

Company: L-DEO - Lamont - Doherty Earth Observatory
Vessel: Marcus G. Langseth
Client: Arnulf / NSF

Project: MGL1905

Area: Axial Seamount 3D
Start Date: 11-Jul-19

Vessel Sensor Offsets

Towing Offsets

Towing Configuration

Acoustic Overhead

Gun Array Offsets

Streamer Front End

Streamer Tail End

Streamer Complete

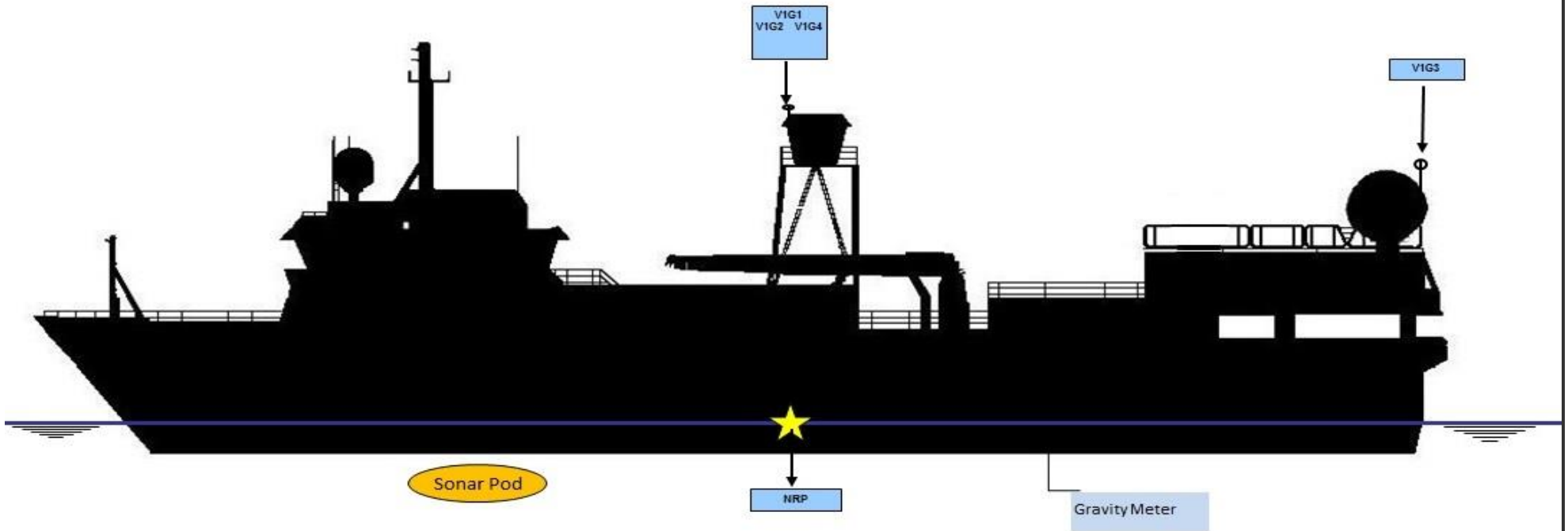
Hydrophone Offsets

Tailbuoy Offsets

Timing



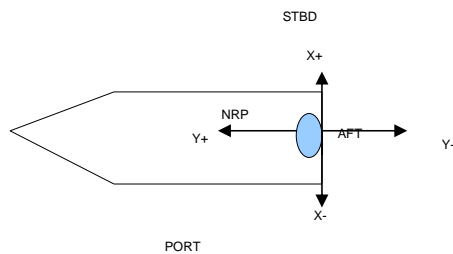
R/V Marcus G. Langseth - Vessel Sensor Offsets



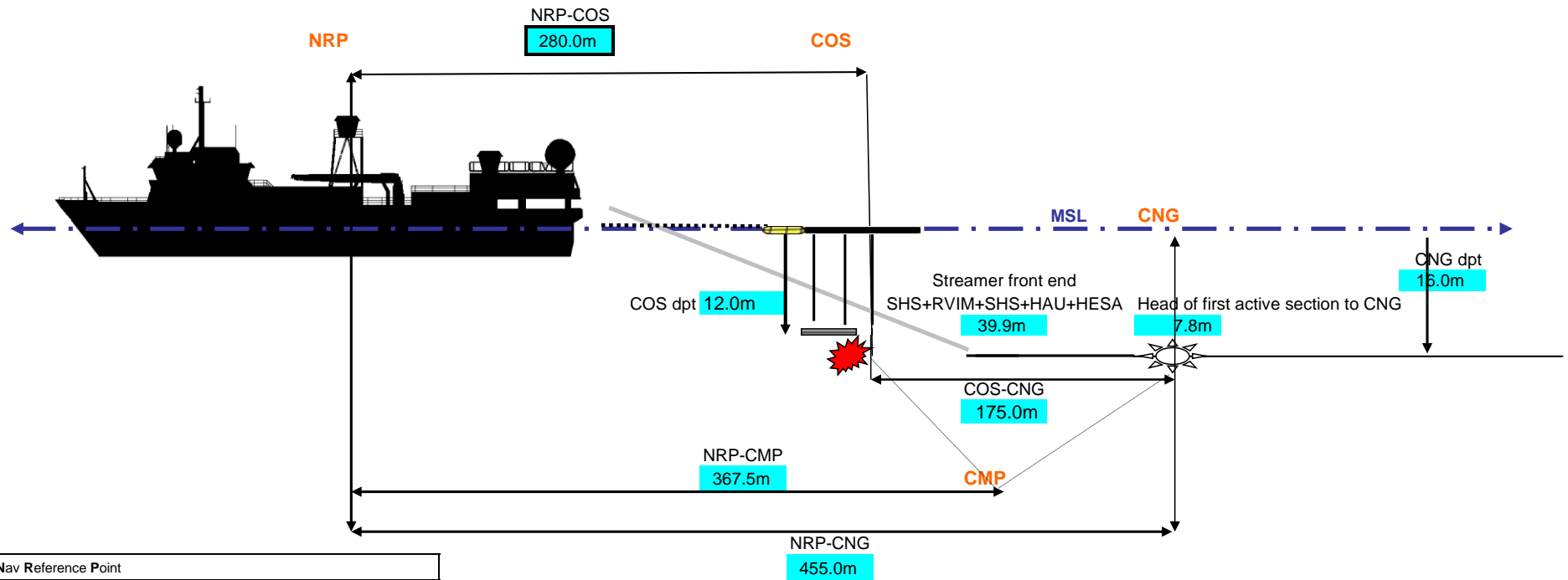
Negative values are above water line

All measurements in meters

		STBD/PORT (X)	FORE/AFT (Y)	UP/DOWN (Z)	
★	NRP	NAVIGATION REFERENCE POINT	0.00	0.00	0.00
	V1G1	C-Nav 3050	0.00	0.00	-16.90
	V1G2	SeaPath 200	0.00	1.50	-16.90
	V1G3	C-Nav 2000	-2.10	-29.20	-14.50
	V1G4	Pos MV	-1.30	1.20	-16.90
	V1R1	PosNet	-1.30	0.00	-16.90
	Sonar Pod	EM122 Knudsen ADCP	0.00	20.20	7.49
		EM122 Center Beam offset (in Spectra)	0.00	13.4	7.49
	MRU	Seapath MRU	2.30	14.16	-4.30
	BGM	Bell Gravity Meter	0.00	-13.10	1.10



R/V Marcus G. Langseth - Towing Offsets



NRP	Nav Reference Point
COS	Centre of Source
CNG	Centre of Near Group
CMP	Common Mid-Point
MSL	Mean Sea Level
NRP-Stern	29.5m
NRP-COS	280.0m

All measurements in meters

Cell contents referenced from Config_offsets tab

R/V Marcus G. Langseth - Towing Configuration

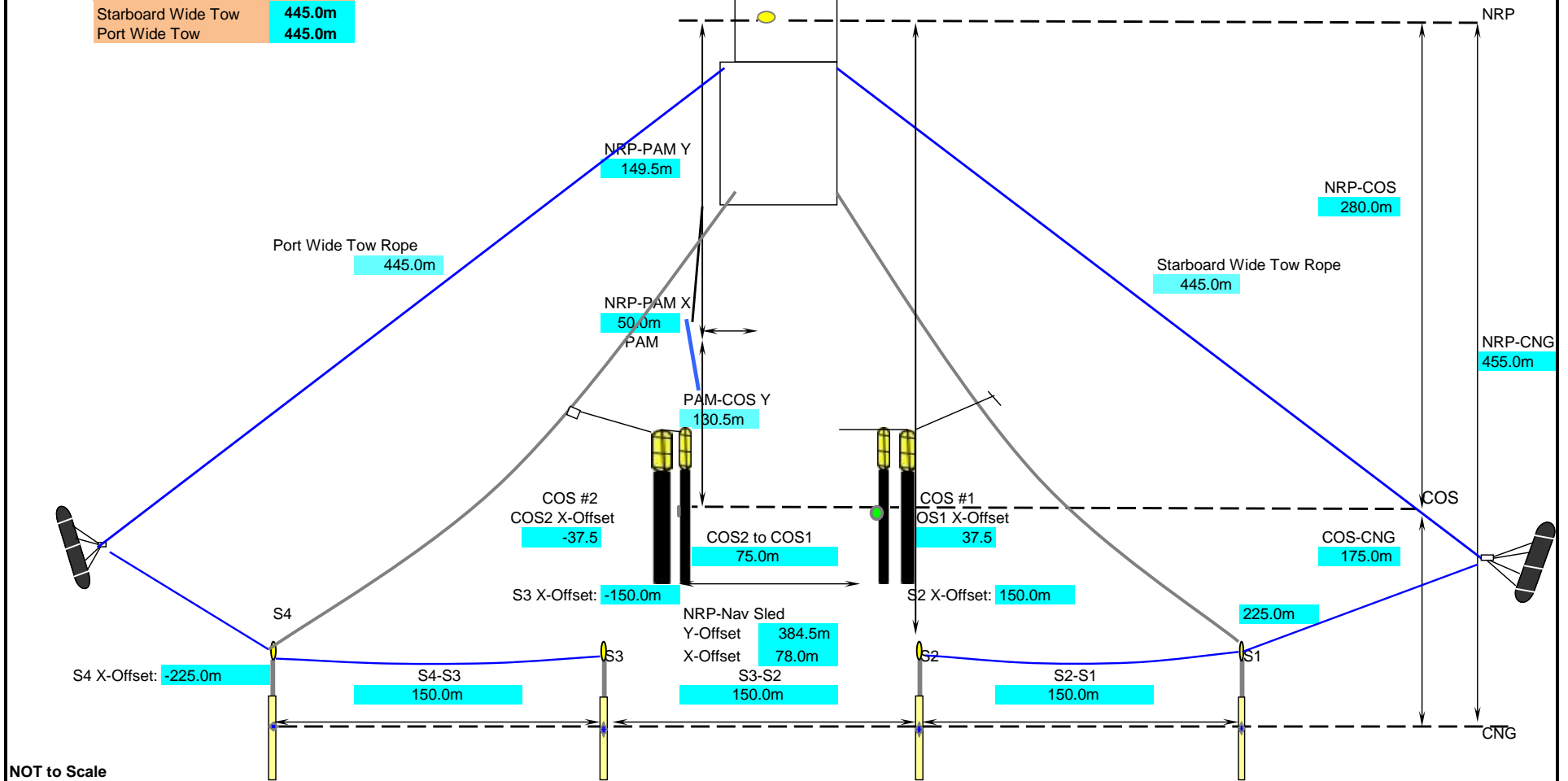
Streamer	Lead-in out	Length	Channels	Spacing
1	440.0m	5850.0m	468	12.5m
2	360.0m	5850.0m	468	12.5m
3	360.0m	5850.0m	468	12.5m
4	440.0m	5850.0m	468	12.5m

Gun Strings Used

Source 1	subarrays 1 and 2	Vol (in^3)	3300
Source 2	subarrays 3 and 4	Vol (in^3)	3300

Wide Tow Rope Deployed

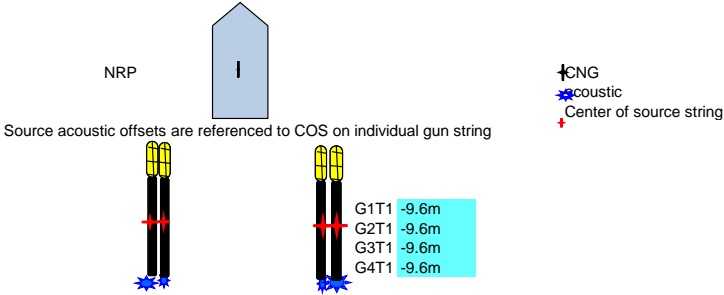
Starboard Wide Tow	445.0m
Port Wide Tow	445.0m



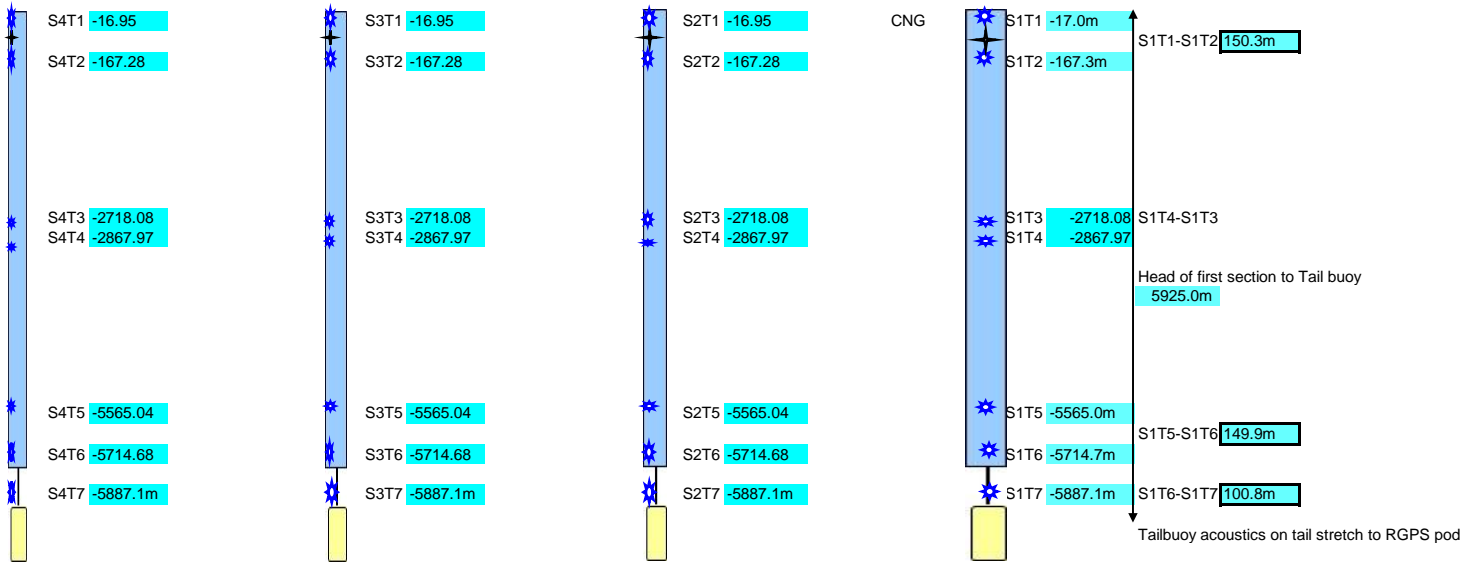
NOT to Scale

Cell contents referenced from Config_offsets tab

R/V Marcus G. Langseth - Acoustic Offsets

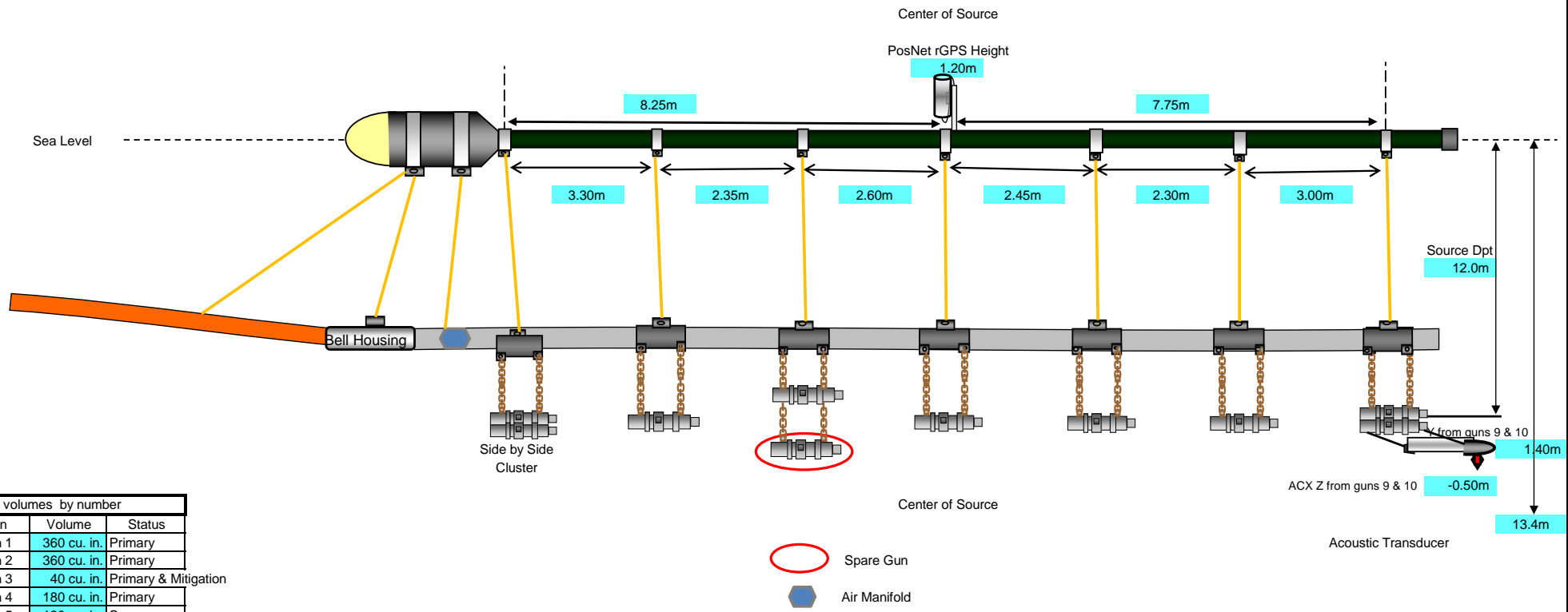


Streamer acoustic offsets are referenced to CNG on individual streamer



Cell contents referenced from Config_offsets tab

R/V Marcus G. Langseth - Gun Array Offsets



Array total volume (without spares) is 3300 cu. in. Total volume/string (without spare) 1650 cu. in.

Guns (1 & 2) & (9 & 10) in a horizontal cluster. Guns (5 & 6) in a vertical cluster but #6 is spare only

Gun clusters have 0.75m between guns and hang 0.95m from center of hanger

Horizontal Clusters are 1m from gun port to gun port

Single guns hang from hanger 1.15m

All gun volumes, numbering, locations, and offsets were inspected and verified by Chief Source Mechanic.

All measurements in meters
NOTE: drawing not to scale

Cell contents referenced from Config_offsets tab

R/V Marcus G. Langseth - Gun Configuration

DT = Depth Transducer

ACX = Acoustic

P = Pressure Sensor - located
in front of gun's 1 & 2

Center of Source



Gun Clusters

Guns 1 & 2 horizontal array

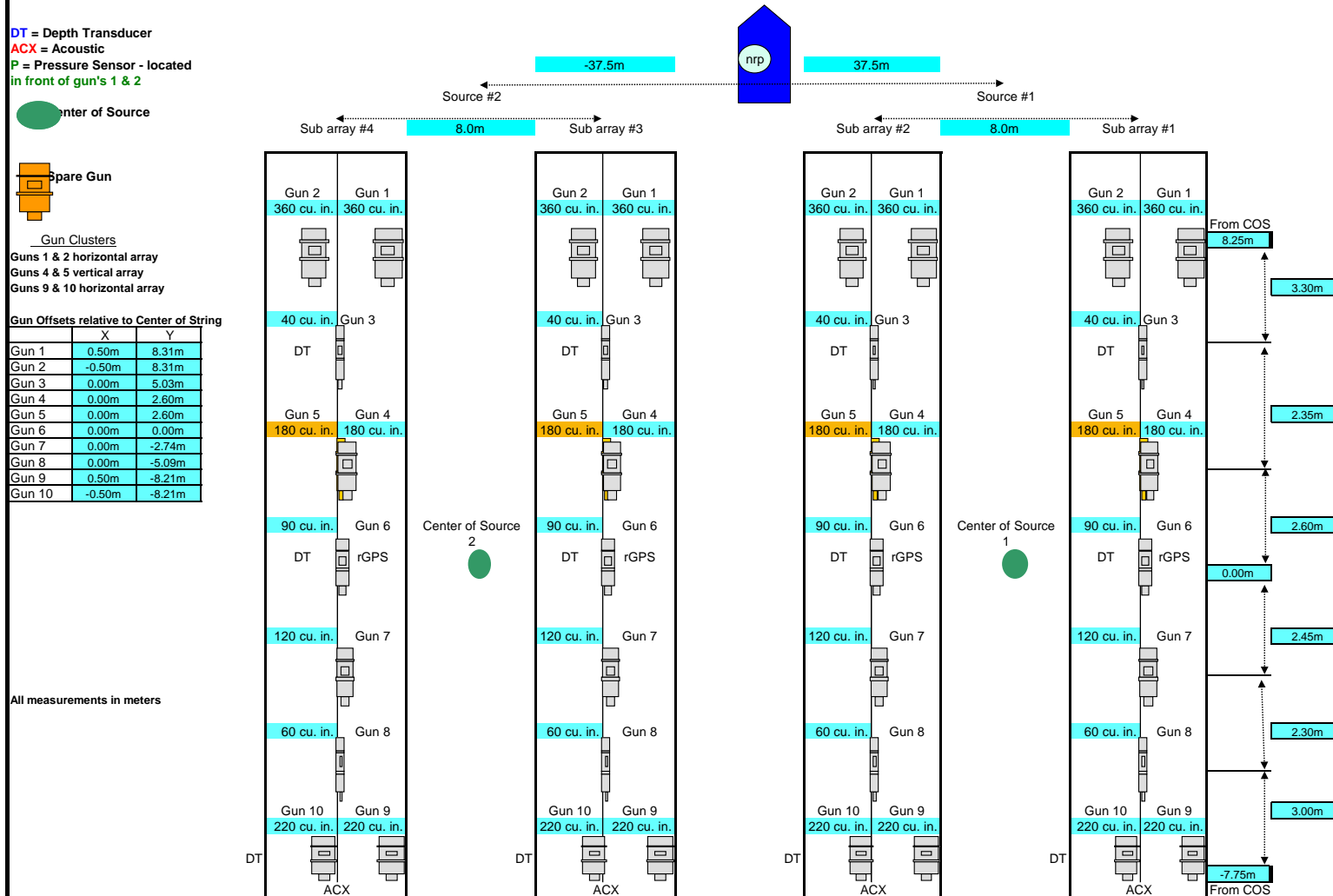
Guns 4 & 5 vertical array

Guns 9 & 10 horizontal array

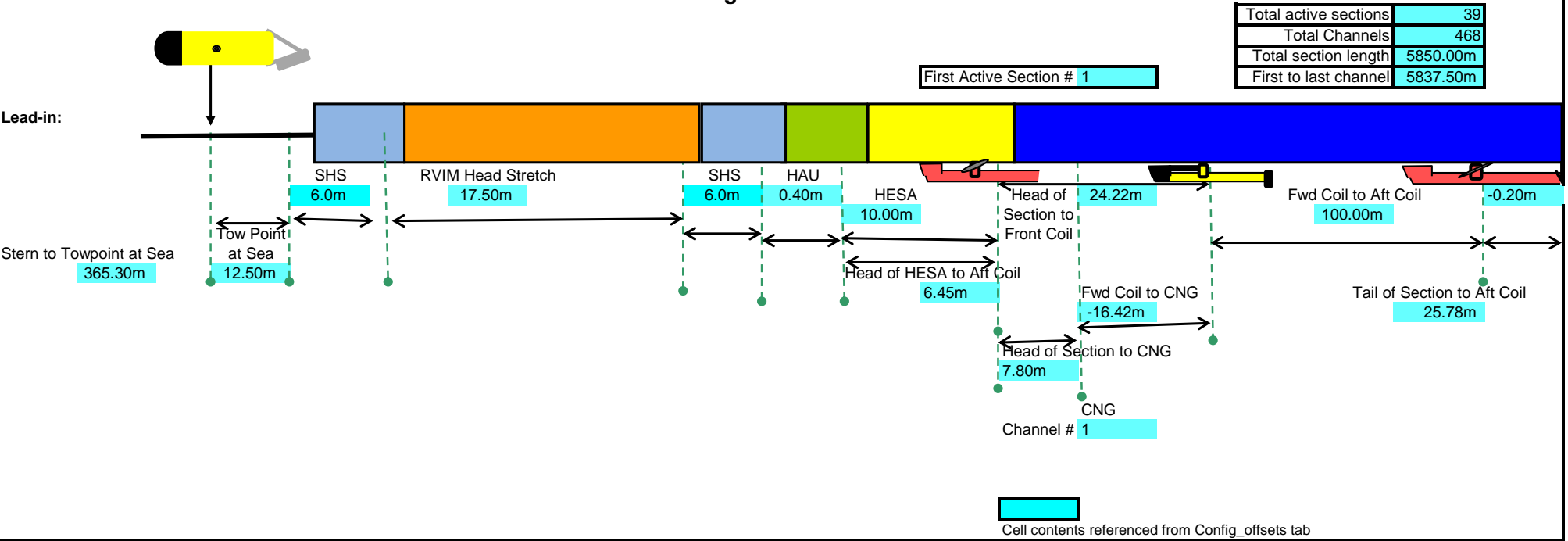
Gun Offsets relative to Center of String

	X	Y
Gun 1	0.50m	8.31m
Gun 2	-0.50m	8.31m
Gun 3	0.00m	5.03m
Gun 4	0.00m	2.60m
Gun 5	0.00m	2.60m
Gun 6	0.00m	0.00m
Gun 7	0.00m	-2.74m
Gun 8	0.00m	-5.09m
Gun 9	0.50m	-8.21m
Gun 10	-0.50m	-8.21m

All measurements in meters

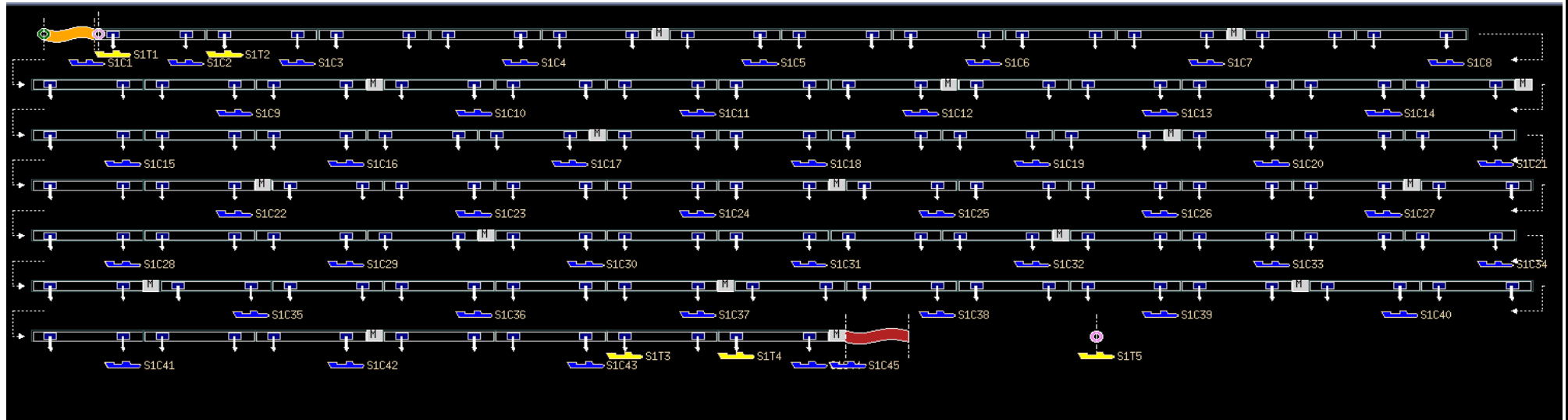


R/V Marcus G. Langseth - Streamer Front End



R/V Marcus G. Langseth - Streamer Complete

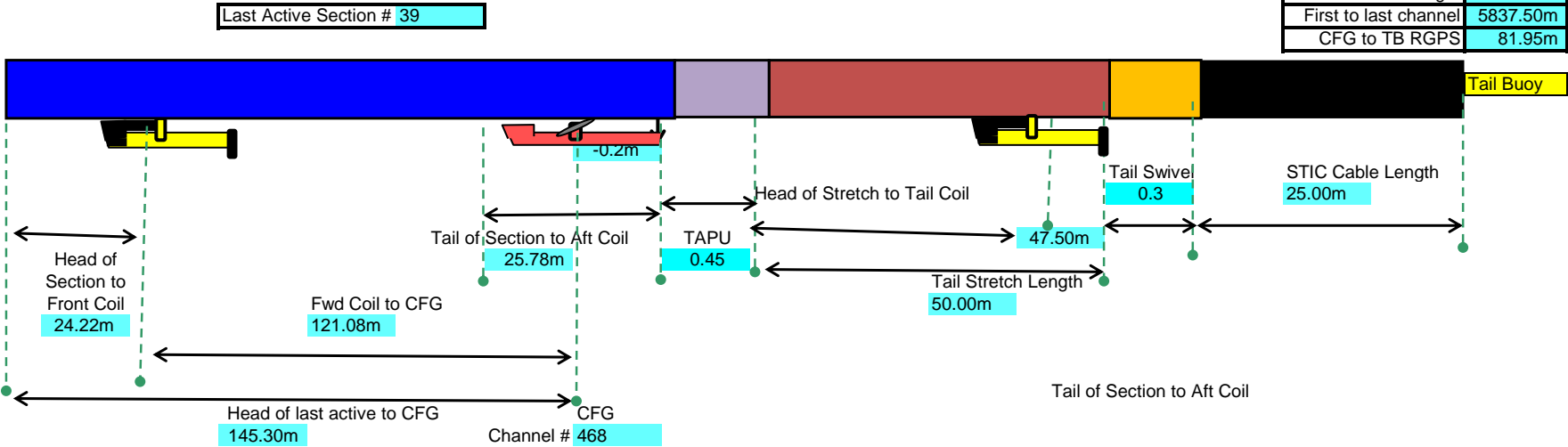
Total active sections	39
Total Channels	468
Total section length	5850.00m
First to last channel	5837.50m



Cell contents referenced from Config_offsets tab

R/V Marcus G. Langseth - Streamer Tail End

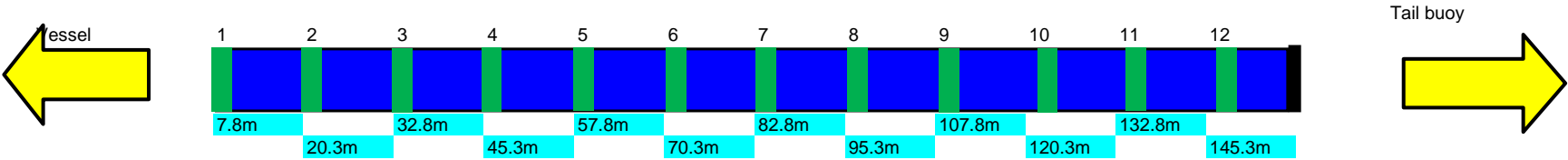
Total active sections	39
Total Channels	468
Total section length	5850.00m
First to last channel	5837.50m
CFG to TB RGPS	81.95m



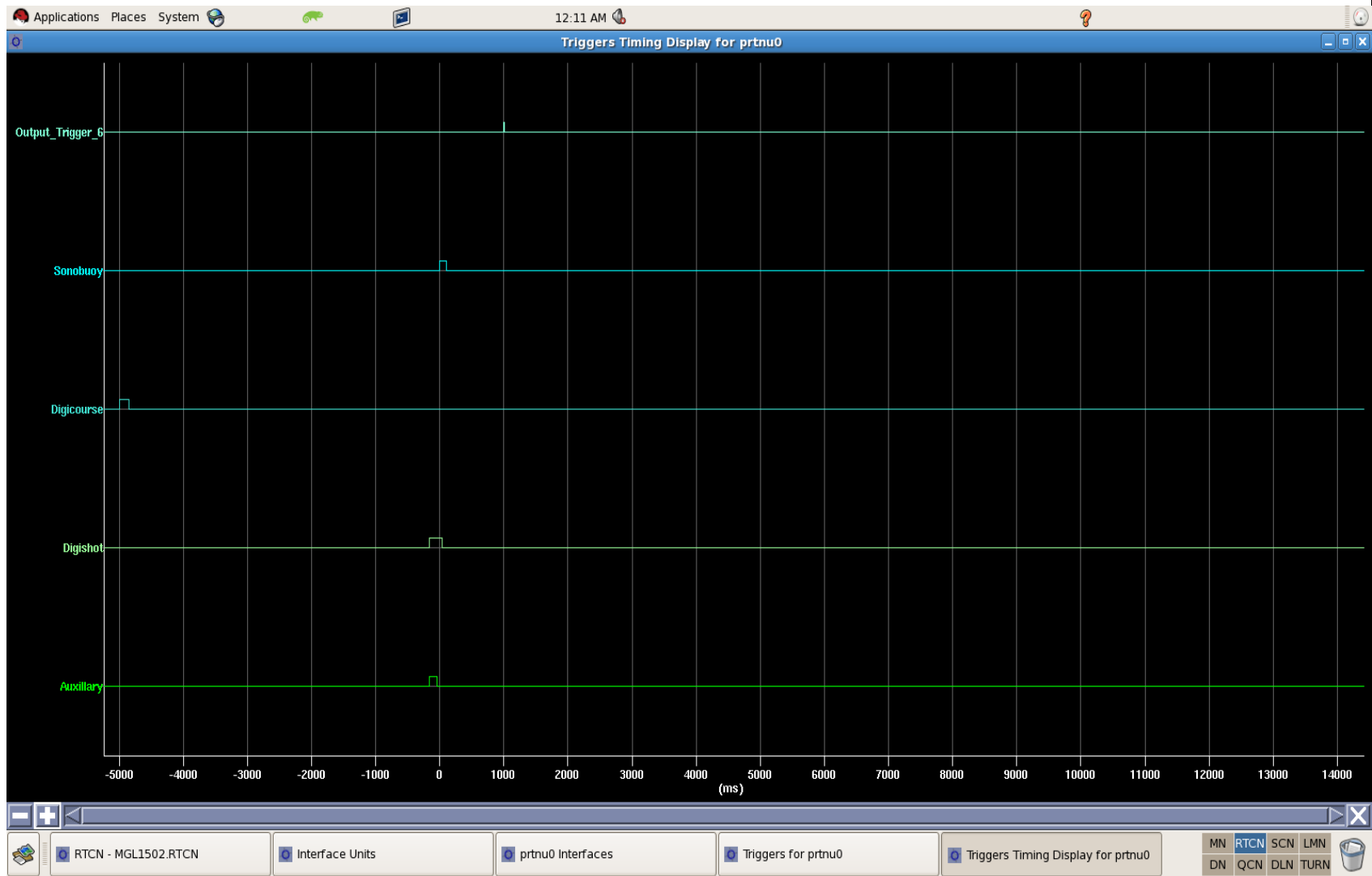
Cell contents referenced from Config_offsets tab

R/V Marcus G. Langseth - Hydrophone Offsets
Sercel 150meter SSAS

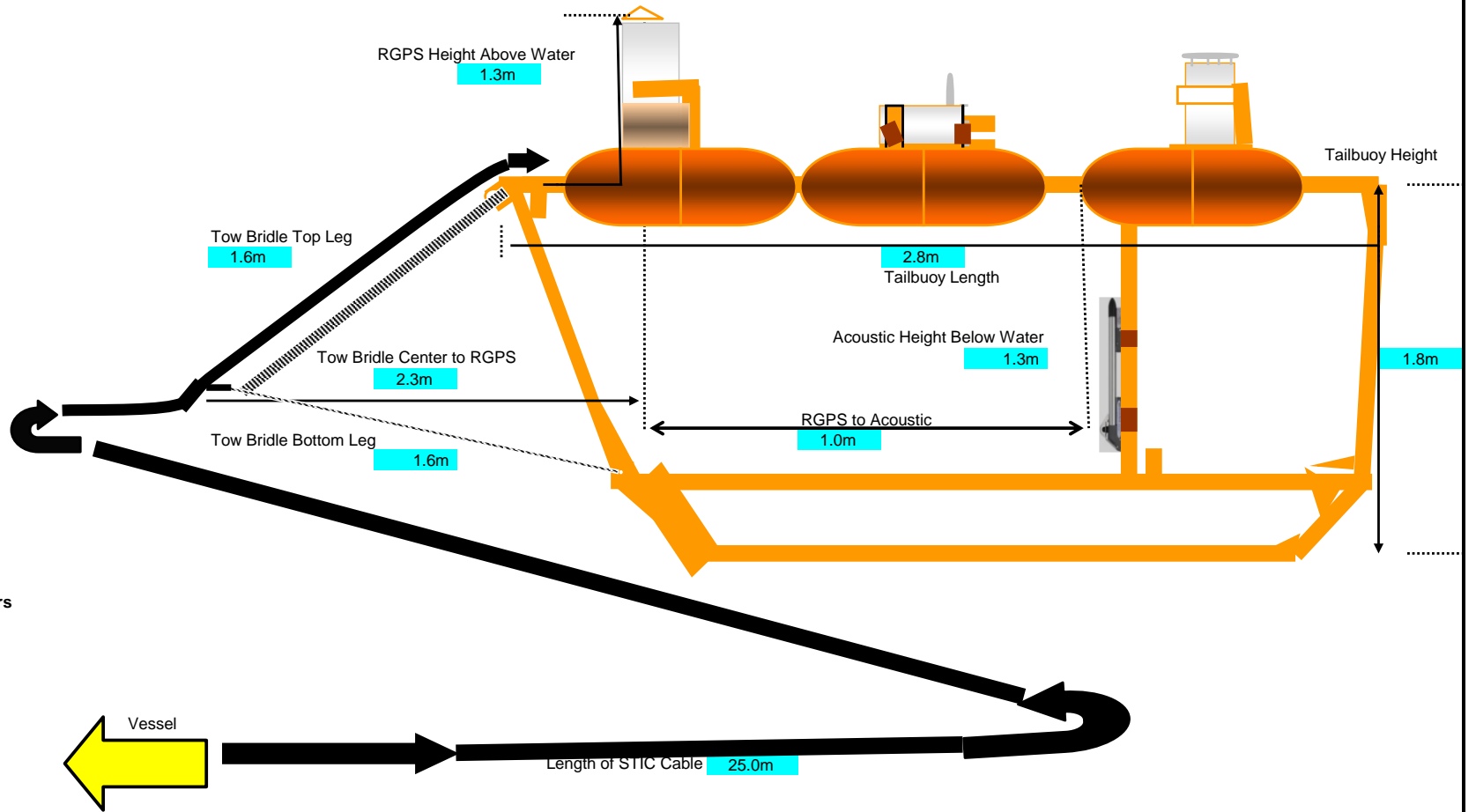
Number of SSAS Sections 39
Channels per active section 12
Total channels 468



Cell contents referenced from Config_offsets tab



R/V Marcus G. Langseth - Tailbuoy



All measurements in meters

Cell contents referenced from Config_offsets tab

Job Specifics	
NRP in COG Y	280
NRP in COG X	0
Streamers Depth	12
Streamer Depth	16
# streamer sections	35
# channels	468
CMG Channel #	1
CPG Channel #	468
MCS Streamers	0
bed to stream to low point dist	305.3
MCS Streamer Sigs	0
gun volume total	33000
Volume per string	18500
# of guns used	18
# of Gun Strings	4
gun string separation	8
PMB Y from stream	120
PMB X (outside of stream)	50
Stream to MAG Y (inside of stream)	305
Stream to MAG X (inside of stream)	75
Stream to MAG X (Peak Boundary/inside of stream)	75
COG-CO2	0
Streamer separation	150

Fixed Positions Streamer	
NRP to Stream	29.51
low point at sea to end of lead-in	12.51
1st Humpback length	0.6
Call to lead	1.2
Head of section to lead	24.22
Head of section to mid channel	12.51
NRP to Port/STBD Rail	7.5
Head to First LXR	7.5
Head to First RX	145.3
Channel per section	145.3
Center of section to Aft transducer	-0.2
First Section Number	
SHS/MSL Length	0.6
SHS Length	6
R/V/L Length	17.5
HESA Length	10
Active Section Length (LOSAS)	
TES tail stretch	50
STC	25
TES Fed Coil	2.5
TES AH Coil	67.50
HESA AH Coil	6.40
Lead-in Streamer 1	640
Lead-in Streamer 2	360
Lead-in Streamer 3	440
Lead-in Streamer 4	440
Lead-in White line Port	440
Port White line	440

Tide buoy offsets	
RGPS height above water	1.3
TB length	2.8
TB height	1.83
RGPS-ACX	1
Birdie-RGPS	2.25
Top Leo	1.55
Bottom Leo	1.6
STC	25
ACX below water line	1.3

Streamed Offsets (Streams)	
MRP to CMP	367
COS-CNG	171
CNG-CFG	-537
MRP-Mag Y	384
MRP-Mag X	71
MRP to last busy RGPS	6350
Total Length of Streamer instances	535
PAM-COS Y	130
PAM-COS X	50
MRP-PAM Y	149
MRP-PAM X	55
MRP-COS	435

Status			
Resource GPS-0203	0		0203 to 0
Resource Distance 2-3	3.3		0203 to 0.3
Resource Distance 2-4	3.6		0203 to 0.6
Resource Distance 4-5	2.5		0203 to 0
Resource Distance 4-6	0.4		0203 to 0.4
Resource Distance 2-7	2.3		0203 to 0.3
Resource Distance 3-7	2		0203 to 0
GPS 1 sample distance water stop	1.2	GPS to GPS 1.2	0203 to 0.2
GPS 1 Volume	360	GPS Depth 0.05	0203 to 0
GPS 2 Volume	48	GPS Depth 0.1	0203 to 0.1
GPS 3 Volume	180	GPS Depth 0.05	0203 to 0.05
GPS 4 Volume	90	GPS Depth 0.15	0203 to 0
GPS 5 Volume	90	GPS Depth 0.1	0203 to 0.05
GPS 6 Volume	120	GPS Depth 0.1	0203 to 0.1
GPS 7 Volume	120	GPS Depth 0.1	0203 to 0.1
GPS 8 Volume	220	GPS Depth 0.05	0203 to 0.05

Assets referenced to CND or COS	
G1T1	-0.61
G2T1	-0.61
G3T1	-0.61
G4T1	-0.61
G1T2	-15.90
G1T2	-167.28
G1T3	-271.60
G1T4	-2867.12
G1T5	-555.04
G1T6	-271.60
G1T7	-2867.12
G2T1	-15.90
G2T2	-167.28
G2T3	-271.60
G2T4	-2867.12
G2T5	-555.04
G2T6	-271.60
G2T7	-2867.12
G3T1	-15.90
G3T2	-167.28
G3T3	-271.60
G3T4	-2867.12
G3T5	-555.04
G3T6	-271.60
G3T7	-2867.12
G4T1	-15.90
G4T2	-167.28
G4T3	-271.60
G4T4	-2867.12
G4T5	-555.04
G4T6	-271.60
G4T7	-2867.12

Derived Offsets (Example)	
Towing Offsets Tab	
NRP-COS	200
NRP-CNG	45
NRP-CMP	367
COS-CNG	17
CNG Channel #	
NRP-Stern	29
Distance from Head of first section to CNG	7
Source Depth	5
Streamer Depth	9
Front End Length	39

Towing Configuration TAB		
NRP-CDS		28
NRP-CNG		17
CDS-CNG		17
NRP-Floatable CNG		36
CDS-Floatable CNG		36
P-Cable Streamer Sep		7
NRP-PAM Y	143	
NRP-PAM X	5	
PAM-CDS Y	130	
PAM-CDS X	5	
# Gun Storage		
gun volume	330	
Gun separation		
# 2D Streamers		
Ch Spacing	12	
Number 2D Channels	46	
2D Streamer Length	55	
2D Streamer Sep		
NRP-MAG X	7	
NRP-MAG Y	384	

Derived Offsets (formula)	
Towing Configuration TAB Continued	
COS to COS	7
COS1 X-offset	37
COS2 X-offset	-37
3D Streamer sep	15
S1 X offset	22
S2 X offset	15
S3 X offset	-15
S4 X offset	-22

Estimated Outcome	
Acoustic Overhead TAB	
G1T1	-9.91
G2T1	-9.61
G3T1	-9.61
G4T1	-9.61
S1T1	-16.95
S1T2	-167.26
S1T3	-2716.06
S1T4	-2967.37
S1T5	-3565.04
S1T6	-5714.66
S1T7	-5967.12
S2T1	-16.95
S2T2	-167.26
S2T3	-2716.06
S2T4	-2967.37
S2T5	-3565.04
S2T6	-5714.66
S2T7	-5967.12
S3T1	-16.95
S3T2	-167.26

General Characteristics		
Core using elements		
Bracketed distance 1-2	9	
Bracketed distance 3-1	3.3	
Bracketed distance 3-4	2.35	
Bracketed distance 4-5	1.6	
Bracketed distance 5-6	2.45	
Bracketed distance 6-7	2.1	
Bracketed distance 7-8	3	
Severity of PCOS - V		
CS2 - Accuracy V	0.47	
APPT light sensor delay	1.2	
G1 Volume	360	
G2 Volume	360	
G3 Volume	40	
G4 Volume	180	
G5 Volume	180	
G6 Volume	90	
G7 Volume	120	
G8 Volume	60	
G9 Volume	230	
G10 Volume	230	
G-Depth 1	0.05	
G-Depth 2	0.05	
G-Depth 3	1.15	
G-Depth 4	0.05	
G-Depth 5	1.15	
G-Depth 6	1.15	
G-Depth 7	1.15	
G-Depth 8	0.05	
G-Depth 9	0.05	
Surface to Air	13.4	
From Air to CS2	7.75	
Free travel in CS2	7.75	
Free travel in CS2	8.75	

Channel Offsets	
Steamer Front End	
Sham-transport at	365.3
transport at end of lead-in	12.5
SPB Length	8
min length	17.5
HAUSITU length	0.4
HEISA Lgth	10
Feed Coil to AR Coil	100
Head to Feed BK	7.8
Feed Coil to CNG	-15.423
Feed to Feed Coil	34.223
Tail to AR Coil	26.777
CNG Channel #	1
Center of steamer to feed to introducer	-0.2
First Section #	1
# channels	468
section length	5050
# sections	39
channel channel	12.5
Feed to tail	5837.5
HEISA Head to tail	6.45

Observed Offsets	
Steamer Tail End	
Head to Feed Coil	24.223
Tail to AB Coil	25.777
Head to Head	145.3
Coil to Coil	100
TAPU Length	0.45
Tail Switch Length	50
Transfer Length	0.3
STC Length	25
Last active	
# channels	468
# sections	39
total section length	5850
First to last	5837.5
Switch Coil	
Center of steamer to Axi connector	-0.2
channel sections	12.5
CFG #	468
Feed coil to CFG	121.077
CFG to TBGRPS	81.95
Switch head to feed coil	2.5
Switch head to aft	47.5

Derived Offsets	
Streamer complete	
#Sections	39
# Channels	402
First to last	5837.5
Total section length	5850

Channel Offsets	
Hydrophone Offsets	
Channel 1	7.825
2	20.325
3	32.825
4	45.325
5	57.825
6	70.325
7	82.825
8	95.325
9	107.825
10	120.325
11	132.825
12	145.325
# channels	12
# Active's	30
Total Channels	465

Derived Offsets	
Tailbuoy offsets	
RGPS height above water	1.3
TB length	2.85
TB height	1.83
RGPS-ACX	9
Bride-RGPS	2.25
Top Leg	1.55
Bottom Leg	1.6
STIC	25
ACX below water line	1.3