Healy Science Systems

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Topics

- Update on multibeam replacement
- Other science upgrades for 2010 season
- Future upgrades
- Science technical support for 2010

Healy Status

- EM122 (new) multibeam
- Other Science & Safety upgrades in drydock (huh?)
- Loaner OS150 ADCP
- Conversion to UHDAS for ADCPs
- Cruise specific modifications

- [x] Project proposed at AICC (2003)
- [x] Engineering Change Request (ECR) (2003
- [x] Installation Concept (approach, cost, time)
- [x] Funding
- [x] Detailed engineering (spring/summer ’09)
- [x] Install (CY 2009/10 drydock)
- [x] Initial evaluation (March/April 2010
- [ ] Acceptance Test (June 2010 - HLY10TC)
- [ ] Performance characterization

New multibeam

- Kongsberg EM122:
  - 1º Tx x 2º RX beams, CW and FM (Chirp)
  - 288 beams, 422 soundings per ping
  - Seafloor bathymetry, sidescan and reflectivity
  - Water column data
  - Raw hydrophone data
  - Source synchronizer

Underhull Installation

- Remove the SB2112 TX and RX arrays
- Cover TX array
- New RX array in the same place
- New TX array further aft

Inboard Installation

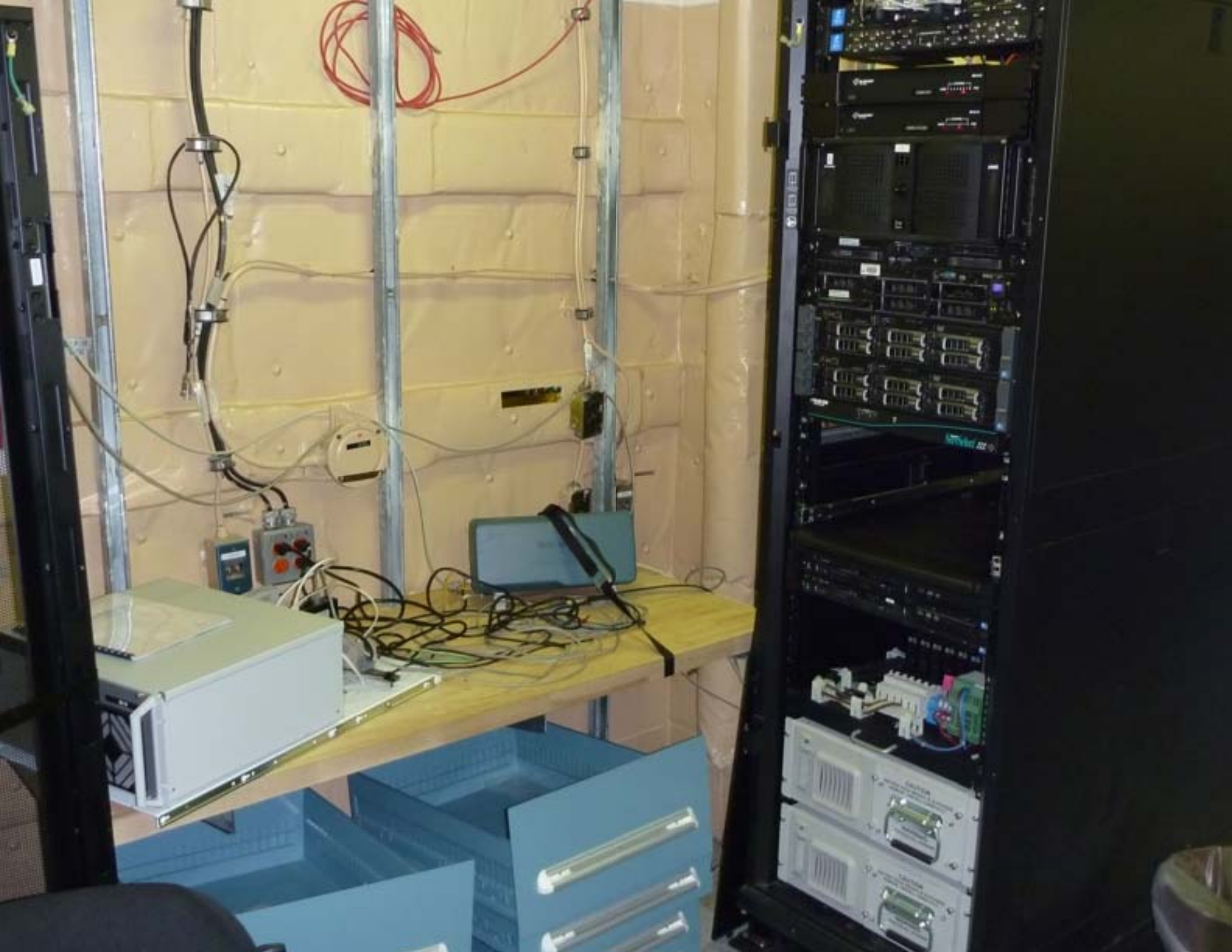
- Remove SB2112 electronics
- Install transceiver electronics in MICA
- Install electronics in Computer Lab, Pilot House, Met Lab and Aloftcon

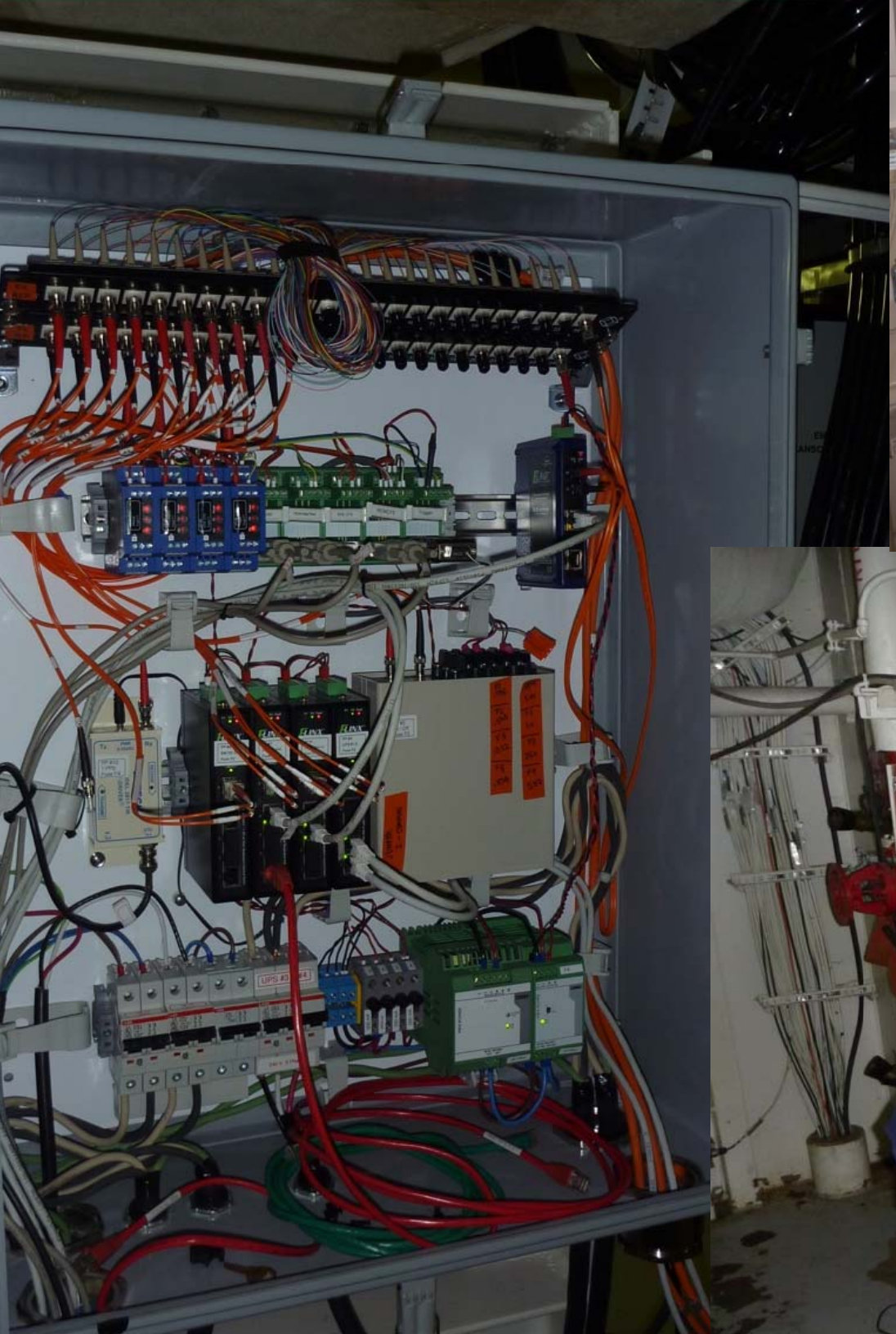

APC


SerSwitch


THERE ARE NO USER SERVICEABLE
PARTS IN THIS UNIT
DO NOT REMOVE COVER
CAUTION
WARNING


APC
CAUTION
WARNING



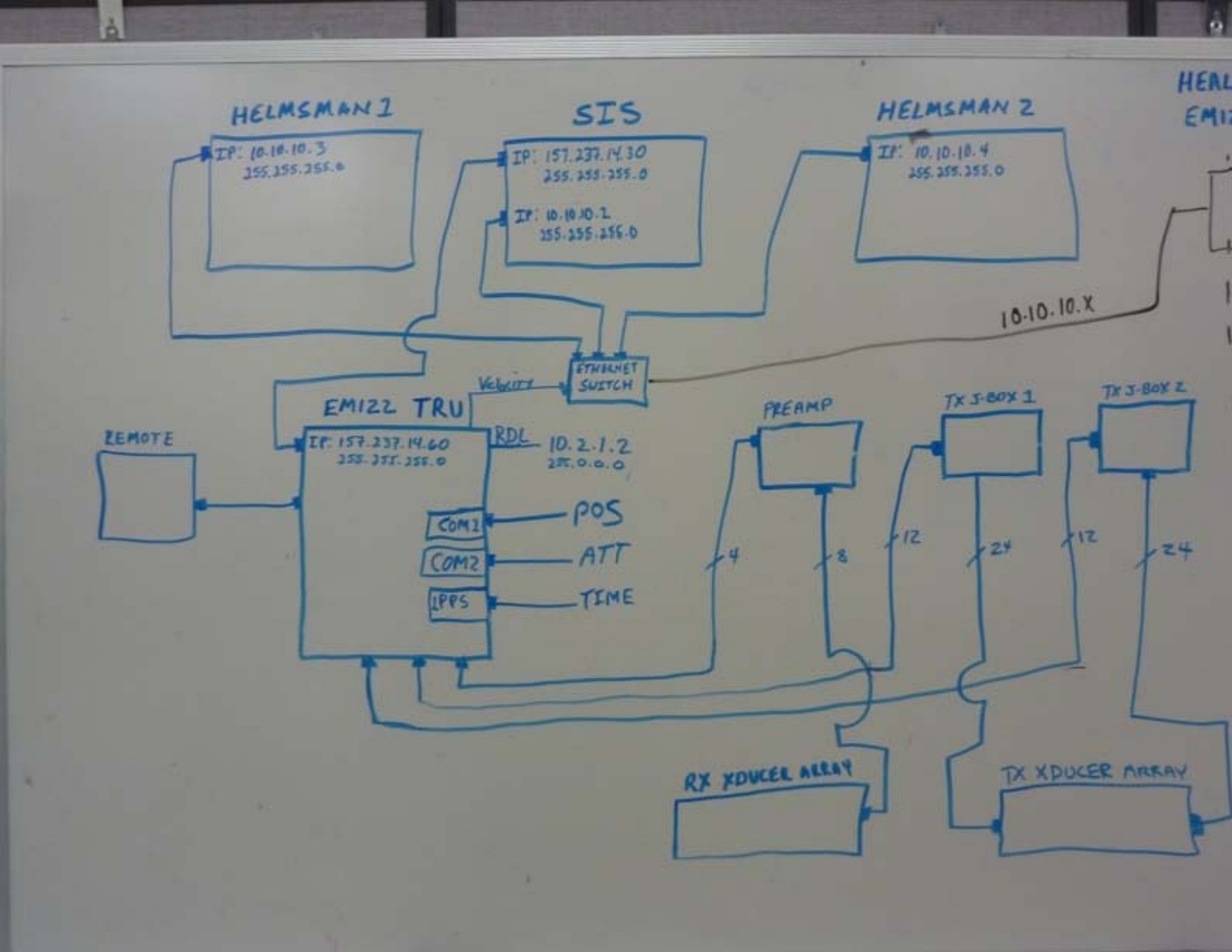



THE FULL PICTURE
THE FULL PICTURE


THE FULL PICTURE
KONGSBERG

Integration w/ existing data system

- Navigation input
- Attitude and heading
- Sound speed at the keel
- Sound speed profile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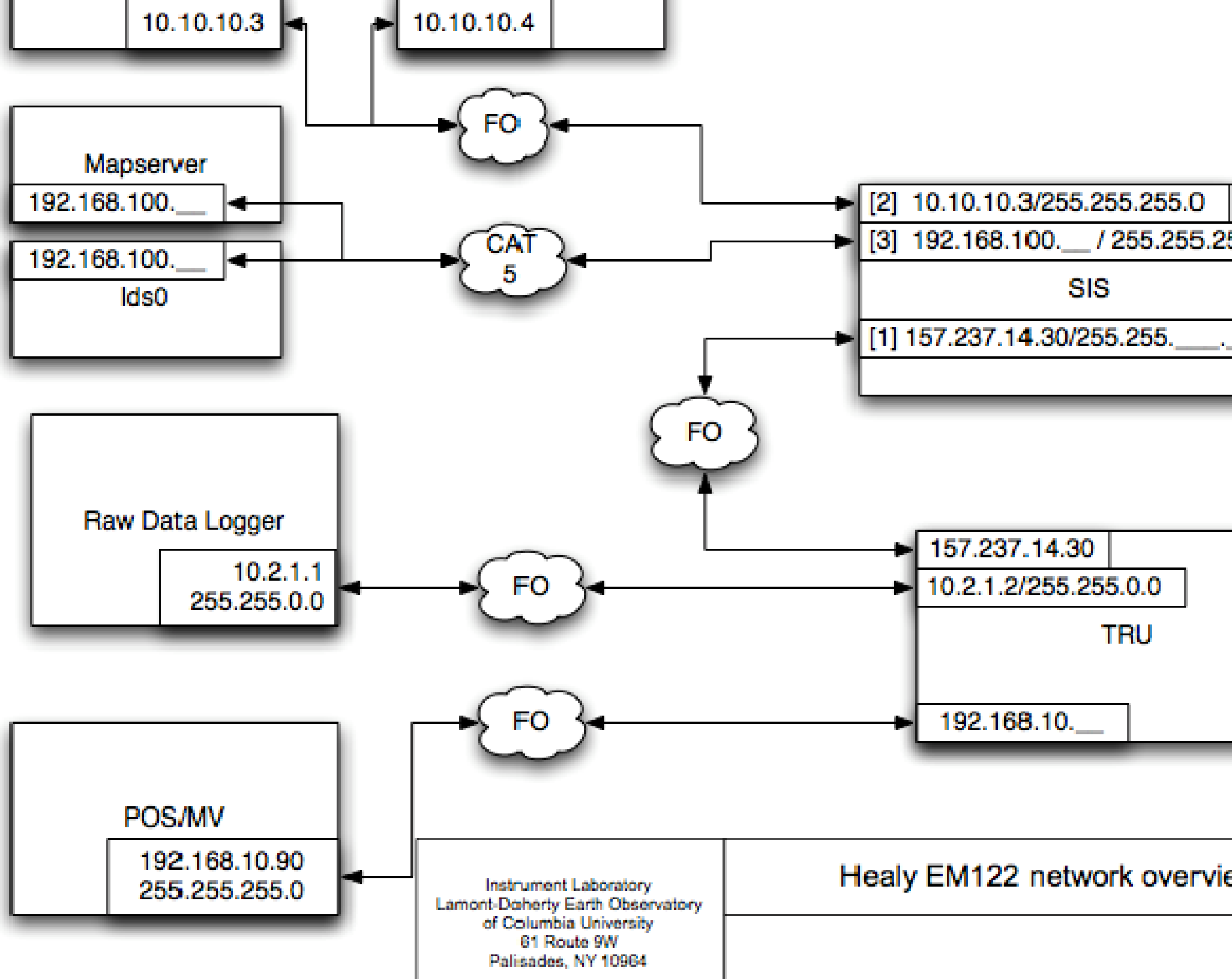
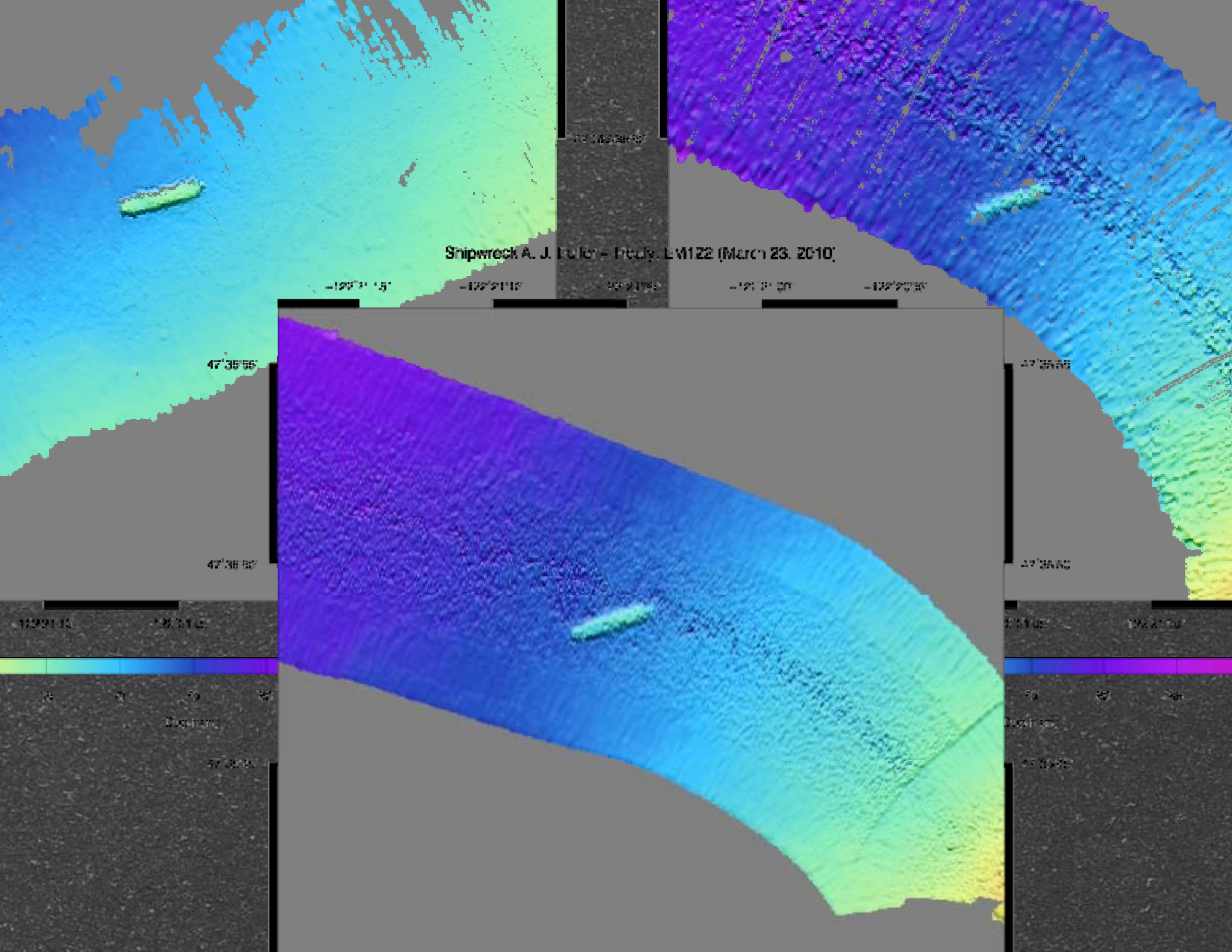
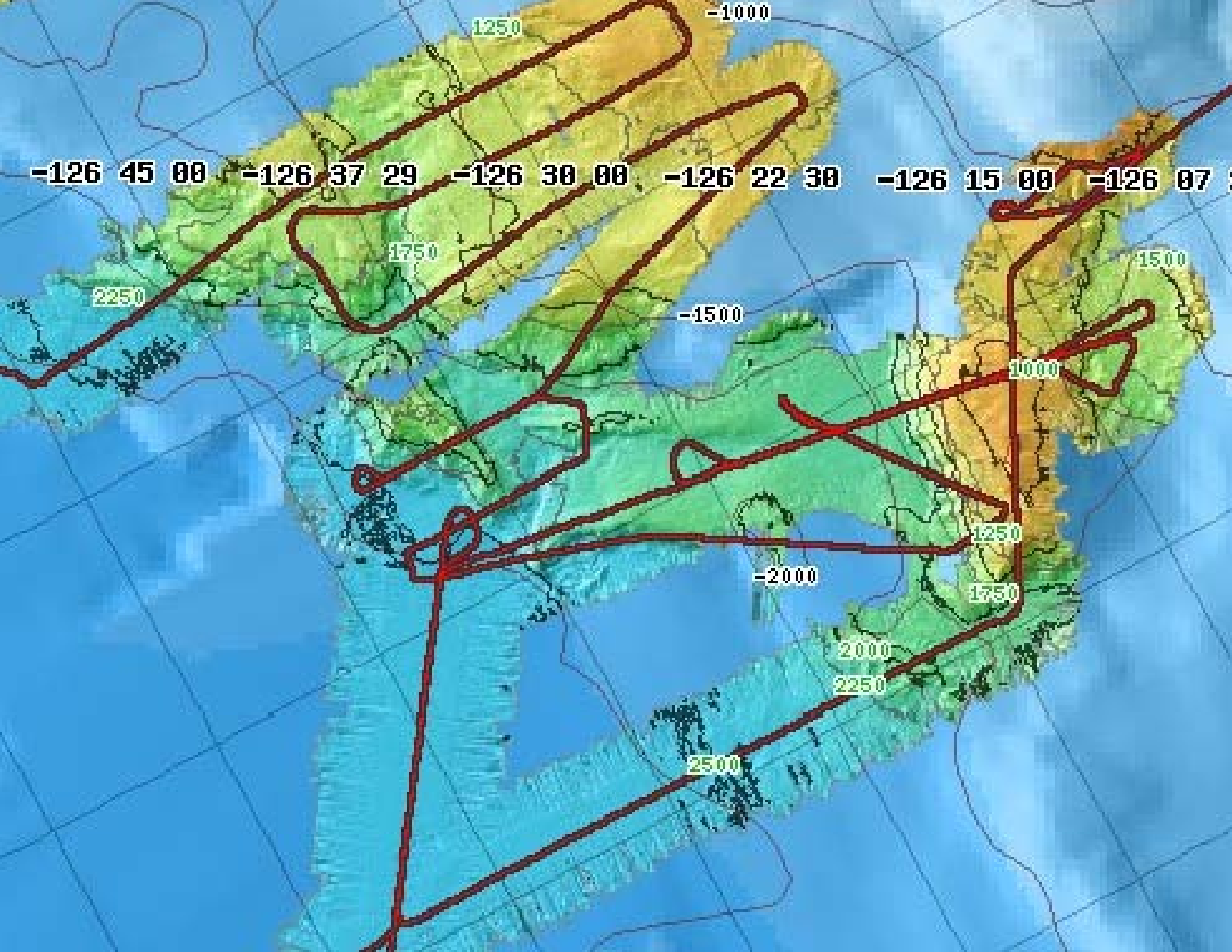
255.255.255.0
SIS
IP: 157.237.14.30
255.255.255.0
IP: 10.10.10.2
255.255.255.0
HELMSMAN 2
IP: 10.10.10.4
255.255.255.0
10.10.10.X
ETHERNET SWITCH
Velocity
EM122 TRU
IP: 157.237.14.60
255.255.255.0
RDL
10.2.1.2
255.0.0.0
REMOTE
COM1
COM2
1PPS
POS
ATT
TIME
PREAMP
TX J-BOX 1
TX J-BOX 2
4
8
12
24
12
24
RX XDUCER ARRAY
TX XDUCER ARRAY


10.10.10.3
10.10.10.4
FO
Mapserver
192.168.100.__
192.168.100.__
lds0
CAT
5
[2] 10.10.10.3/255.255.255.0
[3] 192.168.100.__ / 255.255.25
SIS
[1] 157.237.14.30/255.255.___.
FO
Raw Data Logger
10.2.1.1
255.255.0.0
FO
157.237.14.30
10.2.1.2/255.255.0.0
TRU
FO
192.168.10.__
POS/MV
192.168.10.90
255.255.255.0
Instrument Laboratory
Lamont-Doherty Earth Observatory
of Columbia University
61 Route 9W
Palisades, NY 10964
Healy EM122 network overvie


Shipwreck A. J. Fuller – Ready, EM122 (March 23, 2010)


-1000
1250
-126 45 00
-126 37 29
-126 30 00
-126 22 30
-126 15 00
-126 07
1750
1500
2250
-1500
1000
1250
-2000
1750
2000
2250
2500

...ea Acceptance Test (SA...

- Originally proposed along the trans... from Seattle -> Dutch Harbor
- Ship schedule took us to Hawaii
- Moved SAT from SEA -> HNL to HNL -> DUT to deconflict w/ other NSF/OPP field program (Switchyard...

	Timing #1	4	
	Pitch bias #1	4	
	Roll bias #1	4	
	Heading bias #1	4	
	Timing #2	4	
	Pitch bias #2	4	
	Roll bias #2	4	
	Heading bias #2	4	
	CTD (1,500m)	2	
	Deep survey (5,000m)	20	
	Real deep survey (6,800m)	20	
	Medium depth survey (2,500m)	20	
	Shallow survey (100m)	20	
	Total SAT objectives	114	
	Transit (2100NM at 12 knots)	175	
		Total	

EDEC Science Technical Support

- Seatrials (2)
- Shakedown (5/3)
- HLY10TC (SAT) (6 + 4-7)
- HLY1001 NASA (2 + 1 ashore)
- HLY1002 Edwards (3)
- HLY1003 Pickart (2-3)
- HLY10TX Transit to Seattle

Science-specific mods for 2010

- “Bow boom” (HLY1001)
- Optical Mast (HLY1001)
- Stern “xbt tube” water sipper HLY1001


U.S. COAST GUARD

Healy upgrades (after 2010 season)

- Acoustic communications
- Replacement 150kHz ADCP
- New TSG/PCO2 location
- Computer Lab renovation
- Mooring Winch
- Winch/wire monitor upgrade

New RDI OS-150

Item	Approximate Cost
Electronics and transducer	$65K
Cable	$5-10K
Spares	$20K
Mounting adapter	$10K
Polycarbonate window	$5K
Planning and	$10K

pCO2/T3G Estimated Costs

Item	Approximate Costs
“ship yard” but done dockside	$20K
science hardware	$25K
technical labor (SIO/LDEO)	$20-30K

Acoustic Comms Plan

Item	Approximate Costs
Deck unit	$20K
Transducer	$6K
Mounting and cabling	$5K
technical labor (LDEO)	$5K

Computer Lab Estimate

Item	Approximate Costs
“ship yard” but done dockside	$20K
science hardware	$20K
technical labor (LDEO)	$20K

Questions?

- Dale Chayes
- Lamont Research Engineer