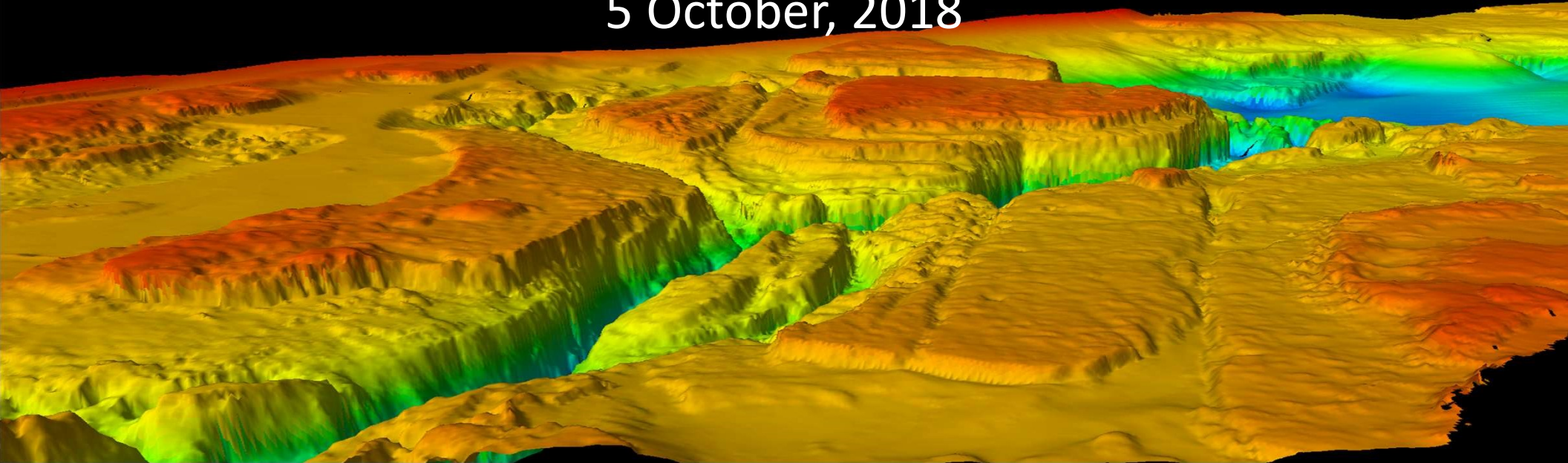


# Memorial University – Marine Institute & Public Works, Government Services Canada

Trial of NORBIT iWBMSH-STX  
Holyrood, NL  
5 October, 2018



# Overview

09:56  
10:23  
10:51  
11:18  
11:45  
12:13  
12:40  
13:07  
13:35  
14:02  
14:30  
14:57  
15:24  
15:52

- 09:55 Depart Delta Hotel in St. John's
- 10:55 Commence setting up Portus Pole in Holyrood
- 11:20 Portus Pole build complete
- 12:00 Drill holes for mounting plate complete
- 12:29 Depart dock for survey area
- 13:15 Complete setting up Hypack, INS offsets, heading alignment calibration (GAMS)
- 14:25 Complete patch test, sound speed profiles and shoreline survey area of 1km x 330m
- 14:34 Return to dock
- 15:20 Depart Holyrood
- 15:50 Ship equipment out at FedEx in St. John's

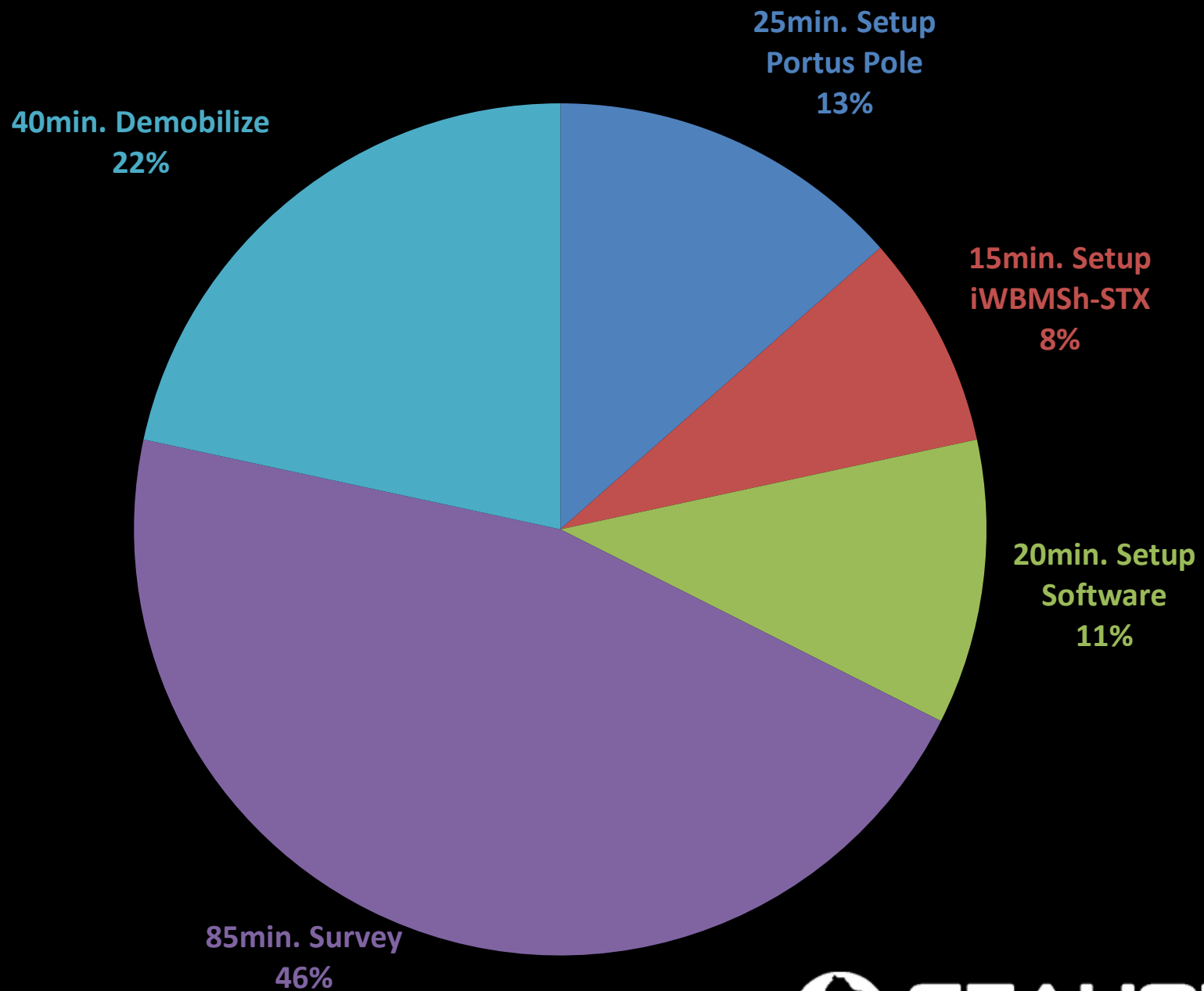


## Complete Survey Kit:

- Case 1: Norbit iWBMSH-STX
  - Sonar Rx, Tx, Probe
  - IMU
  - Mounting Bracket/Fairing
  - Sound Profiler (optional)
  - LiDAR (optional)
- Case 2: Portus Pole
- Backpack: Laptop & lunch



# 185 MINUTE SURVEY: VESSEL OF OPPORTUNITY



**SEAHORSE**  
GEOMATICS

Portus Pole

40lbs (15kgs)

Rugged

Fixed Offsets

Rapid Installation

Repeatable Alignment

Airline Luggage Approved (snow skis)

Single Portus Case (20lbs → 7.5kgs)



Norbit iWBMSH-STX



**SEAHORSE**  
GEOMATICS



# NORBIT iWBMSH-STX

1.8° x 1.9° @200kHz  
 0.9° x 0.9° @400kHz  
 0.65° x 0.65° @550kHz  
 0.51° x 0.51° @700kHz

## Curved Array

- Minimal beam spreading
- Low impact due to incorrect sound speed
- Compact size
- Allows FM for highest resolution

## 80kHz FM Signal

- Highest SNR for all beams
- For best data quality
- For widest possible swath
- No compromising range for resolution
- Noise resistant (other acoustics)

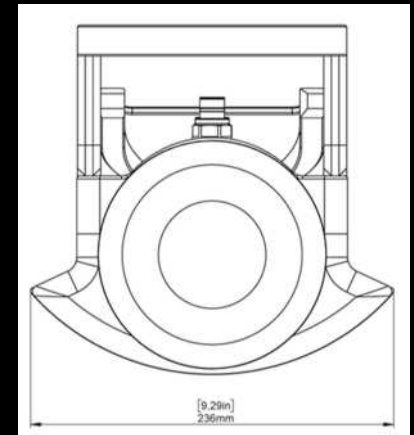
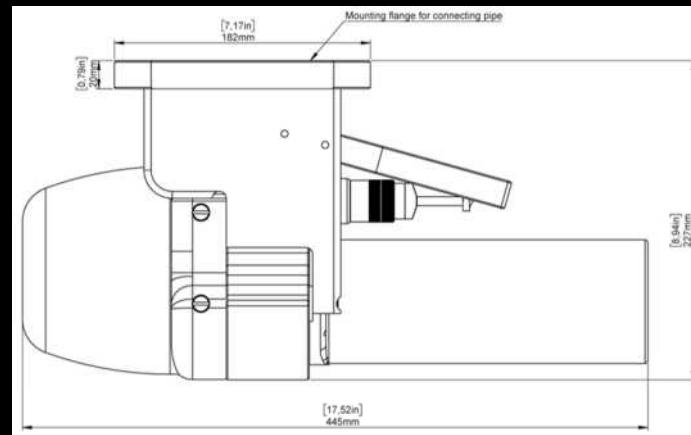
## STX – Steerable Transmitter

- Pitch stabilization
- 3D scanning for best incidence angle
- Forward looking route clearance
- Water column inspection at discrete angles

## Integrated GNSS/INS

- Applanix OceanMaster (AP30)
- No cabling / integration
- Integrated GUI with setup wizard & monitor
- May be decoupled for discrete operation

Weight: 30lbs → 11kgs (complete wet end incl. bracket)

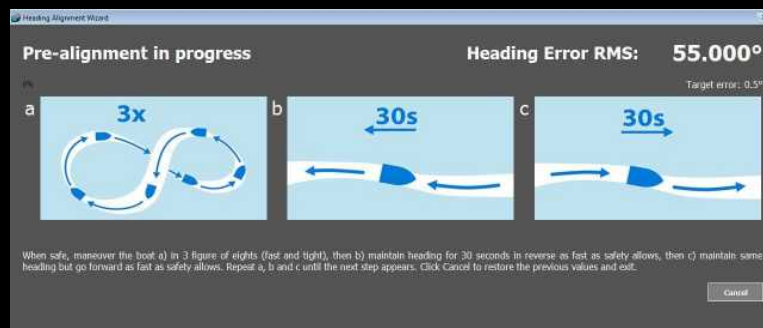


# Straightforward Setup

Offsets from Portus Pole Manual (save to reloadable config file)

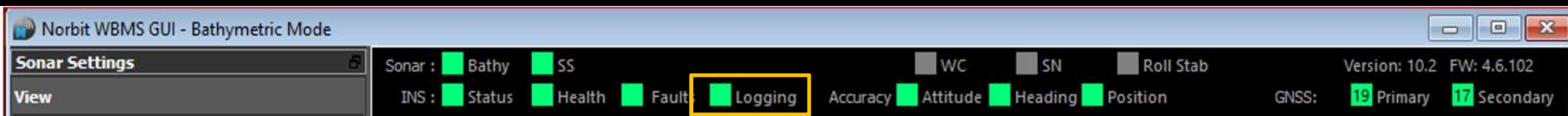
Lever Arms Using Standard 1.881m Sonar Pole	+Fwd	+Stbd	+Dwn 1.5m Ant. Mast	+Dwn 0.5m Ant. Mast
Bttm Center Sonar Flange to Bttm Aft Ant.	-0.955	0.000	-3.336	-2.334
Bttm Center Sonar Flange to Bttm Fwd Ant.	1.043	0.000	-3.336	-2.334
For Applanix integrated NORBIT Systems: Above coordinates are Top Center Bracket to Bottom Antenna Mount. WBNMS GUI (10.3 +) will add remaining offsets. You choose which is primary (Ant 1)				

Complete Heading Alignment (GAMS) calibration by following on-screen directions



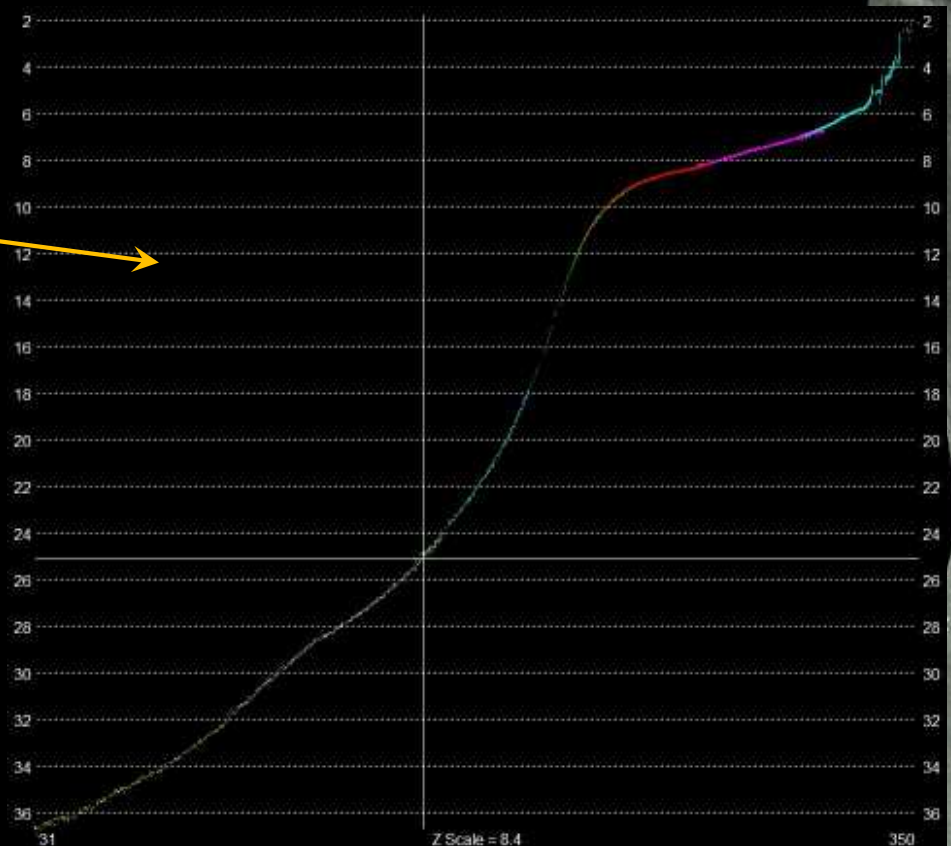
Enter offsets into Hypack/Hysweep (from COR at Waterlevel at ~zero roll) to sonar reference for Norbit and Applanix device.

Survey! Monitor quality from a single interface. All GNSS/INS data quality and solution/sensor status is shown. Rest assured, Applanix POS Pac data is logged automatically for Heave/PPP/PPK



Survey Matrix = Average

Color By  
Depth



Average Survey Speed: 6knots

Swath: 140° typical

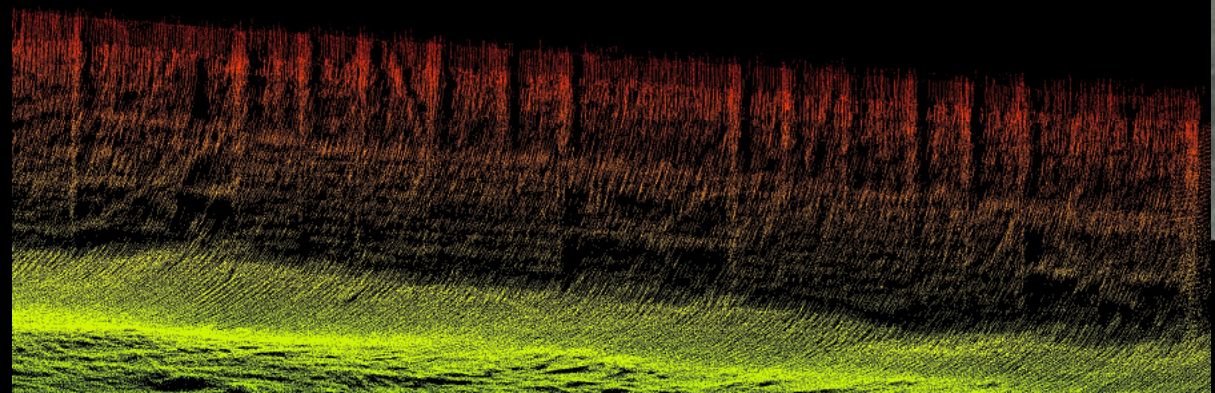
0.9° x 0.9° @400kHz

Min Ping Rate: 5.8Hz

Zero subjective bathy sonar tuning

Fast pier structure mapping.

15 - 25min data processing



0 Z Scale = 1.0 400

View Angle  
0.0

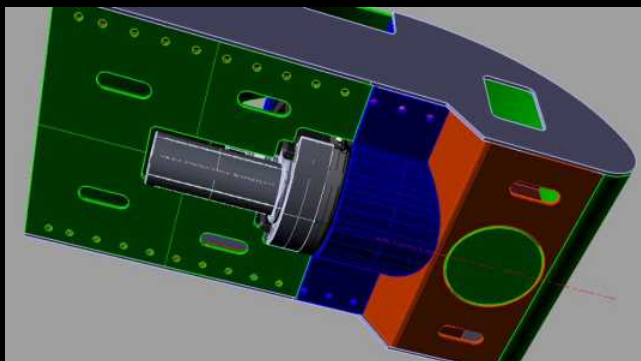


**SEAHORSE**  
GEOMATICS



# Hull Mounting Examples

US Corps of Engineers (4 vessels with permanent hull mounts)





## Recommended NORBIT Options

For 0.3m to 175m (max 330m) or indicate Long Range for 0.3m to 600m

iWBMS-Narrow

iWBMSH-Narrow

iWBMS-STX

iWBMSH-STX

{ Include WBMS 200-700kHz, Snippets, Watercolumn, Sidescan, Applanix, Sound Probe, Bracket and Fairing }

Portus Pole Kit

Dual head bracket

Hull mount /tailored mount design



NORBIT Profiler 100m or 500m (by AML)

LiDAR

On-site basic/advanced training (utilizing Hypack/Hysweep and/or QINSy/Qimera)