

# Status of Navigation Upgrade

DESSC  
May 2007

- Review of Planned Upgrade and Status at Last DESSC meeting
- Progress Since Last Meeting
- Planned Testing
- Implementation and Upgrade Path



# Status of Navigation Upgrade Review

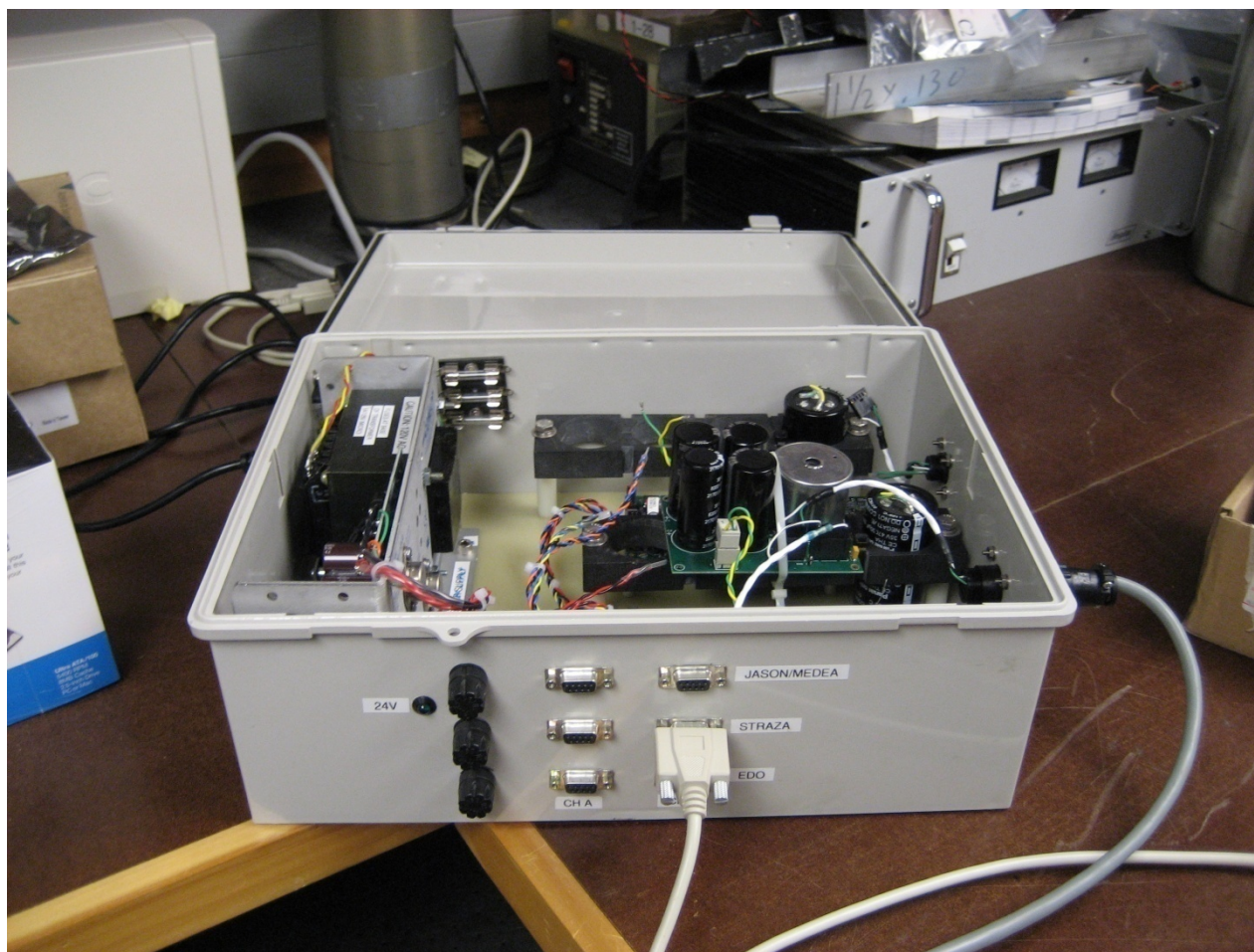
DESSC  
May 2007

- Upgrade Plan
  - Replacement of Acoustic Signal Processor
  - Replacement of software in “outward” pattern
- Status at Last DESSC Meeting
  - Prototype ship box built
  - Test on *Melville* had proven unsuccessful due to hardware problems
  - Plans were to carry out tests on *Kilo Moana*



# Status of Navigation Upgrade Prototype Ship Box

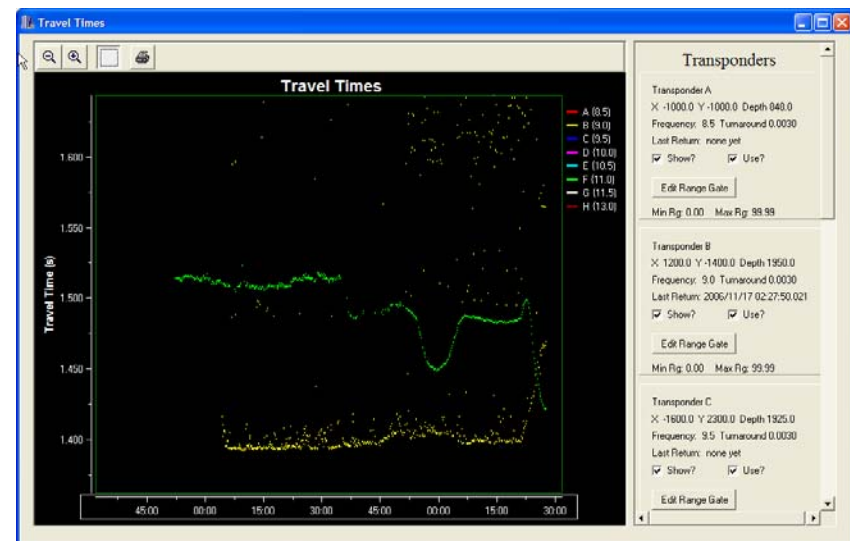
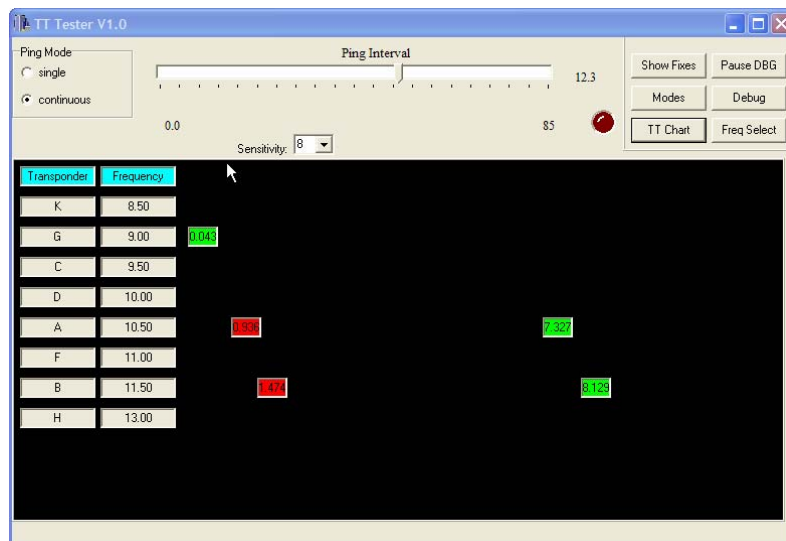
DESSC  
May 2007



# Status of Navigation Upgrade Progress Since Last Meeting

DESSC  
May 2007

- *Kilo Moana Test Successful*
  - Two transponders surveyed in deep (5km) water, residuals < 1m



# Status of Navigation Upgrade Progress Since Last Meeting

DESSC  
May 2007

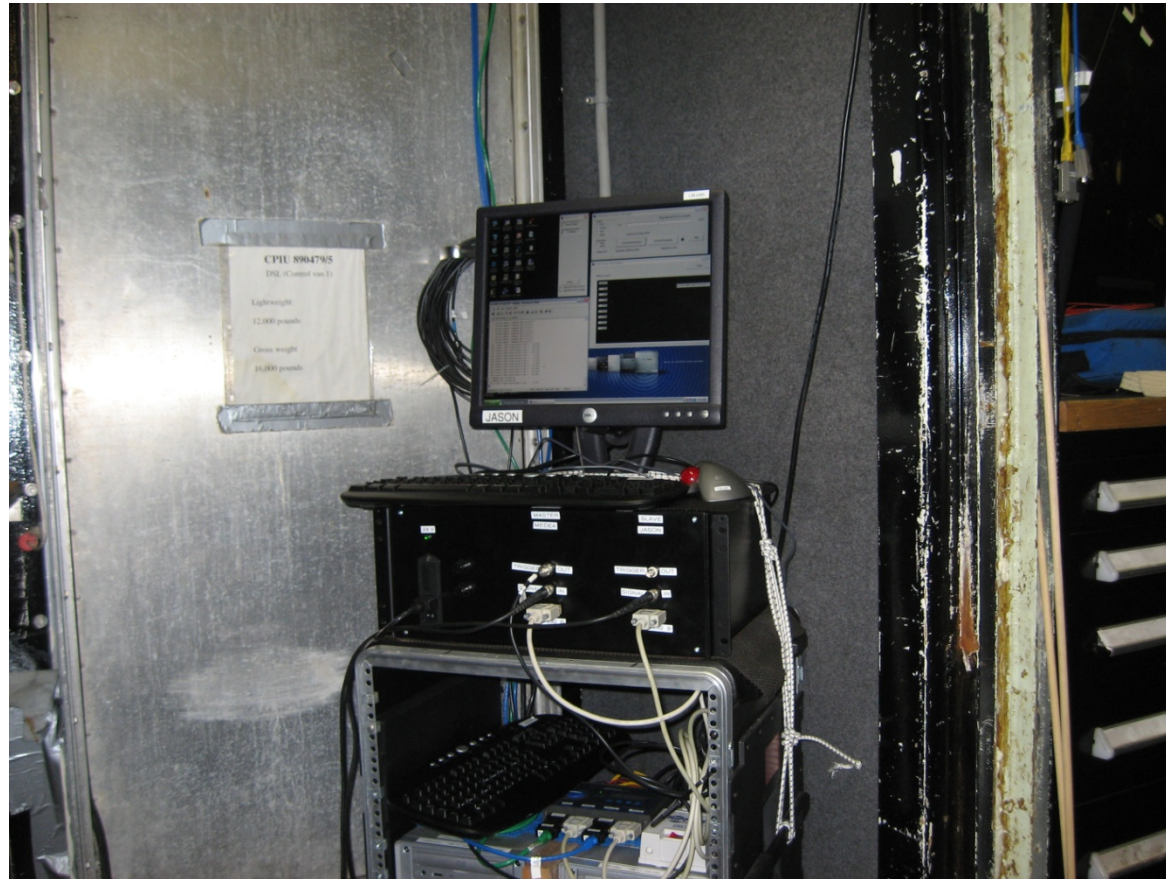
- PRV box developed
  - Two DR boards in single rack mount chassis
  - One board (*Medea*) triggers the other, as well as a subsea trigger
  - Benthos 455 emulation software developed





# Status of Navigation Upgrade Prototype PRV Box

DESSC  
May 2007



# Status of Navigation Upgrade Progress Since Last Meeting

DESSC  
May 2007

- *Atlantis*/ROV Test - Ship Box
  - Same box that was successful in *KM* test surveying xpndrs
  - In port, ship box and DSL Benthos 455 worked
  - At sea, unsuccessful at obtaining travel times using *Atlantis* Straza ducers with either the ship box or DSL Benthos 455
  - Cause of failures not determined but believed to be electrical noise related to use of transducer junction box in computer room aboard *Atlantis*
  - Top Lab Benthos 455 worked with Straza ducers and was used for cruise requirements for ROV
  - Same ship box, when returned to Woods Hole and used with spare Straza ducer, worked fine



# Status of Navigation Upgrade Progress Since Last Meeting

DESSC  
May 2007

- *Atlantis/ROV Test - PRV Box*
  - PRV mode worked in port, with occasional “flakiness” in *Jason* ping receptions
  - At sea, successfully pinged and received at *Medea*, emulated Benthos 455, successful fixes
  - Unsuccessful at receiving pings at *Jason*
  - Troubleshooting in Woods Hole revealed intermittent failure in *Jason* board. Board was replaced, system hasn’t failed since...





# Status of Navigation Upgrade Planned Testing

DESSC  
May 2007

- Both boxes will go to R/V *Ron Brown* for more testing
  - Ship mode: different transducer and setup
  - PRV mode: emulation of Benthos 455
- Building new ship box to take to *Atlantis* for *Alvin* engineering dives
  - Purpose to troubleshoot issues from previous *Atlantis* ship box tests



# Status of Navigation Upgrade Planned Testing & Development

DESSC  
May 2007

- Developing software for LBL fix computation
  - Will support multiple transponders (>2)
  - Will replace current LBL computer
- Will test/modify ship box code to emulate *Atlantis* 455



# Status of Navigation Upgrade Implementation and Upgrade Path

DESSC  
May 2007

- Replace Benthos 455 as soon as feasible/practical in 2007 (both ROV and *Atlantis*)
- DR boards are compatible with *Alvin* in-hull nav (triggering, synchronization) - should integrate without huge difficulty
- DR boards are compatible with AUV requirements – planned for use in both *Sentry* & HROV

