

Pressure Vessel Inspection Assessment

District		Field		LSD		Equipment ID		Equipment Type	
Zama		03-10 Oil NW		16-15-118-07W6		A0497263		Phase Separator	
Plant ID	Serial Number	Manufacturer		Description			Equipment Category		
	03.070HS	Orban Industries Ltd.		Horizontal Separator					
CRN	National Board Number	SAP Number	Build Date	Support Type		Manway		M/W Size	
R2234.2			2003-01-01			Yes - 24" - 300			
Design Information									
Side	Design Pressure	Design Temp	Service	Corr Allow	Insp Due	Rem Life	Ret Date		

CML Information													
Side	CML #	Diameter	Dia Type	Material	Mat Eff	Tmin	Tmin Type	Nominal	Location Name	Comp Type	Last Survey	Last Min	Last CR

Associated PSVs												
Side	PSV ID	CRN	Serial #	Manufacturer	Capacity	Set Pressure	Bench Interval	Bench Due	New Freq. (yrs)			
										5		

Review of PSV Information						
	PSV ID	Test Date	Pre-Pop At	Pass?	Test Comment	Service Company

Inspection History			
	Inspection Date	Inspection Type	File

Open Recommendations				
Date	Title	Recommendation	NCR/Action	Priority

Review of Inspection Findings			
NCR's:	No	Inspection Type:	Thorough
Fit For Service:	Yes	Ultrasonic Thickness:	Yes
IDS Recommended Inspection Frequency:	5	Other NDE:	
Service:	Sour	NDE Type:	
Vibration Noted:	No		

Review of NDE Findings	
Any Thickness found below Nominal - Corrosion Allowance:	No
Any Thickness found below 50% of Nominal Thickness:	
Any Thickness found below Pressure T-Min:	
Other NDE Technique(s) acceptable:	

Comments

IDS PESL Reviewer (Print): _____

IDS PESL Reviewer (Signature): _____

Client Representative (Print): Dennis Simons

Client Representative (Signature): 

<input type="checkbox"/> Installation <input checked="" type="checkbox"/> External <input checked="" type="checkbox"/> Internal										BRIAS Job# 1537													
Date:	2016-10-20					Description:	<input checked="" type="checkbox"/> Vessel <input type="checkbox"/> Exchanger <input type="checkbox"/> Furnace Boiler																
Inspector:	Derek Pfisterer					WO#:	50057804					Equip #:	30104069										
Agent Co:	Brias Inc.					Equip. Name:	Separator																
Owner:	Apache					Jurisdiction #:	A497263					CRN #:	R2234.2										
Province:	AB					Manufacturer:	ORBAN IND.																
Area:	Zama					Year Built:	2003					S/N:	03-070-HS										
Downhole:	NA					Surface	16-15-118-7W6																
Service	<input type="checkbox"/> Sweet <input checked="" type="checkbox"/> Sour <input type="checkbox"/> Other:					Stress Relieved:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					Fluids:	Natural Gas					MDMT(°F):	-20				
Diameter	60 <input type="checkbox"/> mm <input checked="" type="checkbox"/> in & <input type="checkbox"/> ID <input checked="" type="checkbox"/> OD					Length	264 <input type="checkbox"/> mm <input checked="" type="checkbox"/> in & <input checked="" type="checkbox"/> S/S <input type="checkbox"/> Total																
Volume	431.53 <input type="checkbox"/> m³ <input checked="" type="checkbox"/> ft³ <input type="checkbox"/> bbl <input type="checkbox"/> gal					PSV Location:	Vessel					<input type="checkbox"/> T <input checked="" type="checkbox"/> F	PSV Correct CRN	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No									
Zones:	MAWP (psi)	Design T (°F)	Set P (psi)	Tag#	Manufacturer	S/N	In. Sz	Out. Sz	Serv. Co.	Serv. Date	IV	CSO	Capacity (scfm)										
Shell Side	740	100	740	NA	Farris	CO-27689A-10	2"	3"	Apex	Oct/16	Yes	No	11378										
Tube Side																							
Other																							
Component	Material	Nominal t	CA	Retire t	Lowest t	t OK?	Calc. t-min	Comment															
	Shell	SA 516 70N	1.25"	0.125"		<input type="checkbox"/> Y <input type="checkbox"/> N																	
	Head	SA 516 70N	1.1931"	0.125"		<input type="checkbox"/> Y <input type="checkbox"/> N																	
	Channel					<input type="checkbox"/> Y <input type="checkbox"/> N																	
Tube						<input type="checkbox"/> Y <input type="checkbox"/> N																	
Orientation	<input checked="" type="checkbox"/> Hor. <input type="checkbox"/> Ver. <input type="checkbox"/> Sphere		Foundation	<input type="checkbox"/> Concrete <input type="checkbox"/> Gravel <input type="checkbox"/> Timbers <input checked="" type="checkbox"/> Steel <input type="checkbox"/> Other:			Condition: Acceptable to Regulation																
Support	<input checked="" type="checkbox"/> Saddle		<input type="checkbox"/> Seal-welded		<input checked="" type="checkbox"/> Free to Move		Condition: Acceptable to Regulation																
	<input type="checkbox"/> Skirt		<input type="checkbox"/> Free of debris		Comment:		Condition: NA																
	<input type="checkbox"/> Hangers		<input type="checkbox"/> Secure		Comment:		Condition: NA																
	<input type="checkbox"/> Other		Specify:				Condition: NA																
Overall	General Condition: Acceptable to Regulation						Electrical grounding <input type="checkbox"/> Direct <input checked="" type="checkbox"/> Indirect <input type="checkbox"/> None																
Ext. Surface	<input checked="" type="checkbox"/> Painted <input type="checkbox"/> Insulated <input type="checkbox"/> Fire-proofed <input type="checkbox"/> Cladded <input type="checkbox"/> Other:						Condition: Acceptable to Regulation																
	Nameplate Accessible / Legible <input checked="" type="checkbox"/> Y <input type="checkbox"/> N						Comment: Acceptable to Regulation																
	Dents: <input type="checkbox"/> Y <input checked="" type="checkbox"/> N						Comment: Acceptable to Regulation																
	Bending/Warping/Distortion: <input type="checkbox"/> Y <input checked="" type="checkbox"/> N						Comment: Acceptable to Regulation																
Ext.	<input type="checkbox"/> Ladder <input type="checkbox"/> Platform(s) <input type="checkbox"/> Other:						Condition: NA																
Davit Arm	<input checked="" type="checkbox"/> Manway <input type="checkbox"/> Port		Size: 24"		<input checked="" type="checkbox"/> Reinforcement Pads used		<input checked="" type="checkbox"/> Weep Holes Present																
	Comment: Acceptable to Regulation																						
Ext. Piping	<input checked="" type="checkbox"/> Present		<input type="checkbox"/> Greased		<input checked="" type="checkbox"/> Double nutted		Condition: Acceptable to Regulation																
	Pig Receiver		<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		Comment: NA																		
	Insulated:		<input checked="" type="checkbox"/> Y <input type="checkbox"/> N		Comment: Acceptable to Regulation																		
	Dead Legs Present		<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		Comment: Acceptable to Regulation																		
	Bending/Warping/Distortion:		<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		Comment: Acceptable to Regulation																		
	Misalignment:		<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		Comment: Acceptable to Regulation																		
Vessel Piping	<input checked="" type="checkbox"/> PSV	<input checked="" type="checkbox"/> Supported	<input checked="" type="checkbox"/> Joined per code	<input checked="" type="checkbox"/> Drains Properly	<input checked="" type="checkbox"/> Well Coated	Comment: Acceptable to Regulation																	
	<input checked="" type="checkbox"/> Inlet	<input checked="" type="checkbox"/> Supported	<input checked="" type="checkbox"/> Joined per code	<input checked="" type="checkbox"/> Free from leaks	<input checked="" type="checkbox"/> Well Coated	Comment: Acceptable to Regulation																	
	<input checked="" type="checkbox"/> Outlet	<input checked="" type="checkbox"/> Supported	<input checked="" type="checkbox"/> Joined per code	<input checked="" type="checkbox"/> Free from leaks	<input checked="" type="checkbox"/> Well Coated	Comment: Acceptable to Regulation																	
	<input checked="" type="checkbox"/> Drain	<input checked="" type="checkbox"/> Supported	<input checked="" type="checkbox"/> Joined per code	<input checked="" type="checkbox"/> Free from leaks	<input checked="" type="checkbox"/> Well Coated	Comment: Acceptable to Regulation																	
	<input checked="" type="checkbox"/> Instrumentation		<input checked="" type="checkbox"/> Supported	<input checked="" type="checkbox"/> Joined per code	<input checked="" type="checkbox"/> Free from leaks/kinks	Comment: Acceptable to Regulation																	
	<input checked="" type="checkbox"/> Process Fluid Identified		<input checked="" type="checkbox"/> Flow direction marked	Comment: Acceptable to Regulation																			
Valves	<input checked="" type="checkbox"/> Manual Isolation Valve		<input checked="" type="checkbox"/> Free from leaks		Comment: Acceptable to Regulation																		
	<input checked="" type="checkbox"/> Automated Control Valve		<input checked="" type="checkbox"/> Free from leaks		Comment: Acceptable to Regulation																		
	<input checked="" type="checkbox"/> Check Valves		<input checked="" type="checkbox"/> Free from leaks		Comment: Acceptable to Regulation																		
Gauges	<input checked="" type="checkbox"/> Pressure	Reading: 0psi	Range: 0 – 1500psi		Condition: Acceptable to Regulation																		
	<input checked="" type="checkbox"/> Temperature	Reading: 80°F	Range: 0 -250°F		Condition: Acceptable to Regulation																		
Sight Glass	<input checked="" type="checkbox"/> Fluid Level	Reading: Empty	Guard: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N		Condition: Acceptable to Regulation																		

Internal Inspection Performed: ☒ Yes ☐ No

Access:	<input checked="" type="checkbox"/> Manway <input type="checkbox"/> Hand-hole <input type="checkbox"/> Inspection Nozzle		
Opening	Gasket Surfaces:	<input checked="" type="checkbox"/> Compliant with code	Comment Acceptable to Regulation
	Nozzle Tube:	<input checked="" type="checkbox"/> No pitting, erosion, etc.	Comment Acceptable to Regulation
Shell and Head Surfaces	Uniform Corrosion:	<input checked="" type="checkbox"/> Insignificant amount	Comment Acceptable to Regulation
	Pitting Corrosion:	<input checked="" type="checkbox"/> None noted	Comment Acceptable to Regulation
	Erosion:	<input checked="" type="checkbox"/> None noted	Comment Acceptable to Regulation
	Mechanical Damage:	<input checked="" type="checkbox"/> None noted	Comment Acceptable to Regulation
Welds	Uniform Corrosion:	<input checked="" type="checkbox"/> Insignificant amount	Comment Acceptable to Regulation
	Pitting Corrosion:	<input checked="" type="checkbox"/> None noted	Comment Acceptable to Regulation
	Welding Defects:	<input checked="" type="checkbox"/> None noted	Comment Acceptable to Regulation
	<input type="checkbox"/> NDT was performed by:		Extent: NA
	Type: <input type="checkbox"/> MPI (<input type="checkbox"/> WF <input type="checkbox"/> B&W <input type="checkbox"/> Dry) <input type="checkbox"/> LPI <input type="checkbox"/> UT <input type="checkbox"/> RT <input type="checkbox"/> Other:		
	Results:		
Nozzles	Obstructions:	<input checked="" type="checkbox"/> None noted	Comment Acceptable to Regulation
	Corrosion:	<input checked="" type="checkbox"/> None noted	Comment Acceptable to Regulation
	Erosion:	<input checked="" type="checkbox"/> None noted	Comment Acceptable to Regulation
Attachments	<input checked="" type="checkbox"/> Vortex breaker	<input checked="" type="checkbox"/> Secure <input checked="" type="checkbox"/> Good Condition	Comment Acceptable to Regulation
	<input type="checkbox"/> Impingement plate	<input type="checkbox"/> Secure <input type="checkbox"/> Good Condition	Comment NA
	<input type="checkbox"/> Suction tube	<input type="checkbox"/> Secure <input type="checkbox"/> Good Condition	Comment NA
	<input checked="" type="checkbox"/> Demister	<input checked="" type="checkbox"/> Secure <input checked="" type="checkbox"/> Good Condition	Comment Demister pad not removed for inspection
	<input checked="" type="checkbox"/> Other: Wier	<input checked="" type="checkbox"/> Secure <input checked="" type="checkbox"/> Good Condition	Comment Acceptable to Regulation

Burner Tube – NDE Performed by: NA

UT Report & Inspection form completed ☐

MT on Mitres: ☐ Y ☐ N

By:

Report #

Internal Comments:

Demister pad not removed for inspection
Drain nozzles inspected by ultrasonics

Service Conditions				
Process Fluids Description:	<input checked="" type="checkbox"/> Sour	<input type="checkbox"/> Produced Water	<input checked="" type="checkbox"/> OWE	<input type="checkbox"/> Solids
	<input type="checkbox"/> Condensed Water	<input type="checkbox"/> Propane	<input type="checkbox"/> Air	<input type="checkbox"/> Frac. Sand
	<input type="checkbox"/> Liquid Hydrocarbon	<input type="checkbox"/> Glycol	<input type="checkbox"/> NG	<input type="checkbox"/> _____
Potential Mode(s) of Deterioration:	<input type="checkbox"/> Pitting	<input type="checkbox"/> Crevice	<input type="checkbox"/> High Temp	<input type="checkbox"/> Sulphidation
	<input checked="" type="checkbox"/> General Corrosion	<input checked="" type="checkbox"/> Erosion	<input type="checkbox"/> Cavitation	<input type="checkbox"/> Under Deposit Corr.
	<input type="checkbox"/> External Atm. Corrosion	<input type="checkbox"/> Under Insulation	<input type="checkbox"/> Mechanical Damage	<input type="checkbox"/> Brittle Fracture
	<input type="checkbox"/> Temper Embrittlement	<input type="checkbox"/> Thermal Fatigue	<input type="checkbox"/> Cooling Water Corr.	<input type="checkbox"/> Caustic Corrosion
	<input type="checkbox"/> Boiler Water Condensate Corr.	<input type="checkbox"/> HCl Acid Corrosion	<input type="checkbox"/> Sour Water	<input type="checkbox"/> Amine Stress
	<input type="checkbox"/> High temp Hydrogen Attack	<input type="checkbox"/> Wet H2S		
<u>Cracking</u>	<input type="checkbox"/> SCC	<input type="checkbox"/> Hydrogen	<input type="checkbox"/> Fatigue	<input type="checkbox"/> Other
Area(s) Most Likely to Deteriorate:	<input type="checkbox"/> Top Head	<input type="checkbox"/> Bottom Head	<input type="checkbox"/> Nozzles	<input type="checkbox"/> Welds
	<input type="checkbox"/> Attachments	<input checked="" type="checkbox"/> Shell (lower)	<input type="checkbox"/> Shell (Upper)	<input type="checkbox"/> Shell (other)
	<input type="checkbox"/> Tubes	<input type="checkbox"/> Piping (inlet)	<input type="checkbox"/> Piping (outlet)	<input checked="" type="checkbox"/> Piping (drain)
Current Mitigation Program?	<input type="checkbox"/> Yes <input type="checkbox"/> No (if yes, describe)			
Other Considerations?	<input type="checkbox"/> Yes <input type="checkbox"/> No (if yes, describe)			
Additional Process Monitoring	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (if yes, describe in area below or attach details)			
Fluids Sample (Type / Frequency / Analysis Req'd)				
Corrosion Monitoring (Coupons / Probes)				
Other (describe)				

Inspection History

(Complete this section if the vessel is new and a baseline inspection was completed or if the vessel is used)

Inspection Company:		Last Inspection Date:	
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Inspection – Plan

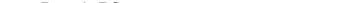
Activity Required	Yes	No	Interval (years)	Due Date (dd / mmm / yy)	Comments / Justification
Offline Internal Visual	<input type="checkbox"/>	<input type="checkbox"/>		/ /	
UT Inspection	<input type="checkbox"/>	<input type="checkbox"/>		/ /	
Crack Inspection	<input type="checkbox"/>	<input type="checkbox"/>		/ /	
Additional Inspection(s)	<input type="checkbox"/>	<input type="checkbox"/>		/ /	
External Visual	<input type="checkbox"/>	<input type="checkbox"/>		/ /	
PRV service interval	<input type="checkbox"/>	<input type="checkbox"/>		/ /	

Notes

<p>Inspection Summary</p>	<p>Vessel has had UT corrosion survey in the past Vessel has had a visual external and a UT corrosion survey Inspection which complies with a thorough inspection as per AB-506. Interval to be set as per AB-506 Demister pads not removed for inspection Drain nozzles inspected by ultrasonics Inlet valve to PSV is not carsealed due to turnaround</p>
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[illegible]

- ☒ Acceptable
 - ☐ Acceptable with the above listed remedial actions performed before the associated remedial action report's "Requested Completion Date".
 - ☐ Not Acceptable until the above listed remedial actions are resolved.

Inspector Name:	<u>Derek Pfisterer</u>	Inspector Company:	<u>BRIAS Inc</u>
Inspector Signature:		Inspection Date:	2016-10-20

Complete if Assessor is different than Inspector

Assessor Name:		Company:	
Assessor Signature:		Assessment Date:	

Report Certification

Report Certified By (signature):		Certificate No:	876	API / ISPMI / ISBP
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An Integrity Focused Inspection Company

Date 2016-10-20

Owner Apache

Vessel Description Separator

Jur # A497263

Manufacturer Orban Industries

Brias Job #

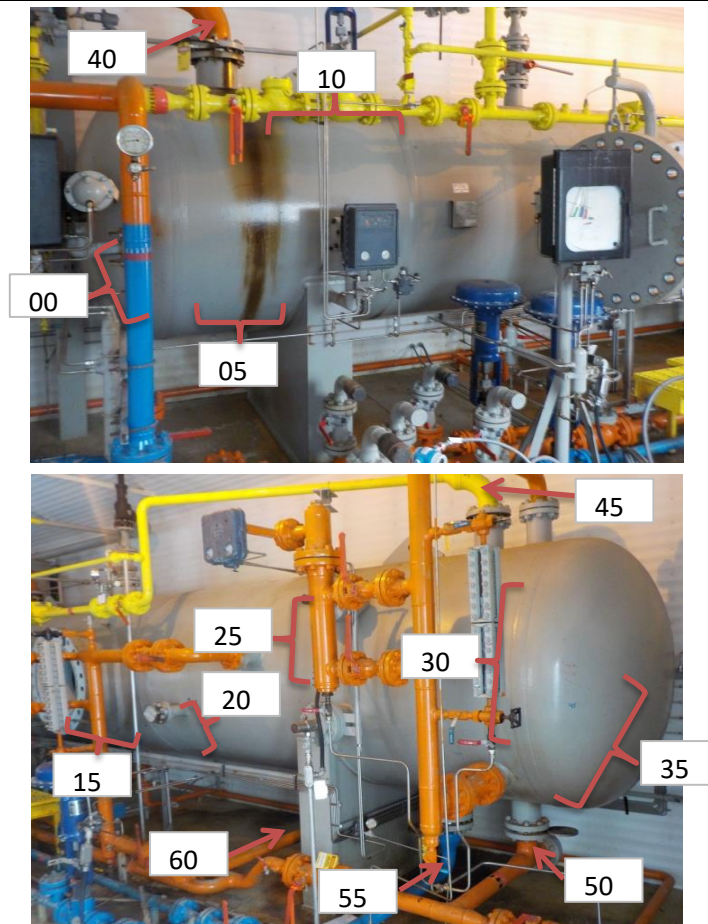
1537

LSD 16-15-118-7W6

CRN R2234.2

Serial # 03-070-HS

ULTRASONIC INSPECTION REPORT



Reviewed By

Date

UT performed by: Derek Pfisterer

Signature

CGSB level 2 cert # 18452

Signature

Expiry Date: 2016-12-31

Date 2016-10-20

UT Scanner: Olympus, Epoch 600 **SN:** 130577502 **Last Calibration Date:** 2016-05-18

Daily performance check on step wedge

UT interval set at

TML#	Location Description	Diameter	First Survey Date	Last Survey Date	Original Wall Thickness	Last Survey Wall Thickness	% WALL LOSS	Corrosion Rate	Remaining Life
0	Top Head	60" OD	2003	2016	1.1931	1.34	Above nominal	0.000	Infinite
0	Top Head	60" OD	2003	2016	1.1931	1.363	Above nominal	0.000	Infinite
0	Top Head	60" OD	2003	2016	1.1931	1.324	Above nominal	0.000	Infinite
0	Top Head	60" OD	2003	2016	1.1931	1.343	Above nominal	0.000	Infinite
0	Top Head	60" OD	2003	2016	1.1931	1.29	Above nominal	0.000	Infinite
0	Top Head	60" OD	2003	2016	1.1931	1.343	Above nominal	0.000	Infinite
0	Top Head	60" OD	2003	2016	1.1931	1.355	Above nominal	0.000	Infinite
0	Top Head	60" OD	2003	2016	1.1931	1.368	Above nominal	0.000	Infinite
0	Top Head	60" OD	2003	2016	1.1931	1.36	Above nominal	0.000	Infinite
0	Top Head	60" OD	2003	2016	1.1931	1.325	Above nominal	0.000	Infinite
5	Shell	60" OD	2003	2016	1.25	1.329	Above nominal	0.000	Infinite
5	Shell	60" OD	2003	2016	1.25	1.35	Above nominal	0.000	Infinite
5	Shell	60" OD	2003	2016	1.25	1.336	Above nominal	0.000	Infinite
5	Shell	60" OD	2003	2016	1.25	1.296	Above nominal	0.000	Infinite
5	Shell	60" OD	2003	2016	1.25	1.299	Above nominal	0.000	Infinite
5	Shell	60" OD	2003	2016	1.25	1.297	Above nominal	0.000	Infinite
5	Shell	60" OD	2003	2016	1.25	1.357	Above nominal	0.000	Infinite
5	Shell	60" OD	2003	2016	1.25	1.307	Above nominal	0.000	Infinite
5	Shell	60" OD	2003	2016	1.25	1.316	Above nominal	0.000	Infinite
5	Shell	60" OD	2003	2016	1.25	1.33	Above nominal	0.000	Infinite
10	Shell	60" OD	2003	2016	1.25	1.347	Above nominal	0.000	Infinite
10	Shell	60" OD	2003	2016	1.25	1.339	Above nominal	0.000	Infinite
10	Shell	60" OD	2003	2016	1.25	1.34	Above nominal	0.000	Infinite
10	Shell	60" OD	2003	2016	1.25	1.356	Above nominal	0.000	Infinite
10	Shell	60" OD	2003	2016	1.25	1.355	Above nominal	0.000	Infinite
10	Shell	60" OD	2003	2016	1.25	1.336	Above nominal	0.000	Infinite
10	Shell	60" OD	2003	2016	1.25	1.336	Above nominal	0.000	Infinite
10	Shell	60" OD	2003	2016	1.25	1.324	Above nominal	0.000	Infinite
10	Shell	60" OD	2003	2016	1.25	1.33	Above nominal	0.000	Infinite
10	Shell	60" OD	2003	2016	1.25	1.346	Above nominal	0.000	Infinite
15	Shell	60" OD	2003	2016	1.25	1.37	Above nominal	0.000	Infinite
15	Shell	60" OD	2003	2016	1.25	1.372	Above nominal	0.000	Infinite
15	Shell	60" OD	2003	2016	1.25	1.396	Above nominal	0.000	Infinite
15	Shell	60" OD	2003	2016	1.25	1.42	Above nominal	0.000	Infinite
15	Shell	60" OD	2003	2016	1.25	1.419	Above nominal	0.000	Infinite
15	Shell	60" OD	2003	2016	1.25	1.396	Above nominal	0.000	Infinite
15	Shell	60" OD	2003	2016	1.25	1.368	Above nominal	0.000	Infinite
15	Shell	60" OD	2003	2016	1.25	1.373	Above nominal	0.000	Infinite
15	Shell	60" OD	2003	2016	1.25	1.356	Above nominal	0.000	Infinite
15	Shell	60" OD	2003	2016	1.25	1.392	Above nominal	0.000	Infinite
20	Shell	60" OD	2003	2016	1.25	1.385	Above nominal	0.000	Infinite
20	Shell	60" OD	2003	2016	1.25	1.37	Above nominal	0.000	Infinite
20	Shell	60" OD	2003	2016	1.25	1.387	Above nominal	0.000	Infinite
20	Shell	60" OD	2003	2016	1.25	1.368	Above nominal	0.000	Infinite

20	Shell	60" OD	2003	2016	1.25	1.381	Above nominal	0.000	Infinite
20	Shell	60" OD	2003	2016	1.25	1.382	Above nominal	0.000	Infinite
20	Shell	60" OD	2003	2016	1.25	1.377	Above nominal	0.000	Infinite
20	Shell	60" OD	2003	2016	1.25	1.42	Above nominal	0.000	Infinite
20	Shell	60" OD	2003	2016	1.25	1.38	Above nominal	0.000	Infinite
20	Shell	60" OD	2003	2016	1.25	1.378	Above nominal	0.000	Infinite
25	Shell	60" OD	2003	2016	1.25	1.367	Above nominal	0.000	Infinite
25	Shell	60" OD	2003	2016	1.25	1.368	Above nominal	0.000	Infinite
25	Shell	60" OD	2003	2016	1.25	1.381	Above nominal	0.000	Infinite
25	Shell	60" OD	2003	2016	1.25	1.389	Above nominal	0.000	Infinite
25	Shell	60" OD	2003	2016	1.25	1.389	Above nominal	0.000	Infinite
25	Shell	60" OD	2003	2016	1.25	1.393	Above nominal	0.000	Infinite
25	Shell	60" OD	2003	2016	1.25	1.337	Above nominal	0.000	Infinite
25	Shell	60" OD	2003	2016	1.25	1.402	Above nominal	0.000	Infinite
25	Shell	60" OD	2003	2016	1.25	1.381	Above nominal	0.000	Infinite
25	Shell	60" OD	2003	2016	1.25	1.388	Above nominal	0.000	Infinite
30	Shell	60" OD	2003	2016	1.25	1.334	Above nominal	0.000	Infinite
30	Shell	60" OD	2003	2016	1.25	1.333	Above nominal	0.000	Infinite
30	Shell	60" OD	2003	2016	1.25	1.353	Above nominal	0.000	Infinite
30	Shell	60" OD	2003	2016	1.25	1.332	Above nominal	0.000	Infinite
30	Shell	60" OD	2003	2016	1.25	1.318	Above nominal	0.000	Infinite
30	Shell	60" OD	2003	2016	1.25	1.329	Above nominal	0.000	Infinite
30	Shell	60" OD	2003	2016	1.25	1.334	Above nominal	0.000	Infinite
30	Shell	60" OD	2003	2016	1.25	1.346	Above nominal	0.000	Infinite
30	Shell	60" OD	2003	2016	1.25	1.342	Above nominal	0.000	Infinite
30	Shell	60" OD	2003	2016	1.25	1.332	Above nominal	0.000	Infinite
35	Bottom Head	60" OD	2003	2016	1.1931	1.313	Above nominal	0.000	Infinite
35	Bottom Head	60" OD	2003	2016	1.1931	1.327	Above nominal	0.000	Infinite
35	Bottom Head	60" OD	2003	2016	1.1931	1.327	Above nominal	0.000	Infinite
35	Bottom Head	60" OD	2003	2016	1.1931	1.331	Above nominal	0.000	Infinite
35	Bottom Head	60" OD	2003	2016	1.1931	1.363	Above nominal	0.000	Infinite
35	Bottom Head	60" OD	2003	2016	1.1931	1.299	Above nominal	0.000	Infinite
35	Bottom Head	60" OD	2003	2016	1.1931	1.359	Above nominal	0.000	Infinite
35	Bottom Head	60" OD	2003	2016	1.1931	1.319	Above nominal	0.000	Infinite
35	Bottom Head	60" OD	2003	2016	1.1931	1.337	Above nominal	0.000	Infinite
35	Bottom Head	60" OD	2003	2016	1.1931	1.362	Above nominal	0.000	Infinite
40	Piping	6" Elbow	2003	2016	0.432	0.41	5.093	0.002	242.27
40	Piping	6" Elbow	2003	2016	0.432	0.414	4.167	0.001	299.00
40	Piping	6" Elbow	2003	2016	0.432	0.425	1.620	0.001	789.29
40	Piping	6" Elbow	2003	2016	0.432	0.417	3.472	0.001	361.40
40	Piping	6" Elbow	2003	2016	0.432	0.432	0.000	0.000	Infinite
45	Piping	4" Elbow	2003	2016	0.237	0.241	Above nominal	0.000	Infinite
45	Piping	4" Elbow	2003	2016	0.237	0.243	Above nominal	0.000	Infinite
45	Piping	4" Elbow	2003	2016	0.237	0.265	Above nominal	0.000	Infinite
45	Piping	4" Elbow	2003	2016	0.237	0.253	Above nominal	0.000	Infinite
45	Piping	4" Elbow	2003	2016	0.237	0.233	1.688	0.000	757.25
50	Piping	4" Tee	2003	2016	0.337	0.341	Above nominal	0.000	Infinite

50	Piping	4" Tee	2003	2016	0.337	0.342	Above nominal	0.000	Infinite
50	Piping	4" Tee	2003	2016	0.337	0.353	Above nominal	0.000	Infinite
50	Piping	4" Tee	2003	2016	0.337	0.361	Above nominal	0.000	Infinite
50	Piping	4" Tee	2003	2016	0.337	0.317	5.935	0.002	206.05
55	Piping	3" Elbow	2003	2016	0.3	0.319	Above nominal	0.000	Infinite
55	Piping	3" Elbow	2003	2016	0.3	0.298	0.667	0.000	1937.00
55	Piping	3" Elbow	2003	2016	0.3	0.3	0.000	0.000	Infinite
55	Piping	3" Elbow	2003	2016	0.3	0.299	0.333	0.000	3887.00
55	Piping	3" Elbow	2003	2016	0.3	0.321	Above nominal	0.000	Infinite
60	Piping	3" Elbow	2003	2016	0.216	0.213	1.389	0.000	923.00
60	Piping	3" Elbow	2003	2016	0.216	0.198	8.333	0.001	143.00
60	Piping	3" Elbow	2003	2016	0.216	0.198	8.333	0.001	143.00
60	Piping	3" Elbow	2003	2016	0.216	0.211	2.315	0.000	548.60
60	Piping	3" Elbow	2003	2016	0.216	0.208	3.704	0.001	338.00