

Navigation Upgrades

DESSC
June 2008

- **Benthos 455 Replacement**
- **Acquisition of two USBL Systems**



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- **Benthos 455 Replacement**
 - ROV system has operated for > 1 year with first prototype system (n456)
 - Limitations:
 - *Only 8 input channels*
 - *No release commands*
 - *Required new boards for each new ship transducer*
 - *Didn't support Alvin operation*
 - Candidate “production” system built
 - Addresses all of the above deficiencies



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- **Spring '08 Tests, *Atlantis/Alvin***
 - Power mismatch in n456/UQC
 - Firmware issues in DSP board
 - Successfully surveyed two transponders in 3,500 m water depth
- **Problem Identification/Correction**
 - Electronic/power issue in board identified, reproduced in lab, corrected
 - Firmware issues under investigation



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- **Plans:**
 - June 2008, *Atlantis/Jason* test
 - July-August 2008, *Revelle/Jason* test
 - *Alvin* tests scheduled for September engineering dive
 - IOC of new systems by the end of the year



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- **USBL DURIP/ONR Proposal written in 2007**
 - Funded this year
 - Two systems
 - Permanent installation on *Atlantis*
 - Portable system for ROV/AUV/other uses
 - Justification:
 - Ship time savings — no transponder deployment, survey, recovery
 - Enables rapid response
 - Increasing accuracy of modern USBL equipment
 - Embedded AHRS, modern signal processing



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- **Operational Issues**

- USBL to augment, not replace, LBL
- 84% of *Jason* lowerings and 95% of *Alvin* dives in recent years were to depths of less than 4,000m



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- **Program Plan:**
 - Qualification phase
 - *Ongoing*
 - Detailed evaluation/comparison/design
 - *Criteria (next slide), ship/flyaway considerations*
 - *Complete by end of Summer '08*
 - Procurement
 - *Fall, 2008*
 - Development/installation
 - *2009, depending upon ship/operational schedules*
 - Testing, calibration, validation, characterization



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Evaluation Criteria

- Range (~4,000 m)
- Accuracy (~0.2 % of range)
- Multiple target ability
- Vehicle/platform requirements
- Ship requirements
- Installation time
- Deployment time
- Shipping
- Integrated comms
- Direct experience
- Cost

