

WO#:

VESSEL STATIC DATA

Plant	Sylvan Lake Gas Plant	Op Unit	Flare	System	Flare
Prov Insp. #		CRN		Equip Tag # (Barcode)	43357
Equipment Description	Flare Knockout Drum			Serial #	
Manufacturer	Unknown			Vessel Class	Non-code Vessel
Internal Access	YES	Description:	Manway	Year Built	
MAWP	14.9	psi	@	MDMT	0
Code	None	RT:	4	PWHT	NO
Diameter	84"	Length	(T/T) 132"	OAL	
Shell	Mat'l	Thickness		Horizontal	
Head	Mat'l	Thickness		Corr. Allowance	
Nozzle	Mat'l	Thickness		Corr. Allowance	
Internal Coating	NO	Internal Clad:	NO	Capacity	m ³
Manway:	YES	Inspection Port	NO	Saddle	
Nozzle Rating	150	lb ANSI	Painted:	YES	Insulated NO

PROCESS DATA

Product Description	Flare gas	Sweet	
Operating Pressure	14.9 psi	Operating Temperature	59 ° F

INSPECTION SUMMARY

Vessel is non-code and has numerous defects from manufacturing including, gouges and Broken tack welds from the rolling process.

General corrosion was noted throughout the vessel. Backing plates are used for internal vessel welds.

Drain nozzles were obstructed with debris and residue.

Ground cable was not attached to vessel at the time of inspection (Vessel is on concrete foundation and receives direct grounding).

Anchor bolts were missing.

The normal operating conditions were given by operators.

RECOMMENDATIONS

Anchor the vessel to the concrete floor.

Ground vessel.

Monitor the depth and length of gouges at next scheduled internal inspection.

NONCONFORMANCES / INSPECTION DEFICIENCIES

Vessel not anchored.



Vessel not grounded.

INSPECTION PLANNING

Inspection Strategy		Availability		Inspection Interval	
Inspection Date		Date of Last Inspect		Date of Next Inspect	

REPORT CERTIFICATION

The signatures below certify that inspections/tests have been completed in accordance with the identified inspection strategy and that the specified equipment is considered fit for service until the date of next inspection.

Inspected by	Nyssa Moore		Date	September 25, 2014
Reviewed and Approved by			Date	
Criticality Assessment Rerun		Inspection Planning Rerun		
Assessed Next Inspection Date				

PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD: 01-02-038-03 W5M

Date: September 25, 2014

SAP Equipment ID:

PSV Information			
PSV S/N:		Model of PSV:	
		Colour of PSV:	
Set Pressure:		Inlet / Outlet Size:	/
Capacity:		Connection Type:	
Date of Last Service:		Code Stamp:	
Asset #:		Block Valve Exists:	
CRN:		PSV Location	
Manufacturer:			

PSV Inspection			
	Yes	No	N/A
Is the MAWP of the vessel greater or equal to the PSV set pressure?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has the PSV been serviced within the past 6 years?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the bonnet seal wire still intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the PSV installed vertically?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the CRN registered in the appropriate province?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If the valve is a pilot operated valve, is the pilot vent plug removed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If there is an isolating valve on the PSV inlet or outlet, is it properly car-sealed open or is there an electronic interlock in place?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the inlet piping diameter equal to or greater than the PSV inlet?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the discharge piping free from obstruction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the discharge piping free of pocketed areas?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the discharge piping diameter equal to or greater than the PSV discharge size?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the discharge piping downstream from the PSV free from reductions in size or restrictions?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the PSV discharge piping self-draining either by design or with a weep hole?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the discharge piping independently supported and anchored properly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the PSV discharge piping assembled so that it will not unthread during a PSV release?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the final discharge directed to a safe location and not impinging upon other equipment or personnel?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the PSV service tag attached to the PSV and is the service tag legible?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are any lifting levers operable and positioned correctly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the PSV appear to be free from excessive vibration?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the PSV appear to be installed properly and is the PSV housing free of any mechanical damage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD: 01-02-038-03 W5M

Date: September 25, 2014

SAP Equipment ID:

ID	General	Condition
V1	Other (please explain)	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> N/A
Minor sludge and debris still on vessel floor.		
V2	General Corrosion	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> N/A
External		
V3	General Leaks	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> N/A
V4	Vibration	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> N/A
V5	Dissimilar Flange Rating	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> N/A
V6	Ladder/Stairway	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input checked="" type="checkbox"/> N/A
V7	Heads	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> N/A
V8	Guy Wires	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input checked="" type="checkbox"/> N/A
V9	Electrical Ground	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input checked="" type="checkbox"/> Poor <input type="checkbox"/> N/A
Vessel is on concrete with no electrical ground at the time of inspection.		
V10	Painted Inactive Corrosion	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input checked="" type="checkbox"/> N/A
V11	Coating/Painting	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> N/A
V12	Expansion Joint or Bellows	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input checked="" type="checkbox"/> N/A
V13	Gauge/Site Glass	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input checked="" type="checkbox"/> N/A
V14	Shell	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> N/A
V15	Jacket	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input checked="" type="checkbox"/> N/A
	Supports	Condition
V21	Other (please explain)	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> N/A
V22	Foundation	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> N/A
V23	Anchor Bolts	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input checked="" type="checkbox"/> Poor <input type="checkbox"/> N/A
Missing anchor bolts.		
V24	Saddle Skirt	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> N/A
V25	Davit	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input checked="" type="checkbox"/> N/A
V26	Fireproofing	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input checked="" type="checkbox"/> N/A
	Connections	Condition
V31	Other (please explain)	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> N/A
V32	Small Branches	<input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input checked="" type="checkbox"/> N/A
V33	Nozzles	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Poor <input type="checkbox"/> N/A

PRESSURE VESSEL & COLUMN INSPECTION REPORT

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SAP Equipment ID:

V34	Manways	<input checked="" type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Poor	<input type="checkbox"/> N/A
V35	Reinforcing Pads	<input checked="" type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Poor	<input type="checkbox"/> N/A
V36	Inadequate Thread Engagement	<input type="checkbox"/> Good	<input type="checkbox"/> Fair	<input checked="" type="checkbox"/> Poor	<input type="checkbox"/> N/A
Short bolting on inlet nozzle.					
V37	Bolting	<input checked="" type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Poor	<input type="checkbox"/> N/A
V38	Flanges	<input checked="" type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Poor	<input type="checkbox"/> N/A
V39	Leak Clamps	<input type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Poor	<input checked="" type="checkbox"/> N/A
	Insulation	Condition			
V41	Other (please explain)	<input type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Poor	<input type="checkbox"/> N/A
V42	Damage	<input type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Poor	<input checked="" type="checkbox"/> N/A
V43	Penetrations	<input type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Poor	<input checked="" type="checkbox"/> N/A
V44	Jacket	<input type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Poor	<input checked="" type="checkbox"/> N/A
V45	Banding	<input type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Poor	<input checked="" type="checkbox"/> N/A
V46	Seals/Joints	<input type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Poor	<input checked="" type="checkbox"/> N/A
	Relief Device	Condition			
V51	Other (please explain)	<input type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Poor	<input type="checkbox"/> N/A
V52	Corrosion	<input type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Poor	<input checked="" type="checkbox"/> N/A
V53	Leaks	<input type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Poor	<input checked="" type="checkbox"/> N/A
V54	Restricted Inlet/Outlet	<input type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Poor	<input checked="" type="checkbox"/> N/A
V55	Manual Operation Lever	<input type="checkbox"/> Good	<input type="checkbox"/> Fair	<input type="checkbox"/> Poor	<input checked="" type="checkbox"/> N/A

PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD: 01-02-038-03 W5M

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SAP Equipment ID:

Issues found during inspection

Type of Issue	Depth	Location
Pit	0.060"	Bottom of East Shell
Defect	0.155"	North Side of West End of Shell
Defect	0.065"	Bottom of West End of Shell
Defect	0.125"	Bottom of West End of Shell
Defect	0.135"	Bottom of West End of Shell
Broken Tack Weld	1" Long	Top of West End of Shell
Broken Tack Weld	-	Bottom of West End of Shell
Broken Tack Weld	2" Long - 0.095"	Bottom of West End of Shell
Broken Tack Weld	-	Top of West Head
Gouge	0.110"	East Head (Bottom)
Gouge	3" Long (Shallow)	East Head (Bottom)
Gouge	3" Long - 0.050"	East End of Shell (North)
Gouge	7" Long (Shallow)	Bottom of East End of Shell
Gouge	6" Long (Shallow)	Bottom of East End of Shell
Gouge	2" Long - 0.095"	Bottom of East End of Shell
Gouge	4" Long - 0.090"	Bottom of East End of Shell
Gouge	0.040"	Bottom of West End of Shell

Magnetic Particle Inspection Comments:

Wet Visible Magnetic Particle Inspection (WVMPI) and Wet Fluorescent Magnetic Particle Inspection (WFMPI) were performed on two, 2" cut outs prior to a new liquid level bridle being installed. No cracks or other indications were found at the time of inspection.

Wet Visible Magnetic Particle Inspection (WVMPI) was also performed on all of the new liquid level bridle attachment welds. No indications were found.

Post Welding:

Wet Visible Magnetic Particle Inspection (WVMPI) and Wet Fluorescent Magnetic Particle Inspection (WFMPI) were performed on the completed welds, 24 hours after the completion of the weld, to ensure no cracks or other welding defects were present in the weld and heat affected zones. No rejectable indications were found at the time of inspection.

Chief Inspector Certification # _____**Assigned Interval** _____**Chief Inspector Signature** _____**Date** _____

PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD: 01-02-038-03 W5M

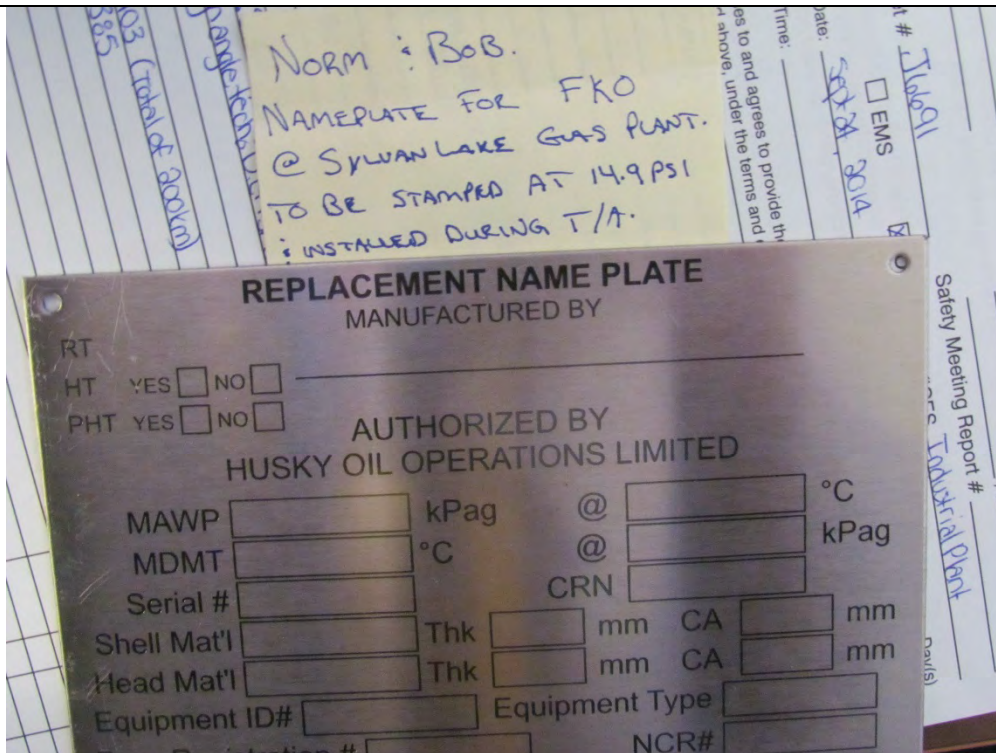
Date: September 25, 2014

SAP Equipment ID:

Pictures



General View of LSD sign



Vessel nameplate

PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD: 01-02-038-03 W5M

Date: September 25, 2014

SAP Equipment ID:



General view of vessel



Vessel head (east)

PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD: 01-02-038-03 W5M

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Missing anchor bolts and cement foundation



Vessel manway (west head)

PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD: 01-02-038-03 W5M

Date: September 25, 2014

SAP Equipment ID:



General view of vessel manway



Short bolting on inlet nozzle

PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD: 01-02-038-03 W5M

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SAP Equipment ID:



Vessel inlet piping and deflector plate assembly



Backing plates for weld seams

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Bottom nozzles were obstructed with debris



Nozzle has been removed in east head

PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD: 01-02-038-03 W5M

Date: September 25, 2014

SAP Equipment ID:



Discharge pipe in manway cover



Non full penetration weld for new nozzle

PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD: 01-02-038-03 W5M

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New nozzle weld (1)



New nozzle weld (2)

PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD: 01-02-038-03 W5M

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SAP Equipment ID:



0.065"/0.125"/0.135" defects in bottom of west end of shell



Broken tack weld in top of west head

PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD: 01-02-038-03 W5M

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0.110" Depth gouge in east head (bottom)



Internal vessel pipe and stiffening ring at west head

PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD: 01-02-038-03 W5M

Date: September 25, 2014

SAP Equipment ID:

*General view of 2" cut out**Liquid level bridle attachment welds*

PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD: 01-02-038-03 W5M

Date: September 25, 2014

SAP Equipment ID:



General view of completed weld (1)



General view of completed weld (2)

PRESSURE VESSEL & COLUMN INSPECTION REPORT

LSD: 01-02-038-03 W5M

Date: September 25, 2014

SAP Equipment ID:

Cover Page – Static Equipment Inspection Report			
Client:	Husky Oil	Inspection Date:	September 25, 2014
Facility:	Sylvan Lake Gas Plant	LSD:	01-21-038-03 W5M
Requested By:	Bob Marchak	Equipment#:	
Equipment:	Flare Knockout Drum		

Equipment Status			
<input checked="" type="checkbox"/> In Service	<input type="checkbox"/> Standby	<input checked="" type="checkbox"/> Sweet Service	<input type="checkbox"/> Insulated
<input type="checkbox"/> Not In Service	<input type="checkbox"/> Unknown	<input type="checkbox"/> Sour Service	<input checked="" type="checkbox"/> Not Insulated

Procedure			
<input checked="" type="checkbox"/> SISL-1 MT Inspection	<input type="checkbox"/> SISL-5 UT Lamination	<input type="checkbox"/> SISL-16 Automated UT	<input checked="" type="checkbox"/> SISL-24 VE/VI Inspection
<input type="checkbox"/> SISL-2 PT Inspection	<input type="checkbox"/> SISL-10 Hardness Testing	<input type="checkbox"/> SISL-20 Corrosion Survey	<input type="checkbox"/> SISL-28 Piping Inspection
<input type="checkbox"/> SISL-3 UT Inspection of Welds	<input type="checkbox"/> SISL-13 Holiday Testing	<input type="checkbox"/> SISL-21 Comp. Cracking Survey	<input type="checkbox"/> Other
<input type="checkbox"/> SISL-4 UT Thickness	<input type="checkbox"/> SISL-14 Coating Repair	<input type="checkbox"/> SISL-23 Installation Inspection	

Technicians/Inspectors		Certifications	
Nyssa Moore		ISI# 000759	
Scott Anderson		CGSB# I-UT# 17077	CGSB II-MT# 17077

Technique			
<input type="checkbox"/> UT Thickness	<input type="checkbox"/> MPI (Dry Powder)	<input checked="" type="checkbox"/> Visual (External)	<input type="checkbox"/> LPI (Visible Aqueous)
<input type="checkbox"/> UT Shearwave	<input checked="" type="checkbox"/> MPI (Wet Fluorescent)	<input checked="" type="checkbox"/> Visual (Internal)	<input type="checkbox"/> LPI (Visible Solvent Removable)
<input type="checkbox"/> UT (C-scan)	<input checked="" type="checkbox"/> MPI (Wet Visible)	<input type="checkbox"/> Hardness (Microdur)	<input type="checkbox"/> LPI (Fluorescent Water Washable)
<input type="checkbox"/> Phased Array	<input type="checkbox"/> RVT	<input type="checkbox"/> Hardness (Telebrinel)	<input type="checkbox"/> LPI (Fluorescent Solvent Removable)
<input type="checkbox"/> Automated UT	<input type="checkbox"/> Holiday Detection	<input type="checkbox"/> Chemical Etching	

Equipment		Consumables	
Ultrasonic	Magnetic Particle	Magnetic Particle	Liquid Penetrant
<input type="checkbox"/> DMS-2 S/N: 01V0PY	<input checked="" type="checkbox"/> AC Yoke	<input checked="" type="checkbox"/> Magnaflux 7HF (black)	<input type="checkbox"/> SKL-WP Penetrant
<input type="checkbox"/> USN-52L	<input type="checkbox"/> DC Yoke	<input checked="" type="checkbox"/> Magnaflux WCP-2 Contrast Paint	<input type="checkbox"/> SKD-S2 Developer
<input type="checkbox"/> USN-58L	<input type="checkbox"/> Permanent Yoke	<input checked="" type="checkbox"/> Magnaflux 14AM Fluorescent Bath	<input checked="" type="checkbox"/> SKC-S Cleaner
<input type="checkbox"/> USN-Phaser	<input checked="" type="checkbox"/> Blacklight	<input type="checkbox"/> Red Oxide Powder	<input type="checkbox"/> DP-51 Penetrant
<input type="checkbox"/> Westdyne Intraspec 4	Other	<input type="checkbox"/> Grey Oxide Powder	<input type="checkbox"/> DR-62 Developer
Other	<input type="checkbox"/> RVT XLG-3	<input checked="" type="checkbox"/> Echogel II	
<input type="checkbox"/> Tinker Razor Holiday Detector	<input type="checkbox"/> RVT Non-articulating	<input type="checkbox"/> Sono 1100	

Magnetic Particle	
Yoke:	AC Yoke - Contour B-300 S/N:
Technique:	AC Continuous
Lighting:	

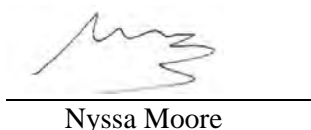
Inspection Surface	
Surface:	Outside
Condition:	Painted
Material:	Carbon Steel

Ultrasonic Transducers				
Description	Serial #	Frequency	Diameter	Angle

Code	
Code:	ASME V
Acc. Criteria:	Customer Spec.
Calibration:	Lift 10lb plate
Sensitivity:	

Comments:
An external and internal visual inspection, and magnetic particle inspection were performed on the vessel. Please see attached report for further detail.

Signature:



Nyssa Moore

Date: October 3, 2014