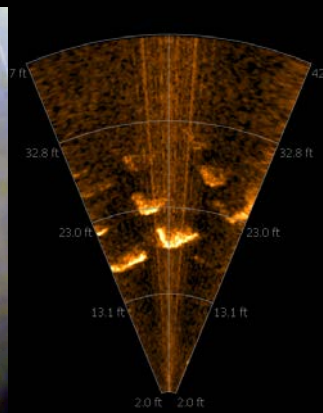




Sonars, robots and seeing through the dark:

Using integrated technology to locate and remove marine debris





Rozalia Project for a Clean Ocean is a 501(c)(3) non-profit whose mission is to find and remove marine debris through action, technology, outreach and research.

American Promise: 60' trash hunting vessel and Rozalia Project's mothership



VideoRay Micro-ROV



LYYN image enhancement



KCF Smart Tether



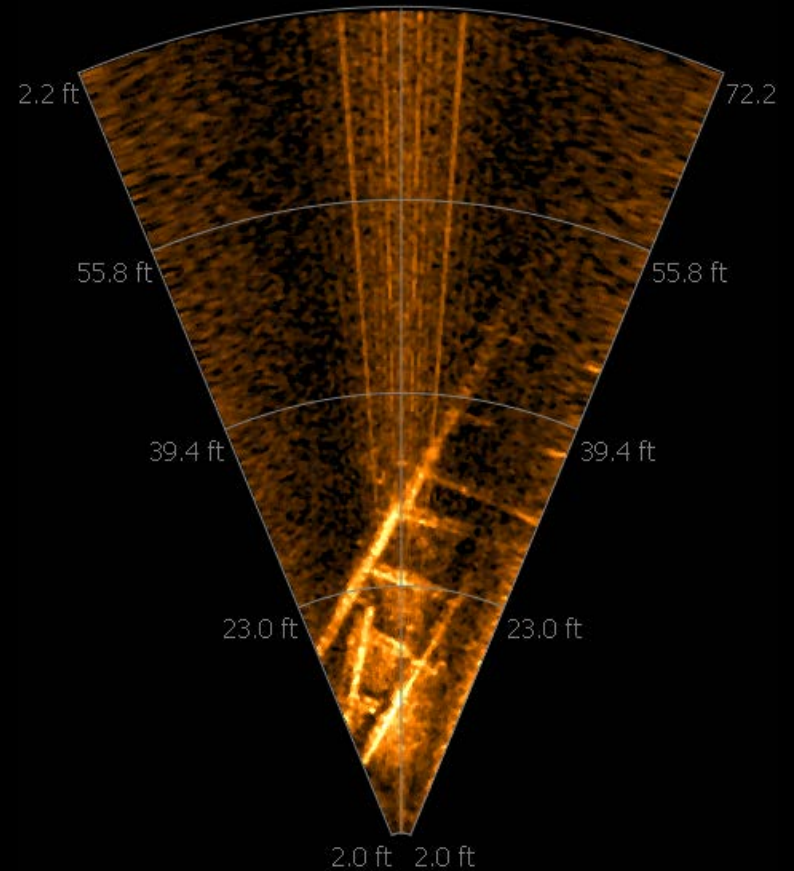
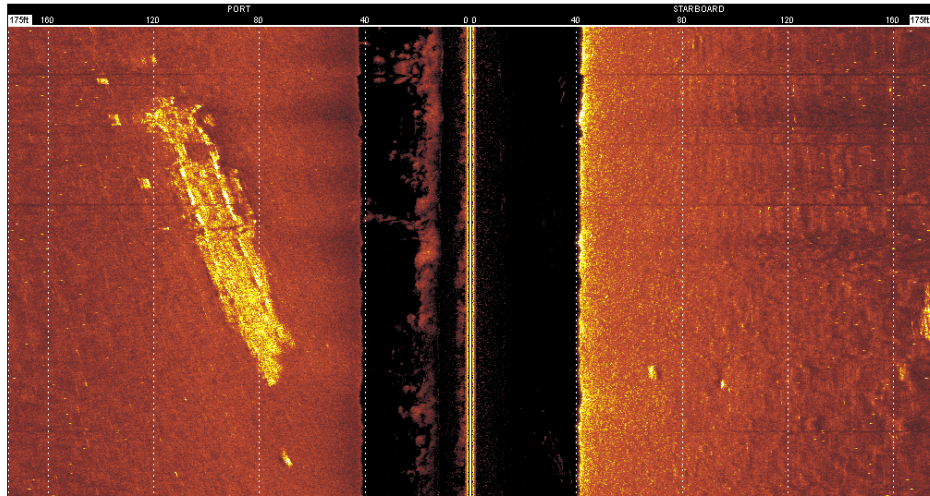


Starfish side scan sonar



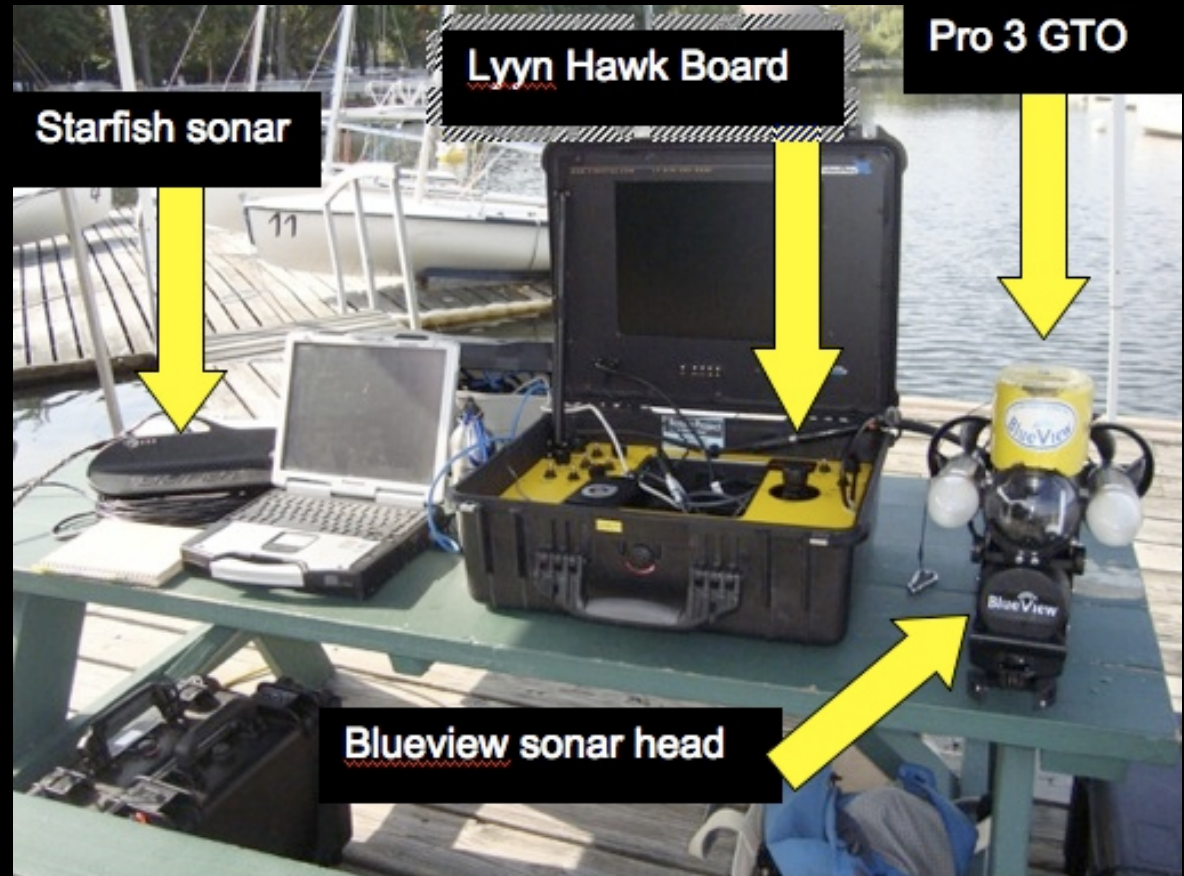
Blueview imaging sonar

Sidescan Plotter



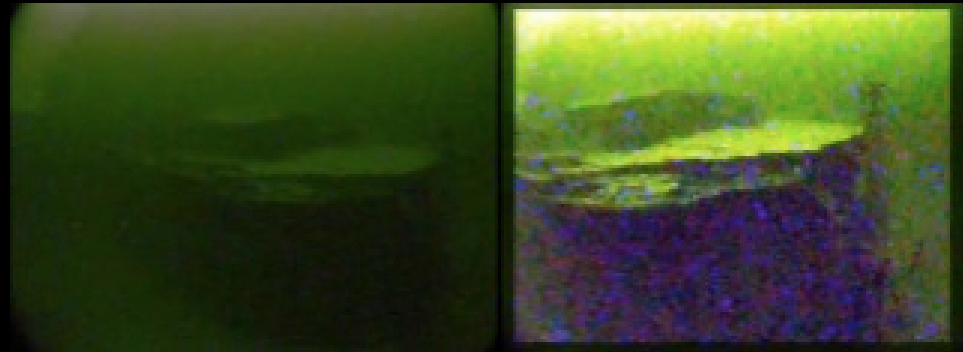
VideoRay Pro 3 GTO

- Central piece of equipment
- Easy to handle, easy to use, reliable
- Needs: workspace, power source, rain/sun cover



Lynn Image Enhancement

- Can be an external unit or integrated
- Used in real time or applied to video after
- Adjusted in concert with lights
- Needs: none for Hawk board, power and space for T-38



KCF Smart Tether

- Easy to use
- Relative and GPS position + Google Earth overlay
- Pro 4: completely integrated, only different tether
- Pro 3: additional small topside box needed
- Limited by Smart Tether length
- Needs: for Pro 3: computer, some space

Tritech Starfish side scan sonar

- Information about whole area
 - Bottom type
 - Bottom contour
 - Debris distribution, size and type
- Assists in mission planning for ROV deployment
- Need: moving boat, power source, computer, ideally 2 people

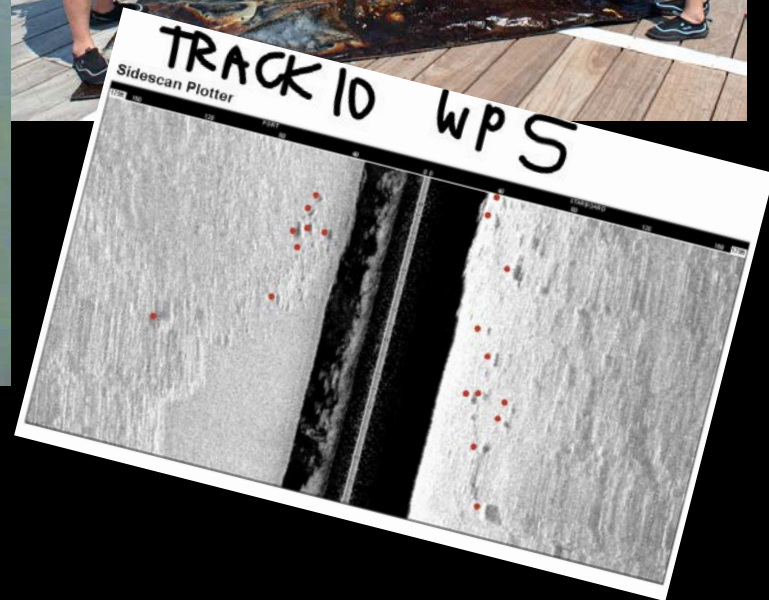


Blueview P900-45

- Multibeam sonar
- 180 feet (55 meters) max range, 45 degree field of view
- Needs: compatible ROV, computer



Trash Tour 2011: Action, Outreach and Research



Small and Medium Debris

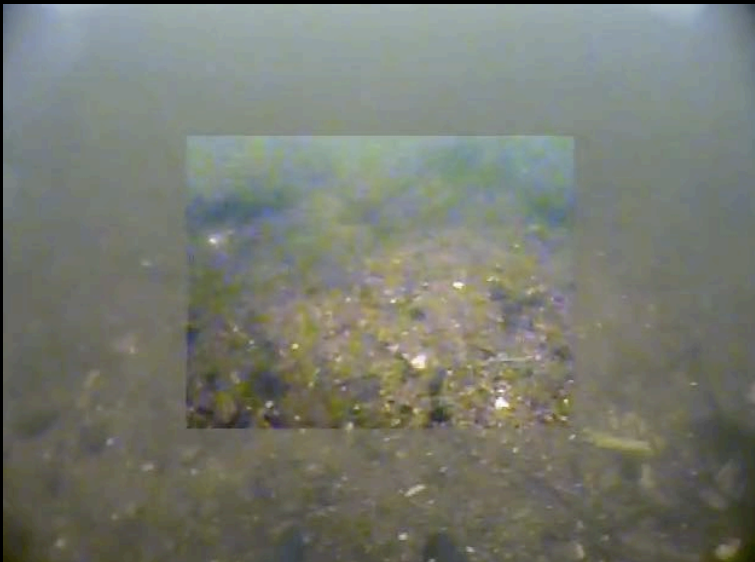
- Small pieces of plastic
- Bottles, cans & cups
- Hardware
- Sunglasses, knives
- Shoes, clothing
- Bilge pumps, gas tank caps + misc. equipment

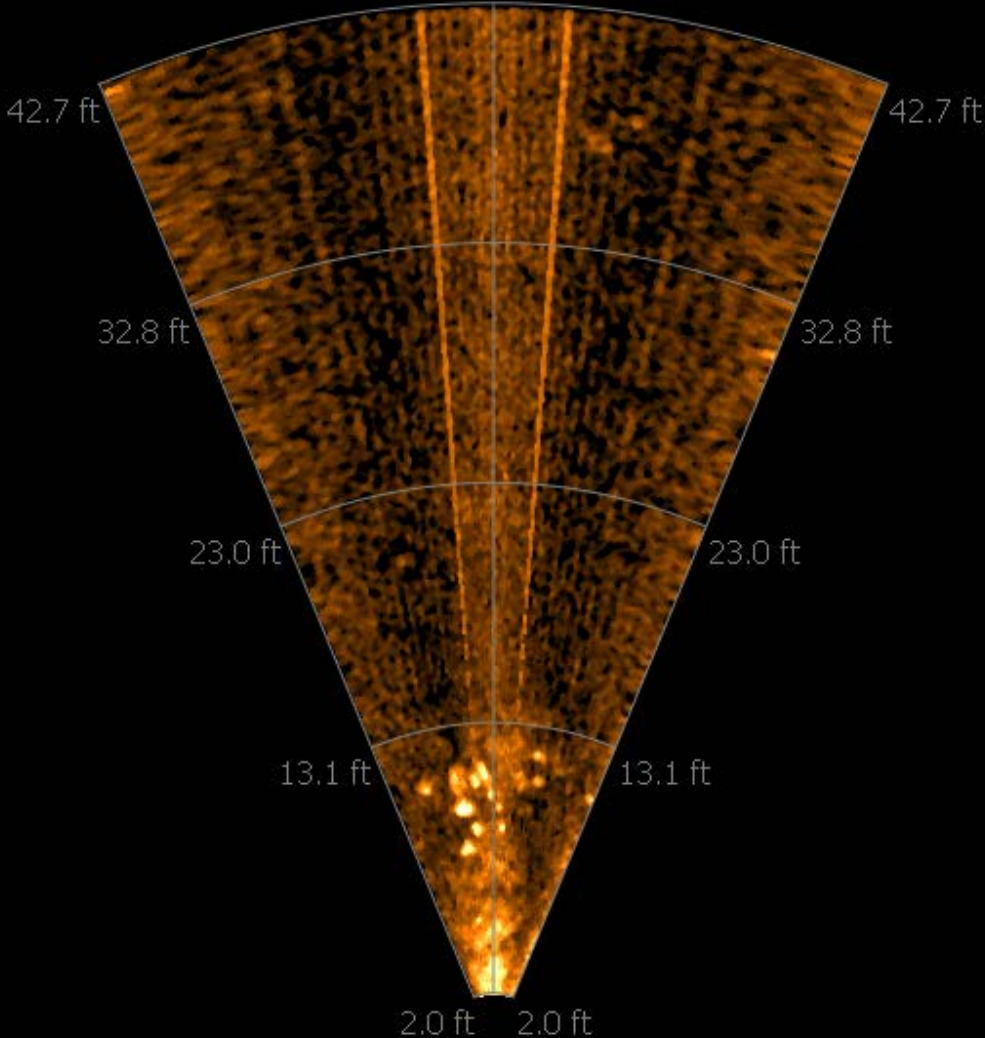


Equipment:

- VideoRay
- Llyn
- Lights
- Blueview sonar
- Manipulator
- Net







Ping 31
Elapsed: 4.45



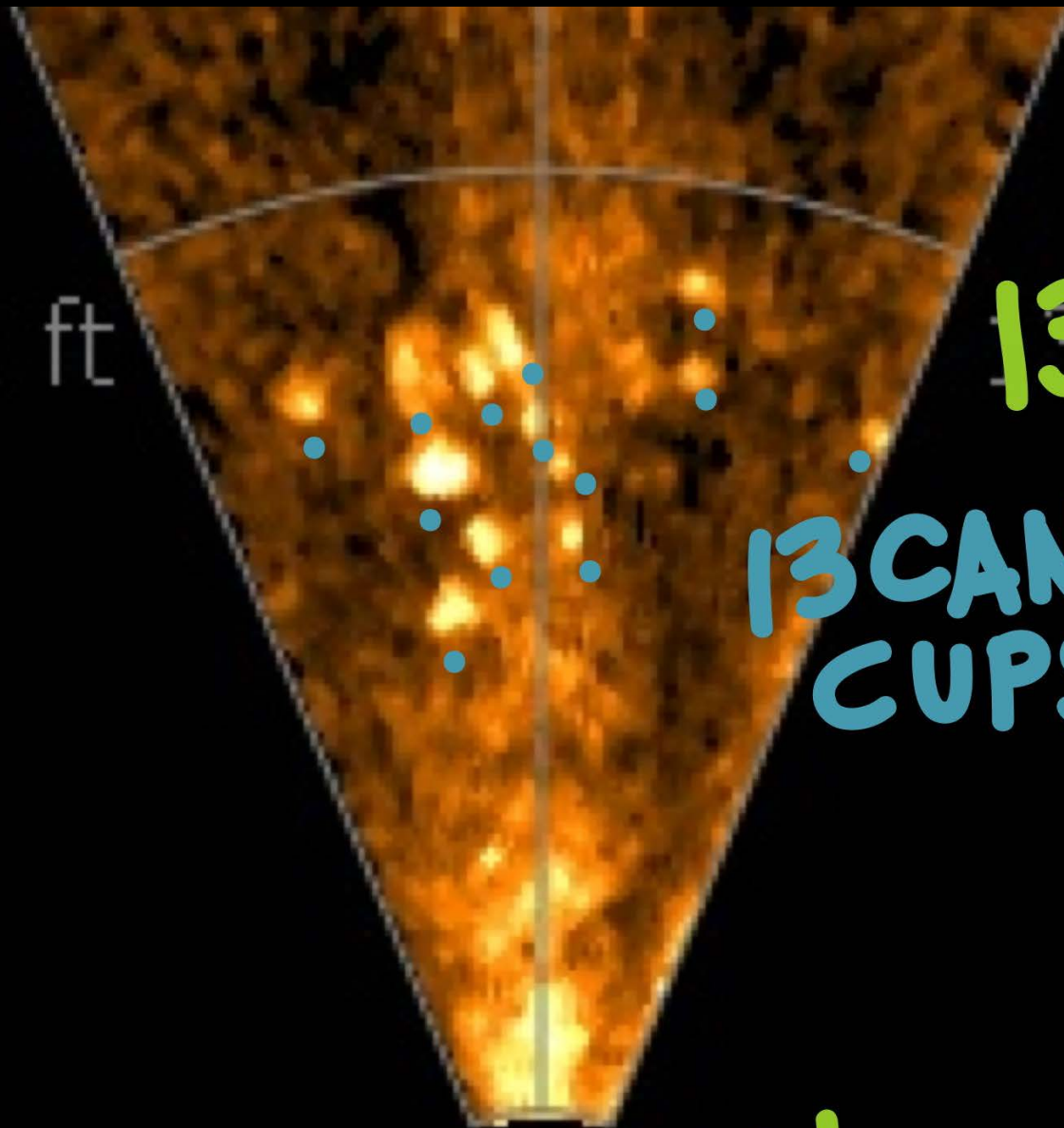
1 ft

13.1'

13 CANS/
CUPS

2.0 ft

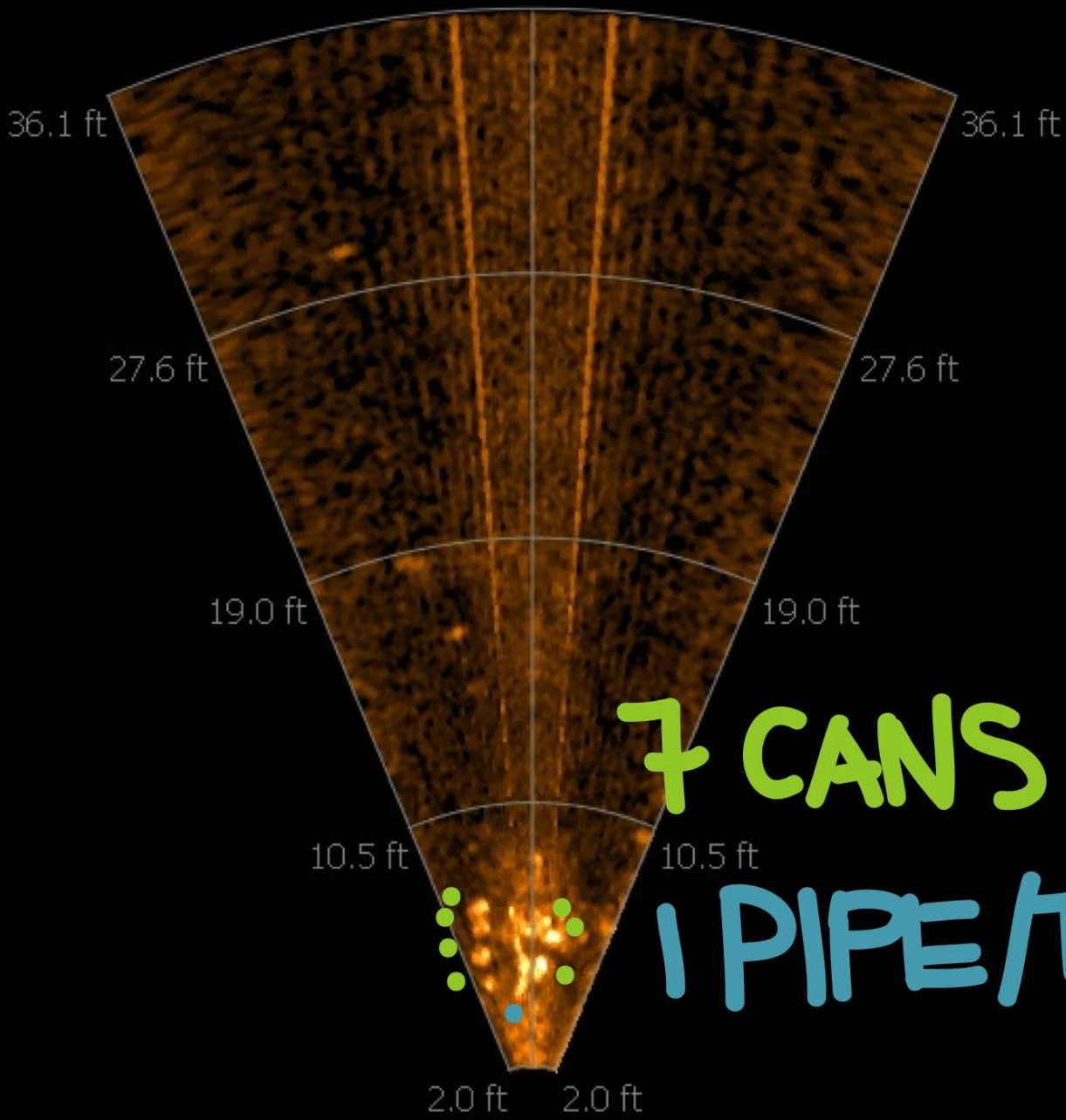
2.0'



20-JUL-11
14:23:18

D:038.0F
H:037



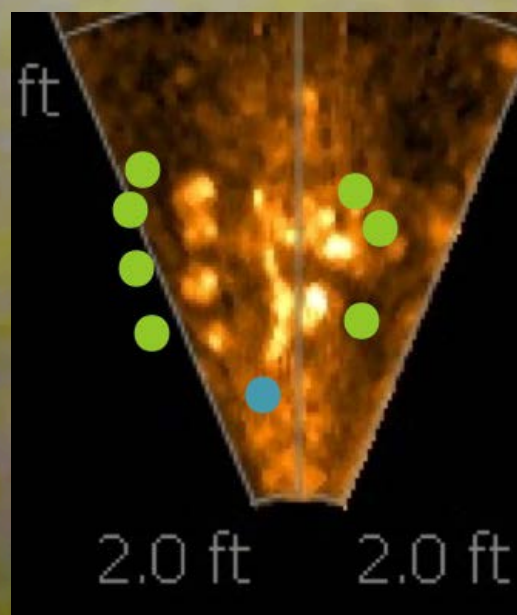


7 CANS

1 PIPE/TUBE

20-JUL-11
11:36:18

D:033.2F
H:151



01-JUL-11
14:10:27

0:000.0F
H:270



Medium - Large Marine Debris

- Derelict lobster traps
- Bait buckets
- Tires
- Mooring blocks, anchors, misc. large and heavy items



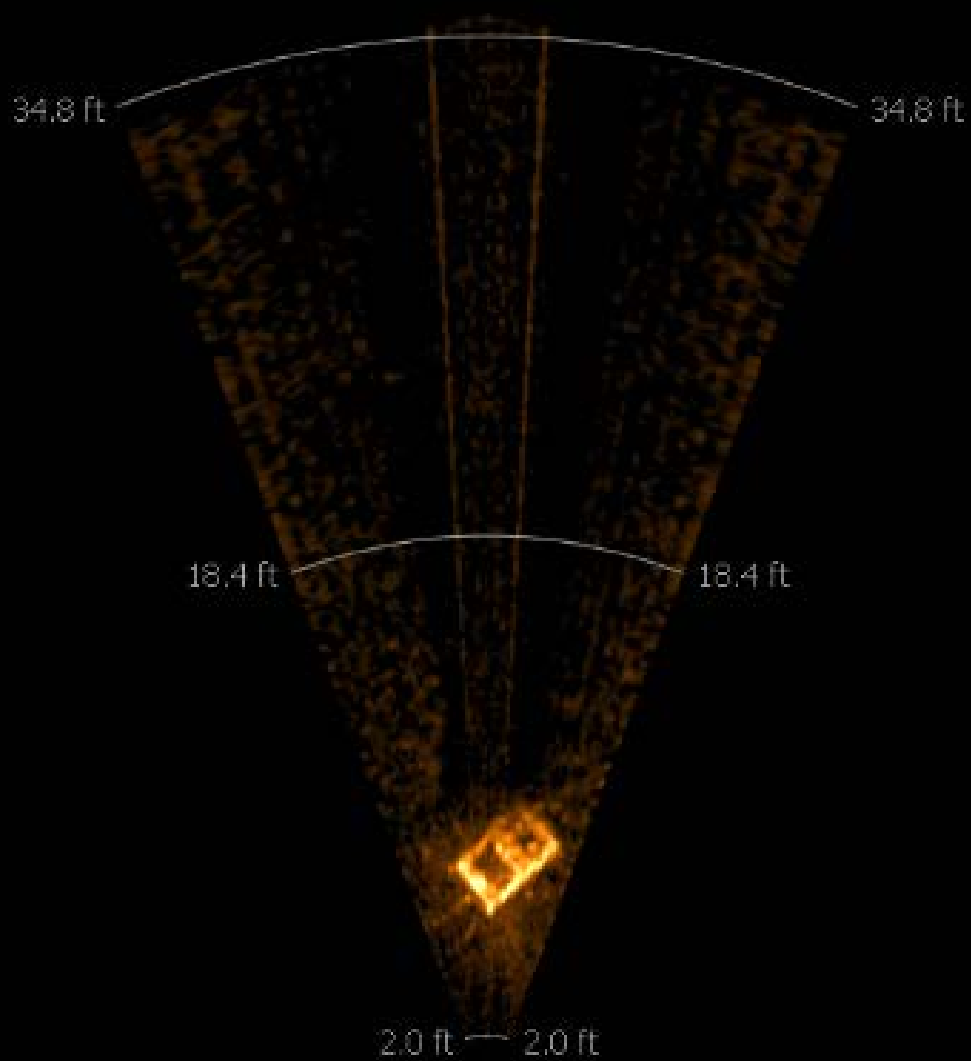
Equipment:

- VideoRay
- Lynn
- Blueview sonar
- Smart Tether
- Starfish sonar
- Hook/line



Ping 917

Review
P900E



Elapsed: 3:09.25

BlueView[®]
TECHNOLOGIES



← 27.6 feet

← 19.0 feet

← 10.5 feet

Using the Blueview to fly to a DFG target (sonar view).



Using the Blueview to fly to a DFG target (camera view)



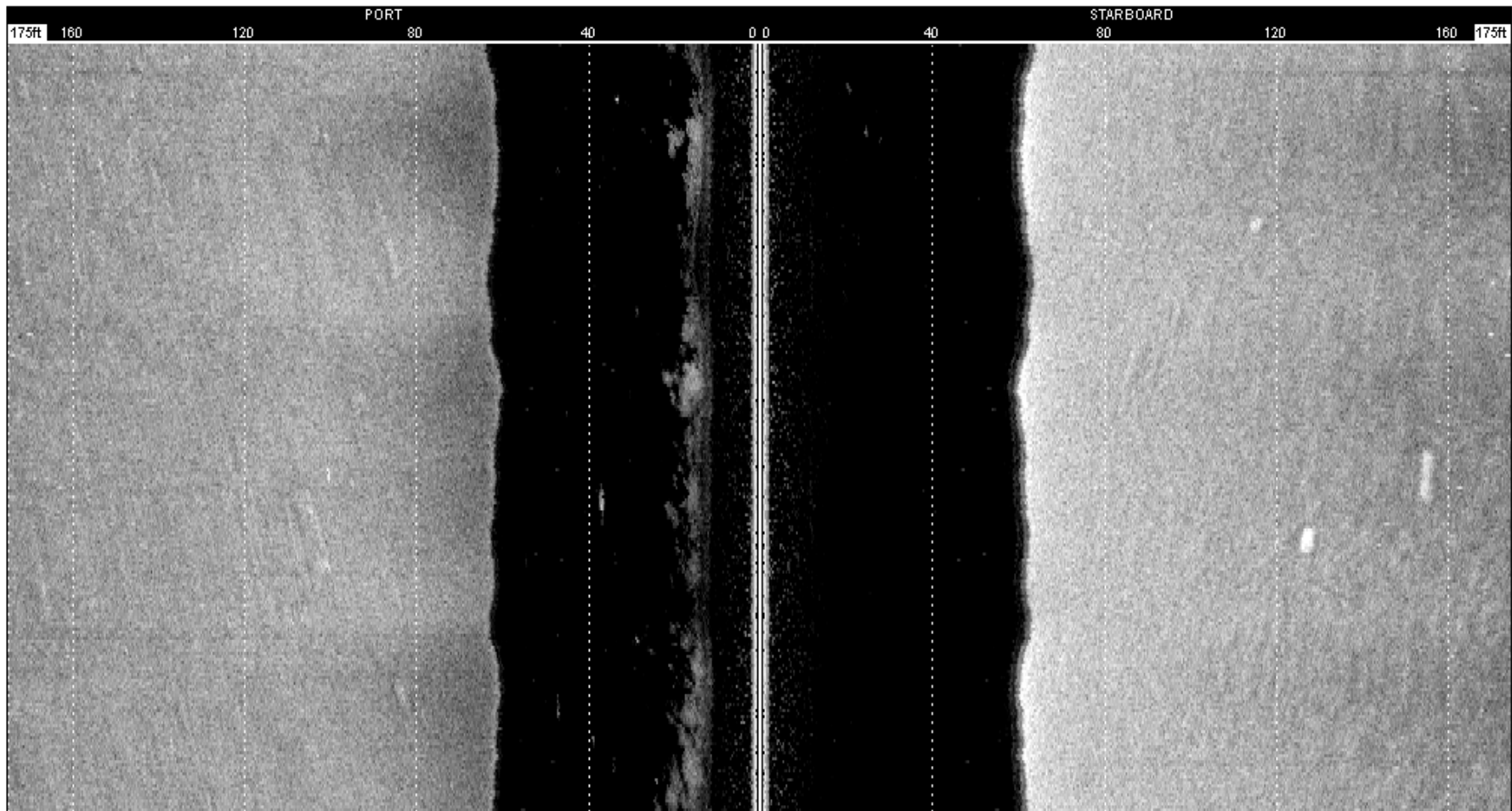


Survey (for derelict fishing gear)

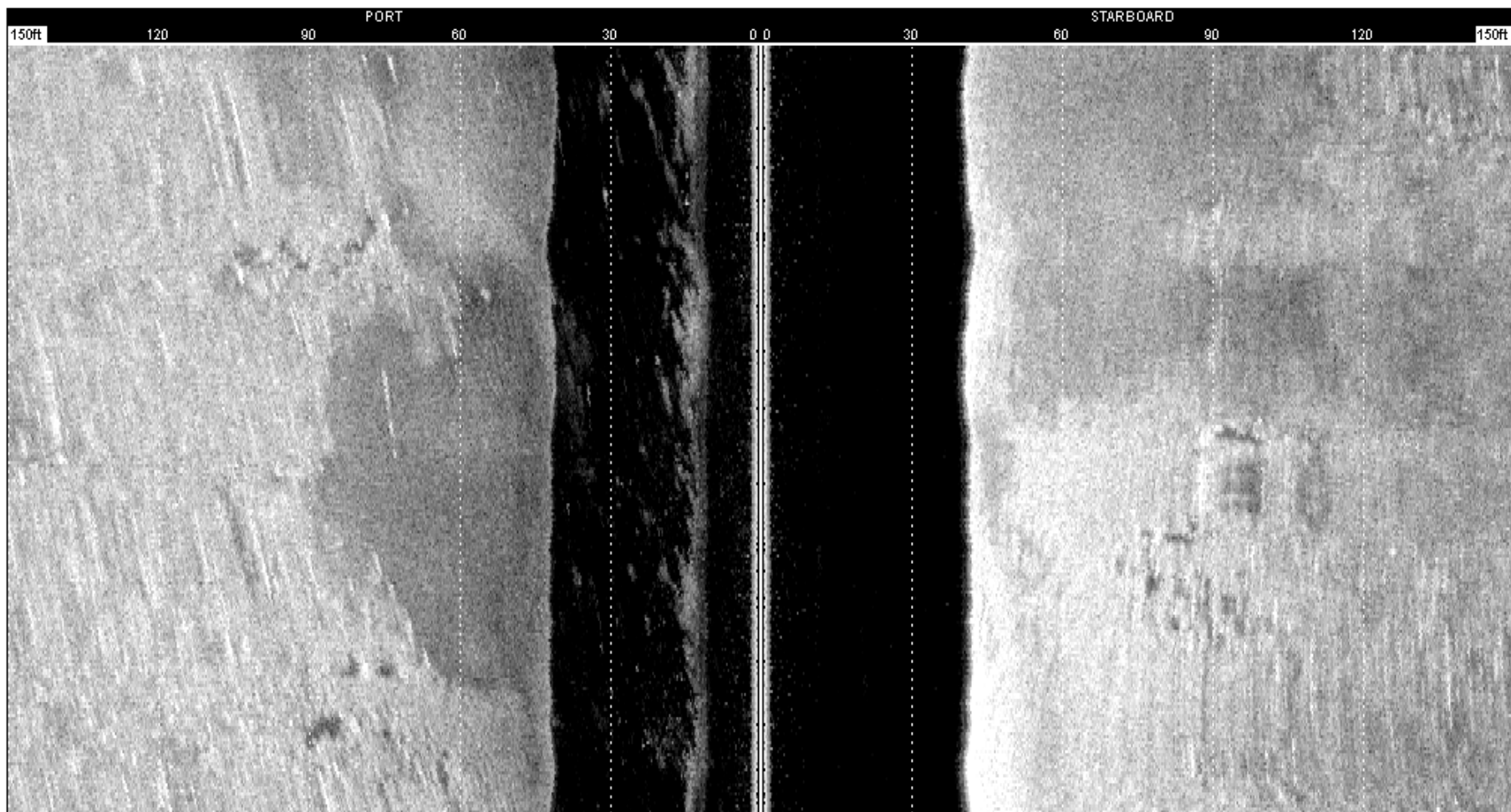
- Starfish side scan sonar
- iPad/Navionics App
- ROV
- Blueview



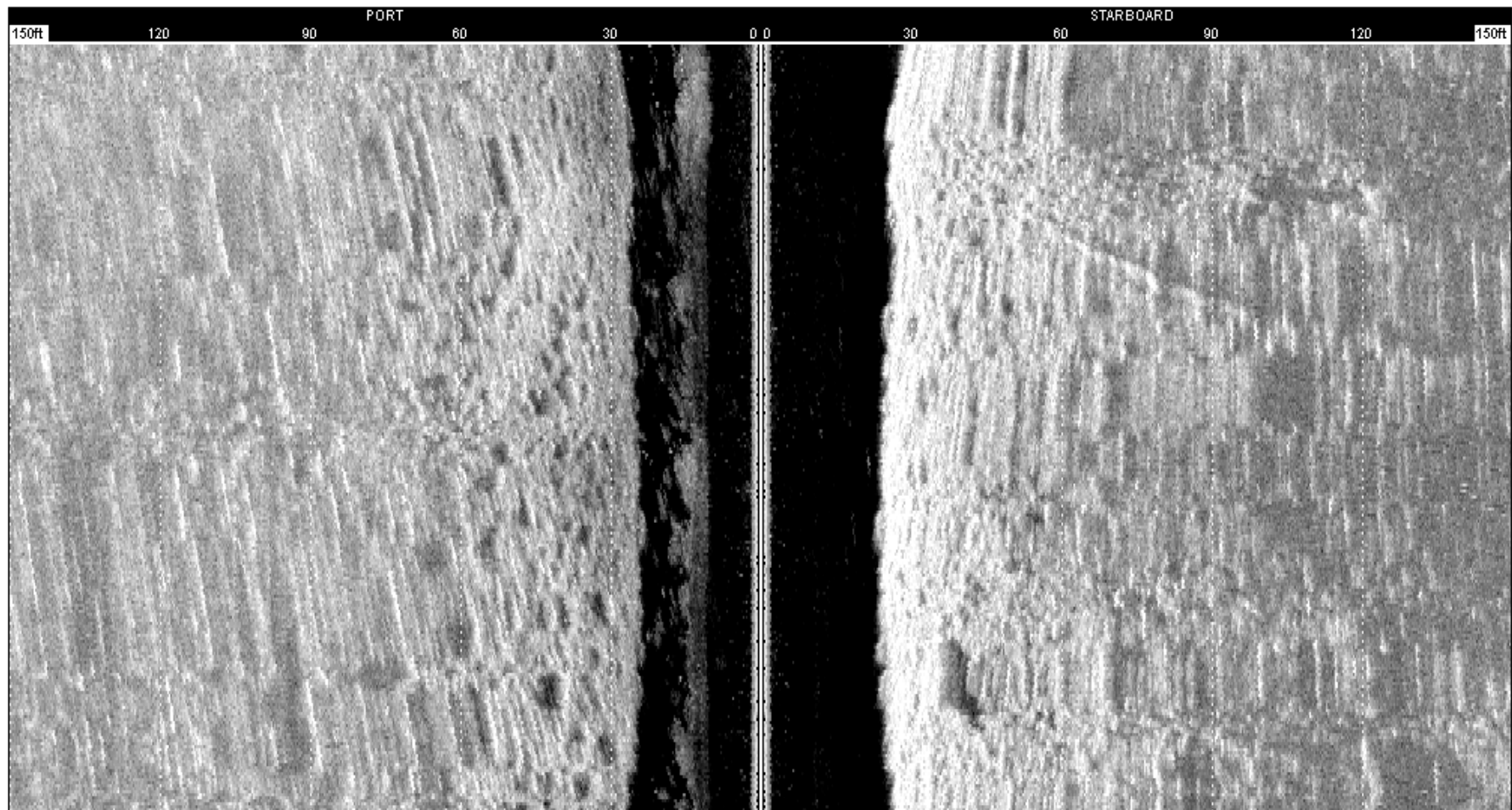
Sidescan Plotter

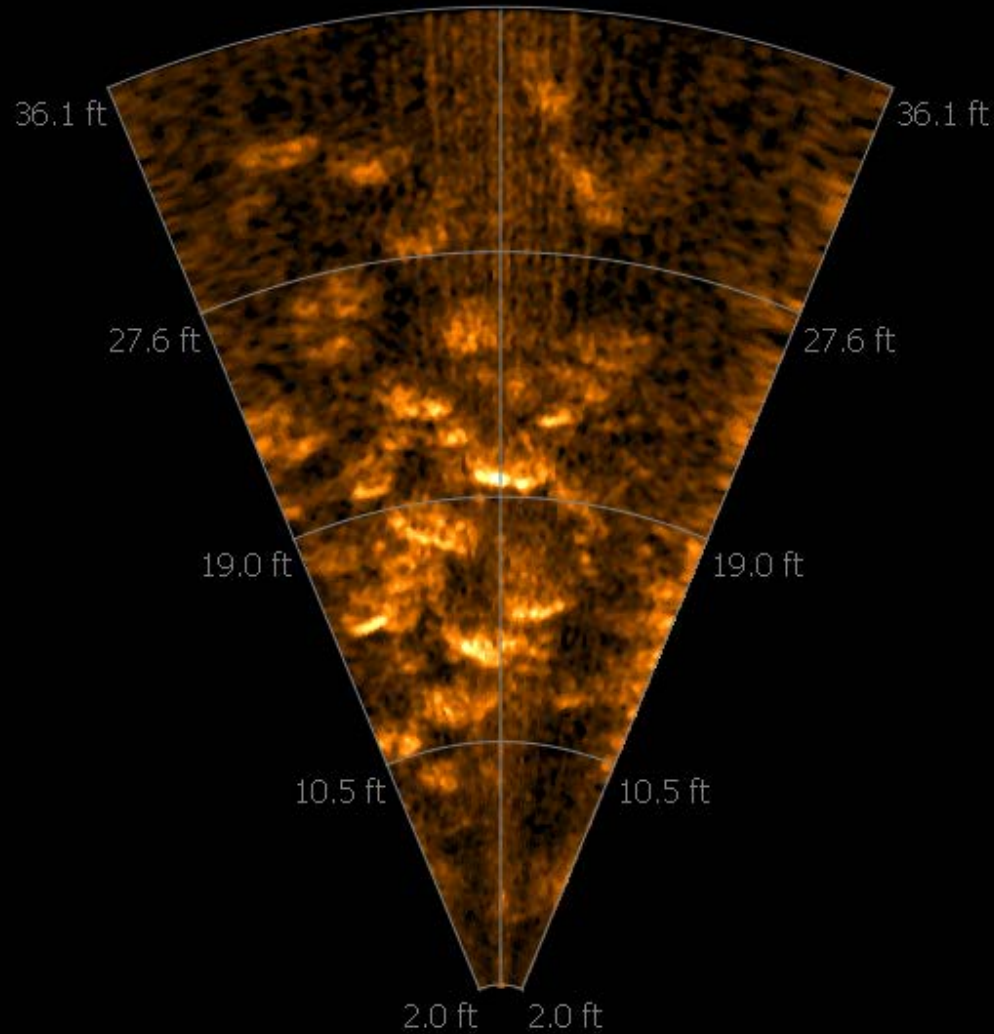


Sidescan Plotter



Sidescan Plotter





Ping 1090
Elapsed: 2:36.91

08-AUG-11
14:11:17

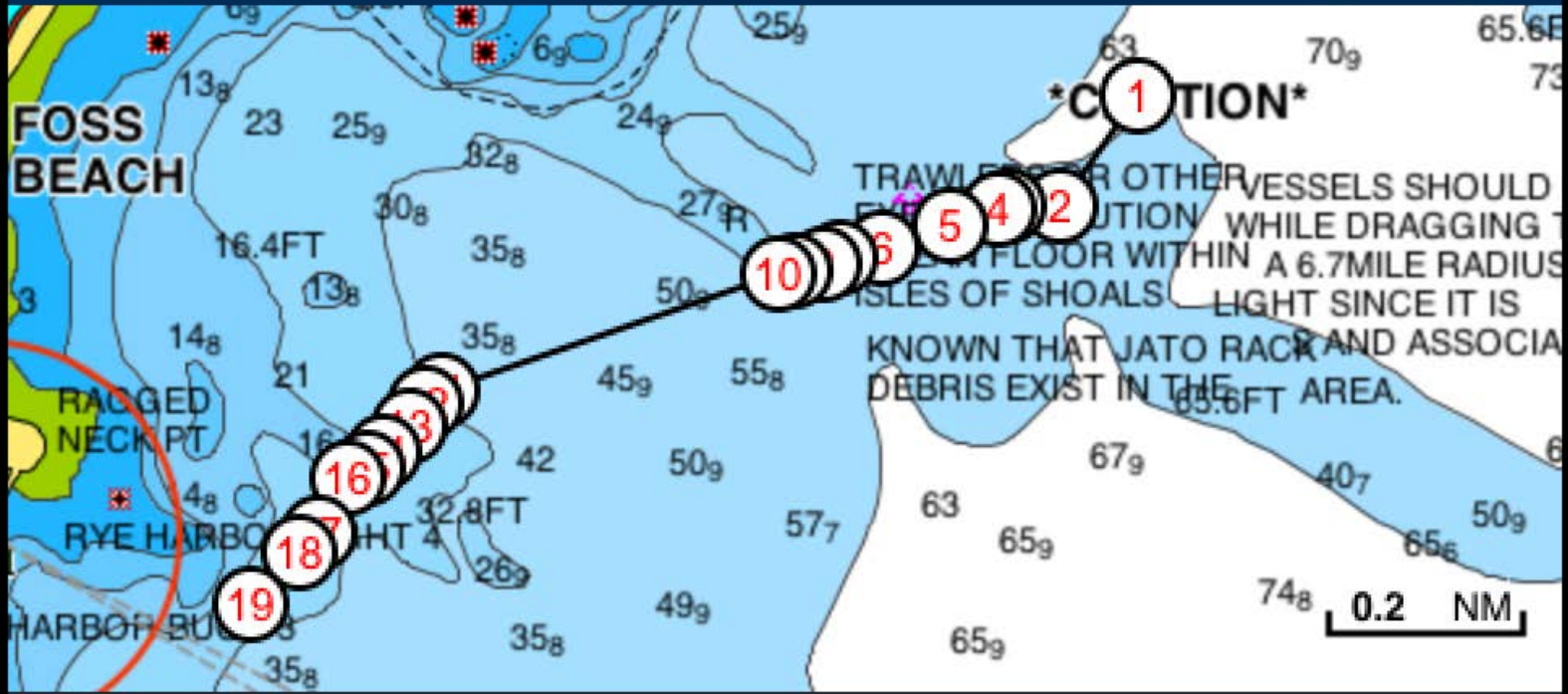
D: 036.8F
H: 298



Sidescan Plotter







GPS

Search

Track

Distance

WP

Menu





- WP 1
- WP 4
- WP 5
- WP 6
- WP 7
- WP 9
- WP 10
- WP 12
- WP 13
- WP 14
- WP 15
- WP 16
- WP 17
- WP 18
- WP 19

902 m

Data SIO, NOAA, U.S. Navy, NGA, GEBCO

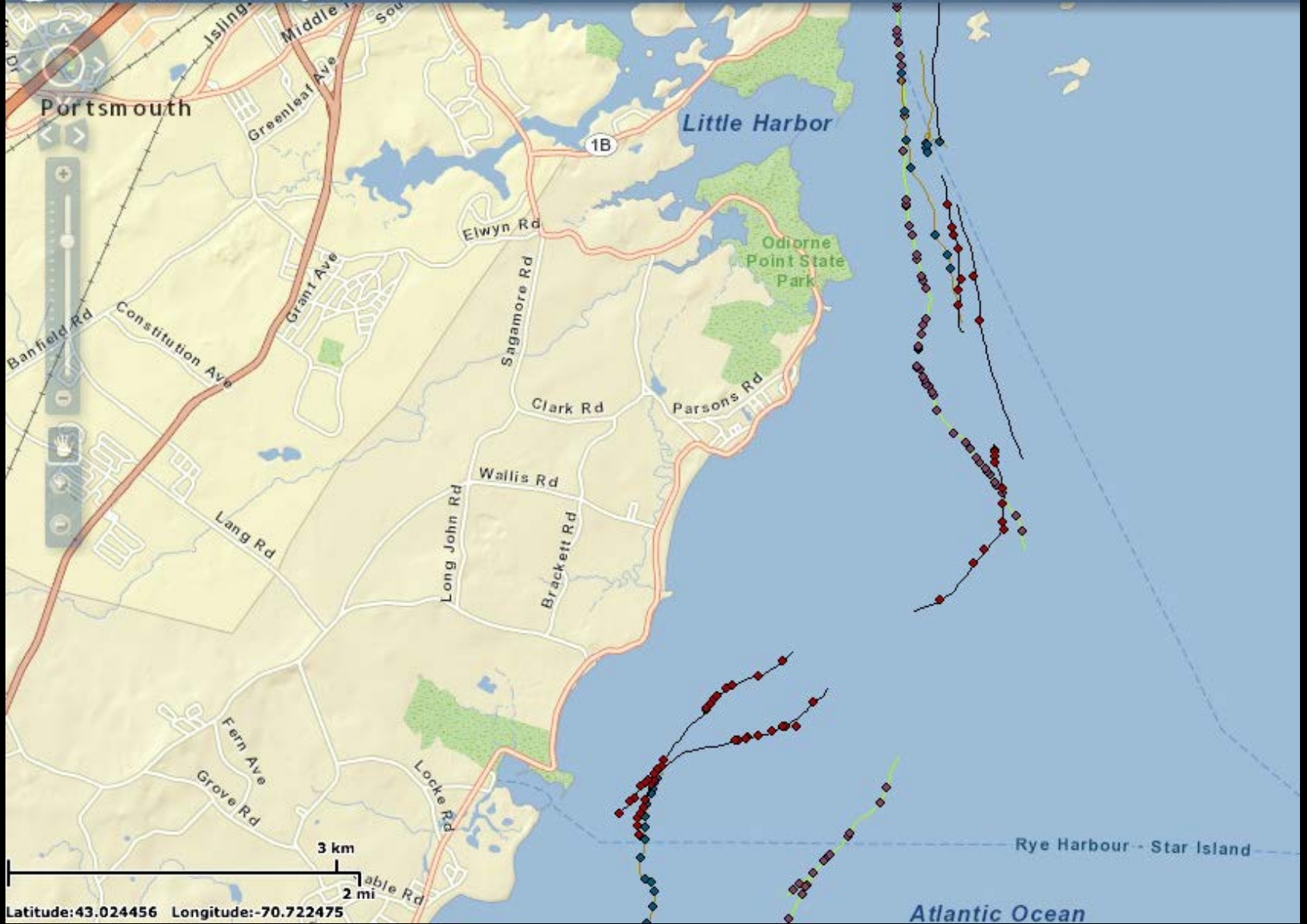
Image © 2011 GeoEye

©2009 Google



Marine Debris to Energy

Sonar Transects - Aug. 2011

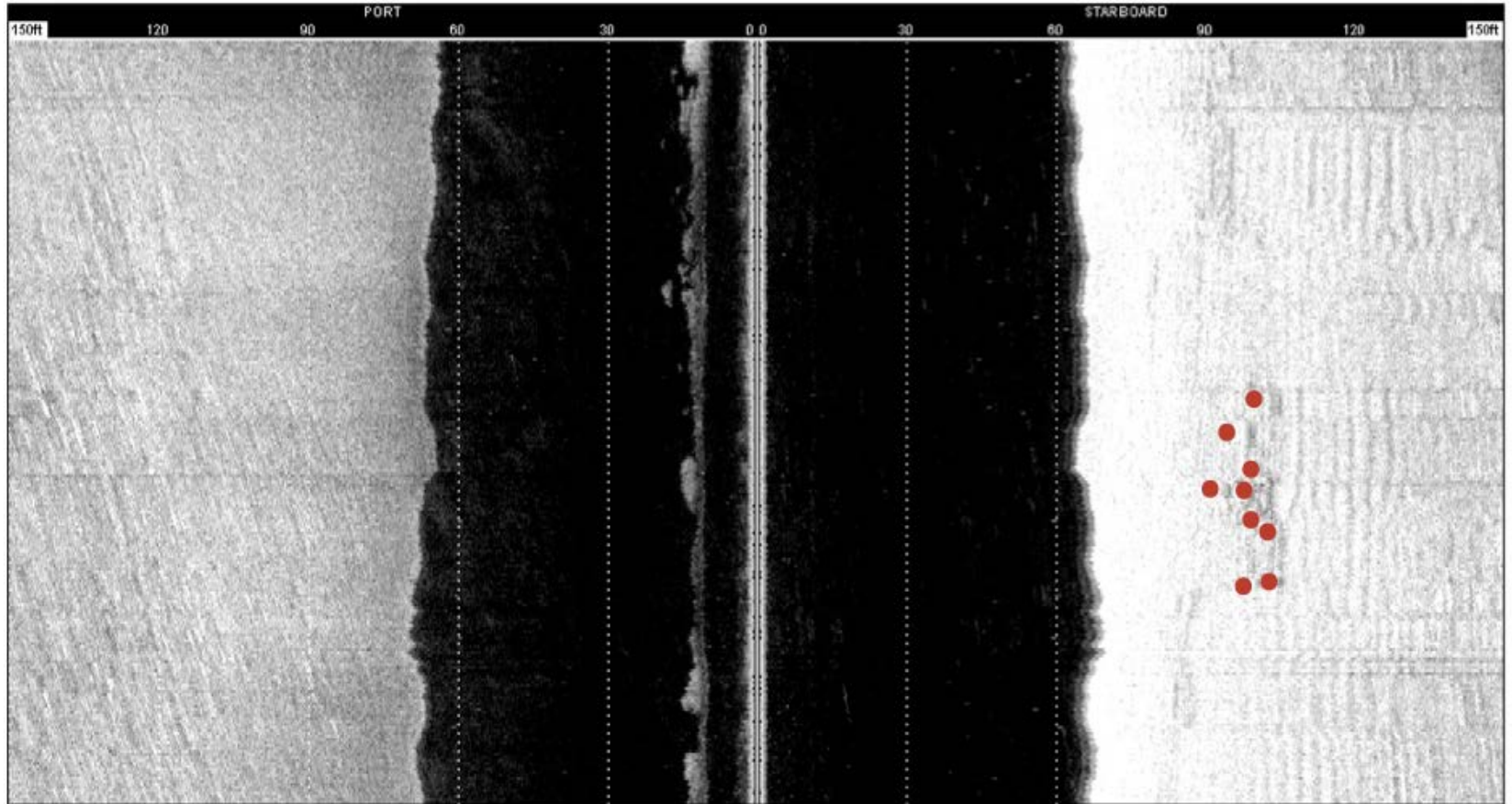


Latitude: 43.024456 Longitude: -70.722475

Atlantic Ocean

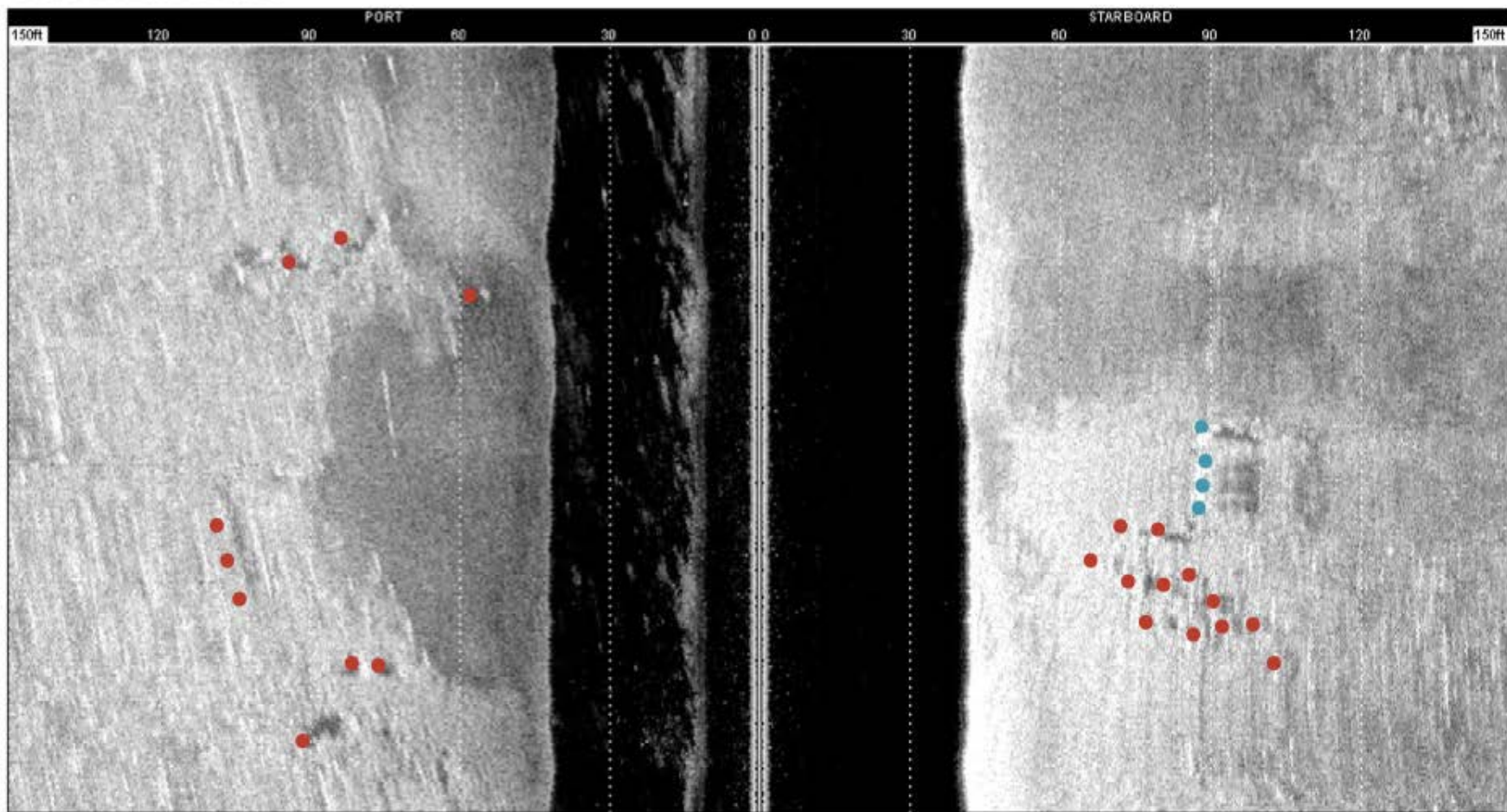
TRACK 02 WP5

Sidescan Plotter

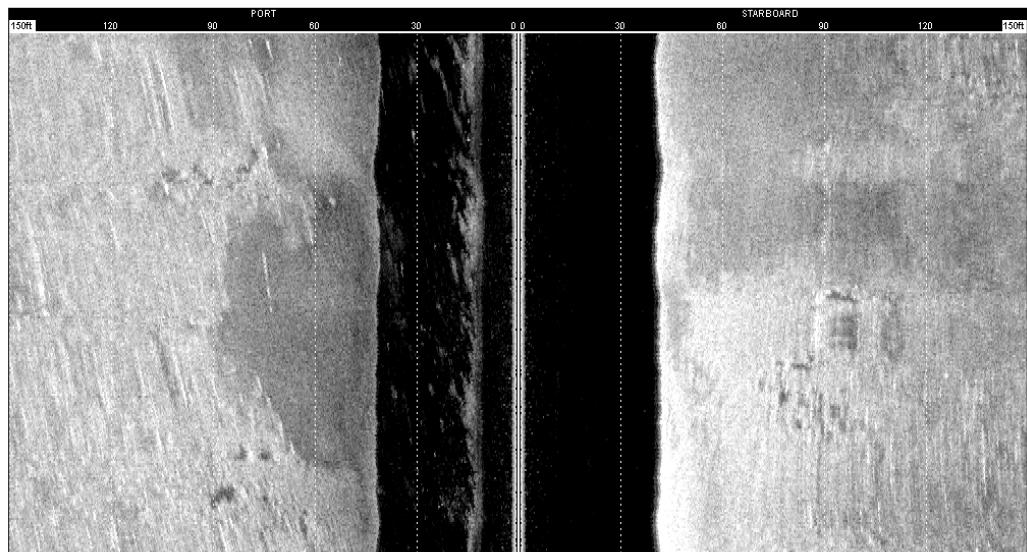


TRACK 04 WP2

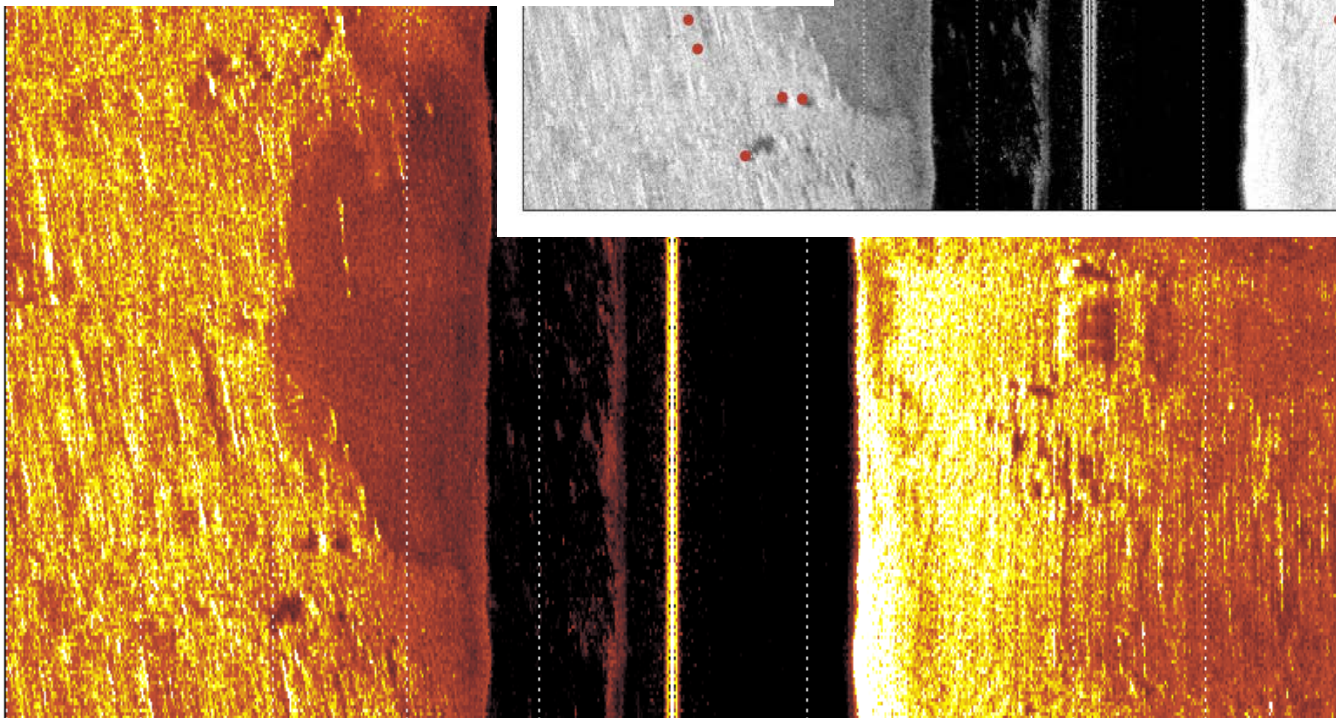
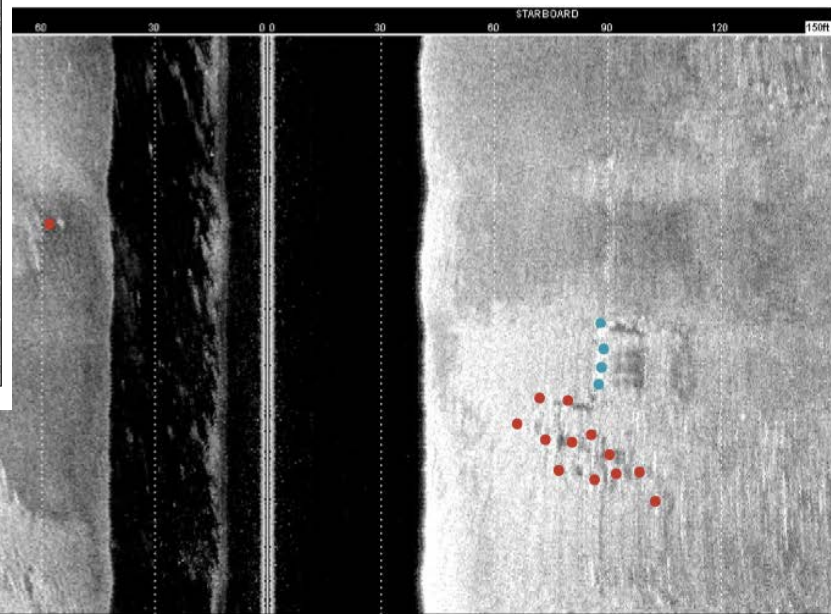
Sidescan Plotter



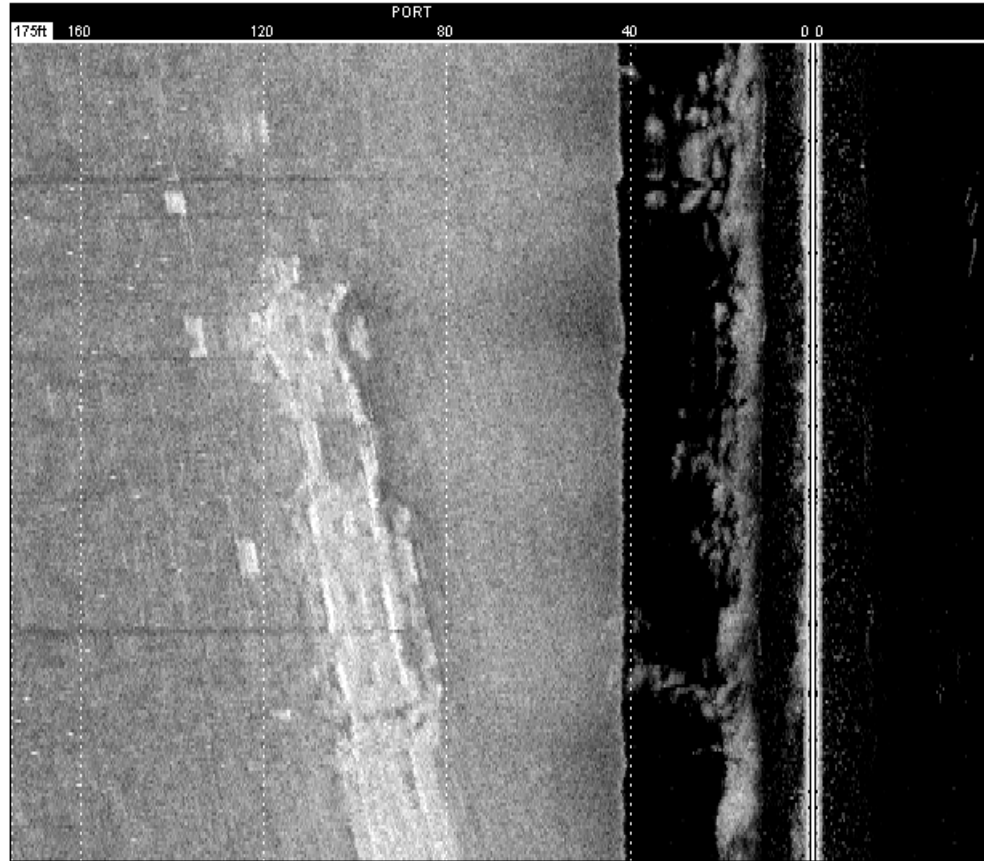
Sidescan Plotter



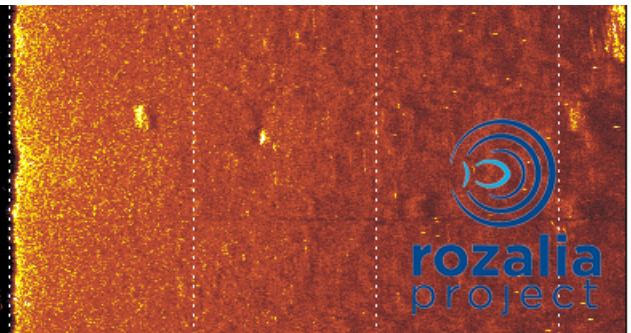
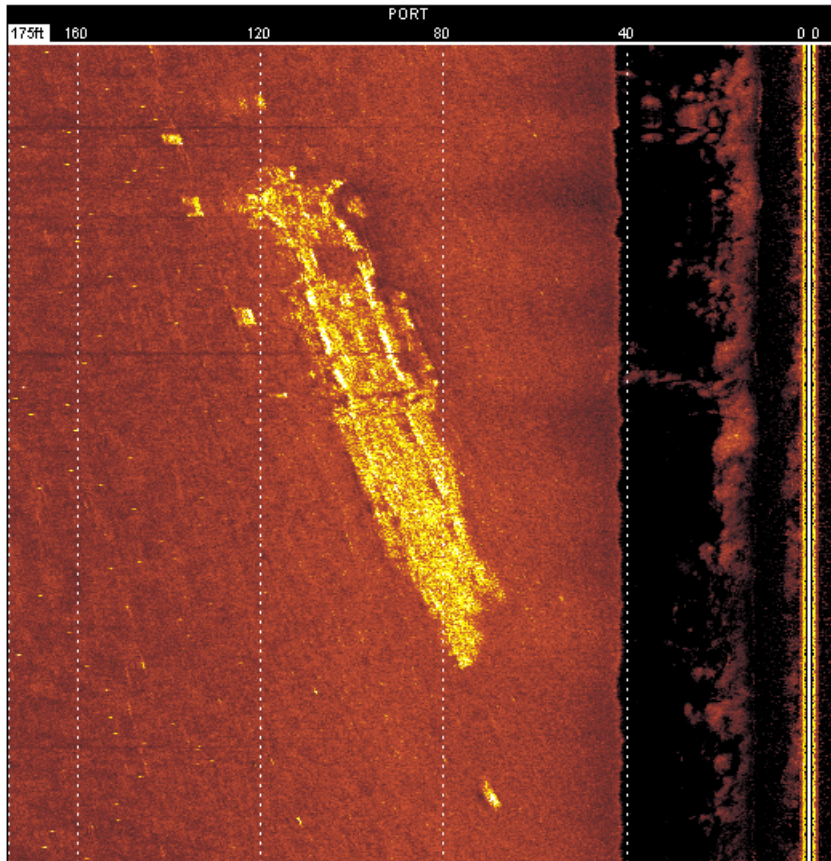
K 04 WP2



Sidescan Plotter



Sidescan Plotter













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