

Upgrades to *ALVIN*

- Evaluation of 600 kHz Doppler as spare/replacement to RDI units presently in use (ongoing reliability issues)
- USBL installation and evaluation, including SMS messaging and integration into existing navigation “pipeline”
- Evaluating options to spare DSC and obstacle avoidance sonar



Upgrades to *Jason*

- Added a 2nd Kraft manipulator to *Jason* from spares in response to DESSC concerns with manipulation capabilities
- USBL will be available later in 2009
- Testing a new strobe system to replace outdated Benthos system
- Made significant adjustments to the operations paradigm in response to DESSC concerns with turn around, i.e. 16 hour/day dives. More flexibility as indicated by positive user response.
- High Def in progress
- Increased payload



Navigation Upgrades

Long Baseline Upgrade

- Benthos 455 no longer in use
- ROV now using redundant transponder fixes (least squares)
- Same algorithm/code as *ABE/Sentry*

USBL

- Hardware delivered
- *Alvin* system installed during SD->Astoria transit; testing during current leg
- Mobile system first use is this summer with *Sentry*

