



ELANDER INSPECTION LTD.

Nondestructive Testing and Marine Inspection

Suite 128 – 11800 River Road,
Richmond, B.C. Canada V6X 1Z7
Phone: (604)214-1318 Fax: (604)214-1349
E-mail: Elander@intergate.ca
Web Page: Elanderinspection.ca

THICKNESS MEASUREMENT REPORT - TM-6

REPORT ON THICKNESS MEASUREMENT OF MISCELLANEOUS STRUCTURAL MEMBERS

Ship's Name: R.v. Medeia

Id.No:

N/A

Report No:

E11-018-004

Legend:

Substantial corr

Below class min

Description:	Various Piping Systems												
Location of Structure:	Void/Engine Room/Fuel Tanks												
Description	Element / Frame No.	Draw ref.	Pipe Size	Pipe Sch.	Orig thk.	Class min thk.	Gauged		Diminution				Drawing/Comments
			Inches	Sch.	Inches	Inches	Port	Stbd	Port		Starboard		
							Inches	%	Inches	%			
Suction Manifold										-		-	GENERAL NOTE: ALL ORIGINAL THICKNESSES USED IN THIS REPORT ARE TO BE CONFIRMED BY ORIGINAL SHIPS' DWGS
Top Plate,	S1	Top	Box		0.375	0.263	0.350	0.341	0.03	6.7%	0.03	9.1%	
Aft Plate		Aft	Box		0.375	0.263	0.366	0.345	0.01	2.4%	0.03	8.0%	
Btm Plate		Btm	Box		0.375	0.263	0.369	0.327	0.01	1.7%	0.05	12.8%	
										-		-	
Top Plate,	S2	Top	Box		0.375	0.263		0.381		-	0.00	0.0%	
Aft Plate		Aft	Box		0.375	0.263		0.333		-	0.04	11.2%	
Btm Plate		Btm	Box		0.375	0.263		0.359		-	0.02	4.3%	
										-		-	
Discharge Manifold										-		-	
Top Plate,	O1	Top	Box		0.375	0.263	0.316	0.373	0.06	15.7%	0.00	0.5%	DO NOT USE THE REFERENCED THICKNESSES WITHOUT FIRST CONFIRMING THE ACUTAL THICKNESS.
Aft Plate		Aft	Box		0.375	0.263	0.338	0.334	0.04	9.9%	0.04	10.9%	
Btm Plate		Btm	Box		0.375	0.263	0.342	0.341	0.03	8.8%	0.03	9.1%	
										-		-	
Top Plate,	O2	Top	Box		0.375	0.263		0.383		-	0.00	0.0%	
Aft Plate		Aft	Box		0.375	0.263		0.338		-	0.04	9.9%	
Btm Plate		Btm	Box		0.375	0.263		0.345		-	0.03	8.0%	
										-		-	
										-		-	
Suction Manifold Pipe										-		-	
Pipe - 1st from manifold		P1				0.000		0.250		-		-	DIMINUTION CALCULATIONS WAS NOT POSSIBLE FOR DATA WITH NO ORIGINAL THICKNESS
Pipe - 1st from manifold		P2				0.000		0.242		-		-	
Pipe - 1st from manifold		P3				0.000		0.278		-		-	
Pipe - 1st from manifold		P4				0.000		0.238		-		-	
Pipe - 1st from manifold		P5				0.000	0.128			-		-	
Pipe - 1st from manifold		P6				0.000	0.248			-		-	
Pipe - 1st from manifold		P7				0.000	0.238			-		-	
Pipe - 1st from manifold		P8				0.000	0.245			-		-	
Pipe - 1st from manifold										-		-	
										-		-	



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Below class min

Discharge Manifold Pipe										-		-
Pipe - 1st from manifold		D1				0.000		0.240		-		-
Pipe - 1st from manifold		D2				0.000		0.246		-		-
Pipe - 1st from manifold		D3				0.000		0.241		-		-
Pipe - 1st from manifold		D4				0.000		0.255		-		-
Pipe - 1st from manifold		D5				0.000	0.178			-		-
Pipe - 1st from manifold		D6				0.000	0.242			-		-
Pipe - 1st from manifold		D7				0.000	0.258			-		-
Pipe - 1st from manifold		D8				0.000	0.234			-		-
						0.000						
40' of Pipe from Manifold										-		-
(Area tested from E/R Aft - 10')	Top	1				0.000		0.177		-		-
and frm Fwd BHD + 10' Approx)	Btm	1				0.000		0.182		-		-
	Top	2				0.000		0.177		-		-
	Btm	2				0.000		0.182		-		-
	Top	3				0.000		0.179		-		-
	Btm	3				0.000		0.196		-		-
										-		-
Sea Chest										-		-
Main Body	Top		0.500		0.337	0.236	0.490		0.00	0.0%		-
	Top		0.500		0.337	0.236	0.496		0.00	0.0%		-
	Side		0.500		0.337	0.236		0.460		-	0.00	0.0%
	Side		0.500		0.337	0.236		0.465		-	0.00	0.0%
	Side		0.500		0.337	0.236		0.467		-	0.00	0.0%
Fwd Nozzle	Top					0.000		0.260		-		-
	Btm					0.000		0.265		-		-
										-		-

Original thickness estimated

Original thickness estimated

Original thickness estimated

Original thickness estimated

Original thickness estimated



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Bilge Pump and Piping										-		
Vertical pipe above pump	Inbd	B1			0.337	0.236	0.260		0.08	22.8%		
Vertical pipe above pump	Aft	B1			0.337	0.236	0.272		0.07	19.3%		
Fwd Nozzle	Top	B2			0.337	0.236	0.286		0.05	15.1%		-
Fwd Nozzle	Btm	B2			0.337	0.236	0.262		0.08	22.3%		-
90 Degree Elbow	Top	B3			0.337	0.236	0.289		0.05	14.2%		-
	Top	B3			0.337	0.236	0.268		0.07	20.5%		-
Vertical Pipe below Elbow	Fwd	B4			0.337	0.236	0.268		0.07	20.5%		-
	Side	B4			0.337	0.236	0.258		0.08	23.4%		-
										-		-
Void Space Overboard Penetrations										-		-
1st Fwd (Fwd BHD)						0.000	0.199			-		-
1st Fwd						0.000	0.201			-		-
2nd Fwd						0.000	0.184			-		-
2nd Fwd						0.000	0.180			-		-
3rd Fwd						0.000	0.167			-		-
3rd Fwd (Aft. BHD)						0.000	0.162			-		-
										-		-
Sewage Pipe Through-hull	Top					0.000		0.284		-		-
	Aft Side					0.000		0.277		-		-
										-		-
Pipe System in Area of Overboard										-		-
Discharge Pipe						0.000				-		-
Horizontal Pipe going fwd		OB-1	4	Sch. 80	0.337	0.236		0.279		-	0.06	17.2%
Aft of Fwd BHD			4	Sch. 80	0.337	0.236		0.244		-	0.09	27.6%
						ds				-		-
Horizontal pipe after Fwd BHD		OB-2	4	Sch. 80	0.337	0.236		0.262			0.08	22.3%
			4	Sch. 80	0.337	0.236		0.268			0.07	20.5%
			4	Sch. 80	0.337	0.236		0.282			0.06	16.3%
90 degree Elbow aft of Valve		OB-3	4	Sch. 80	0.337	0.236		0.175		-	0.16	48.1%
			4	Sch. 80	0.337	0.236		0.179		-	0.16	46.9%
			4	Sch. 80	0.337	0.236		0.148		-	0.19	56.1%
Vertical Pipe below Elbow		OB-4	4	Sch. 80	0.337	0.236		0.285		-	0.05	15.4%
going to Tank			4	Sch. 80	0.337	0.236		0.249		-	0.09	26.1%



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										-		-
Waste Water to Tank located in Fwd Berth Area (Port side)										-		-
Pipe aft of reducer	1	Top	4	Sch. 80	0.337	0.236	0.174		0.16	48.4%		-
		Side	4	Sch. 80	0.337	0.236	0.212		0.13	37.1%		-
		Btm	4	Sch. 80	0.337	0.236	0.206		0.13	38.9%		-
										-		-
90 degree Elbow Fwd of reducer	Outbd Radius									-		-
	2	Top	4	Sch. 80	0.337	0.236	0.340		0.00	0.0%		-
		Btm	4	Sch. 80	0.337	0.236	0.349		0.00	0.0%		-
										-		-
Horizontal pipe going Inbd.	3	Top	4	Sch. 80	0.337	0.236	0.297		0.04	11.9%		-
		Btm	4	Sch. 80	0.337	0.236	0.271		0.07	19.6%		-
										-		-
Sewage discharge Pipe in Closet										-		-
Horizontal Pipe	SD-1	Top	4	Sch. 80	0.337	0.236		0.258		-	0.08	23.4%
		Inbd	4	Sch. 80	0.337	0.236		0.274		-	0.06	18.7%
		Btm	4	Sch. 80	0.337	0.236		0.274		-	0.06	18.7%
		Outbd	4	Sch. 80	0.337	0.236		0.265		-	0.07	21.4%
										-		-
90 Degree Elbow	SD-2	Top	4	Sch. 80	0.337	0.236		0.212		-	0.13	37.1%
		Inbd	4	Sch. 80	0.337	0.236		0.197		-	0.14	41.5%
		Btm	4	Sch. 80	0.337	0.236		0.202		-	0.14	40.1%
		Outbd	4	Sch. 80	0.337	0.236		0.202		-	0.14	40.1%
										-		-
Horizontal Pipe going Aft	SD-3	Top	4	Sch. 80	0.337	0.236		0.265		-	0.07	21.4%
		Inbd	4	Sch. 80	0.337	0.236		0.264		-	0.07	21.7%
		Btm	4	Sch. 80	0.337	0.236		0.274		-	0.06	18.7%
		Outbd	4	Sch. 80	0.337	0.236		0.264		-	0.07	21.7%
										-		-
Horizontal Pipe past Loc. 3	SD-4	Top	4	Sch. 80	0.337	0.236		0.285		-	0.05	15.4%
		Inbd	4	Sch. 80	0.337	0.236		0.275		-	0.06	18.4%
		Btm	4	Sch. 80	0.337	0.236		0.268		-	0.07	20.5%
		Outbd	4	Sch. 80	0.337	0.236				-		-
										-		-



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Upper horizontal Pipe	SD-5	Top	4	Sch. 80	0.337	0.236		0.265	-	0.07	21.4%
		Inbd	4	Sch. 80	0.337	0.236		0.240	-	0.10	28.8%
		Btm		Sch. 80	0.337	0.236		0.247	-	0.09	26.7%
		Outbd		Sch. 80	0.337	0.236		0.240	-	0.10	28.8%
									-		-
Vertical Pipe below Elbow	SD-6	Fwd		Sch. 80	0.337	0.236		0.275	-	0.06	18.4%
		Aft		Sch. 80	0.337	0.236		0.280	-	0.06	16.9%
									-		-
Engine Room Overboard Discharge Pipe									-		-
1st Fwd		Top	4"	Sch 40	0.237	0.166	0.242		0.00	0.0%	-
1st Fwd		Btm	4"	Sch 40	0.237	0.166	0.267		0.00	0.0%	-
2nd Fwd		Top	4"	Sch 40	0.237	0.166	0.210		0.03	11.4%	-
2nd Fwd		Btm		Sch 40	0.204	0.143	0.209		0.00	0.0%	-
3rd Fwd		Top	1 1/4"	Sch 80	0.190	0.133	0.197		0.00	0.0%	-
3rd Fwd		Btm	1 1/4"	Sch 80	0.190	0.133	0.172		0.02	9.5%	-
4th Fwd		Top			0.237	0.166	0.275		0.00	0.0%	-
4th Fwd		Btm			0.237	0.166	0.255		0.00	0.0%	-
									-		-
Air Receivers									-		-
Outboard Head		Top			0.187	0.131	0.172	0.171	0.02	8.0%	0.02 8.6%
Outboard Head		Middle			0.187	0.131	0.177	0.191	0.01	5.3%	0.00 0.0%
Outboard Head		Middle			0.187	0.131	0.181	0.180	0.01	3.2%	0.01 3.7%
Outboard Head		Btm			0.187	0.131	0.180	0.169	0.01	3.7%	0.02 9.6%
									-		-
Shell Circ 1		Top			0.187	0.131	ds	0.214		-	0.00 0.0%
Shell Circ 1		Aft Side			0.187	0.131	0.200	0.195	0.00	0.0%	0.00 0.0%
Shell Circ 1		Btm			0.187	0.131	0.164	0.176	0.02	12.3%	0.01 5.9%
									-		-
Shell Circ 2		Top			0.187	0.131	0.190		0.00	0.0%	-
Shell Circ 2		Aft Side			0.187	0.131	0.172		0.02	8.0%	-
Shell Circ 2		Btm			0.187	0.131	0.168		0.02	10.2%	-
									-		-
Inboard Head		Top			0.187	0.131	0.164	0.172	0.02	12.3%	0.02 8.0%
Inboard Head		Middle			0.187	0.131	0.170	0.165	0.02	9.1%	0.02 11.8%
Inboard Head		Middle			0.187	0.131	0.168	0.165	0.02	10.2%	0.02 11.8%
Inboard Head		Btm			0.187	0.131	0.176	0.164	0.01	5.9%	0.02 12.3%

Pipes identified Fwd to Aft



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Below class min

Fuel Tank Piping from Manifold												
Bow Fuel Tank - Fwd Space		Top	2"	Sch. 80	0.218	0.153	0.196		0.02	10.1%		-
		Outbd			0.218	0.153	0.177		0.04	18.8%		-
		Btm			0.218	0.153	0.196		0.02	10.1%		-
		Inbod			0.218	0.153	0.195		0.02	10.6%		-
										-		-
Bow Fuel Tank - Middle Space		Top	2"	Sch. 80	0.218	0.153	0.209		0.01	4.1%		-
		Outbd			0.218	0.153	0.201		0.02	7.8%		-
		Btm			0.218	0.153	0.197		0.02	9.6%		-
		Inbod			0.218	0.153	0.213		0.01	2.3%		-
										-		-
Bow Fuel Tank - Aft Space		Top	2"	Sch. 80	0.218	0.153	0.190		0.03	12.8%		-
		Outbd			0.218	0.153	0.191		0.03	12.4%		-
		Btm			0.218	0.153	0.193		0.03	11.5%		-
		Inbod			0.218	0.153	0.198		0.02	9.2%		-
										-		-
Middle Fuel Tank - Fwd Space fr. Fwd BHD		Top	2"	Sch. 80	0.218	0.153	0.223		0.00	0.0%		-
		Outbd			0.218	0.153	0.212		0.01	2.9%		-
		Btm			0.218	0.153	0.217		0.00	0.5%		-
		Inbod			0.218	0.153	0.216		0.00	0.9%		-
										-		-
Middle Fuel Tank - Aft Space Fwd		Top	2"	Sch. 80	0.218	0.153	0.201		0.02	7.8%		-
		Outbd			0.218	0.153	0.211		0.01	3.2%		-
		Btm			0.218	0.153	0.219		0.00	0.0%		-
		Inbod			0.218	0.153	0.218		0.00	0.0%		-
										-		-
Middle Fuel Tank - Aft Space Aft		Top	2"	Sch. 80	0.218	0.153	0.200		0.02	8.3%		-
		Outbd			0.218	0.153	0.201		0.02	7.8%		-
		Btm			0.218	0.153	0.206		0.01	5.5%		-
		Inbod			0.218	0.153	0.196		0.02	10.1%		-
										-		-
Bunker Fuel Tank - Fwd Space		Top	2"	Sch. 80	0.218	0.153	0.216		0.00	0.9%		-
		Outbd			0.218	0.153	0.192		0.03	11.9%		-
		Btm			0.218	0.153	0.214		0.00	1.8%		-
		Inbod			0.218	0.153	0.198		0.02	9.2%		-
										-		-



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1. Bunker Fuel Tank - 2nd Space fr. Fwd Bhd.		Top	2"	Sch. 80	0.218	0.153	0.208		0.01	4.6%		-
		Outbd			0.218	0.153	0.198		0.02	9.2%		-
		Btm			0.218	0.153	0.196		0.02	10.1%		-
		Inbod			0.218	0.153	0.196		0.02	10.1%		-
					0.218	0.153	0.196		0.02	10.1%		-
										-		-
Bunker Fuel Tank - Aft Space		Top	2"	Sch. 80	0.218	0.153	0.198		0.02	9.2%		-
		Outbd			0.218	0.153	0.205		0.01	6.0%		-
		Btm			0.218	0.153	0.205		0.01	6.0%		-
		Inbod			0.218	0.153	0.198		0.02	9.2%		-
										-		-
										-		-