

Dive 4607

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Pilot: Bruce Stickrott

Port Obs: Tracy Gregg

Stbd. Obs: Scott McCew

Port Transcript

Note: The overlays on the sub video were quite dark and difficult to read at times, so there may be some errors.

| Time | X | Y | Depth | Heading | Comments |
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| 15:01 | 15761 | 10358 | 1808 | | We have reached the bottom: sedimented pillows and lobes |
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Bruce has put the sub down right at a contact. The sub is resting on sedimented pillows and lobes. There are broad areas of <1 m that are covered with sediment, so pockets of sediment. And we're facing a small lobate mound. Tightly packed pillows. The slope in front of me is about a 30° slope or so, mostly lobes are a few tens of cm. across with sediment in the pockets.

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| 15:03 | 15773 | 10378 | 1815 | | |
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There's a strong current pushing us to the NW. We've nestled on the edge of the slope of pillows and lobes. There's a consistent dusting of sediment on top of everything, but I can see through the sediment on top of the lobes. There's small-scale topography on the surface that I can't really see any sediment cuz there's just no place for the pockets. Looks like there's some Mg on top and there're lots of little sessile creatures growing on the rocks as well.

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| 15:09 | 15682 | 10390 | 1809 | | |
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On this pillow mound with a dusting of sediment. We got sample #1 which is a lobe; not exactly a bud, just a protuberance. We were able to get photos of it was, and there's a lot of orange staining in the interior of the rock.

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| 15:13 | 15782 | 10396 | 1806 | | |
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| 15:16 | 15783 | 10361 | | | We're gonna do a sonar spin here. |
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| 15:13 | 15752 | 10354 | | | We're about 15 m off the ground to do a sonar spin. |
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Sedimented pillows and lobes; a van Andel 3 or 4. Sediment everywhere in regions of up to 1 meter across that are just blankets of sediment. I've attempted to find a sample.

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| 15:23 | 15745 | 10384 | 1814 | | |
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Bruce has collected a sample of a pillow bud from this heavily sedimented area. There's a coating of sediment over everything; can't really see through it. On the pillows there's sponges and things growing on tops of the pillows. This corresponds to the "heavy/coalescent" stuff we've been seeing on towcam.

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| 15:29 | 15731 | 10373 | 1817 | | |
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After collecting the 2nd sample, we are bypassing waypoint 1, and we're going head to waypoint 2. We anticipate crossing the contact again, between the sedimented, flat-lying, primarily lobes with a few pillows--there's a very lobe longer than the sub, with an aspect ratio of about 5 on this flat terrain, which is interesting--back over that lobate hill.

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| 15:33 | 15732 | 10373 | 1816 | | |
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| 15:36 | 15795 | 10315 | 1815 | We're climbing up a hill, but it's still sedimented. |
| 15:39 | 15820 | 10289 | 1805 | More lobes; we've kindof reached a [topographic] shoulder here. Still look same sedimented terrain. Some of the individual lobes are collapsed. An combination of a collapse and something that never filled in in the first place. Coming uphill. The sediment pockets are becoming smaller as we go up the hill. There's still a sediment coating on the pillows. I think what we're seeing right now is a contact is the nature of the sediment cover: because we're on a slope, the size of sediment are smaller. |
| 15:42 | 15877 | 10231 | 1807 | There's a large fissure about 2m wide. We're crossing it now; it's running N45W from the sub heading. Broken pillows--beautifully broken pillows at 137 |
| 15:45 | 15909 | 10197 | 1789 | can't see the bottom. Climbing up the first [topographic] shoulder [on our planned dive track]. It's a constructional slope; it's sedimented; there are lobes and pillows. There are large pockets of sediment. I don't think it's any younger than the stuff we're flying over. |
| 15:48 | 15975 | 10135 | 1795 | Reached the top of this first large shoulder. The whole thing looked like it was the same age. Sedimented. Now that we're at the top, there are broad areas of flat or more of flat blanket sediment and pillows <1 m. We're gonna head off to waypoint 3 now. |
| 15:51 | 16004 | 10105 | 1717 | Crossing over a fault that steps down, and it's dipping from in front of the sub behind the sub, and steps down a couple of meters. |
| 15:54 | 15974 | 10044 | 211 | There are some nav problems related to communication between the sub and the ship, so we're holding tight 'til we get a good fix. |
| 16:05 | | | | Moving on to waypoint 3; still over these sedimented lobes and pillows. |
| 16:11 | | | | Climbing up this hill of sedimented lobes and pillows on our way to waypoint 3. It still has broad patches of sediment that are 2, 3, 4 meters across with pillows and lobes sticking out of it; still a constructional slope. |
| 16:16 | 16241 | 9589 | 1752 | Passing over a break in slope; it was a flat area, and in that area, the lobe was broad and flat, a couple of meters across with minimal relief but no change in sediment cover. Bruce sees a fissure coming up; I see it in the camera. It's 4 meters deep. |
| 16:19 | 16168 | 9548 | 1735 | We're crossing a fissure that's about N40W, it's about 4 m wide. There are pillows on the floor of it; some of them look like they might be in place but I can't tell. |
| 16:23 | 16134 | 9521 | 1734 | We crossed over a 2-m-wide fissure very close to the summit of this shoulder. It houses waypoint #3. And the flow direction on either side of the fissure looks like the lobes were flowing away from the fissure so Bruce is nestling up against the fissure to grab a rock. These rocks look slightly less sedimented than the ones we've been flying over, but not drastically. |

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| 16:34 | 16140 | 9536 | 1733 | 152 | <p>Fissure is roughly parallel to sub heading. Bruce did a great job of getting pillow crust right from the lip of the fissure. It looked like at that point the and pillows were locally flowing away from the fissure. It does look like some pillows and lobes may be in place at the base of the fissure, but there's definitely some broken pillows on the wall of the fissure, so this may be one of those eruptive fissures."</p> |
| 16:41 | 16066 | 9498 | 1735 | | <p>Sedimented lobes and pillows still, although right here the sediment pockets are smaller: they're a few tens of centimeters across. And there's maybe a little sediment on top of the lobes and pillows as well.</p> |
| 16:43 | 16016 | 9476 | 1739 | | <p>Sedimented lobes and pillows, and now the sediment pockets are a couple of meters wide as we cruise up this hill towards... I think what's happening is that as we're nearing the top of this plateau this shoulder that contains waypoint 3, and it is governing how much sediment we see between the lobes and pillows. Climbing up the shoulder to waypoint 3 and it's a constructional slope with pillows. Sediment cover may be a little less, but of course we're also climbing the slope.</p> |
| 16:46 | 15931 | 9432 | 1728 | | <p>We crossed out of the tightly packed pillows and lobes and back into broad sediment pockets that were a couple of meters across. I think that's primarily controlled by topography, though, because I haven't seen anything that looks strongly like a contact. In places the sediment is covered with broken glass, making the surface look dark.</p> |
| 16:49 | 15866 | 9401 | | | |
| 16:51 | 15806 | 9370 | 1715 | | <p>Out my window to the left there's a collapse in this lobate flow that's at least a few of sublengths long. It's the largest collapse I've seen in this neck of the wall so far. So we're out of the pillows and into lobate flows which is kinda surprising. The slope is a pretty gentle slope as we go up. There's a nice hole; oh that's a lava tube! There's stalagmites and everything! It's about 2 m across!</p> |
| 16:53 | 15770 | 9352 | 1713 | | <p>There's a jumbled sheet flow on our way up this shoulder and Bruce has stopped to get a rock.</p> |
| 17:01 | 15769 | 9351 | 1713 | | <p>We're going to head toward waypoint #4 after collecting a sample of this jumbled sheet flow. Handful of glass and a piece that went into 7D.</p> |
| 17:03 | 15753 | 9343 | 1710 | | <p>As we climb up this slope there is beautiful hackly, jumbled texture; Bruce has seen a crack coming up. I can still see the lobate form of the jumbled texture but they're not channels. Oh, but right below me [gasp!] those fractures are little dribbles of lava, so those fractures formed when the lava was still squishy and small fractures, just a few tens of cm across and a few tens of cm deep.</p> |

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| 17:05 | 15712 | 9315 | 1706 | As we continue to fly up this jumbled texture there are lots of small hoels pass over a couple of meters across, <1 m deep. One that I saw was in tl of a much larger hole, like an ant-lion thing. And some of those holes loc was coming out of them; we just passed one that looked like a standard c feature. Bruce says he sees lobates, but I still have lobates out my windo now I see lobates as well, so we just crossed a little contact |
| 17:06 | 15700 | 9301 | 1706 | contact between jumbled and lobate. Broad lobates; pockets of sediment the lobes; some collapses. |
| 17:07 | 15688 | 9285 | 1706 | As we continue up this slope, there are patches of the jumbled texture am more flattened lobes. Now out my window I see, it looks more like broker rather than jumbled lobes. There are like puzzle-pieces of the lobate crus there's a collapse in which I can see 4 layers, which is kinda cool. |
| 17:09 | 15655 | 9247 | 1705 | 219 We passed a couple of streams of lava; I'm not going to call them channel they're not that big. The streams were pretty much perpendicular, flowing port to the starboard, from the left to the right, and now we're back into s pillows and--mostly pillows. We also passed a region back there where th each individual lobe was collapsed by a few centimeters. |
| 17:12 | 15658 | 9180 | 1701 | 154 We're going from, we took a turn heading toward waypoint #5 and we jus over a cliff that dropped off in front of us. The cliff was 3 m or so high, an we're over jumbled sheet flows. |
| 17:14 | 15678 | 9158 | 1704 | Large orange anemone that's bent over--is that from the current? Broad I kind of sediment cover, consistent sediment cover with pockets of sedimer them. Pillows as we climb up toward waypoint #5. |
| 17:18 | 15737 | 9080 | | 152 We were climbing up this hill of pillows and lobes and then suddenly there fissure about 2 - 3 m wide, it's offset in front of the sub, had to climb up a meters. The wall is broken pillows, roughly perpendicular to our heading. |
| 17:21 | 15785 | 9032 | 1796 | 142 Climbing up this shoulder of pillows that is, this shoulder that contains way that I think is attached to the seamount, and there's no obvious difference this stuff and the stuff we've been climbing over. It might look a little bit, I can sort of convince myself that there's less sediment on top of the pillow there's still pockets of sediment between the pillows. |
| 17:26 | 15830 | 974 | 1655 | We're climbing up this shoulder of the seamount; it is primarily pillows and Every once in a while you see an individual pillow or lobe that's collapsed : centimters. Sediment pockets inbetween. The aspect ratio of some of the like 3 or 4, but many of them are just nice bulbous pillows a meter or so h |

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| 17:31 | 15840 | 8955 | 1648 | <p>We just collected sample #5. It's a couple of pieces of lobate crust that I'm confident that the rock you picked is from the shoulder of the large seamount. As we continue to go up, there's more sediment, more coral, and I'm confident that the rock you picked is from the same stuff. It's a forest of coral, with starfish hanging from them.</p> <p>We're crossing over a fault, stepping down in front of the sub. It's about 4 meters across. Really large lobes and pillows exposed in the wall of the fissure from this side. Meters across, 2-3m across lobes and pillows. And they're not broken, they're squishy. Yup, I'm not seeing broken pillows; it looks like there are lobes that have bled down that fault.</p> |
| 17:32 | 15846 | 8942 | 1646 | |
| 17:35 | 15839 | 8878 | 134 | <p>We're climbing up this hill of lightly sedimented lobes of pillows with aspect 1 - 2. The pillows are meter-scale. Fuzz on all the rocks, but not a lot of it. I can see through to the rock. It's not glassy, but it does look younger. I think this is the same stuff you got a rock of [sample#5].</p> |
| 17:38 | 15901 | 8858 | 1630 | <p>We didn't quite go to waypoint #5 but we don't need to, so we're going to waypoint #6. We're coming off this shoulder of the seamount and starting up the seamount. It's still all sedimented pillows and lobes, but very light sediment cover, sediment is just in the pockets. There's a dusting of sediment on the glass. So not a lot of sediment but this was not yesterday's eruption.</p> |
| 17:42 | 15932 | 8806 | 1630 | <p>Flying over these very lightly sedimented pillows and lobes. Some of the pillows are quite large, almost 2m. Most of them are not; most are on the meter scale. We've lost the bottom a little bit but we're cruising between that shoulder and the large seamount.</p> |
| 17:44 | 15956 | 8757 | 1634 | <p>Bottom back in sight. It is sedimented pillows and lobes. These have a little more sediment on top of them than we saw on the shoulder, and in the pocket morphology's very very similar. Just a slight more sediment cover on the pillows and lobes.</p> |
| 17:46 | 15968 | 8727 | 1642 | 171 |
| 17:46 | | | | <p>An added note: the pillows and lobes are flowing from in front of the sub to the sub, so they definitely are coming from the seamount.</p> <p>We're climbing up the flank of the seamount, and it's sedimented pillows and lobes a little bit more sediment than was on the shoulder I think. Bruce is getting about halfway up this slope.</p> |
| 17:51 | 15985 | 8635 | 1619 | <p>Bruce grabbed 2 pieces of pillow crust; one of them had a coral and a dripstone. I put them in 7B on the flank of this large seamount.</p> |
| 17:55 | | | | |
| 18:00 | 15987 | 8623 | 1613 | <p>Continuing up the flank of the seamount. It's all constructional.</p> <p>Climbing up the flank of the seamount, and we've reached a flatter area. More lobate flows, fewer pillows. The lobes are a meter across, and a couple of meters long.</p> |
| 18:02 | 16007 | 8592 | 1604 | <p>Some really broad lobate flows that are several meters long; they look kind of inflated.</p> |
| 18:05 | 16039 | 8526 | 1602 | |

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| 18:09 | 16062 | 8474 | 1601 | There's kindof a mixture of different morphologies here; there are big pillow lobes, some cracks and collapses. I think we're coming close to the top of shoulder here. It really looks like a place where a lotta stuff was coming c |
| 18:09 | 16082 | 8436 | 1601 | We just crossed over the fault, running perpendicular to the sub's heading the low-lying terrain which has very similar sediment cover and morpholog |
| | | | 164 | doesn't really look any different. |
| 18:12 | 16098 | 8395 | 1608 | We're in the center of the [laughter], we're coming down on the floor of th the seamount. Sedimented pillows. But a lot of the pillows are really bust Some of them are collapsed; I can see in side of them. Some of them are there are a lot of broken pieces around here. There's lots of coral, 2 sea p window. Bruce is cruising around, trying to find a rock. |
| 18:15 | 16102 | 8370 | 1609 | We're in the middle of the top of the seamount. Pillows, primarily, cracked broken. Out my window I can see orange staining in the cracks. No glass some white staining. Not a lot of sediment, but no glass. |
| 18:19 | 16102 | 8370 | 1609 | Bruce collected a chunk of pillow from the center of this seamount. We ar to our waypoint across the top of the seamount. |
| 18:22 | 16116 | 8344 | 163 | We're crossing the center of this seamount. It's primarily lobes, with a few Sediment consistent: there's a dusting of sediment over everything, and i but I can see through the sediment when it's on the top in most cases (bu always) on all the pillows. Some individual lobes are collapsed, and some individual pillows are fractured in such a way that you can see layers on ei the fracture. You can see what looks like pulsed emplacement of the lava, the crust outward. |
| 18:26 | 16162 | 8249 | 1605 | Top of the seamount. There are lots of collapses now; there is quite a low the left. The collapses tend to be still the sizes of individual lobes, but we over a hole that was so deep I couldn't see the bottom of it. And out my \ there is... Is that a fault? There's a large collapse with what looks like hy staining on the walls. That looks kinda 9-northy over there. It's a copule deep, and in the collapses I can see layers, look kinda like bathtub rings, t they're layers inside. This is a massive collapse; big blocks of stuff that have been displaced. Tl almost like columnar jointing. This is a huge tumulus is what I see. I'm looking down into a crack that's deep; there's layers inside of the crack; they're symmetric, the walls of th leaning up and away. It looks like an enormous tumulus; I can't see eithe |

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| 18:29 | 16189 | 8197 | 1603 | 147 | <p>Passing over another crack. This ground is all cracked up; small cracks. 7 running roughly perpendicular to the sub heading. Inbetween the cracks, morphologies are really disrupted. I think in some places there used to be but they've been busted up. I also see jumbled flows, stuff like that. This looks to me like a vent area.</p> |
| 18:32 | 16224 | 8186 | | | <p>We were in a collapse. That sedimented floor that we came over was a co we cross over, I can see the little layering in the walls, the crust upturned, foot think, and now it's the sedimented lobes and pillows that we've been before. I think that was a ventish area. That was really cool.</p> |
| 18:34 | 16253 | 8132 | 1604 | | <p>Approaching the south shoulder of the seamount. Lobate flows. Lots of ir collapses, and some of them are large enough to swallow the sub.</p> |
| 18:35 | 16260 | 8098 | | 179 | <p>We are approaching the fault on the south side of the summit. The floor is up. Still primarily pillows and lobes, but pretty well chewed up. Bruce say flattened out again. Still areas of collapse. There's a wall out my window, meter tall, looks constructional.</p> |
| 18:40 | 16249 | 8011 | 1609 | 211 | <p>Yup, this is talus, pillow talus. We've reached the southern fault. Pillow t Yellow and white hydrothermal staining on a a lot of the talus. Mostly bro with some broken lobes.</p> |
| 18:48 | 16224 | 7989 | 1584 | | <p>Wow, that's a great big piece! We just climbed up an 18-m tall vertical w the south side of the seamount. Fault wall was vertical. Talus, broken pill lobes with lots of hydrothermal staining. And at the top of the fault, Bruce a sample of a pillow.</p> |
| 19:49 | | | | | <p>Bruce collected a pillow on top of this fault wall, and we're going to go dov area between the two faults to do some sonar work.</p> <p>Note: sonar work took place 20m above bottom, so this is the effective er geology part of the dive.</p> |