HD Upgrade Project

Design Goals for HDTV Upgrade

To develop an imaging system upgrade that improves the overall quality of motion and still-based imagery on *Jason* and *Alvin* without impacting the day rate.

- Endorsed by DESSC, December 2007
- Approved for funding by NSF, Spring 2008

Phased Implementation

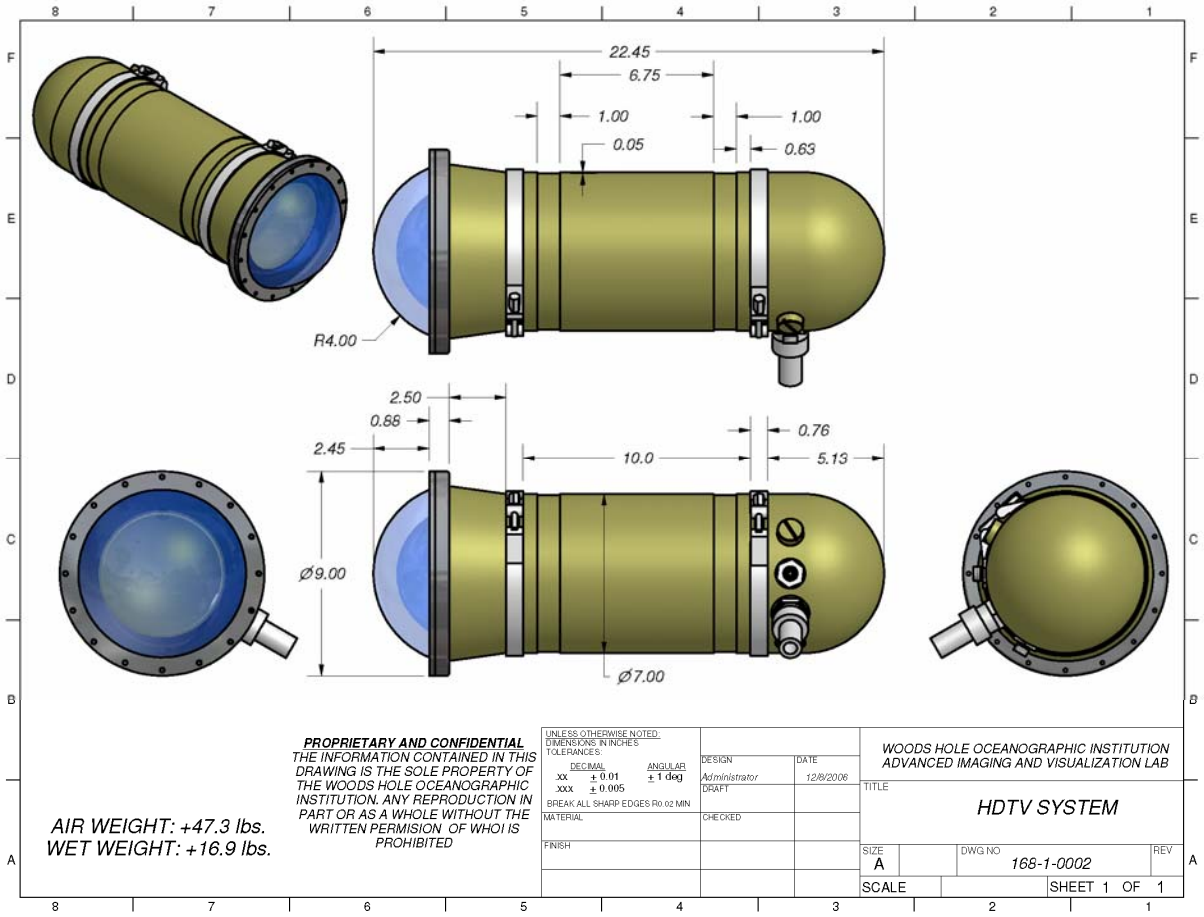
- Camera Head Completion, Early 2009
- System Integration, Fall 2009

HD Upgrade Project

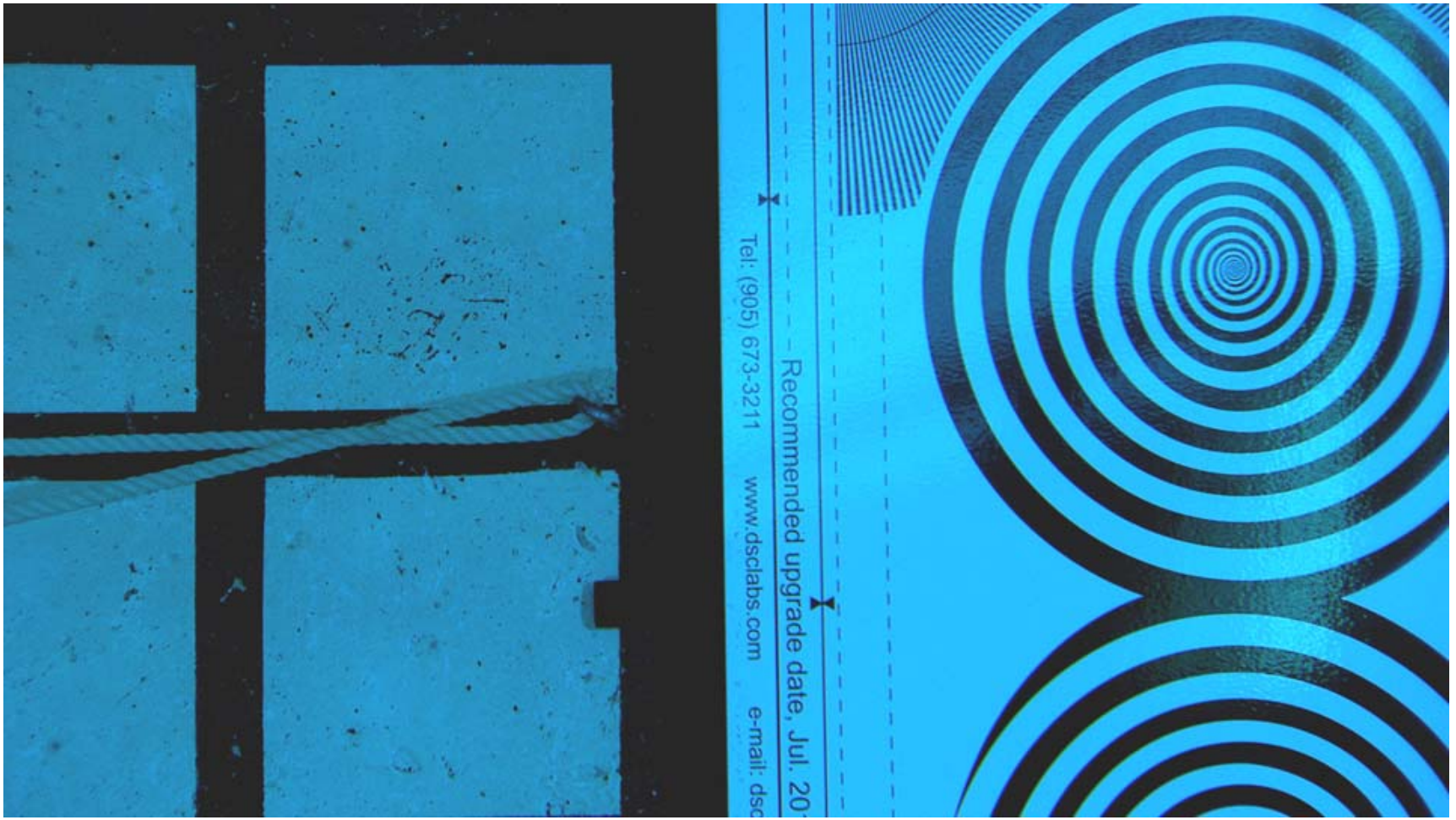
Fabrication activities

- Optical and Sensor Path - Finalized
- Electronics for Jason Camera - Finalized
- Electronics & Storage for Alvin - In Development
- Pressure Housings - Finalized being fabricated
- Camera Control Software - Field Testing
- Alvin Storage Bottle - In Development
- Final Camera Hardware Integration - March 2009

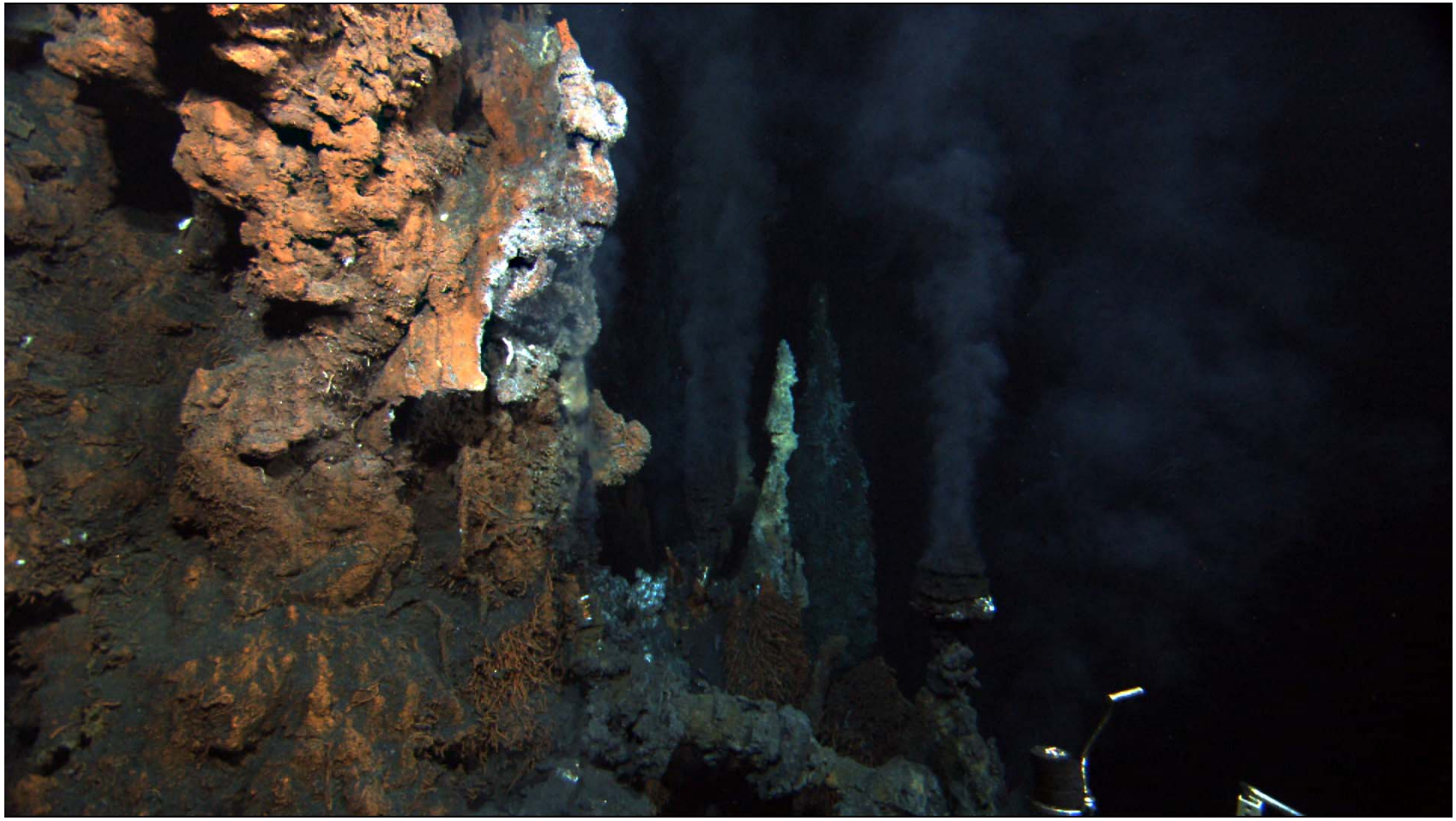
HD Upgrade Project - Implementation



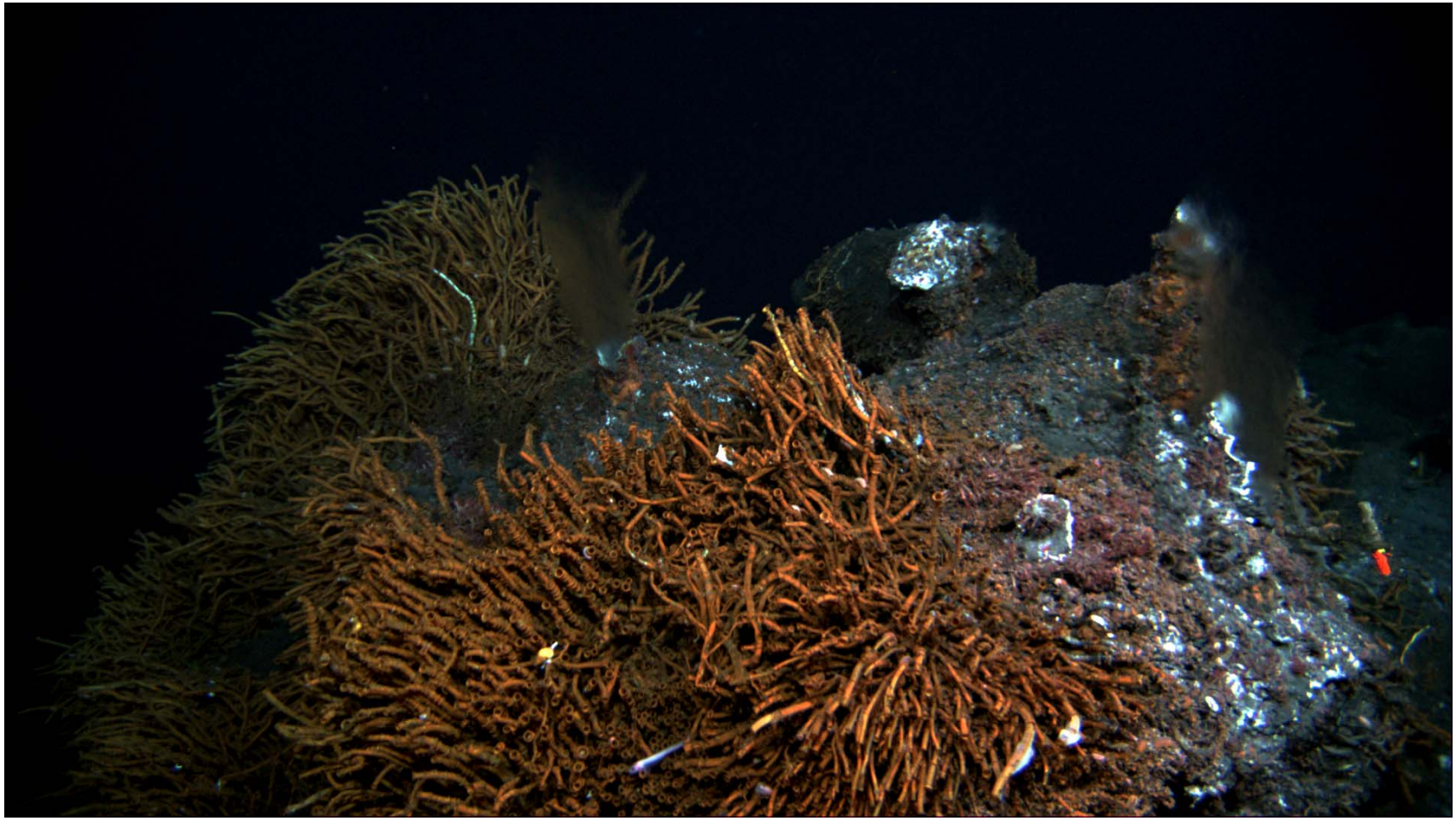
HD Upgrade Project - Implementation



HD Upgrade Project - Implementation
Single-CCD HDTV Still Image



HD Upgrade Project - Implementation
Wide View



HD Upgrade Project - Implementation Medium

HD Upgrade Project - Implementation Close-Up

Navigation: LBL
Summary of Prior Reports

- Primary objective: replacement of Benthos 455 hardware in ROV van, Atlantis Top Lab
- Added another objective: replacement of NavBox in submarine
- Several prototypes produced and tested in both ROV and Submarine

Navigation: LBL
Progress Since Last Meeting (ROV)

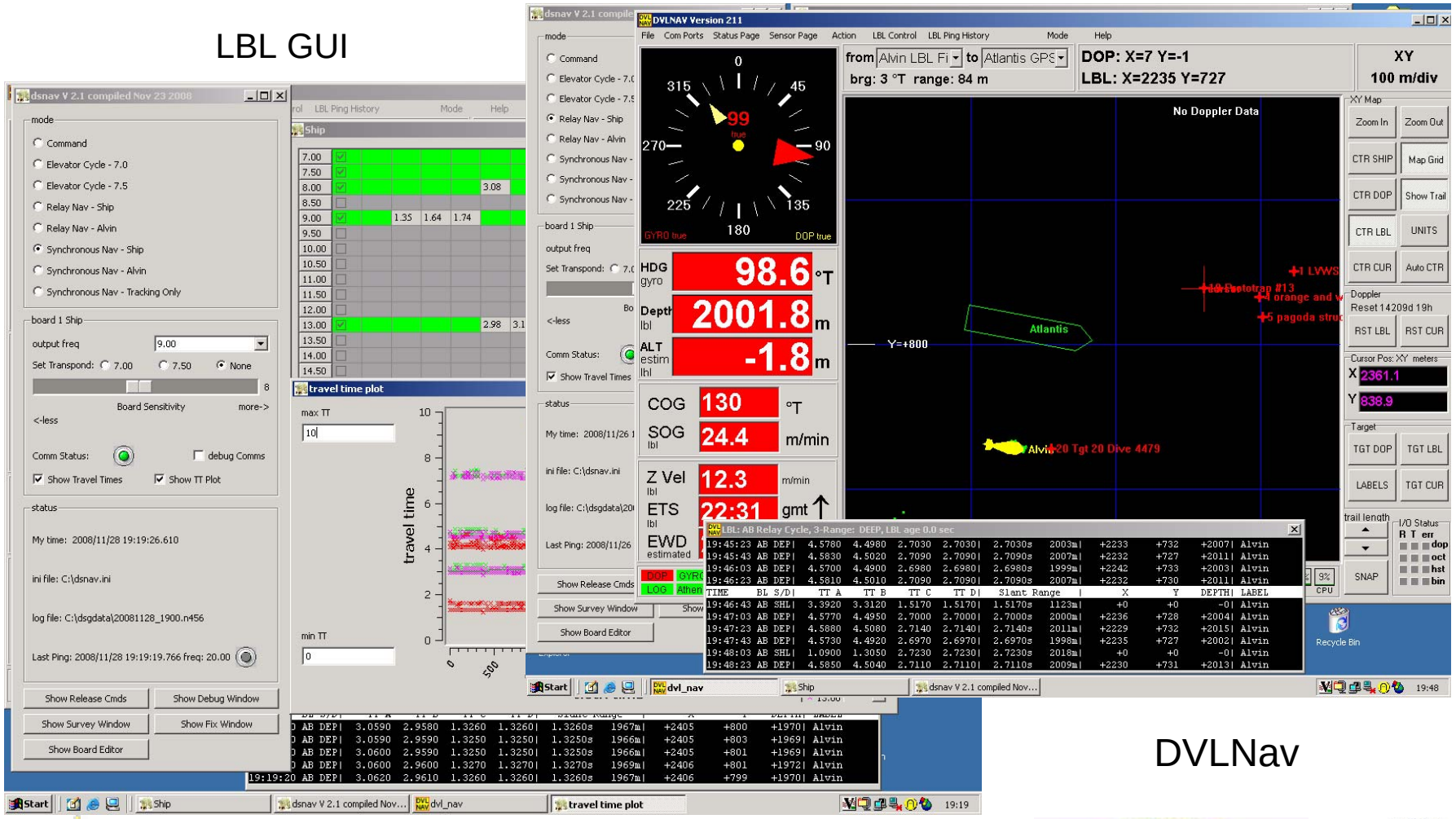
- Benthos 455 not installed in new control van, new system (N456) used exclusively
- Successfully tracking Medea,Jason, elevators

Navigation: LBL
Progress Since Last Meeting (Alvin)

- New hardware installed in submarine, top lab, November 2008
  - Software integrated with dvlnav
- Successfully supported last 5 dives of recent series
  - Relay mode
  - Synchronous mode
  - Elevator tracking

Navigation: LBL
Fully Integrated Software

LBL GUI



DVLNav

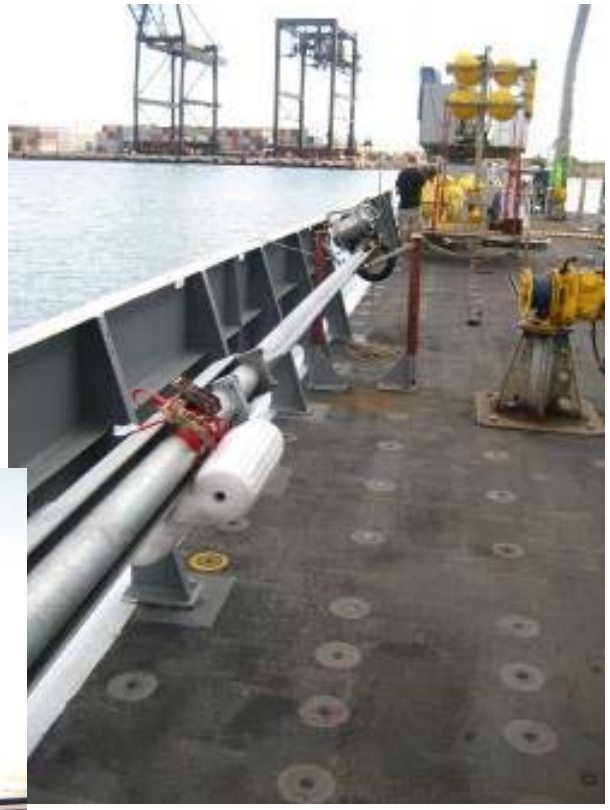
Navigation: LBL
Summary

- Benthos 455 retired
- Effectively supporting ROV and submarine LBL requirements with new supported hardware and software
- “new” capabilities added (synchronous nav)
- Effective, modern baseline for future developments in software and hardware

Navigation: USBL
Procurement

- Sonardyne system successfully tested off Hawaii
  - Successful testing at 4700m
    - Jason, medea, elevators
- Ixsea GAPS tested on Oceanus
  - Ship noise an issue, lost Sentry tracking at 2400m

Navigation: USBL
Installation on Thompson/Jason



Navigation: USBL
Selection Process

- Narrowed selection from 7 to 2, now securing final proposals
- Expect procurement to begin by end of year
- 16-24 week delivery
  - Atlantis in-hull mount
  - ROV/AUV pole
  - Integration into vehicle data systems

Data Activities

General

- Scott McCue has made 6 Alvin and Jason cruises in 2008
  – learning the ropes
- See: Abstract IN53A-1188 (Friday, AGU 2008).
  V.L. Ferrini, R. Arko, S. McCue “Building an Interoperable Relational Database for the National Deep Submergence Facility (NDSF)”

Infrastructure Improvements

- Added 2 x 8 TB RAID 6 (highly reliable!) storage to the server installed earlier in 2008. Recent cruises being placed on it directly.
- Update to web documents to better present NDSF data-bearing archives and separate pre-cruise documentation from these archives.
  http://www.whoi.edu/page.do?pid=8475

Data Activities

Sentry Data Management

- Develop/implement MBSystems as primary processing tool for vehicle-based multibeam (Reson 7125)

Alvin Data Management

- Reson SeaBat 7125 integration
  - Signal paths, Logging, Merge w/Alvin data system

- Modernization of Alvin images database (w/WHOI Data Library and Graphics)

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- Refinement of policy and procedures regarding data deliverables from Atlantis/Alvin cruises shared by multiple independent science parties.

Data Activities

Jason Data Management

- Event Logger
  - new release trialled on Reysenbach, Moyer, & Duennebier cruises.
  - further revisions underway to improve use: ease of consistent science & operations vocabularies.

- Virtual Van – “by-lowering” functionality added to timebar.

- Working to further codify data collection protocols
  - “How-to” guides for Image Mosaicing, Multi-beam Surveys

On the Horizon

- Data archiving for future HD Imaging cruises

Future Upgrades

Based upon Science User requests

- "CHIRP" system portable between Alvin, Jason & Sentry
- Reson 7125 Multi-beam for Jason, to match Alvin & Sentry
- Implementation of sidescan sonar capability on Sentry (joint with HMRG)