deformation of the volcanic edifice due to continuing motion across the fracture zone. This dive also surveyed the biologic communities present on the seafloor to characterize their distribution and abundance.		
Description of the Dive	The ROV Deep Discoverer (D2) reached bottom at 2562 m water depth on a flat sediment plain with small ripples and covered in gravel sized cobbles with a welcoming white halosaur, *Aldrovandia* cf. *rostrata*. A large boulder was also present with one each of a crinoid, sponge, and sea star. Meter sized boulders and smaller talus were observed at 2554 m where a *Bathysaurus molis* with parasitic amphipod on it tail was spotted followed by a transition to a sedimented angular talus field at 2552 m and then a contact with intact pillow flows at 2549 m on a 25-30° slope. The slope increased to ~60° at 2536 m with the substrate being composed of some sort of consolidated or cemented material such as small talus resembling hardpan. The first coral of the dive, a *Pluerogorgia militaris*, was identified at time 20:39 (2527 m). Transition to a sedimented talus slope with large outcrops/boulders became evident at 2527 m, then back to an intact lava flow front at 2521 m. The unnamed cookie star of Dr. Chris Mah's affection seen on other seamounts was observed at time 20:48 (2518 m). This was the first sighting of many during this dive. Alternating talus slopes and pillowed flow fronts and edges were also observed here. The first of a combo pair of stalked and unstalked crinoids co-habitating were seen at time 20:58 (2508 m). Afterward, a mixed substrate consisting of consolidated pavement or very thin and fluid lava flows, talus, sediment, and ubiquitous large lava lobes. An unusual "Spiderman" benthic siphonophore, *Thermopalia* sp., was observed at time 21:12 (2495 m). The first rock sample was collected, a large piece of rounded pillow talus from a ledge at 2478 m. A small unusual urchin was first observed at the base of a massive outcrop and isolated blocks at time 21:36 (2477 m). The first two biological specimens were collected at time 22:10 Hyocrinidae stalked crinoid and 22:34 a Euplectellidae vase-shaped glass sponge (2453m). Following that, an isolated boulder hosting coral colonies was observed at 2444 m followed by various sized talus and boulders to ~2435 m after which intact pillow flows dominated on a ~45° slope at 2428 m. A second urchin, like at time 21:36, was observed at time 23:29 (~2390 m) followed by another cookie star at 2386 m. A		

	second rock was collected, a small brick of talus on a flow slope at 2377 m. The skid of D2 broke through a suspended thin Mn-crust that contained a brownish material in center – perhaps a double-sided hardpan deposit (??) at time 23:48 (2368 m). Large exposed intact linear pillow lavas or tubes were seen at time 23:48 (2368 m) followed by a flow front of <1 m meter in thickness at 2366 m, then massive flows continued upslope. Biological specimen #3, a Proisocrinidae stalked crinoid, was collected at time 00:11 (2352 m). A combination of massive outcrops, walls, and thin surficial flows and pillows along with boulders and sedimented talus were present in one general location at time 00:17 (2340 m), suggesting multiple stages of volcanism separated by relatively significant periods of time. An *Anthomastus* sp. mushroom coral and juvenile polyp were imaged at time 00:21 (2336 m). Fractured massive outcrops poised for failure downslope were observed at time 00:32 (2330 m). At time 00:49 (2309 m), D2 began running along a narrow ridgeline covered by intact smooth lava flows. A calved off sharp edge with attendant coral colonies was observed at time 00:50 (2303 m). The strike of the ridgeline was 320° and a 5 m vertical drop to the first of two possible steps was measured by the ROV altimeter. More steps may have occurred farther down the flank, out of view. Thin featureless, smooth lava sheet flows, only a few inches thick, were also present here. The rift zone ridge continued up with a vertical wall to port and a 30-45° slope to starboard, although it was difficult to estimate slope accurately looking downhill. A sea cucumber and sea spider were observed in close proximity to each other at the crest of the ridgeline at time 01:03 (2292 m). The dive concluded at time 01:15 as D2 left bottom from 2281 m with another large cutthroat eel in view. In summary, collections of two different stalked crinoids were made, one in the family Hyocrinidae and one in the family Proisocrinidae. Both may be new and were characteristic of the area we were surveying. There were also a number of unusual sea stars, sea cucumbers, and an interesting looking sea urchin. While the area that was surveyed on Lizst Seamount did not support what would generally be defined as a dense coral and sponge community, there were a number of different species of black coral, chrysogorgid coral, and primnoid coral, mushroom coral, and glass sponges. There were also two unique amphipods spotted during this dive. A Caprellidae amphipod on a coral stalk covered with hydroids and a Lysianassidae amphipod feeding on the tail of *Bathysaurus molis*, a deep-sea lizardfish. Near the end of the dive, the ROV came upon a well-defined ridge and a stunning view of both sides from above was had. To the left was a sheer drop off where the most animals were observed, while on the right was a continuous, featureless slope of 30-45° mostly devoid of biologics.
Overall Map of the ROV Dive Area	Close-up Map of Main Dive Site

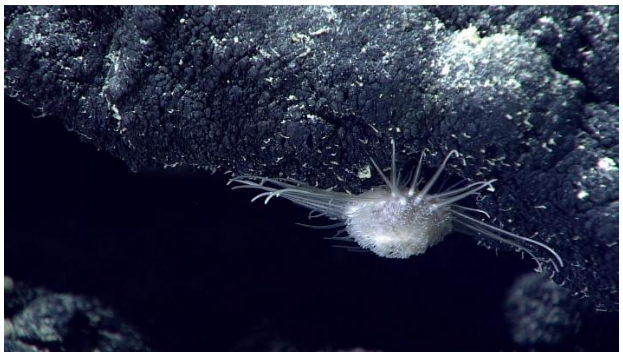




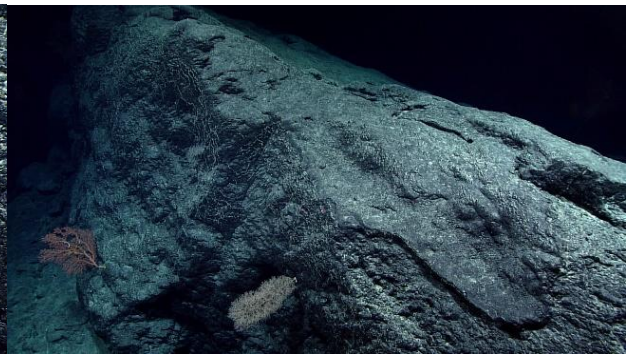
Representative Photos of the Dive



Pleurogorgia militaris chrysogorgid coral on massive pillow flow outcrop



Unknown urchin perched on the underside of a large boulder of volcanic origin

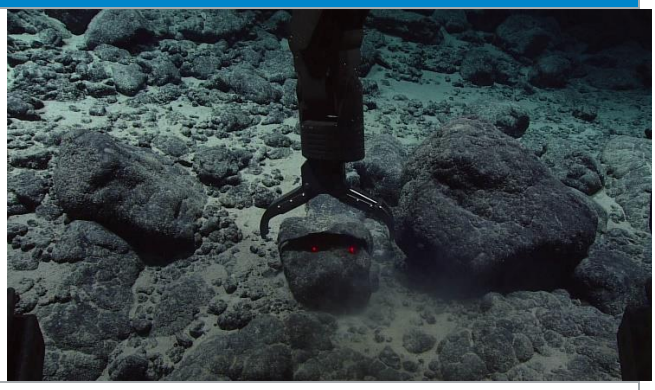


Goblet shaped Euplectellidae glass sponge, possibly an *Amphidiscella* sp. on an outcrop of volcanic origin	Sheer rock face of a calved off ridge line with colonies of *Paragorgia* sp. *Chrysogorgia* sp. octocorals

Samples Collected

Sample

Sample ID	EX1708_D2_DIVE14_SPEC01GEO
Date (UTC)	9/20/2017
Time (UTC)	21:31
Depth (m)	2478.6
Temperature (°C)	1.8
Field ID(s)	Mn-crusted basalt talus from ledge of pillow outcrop
Commensal ID and Field Identification	
Comments	



Sample

Sample ID	EX1708_D2_DIVE14_SPEC02BIO
Date (UTC)	9/20/2017
Time (UTC)	22:10
Depth (m)	2456.8
Temperature (°C)	1.8
Field ID(s)	Hyocrinidae
Commensal ID and Field Identification	EX1708_D2_DIVE14_SPEC02BIO_A01 Platyhelminthes?
Comments	

Sample

Sample ID	EX1708_D2_DIVE14_SPEC03BIO
Date (UTC)	9/20/2017
Time (UTC)	22:34
Depth (m)	2453.6
Temperature (°C)	1.8

Field ID(s)	"Euplectellidae" "vase"
Commensal ID and Field Identification	EX1708_D2_DIVE14_SPEC03BIO_A01 Amphipoda EX1708_D2_DIVE14_SPEC03BIO_A02 Benthic Ctenophores
Comments	

Sample

Sample ID	EX1708_D2_DIVE14_SPEC04GEO
Date (UTC)	9/20/2017
Time (UTC)	23:43
Depth (m)	2377.9
Temperature (°C)	1.8
Field ID(s)	Small brick of Mn-crusted basalt talus on flow slope
Commensal ID and Field Identification	
Comments	

Sample

Sample ID	EX1708_D2_DIVE14_SPEC05BIO
Date (UTC)	9/21/2017
Time (UTC)	00:11
Depth (m)	2352.1
Temperature (°C)	1.8
Field ID(s)	*Proisocrinus* sp.?
Commensal ID and Field Identification	EX1708_D2_DIVE14_SPEC05BIO_A01 Unstalked Crinoid
Comments	

Please direct inquiries to:

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