

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

Project: MGL2105
Area: Queen Charlotte Fault
Start Date: 15-Jul-21

Vessel Sensor Offsets

Towing Offsets

Towing Configuration

Acoustic Overhead

Gun Array Offsets

Streamer Front End

Streamer Tail End

Streamer Complete

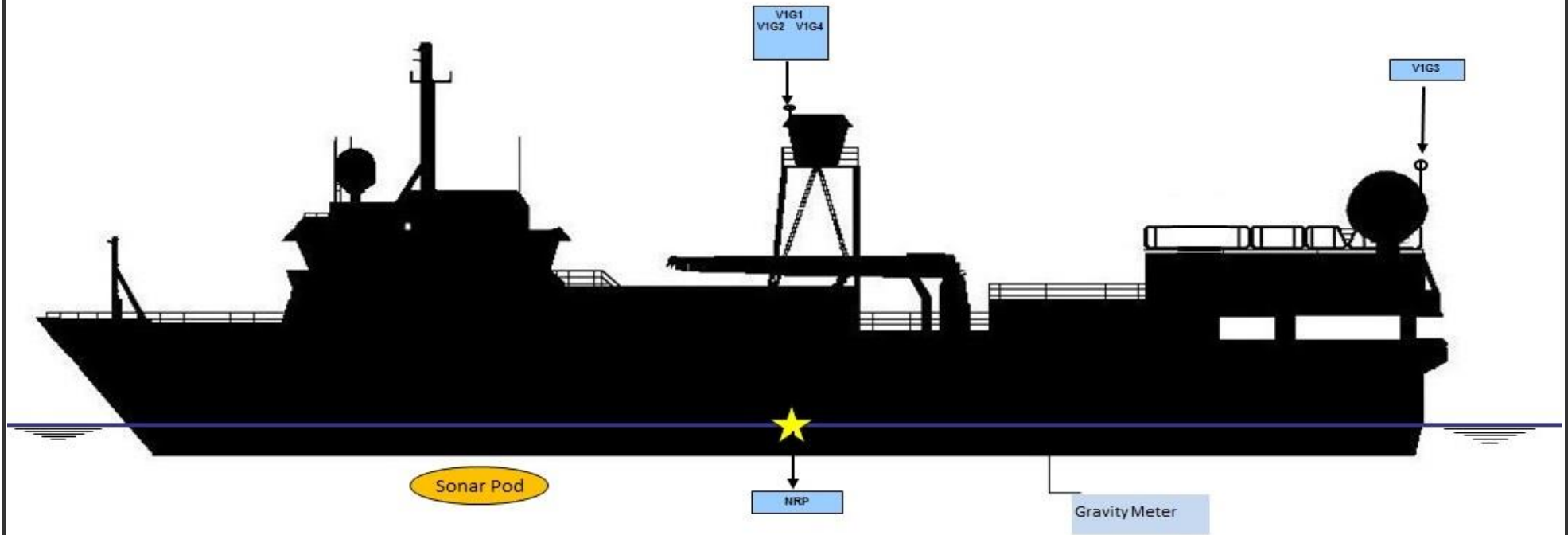
Hydrophone Offsets

Tailbuoy Offsets

Timing

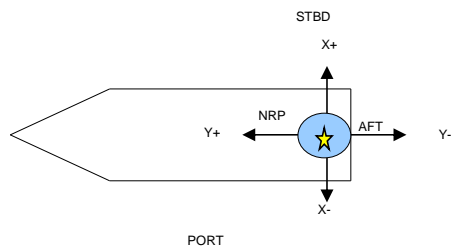


R/V Marcus G. Langseth - Vessel Sensor Offsets



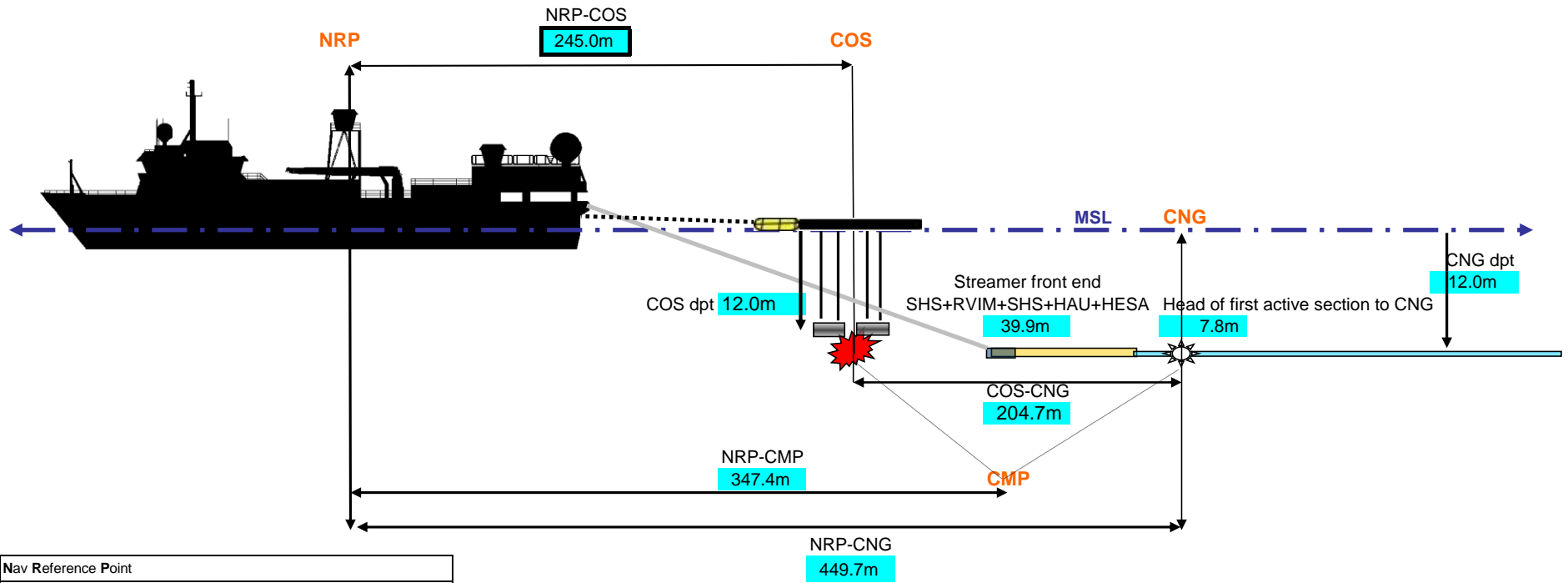
Negative values are above water line

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



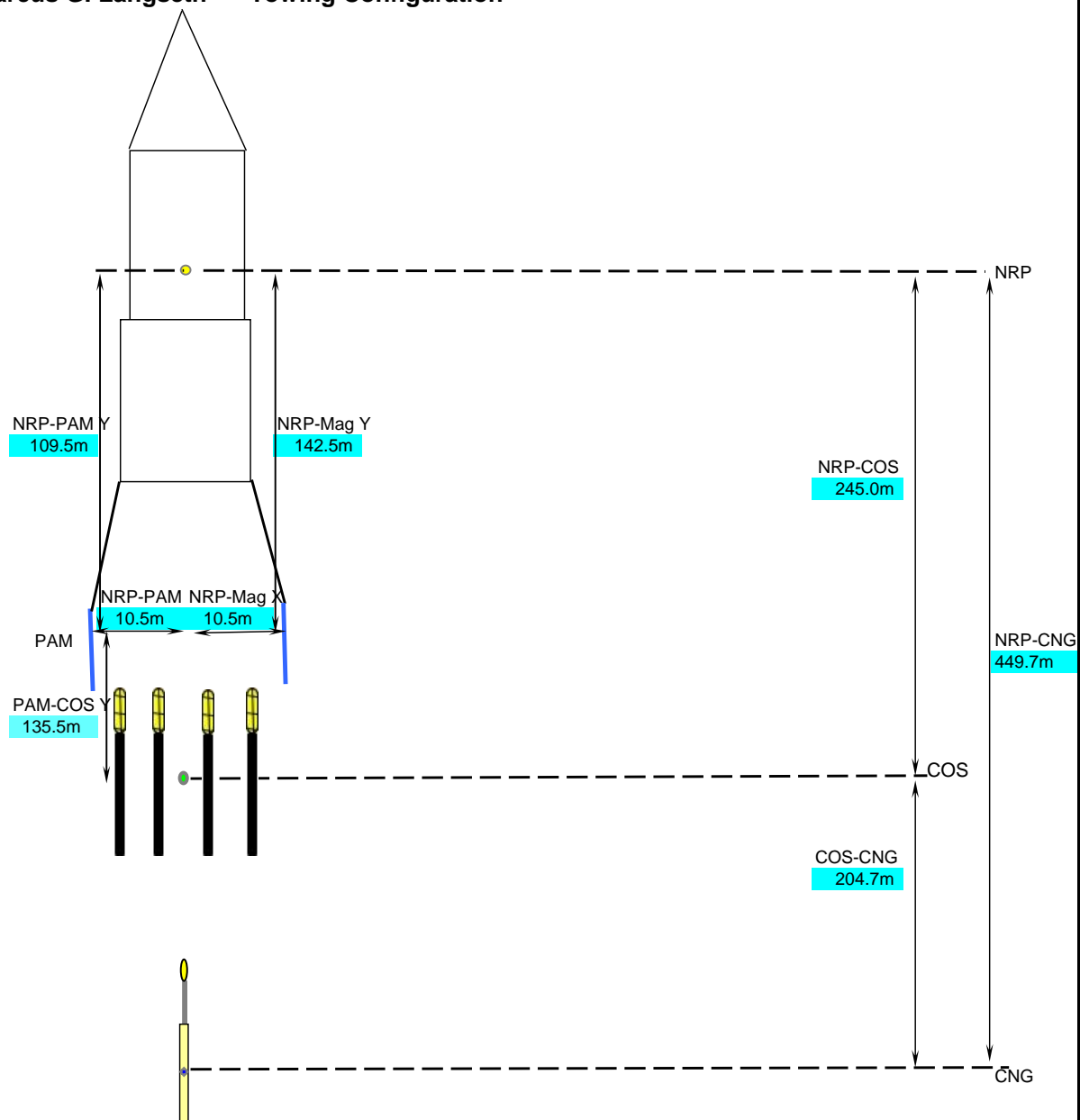
NRP	Nav Reference Point
COS	Centre of Source
CNG	Centre of Near Group
CMP	Common Mid-Point
MSL	Mean Sea Level
NRP-Stern	29.5m
NRP-COS	245.0m

All measurements in meters

Cell contents referenced from Config_offsets tab

R/V Marcus G. Langseth - Towing Configuration

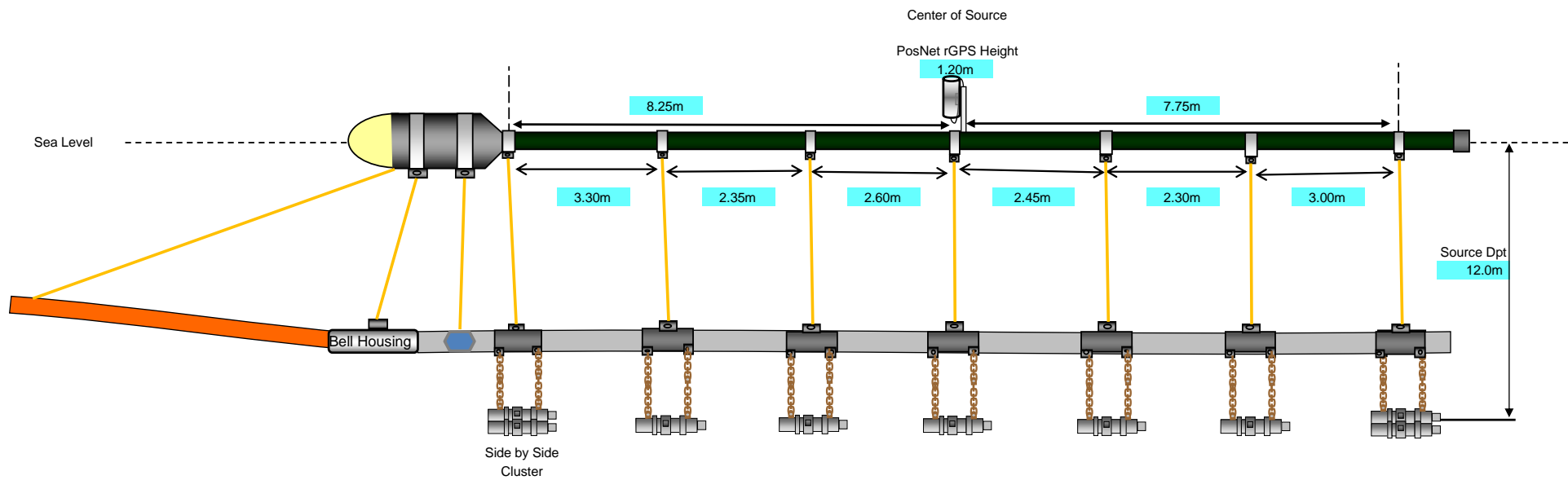
	# Streamers	Length	Channels	Spacing
SEAL	1	15000	1200	12.5m
# Gun Strings Used	4		Vol (in^3)	6600



NOT to Scale

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

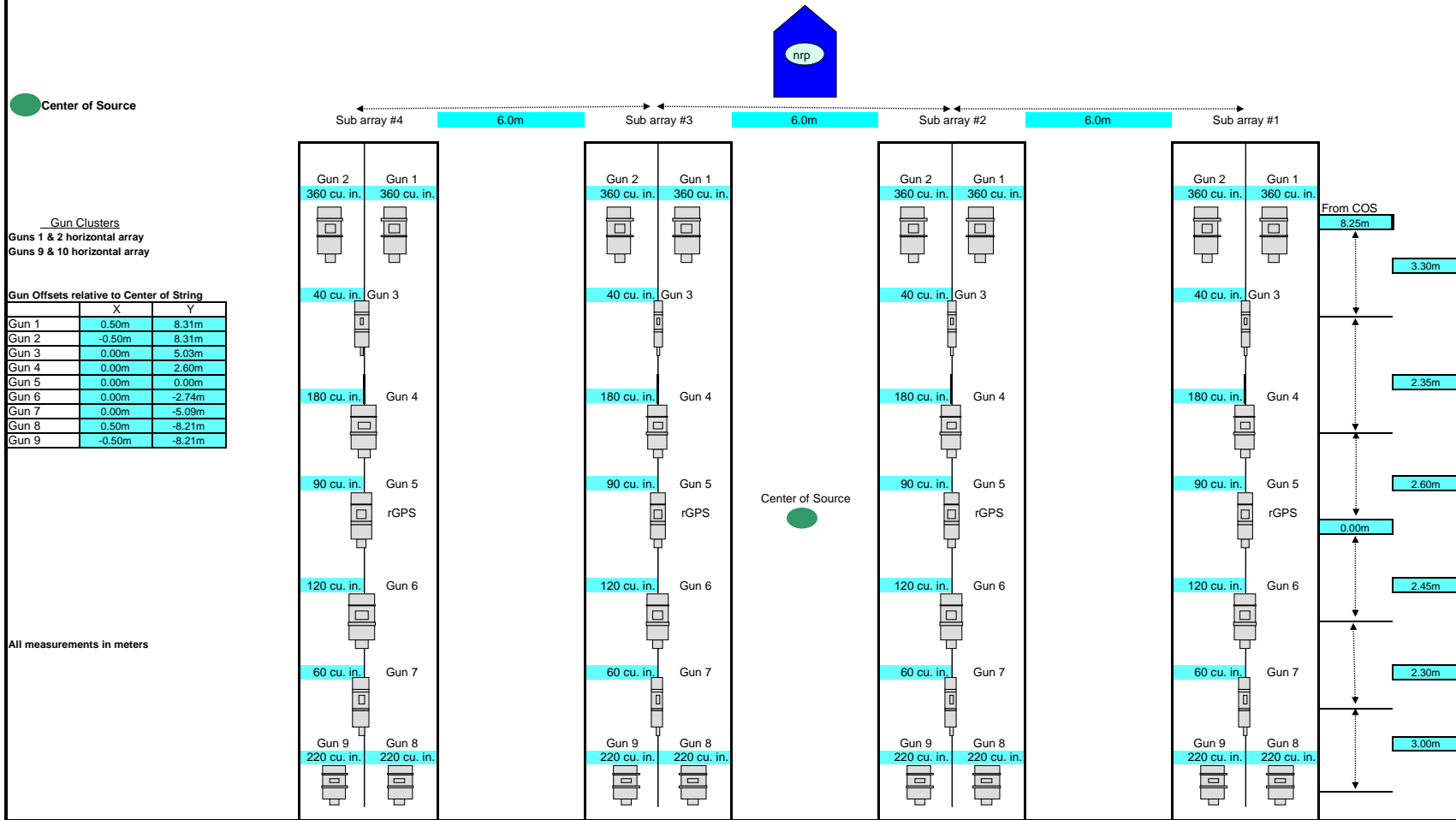
Single guns hang from hanger 1.15m

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

All measurements in meters
NOTE: drawing not to scale

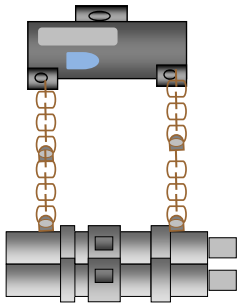
Cell contents referenced from Config_offsets tab

R/V Marcus G. Langseth - Gun Configuration

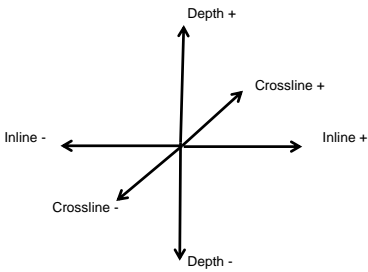


Distances in Meters

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		N/A	N/A	N/A
2	1	3.18	0.00	0.95
3	2	5.34	0.00	0.91
4		N/A	N/A	N/A
5		N/A	N/A	N/A
6	3	10.48	0.00	0.90
7		N/A	N/A	N/A

Gun String 2				
Plate	Phone	Inline	Crossline	Depth
1		N/A	N/A	N/A
2	1	3.05	0.00	0.93
3	2	5.48	0.00	0.96
4		N/A	N/A	N/A
5		N/A	N/A	N/A
6	3	10.50	0.00	0.92
7		N/A	N/A	N/A

Gun String 3				
Plate	Phone	Inline	Crossline	Depth
1		N/A	N/A	N/A
2	1	3.18	0.00	0.96
3	2	5.22	0.00	0.97
4		N/A	N/A	N/A
5		N/A	N/A	N/A
6	3	10.61	0.00	0.90
7		N/A	N/A	N/A

Gun String 4				
Plate	Phone	Inline	Crossline	Depth
1		N/A	N/A	N/A
2	1	3.50	0.00	0.96
3	2	5.53	0.00	0.97
4		N/A	N/A	N/A
5		N/A	N/A	N/A
6	3	10.59	0.00	0.90
7		N/A	N/A	N/A

Depth Transducer Offsets

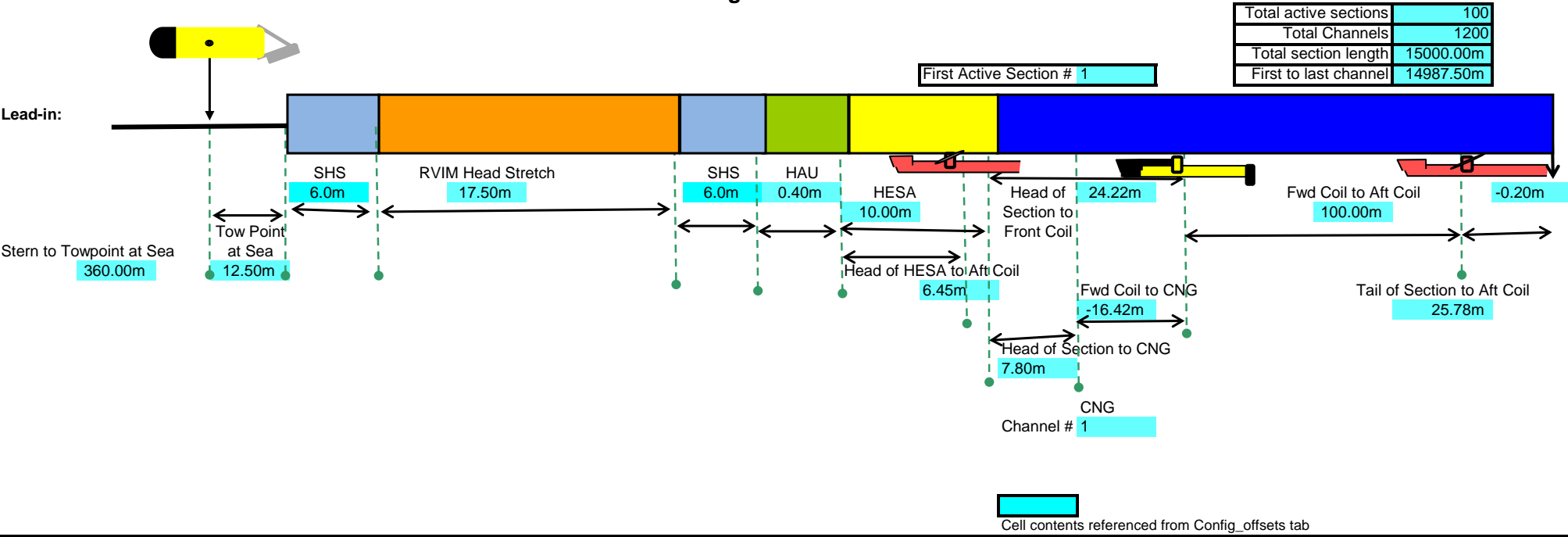
Gun String 1				
Plate	DT	Inline	Crossline	Depth
1	1	0.00	N/A	1.20
2		N/A	N/A	N/A
3	2	5.68	N/A	1.08
4		N/A	N/A	N/A
5		N/A	N/A	N/A
6		N/A	N/A	N/A
7	3	16.28	N/A	1.23

Gun String 2				
Plate	DT	Inline	Crossline	Depth
1	1	0.00	N/A	1.23
2		N/A	N/A	N/A
3		N/A	N/A	N/A
4	2	8.00	N/A	1.20
5		N/A	N/A	N/A
6		N/A	N/A	N/A
7	3	16.08	N/A	1.30

Gun String 3				
Plate	DT	Inline	Crossline	Depth
1	1	0.00	N/A	1.23
2		N/A	N/A	N/A
3	2	5.49	N/A	1.10
4		N/A	N/A	N/A
5		N/A	N/A	N/A
6		N/A	N/A	N/A
7	3	15.58	N/A	2.37

Gun String 4				
Plate	DT	Inline	Crossline	Depth
1	1	0.00	N/A	1.23
2		N/A	N/A	N/A
3	2	5.59	N/A	1.10
4		N/A	N/A	N/A
5		N/A	N/A	N/A
6		N/A	N/A	N/A
7	3	15.58	N/A	2.23

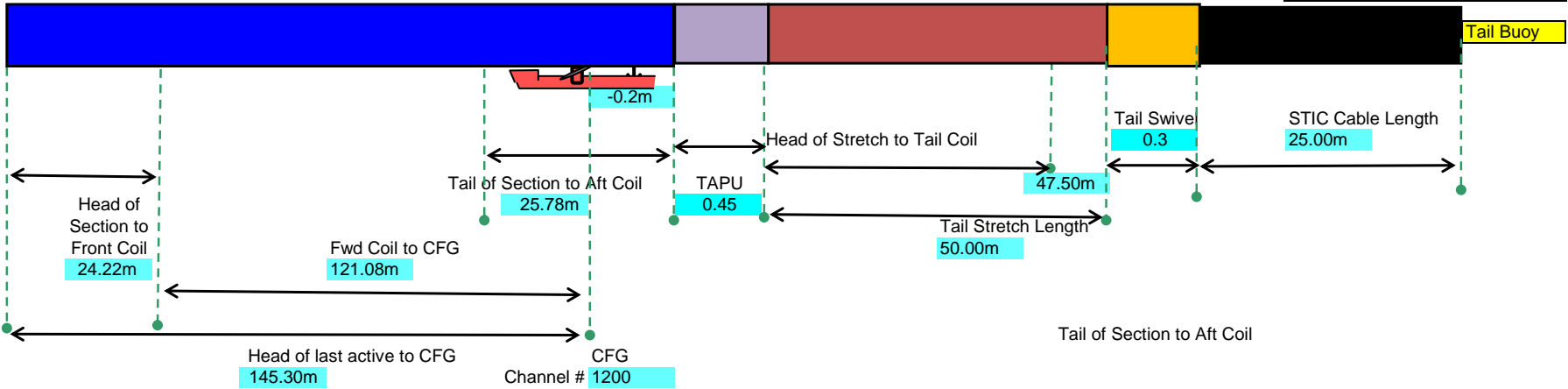
R/V Marcus G. Langseth - Streamer Front End



R/V Marcus G. Langseth - Streamer Tail End

Total active sections	100
Total Channels	1200
Total section length	15000.00m
First to last channel	14987.50m
CFG to TB RGPS	81.95m

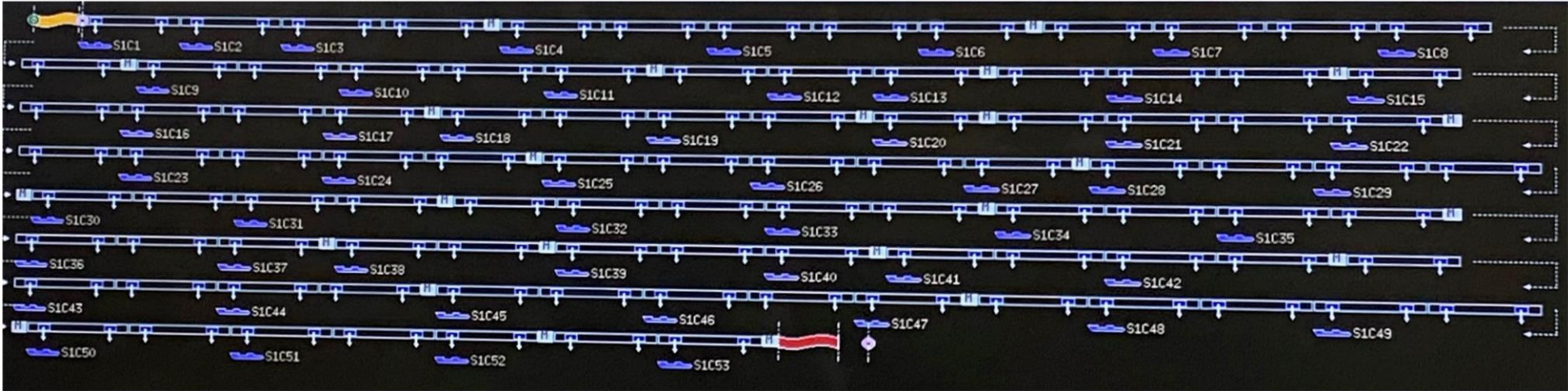
Last Active Section # 100



Cell contents referenced from Config_offsets tab

R/V Marcus G. Langseth - Streamer Complete

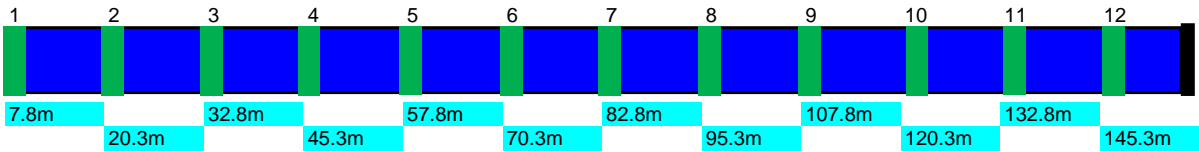
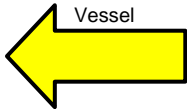
Total active sections	100
Total Channels	1200
Total section length	15000.00m
First to last channel	14987.50m



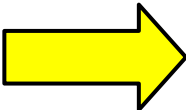
Cell contents referenced from Config_offsets tab

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

Number of SSAS Sections 100
Channels per active section 12
Total channels 1200

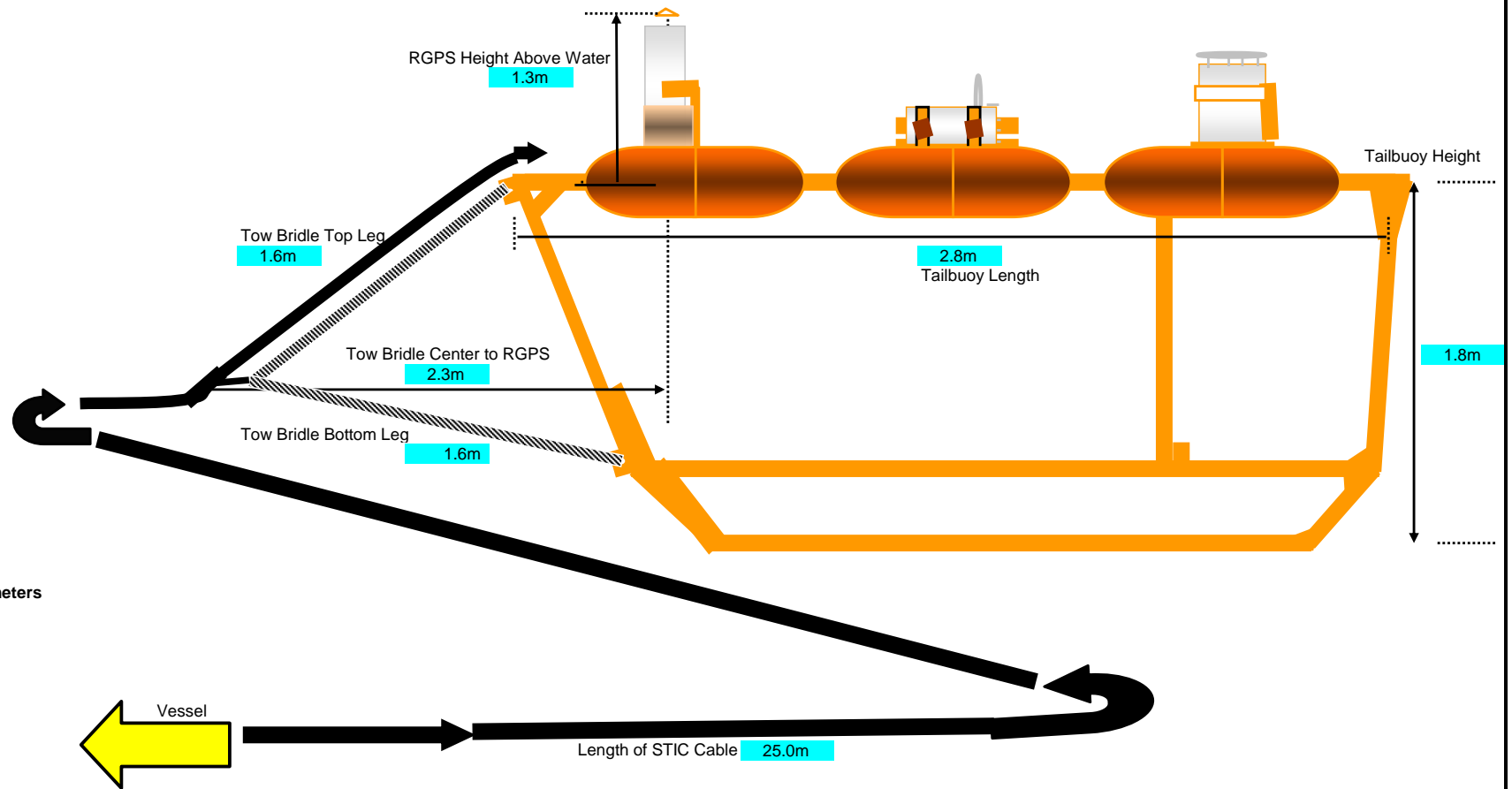


Tail buoy



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 Details		
NRP to COS Y		245
NRP to COS X		0
Source Depth		
Streamers Depth		12
# streamer sections		100
# channels		1200
CNG Channel #		1
CFG Channel #		1200
AMCIS Streamers		1
Real-It alerts to base		360
AMCIS Streamer Sep.		360
CNG volume total		8500
Volume per string		1650
# of guns used		35
# Gun Strings		6
gun string separation		4
PHM Y from stern		80
PHM X - inside of stern		0
PHM X - outside of stern		0
Slam to MAG Y		113
Slam to MAG X - (outside of stern X)		3

Fixed Positions	
Structure	
Build to Stock	39.5%
Now point or stock to	20.5%
out of stock in	12.0%
ATM/stock in	0.6%
Cost to sell	1.0%
Cost of section to	24.22%
Cost of section to sell	25.77%
Channel section	12.77%
NRP to PUV/STBD	7.5%
Section to Point RX	2.0%
Point to Last RX	180.3%
Channels per section	12.0%
Center of section to	-0.2%
from inner channel	1.0%
Point Section Number 1	1.0%
RAM/STBD/1 Length	0.2%
Cost to sell	1.0%
STBD Length	11.2%
STBD Length	10.0%
Active Section	150
Section Length (STBD)	10
TES test sketch	50
STBD	10
TES Test Cost	2.2%
TES, BR Cost	8.0%
TES, BR Cost	1.0%

Tidebuoy offsets	
RGPS height above water	1.3
TR length	2.8
TR horizontal	1.8%
Buoy arm	1
Reeflex-RGPS	2.2%
Tide Lim	1.5%
Reeflex Lim	1.5%
RTS	2%
ACX below water line	1.3

Desired (Kilobits/Second)	
NRP to CMP	347,305
COS-ONG	204,305
CNG-CFG	149,807
NRP-Mag Y	142,305
NRP-Mag X	101,305
NRP to tail busy RGPS	15,494
Total Length of Streamer sections	
PBM-COS Y	135,305
PBM-COS X	101,305
NRP-PM Y	105,305
NRP-PM X	101,305
NRP-ONG	449,305

Gums	
Source: GPC-SEC V	0
Bracket distance 3-3	1.9
Bracket distance 3-4	2.3
Bracket distance 3-5	2.6
Bracket distance 3-6	2.9
Bracket distance 3-7	3.4
Bracket distance 3-8	3.7
POH - Acrylic V	5.41
GPC number above water line	1.3
G1 Volume	360
G2 Volume	390
G3 Volume	46
G4 Volume	180
G5 Volume	180
G6 Volume	90
G7 Volume	120
G8 Volume	40
G9 Volume	40

[illegible]

Derived Offsets (Formula)	
Towing Offsets Tab	
MRP-COS	240
MRP-CNG	440
MRP-CMP	347.33
COS-CNG	204
CNG Channel #	1
MRP-Stern	29
Distance from Head of first section to CNG	7.1
Source Depth	12
Streamer Depth	12
Front End Length	39

General Release Network	
Teaming Configuration TAB	
MRP-COS	245
MRP-CNG	443.7
COS-CNG	204.7
MRP-Pratib	6
COS-Pratib	0
P-Cable	0
Pratib-Sat	0
MRP-PAB Y	103.5
MRP-PAB X	10.5
PAB-COS Y	135.5
PAB-COS X	10.5
gun Strings	4
gun volume	6500
gun separation	
# 2D Streamers	1
2D Streamer Ch Spacing	12.5
Number 2D Streamers	1200
2D Streamer Location	15000
2D Streamer	0
MRP-MAG X	10.5
MRP-MAG Y	142.5

Normal Overhead TAB	
G1T1	-0.15
G2T1	-0.15
G3T1	-0.15
G4T1	-0.15
S1T1	-16.95
S1T2	-162.28
S1T3	-1232.62
S1T4	-5247.62
S1T5	1
S1T6	0
S1T7	0
S2T1	0
S2T2	0
S2T3	0
S2T4	0
S2T5	0
S2T6	0
S2T7	0
S3T1	0
S3T2	0
S3T3	0
S3T4	0
S3T5	0
S3T6	0
S3T7	0
S4T1	0
S4T2	0
S4T3	0
S4T4	0
S4T5	0
S4T6	0
S4T7	0
Fixed cost	10000
S1T4-S1T5	5248.62

Gun array options	
Bracket distance 1-2	0
Bracket distance 2-3	3.3
Bracket distance 3-4	7.5
Bracket distance 4-5	2.5
Bracket distance 5-6	2.5
Bracket distance 6-7	2.3
Bracket distance 7-8	3
SoundGun-COS Y	0
COS - Acoustic Y	-5.47
HPS height above water	0
G2 Volume	360
G3 Volume	360
G4 Volume	180
G5 Volume	180
G6 Volume	90
G7 Volume	90
G8 Volume	65
G9 Volume	230
G10 Volume	220
C-Depth 1	0.95
C-Depth 2	0.95
C-Depth 3	1.15
C-Depth 4	0.95
C-Depth 5	1.15
C-Depth 6	0.95
C-Depth 7	1.15
C-Depth 8	0.95
C-Depth 9	1.15
C-Depth 10	0.95
C-Depth 11	1.15
C-Depth 12	0.95
C-Depth 13	1.15
C-Depth 14	0.95
C-Depth 15	1.15
C-Depth 16	0.95
C-Depth 17	1.15
C-Depth 18	0.95
C-Depth 19	1.15
C-Depth 20	0.95
C-Depth 21	1.15
C-Depth 22	0.95
C-Depth 23	1.15
C-Depth 24	0.95
C-Depth 25	1.15
C-Depth 26	0.95
C-Depth 27	1.15
C-Depth 28	0.95
C-Depth 29	1.15
C-Depth 30	0.95
C-Depth 31	1.15
C-Depth 32	0.95
C-Depth 33	1.15
C-Depth 34	0.95
C-Depth 35	1.15
C-Depth 36	0.95
C-Depth 37	1.15
C-Depth 38	0.95
C-Depth 39	1.15
C-Depth 40	0.95
C-Depth 41	1.15
C-Depth 42	0.95
C-Depth 43	1.15
C-Depth 44	0.95
C-Depth 45	1.15
C-Depth 46	0.95
C-Depth 47	1.15
C-Depth 48	0.95
C-Depth 49	1.15
C-Depth 50	0.95
C-Depth 51	1.15
C-Depth 52	0.95
C-Depth 53	1.15
C-Depth 54	0.95
C-Depth 55	1.15
C-Depth 56	0.95
C-Depth 57	1.15
C-Depth 58	0.95
C-Depth 59	1.15
C-Depth 60	0.95
C-Depth 61	1.15
C-Depth 62	0.95
C-Depth 63	1.15
C-Depth 64	0.95
C-Depth 65	1.15
C-Depth 66	0.95
C-Depth 67	1.15
C-Depth 68	0.95
C-Depth 69	1.15
C-Depth 70	0.95
C-Depth 71	1.15
C-Depth 72	0.95
C-Depth 73	1.15
C-Depth 74	0.95
C-Depth 75	1.15
C-Depth 76	0.95
C-Depth 77	1.15
C-Depth 78	0.95
C-Depth 79	1.15
C-Depth 80	0.95
C-Depth 81	1.15
C-Depth 82	0.95
C-Depth 83	1.15
C-Depth 84	0.95
C-Depth 85	1.15
C-Depth 86	0.95
C-Depth 87	1.15
C-Depth 88	0.95
C-Depth 89	1.15
C-Depth 90	0.95
C-Depth 91	1.15
C-Depth 92	0.95
C-Depth 93	1.15
C-Depth 94	0.95
C-Depth 95	1.15
C-Depth 96	0.95
C-Depth 97	1.15
C-Depth 98	0.95
C-Depth 99	1.15
C-Depth 100	0.95

Downed Offsets	
Sensometer Front End	
Downpoint at sea	360
downpoint at sea to end of towline	12.5
DHS Length	17.5
rim length	17.5
HALFTU towline	0.4
HESEA Lgth	10
Feed Coil to Ab Coil	100
Feed to Head	7.3
Feed Coil to CMC	-16.423
Feed to Tail	24.233
Feed to Tail to Ab Coil	25.777
CNG Channel #	1
Center of streamer to Ace towpoint	-0.2
Feed Section #	1
# channels	1200
section length	15000
# sections	50
channel spacing	12.5
First to last	14987.5
HESEA Head to aft	6.45

Streamers Tail End	
Head to Feed Coil	24.22
Tail to AR Coil	25.77
Head to AR Coil	145.
Coil to Coil	10
TAPU 1 coals	0.4
Tail to AR Coil	5
Twisted Length	0.
STIC 1 coals	2
Last active	10
# channels	120
# sections	10
Total section length	1500
First to last	1488.7
Stretch	0.
Center of streamer to AR Coil	-0.
Channel length	12.
CFG #	120
Feed coil to CFG	121.07
CFG to transition	81.9
Stretch head to tail	2.
Stretch head to aft	47.

Derived Offsets	
Streamer complete	
#Sections	10
# Channels	120
First to last	14287
Total section length	1500

Channel Offsets	
Hydrophone Offsets	
Channel 1	7.82
2	20.32
3	32.82
4	45.32
5	57.82
6	70.32
7	82.82
8	95.32
9	107.82
10	120.32
11	132.82
12	145.32
# channels	1
# Active's	10
Total Channels	120

Derived Offsets	
Tailrubby offsets	
RGPS height above anchor	1.
TB length	2.
TB height	1.8
RGPS-AGX	
Bridge-arm	2.2
Top Leg	1.5
Bottom Leg	1.
STIC	2.
ACX below anchor line	1.