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SEPARATOR INSPECTION REPORT

Inspection Report

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Notification Number 6067457 Work Order 6070157
Notification Desc SEPARATOR, 16" 600# 1440 PSI Maintenance Plan QPSEPAR6588
Tasklist Operation (5Y Inspection Interval) 5Y Code Inspection Separator - Sweet Se

Equipment Static Data

Equipment Number 66123508 Equipment Description SEPARATOR, 16" 600# 1440 PSI
Class SEPARATOR Tag Number
Serial Number 11021 Year Built 2007
Manufacturer R.J.V. GASFIELD SERVICES
Location FH-FW-013-00001-0167 Location Description 102/14-07-051-18W5/00
Provincial Number 0547283 PM Activity Code
Status Codes NOPR ORAS Equipment Status In Service - Fully Utilized

CRN Number P7217.23 Code Stamp U Fluid Description NATURAL GAS
Fluid Service SWEET Internal Coating Exists N Length 7.50 FOOT
MDMT - Min. Design Metal Temp Shell MAWP 1440 PSI Stress Relief PHT
Vessel Diameter 16.0 " Volume X-Ray RT1

PRD Static Data

Equip ID	Location	Size		Set Pressure	Capacity	Manufacturer	Serial Number	Model Number	Next Service Date
		Inlet	Outlet						

Process Data

Product Description SWEET GAS Fluid Service ☒ Sweet ☐ Sour PPM
Operating Pressure KPA Operating Temperature °C

Pressure Test

Test Completed ☐ Yes ☒ No Test Acceptable ☐ Yes ☐ No Test Report #

PSV Data

Tag/Serial No.	Location	Size		Set Pressure	Capacity	Model / Type	Service Date
		Inlet	Outlet				
33037-599	SEPARATOR	1"	1"	1440 PSI	5180 SCFM	TAYLOR	02/2007

Inspection History

Inspected By MARCHAK, BOB Inspection Date 2007.11.28

Inspection Summary

An external inspection consisting of a visual and UT was carried out to determine the integrity of the 3 Phase Separator.
PSV last serviced 02/2007.
It was found that the nameplate was stamped incorrectly. It should read 21.44 mm not 24.44 mm. This issue is being handled by Calgary Technical Services and the Area Inspector.
Paint was in excellent condition.
No leaks noted on any connections.
No other concerns noted.
The Separator is considered acceptable for continued service.

Recommendations

None.

Repairs Completed

Equipment Status

Integrity Status ☒ Suitable for Continued Service ☐ Immediate Repairs Required ☐ Replace
☐ Future Repairs Required
Inventory Status ☒ In Service - Fully Utilized ☐ Idle ☐ Surplus ☐ Scrap

QA Activities

☒ Leave As-Is ☐ Weld Overlayed ☐ Part / Component Replaced
☐ Equipment Replaced ☐ Grind Dressed ☐ Patch Installed

- | | | |
|--|--|---|
| <input type="checkbox"/> MAWP Derated | <input type="checkbox"/> Coating - Cleaned & Patched | <input type="checkbox"/> Coating - Removed & Replaced |
| <input type="checkbox"/> Defect Removed & Rewelded | <input type="checkbox"/> Part Cleaned | <input type="checkbox"/> Lapped & Dressed |
| <input type="checkbox"/> Epoxy Patched | | |

Noncompliances or Inspection Deficiencies Issued

External Visual Inspection

Nameplate on the Separator was attached and legible.
 The paint was in excellent condition with no chips noted.
 The Separator skirt was welded to the floor and was secure.
 PSV was last serviced 02/2007.
 The nameplate states 24.44 mm nominal. The shell is actually fabricated from a 0.843" (21.44 mm) section of pipe. The nameplate needs to be changed to reflect this. The issue is being handled by Calgary Technical Services and the Area Inspector.
 No leaks noted on any connections.
 No other concerns noted.
 The Separator is considered acceptable for continued service.

The Fuel Gas Scrubber was fabricated by RJV in 2006. CRN# F6388.2, Serial# 10818. MAWP: 150 psi at 100F. Diameter 219mm x 760 mm L.
 The paint was in excellent condition. No chips were noted.
 No leaks were noted on any connections.
 No concerns were noted on the scrubber.
 Scrubber PSV info:
 Located: off Scrubber
 Service Date: 03/2007
 The Fuel Gas Scrubber is considered acceptable for continued service

External NDE Examination

UT carried out by Bob Marchak.
 Separator: Nominal Shell: 0.843", Head: 0.812", Drain Nozzle: 0.343"
 Drain Nozzle: 0.309" to 0.313"
 Top Head: 0.839" to 0.853"
 Top Shell: 0.904" to 0.910"
 Bottom Shell: 0.886" to 0.900"
 Calculated t.min. on the drain nozzle = 0.078"
 Remaining life on drain nozzle = 6.8 years.
 Within corrosion allowance, no action required.

Fuel Gas Scrubber:
 Nominal Shell: 0.319", Head: 0.282"
 Top Head: 0.303" to 0.317"
 Top Shell: 0.346" to 0.350"
 Bottom Shell: 0.346" to 0.348"
 No issue with UT readings.

Internal Visual Inspection

Internal NDE Examination

Data Integrity

The following changes are required in SEIM:
 Equipment Text and Technical Description: 1480 psi not 1440 psi
 X-Ray: RT2
 Stress Relief: No
 MAWP: 1480 psi not 1440 psi
 Orientation: Vertical not Horizontal
 CRN: P7217.2 not P7217.23

Inspection Interval

Keep inspection interval at 5 years.
 Set PSV service interval at 5 years.

Damages

Inspector Certification

I, the undersigned certify that the above equipment has been inspected in accordance with the assigned task list and that statements within this report are correct and represent inspection findings.

Inspector Name MARCHAK, BOB Inspector Signature
 Inspection Company HUSKY ENERGY Date

13-Dec-2007

Lead Inspector's Acceptance & Schedule Confirmation

Lead Inspector DALE MARCHAK Signature Date DEC 17, 07
 Vessel Inspection Interval
 PSV Inspection Interval

☒ Leave as-is / Change to:
☐ Leave as-is / Change to:

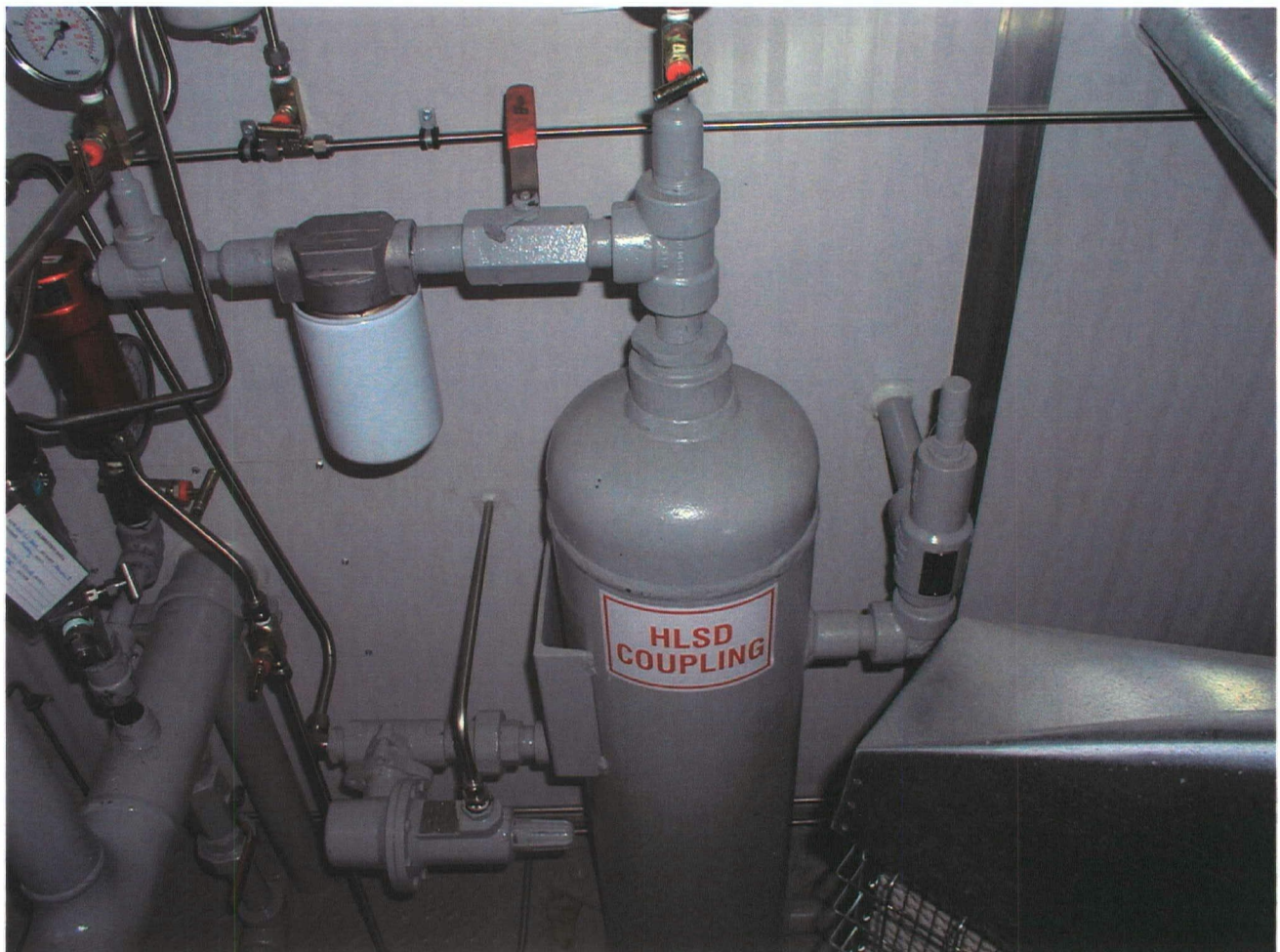
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PHOTOS OF A547283 SEPARATOR AND FUEL GAS SCRUBBER

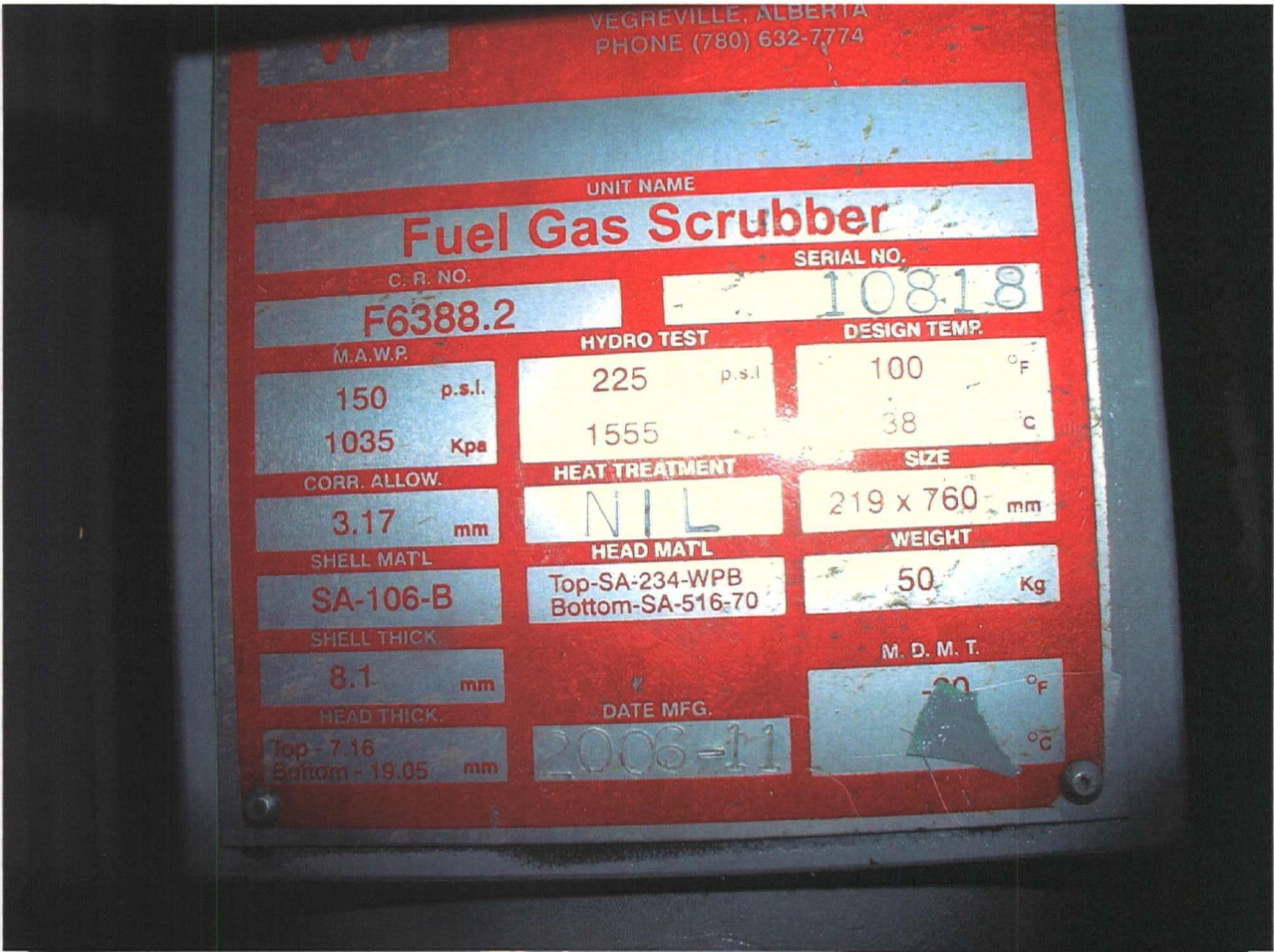
102/14-7

W RT-2		CERTIFIED BY RJV GAS FIELD SERVICES LTD VEGREVILLE, ALBERTA PHONE (780) 632-7774	
A547283 UNIT NAME			
VERT. 3 PHASE SEPARATOR			
C. R. NO. P7217.2		SERIAL NO. 11021	
W.A.M.P. 1480 P.S.I. 10204 KPa	HYDRO TEST 2220 P.S.I. 15307 KPa	DESIGN TEMP. 100 °C 38 °C	
CORR. ALLOW. 1.6 mm	HEAT TREATMENT NIL	SIZE 406x2285 mm	
HEAD MATL. SA-106-B	HEAD MATL. SA-516-70	W.T. 685 mm	
W.T. 24.44 mm	DATE MFG. 2007-03	M.D.M.T. -20 °C -29 °C	

PHOTOS OF A547283 SEPARATOR AND FUEL GAS SCRUBBER



PHOTOS OF A547283 SEPARATOR AND FUEL GAS SCRUBBER





PRESSURE VESSEL INSPECTION REPORT

66123508

EQ # 66123508

NO #

PAGE: 1 of 4
Entered
HDS
Linked

FACILITY Ansell Field DATE February 22, 2009 REPORT # IR090222JNo

VESSEL STATIC DATA

Prov. Insp. #	A#547283	CRN	P7217.2	Equip Tag #	-
Equipment Location (LSD)	31102/17-07-051-18 w5m			Serial #	11021
Equipment Description	Vertical Separator			Vessel Class	-
Manufacturer	RJV Gas Field Services			Year Built	2007
MAWP	1480 PSI	KPag / psig	@ 100°F	MDMT	-20°F
CODE: UM	<input type="checkbox"/>	U	<input checked="" type="checkbox"/>	U2	<input type="checkbox"/>
RT: 1	<input type="checkbox"/>	2	<input checked="" type="checkbox"/>	3	<input type="checkbox"/>
4	<input type="checkbox"/>	PWHT: YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>			
Diameter	406mm (NPS)	Length	2285mm (S/S)	OAL	mm/in
Shell	Mat'l	SA 106 B	Thickness	21.44mm	mm
Head	Mat'l	SA 516-70	Thickness	20.63mm	mm
Nozzle	Mat'l		Thickness		mm/in
Internal Coating	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>		Internal Clad	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
Manway	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>		Inspection Port	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
Nozzle Rating	600	lb ANSI	Painted	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	
Capacity N/A m ³					
Skirt <input checked="" type="checkbox"/> Legs <input type="checkbox"/> Saddle <input type="checkbox"/>					
Insulated : YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>					

PROCESS DATA

Product Description	Sweet Gas	Sweet	<input checked="" type="checkbox"/>	Sour	<input type="checkbox"/>	PPM:
Operating Pressure	PSI	KPag / psig	Operating Temperature	0 °F	°C / °F	

PSV STATIC DATA

Tag / Serial No.	Location	Size Inlet	Size Outlet	Set Pressure	Capacity SCFM / Lbs/Hr / GPM	Manufacturer	Model / Type	Service Date
33037-599	Vessel	1"	1"	1440 PSI	5180 SCFM	Taylor	82E8351 311	02/07

INSPECTION HISTORY

RBI Category	A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/>	Last Inspection Date	W.O. #
Inspection Task List #		Inspection Type	Inspection Reason
Inspection Techniques Required		Next Inspection Type	Due Date
VE <input type="checkbox"/> VI <input type="checkbox"/> RT <input type="checkbox"/> UT <input type="checkbox"/> MT <input type="checkbox"/> PT <input type="checkbox"/> TT <input type="checkbox"/>		Outstanding Repairs	

INSPECTION SUMMARY

An external inspection was performed to verify the vessels integrity.
The vessel is in-service and fully utilized.
No concerns were found and the vessel is considered acceptable for continued service.
A level 3 IDR090304JNa was issued for mica-graphite gaskets found in piping connections.

RECOMMENDATIONS

Replace the mica-graphite gaskets in piping connections with approved flexible graphite-gaskets at the next available service interval.

Re-stamp shell thickness on nameplate to 21.44mm. *SM*

Tighten any fitting that has an active leak in the sight glass and treaded piping.

REPAIRS COMPLETED

Object Name	Cause	Damage	Repair Activity
None			

VESSEL STATUS

Integrity Status	<input checked="" type="checkbox"/> Suitable for Continued Service	<input type="checkbox"/> Immediate Repairs Required	<input type="checkbox"/> Replace
		<input type="checkbox"/> Future Repairs Required	
Inventory Status	<input checked="" type="checkbox"/> In service Fully Utilized	<input type="checkbox"/> Idle	<input type="checkbox"/> Surplus
		<input type="checkbox"/> Scrap	
This IR completes a thorough inspection. Reschedule as indicated		<input checked="" type="checkbox"/>	Partial IR only. Do not reschedule <input type="checkbox"/>



FACILITY	Ansell Field	DATE	February 22, 2009	REPORT #	IR090222JNo
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INSPECTION OBSERVATIONS**NONCOMPLIANCES OR INSPECTION DEFICIENCIES ISSUED**

A level 3 IDR090304JNa was issued for mica-graphite gaskets found in piping connections.

EXTERNAL VISUAL INSPECTION

The overall condition of this vessel is good.

The vessel dataplate is legible and has the required information. / *Data Plate Condition - Good*

The vessel is protected with a PSV. The PSV is attached to the vessel, has a set pressure at or under MAWP and a current service date. / *PSV Condition - Good*

The gauges are clearly legible and appear to be functioning properly. / *Gauges Condition - Good*

The vessel appears to be properly secured and level. / *Vessel Secure - Yes*

The vessel is indirectly grounded. / *Vessel Grounded - Yes*

The piping, bolting, tubing and external attachments are secure. There are numerous active leaks in the treaded piping and sight glass fittings. / *Piping & Bolting Condition - Fair*

Mica-graphite gaskets were found in piping connections.

The vessel and piping are painted with some flaking and blistering but no notable corrosion found. / *Vessel Paint Condition - Fair*

The floor is painted with no notable corrosion found. / *Floor Condition - Good*

The exterior piping is insulated and clad. / *Insulation Condition - Good*

EXTERNAL NDE EXAMINATION

An external ultrasonic corrosion survey was completed as requested.

No relevant indications were noted at the time of inspection.

For more details see formal UT report by Hunt Inspection - Project C2946

INTERNAL VISUAL INSPECTION

There was no internal Visual at time of inspection.

INTERNAL NDE EXAMINATION

There was no internal NDE at time of inspection.

PRESSURE TEST

Test Completed	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Test Acceptable	<input type="checkbox"/> Yes <input type="checkbox"/> No	Test Report #
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INSPECTOR CERTIFICATION

I, the undersigned certify that the above equipment has been inspected in accordance with the assigned task list and that statements within this report are correct and represent inspection findings

Inspectors Name	Joel Norman	Inspector's Signature	
Inspection Company	Hunt Inspection Ltd.	Date	February 22, 2009

LEAD INSPECTOR'S ACCEPTANCE & SCHEDULE CONFIRMATION

Lead Inspector	Bob Marchak	Signature		Date	Apr. 27, 2009
Vessel Inspection Interval	5 Years	Leave "as-is"	<input type="checkbox"/>	Change to	
PSV Inspection Interval	5 Years	Leave "as-is"	<input type="checkbox"/>	Change to	

Office Use Only Report Entered to SEQA Database by
Static Data Verified by

Date
Date

SEIM Changes
Eq. Text & Tech Desc - 1480psi ✓
MAWP - 1480psi ✓

Husky Energy
PRESSURE VESSEL INSPECTION REPORT

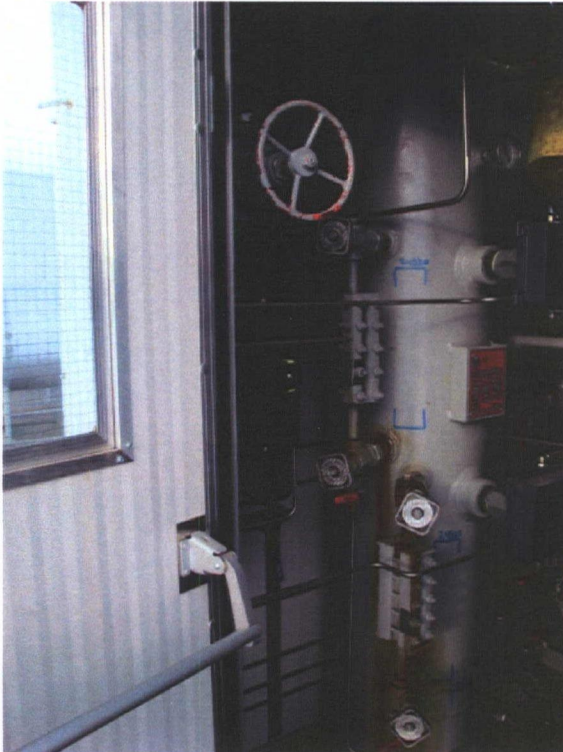
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FACILITY	Ansell Field	DATE	February 22, 2009	REPORT #	IR090222JNo
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Photos

Data Plate

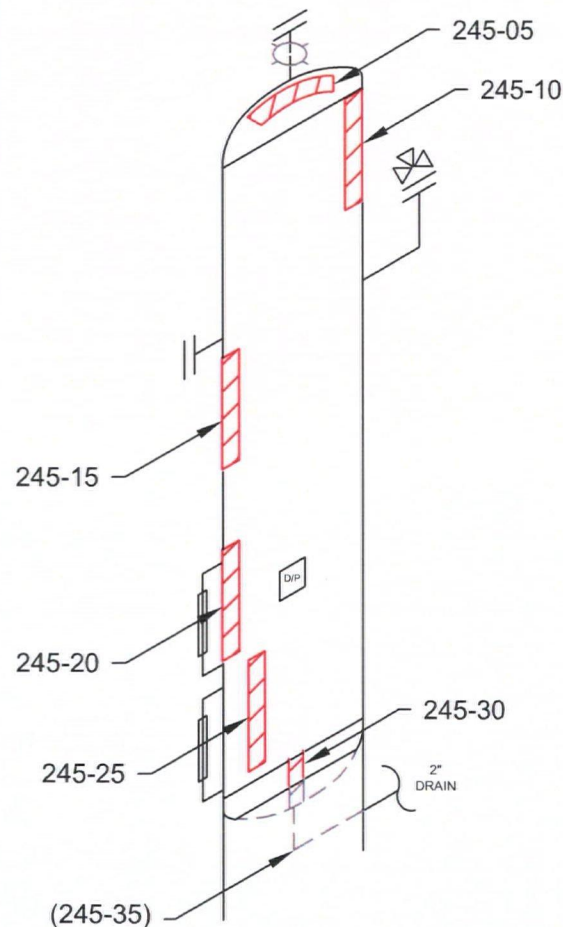
Vessel



PSV



ITEM:

SEPARATOR**A 0547283**

STETTLER, AB (403) 742-4868
 LACOMBE, AB (403) 782-7855
 BROOKS, AB (403) 501-8029
 GRANDE PRAIRIE, AB (866) 422-9732

TECHNICIAN:

JOEL NORMAN
 SNT LEVEL III
 CGSB 48.9712
 LEVEL III # 6951

DATE: **02/22/09**DWG # **245**CLIENT: **HUSKY ENERGY**LSD: **102/14-07-051-18-W5M**INSPECTOR: **BOB MARCHAK**LOCATION: **ANSELL FIELD**DISTRICT UNIT: **FH-FW**BLDG/SKID: **-**PROCESS: **SWEET**CODE: **ASME SEC VIII DIV 1**SPECIFICATION: **AS PER ASME SE 797**TECHNIQUE: **UT 1-1, REV .1**METHOD: **UT CONTINUOUS / A SCAN**SURFACE COND: **PAINTED**SURFACE TEMP: **AMBIENT****VESSEL INFORMATION**VESSEL #: **A 0547283**CRN #: **P7217.2**SERIAL #: **11021**MANUFACTURER: **RJV**DATE BUILT: **2007-03**CLIENT ID / TAG: **-**M.A.W.P.: **1480 PSI**M.A.W.T.: **100 °F**JOINT EFFICIENCY/RT: **RT 2**STRESS RELIEVED: **NO**INSULATED: **NO**MANWAY: **NO****VESSEL SPECIFICATIONS**

	OD	NOMINAL	MATERIAL	CA
VESSEL HEAD	16"	.812"	SA-516-70	.063"
VESSEL SHELL	16"	.844"	SA-106-B	.063"
BOOT HEAD	-	-	-	-
BOOT SHELL	-	-	-	-

COMMENTS:

PROJECT:

C2946

Husky Energy
PRESSURE VESSEL INSPECTION REPORT

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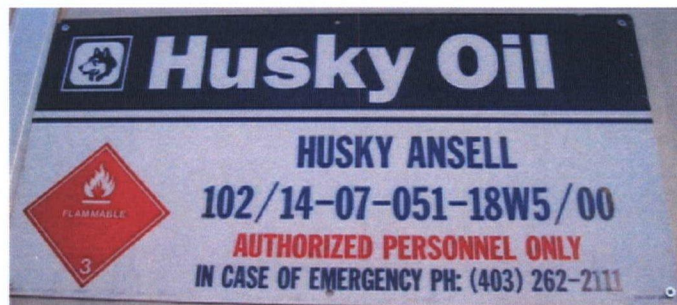
FACILITY	Ansell Field	DATE	February 22, 2009	REPORT #	IR090222JNo
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Photos

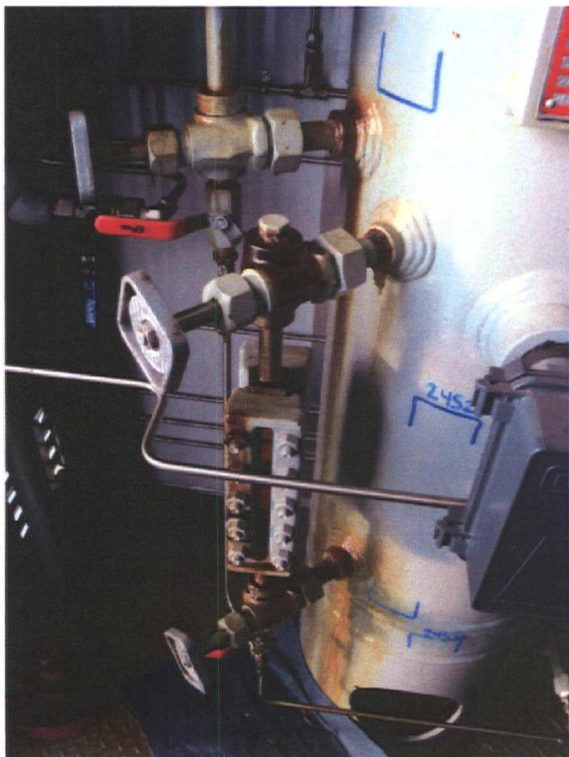
Building



LSD Sign



Active Leaks in Sight Glass Fittings



Active Leaks in Threaded Fittings





ULTRASONIC CORROSION SURVEY

Survey Name: HUSKY ENERGY

LSD: 14-07-051-18W5 Dwg: 245 Vessel Number: A0547283
District Unit: FH-FW Vessel Name: SEPARATOR
Location: ANSELL FIELD Year Built: 2007
Skid: - Tag Number: -
CRN: P7217.2

Manufacturer: RJV
Serial Number: 11021
Shell MAWP PSI: 1480
Tube MAWP PSI: 0
Vessel CA: 0.0630

Survey Date: 2/22/09
Inspector: BOB MARCHAK
Process: SWEET
Project #: C2946

Band	Description			Readings						Year	Avg Inches	Min Inches	Nominal	CA	TMIN	Recommended Next Inspection	Recommended Retirement Date
				1	2	3	4	5	6								
245-05	Top	Head	Baseline	0.833	0.843	0.849	0.848	0.841	0.833	2009	0.841	0.833	0.8120	0.0630	0.5359	2010	2029
Shape	Ellipsoidal	Shell Side	Previous	Comments-->													
OD	16		Current	0.833	0.843	0.849	0.848	0.841	0.833	2009	0.841	0.833					
Spec.	VIII Div 1			ST Loss MPY									OK				
Material	SA 516 - 70			LT Loss MPY							0.000						
245-10	Upper	Shell	Baseline	0.853	0.845	0.827	0.827	0.837	0.839	2009	0.838	0.827	0.8440	0.0630	0.6533	2010	2029
Shape	Cylindrical	Shell Side	Previous	Comments-->													
OD	16		Current	0.853	0.845	0.827	0.827	0.837	0.839	2009	0.838	0.827					
Spec.	VIII Div 1			ST Loss MPY									OK				
Material	SA 106 - B			LT Loss MPY							0.000						
245-15	Mid	Shell	Baseline	0.861	0.863	0.885	0.873	0.870	0.883	2009	0.873	0.861	0.8440	0.0630	0.6533	2010	2029
Shape	Cylindrical	Shell Side	Previous	Comments-->													
OD	16		Current	0.861	0.863	0.885	0.873	0.870	0.883	2009	0.873	0.861					
Spec.	VIII Div 1			ST Loss MPY									OK				
Material	SA 106 - B			LT Loss MPY							0.000						
245-20	Mid	Shell	Baseline	0.889	0.891	0.890	0.894	0.893	0.879	2009	0.889	0.879	0.8440	0.0630	0.6533	2010	2029
Shape	Cylindrical	Shell Side	Previous	Comments-->													
OD	16		Current	0.889	0.891	0.890	0.894	0.893	0.879	2009	0.889	0.879					
Spec.	VIII Div 1			ST Loss MPY									OK				
Material	SA 106 - B			LT Loss MPY							0.000						