R/V Sikuliaq Progress

RVTEC November 2011

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R/V SIKULIAQ

- Ice-capable General Oceanographic Research Ship
  - IACS PC-5 Ice Classification – one of the first in US
  - 261 feet length
  - 4,053 LT displacement at design draft
  - 5,750 BHP
  - 45 day endurance
  - Integrated power plant with AC propulsion motors
  - Tractor style Z-drives
- Owned by NSF, being built and operated by UAF
- UNOLS Global Class
- 20 Crew, 26 Science
- Homeport in Seward, Alaska

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Milestones

•October 2008	Final Design Review
•August 2009	Z-drive Contract with Wartsila
•December 2009	Shipyard Contract With Marinette Marine
•January 7th 2010	Shipyard Contract Start Date
•January 4th 2011	Cutting Steel
•January 21st 2011	Module Construction Started
•April 11th 2011	Keel Laying Ceremony
•May 10th 2011	Science Workshop (Shipyard)

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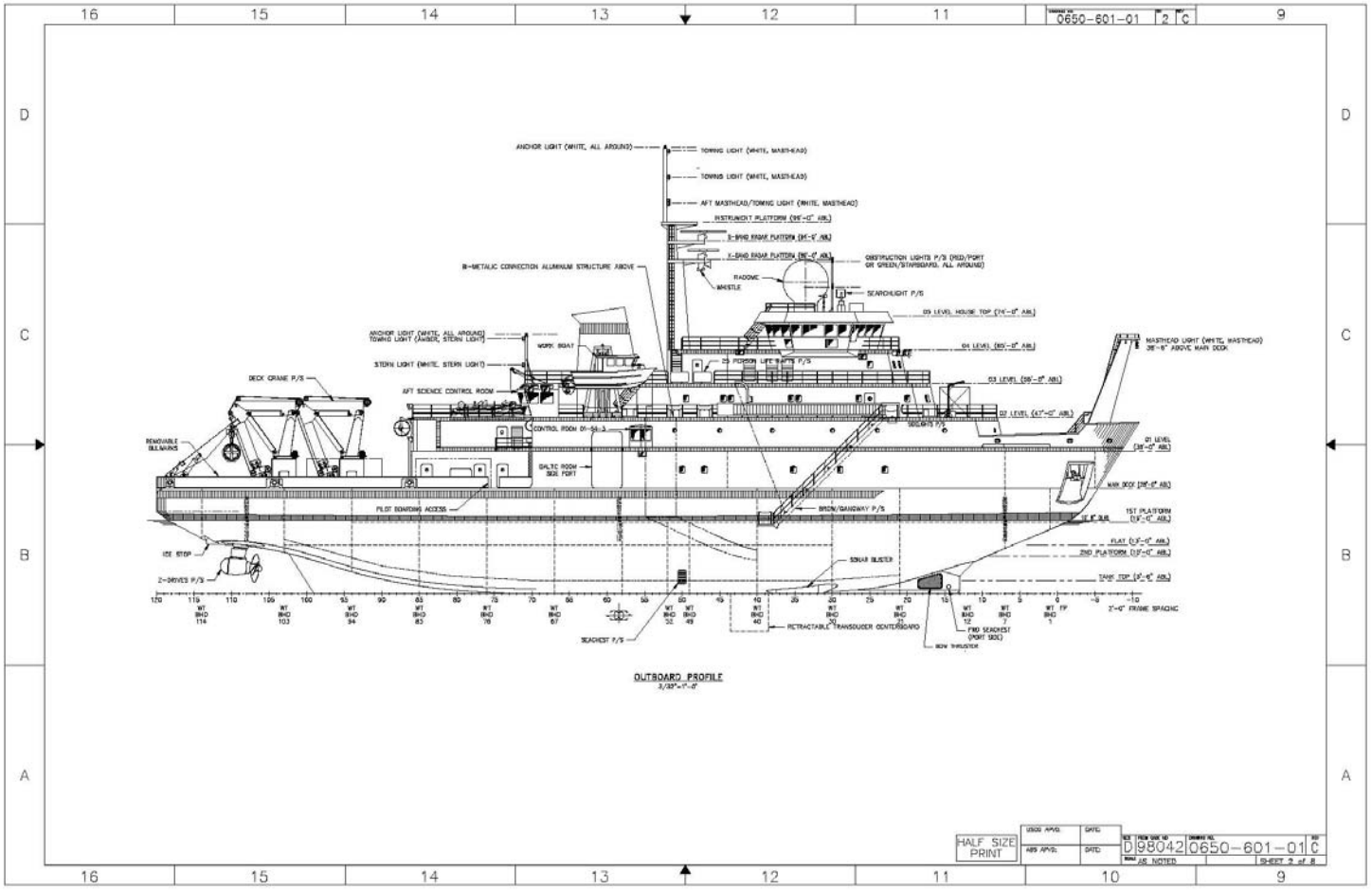

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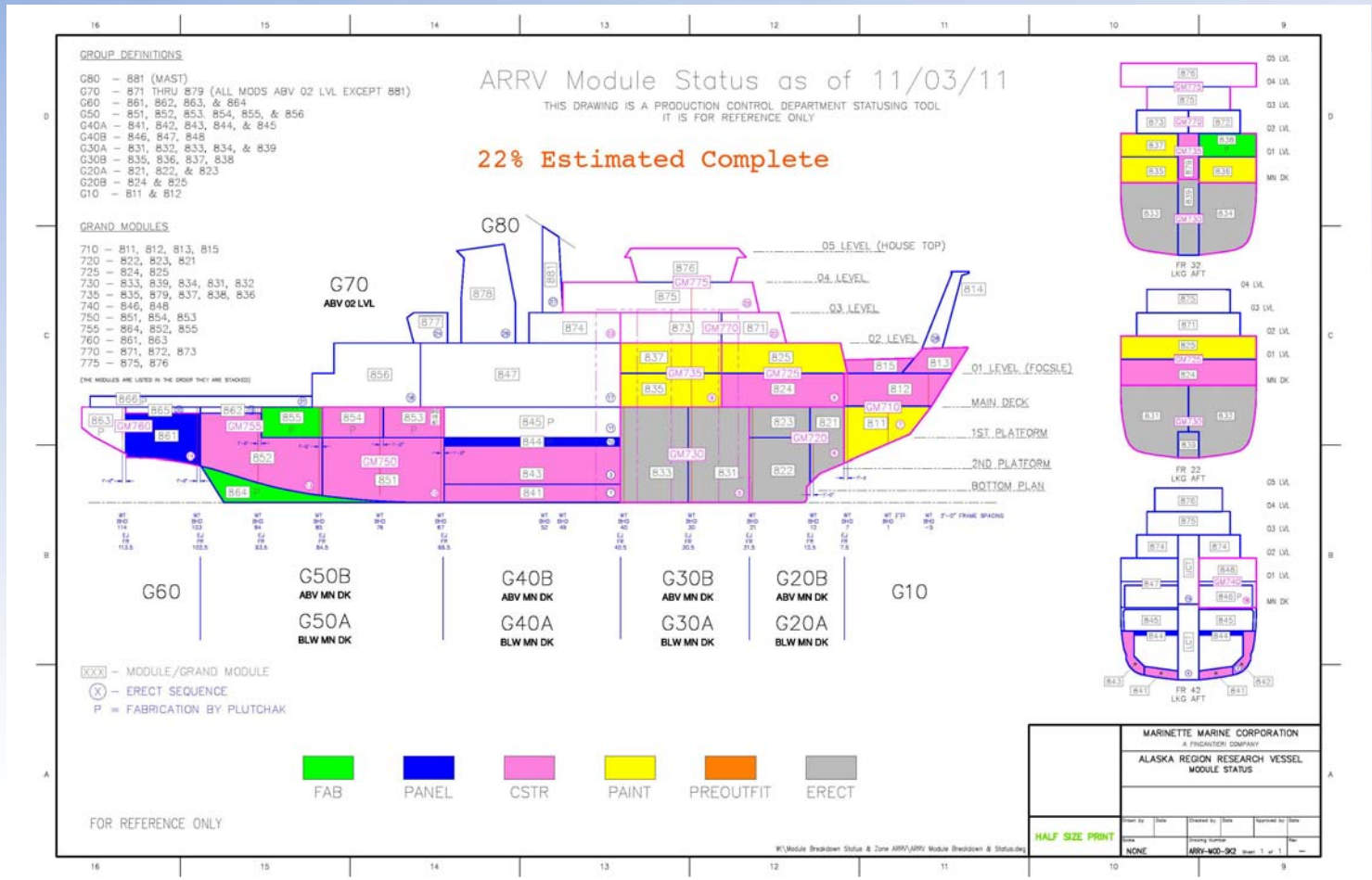
R/V Sikuliaq Progress



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Marinette Marine, Marinette Wisconsin
Building 10

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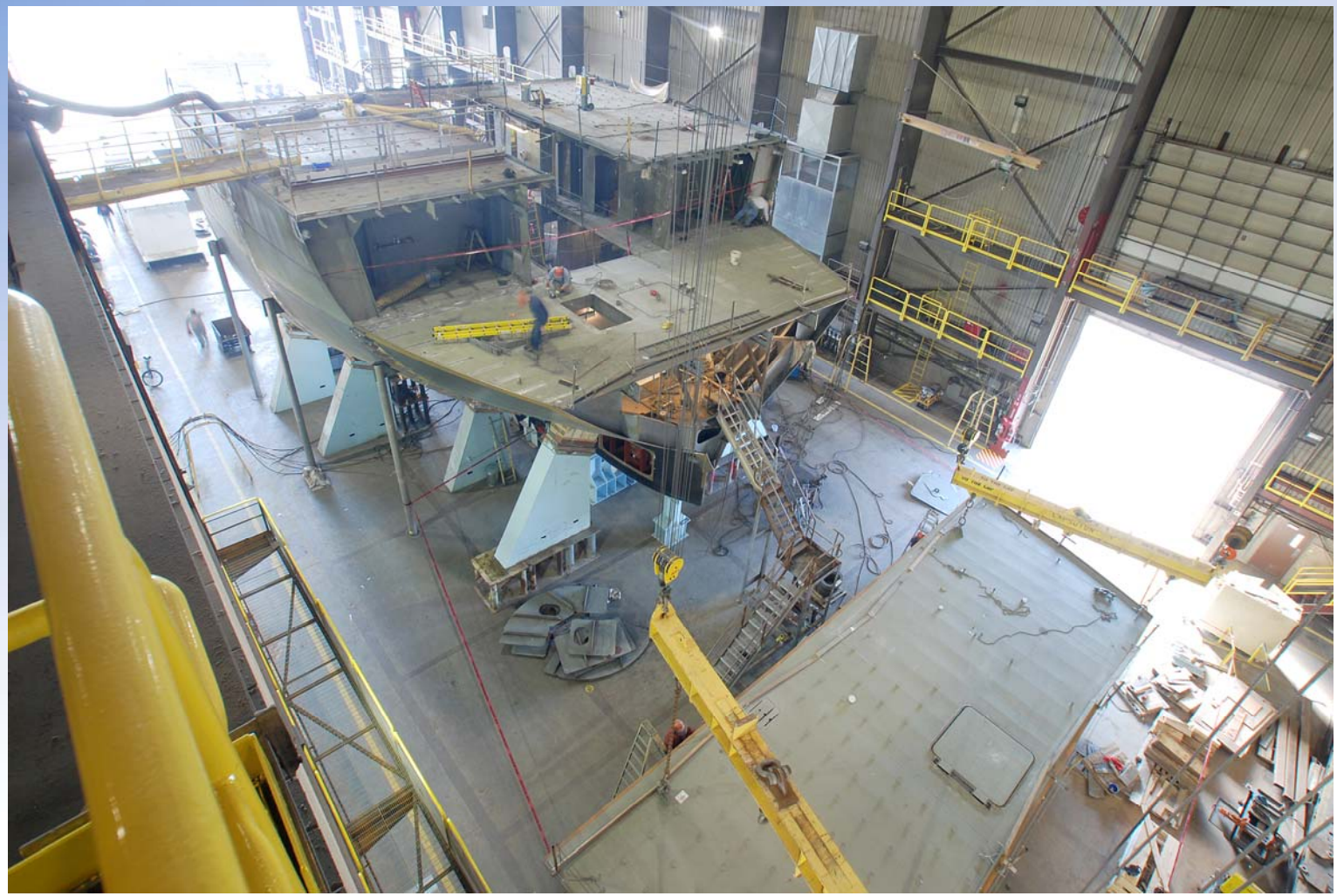

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Sonar Installations

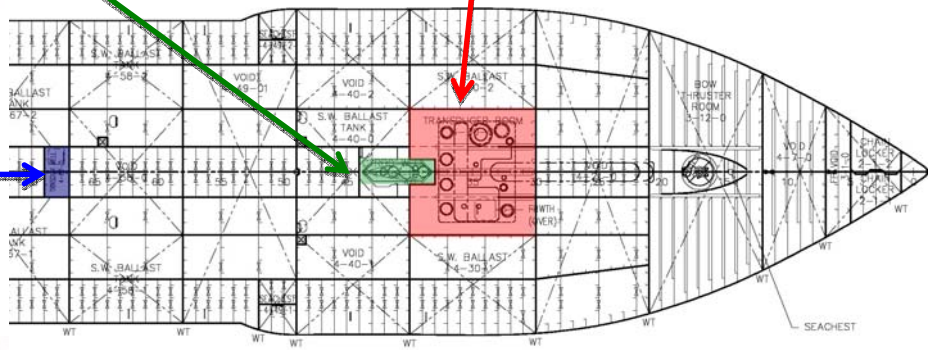
-Sonars are synchronized to reduce interference between systems

-Self-noise monitoring system included

Sonar “blister” flat with multibeam, single-beam sonars and ADCPs

Retractable Centerboard
EK-60 Array 18,38,70,120 & 200 kHz

Aft Transducer well
With 2 spare mounting rings



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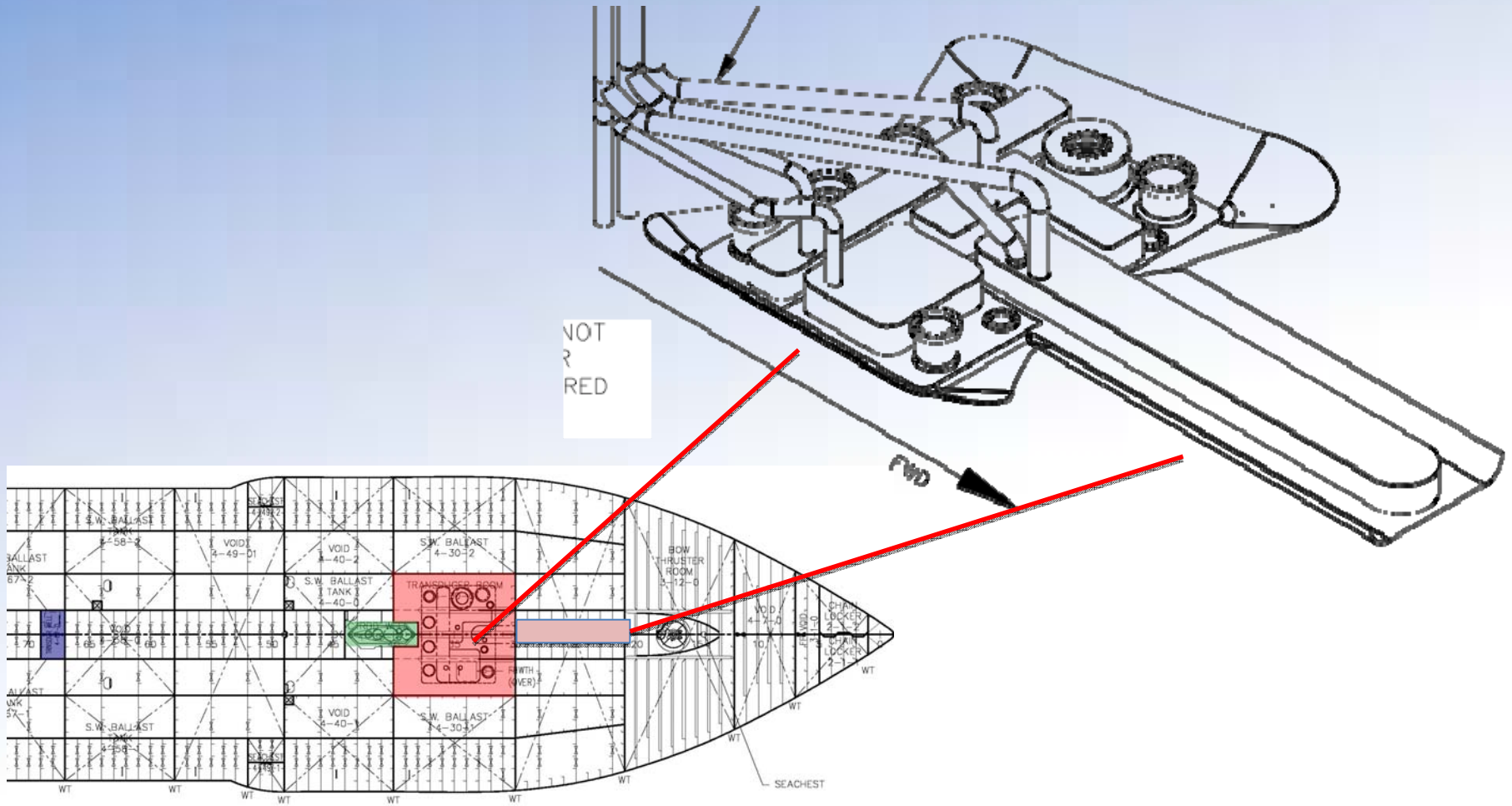
Sonar Flat - "Blister"



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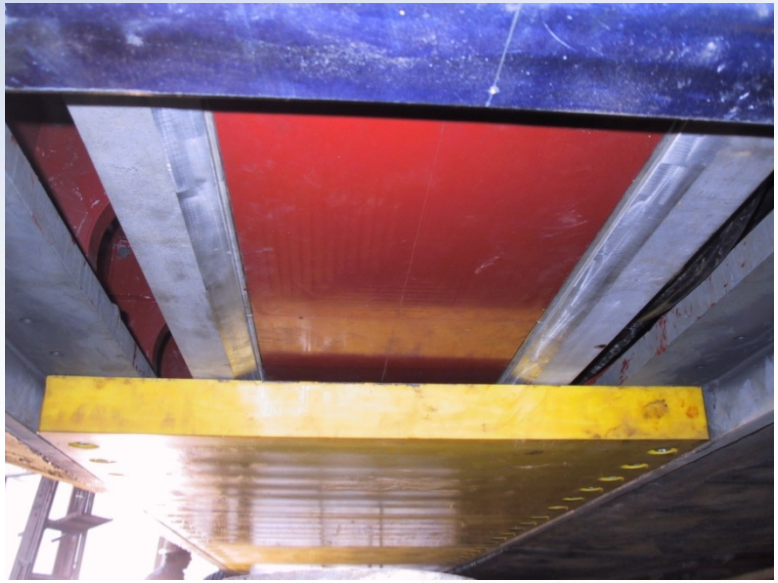
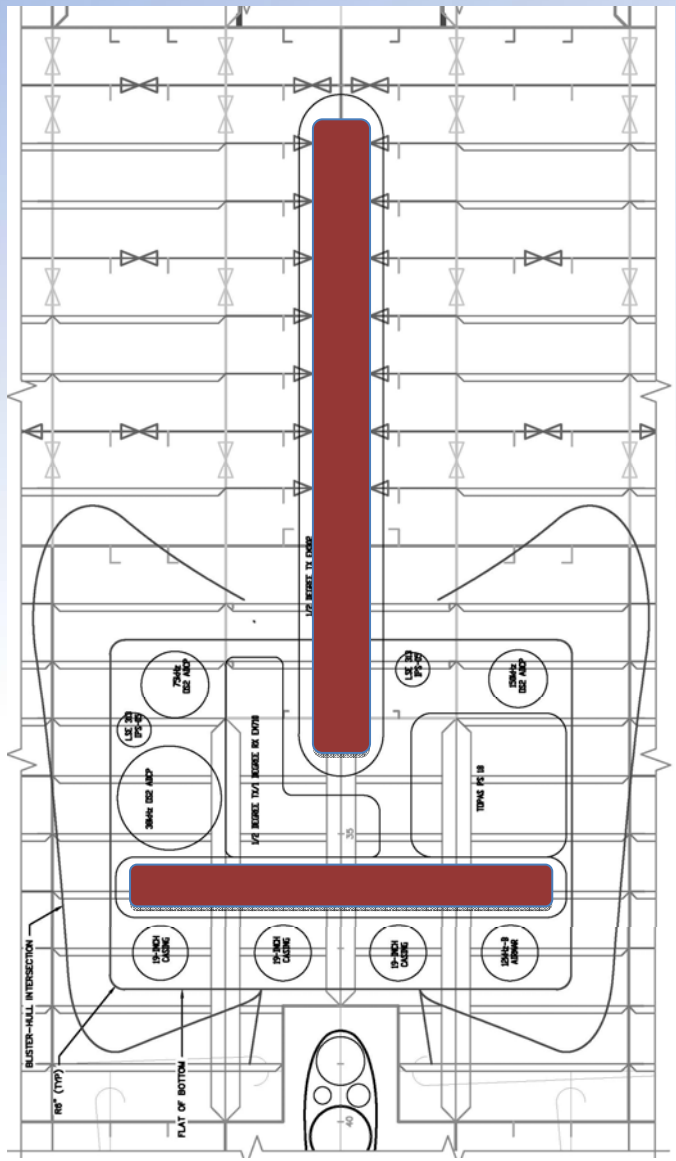
EM302 Multibeam

- Operating Freq: 30 kHz
- Transducer array: .5 deg X 1 deg
- Depth Range: 10-5000m
- Pulse Forms: CW and FM chirp
- Max soundings/ping : 864
- Depth Resolution: 1 cm





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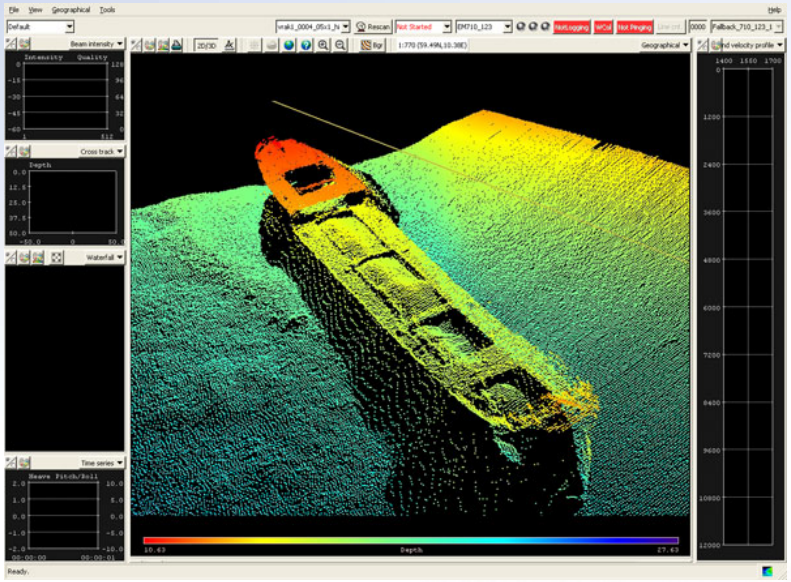
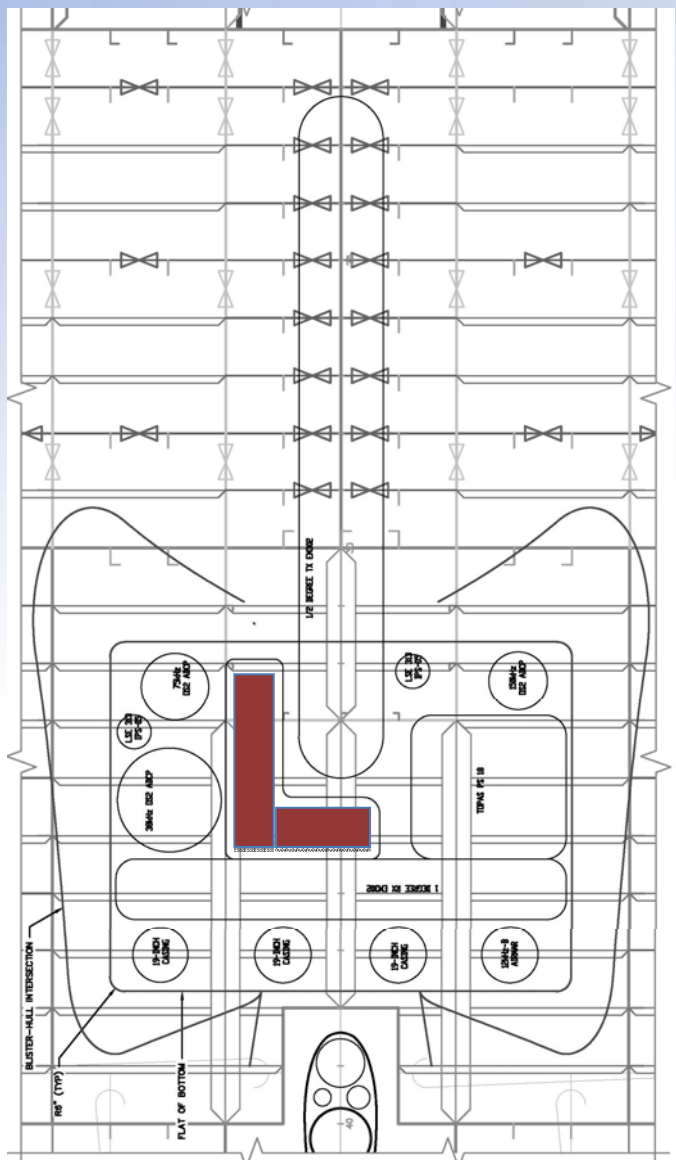
EM710S Multibeam

- Operating Freq: 70-100 kHz
- Transducer array .5 X 1
- Depth Range 3-1000m
- Pulse Forms, CW
- Max soundings/ping 400
- Depth Resolution 1 cm





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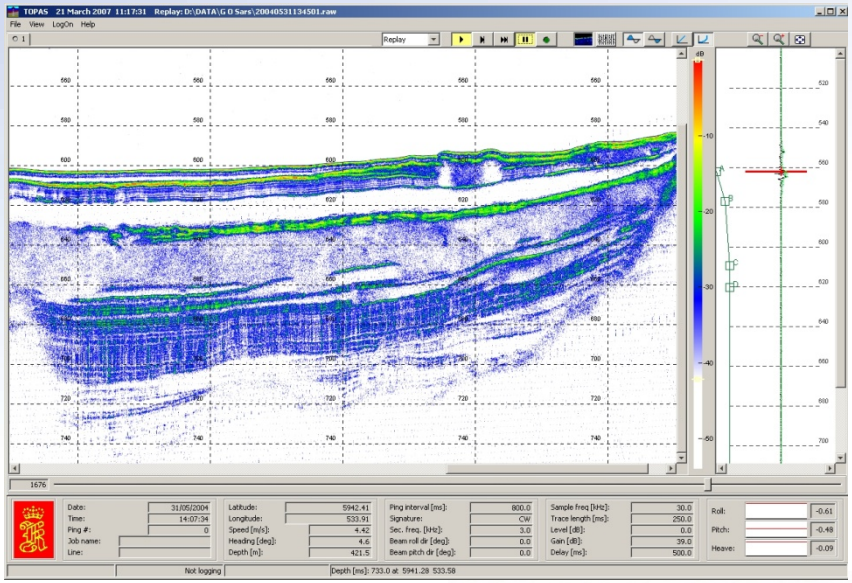
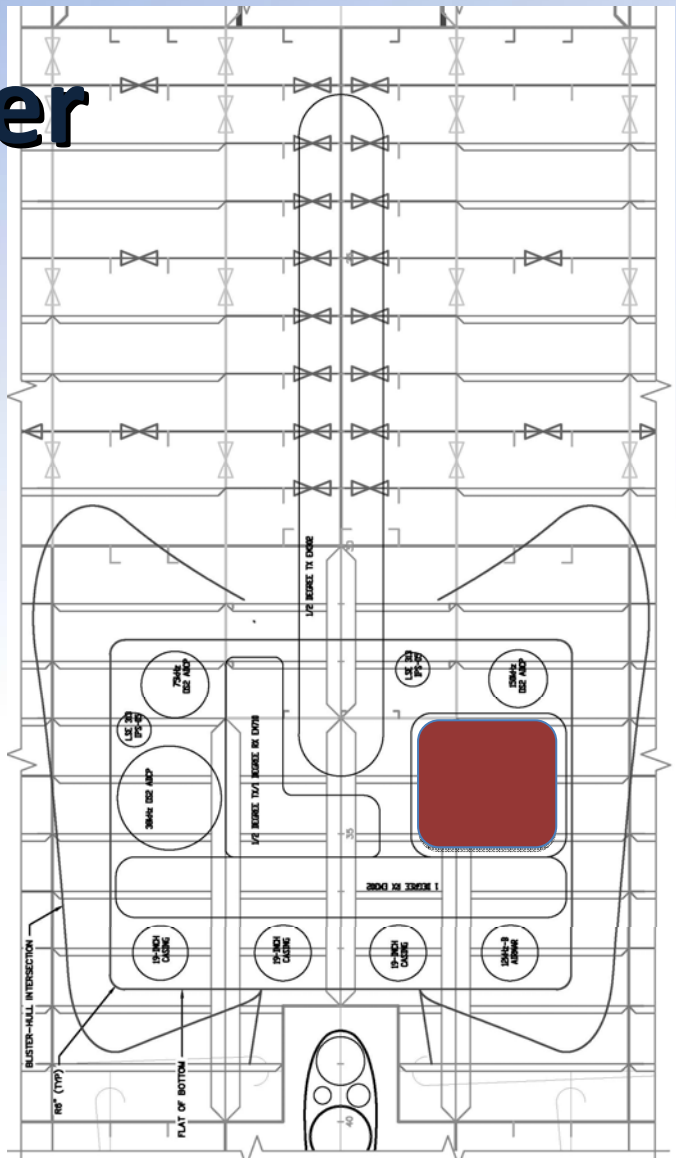
PS18 Sub-bottom profiler

- Frequency Range: 0.5-6,15-20,30-42kHz
- Signatures : CW, Chirp, Ricker
- Depth Range: 30 – 10000m
- Max Penetration: ~150m

- Audible noise inside hull: none





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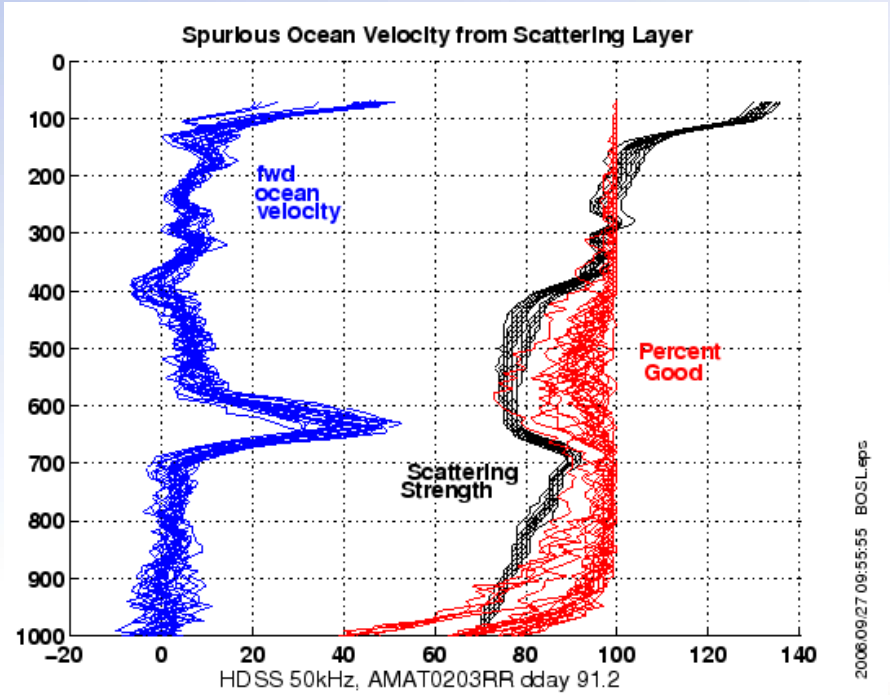
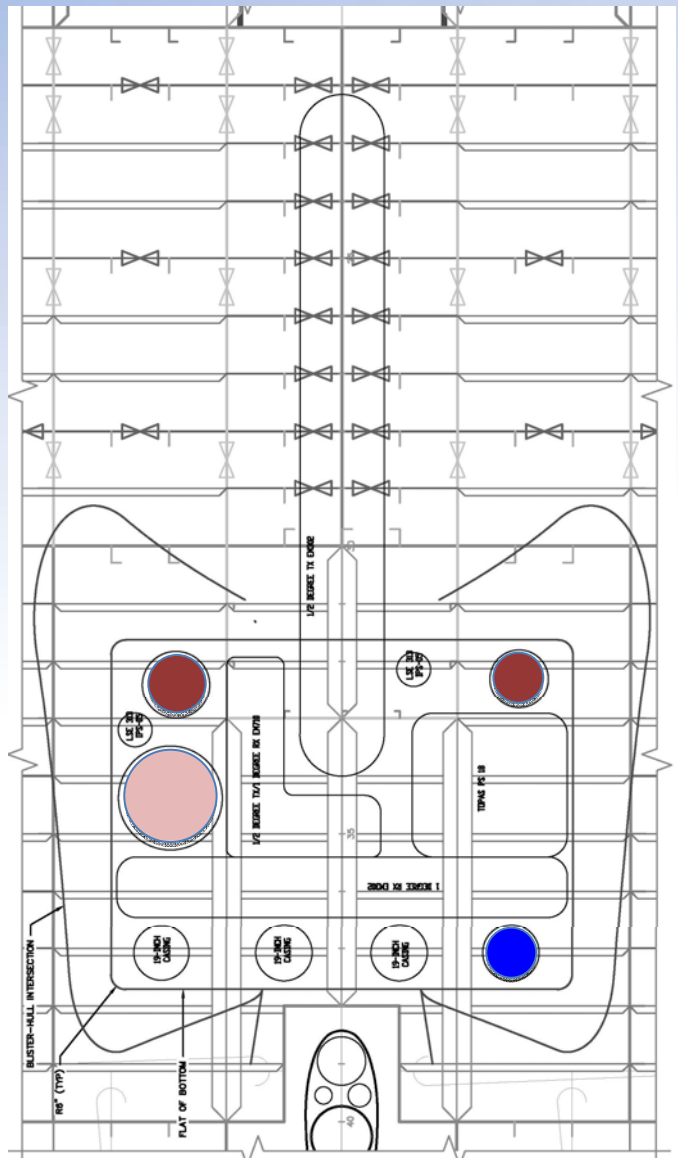
ADCP 75 kHz and 150 kHz and 12 kHz echosounder

- RDI Ocean Surveyor ADCPs
  - Provision for future 38 kHz installation
- "Traditional" 12 kHz echosounder
  - Knudsen 3260 system common to UNOLS fleet





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Hydrophones

Monitoring of Underwater Radiated Noise
Harris Acoustic HAP 5050

1 Port of RX Array
2 Fwd of TX Array
3 STBD of RX Array
4 AFT Sonar Flat
5 Centerboard
6 Adjacent to Propeller Plane

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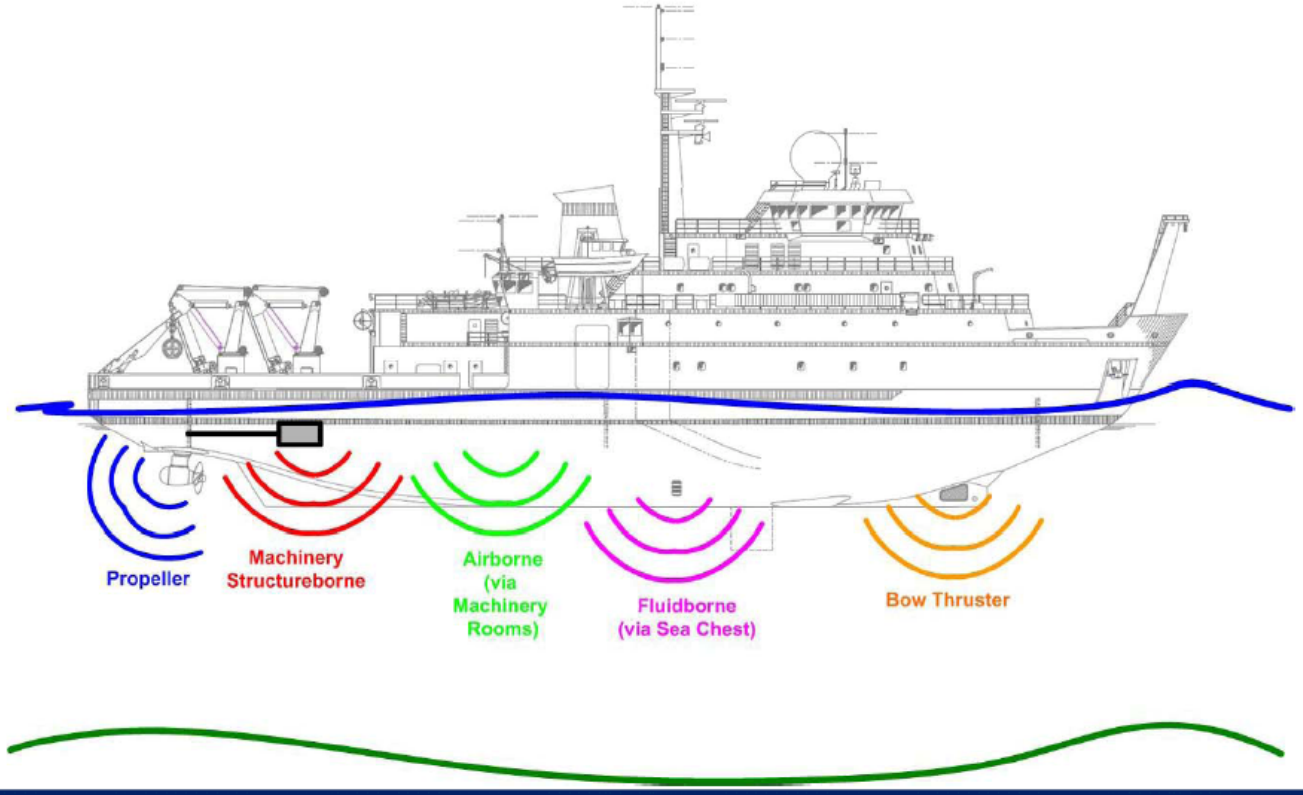
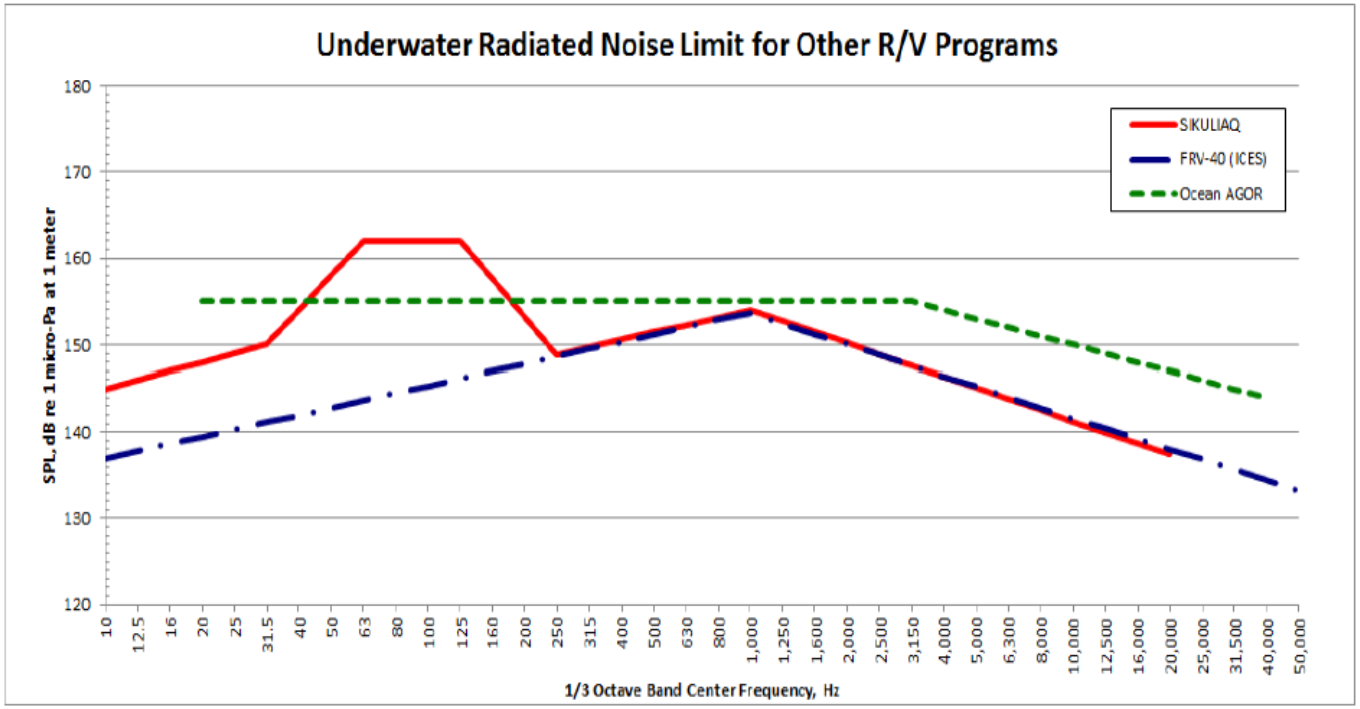
Radiated Noise Paths



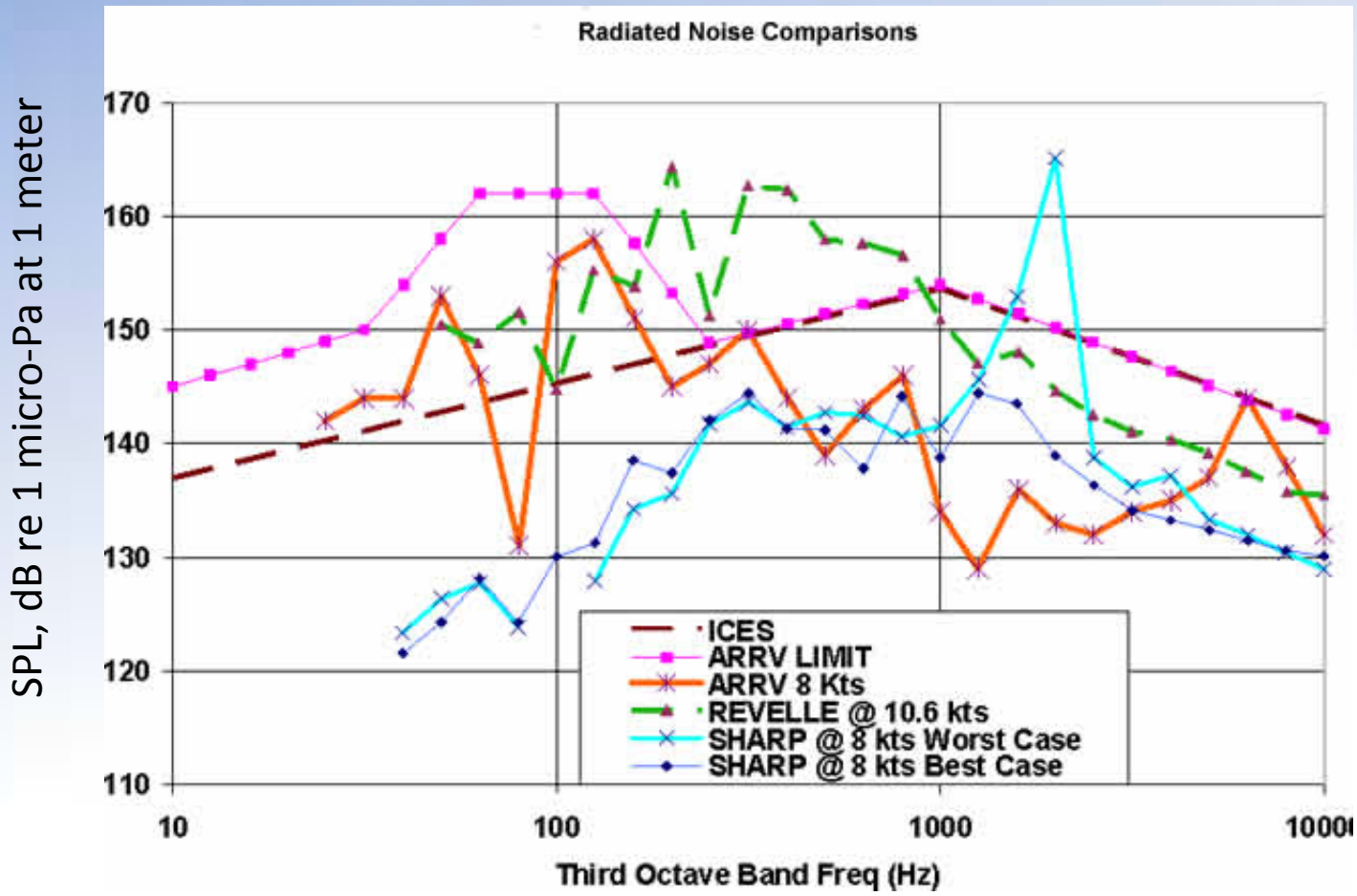
Noise Control Engineering, Inc., 799 Middlesex Turnpike, Billerica, MA 01821
Phone: 978-670-5339 Fax: 978-667-7047 nonoise@noise-control.com

073.2.1 Radiated Noise Criteria



Noise Control Engineering, Inc., 799 Middlesex Turnpike, Billerica, MA 01821
Phone: 978-670-5339 Fax: 978-667-7047 nonoise@noise-control.com

SIKULIAQ
Predicted Underwater Radiated Noise



- Self-noise baseline assessment will be part of post-delivery sea trials

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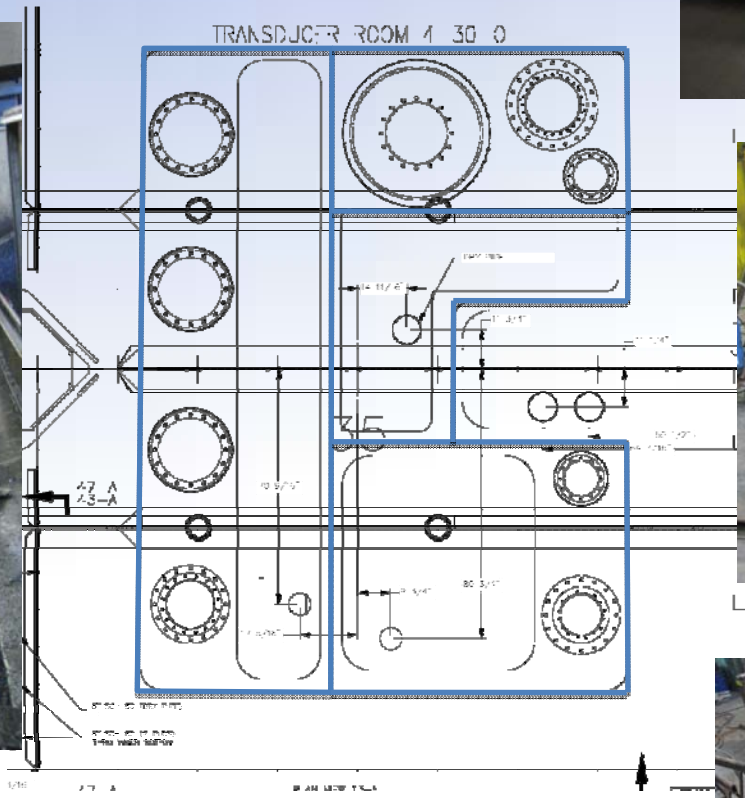
Forward Transducer Flat in Production
Machinists, Inc, Seattle, WA
13 July 2011



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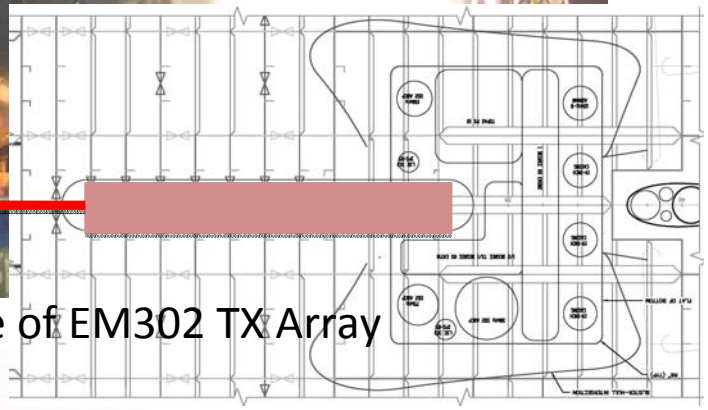
ARRV (0650) MV SIKULIAQ
PROGRESS PHOTO
DATE: 10-14-11
CONTRACT NO.: UAF-10-0040
DESCRIPTION: Transducer Flat


ARRV (0650) MV SIKULIAQ
PROGRESS PHOTO
DATE: 10-18-11
CONTRACT NO.: UAF-10-0040
DESCRIPTION: Transducer Flat

Ice Knife



Leading Edge of EM302 TX Array

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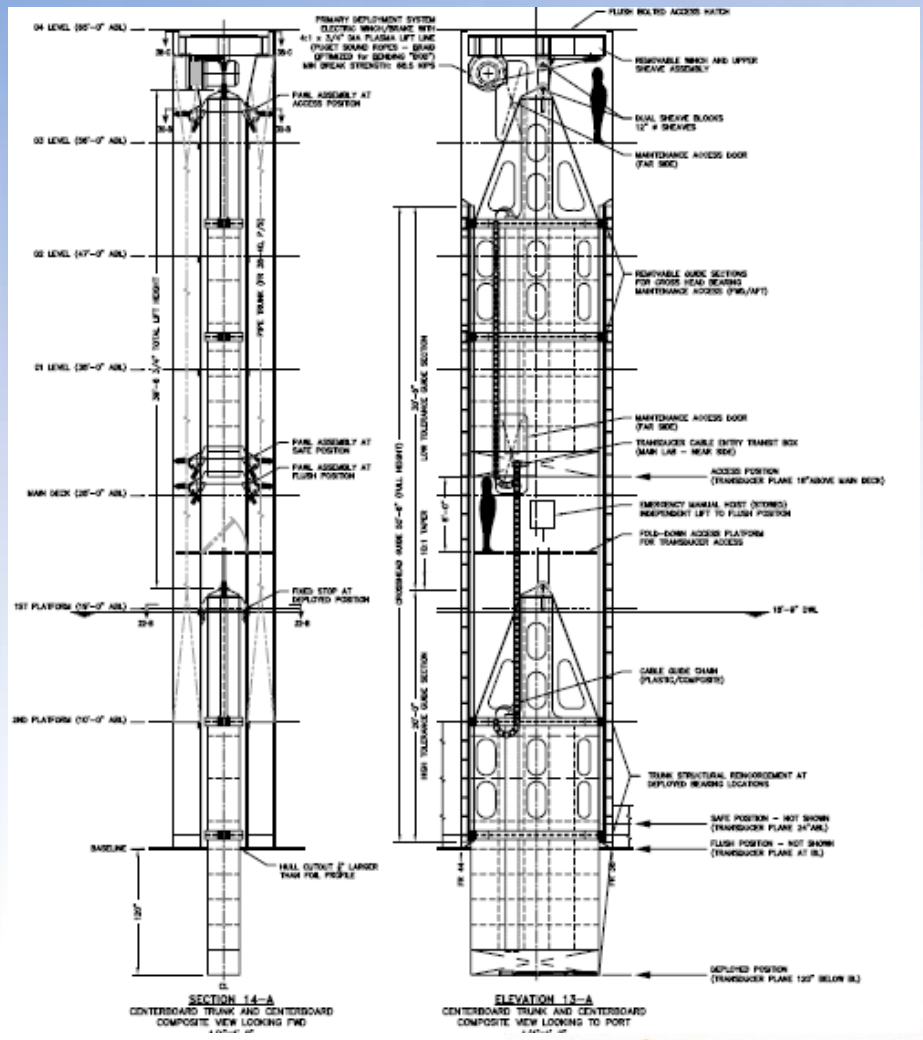
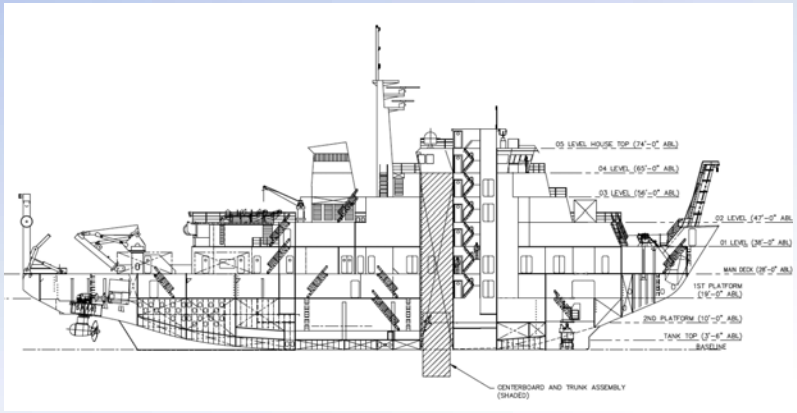
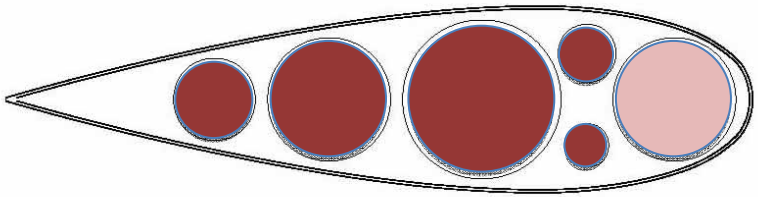
Retractable Centerboard





- EK-60 Scientific Sounder System
- One spare mount for project use
  - Accessible from main deck for transducer installations



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Center Board Keel

CS Controls, Houma Louisiana

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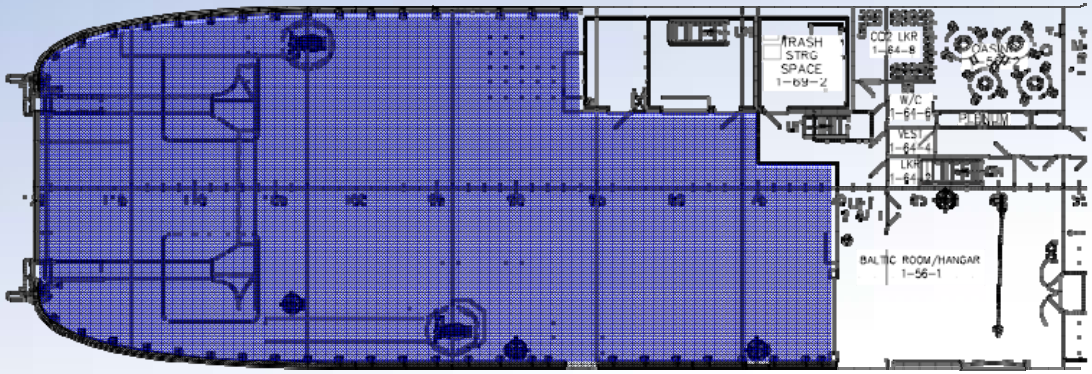
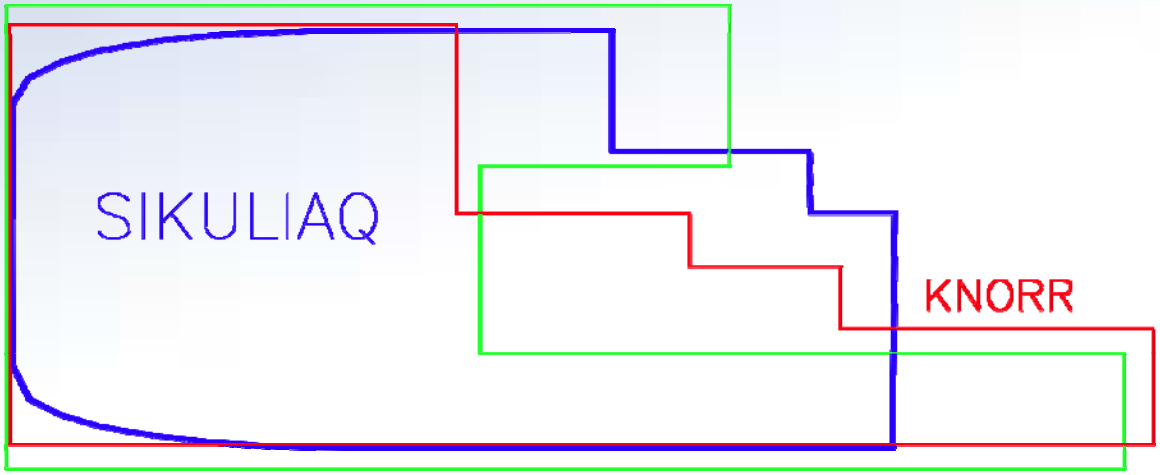
Deck Area Comparison

SIKULIAQ, THOMPSON and KNORR





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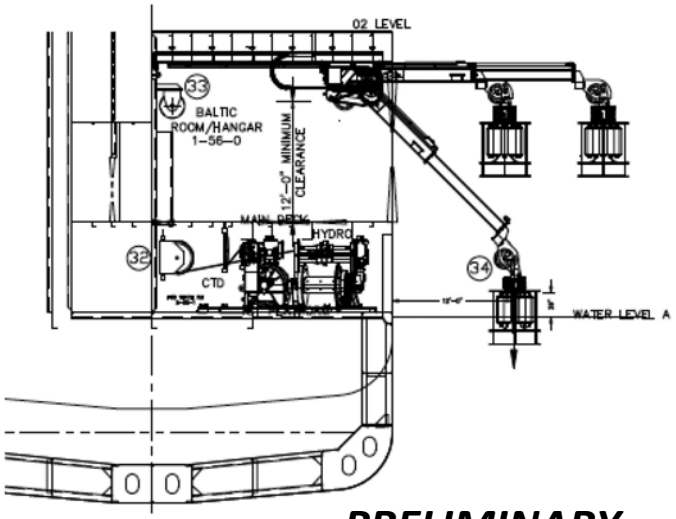
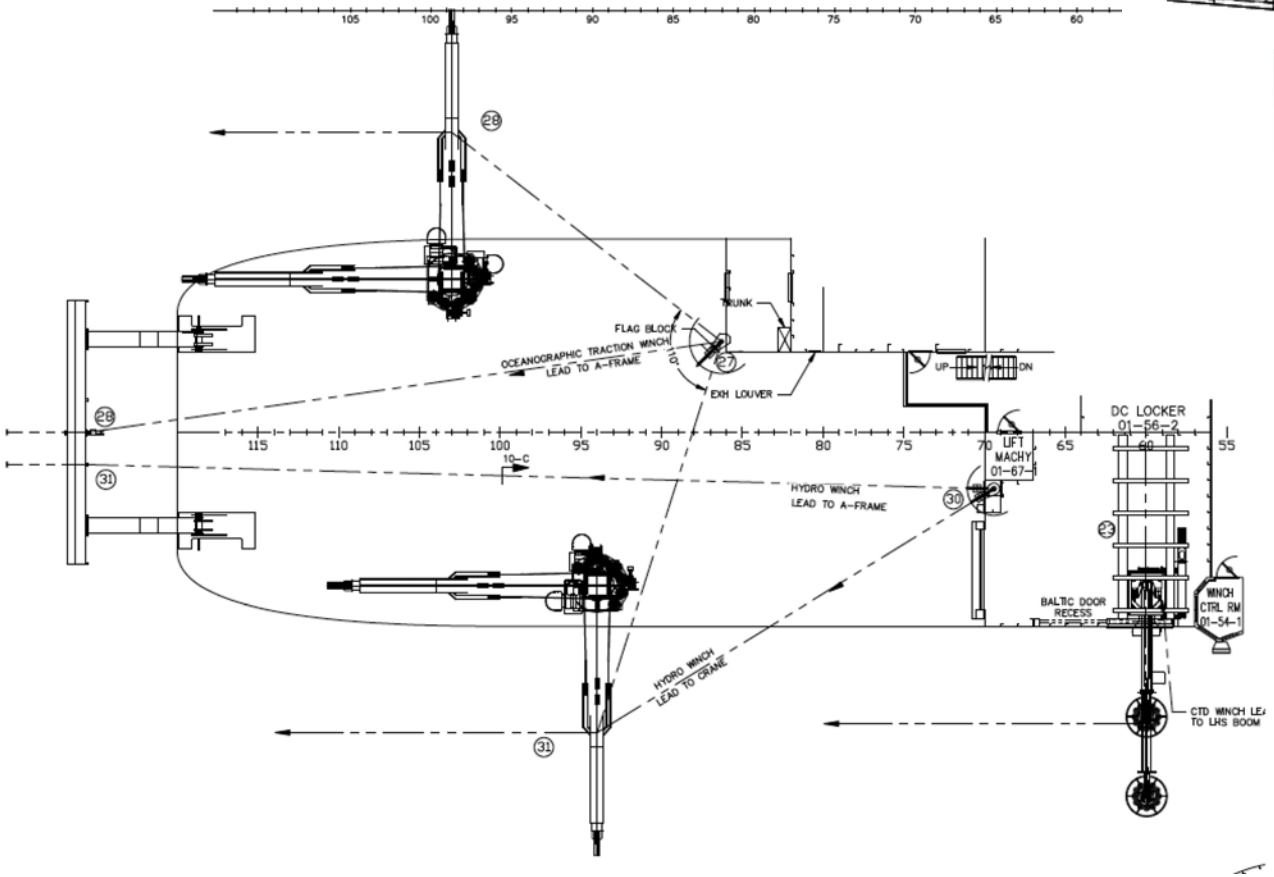
Overboarding Winches

-Two Mo-Comp Hydro winches forward
  -Both with .322” EM cable
  -Drums can be changed
  -Can be led to side boom or stern
-Traction winch with two drums
  -.680” coax and 9/16” Wire Rope



PRELIMINARY



Mo-Comp Hydro Winches

Rapp Hydema Seattle

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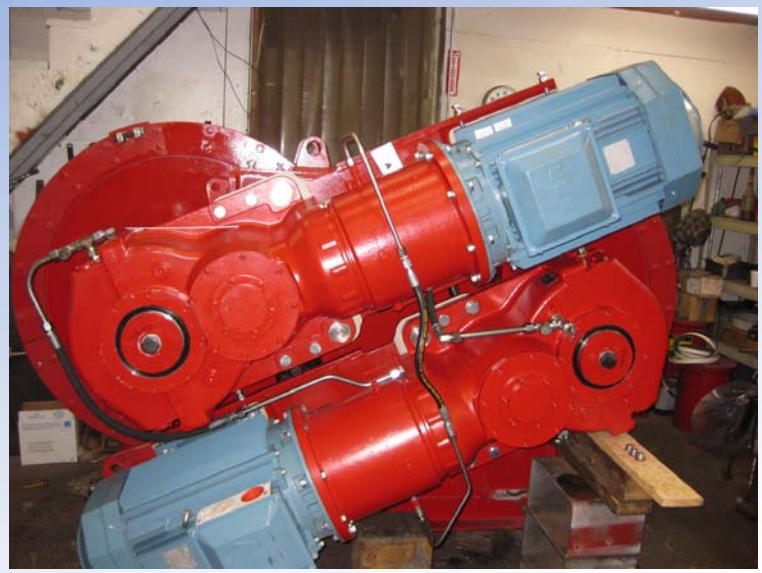
Traction Winch

Rapp Hydema Seattle



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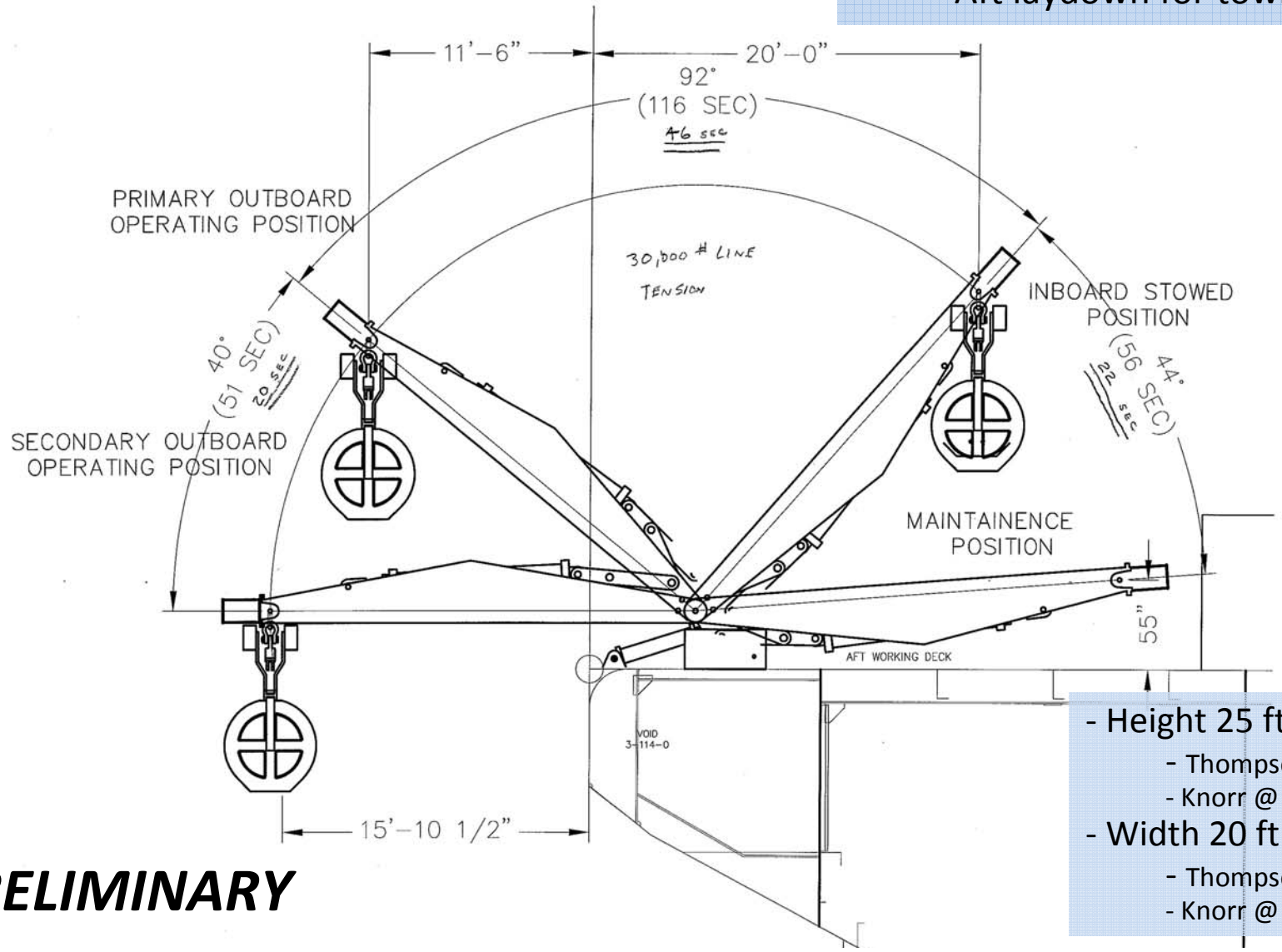
A-Frame

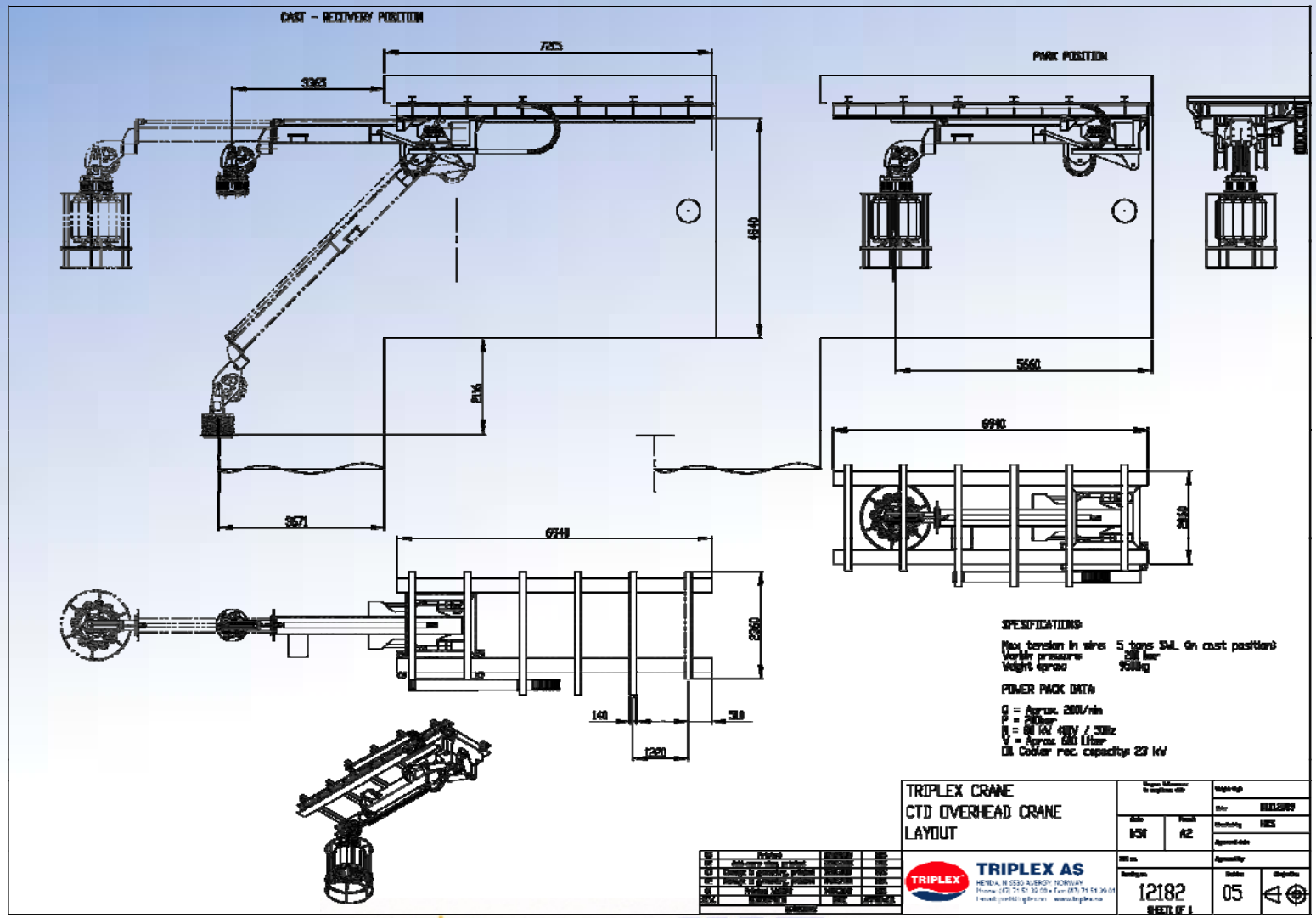
- 120,000 lbs maximum loading
- 30,000 lbs luffing capacity
- Unique features
  - Forward maintenance position
  - Aft laydown for towing in ice



- Height 25 ft
  - Thompson @ 25 ft
  - Knorr @ ~25 ft?
- Width 20 ft
  - Thompson @ 20 ft
  - Knorr @ ~20 ft

PRELIMINARY

Baltic Room Load Handling System



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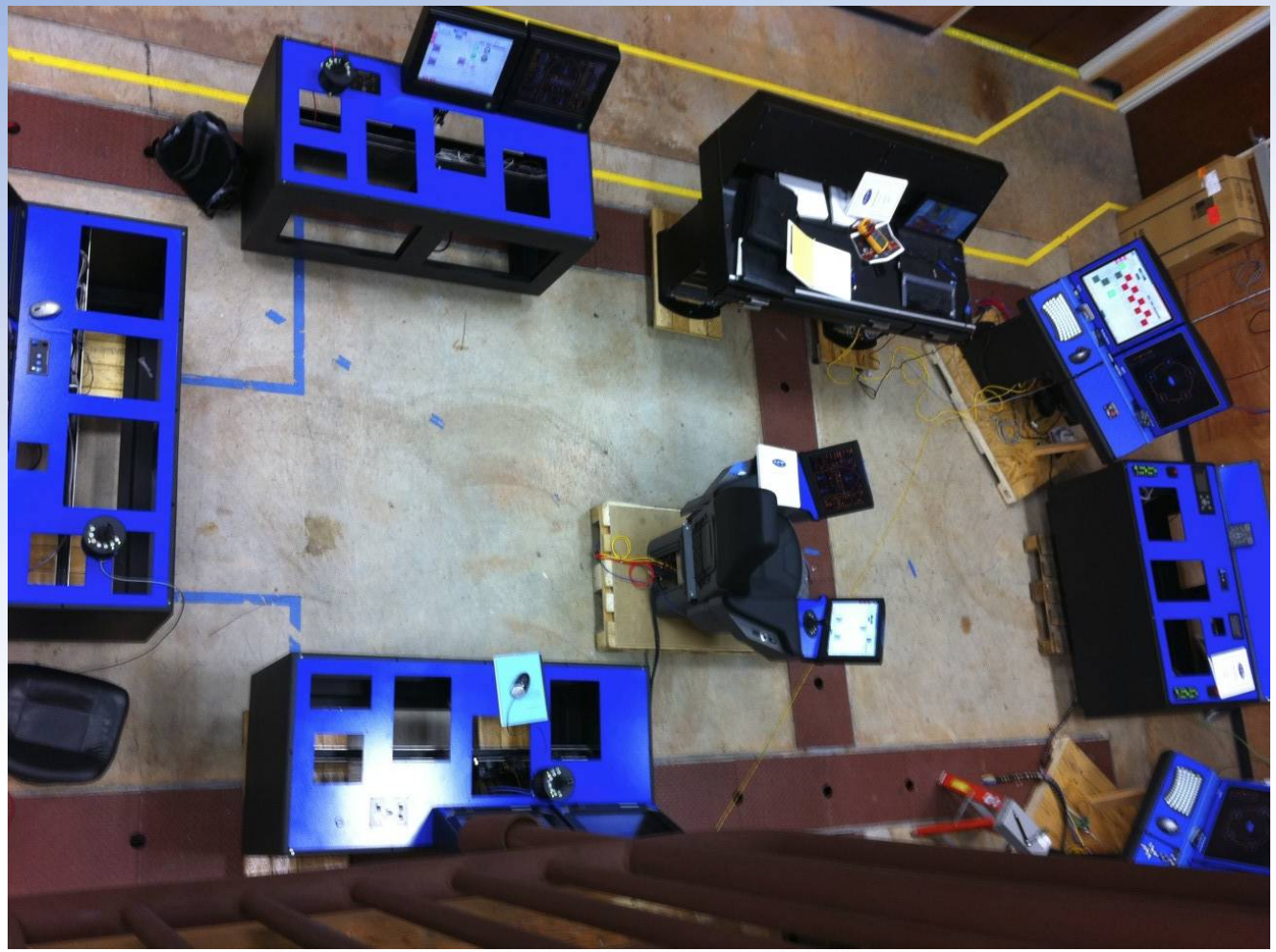
PRELIMINARY

Integrated Bridge

Marine Technologies, Mandeville Louisiana



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SIKULIAQ SCHEDULE

Z-drives Delivered to Shipyard	Jan 2012
Ocean Science Meeting Salt Lake	Feb 2012
Launch	Oct 2012
Builder's Trials	April 2013
Acceptance Trials	May 2013
Delivery	July 2013
Post Delivery Dockside/Training	Aug 2013
Transit and Science Trials	Oct 2013
NSF Inspection	Dec 2013
Available for Science	Jan 2014
Ice Trials	April 2014
Inport and Drydock	May 2014

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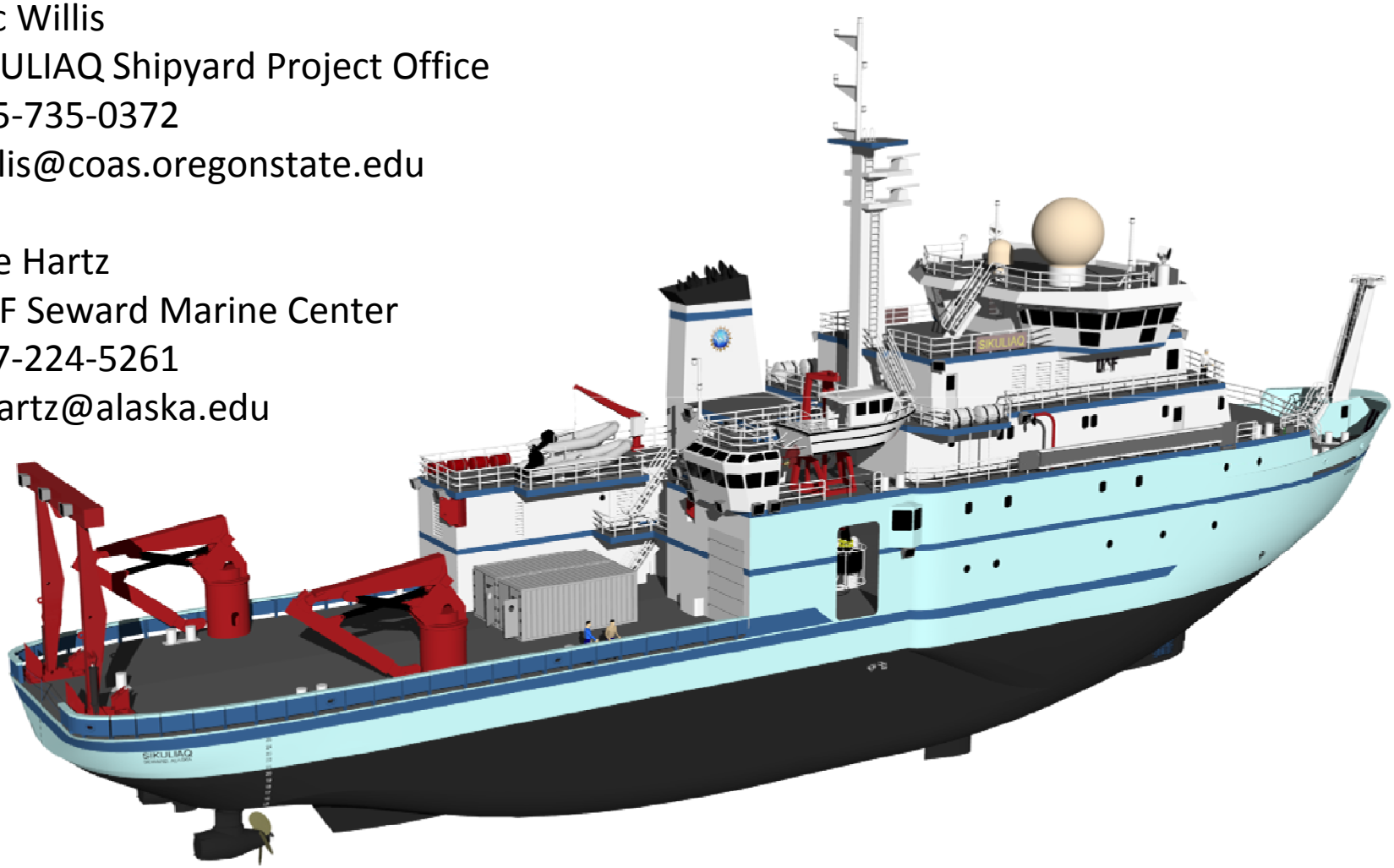

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