SOI 4500m ROV Progress Update
Victor Zykov
Director of Research
4500m ROV core instruments

- **Core System Sensors**
  - Vehicle Navigation Sensors
  - CTD Sensor - Seabird FastCAT SBE49
  - Pressure Depth Sensor - Paroscientific DigiQuartz
  - Oxygen Sensor - Aandera O2 optode 4831

- **Core Imaging Suite**
  - Main: 4k 2160p, Pan/Tilt, 12x optical Zoom
  - Situational: 2k 1080p, Tilt only
  - Scaling lasers w 10 cm spacing, CathX / DSPL lights
  - 5 HD cameras, 3 SD cameras, configurable

- **Core Sampling System**
  - Niskin bottles / Core tubes
  - Suction sampler / Insulated bio-box
  - High Temperature Sensor
  - Interfaced Suction Filtration Sampler

- **Core Sonar Systems**
  - Imaging: Teledyne BlueView M900
  - Scanning: Tritech Super SeaKing DST
4500m ROV delivery plan: key project dates

<table>
<thead>
<tr>
<th>Event</th>
<th>Start Date</th>
<th>End Date</th>
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<tbody>
<tr>
<td>Preliminary Design Review</td>
<td>Wed 9/2/15</td>
<td>Fri 9/4/15</td>
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<tr>
<td>Detailed Design Review</td>
<td>Thu 12/17/15</td>
<td>Fri 12/18/15</td>
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<tr>
<td>Factory Acceptance Test</td>
<td>Mon 4/11/16</td>
<td>Wed 4/20/16</td>
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<td>Tank Testing at MBARI</td>
<td>Thu 4/28/16</td>
<td>Sun 5/15/16</td>
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<td>System shipping to R/V Falkor</td>
<td>Mon 5/30/16</td>
<td>Fri 6/23/16</td>
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<tr>
<td>Falkor integration, Sea Trials</td>
<td>Fri 7/1/16</td>
<td>Sun 8/14/16</td>
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<tr>
<td>Science Verification Cruise</td>
<td>Fri 11/18/16</td>
<td>Tue 11/29/16</td>
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<tr>
<td>First Planned Research Cruise</td>
<td>Wed 11/30/16</td>
<td>Wed 12/21/16</td>
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Research project currently using this vehicle:
Sea Trials - Summer 2016

- Attended by External Technical Observers
  - Vincent Rigaud, Head of Ifremer Undersea Systems Unit
  - Gerrit Meinecke, QUEST4000 MARUM Operations

- 73 Observations, a few select point:
  - Issues with the main video/still science camera
  - Need for a streamline dive annotation system
  - Need for an automated video management system
  - Be prepared to deal with large volumes of data
  - Be prepared to support seafloor photomosaicing
  - Finalize the development of an ROV Operational Team
Non-Science Verification Cruise – Nov. 18-24, 2016
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Non-Science Verification
Cruise – Nov. 18-24, 2016
Non-Science Verification Cruise – Nov. 18-24, 2016
Non-Science Verification Cruise – Nov. 18-24, 2016

- Attended by Science Advisors as Observers
  - Bill Chadwick, NOAA-PMEL / Oregon State University
  - Mandar Chitre, Acoustic Research Lab, National University of Singapore

- 72 Observations, a few select point:
  - Accurate and consistent time-stamping of screen grabs
  - Efficient compression of continuous video recording
  - Highlights recording and automatic video file naming
  - Camera auto-iris not working, halos still present
  - Accurate logging and time-stamping of ROV nav data
  - Instant screen grabbing
First Scientific Deployment
Nov. 29 – Dec. 20, 2016
First Scientific Deployment
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First Scientific Deployment
Nov. 29 – Dec. 20, 2016
First Scientific Deployment
Nov. 29 – Dec. 20, 2016
SOI Operational Trends

Days at Sea, Supporting Science and ROV Onboard

- Days at Sea
- Supporting Science
- ROV Onboard

Year

2012 2013 2014 2015 2016 2017 2018
Planned ROV Project
(pending SOI Board approval)

• Year 2017: 97 days of ROV cruises
  • Les Watling, U. Hawaii – 30 day ROV cruise
  • Ken Rubin, U. Hawaii – 17 day and 22 day ROV cruises
  • Erik Cordes, Temple Univ. – 28 day ROV cruise

• Year 2018: 132 days of ROV cruises
  • Barbara Block, Stanford – 30 day ROV cruise (10 dive days)
  • Blair Thornton, U. Tokyo / NOC – 17 day ROV cruise
  • Anna Michel, WHOI – 28 day ROV cruise (19 dive days)
  • Peter Girguis, Harvard – 14 day ROV cruise
  • Robert Zierenberg, UC Davis – 29 day ROV cruise
First Scientific Deployment
Nov. 29 – Dec. 20, 2016

Dive #40 - Alice Springs - Burke Vent Field - FK161129 - SuBastian

Streamed live on Dec 6, 2016

We're diving again today at Alice Springs as part of our HydrothermalHunt. Today, we are heading to a satellite vent field of Alice Springs,