

Company: L-DEO - Lamont - Doherty Earth Observatory
Vessel: Marcus G. Langseth
Client: UTIG/WHOI/USGS

Project: MGL2315
Area: Puerto Rico
Scope: Seq004-018
Start Date: 6-Nov-23

Vessel Sensor Offsets

Towing Offsets

Towing Configuration

Gun Array Offsets

Streamer Front End

Streamer Tail End

Streamer Complete

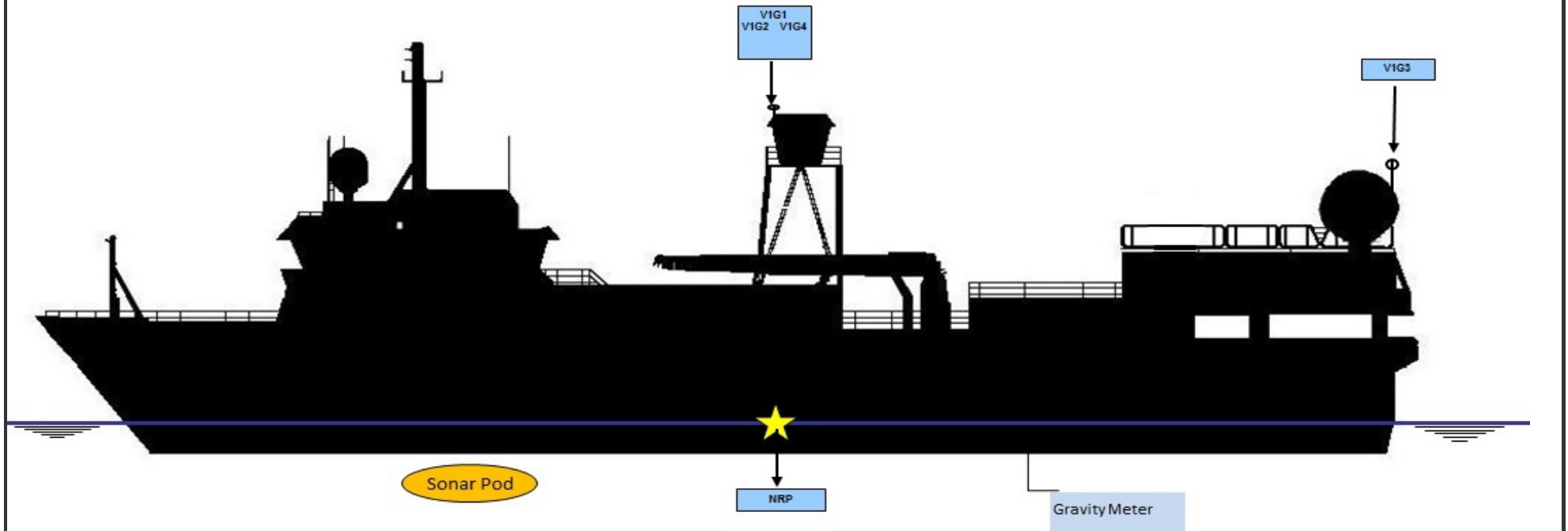
Hydrophone Offsets

Tailbuoy Offsets

Timing



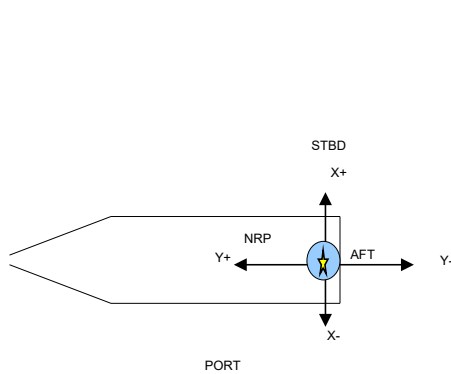
R/V Marcus G. Langseth - Vessel Sensor Offsets



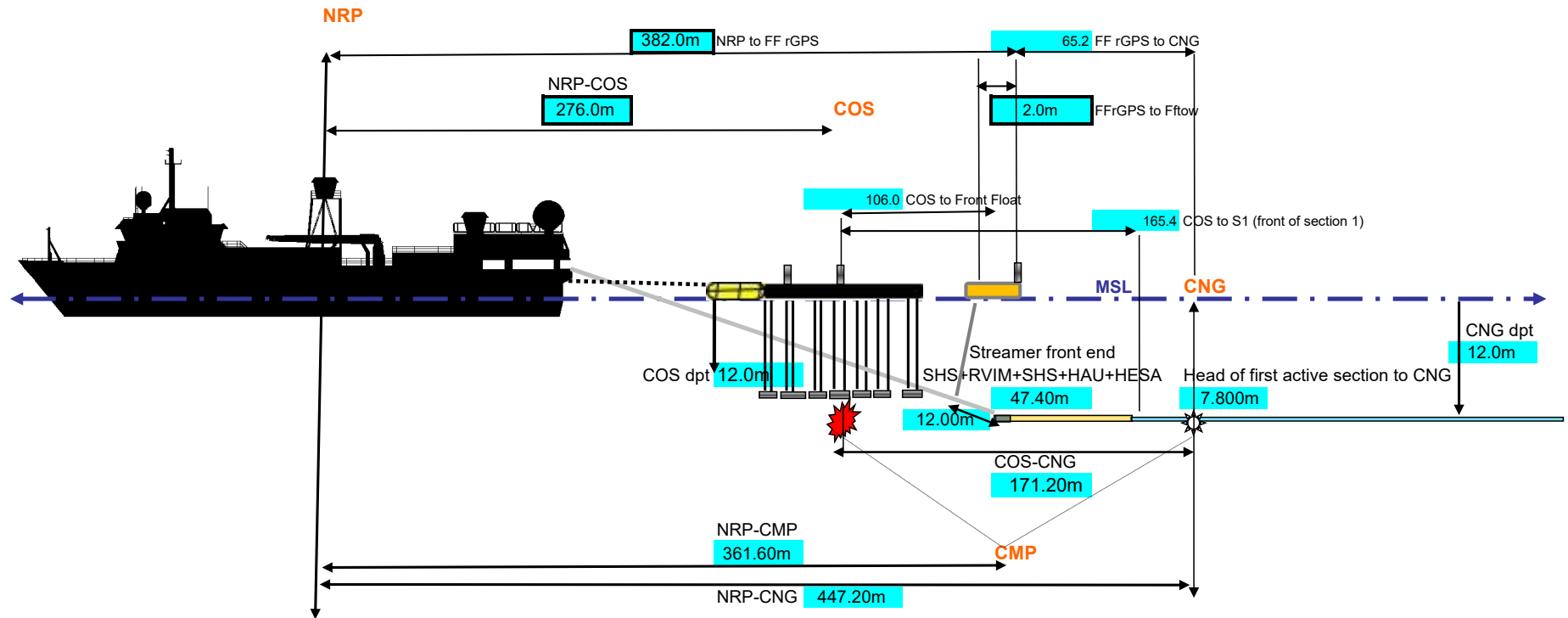
Negative values are above water line

All measurements in meters

			STBD/PORT (X)	FORE/AFT (Y)	UP/DOWN (Z)	
NRP	NAVIGATION REFERENCE POINT		0.00	0.00	0.00	
V1G1	SeaPath 330	Orca	-1.24	-1.25	-16.78	
V1G2	C-Nav3050 MMO Tower	Orca	0.00	0.00	-16.90	
V1G3	C-Nav3050 Stern	Orca	-1.95	-31.83	-14.50	
V1G4	Pos MV	Orca	2.39	12.75	-16.90	
	PosMV Output position is IMU mounted in stbd drylab					
V1R1	PosNet		-1.92	-0.02	-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		2.39	12.75	-4.30	
BGM	Bell Gravity Meter		0.00	-13.10	1.10	



R/V Marcus G. Langseth - Towing Offsets

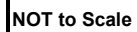


NRP	Nav Reference Point
COS	Centre of Source
CNG	Centre of Near Group
CMP	Common Mid-Point
MSL	Mean Sea Level
NRP-Stern	29.2m
NRP-COS	276.0m

All measurements in meters

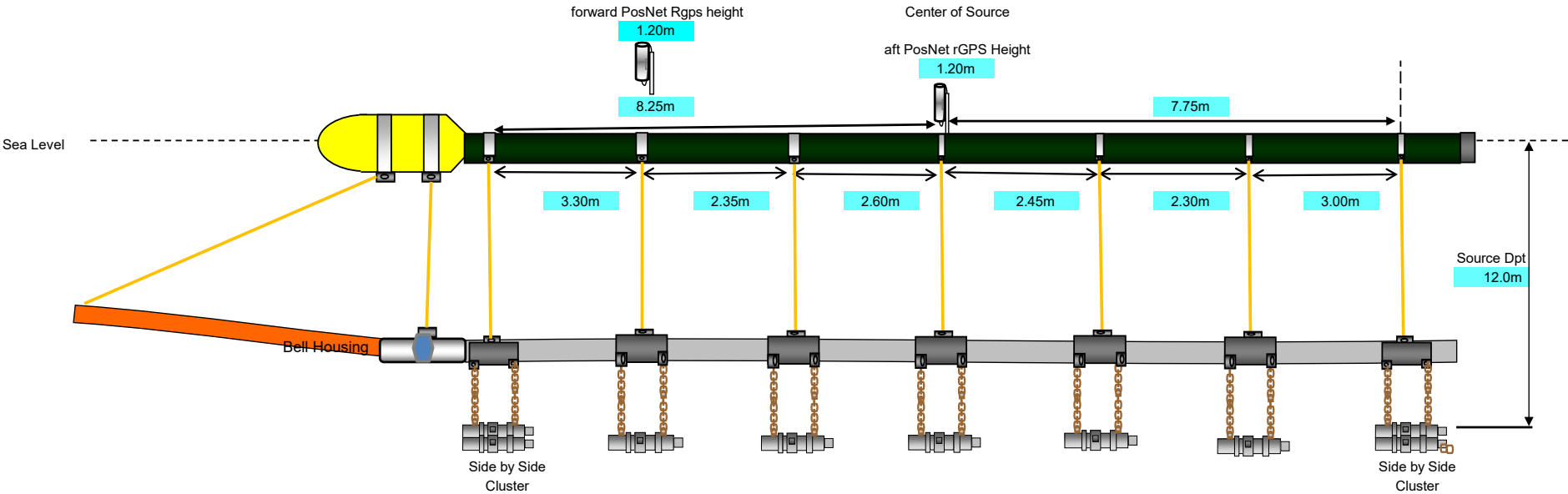
Cell contents referenced from Config_offsets tab

	# Streamers	Length	Channels	Spacing
SEAL	1	13650	1092	12.5m
# Gun Strings Used	4		Vol (in^3)	6600



Cell contents referenced from Config_offsets tab

R/V Marcus G. Langseth - Gun Array Offsets



Gun volumes by number		
Gun	Volume	Status
Gun 1	360 cu. in.	Primary
Gun 2	360 cu. in.	Primary
Gun 3	40 cu. in.	Primary & Mitigation
Gun 4	180 cu. in.	Primary
Gun 5	90 cu. in.	Primary
Gun 6	120 cu. in.	Primary
Gun 7	60 cu. in.	Primary
Gun 8	220 cu. in.	Primary
Gun 9	220 cu. in.	Primary

Array total volume (without spares) is 6600 cu. in. Total volume/string (without spare) 1650 cu. in.

Guns (1 & 2) & (8 & 9) in a horizontal cluster.

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

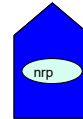
Single guns hang from hanger 1.15m

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



Center of Source

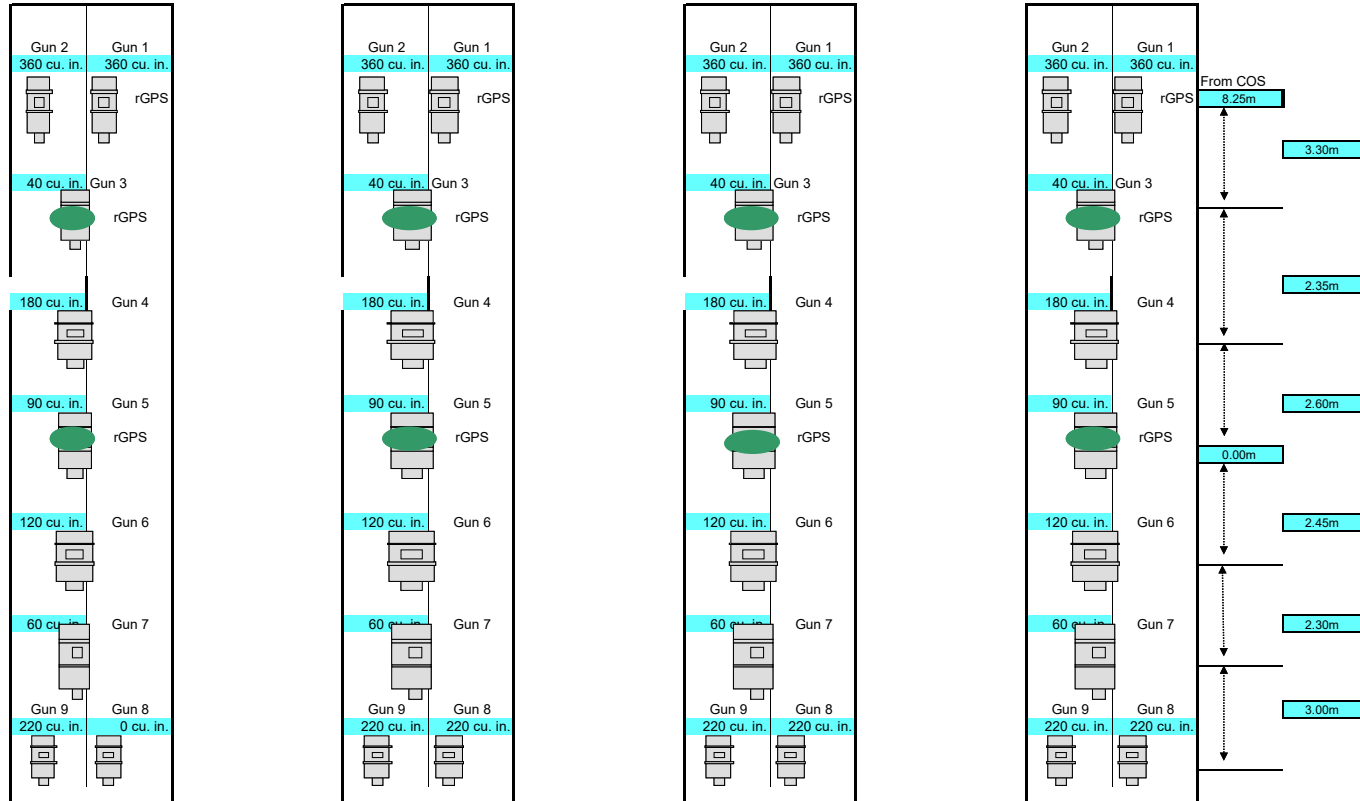
Sub array #4 6.0m Sub array #3 6.0m Sub array #2 6.0m Sub array #1

Gun Clusters
Guns 1 & 2 horizontal array
Guns 8 & 9 horizontal array

Gun Offsets relative to Center of String

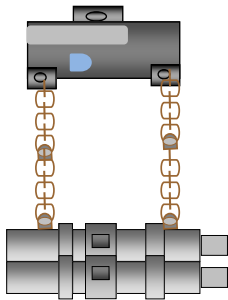
	X	Y
Gun 1	0.50m	8.23m
Gun 2	-0.50m	8.23m
Gun 3	0.00m	5.00m
Gun 4	0.00m	-2.60m
Gun 5	0.00m	-2.46m
Gun 6	0.00m	-4.77m
Gun 7	0.50m	-7.77m
Gun 8	-0.50m	-7.77m
Gun 9	0.50m	8.23m

All measurements in meters

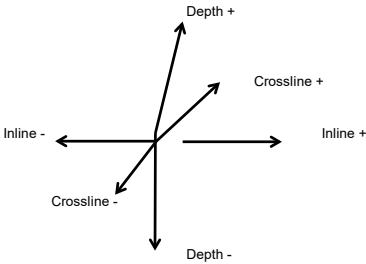


Distances in Meters

Gun Plate



Center of ports between guns 1 and 2 is the reference point



Hydrophone Offsets

Gun String 1				
Plate	Phone	Inline	Crossline	Depth
1	1			
2	2	3.35	0.00	1.00
3	3	5.50	0.00	1.00
4	4			
5	5	10.68	0.00	1.00
6	6			
7	7			

Gun String 2				
Plate	Phone	Inline	Crossline	Depth
1	1			
2	2	3.35	0.00	1.00
3	3	5.50	0.00	1.00
4	4			
5	5	10.68	0.00	1.00
6	6			
7	7			

Gun String 3				
Plate	Phone	Inline	Crossline	Depth
1	1			
2	2	3.35	0.00	1.00
3	3	5.50	0.00	1.00
4	4			
5	5	10.68	0.00	1.00
6	6			
7	7			

Gun String 4				
Plate	Phone	Inline	Crossline	Depth
1	1			
2	2	3.35	0.00	1.00
3	3	5.50	0.00	1.00
4	4			
5	5	10.68	0.00	1.00
6	6			
7	7			

Depth Transducer Offsets

Gun String 1				
Plate	DT	Inline	Crossline	Depth
1	1	0.00	0.00	1.20
2				
3	2	5.75	0.00	1.08
4				
5				
6				
7	3	16.30	0.00	1.23

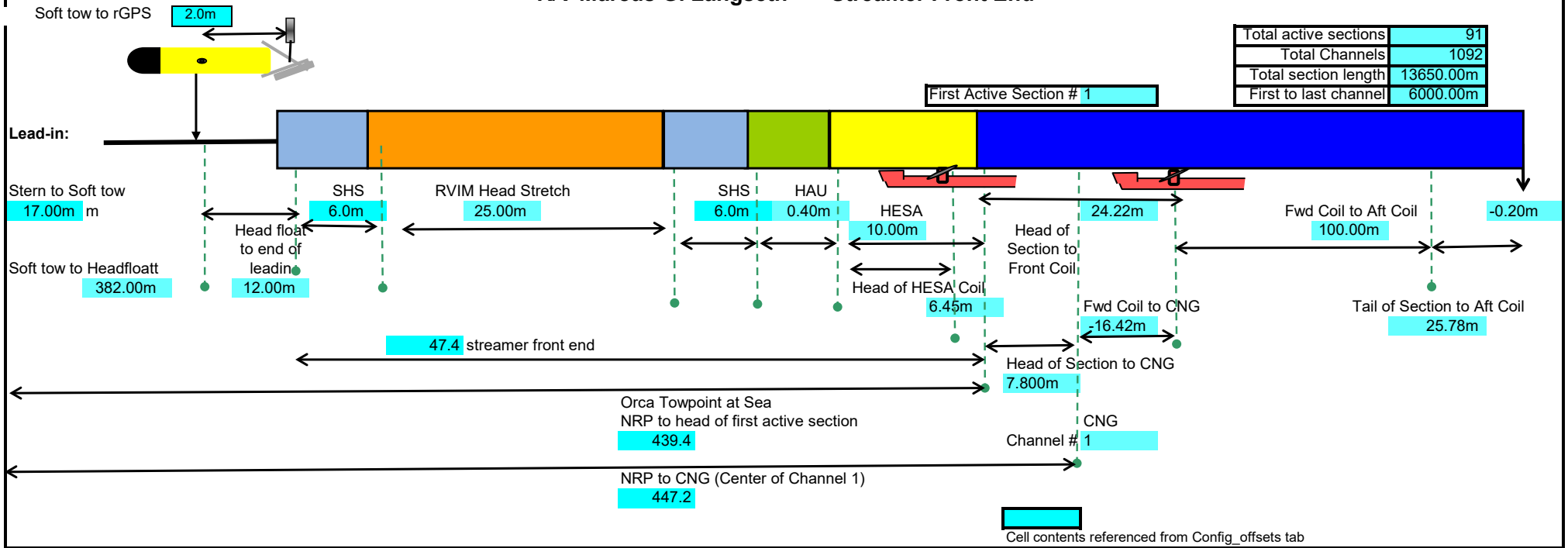
Gun String 2				
Plate	DT	Inline	Crossline	Depth
1	1	0.00	0.00	1.20
2				
3	2	5.75	0.00	1.08
4				
5				
6				
7	3	16.30	0.00	1.23

Gun String 3				
Plate	DT	Inline	Crossline	Depth
1	1	0.00	0.00	1.20
2				
3	2	5.75	0.00	1.08
4				
5				
6				
7	3	16.30	0.00	1.23

Gun String 4				
Plate	DT	Inline	Crossline	Depth
1	1	0.00	0.00	1.20
2				
3	2	5.75	0.00	1.08
4				
5				
6				
7	3	16.30	0.00	1.23

R/V Marcus G. Langseth - Streamer Front End

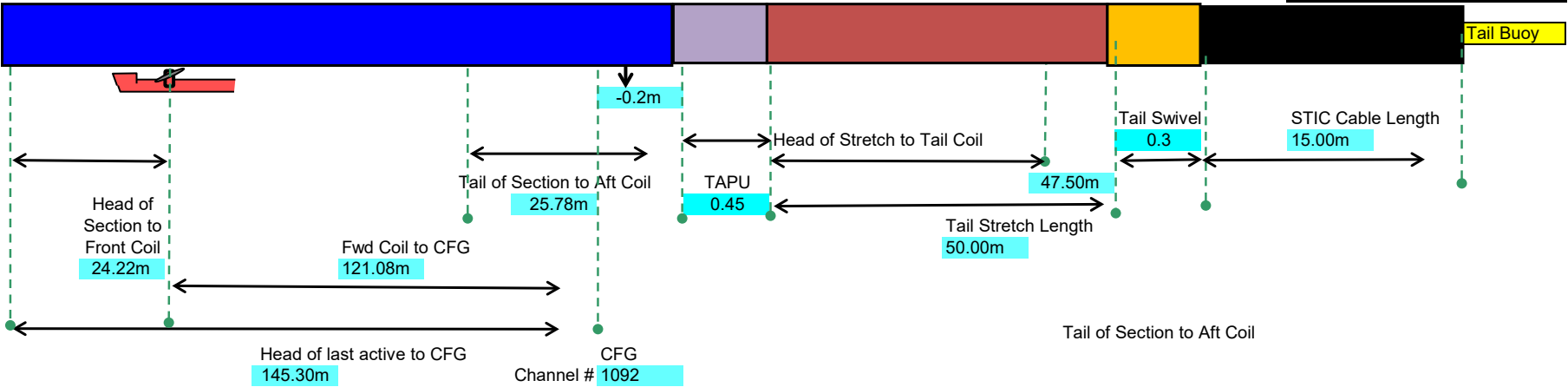
Total active sections	91
Total Channels	1092
Total section length	13650.00m
First to last channel	6000.00m



R/V Marcus G. Langseth - Streamer Tail End

Total active sections	91
Total Channels	1092
Total section length	13650.00m
First to last channel	6000.00m
CFG to TB RGPS	71.95m

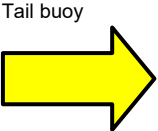
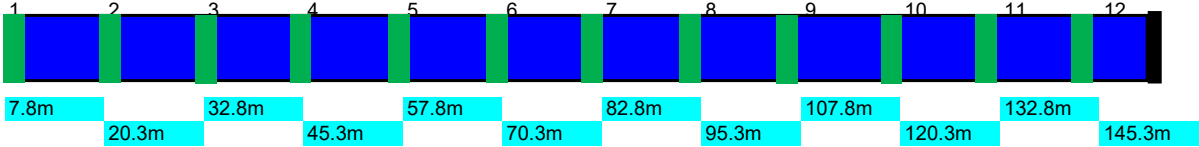
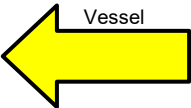
Last Active Section # 91



Cell contents referenced from Config_offsets tab

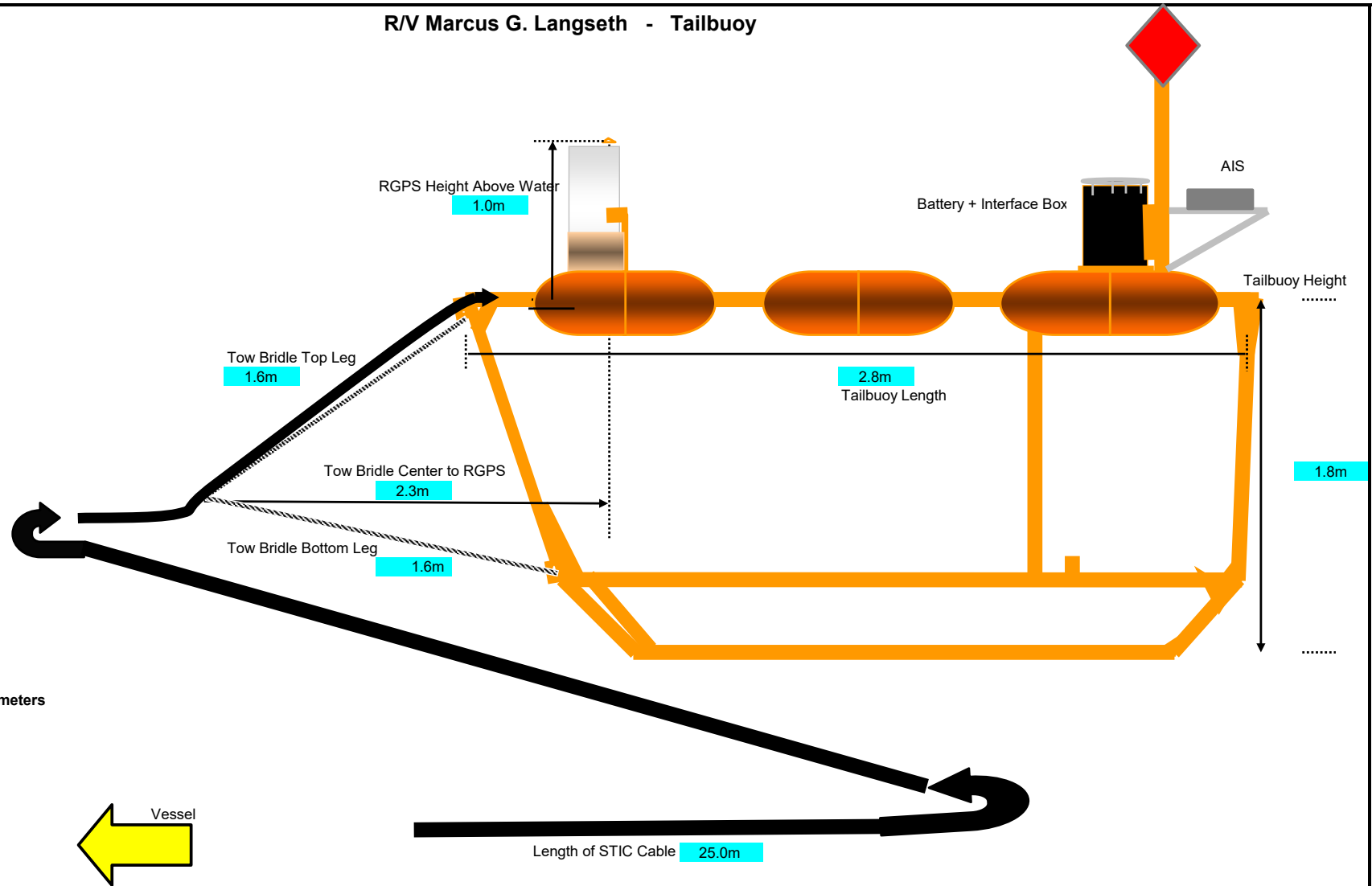
R/V Marcus G. Langseth - Hydrophone Offsets
Sercel 150meter SSAS

Number of SSAS Sections 91
Channels per active section 12
Total channels 1092



Cell contents referenced from Config_offsets tab

R/V Marcus G. Langseth - Tailbuoy



All measurements in meters

Cell contents referenced from Config_offsets tab

SS Metrics		Decking Metrics		Towing Offsets Tab		Towing Configuration TAB		Acoustic Downhaul TAB		Gun array offsets		Acoustic Metrics		Streamers Front End		Streamers Tail End		Streamers complete		Systematics Offsets		Tallysheet offsets	
NMP to COS Y	276.6	NMP to CMP	261.5	Towing Offsets Tab	NMP-COS	276	NMP-COS	276	G1T1	0	Bracket distance 1-2	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860	
NMP to COS X	0	COS-COS Y	171.2	NMP-COS	276	NMP-COS	276	G1T1	0	Bracket distance 2-3	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
Source Depth	16	COS-COS Y	171.2	NMP-COS	276	NMP-COS	276	G1T1	0	Bracket distance 3-4	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
Streamers Depth	12	NMP-Mag Y	16.5	NMP-COS	276	NMP-COS	276	G1T1	0	Bracket distance 4-5	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
# streamers sections	91	NMP-Mag X	16.5	COS-COS Y	171.2	NMP-Phonics	276	G1T1	0	Bracket distance 5-6	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
# channels	1032	NMP to last busy RGPS	1424.54	COS-COS Y	171.2	COS-Phonics	276	G1T1	0	Bracket distance 6-7	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
COS Channel #	1032	Total Length of Streamer	13950	NMP-Beam	276	P-Cable	276	G1T1	0	Bracket distance 7-8	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
AWC Channel #	1032	FW-COS Y	136.5	Distance from Head of first section to MAG	7.5	NMP-PAM Y	136.2	G1T1	0	Bracket distance 8-9	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
AWC Streamers	1	NMP-COS X	136.5	Streamers Depth	12	NMP-PAM X	136.2	G1T1	0	Bracket distance 9-10	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
Head-in NMP to head	362	NMP-PAM Y	136.5	Streamers Depth	12	NMP-PAM X	136.2	G1T1	0	Bracket distance 10-11	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
NCS Streamers Gap	0	NMP-PAM X	136.5	Front End Length	47.4	NMP-COS X	136.5	G1T1	0	Bracket distance 11-12	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
Gun Volume total	6900	NMP-COS Y	136.5	Front End section to MAG	47.4	# Gun Strings	4	G1T1	0	Bracket distance 12-13	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
Volume per string	1000	Gun to length, down to bridle	447.2					G1T1	0	Bracket distance 13-14	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
# if guns used	38	Max RWI 17.5m/25m	25					G1T1	0	Bracket distance 14-15	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
# Gun Strings	4	LJRM 3308 x 14 modules	4,760					G1T1	0	Bracket distance 15-16	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
gun string separation	6	USCG 47M x 2 (modules)	0,946					G1T1	0	Bracket distance 16-17	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
		TAPU 4200	0,4200					G1T1	0	Bracket distance 17-18	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
								G1T1	0	Bracket distance 18-19	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
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								G1T1	0	Bracket distance 20-21	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
								G1T1	0	Bracket distance 21-22	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
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								G1T1	0	Bracket distance 23-24	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
								G1T1	0	Bracket distance 24-25	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
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								G1T1	0	Bracket distance 26-27	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
								G1T1	0	Bracket distance 27-28	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
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								G1T1	0	Bracket distance 37-38	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
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								G1T1	0	Bracket distance 50-51	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
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								G1T1	0	Bracket distance 67-68	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
								G1T1	0	Bracket distance 68-69	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
								G1T1	0	Bracket distance 69-70	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
								G1T1	0	Bracket distance 70-71	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
								G1T1	0	Bracket distance 71-72	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
								G1T1	0	Bracket distance 72-73	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
								G1T1	0	Bracket distance 73-74	0	Streamers Front End	562	Streamers Tail End	24,223	Streamers complete	91	Systematics Offsets	7,860	Systematics Offsets	7,860		
								G1T1	0	Bracket distance 74-75	0	Streamers Front End	56										