

Drydock #2: (FAITHFUL SERVANT)

General Description

The FAITHFUL SERVANT is the former Semi-submersible barge LUCKY ANGEL. The Dock was originally built in 1979 and classed by the Chinese Classification Society (CCS). The Dock underwent extensive mid-life upgrade and refurbishment in 2002/2003 under the same CCS class standards and was maintained under class until 2007. While its original non-lift transfer operations allowed a maximum lift/transfer weight of 20,000 L.tons, dedicated service as a drydock necessitates a greatly reduced lift capacity typically 6,500 to 8,500 depending on weight and center of gravity properties of the vessel being docked.

Principal Dimensions

Length (Overall):	492.0 Ft
Length (Waterline):	483.5 Ft
Breadth-Main Hull (Moulded, Excluding Aft Towers):	131.2 Ft
Breadth (OA including Aft Tower tanks)	148.2 Ft
Depth to Pontoon Deck (Moulded):	27.88 Ft
Depth Overall (Total Hull and Superstructure):	67.26 Ft
Dock Frame Spacing:	8.2Ft
Keel Block Height (Standard including 4" Crushers)	3.83 Ft.
Keel Block Height (Maximum including 4" Crushers)	6.33 Ft

Clearances

Depth Available Over Standard 6 Ft Keel Blocks@ Minimum Allowable Freeboard (36"):	26.0 Ft
Depth Available Over Maximum 7.5 Ft Keel Blocks @ Minimum Allowable Freeboard (36"):	24.6 Ft
Clearance (Between Deck-mounted Ballast tank #9 Fwd.):	26.5 Ft
Clearance (Between Deck-mounted Ballast tank #10 Aft):	105.6 Ft

Weights

Dock Weight@ Light Ship (Excludes Wing Blocks & Tanks, Keel Blocks & Residual Ballast):	7,243 L. Tons
Ballast-Residual (Total Residual in Tanks at suction):	4.140 L. Tons
Supplemental Waterplane Weight (Wing Blocks & Tanks P/S):	278. L.Tons
Keel Block Weight (Total with keel blocks @ 3'x 4' x 6' high (Avg for capacity vessels)	290. L.Tons
Side Block Weight (Total with wedges atop (.. Avg for capacity vessels):	198. L.Tons
Dock Weight @ Light Operating (Includes ALL Blocks, Tanks & Residual Ballast in Sumps):	12.14 L. Tons
Ballast Capacity (Gross @ 100% of Capacity ...a NON-Operating Condition!):	17,000 L.Ton

Lift Capacity

Certified Rated Capacity (CRC):	6,800. L.Tons
Freeboard at CRC (... to Tank Vents atop Deck Tower Tanks)	-60"
Certified Maximum Lift Capacity (CMC):	7,300 L. Tons
Freeboard at CMC (...to Tank Vents atop Deck Tower Tanks):	-55"

Mechanical & Electrical Capacities

Pump Capacity (Total Pumping Rate-Deballasting):	-26.000.GPM
Pump Suction Limit (Depth in Tanks-Typical):	3.5-4.5 Ft
Electrical Generating Capacity (Main Pumping new Cummins Atop Deck Tank #9 (S)	800. KW
Electrical Generating Capacity (Standby):	450. KW
Electrical Generating Capacity (Emergency):	250.KW



Scott Dixon
Puglia Engineering Inc.
Fairhaven Shipyard
201 Harris Ave,
Bellingham, WA 98225

18 December 2017,

File: 1765

Subject: Drydock Faithful Servant Certification for Commercial Vessels.

Dear Mr. Scott Dixon, Dock master:

Columbia-Sentinel Engineers, Inc.(CSE) has been hired to conduct inspections/certification per Drydocking of Commercial Vessels on Puglia Fairhaven shipyard(FHS) Drydock Faithful Servant.

CSE has inspected and observed the mechanical and electrical systems of the drydock operating and all operated satisfactorily. CSE surveyed the tanks in the drydock.

I hereby certify the Material and Operational conditions of FHS Drydock Faithful Servant are safe per Commercial Vessels for a rated capacity of 6800LT.

All docking/undocking calculations are verified by Naval architect prior to docking/ undocking the vessels if the vessel doesn't have a previous docking record(Same or similar vessel).

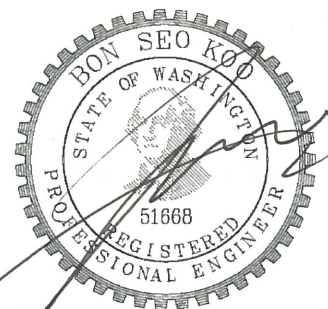
This certification is valid for two years and may be renewed after re-inspection.

Attachments:

1. The checklists from Appendix B of SFLC Standard Specification 8634.
2. Emergency Evacuation Procedure
3. UT Report

Very Truly Yours,

BON SEO KOO, P.E.
Naval Architect
Columbia-Sentinel Engineers, Inc.

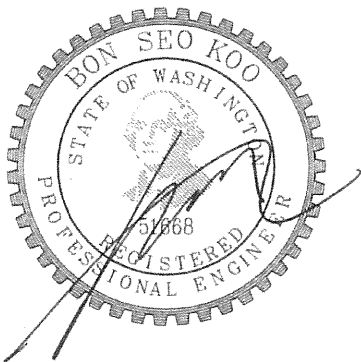


18 December 2017

INSPECTION CHECKLISTS FOR DRYDOCKING FACILITIES CERTIFICATION

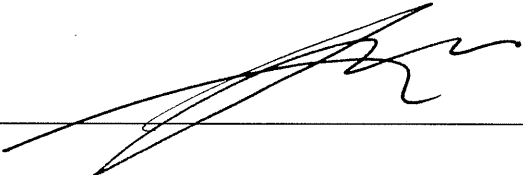
The following is a list of the minimum facility requirements with integrated inspection checklists for each type of drydocking facility. All required equipment or equipment that the Contractor intends to use must be marked satisfactory at the time of the availability start date.

I hereby certify the material and operational conditions of the docking facilities identified as Faithful Servant Drydock, owned and operated by Puglia Engineering, Inc Fairhaven shipyard are safe for docking vessels within the facility's rated capacity on this the 18th day of December in the year of 2017.



Date: 18 December 2017

Registration State and No.: Washington State License No: 51668

Signature of Registered Professional Engineer: 

INSPECTION CHECKLIST FOR GENERAL REQUIREMENTS (ALL TYPES)

INSPECTED BY BON S. KOO, P.E DATE 29 September 2017

FACILITY ID. Faithful Servant SHEET NO. 1 OF 7

ITEMS INSPECTED	CONDITION					REMARKS
	U	M	NA	NI	S	
Block Hauling Mechanism						(Mark all that apply)
Sheaves			√			
Tracks			√			
Chain/cable			√			
Pawls			√			
Structural members			√			
Ratchets			√			
Hauling winches/motors			√			
Slides			√			
Communication Systems (One of the below is required)						(Mark all that apply – Pass/Fail)
Public address system			√			
Radios					√	
Alarms			√			
Sound powered phones					√	
Dial telephone			√			
Bull Horn			√			

U-Unsatisfactory M-Marginal NA-Not applicable NI- Not inspected S-Satisfactory

NOTE: All marginal and unsatisfactory items shall be addressed in remarks. Attach additional sheets as necessary.

INSPECTION CHECKLIST FOR GENERAL REQUIREMENTS (ALL TYPES), CONTINUED

INSPECTED BY BON S. KOO, P.EDATE 29 September 2017FACILITY ID. Faithful ServantSHEET NO. 2 OF 7

ITEMS INSPECTED	CONDITION					REMARKS
	U	M	NA	NI	S	
Electrical Systems and Equipment Electrical power system shall support maximum load, developed by simultaneous operation of the dewatering pumps, fire protection pumps, valve opening and closing mechanisms, hauling machinery, communications equipment, lighting, alarms, and any other support equipment or systems necessary for the safe operation of the facility.					√	
Main power source (One of the below is required)					√	(Required)
Shore power					√	
Diesel gen. Set					√	Cummins 800 kw Stbd. Dk house Top
Back-up power source						(Optional)
Shore power					√	
Diesel gen. Sets					√	Mitsubishi 450kw Stbd in Dk House
Electrical power distribution					√	(Required)
Lighting for operations & security					√	(Required)
Ship grounding straps					√	(Required)
Welding machine grounds					√	(Required)
FIRE PROTECTION SYSTEM (One of the below is required)					√	(Required)
Installed fire protection system compliant with Occupational Safety and Health Administration (OSHA) regulations			√			
Memorandum of agreement with a local fire department ensuring that that fire department can arrive at the facility within 30 minutes of receiving the alarm.					√	

U-Unsatisfactory M-Marginal NA-Not applicable NI- Not inspected S-Satisfactory

NOTE: All marginal and unsatisfactory items shall be addressed in remarks. Attach additional sheets as necessary.

INSPECTION CHECKLIST FOR GENERAL REQUIREMENTS (ALL TYPES), CONTINUED

FACILITY ID. Faithful Servant

SHEET NO. 3 **OF** 7

ITEMS INSPECTED	CONDITION					REMARKS
	U	M	NA	NI	S	
FITTINGS/CONNECTIONS						(Mark all that apply)
Cleats					✓	
Bollards					✓	
Chocks					✓	
Gratings			✓			
Ringbolts			✓			
Platforms			✓			
Watertight doors, hatches, portlights and manholes					✓	
Gudgeon and pintle connections			✓			
Bolted connections					✓	
Attachments					✓	
Reinforcements					✓	
SHIP/DOCK HANDLING SYSTEMS AND EQUIPMENT (One of the below is required)						(Mark all that apply)
Capstans			✓			
Winches					✓	
Trolleys			✓			
Translation chains and cables					✓	
UNDERWATER INSPECTION Has there been an inspection performed within the last 5 years?				✓		Couldn't find any significant bottom plate wastage from UT report and didn't carry out underwater inspection

U-Unsatisfactory M-Marginal NA-Not applicable NI- Not inspected S-Satisfactory

NOTE: All marginal and unsatisfactory items shall be addressed in remarks. Attach additional sheets as necessary.

INSPECTION CHECKLIST FOR FLOATING DRYDOCKS

INSPECTED BY BON S. KOO, P.E DATE 29 September 2017

FACILITY ID. Faithful Servant SHEET NO. 4 OF 7

General Description. Attach a drawing of the dock showing general construction. Supply on the drawing or in a table the tank sizes, volumes and locations.

Age of Dock (yrs)	38 Years since 1979 Construction 14 Years since 2003 Refurbishment
LOA (ft)	492 ft
BOA (ft)	135 ft
Distance between wing walls (ft)	n/a
Wing wall height (ft)	n/a
Wing wall length (ft)	n/a
Pontoon height (ft)	27.89 ft
Pontoon width (ft)	131.2 ft
The maximum water depth over the pontoon deck accounting for silt and tidal changes. (ft) The bottom dock must maintain 12 inches clearance above the harbor bottom when fully submerged.	Max Depth over pontoon deck: 31 ft Depth of harbor: ~70 ft Tidal Range: 10 ft
Maximum wind and current under which docking and undocking can be safely conducted. Determined by Contractor's SOP.	Max Wind: 15 knots Max Current: 4 ~ 5 knots
Maximum rated capacity of the drydock and the maximum load per foot.	Max Capacity (LT): 6800 LT Max : 48.51 LT/FT
Maximum differential water levels permitted on tank bulkheads.	67.26 ft
A current estimated weight & KG shall show the drydock in the light operating condition with all ballast tanks at the residual water levels. A correction shall be added for deck load, marine growth and silt accumulation in the tanks.	Lightship: 7242.8 LT, KG: 26.02 ft Current WT : 11493.3 LT, KG: 17.13ft (Ballast No1 ~8 10% Residual water)

INSPECTION CHECKLIST FOR FLOATING DRYDOCKS, CONTINUED

FACILITY ID. Faithful ServantSHEET NO. 5 OF 7

ITEMS INSPECTED	CONDITION					REMARKS
	U	M	NA	NI	S	
BALLASTING SYSTEM					√	(Required)
Do pumps operate?					√	(Pass/Fail) PASS
Ballast and deballast in less than eight hours.					√	(Pass/Fail) PASS
Do valves operate?					√	(Pass/Fail) PASS
DEFLECTION DETECTION SYSTEM (Describe system if applicable)			√			(Optional)
DRAFT BOARDS Draft boards showing depth of water over pontoon deck at the wingwalls near the four inboard corners and at mid-length on the port and starboard sides.					√	(Required - Pass/Fail) PASS Located on Aft Deck's tower (No.9 Tanks)
METHOD FOR DETERMINING TANK LEVELS						(Mark all that apply. One of the below is required)
Tank level indicators					√	
Sounding tubes					√	
HULL STRUCTURE Metal structural members shall have no more than 25% wastage. Wood structural members shall be free of wood rot, marine bores and deemed in good condition.						See UT Report
Pontoon deck					√	
Pontoon sides/ends					√	Bow 10'x8" and 12.5'x11.5' Plate Replaced
Pontoon bottom					√	
Wingwalls sides/ends			√			
Wingwall top deck			√			
Safety/machinery decks			√			
Interior Ballast/trim/ buoyancy tanks					√	

U-Unsatisfactory M-Marginal NA-Not applicable NI- Not inspected S-Satisfactory

Note: All marginal and unsatisfactory items shall be addressed in remarks. Attach additional sheets as necessary.

INSPECTION CHECKLIST FOR FLOATING DRYDOCKS, CONTINUED

FACILITY ID. Faithful Servant

SHEET NO. 6 **OF** 7

ITEMS INSPECTED	CONDITION					REMARKS
	U	M	NA	NI	S	
HULL STRUCTURE (cont.)						
Trusses/girders/frames/ beams					✓	
Longitudinals					✓	
Swash bulkheads					✓	
Watertight bulkheads					✓	Fr. 3 Stbd 20' x 2' Plate Replaced
Fuel/water tanks					✓	
Coatings					✓	
MOORING SYSTEM (dock to shore)					✓	(Required)
Condition of mooring					✓	
SECURE WT HANDLING EQUIPMENT The weight handling securing systems shall be demonstrated to verify that these systems are adequate to hold under conditions of maximum list and trim.			✓			(If applicable)
STABILITY AND BUOYANCY CRITERIA Docking facility shall meet the following freeboard and buoyancy characteristics.					✓	(Mark as applicable)
OPEN-ENDED DOCKS The minimum freeboard of the pontoon deck of the drydock (excluding pits) with the rated maximum load lifted shall be 12 inches.					✓	1.0' Freeboard at Aft Deck's Tower (No. 9 tanks)

U-Unsatisfactory M-Marginal NA-Not applicable NI- Not inspected S-Satisfactory

Note: All marginal and unsatisfactory items shall be addressed in remarks. Attach additional sheets as necessary.

INSPECTION CHECKLIST FOR FLOATING DRYDOCKS, CONTINUED

FACILITY ID. Faithful Servant

SHEET NO. 7 **OF** 7

ITEMS INSPECTED	CONDITION					REMARKS
	U	M	NA	NI	S	
<p>CLOSE-ENDED DRY DOCK</p> <p>Minimum freeboard with the rated maximum load lifted shall be nine inches, measured from the sill of the stern (or bow) gates.</p>			√			
<p>FLOATING DRYDOCKS IN THE FULLY BALLASTED DOWN CONDITION</p> <p>During controlled ballasting of the drydock, the minimum freeboard (measured from the top deck at side) shall be 12 inches.</p>					√	Required (Pass/Fail) PASS No 9 tanks are slack and No 10 tanks are Empty at Full ballast down condition.
<p>EMERGENCY PUMPING PLAN</p> <p>The facility must have an emergency plan or data demonstrating that failure of a pump or loss of pumping capacity will neither put the drydock out of operation nor cause damage to either the drydock or a ship in drydock.</p>					√	Required (Pass/Fail) PASS Two Diesel aux. backup pumps are installed for emergency.

U-Unsatisfactory M-Marginal NA-Not applicable NI- Not inspected S-Satisfactory

Note: All marginal and unsatisfactory items shall be addressed in remarks. Attach additional sheets as necessary.

EMERGENCY EVACUATION PROCEDURE

Rev 6/1/16

Fairhaven Shipyard – 201 Harris Avenue – Phone (360) 647-0080

1. **Sound Alarm** (on flag pole) continuously and/or use portable horns located with fire watches and on Job Boards. The first person to evacuate the Faithful Servant and the AFDL-45 Drydock is to activate an air horn aiming it back at the drydock to aid in assuring that everyone is aware of the call to evacuate.
2. **Call 911** - By Radio or Telephone, contact one of the following Personnel to call 911.

Matt Wallberg - ext. 219	Dale Lockwood - ext. 210	Mike Guidon – ext. 204
Pete Riss - ext. 209	Security - ext. 217	Scott Dixon - ext. 216
3. Joel Underwood, Guard or Designee will remain at the Main Gate to guide Emergency Vehicle(s) to the Emergency Scene.
4. Jay Mueller and Mike Guidon will supervise the evacuation at the Staging Area and assist those who may need medical attention.
5. Pete Riss and Matt Wallberg will verify all items on the Master Check-Off List are accomplished. Pete will take Production Head Count; Matt will take Administration/QA Head Count.
6. **Evacuate To Staging Area** - All personnel will assemble at the Staging Area. (asphalt, south of flag pole). **DO NOT USE ELECTRIC CARTS TO MOVE PERSONNEL** during the evacuation.
7. FHS employees will assemble by Department. Sub-Contractors by Company. Customers & Crew Members by Vessel.
8. Department and Sub-Contractor Supervisors are responsible for the head count of their Personnel and any Temporary Personnel assigned to them. After taking the head count, Supervisors are to report count results to Pete or Matt. Report regardless of whether all are accounted for or someone is missing.
9. Craft Leads will account for Temporary Personnel assigned to them.
 - Names of Temporary Personnel can be provided by Human Resources.
 - Names of the Sub-Contractor companies can be provided by the Ship Supervisor or Guardhouse. (if security is on duty.)
10. The Ship Supervisor of the Affected Vessel or Area is responsible to assist with the Evacuation.
11. Pete Riss (alternate: Angela Ferguson) will account for all Personnel on the 2nd floor of the Pier Building.
12. Matt Wallberg (alternate: Scott Hendrickson, Maggie Proctor or Jet Rhodes) will account for 2nd floor Arrowac building Personnel.
13. Kelly Ogar (alternate: Joel Christensen) will account for Personnel on the Ground Floor of the Arrowac building.
14. Randy Goode and Edd Spreitzer will account for Personnel on the Ground Floor of the Pier Building.
15. Greg VanDyke (alternate: Steve Schemstad) will account for Personnel in the South Production Shops.
16. Mark Carter & Doug Reed (alternate: Randy Compton) will account for Personnel in the Yard Outbuildings.
17. Cary Johansen & Chris Beatty will assist in Moving Equipment out of the way. Lift trucks are then to be driven out of Fire Lanes and parked.
18. Scott Dixon will assist Fire Department if required.

(1)

EMERGENCY SHUT OFF

- Greg VanDyke and Steve Schemstad are responsible for the Shut-Off of Oxygen, Shielding Gas, Natural Gas and Mapp Gas, if required, located outside of the Fab Shop.
- Bob Clunk (back up Colton Ridgely) is responsible for shut off of required electrical power for equipment or building.

Return to the staging area for head count and to assist where needed.

EMERGENCY EVACUATION MASTER CHECK – OFF LIST

1. Emergency Response Called, (Fire Depart. / Police, Etc.) (Standby at Gate)
2. Shut-off(s) Oxygen, Natural Gas, Mapp Gas (Greg VanDyke & Steve Schemstad)
3. Shut-off Electrical Power (Electrician: Bob Clunk, Colton Ridgely)
4. Emergency Stop Button – Solvent Still (Doug Reed, Dan Webster, Randy Compton)
5. Representation of Areas
 - a. 2nd Floor Production Offices, Lunch Room, Loft.
 - b. Mechanical Shop, Ground Floor
 - c. Tool Room
 - d. First Aid Room
 - e. Electrical Shop
 - f. Wood Shop / Operator Lunch Room
 - g. 1st Floor Customer Offices
 - h. Painter Lunch Room
 - i. Arrowac 2nd Floor, Est. Offices, Exec. Offices, Front Lobby, Receptionist, Loft.
 - j. Arrowac Ground Floor, Valve & Machine Shop
 - k. Customer Office Trailers
 - l. Sandblast / Paint Buildings
 - m. Shipping / Receiving / Purchasing / Security
 - n. Weld / Pipe Shops
 - o. Old Machine Shop
 - p. Drydock
 - q. Faithful Servant

(2)

6. Representation of Production Personnel for Head Count - Pete

- a. Electrical
- b. Paint
- c. Pipe
- d. Weld
- e. Mechanical
- f. Operators
- g. Tool Room
- h. Valve / Machine Shop
- i. Dockmasters and crew
- i. Customer / Vessel Crew Members

7. Representation of Administrative Personnel for Head Count - Matt

- a. Arrowac Office
- b. Pier Building Office
- c. Purchasing and Receiving
- d. QA
- e. Temporary
- f. Security
- g. Adjacent Facilities (Neighbors) – Premier Harvest

(3)



Faithful Servant Dry-dock Ultrasonic Testing

9/5/17 - 10/3/17

UTT Readings: Daniel Webster, QA/QA Technician

Gauge: PosiTector Advanced - S/N# 741921

PosiTector UTG Probe: S/N# 230253

STDB1 Certified Step Blocks: S/N# 916478

A handwritten signature in black ink that reads "Dan Webster".

Dan Webster QA/QC Tech.

Pg 1: (this cover sheet)

Pg 2-3: Tank #3 Port Results

Pg 4-5: Tank #5 Port Results

Pg 6-7: Tank #4 Stbd Results

Pg 8-9: Tank # 6 Stbd Results

Pg 10: Thickness measurement locations #1-24 - Side Shell Diagram

Pg 11: Thickness measurement locations #25-45 - Forward Bulkhead

Pg 12: Thickness measurement locations #46-69 - Centerline Bulkhead

Pg 13: Thickness measurement locations #70-90 - Aft Bulkhead

Pg 14: Thickness measurement locations #91-114 - Non-watertight Bulkhead

Pg 15: Thickness measurement locations #115 - 139- Bottom Shell

RDG	t"	Location
1	0.937	2'
2	0.503	7.5' 19-20
3	0.563	20.5'
4	0.983	2'
5	0.490	7.5' 18-19
6	0.564	20.5'
7	0.949	2'
8	0.513	7.5' 17-18
9	0.545	20.5'
10	0.962	2'
11	0.501	7.5' 16-17
12	0.462	20.5'
13	0.971	2'
14	0.511	7.5' 15-16
15	0.555	20.5'
16	0.991	2'
17	0.507	7.5' 14-15
18	0.558	20.5'
19	1.000	2'
20	0.517	7.5' 13-14
21	0.436	20.5'
22	0.928	2'
23	0.443	7.5' 12-13
24	0.502	20.5'
25	0.487	2' Fwd blkhd frame 12 at sideshell
26	0.510	9' Fwd blkhd frame 12 at sideshell
27	0.508	21' Fwd blkhd frame 12 at sideshell
28	0.482	2'
29	0.517	9'
30	0.511	21'
31	0.480	2'
32	0.490	9'
33	0.513	21'
34	0.472	2'
35	0.501	9'
36	0.520	21'
37	0.479	2'
38	0.500	9'
39	0.517	21'
40	0.489	2'
41	0.502	9'
42	0.508	21'
43	0.482	2'
44	0.497	9'
45	0.515	21'
46	0.712	2' CL water tight bulkhead

RDG	t"	Location
47	0.641	7.5'
48	0.633	20.5'
49	0.703	2'
50	0.638	7.5'
51	0.629	20.5'
52	0.723	2'
53	0.649	7.5'
54	0.627	20.5'
55	0.717	2'
56	0.638	7.5'
57	0.632	20.5'
58	0.706	2'
59	0.624	7.5'
60	0.619	20.5'
61	0.716	2'
62	0.629	7.5'
63	0.634	20.5'
64	0.700	2'
65	0.606	7.5'
66	0.615	20.5'
67	0.709	2'
68	0.637	7.5'
69	0.628	20.5'
70	0.488	2' Aft blkhd frame at sideshell
71	0.503	9' Aft blkhd frame at sideshell
72	0.507	21' Aft blkhd frame at sideshell
73	0.492	2'
74	0.507	9'
75	0.515	21'
76	0.493	2'
77	0.499	9'
78	0.487	21'
79	0.507	2'
80	0.522	9'
81	0.513	21'
82	0.478	2'
83	0.519	9'
84	0.510	21'
85	0.493	2'
86	0.506	9'
87	0.501	21'
88	0.485	2'
89	0.489	9'
90	0.477	21'
91	0.530	2' non-water tight bulkhead
92	0.545	7.5'

RDG	t"	Location
93	0.538	20.5'
94	0.513	2'
95	0.540	7.5'
96	0.533	20.5'
97	0.509	2'
98	0.513	7.5'
99	0.502	20.5'
100	0.493	2'
101	0.509	7.5'
102	0.500	20.5'
103	0.506	2'
104	0.522	7.5'
105	0.517	20.5'
106	0.506	2'
107	0.546	7.5'
108	0.531	20.5'
109	0.491	2'
110	0.528	7.5'
111	0.507	20.5'
112	0.511	2'
113	0.529	7.5'
114	0.516	20.5'
115	0.996	Bottom shell 1A
116	0.923	Bottom shell 1B
117	0.937	Bottom shell 1C
118	0.935	Bottom shell 1D
119	0.942	Bottom shell 1E
120	0.975	Bottom shell 2A
121	0.958	Bottom shell 2B
122	0.970	Bottom shell 2C
123	0.944	Bottom shell 2D
124	0.963	Bottom shell 2E
125	0.957	Bottom shell 3A
126	0.968	Bottom shell 3B
127	0.965	Bottom shell 3C
128	0.972	Bottom shell 3D
129	0.964	Bottom shell 3E
130	0.959	Bottom shell 4A
131	0.972	Bottom shell 4B
132	0.966	Bottom shell 4C
133	0.929	Bottom shell 4D
134	0.937	Bottom shell 4E
135	0.974	Bottom shell 5A
136	0.979	Bottom shell 5B
137	0.952	Bottom shell 5C
138	0.949	Bottom shell 5D

RDG	t"	Location
139	0.938	Bottom shell 5E
140		
141		
142		
143		
144		
145		
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182		
183		
184		

RDG	t"	Location
1	1.010	2'
2	0.467	7.5' 35-36
3	0.562	20.5'
4	1.000	2'
5	0.470	7.5' 34-35
6	0.498	20.5'
7	1.000	2'
8	0.459	7.5' 33-34
9	0.513	20.5'
10	0.993	2'
11	0.480	7.5' 32-33
12	0.512	20.5'
13	0.995	2'
14	0.463	7.5' 31-32
15	0.563	20.5'
16	1.000	2'
17	0.483	7.5' 30-31
18	0.495	20.5'
19	0.997	2'
20	0.490	7.5' 29-30
21	0.558	20.5'
22	1.010	2'
23	0.469	7.5' 28-29
24	0.570	20.5'
25	0.490	2' Fwd blkhd frame at sideshell
26	0.488	9' Fwd blkhd frame at sideshell
27	0.499	21' Fwd blkhd frame at sideshell
28	0.456	2'
29	0.503	9'
30	0.510	21'
31	0.488	2'
32	0.499	9'
33	0.503	21'
34	0.469	2'
35	0.493	9'
36	0.491	21'
37	0.471	2'
38	0.489	9'
39		21'
40	0.468	2'
41	0.493	9'
42		21'
43	0.475	2'
44	0.490	9'
45		21'
46	0.714	2' CL water tight bulkhead

RDG	t"	Location
47	0.620	7.5'
48		20.5'
49	0.713	2'
50	0.612	7.5'
51		20.5'
52	0.708	2'
53	0.620	7.5'
54		20.5'
55	0.712	2'
56	0.630	7.5'
57		20.5'
58	0.709	2'
59	0.623	7.5'
60		20.5'
61	0.706	2'
62	0.629	7.5'
63		20.5'
64	0.700	2'
65	0.680	7.5'
66		20.5'
67	0.711	2'
68	0.629	7.5'
69		20.5'
70	0.480	2' Aft blkhd frame at sideshell
71	0.548	9' Aft blkhd frame at sideshell
72	0.451	21' Aft blkhd frame at sideshell
73	0.498	2'
74	0.532	9'
75	0.448	21'
76	0.491	2'
77	0.536	9'
78	0.487	21'
79	0.500	2'
80	0.528	9'
81	0.513	21'
82	0.477	2'
83	0.528	9'
84		21'
85	0.483	2'
86	0.525	9'
87		21'
88	0.480	2'
89	0.537	9'
90		21'
91	0.482	2' non-water tight bulkhead
92	0.496	7.5'

RDG	t"	Location
93	0.477	20.5'
94	0.471	2'
95	0.503	7.5'
96	0.483	20.5'
97	0.490	2'
98	0.516	7.5'
99	0.479	20.5'
100	0.467	2'
101	0.499	7.5'
102	0.473	20.5'
103	0.472	2'
104	0.510	7.5'
105	0.497	20.5'
106	0.488	2'
107	0.516	7.5'
108	0.482	20.5'
109	0.497	2'
110	0.509	7.5'
111	0.506	20.5'
112	0.488	2'
113	0.521	7.5'
114	0.500	20.5'
115	0.993	Bottom shell 1A
116	1.000	Bottom shell 1B
117	1.000	Bottom shell 1C
118	0.986	Bottom shell 1D
119	0.990	Bottom shell 1E
120	1.000	Bottom shell 2A
121	1.000	Bottom shell 2B
122	0.980	Bottom shell 2C
123	0.977	Bottom shell 2D
124	1.000	Bottom shell 2E
125	1.000	Bottom shell 3A
126	0.995	Bottom shell 3B
127	1.000	Bottom shell 3C
128	0.984	Bottom shell 3D
129	0.992	Bottom shell 3E
130	0.963	Bottom shell 4A
131	0.984	Bottom shell 4B
132	0.972	Bottom shell 4C
133	1.000	Bottom shell 4D
134	1.000	Bottom shell 4E
135	1.000	Bottom shell 5A
136	0.996	Bottom shell 5B
137	1.000	Bottom shell 5C
138	0.985	Bottom shell 5D

RDG	t"	Location
139	0.967	Bottom shell 5E
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RDG	t"	Location
1	0.987	2' Frame 27-28
2	0.470	7.5' Frame 27-28
3	0.526	20.5' Frame 27-28
4	0.952	2' Frame 26-27
5	0.486	7.5' Frame 26-27
6	0.517	20.5' Frame 26-27
7	1.000	2' Frame 25-26
8	0.478	7.5' Frame 25-26
9	0.517	20.5' Frame 25-26
10	0.968	2' Frame 24-25
11	0.479	7.5' Frame 24-25
12	0.528	20.5' Frame 24-25
13	0.929	2' Frame 23-24
14	0.467	7.5' Frame 23-24
15	0.530	20.5' Frame 23-24
16	0.975	2' Frame 22-23
17	0.480	7.5' Frame 22-23
18	0.522	20.5' Frame 22-23
19	0.952	2' Frame 21-22
20	0.463	7.5' Frame 21-22
21	0.509	20.5' Frame 21-22
22	0.962	2' Frame 20-21
23	0.468	7.5' Frame 20-21
24	0.512	20.5' Frame 20-21
25	0.469	2' Fwd blkhd frame 20 at sideshell
26	0.481	9' Fwd blkhd frame 20 at sideshell
27	0.487	21' Fwd blkhd frame 20 at sideshell
28	0.473	2'
29	0.490	9'
30	0.496	21'
31	0.488	2'
32	0.502	9'
33	0.488	21'
34	0.491	2'
35	0.499	9'
36	0.490	21'
37	0.482	2'
38	0.506	9'
39		21'
40	0.480	2'
41	0.501	9'
42		21'
43	0.493	2'
44	0.000	9' Tunnel in way
45		21'
46	0.716	2' CL water tight bulkhead

RDG	t"	Location
47	0.622	7.5'
48		20.5'
49	0.703	2'
50	0.616	7.5'
51		20.5'
52	0.711	2'
53	0.630	7.5'
54		20.5'
55	0.724	2'
56	0.638	7.5'
57		20.5'
58	0.709	2'
59	0.628	7.5'
60		20.5'
61	0.712	2'
62	0.618	7.5'
63		20.5'
64	0.703	2'
65	0.619	7.5'
66		20.5'
67	0.707	2'
68	0.625	7.5'
69		20.5'
70	0.468	2' Aft blkhd frame 28 at sideshell
71	0.521	9' Aft blkhd frame 28 at sideshell
72	0.531	21' Aft blkhd frame 28 at sideshell
73	0.488	2'
74	0.527	9'
75	0.515	21'
76	0.478	2'
77	0.518	9'
78	0.511	21'
79	0.475	2'
80	0.522	9'
81	0.507	21'
82	0.490	2'
83	0.511	9'
84		21'
85	0.483	2'
86	0.507	9'
87		21'
88	0.481	2'
89	0.000	9' Tunnel in way
90		21'
91	0.493	2' non-water tight bulkhead
92	0.516	7.5'

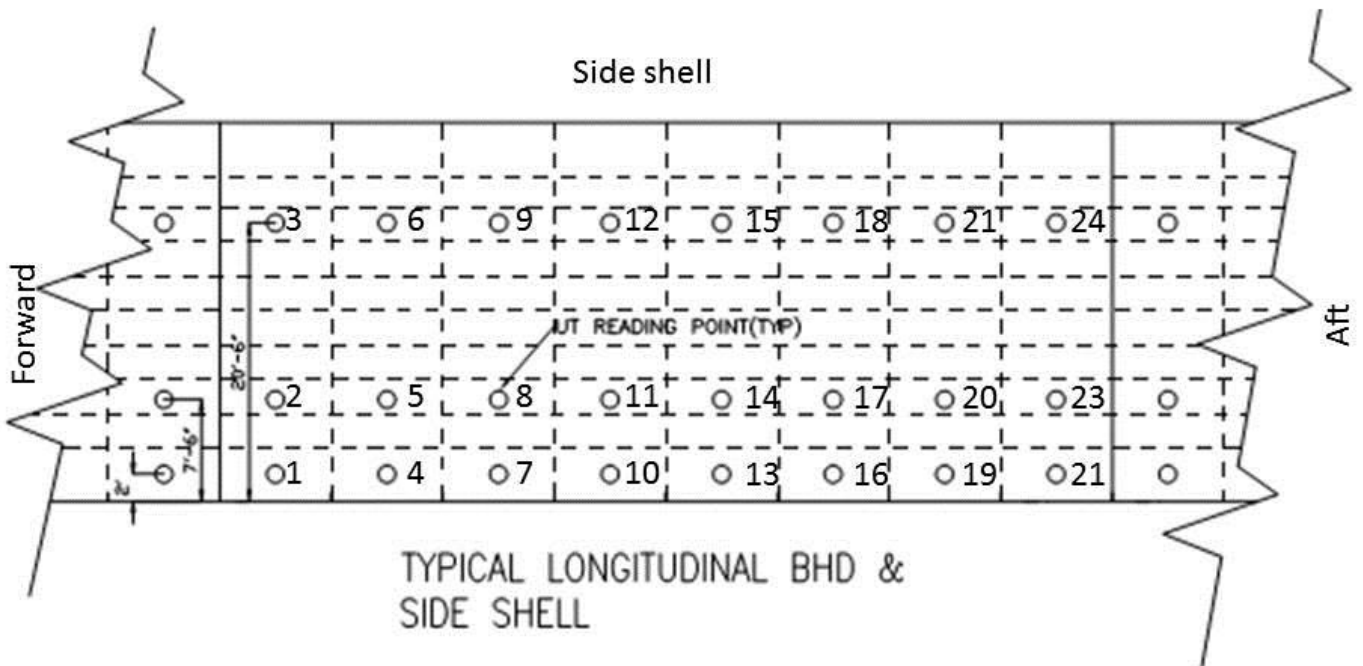
RDG	t"	Location
93	0.472	20.5'
94	0.471	2'
95	0.496	7.5'
96	0.491	20.5'
97	0.488	2'
98	0.507	7.5'
99	0.483	20.5'
100	0.468	2'
101	0.489	7.5'
102	0.489	20.5'
103	0.474	2'
104	0.504	7.5'
105	0.476	20.5'
106	0.492	2'
107	0.518	7.5'
108	0.481	20.5'
109	0.487	2'
110	0.512	7.5'
111	0.492	20.5'
112	0.491	2'
113	0.511	7.5'
114	0.506	20.5'
115	0.963	Bottom shell 1A
116	0.986	Bottom shell 1B
117	0.951	Bottom shell 1C
118	0.968	Bottom shell 1D
119	0.994	Bottom shell 1E
120	1.000	Bottom shell 2A
121	0.981	Bottom shell 2B
122	0.978	Bottom shell 2C
123	0.998	Bottom shell 2D
124	1.000	Bottom shell 2E
125	0.947	Bottom shell 3A
126	0.976	Bottom shell 3B
127	0.959	Bottom shell 3C
128	0.960	Bottom shell 3D
129	0.967	Bottom shell 3E
130	0.984	Bottom shell 4A
131	0.958	Bottom shell 4B
132	0.964	Bottom shell 4C
133	0.983	Bottom shell 4D
134	0.971	Bottom shell 4E
135	0.963	Bottom shell 5A
136	0.992	Bottom shell 5B
137	0.983	Bottom shell 5C
138	0.966	Bottom shell 5D

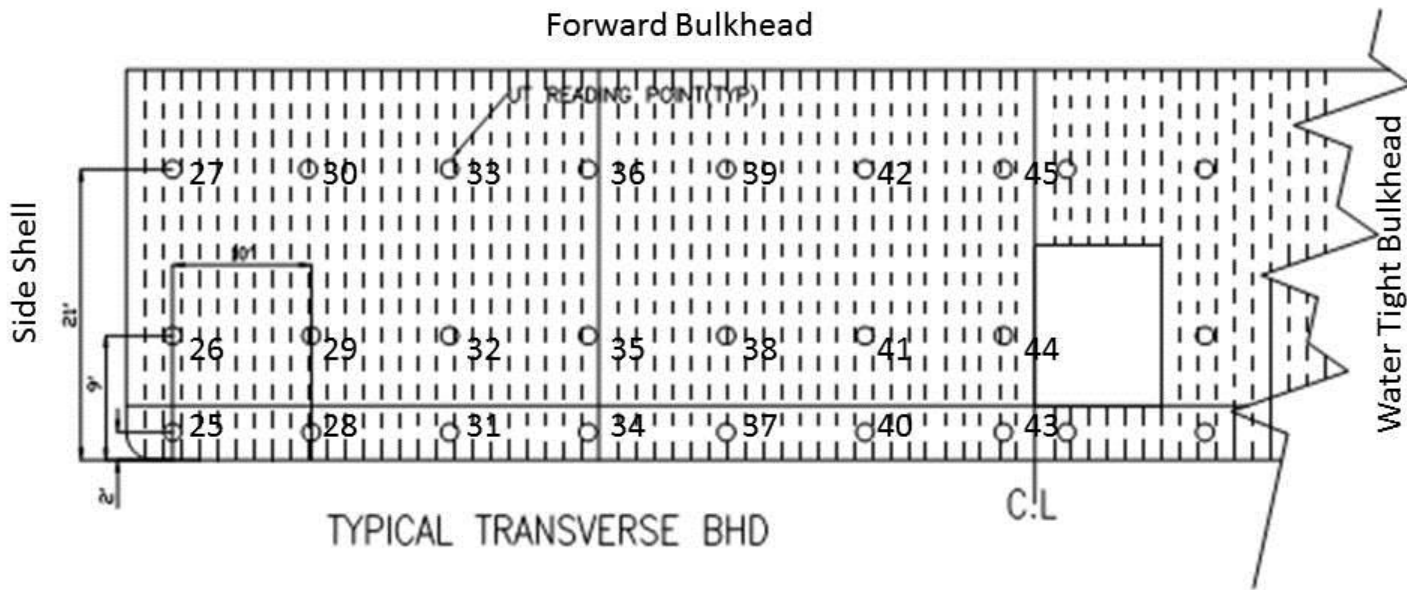
RDG	t"	Location
139	0.984	Bottom shell 5E
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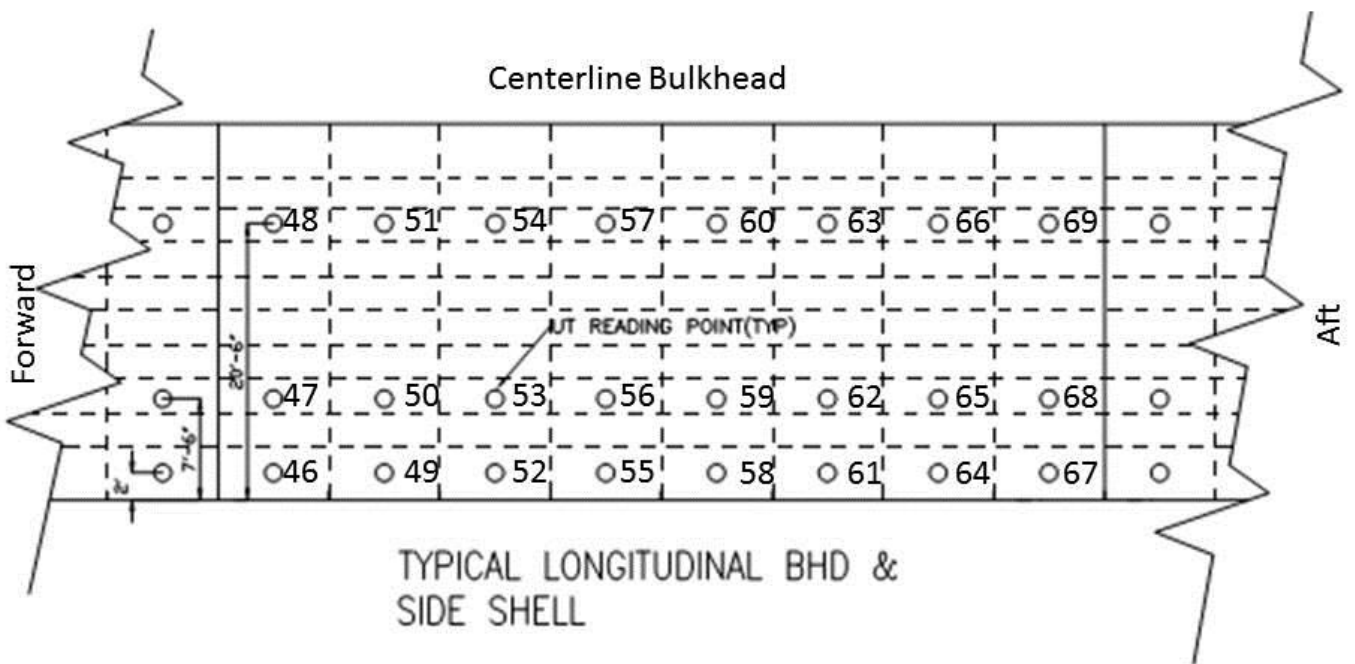
RDG	t"	Location	RDG	t"	Location
1	0.943	2'	47	0.643	7.5'
2	0.492	7.5'	48	0.639	20.5'
3	0.531	20.5'	49	0.722	2'
4	0.926	2'	50	0.632	7.5'
5	0.486	7.5'	51	0.627	20.5'
6	0.499	20.5'	52	0.709	2'
7	0.937	2'	53	0.618	7.5'
8	0.429	7.5'	54	0.627	20.5'
9	0.515	20.5'	55	0.717	2'
10	0.972	2'	56	0.621	7.5'
11	0.481	7.5'	57	0.623	20.5'
12	0.521	20.5'	58	0.707	2'
13	0.992	2'	59	0.630	7.5'
14	0.486	7.5'	60	0.624	20.5'
15	0.508	20.5'	61	0.712	2'
16	0.967	2'	62	0.615	7.5'
17	0.488	7.5'	63	0.628	20.5'
18	0.500	20.5'	64	0.723	2'
19	0.954	2'	65	0.640	7.5'
20	0.493	7.5'	66	0.642	20.5'
21	0.526	20.5'	67	0.707	2'
22	0.943	2'	68	0.624	7.5'
23	0.480	7.5'	69	0.631	20.5'
24	0.509	20.5'	70	0.473	2' Aft blkhd frame at sideshell
25	0.490	2' Fwd blkhd frame at sideshell	71	0.482	9' Aft blkhd frame at sideshell
26	0.492	9' Fwd blkhd frame at sideshell	72	0.488	21' Aft blkhd frame at sideshell
27	0.488	21' Fwd blkhd frame at sideshell	73	0.472	2'
28	0.481	2'	74	0.482	9'
29	0.488	9'	75	0.497	21'
30	0.479	21'	76	0.491	2'
31	0.468	2'	77	0.476	9'
32	0.486	9'	78	0.535	21'
33	0.470	21'	79	0.496	2'
34	0.477	2'	80	0.498	9'
35	0.502	9'	81	0.525	21'
36	0.493	21'	82	0.501	2'
37	0.471	2'	83	0.519	9'
38	0.492	9'	84	0.484	21'
39	0.487	21'	85	0.474	2'
40	0.473	2'	86	0.535	9'
41	0.496	9'	87	0.505	21'
42	0.507	21'	88	0.538	2'
43	0.458	2'	89	0.000	9' Tunnel in way
44	0.000	9' Tunnel in way	90	0.505	21'
45	0.489	21'	91	0.483	2' non-water tight bulkhead
46	0.708	2' CL water tight bulkhead	92	0.488	7.5'

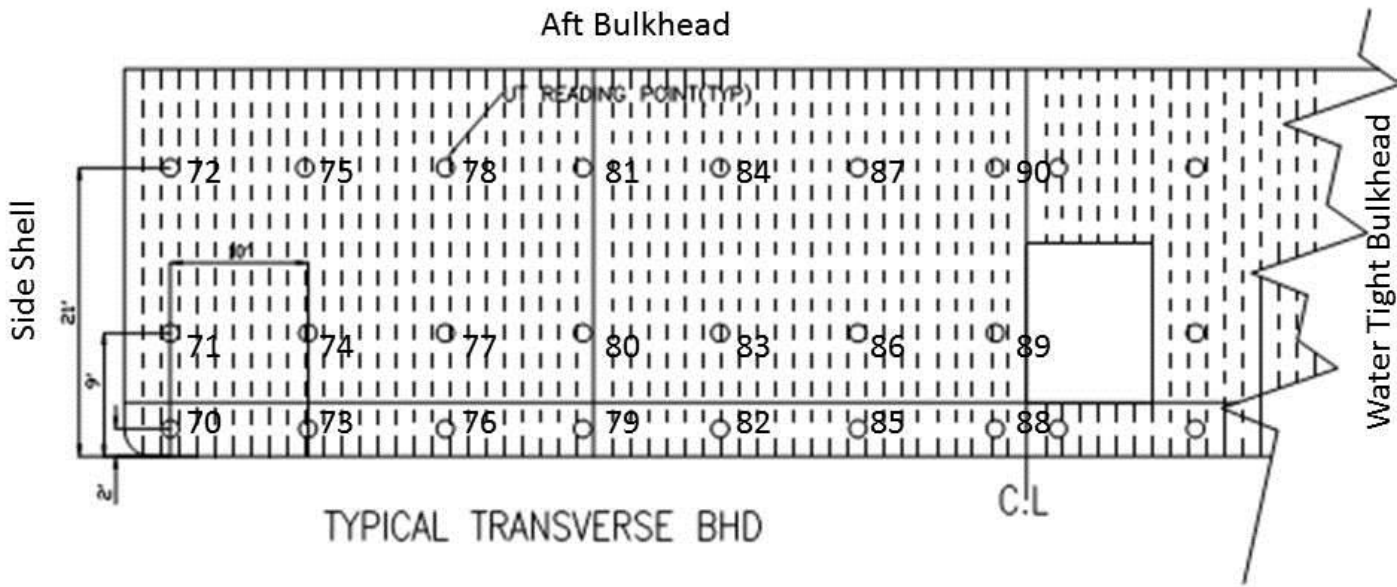
RDG	t"	Location
93	0.484	20.5'
94	0.468	2'
95	0.497	7.5'
96	0.475	20.5'
97	0.475	2'
98	0.468	7.5'
99	0.475	20.5'
100	0.472	2'
101	0.491	7.5'
102	0.483	20.5'
103	0.500	2'
104	0.495	7.5'
105	0.492	20.5'
106	0.469	2'
107	0.479	7.5'
108	0.467	20.5'
109	0.492	2'
110	0.472	7.5'
111	0.481	20.5'
112	0.467	2'
113	0.482	7.5'
114	0.471	20.5'
115	0.972	Bottom shell 1A
116	0.979	Bottom shell 1B
117	0.963	Bottom shell 1C
118	0.959	Bottom shell 1D
119	0.957	Bottom shell 1E
120	0.947	Bottom shell 2A
121	0.963	Bottom shell 2B
122	0.976	Bottom shell 2C
123	0.977	Bottom shell 2D
124	0.974	Bottom shell 2E
125	0.970	Bottom shell 3A
126	0.983	Bottom shell 3B
127	0.955	Bottom shell 3C
128	0.982	Bottom shell 3D
129	0.973	Bottom shell 3E
130	0.970	Bottom shell 4A
131	0.948	Bottom shell 4B
132	0.952	Bottom shell 4C
133	0.946	Bottom shell 4D
134	0.953	Bottom shell 4E
135	0.949	Bottom shell 5A
136	0.961	Bottom shell 5B
137	0.967	Bottom shell 5C
138	0.952	Bottom shell 5D

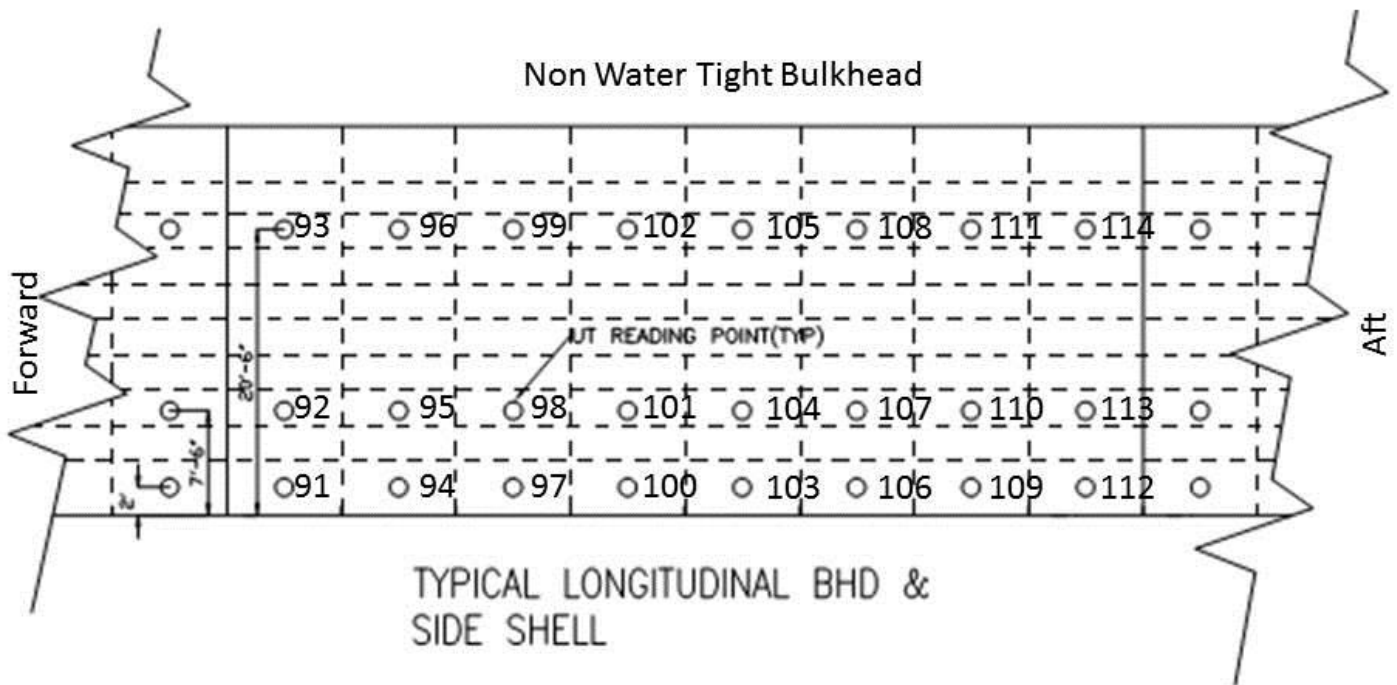
RDG	t"	Location
139	0.969	Bottom shell 5E
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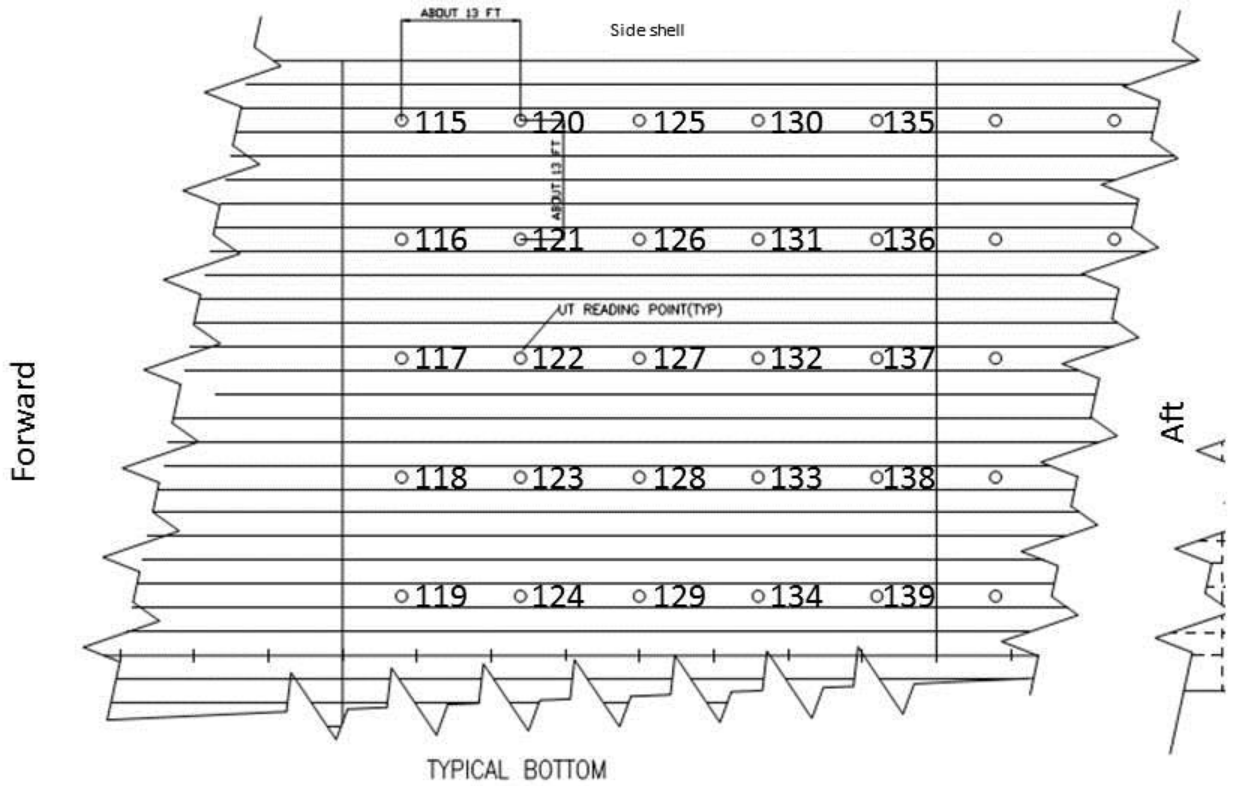


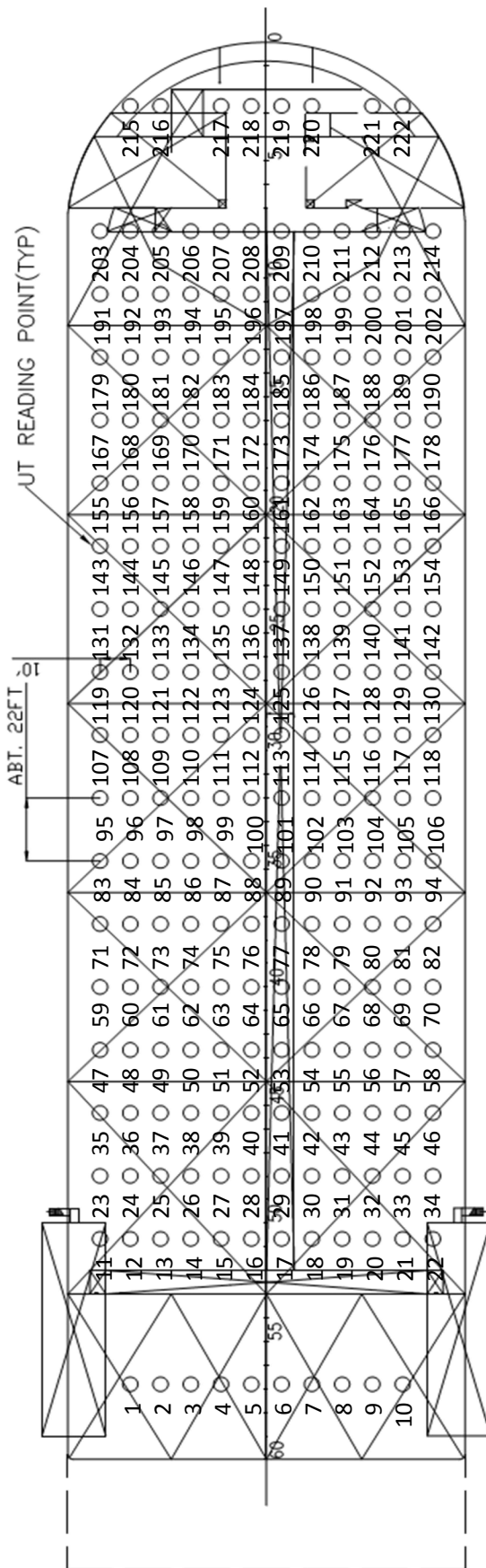






Deck in Tank





1	1.000	100.00%
2	0.838	83.80%
3	0.870	87.00%
4	0.781	78.10%
5	0.691	69.10%
6	0.807	80.70%
7	0.624	62.40%
8	0.721	72.10%
9	0.691	69.10%
10	0.854	85.40%
11	tower	#VALUE!
12	1.000	100.00%
13	0.886	88.60%
14	0.936	93.60%
15	1.000	100.00%
16	1.000	100.00%
17	1.000	100.00%
18	0.879	87.90%
19	1.000	100.00%
20	1.000	100.00%
21	1.000	100.00%
22	tower	#VALUE!
23	1.000	100.00%
24	1.000	100.00%
25	1.000	100.00%
26	1.000	100.00%
27	1.000	100.00%
28	0.953	95.30%
29	1.000	100.00%
30	1.000	100.00%
31	0.844	84.40%
32	1.000	100.00%
33	1.000	100.00%
34	1.000	100.00%
35	0.883	88.30%
36	0.793	79.30%
37	0.917	91.70%
38	0.968	96.80%
39	0.861	86.10%
40	0.872	87.20%
41	0.947	94.70%
42	0.968	96.80%
43	0.857	85.70%
44	1.000	100.00%
45	1.000	100.00%
46	D.H. Unit	#VALUE!
47	1.000	100.00%
48	1.000	100.00%
49	0.894	89.40%
50	1.000	100.00%

51	1.000	100.00%
52	0.862	86.20%
53	0.903	90.30%
54	0.921	92.10%
55	1.000	100.00%
56	0.894	89.40%
57	0.756	75.60%
58	0.780	78.00%
59	0.819	81.90%
60	0.817	81.70%
61	0.859	85.90%
62	0.894	89.40%
63	0.936	93.60%
64	0.938	93.80%
65	0.895	89.50%
66	0.911	91.10%
67	0.887	88.70%
68	0.879	87.90%
69	1.000	100.00%
70	0.879	87.90%
71	0.839	83.90%
72	0.707	70.70%
73	0.738	73.80%
74	0.906	90.60%
75	0.875	87.50%
76	0.873	87.30%
77	0.782	78.20%
78	0.888	88.80%
79	1.000	100.00%
80	1.000	100.00%
81	0.998	99.80%
82	0.854	85.40%
83	Baker Tank	#VALUE!
84	0.939	93.90%
85	0.943	94.30%
86	0.677	67.70%
87	0.916	91.60%
88	0.792	79.20%
89	0.778	77.80%
90	0.962	96.20%
91	0.802	80.20%
92	0.875	87.50%
93	0.871	87.10%
94	Baker Tank	#VALUE!
95	Baker Tank	#VALUE!
96	0.890	89.00%
97	0.867	86.70%
98	0.886	88.60%
99	0.827	82.70%
100	0.840	84.00%

101	0.861	86.10%
102	0.879	87.90%
103	0.820	82.00%
104	0.823	82.30%
105	1.000	100.00%
106	Baker Tank	#VALUE!
107	Baker Tank	#VALUE!
108	0.819	81.90%
109	0.859	85.90%
110	0.755	75.50%
111	0.886	88.60%
112	0.990	99.00%
113	0.928	92.80%
114	0.937	93.70%
115	0.987	98.70%
116	0.882	88.20%
117	0.835	83.50%
118	Baker Tank	#VALUE!
119	Baker Tank	#VALUE!
120	0.878	87.80%
121	0.928	92.80%
122	0.896	89.60%
123	0.822	82.20%
124	0.826	82.60%
125	0.837	83.70%
126	0.933	93.30%
127	0.932	93.20%
128	0.840	84.00%
129	0.906	90.60%
130	Baker Tank	#VALUE!
131	Baker Tank	#VALUE!
132	0.912	91.20%
133	0.871	87.10%
134	0.859	85.90%
135	0.840	84.00%
136	0.924	92.40%
137	0.931	93.10%
138	0.940	94.00%
139	0.939	93.90%
140	0.881	88.10%
141	0.838	83.80%
142	Baker Tank	#VALUE!
143	Baker Tank	#VALUE!
144	0.798	79.80%
145	0.957	95.70%
146	0.915	91.50%
147	0.867	86.70%
148	0.903	90.30%
149	0.974	97.40%
150	0.917	91.70%

151	0.951	95.10%
152	0.883	88.30%
153	0.968	96.80%
154	Baker Tank	#VALUE!
155	Baker Tank	#VALUE!
156	0.960	96.00%
157	0.837	83.70%
158	0.898	89.80%
159	0.876	87.60%
160	0.873	87.30%
161	0.990	99.00%
162	0.923	92.30%
163	0.938	93.80%
164	0.902	90.20%
165	0.854	85.40%
166	Baker Tank	#VALUE!
167	1.000	100.00%
168	1.000	100.00%
169	1.000	100.00%
170	0.949	94.90%
171	0.973	97.30%
172	0.891	89.10%
173	0.928	92.80%
174	1.000	100.00%
175	0.973	97.30%
176	0.957	95.70%
177	0.910	91.00%
178	0.962	96.20%
179	Baker Tank	#VALUE!
180	0.989	98.90%
181	0.828	82.80%
182	0.897	89.70%
183	0.876	87.60%
184	0.796	79.60%
185	0.830	83.00%
186	0.959	95.90%
187	0.923	92.30%
188	0.799	79.90%
189	0.837	83.70%
190	Baker Tank	#VALUE!
191	0.933	93.30%
192	0.887	88.70%
193	0.915	91.50%
194	0.963	96.30%
195	0.956	95.60%
196	0.708	70.80%
197	0.793	79.30%
198	0.940	94.00%
199	0.764	76.40%
200	0.884	88.40%

201	0.839	83.90%	
202	0.926	92.60%	
203	block	#VALUE!	
204	0.869	86.90%	
205	1.000	100.00%	
206	0.923	92.30%	
207	0.953	95.30%	
208	0.980	98.00%	
209	0.930	93.00%	
210	0.926	92.60%	
211	1.000	100.00%	
212	1.000	100.00%	
213	0.973	97.30%	
214	0.887	88.70%	
215	0.507	77.52%	(.654" nominal)
216	0.654	100.00%	(.654" nominal)
217	0.257	39.30%	(.654" nominal)
218	0.503	76.91%	(.654" nominal)
219	0.495	75.69%	(.654" nominal)
220	0.554	84.71%	(.654" nominal)
221	0.168	25.69%	(.654" nominal)
222	0.276	42.20%	(.654" nominal)

- Main deck area nominal thickness = 1.000"
- Spots 215 through 222 - nominal thickness unknown. Spot 216 is taken on newly installed steel; nominal of .654" is based on this new steel.
- Non-numeric values describe current obstruction preventing measurement.
- See attached diagram for measurement locations