

WO# 601113

NH 6011063

SRV



# STORAGE TANK INSPECTION REPORT

(Metric)

Page 1 of 5  
Rev. 8-06-08

Facility:	MCMILLAN BOOSTER	Date:	February 3, 2009	Report #:	IR090203GENa
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Area Supervisor:	GORD IVERSON	W.O. / C.C.#	6011113
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STATIC DATA						
Alberta Reg. #:		CRN:	-	National Board #:	-	
Equipment Number:		66060546	Notification #:	6011063	Classification:	-
Manufacturer:		GLM TANKS & EQUIPMENT LTD.		Serial Number:	F-97-298-2	
Equip. Description:		PRODUCED WATER TANK		Location (LSD):	12-24-076-04W5	
Equipment Tag #:		-	Year Built:	1997	Company I.D.#:	BC-053922
Province Installed:		ALBERTA	Registration #:	-	Skid / Building #:	-
Nameplate Attached:		YES	Legible:	YES	U1A Available:	NO

MAWP:	8	oz	Diameter:	4648	mm	Radiography:	NO	Efficiency:	-
MAWT:	-	°C	Height:	7315	mm	Stress Relief:	NO	Code Stamp:	12 F
MDMT:	-	°C	Tank Test Pressure:	-		Ext. Coating:	NO	Position:	VERTICAL
Capacity:	120.00	m3	Coil Test Pressure:	-		Insulated:	YES	Tank Base:	PLANKS

Internal Coating:	YES	Type:	-	Thickness:	-	mm	Man door:	YES	Size:	610	mm
Is Tank Heated:	YES	Type:	FIRETUBE	Double Wall:	NO		Is Tank Portable:	NO			
Sec. Containment:	YES	Type: #1	STEEL	#2	PLASTIC						

	Material	Thickness	Corrosion Allowance
Roof :	SA-36	4.78 mm	2.24 mm
Floor:	SA-36	6.35 mm	3.81 mm
Shell #1: (Bottom)	SA-36	6.35 mm	3.81 mm
Shell #2	SA-36	4.78 mm	2.24 mm
Shell #3	SA-36	4.78 mm	2.24 mm
Shell #4	SA-36	4.78 mm	2.24 mm

Nozzle Description	I.D. #	NPS	Flange Rating	Type	Material	Thickness	Length
Inlet	-	76 mm	150 #	RFSO	SA-106B	- mm	- mm
Outlet	-	76 mm	150 #	RFSO	SA-106B	- mm	- mm

FIRETUBE or HEAT COIL					
Diameter: O.D.	168	mm	Length:	-	mm
Diameter: I.D.	154	mm			
			Radiography:	NO	Code: NON CODE
			Stress Relief:	NO	# of Passes: 1
	Material		Thickness		Corrosion Allowance
Tube	SA-106B		7.11 mm		4.57 mm
Return Bend	SA-234WPB		7.11 mm		4.57 mm

PROCESS DATA				
Product Description:		PRODUCED WATER		Service: SWEET -
Operating Pressure:		-	Kpa	Operating Temperature: - °C

PRD STATIC DATA									
Tag Number: -			Manufacturer: -						
Company I.D. #: NON-CODE			Model # / Type: -				Equipment # : -		
Serial Number: -			CRN: -				Code Stamp: - -		
Inlet Size: - mm		Rating: - #	Set Pressure: - Kpa		Back Pressure: - Kpa				
Outlet Size: - mm		Rating: - #	Capacity: -		Service Date: -				
Location of PSV: -									

INSPECTION DETAILS													
Inspection Reason:	CODE INSPECTION	Inspections Required:	VE	VI	UT	MT							
Inspection Test Plan:	-	Inspection Type Used:	VE	VI	UT	MT							
Last Inspection Date:	-	Next Inspection Type:	VE	VI	UT	MT							
Next Inspection Due:	2014	Outstanding Repairs:	NO	RBI Category:		A		B		C		D	

VESSEL STATUS			
Integrity Status:	SUITABLE FOR CONTINUED SERVICE	Inventory Status:	ISF
This IR completes a thorough inspection; reschedule as indicated.	YES	Partial inspection; do not reschedule.	-

## INSPECTION SUMMARY

A thorough inspection to verify the equipments integrity was done by UT, VI, VE and MT.  
There were no rejectable defects observed at this time; the vessel can be recommended fit for service.  
No NCR's were issued at this time.  
No IDR's were issued at this time.  
There was no external NDE performed during this inspection.



Facility: <b>MCMILLAN BOOSTER</b>	Date: <b>February 3, 2009</b>	Report #: <b>IR090203GENa</b>
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## RECOMMENDATIONS

At the next opportunity the two risers inside the tank should be cut off to allow proper operation of the tank's intended purpose.

## REPAIRS COMPLETED

The firetube to flange plate fillet welds had some indications noted that required weld repairs. The defects were removed by grinding and rewelded. MT was then performed with no indications noted.

## INSPECTION OBSERVATIONS

### NON COMPLIANCES ISSUED

## INSPECTION DEFICIENCIES ISSUED

## EXTERNAL VISUAL INSPECTION

The nameplate is in tact and legible.  
The tank base is sound with no evidence settling.  
The tank's ground connection is through a ground wire and ground rod.  
The piping and piping attachments are in fair condition with no detectable leaks.  
The piping bolt up grading is B7 and 2H.  
There is no visual access to the bottom side of the floor.  
The spray foam insulation is in fair condition.  
The tank is open to atmosphere and does not require a PRD.  
The tank has secondary containment that is in fair condition and free of leakage.

## EXTERNAL NDE

## INTERNAL VISUAL INSPECTION

The tank was cleaned prior to inspection; however, there was still some oil remaining on the shell above the 5 foot mark.  
The tank roof, shell and floor show no evidence of pitting or corrosion.  
There were some minor mechanical defects on the internal coating that was repaired using Devco 243 patch kit.  
The internal condition of the tank is satisfactory.  
The fire tube was removed and sandblasted for inspection.  
MT revealed some indications that could and some that could not be removed by grinding. Upon further inspection slag was detected and removed with a grinder, weld repairs were performed and reinspected with no defects noted.  
There was some isolated pitting noted on the firetube that measured 0.020" in one area and 0.045" in another.

## INTERNAL NDE

UT inspections on the shell and tank floor were performed by Silvertip Inspection Services Ltd.  
MT examination on the firetube was performed by Silvertip Inspection Services Ltd.  
The UT readings on the tank shell and floor are above nominal.  
The UT readings on the firetube are below nominal; however, they are of no concern at this time.  
See the NDE reports for more detailed information.

## PRESSURE TESTS

Test Completed: -	Test Pressure: - Kpa	Test Acceptable: -	Test Report #: -
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## INSPECTOR CERTIFICATION AND ACCEPTANCE

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

External Inspector's Name:	Inspector's Certification:	Inspector's Signature:	Date:
<b>GUY NORMAND C.E.T.</b>	<b>API 510, 653, ABSA, CGSB II</b>		<b>FEBRUARY 3, 2009</b>
Internal Inspector's Name:	Inspector's Certification:	Inspector's Signature:	Date:
<b>GUY NORMAND C.E.T.</b>	<b>API 510, 653, ABSA, CGSB II</b>		<b>FEBRUARY 3, 2009</b>



Facility: **MCMILLAN BOOSTER** Date: **February 3, 2009** Report #: **IR090203GENa**

**CHIEF OR LEAD INSPECTOR'S ACCEPTANCE AND SCHEDULE CONFIRMATION**

Inspector's Name: <b>DALE MARTIN</b>		Inspector's Certification: -		Inspector's Signature: <i>[Signature]</i>		Date: <b>FEB 24, 09</b>	
Vessel Inspection Interval: <b>5</b> Years	Leave "As Is":	Change to:	PSV Inspection Interval: Years	Leave "As Is":	Change to:	Years	Years

Office Use Only: Report Entered to SEQA Database by: \_\_\_\_\_ Date: \_\_\_\_\_  
Static Data Verified by: \_\_\_\_\_ Date: \_\_\_\_\_

**G.L.M. TANKS & EQUIPMENT LTD.**

**NISKU, ALBERTA** ☒ **BATTLEFORD, SASK.** ☐

API ☒ ED. ☐ APP. ☐

SERIAL No. **F-97-298-2**

YEAR BUILT **1997**

NOM DIA	<b>15.25 FT.</b>	NOM CAP	<b>750 BBL</b>
NOM HT	<b>24.0 FT.</b>	SHELL THK	<b>1/4 3/16 IN.</b>
BTM THK	<b>1/4 IN.</b>	SHELL MATL	<b>A-36 OR EQ</b>
DECK THK	<b>3/16 IN.</b>	BTM TYPE	<b>FLAT</b>
S.G.	<b>1.0</b>	D.P.	<b>8.0 OZ.</b>
D.M.T.	<b>N/A °F</b>	S.R.	<b>NO</b>
D.L.L.	<b>24.0 FT.</b>	EQUIP No	<b>STOCK TANKS</b>
SERVICE	<b>API-12F MODIFIED</b>		

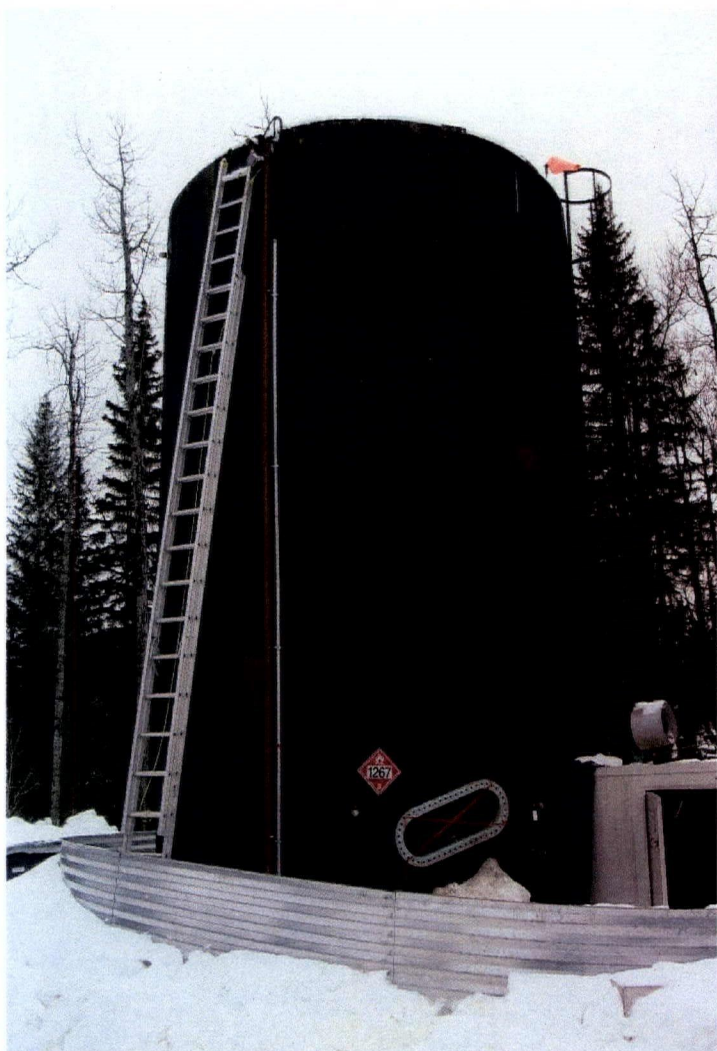
NAMEPLATE



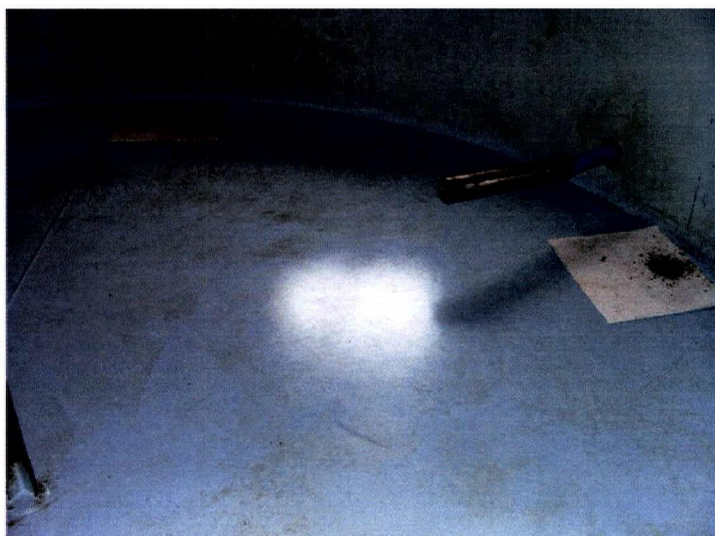
Facility: **MCMILLAN BOOSTER**

Date: **February 3, 2009**

Report #: **IR090203GENa**



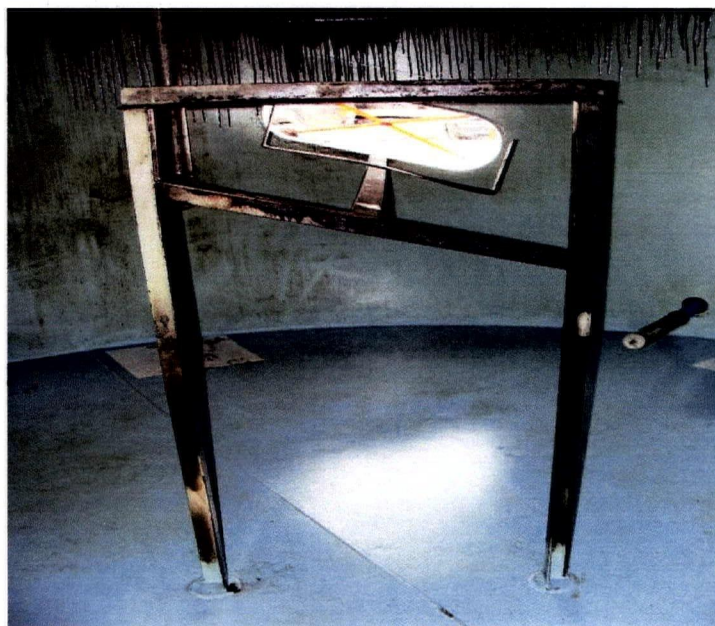
**OVERALL VIEW**



**TANK FLOOR**



**TANK FLOOR**



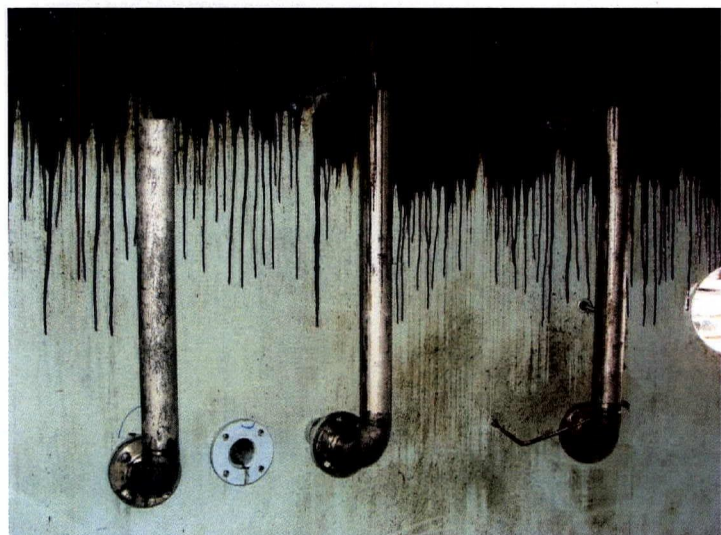
**FIRETUBE SUPPORT**



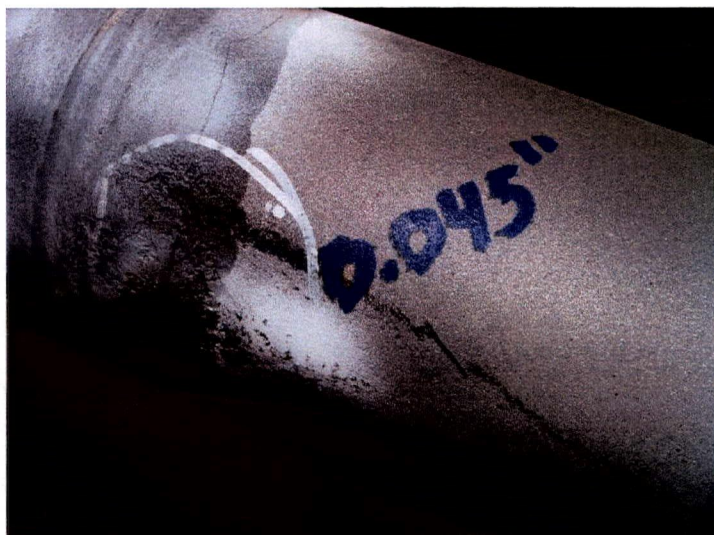
Facility: **MCMILLAN BOOSTER**

Date: **February 3, 2009**

Report #: **IR090203GENa**



**INTERNAL PIPING**



**PITTING ON FIRETUBE**



**FIRETUBE**

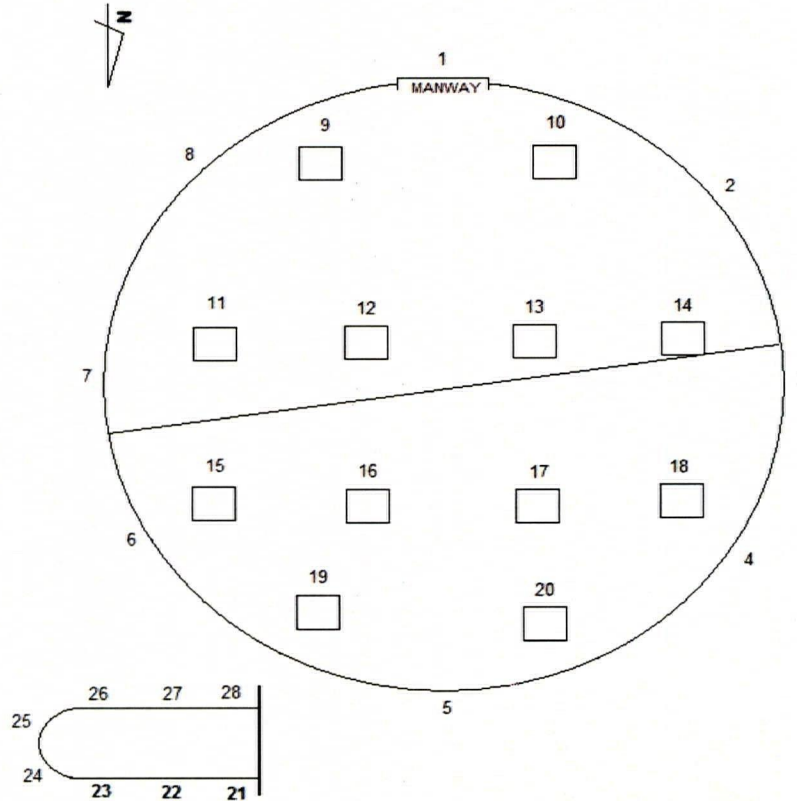


**PITTING ON FIRETUBE**



# STORAGE TANK UT REPORT

FACILITY: <b>MCMILLAN BOOSTER</b>		DATE: <b>FEBRUARY 03, 2009</b>		REPORT #: <b>IR090203GENa</b>	
AREA SUPERVISOR: <b>GORD IVERSON</b>				W.O. / C.C.#: <b>6011113</b>	
<b>STATIC DATA</b>					
Alberta Reg. #:		CRN:		National Board #:	
Equipment Number: <b>66060546</b>		Notification #: <b>6011063</b>		Vessel Class:	
Manufacturer: <b>GLM TANKS &amp; EQUIPMENT LTD.</b>				Serial Number: <b>F-97-298-2</b>	
Equip. Description: <b>PRODUCED WATER TANK</b>				Location (LSD): <b>12-24-076-04W5</b>	
Equipment Tag #: <b>-</b>		Year Built: <b>1997</b>		Company I.D.#: <b>BC-053922</b>	
Province Installed: <b>ALBERTA</b>		Registration #: <b>-</b>		Skid / Building #: <b>-</b>	
MAWP: <b>3</b> Kpa	Diameter: <b>4648</b> mm	Radiography: <b>NO</b>	Nozzle Rating: <b>#</b>	Internal Coating: <b>YES</b>	
MAWT: <b>°C</b>	Height: <b>7315</b> mm	Stress Relief: <b>NO</b>	Code Stamp: <b>12 F</b>	Tank Heated: <b>YES</b>	
MDMT: <b>°C</b>		External Coating: <b>NO</b>	Position: <b>VERTICAL</b>	Double Wall: <b>NO</b>	
Capacity: <b>120.00</b> m3		Insulated: <b>YES</b>	Tank Base:	Tank Portable: <b>NO</b>	
<b>Material</b>		<b>Thickness</b>		<b>Corrosion Allowance</b>	
Roof / Deck:	<b>SA-36</b>	<b>4.78</b> mm		<b>2.24</b> mm	
Floor:	<b>SA-36</b>	<b>6.35</b> mm		<b>3.81</b> mm	
Shell Course #1: (Bottom)	<b>SA-36</b>	<b>6.35</b> mm		<b>3.81</b> mm	
Shell Course #2:	<b>SA-36</b>	<b>4.78</b> mm		<b>2.24</b> mm	
Shell Course #3:	<b>SA-36</b>	<b>4.78</b> mm		<b>2.24</b> mm	
Shell Course #4:	<b>SA-36</b>	<b>4.78</b> mm		<b>2.24</b> mm	
<b>Nozzle Description</b>	<b>I.D. #</b>	<b>NPS</b>	<b>Flange Rating</b>	<b>Type</b>	<b>Material</b>
Inlet	-	76 mm	150 #	RFSO	SA-105N
Outlet	-	76 mm	150 #	RFSO	SA-105N
<b>Thickness</b>		<b>Length</b>			
<b>PROCESS DATA</b>					
Product Description: <b>PRODUCED WATER</b>		Service: <b>SWEET</b>			
Operating Pressure: <b>Kpa</b>		Operating Temperature: <b>°C</b>			



NOTE: THE POINTS SHOWN ON THE OUTSIDE OF THE TANK SHELL ARE APPROXIMATELY 4' ABOVE THE FLOOR.  
\* THE FLOOR SCAN POINTS ARE 12" x 12". ONLY THE LOWEST READING PER SQUARE HAS BEEN RECORDED.

ALL VALUES ARE IN METRIC UNITS

POINT	NOMINAL mm	LOW POINT	BELOW NOMINAL	POINT	NOMINAL mm	LOW POINT	BELOW NOMINAL	POINT	NOMINAL mm	LOW POINT	BELOW NOMINAL
LOC001	6.4	6.9		LOC010	6.4	6.8		LOC019	6.4	6.8	
LOC002	6.4	7.1		LOC011	6.4	6.8		LOC020	6.4	6.8	
LOC003	6.4	7.0		LOC012	6.4	7.0		LOC021	7.1	6.6	0.6
LOC004	6.4	7.0		LOC013	6.4	6.7		LOC022	7.1	6.3	0.8
LOC005	6.4	6.9		LOC014	6.4	6.4		LOC023	7.1	6.1	1.0
LOC006	6.4	6.9		LOC015	6.4	6.8		LOC024	7.1	6.5	0.7
LOC007	6.4	7.1		LOC016	6.4	6.8		LOC025	7.1	6.9	0.3
LOC008	6.4	6.9		LOC017	6.4	6.9		LOC026	7.1	6.4	0.7
LOC009	6.4	6.8		LOC018	6.4	6.9		LOC027	7.1	6.1	1.0





INSPECTION SERVICES LTD.

**MT EXAMINATION REPORT**REPORT NO.: **MT BC-053922**

CLIENT NAME: **HUSKY ENERGY**  
FACILITY: **McMILLAN BOOSTER**  
WORK LOCATION: **PRO-BLAST SHOP**  
EXAMINATION STANDARD: **ASME V, ARTICLE 7**  
ACCEPTANCE STANDARD: **ASME VIII DIV. 1 APPENDIX 6**  
EXAMINATION OF:

JOB NO.: **2009 - 032**  
DATE: **February 3 2009**  
COST: **6011063**  
CENTER: **----**  
W.O.#: **----**  
PAGE: **1** OF **2**

VESSEL DATA: Prov. No.: **(A)** Serial No.: \_\_\_\_\_ CRN No.: \_\_\_\_\_ Nat. Bd. No.: \_\_\_\_\_  
SURFACE: ☐ As Found ☐ Machined ☐ Shot Blasted ☒ Base Metal ☐ Painted ☐ As Welded

**Testing Equipment**

Equipment	Serial No.	Technique	Test Medium
<input checked="" type="checkbox"/> Hand Yoke	CONTOUR	15878	<input checked="" type="checkbox"/> Wet
<input type="checkbox"/> Perm Magnet			<input type="checkbox"/> Dry
<input type="checkbox"/> Coil			<input checked="" type="checkbox"/> Color Contrast
<input type="checkbox"/> Blacklight			<input type="checkbox"/> Fluorescent
<input type="checkbox"/> Hardness Tester			<input type="checkbox"/> Penetrant Dye
<input type="checkbox"/> Alloy Analyzer			<input type="checkbox"/> Other
<input type="checkbox"/> Other			
		<input checked="" type="checkbox"/> AC <input type="checkbox"/> Water Washable	Circle Safe #820AX
		<input type="checkbox"/> DC <input type="checkbox"/> Post Emulsified	MI-GLOW-WC
		<input checked="" type="checkbox"/> Continuous <input type="checkbox"/> Solvent Removable	
		<input type="checkbox"/> Residual	
		Dwell Time: _____ min	
		Developer Time: _____ min	
		Batch No.: <b>BLK-07275G WHT-15504</b>	


SCOPE: **Magnetic Particle inspection was performed on the firetube liquid retainnaing fillet welds.**

RESULTS: **Minor indications were noted on various welds. Most indications were removed by grinding.**  
**The two attachment fillet welds on the outside of the flange plate to the firetube had defects that were removed by grinding. The defects were slag inclusions that required removal to the parent material.**  
**MT was performed on the weld repairs with no indications noted.**

CONCLUSION: **The areas above were acceptable to the above acceptance standard, ASME VIII DIV. 1 APPENDIX 6.**

**TECHNICIAN(S)**

Interpretation is in accordance with the above mentioned standards, to the best of my professional ability

Print: \_\_\_\_\_ CGSB Level: \_\_\_\_\_ Reg. No.: \_\_\_\_\_ Sign:   
Print: **Guy Normand** CGSB Level: **II** Reg. No.: **13310** Sign: \_\_\_\_\_

The above representation is a professional opinion, final interpretation is the responsibility of the client. I have reviewed and am in full agreement with the contents of this report.

Client Representative: (Print) **D. Martini** Sign:  Date: **FEB 24 09**



## MT EXAMINATION REPORT

REPORT NO.:

MT BC-053922

CLIENT NAME: HUSKY ENERGY

FACILITY: McMILLAN BOOSTER

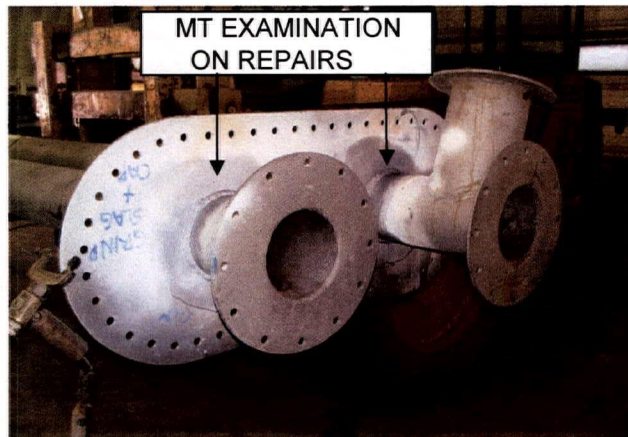
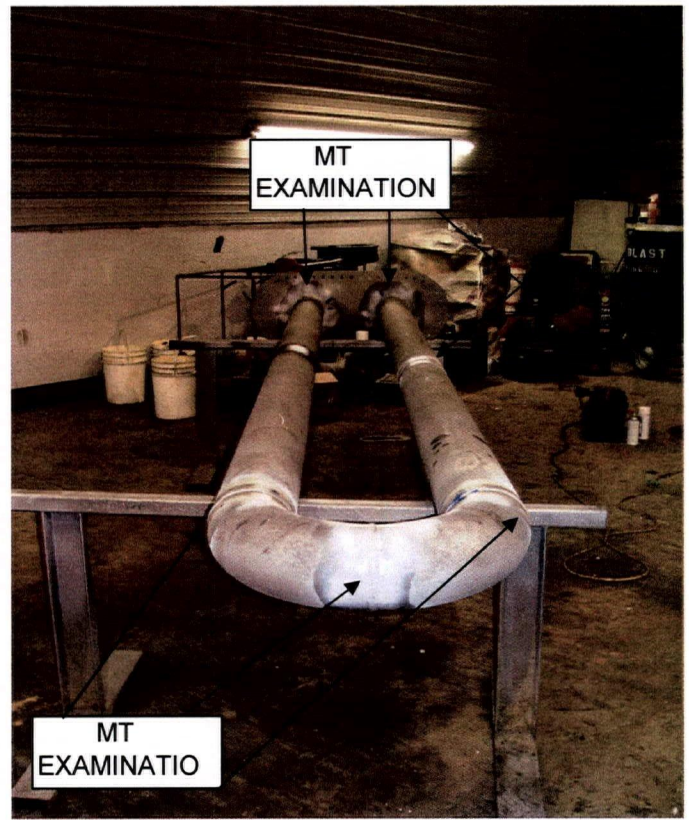
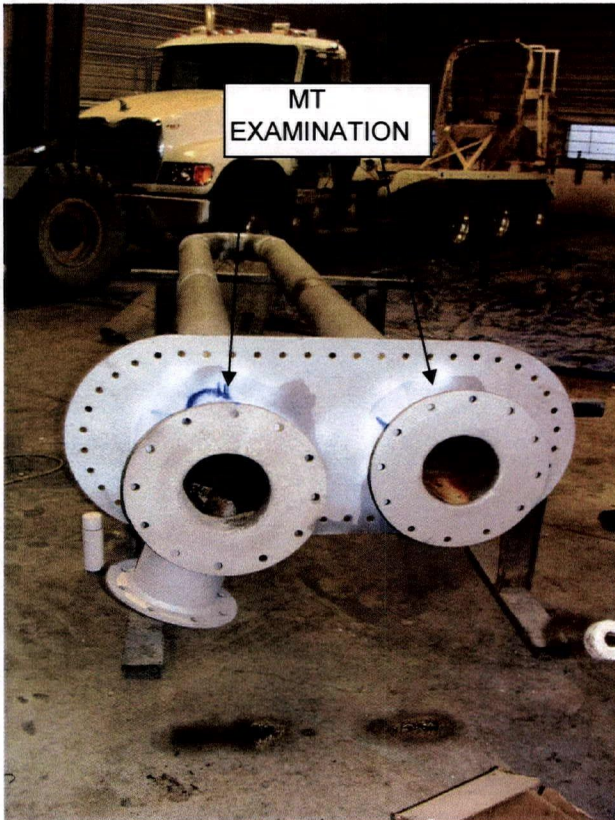
EXAMINATION OF: \_\_\_\_\_

JOB NO.: 2009 - 032

DATE: February 3 2009

PAGE: 2 OF 2

### LOCATION OF MPI EXAMINATION



### TECHNICIAN(S)

Interpretation is in accordance with the above mentioned standards, to the best of my professional ability

Print: Guy Normand

CGSB Level: II

Reg. No.: 13310

Sign: \_\_\_\_\_

The above representation is a professional opinion, final interpretation is the responsibility of the client. I have reviewed and am in full agreement with the contents of this report.



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**TANK INSPECTION REPORT****Inspection Report**

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Notification Number 6011063 Work Order 6011113  
 Notification Desc Tank Water Storage Maintenance Plan QNATANK2133  
 Tasklist Operation ( 5Y Inspection Interval ) 5Y Code Inspection Tank 400 to 1000 bbl,

**Equipment Static Data**

Equipment Number 66060546 Equipment Description TANK, AST,750bbl , WATER STORAGE  
 Class TANK Tag Number  
 Serial Number F-97-298-2 Year Built 2001  
 Manufacturer GLM  
 Location NW-NA-013-00001-0018 Location Description 100/12-24-076-04W5/00  
 Provincial Number PM Activity Code  
 Status Codes NOPR ORAS Equipment Status In Service - Fully Utilized

Design Max Temp Design Min Temp Design Standard  
 Enviro Vault Exists Fabrication Type SHOP Firetube Exists Y  
 Fluid Description WATER Fluid Service SWEET Insulation Exists Y  
 Internal Coating Exists Number of Walls SINGLE Secondary Containment  
 Skidded Flag Tank Service Date Tank Type SURFACE  
 Volume 750.00 BBL

**PRD Static Data**

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

**Process Data**

Product Description PRODUCED WATER Fluid Service ☒ Sweet ☐ Sour PPM  
 Operating Pressure ATMOS 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				

**Inspection History**

Inspected By GUY NORMAND Inspection Date 2009.02.03

**Inspection Summary**

-A THOROUGH INSPECTION TO VERIFY THE EQUIPMENTS INTEGRITY WAS DONE BY UT, VI, VE, AND MT.  
 -THERE WERE NO REJECTABLE DEFECTS OBSERVED AT THIS TIME: THE VESSEL CAN BE RECOMMENDED FIT FOR SERVICE.  
 -NO NCR's WERE ISSUED AT THIS TIME.  
 -NO IDR's WERE ISSUED AT THIS TIME.  
 -THERE WAS NO EXTERNAL NDE PERFORMED DURING THIS INSPECTION

Entered by  
 Susi B. 20090202  
 CV.  
 20090429



**Recommendations**

- AT THE NEXT OPPORTUNITY, THE TWO RISERS INSIDE THE TANK SHOULD BE CUT OFF TO ALLOW PROPER OPERATION OF THE TANK'S INTENDED PURPOSE.

**Repairs Completed**

-THE FIRETUBE TO FLANGE PLATE FILLET WELDS HAD SOME INDICATIONS NOTED THAT REQUIRED WELD REPAIRS.

-THE DEFECTS WERE REMOVED BY GRINDING AND REWELDED. MT WAS THEN PERFORMED WITH NO INDICATIONS NOTED.

**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**

<input checked="" type="checkbox"/> Leave As-Is	<input type="checkbox"/> Weld Overlayed	<input type="checkbox"/> Part / Component Replaced
<input type="checkbox"/> Equipment Replaced	<input type="checkbox"/> Grind Dressed	<input type="checkbox"/> 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**

-THE NAMEPLATE IS IN TACT AND LEGIBLE.  
 -THE TANK BASE IS SOUND WITH NO EVIDENCE OF SETTLING.  
 -THE TANKS GROUND CONNECTION IS THROUGH A GROUND WIRE AND GROUND ROD.  
 -THE PIPING AND PIPING ATTACHMENTS ARE INFAIR CONDITION WITH NO DETECTABLE LEAKS  
 -THE BOLT UP GRADING IS B7 AND 2H.  
 -THERE IS NO VISUAL ACCESS TO THE BOTTOM SIDE OF THE FLOOR.  
 -THE SPRAY FOAM INSULATION IS IN FAIR CONDITION.  
 -THE TANK IS OPEN TO ATMOSPHERE AND DOES NOT REQUIRE A PRD.  
 -THE TANK HAS SECONDARY CONTAINMENT THAT IS IN FAIR CONDITION AND FREE OF LEAKAGE.

**External NDE Examination****Internal Visual Inspection**

-THE TANK WAS CLEANED PRIOR TO INSPECTION, HOWEVER THERE WAS STILL SOME OIL REMAINING ON THE SHELL ABOVE THE 5 FOOT MARK.  
 -THE TANK ROOF, SHELL AND FLOOR SHO NO EVIDENCE OF PITING OR CORROSION.  
 -THERE WERE SOME MINOR MECHANICAL DEFECTS ON THE INTERNAL COATING THAT WAS REPAIRED USIND DEVOE 243 PATCH KIT.  
 -THE INTENAL CONDITION OF THE TANK IS SATISFACTORY.  
 -THE FIRE TUBE WAS REMOVED AND SANDBLASTED FOR INSPECTION.  
 -MT REVEALED SOME INDICATIONS THAT COULD AND SOME THAT COULD NOT BE REMOVED BY GRINDING. UPON FURTHER INSPECTION SLAG WAS DETECTED AND REMOVED WITH A GRINDER, WELD REPAIRS WERE PERFORMED AND REINSPECTED WITH NO DEFECTS NOTED.  
 -THERE WAS SOME ISOLATED PITTING NOTED ON THE FIRETUBE THAT MEASURED 0.020" IN ONE AREA AND 0.045" IN ANOTHER

**Internal NDE Examination**

-UT INSPECTIONS ON THE SHELL AND TANK FLOOR WERE PERFORMED BY SILVERTIP INSP.  
 -MT EXAMINATION ON THE FIRETUBE WAS PERFORMED BY SILVERTIP INSP.  
 -THE UT READINGS ON THE TANK SHELL AND FLOOR ARE ABOVE NOMINAL.  
 -THE UT READING ON THE FIRETUBE ARE BELOW NOMINAL, HOWEVER THARE ARE OF NO CONCERN AT THIS TIME.  
 SEE THE NDE REPORTS FOR MORE DETAILED INFORMATION.

**Data Integrity****Inspection Interval**



**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 GUY NORMAND

Inspector Signature *Donna Wignall For Guy Normand.*

Inspection Company SILVERTIP INSPECTION SERVICES Date Feb 23/09

**Lead Inspector's Acceptance & Schedule Confirmation**

Lead Inspector *Donna Wignall* Signature *Donna Wignall* Date APR 8, 09.

Vessel Inspection Interval ☒ Leave as-is / Change to: \_\_\_\_\_

PSV Inspection Interval ☐ Leave as-is / Change to: \_\_\_\_\_

Top





# STORAGE TANK INSPECTION REPORT

(Metric)

Page 1 of 5

Rev. 8-06-08

Facility: **MCMILLAN BOOSTER** Date: **February 3, 2009** Report #: **IR090203GENa**

Area Supervisor: **GORD IVERSON** W.O. / C.C.#: **6011113**

## STATIC DATA

Alberta Reg. #:	CRN:	National Board #:
Equipment Number: <b>66060546</b>	Notification #: <b>6011063</b>	Classification: <b>-</b>
Manufacturer: <b>GLM TANKS &amp; EQUIPMENT LTD.</b>	Serial Number: <b>F-97-298-2</b>	
Equip. Description: <b>PRODUCED WATER TANK</b>	Location (LSD): <b>12-24-076-04W5</b>	
Equipment Tag #: <b>-</b>	Year Built: <b>1997</b>	Company I.D.#: <b>BC-053922</b>
Province Installed: <b>ALBERTA</b>	Registration #: <b>-</b>	Skid / Building #: <b>-</b>
Nameplate Attached: <b>YES</b>	Legible: <b>YES</b>	U1A Available: <b>NO</b>

MAWP: <b>8</b> oz	Diameter: <b>4648</b> mm	Radiography: <b>NO</b>	Efficiency: <b>-</b>
MAWT: <b>-</b> °C	Height: <b>7315</b> mm	Stress Relief: <b>NO</b>	Code Stamp: <b>12 F</b>
MDMT: <b>-</b> °C	Tank Test Pressure:	Ext. Coating: <b>NO</b>	Position: <b>VERTICAL</b>
Capacity: <b>120.00</b> m3	Coil Test Pressure:	Insulated: <b>YES</b>	Tank Base: <b>PLANKS</b>

Internal Coating: <b>YES</b>	Type: <b>-</b>	Thickness: <b>-</b> mm	Man door: <b>YES</b>	Size: <b>610</b> mm
Is Tank Heated: <b>YES</b>	Type: <b>FIRETUBE</b>	Double Wall: <b>NO</b>	Is Tank Portable: <b>NO</b>	
Sec. Containment: <b>YES</b>	Type: #1 <b>STEEL</b>	#2 <b>PLASTIC</b>		

	Material	Thickness	Corrosion Allowance
Roof :	SA-36	4.78 mm	2.24 mm
Floor:	SA-36	6.35 mm	3.81 mm
Shell #1: (Bottom)	SA-36	6.35 mm	3.81 mm
Shell #2	SA-36	4.78 mm	2.24 mm
Shell #3	SA-36	4.78 mm	2.24 mm
Shell #4	SA-36	4.78 mm	2.24 mm

Nozzle Description	I.D. #	NPS	Flange Rating	Type	Material	Thickness	Length
Inlet	-	76 mm	150 #	RFSO	SA-106B	- mm	- mm
Outlet	-	76 mm	150 #	RFSO	SA-106B	- mm	- mm

## FIRETUBE or HEAT COIL

Diameter: O.D. <b>168</b> mm	Length: <b>-</b> mm	Radiography: <b>NO</b>	Code: <b>NON CODE</b>
Diameter: I.D. <b>154</b> mm		Stress Relief: <b>NO</b>	# of Passes: <b>1</b>

	Material	Thickness	Corrosion Allowance
Tube	SA-106B	7.11 mm	4.57 mm
Return Bend	SA-234WPB	7.11 mm	4.57 mm

## PROCESS DATA

Product Description: <b>PRODUCED WATER</b>	Service: <b>SWEET</b>
Operating Pressure: <b>-</b> Kpa	Operating Temperature: <b>-</b> °C

## PRD STATIC DATA

Tag Number: <b>-</b>	Manufacturer: <b>-</b>	
Company I.D. #: <b>NON-CODE</b>	Model # / Type: <b>-</b>	Equipment #: <b>-</b>
Serial Number: <b>-</b>	CRN: <b>-</b>	Code Stamp: <b>-</b>
Inlet Size: <b>-</b> mm	Rating: <b>-</b> #	Set Pressure: <b>-</b> Kpa
Outlet Size: <b>-</b> mm	Rating: <b>-</b> #	Capacity: <b>-</b>
Location of PSV: <b>-</b>		Service Date: <b>-</b>

## INSPECTION DETAILS

Inspection Reason: <b>CODE INSPECTION</b>	Inspections Required: <b>VE VI UT MT</b>
Inspection Test Plan: <b>-</b>	Inspection Type Used: <b>VE VI UT MT</b>
Last Inspection Date: <b>-</b>	Next Inspection Type: <b>VE VI UT MT</b>
Next Inspection Due: <b>2014</b>	Outstanding Repairs: <b>NO</b> RBI Category: <b>A B C D</b>

## VESSEL STATUS

Integrity Status: <b>SUITABLE FOR CONTINUED SERVICE</b>	Inventory Status: <b>ISF</b>
This IR completes a thorough inspection; reschedule as indicated. <b>YES</b>	Partial inspection; do not reschedule. <b>-</b>

## INSPECTION SUMMARY

A thorough inspection to verify the equipments integrity was done by UT, VI, VE and MT.  
There were no rejectable defects observed at this time; the vessel can be recommended fit for service.  
No NCR's were issued at this time.  
No IDR's were issued at this time.  
There was no external NDE performed during this inspection.



Facility: **MCMILLAN BOOSTER** Date: **February 3, 2009** Report #: **IR090203GENa**

## RECOMMENDATIONS

At the next opportunity the two risers inside the tank should be cut off to allow proper operation of the tank's intended purpose.

## REPAIRS COMPLETED

The firetube to flange plate fillet welds had some indications noted that required weld repairs. The defects were removed by grinding and rewelded. MT was then performed with no indications noted.

## INSPECTION OBSERVATIONS

### NON COMPLIANCES ISSUED

## INSPECTION DEFICIENCIES ISSUED

## EXTERNAL VISUAL INSPECTION

The nameplate is in tact and legible.  
The tank base is sound with no evidence settling.  
The tank's ground connection is through a ground wire and ground rod.  
The piping and piping attachments are in fair condition with no detectable leaks.  
The piping bolt up grading is B7 and 2H.  
There is no visual access to the bottom side of the floor.  
The spray foam insulation is in fair condition.  
The tank is open to atmosphere and does not require a PRD.  
The tank has secondary containment that is in fair condition and free of leakage.

## EXTERNAL NDE

## INTERNAL VISUAL INSPECTION

The tank was cleaned prior to inspection; however, there was still some oil remaining on the shell above the 5 foot mark.  
The tank roof, shell and floor show no evidence of pitting or corrosion.  
There were some minor mechanical defects on the internal coating that was repaired using Devoe 243 patch kit.  
The internal condition of the tank is satisfactory.  
The fire tube was removed and sandblasted for inspection.  
MT revealed some indications that could and some that could not be removed by grinding. Upon further inspection slag was detected and removed with a grinder, weld repairs were performed and reinspected with no defects noted.  
There was some isolated pitting noted on the firetube that measured 0.020" in one area and 0.045" in another.

## INTERNAL NDE

UT inspections on the shell and tank floor were performed by Silvertip Inspection Services Ltd.  
MT examination on the firetube was performed by Silvertip Inspection Services Ltd.  
The UT readings on the tank shell and floor are above nominal.  
The UT readings on the firetube are below nominal; however, they are of no concern at this time.  
See the NDE reports for more detailed information.

## PRESSURE TESTS

Test Completed: - Test Pressure: - Kpa Test Acceptable: - Test Report #: -

## INSPECTOR CERTIFICATION AND ACCEPTANCE

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

External Inspector's Name:	Inspector's Certification:	Inspector's Signature:	Date:
<b>GUY NORMAND C.E.T.</b>	<b>API 510, 653, ABSA, CGSB II</b>		<b>FEBRUARY 3, 2009</b>
Internal Inspector's Name:	Inspector's Certification:	Inspector's Signature:	Date:
<b>GUY NORMAND C.E.T.</b>	<b>API 510, 653, ABSA, CGSB II</b>		<b>FEBRUARY 3, 2009</b>



# STORAGE TANK INSPECTION REPORT

(Metric)

Facility: **MCMILLAN BOOSTER** Date: **February 3, 2009** Report #: **IR090203GENa**

## CHIEF OR LEAD INSPECTOR'S ACCEPTANCE AND SCHEDULE CONFIRMATION

Inspector's Name:	Inspector's Certification:	Inspector's Signature:	Date:
<b>DALE MARTIN</b>	-	-	-
Vessel Inspection Interval:	Leave "As Is":	Change to:	PSV Inspection Interval:
<b>5</b> Years			<b>5</b> Years

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

Roman Wanyk  
Roman Wanyk

Date: Feb 23/09  
Date: Feb 23/09

G.L.M. TANKS & EQUIPMENT LTD.			
		NISKU, ALBERTA <input checked="" type="checkbox"/>	
		BATTLEFORD, SASK. <input type="checkbox"/>	
API <input checked="" type="checkbox"/> ED. <input type="checkbox"/> APP. <input type="checkbox"/>			
SERIAL No. <b>E-97-298-2</b>			
YEAR BUILT <b>1997</b>			
NOM DIA	<b>15.25 FT.</b>	NOM CAP	<b>750 BBL</b>
NOM HT	<b>24.0 FT.</b>	SHELL THK	<b>1/4 3/16 IN.</b>
BTM THK	<b>1/4 IN.</b>	SHELL MATL	<b>A-3.6 OR EQ</b>
DECK THK	<b>3/16 IN.</b>	BTM TYPE	<b>FLAT</b>
S.G.	<b>1.0</b>	D.P.	<b>8.0 OZ.</b>
D.M.T.	<b>N/A °F</b>	S.R.	<b>NO</b>
D.L.L.	<b>24.0 FT.</b>	EQUIP No	<b>STOCK TANKS</b>
SERVICE	<b>API-12F MODIFIED</b>		

NAMEPLATE



Facility: **MCMILLAN BOOSTER**

Date: **February 3, 2009**

Report #: **IR090203GENa**



**OVERALL VIEW**



**TANK FLOOR**



**TANK FLOOR**



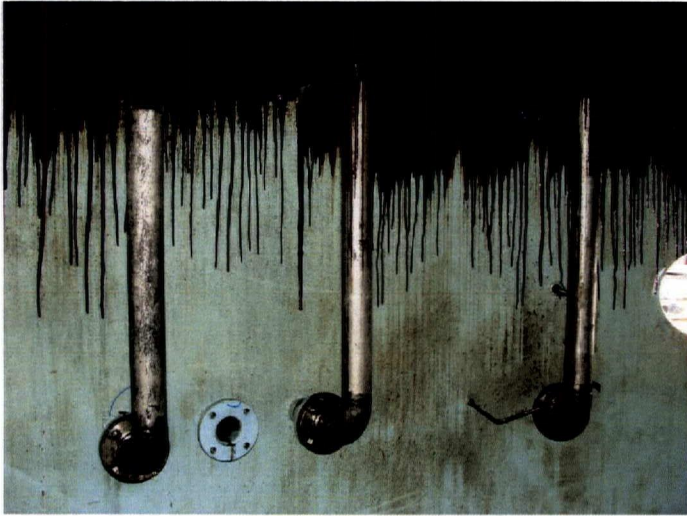
**FIRETUBE SUPPORT**



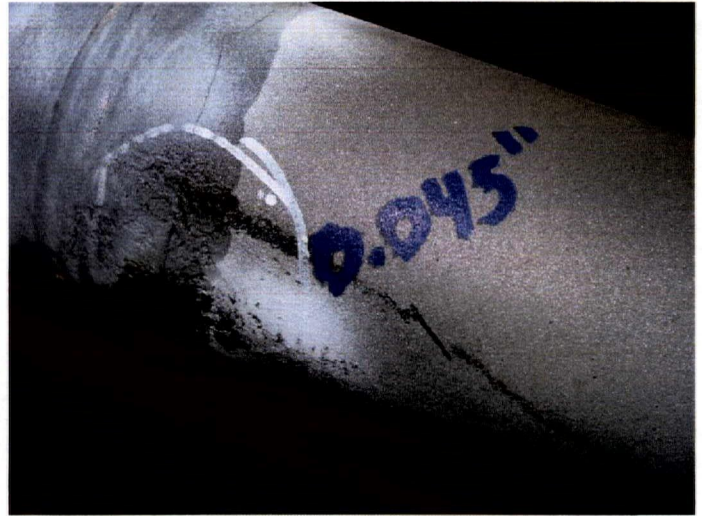
Facility: **MCMILLAN BOOSTER**

Date: **February 3, 2009**

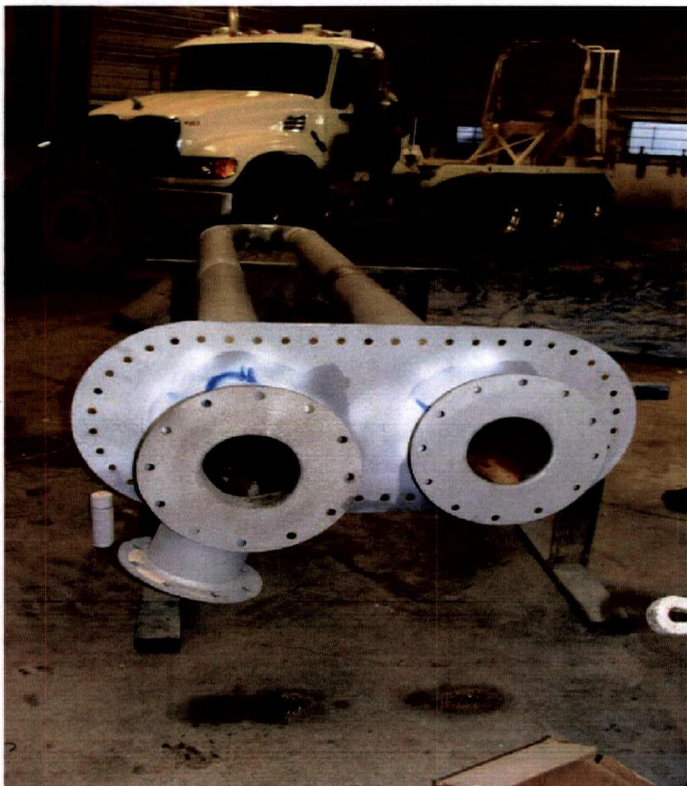
Report #: **IR090203GENa**



**INTERNAL PIPING**



**PITTING ON FIRETUBE**



**FIRETUBE**



**PITTING ON FIRETUBE**





INSPECTION SERVICES LTD.

**MT EXAMINATION REPORT**REPORT NO.: **MT BC-053922**

CLIENT NAME: **HUSKY ENERGY**  
FACILITY: **McMILLAN BOOSTER**  
WORK LOCATION: **PRO-BLAST SHOP**  
EXAMINATION STANDARD: **ASME V, ARTICLE 7**  
ACCEPTANCE STANDARD: **ASME VIII DIV. 1 APPENDIX 6**  
EXAMINATION OF: \_\_\_\_\_

JOB NO.: **2009 - 032**  
DATE: **February 3 2009**  
COST: **6011063**  
CENTER: **----**  
W.O.#: \_\_\_\_\_  
PAGE: **1** OF **2**

VESSEL DATA: Prov. No.: **A** Serial No.: \_\_\_\_\_ CRN No.: \_\_\_\_\_ Nat. Bd. No.: \_\_\_\_\_  
SURFACE: ☐ As Found ☐ Machined ☐ Shot Blasted ☒ Base Metal ☐ Painted ☐ As Welded

**Testing Equipment**

Equipment	Serial No.	Technique	Test Medium
<input checked="" type="checkbox"/> Hand Yoke	<b>CONTOUR</b>	<input checked="" type="checkbox"/> AC	<input checked="" type="checkbox"/> Wet
<input type="checkbox"/> Perm Magnet		<input type="checkbox"/> DC	<input type="checkbox"/> Dry
<input type="checkbox"/> Coil		<input type="checkbox"/> Continuous	<input checked="" type="checkbox"/> Color Contrast
<input type="checkbox"/> Blacklight		<input type="checkbox"/> Residual	<input type="checkbox"/> Fluorescent
<input type="checkbox"/> Hardness Tester			<input type="checkbox"/> Penetrant Dye
<input type="checkbox"/> Alloy Analyzer			<input type="checkbox"/> Other
<input type="checkbox"/> Other			
		Dwell Time: _____ min	Batch No.: <b>BLK-07275G WHT-15504</b>
		Developer Time: _____ min	

SCOPE: **Magnetic Particle inspection was performed on the firetube liquid retainnaing fillet welds.**

RESULTS: **Minor indications were noted on various welds. Most indications were removed by grinding.**  
**The two attachment fillet welds on the outside of the flange plate to the firetube had defects that were removed by grinding. The defects were slag inclusions that required removal to the parent material.**  
**MT was performed on the weld repairs with no indications noted.**

CONCLUSION: **The areas above were acceptable to the above acceptance standard, ASME VIII DIV. 1 APPENDIX 6.**

**TECHNICIAN(S)**

Interpretation is in accordance with the above mentioned standards, to the best of my professional ability

Print: \_\_\_\_\_ CGSB Level: \_\_\_\_\_ Reg. No.: \_\_\_\_\_ Sign: \_\_\_\_\_  
Print: **Guy Normand** CGSB Level: **II** Reg. No.: **13310** Sign: \_\_\_\_\_

The above representation is a professional opinion, final interpretation is the responsibility of the client. I have reviewed and am in full agreement with the contents of this report.

Client Representative: (Print) \_\_\_\_\_ Sign: \_\_\_\_\_ Date: \_\_\_\_\_



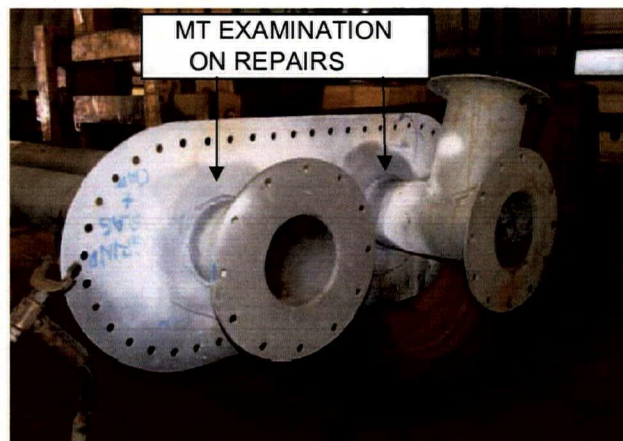
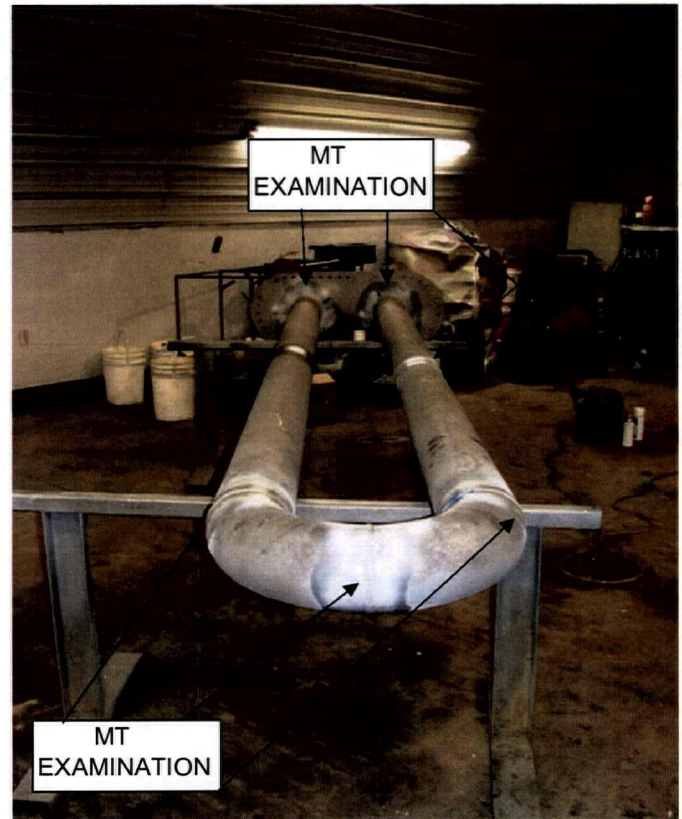
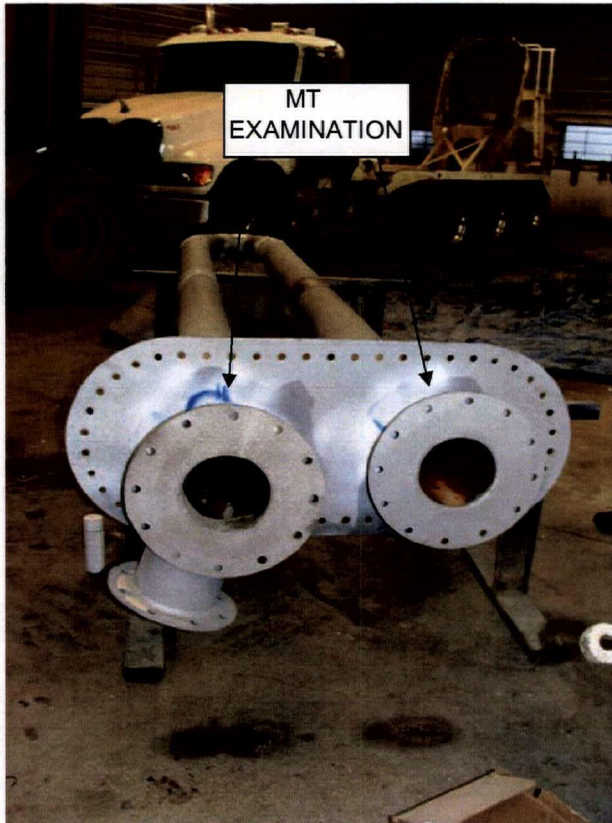
## MT EXAMINATION REPORT

REPORT NO.: **MT BC-053922**

CLIENT NAME: HUSKY ENERGY  
FACILITY: McMILLAN BOOSTER  
EXAMINATION OF: \_\_\_\_\_

JOB NO.:	<u>2009 - 032</u>
DATE:	<u>February 3 2009</u>
PAGE:	<u>2</u> OF <u>2</u>

### LOCATION OF MPI EXAMINATION



### TECHNICIAN(S)

Interpretation is in accordance with the above mentioned standards, to the best of my professional ability

Print: Guy Normand CGSB Level: II Reg. No.: 13310 Sign: \_\_\_\_\_

The above representation is a professional opinion, final interpretation is the responsibility of the client. I have reviewed and am in full agreement with the contents of this report.





## Inspection Project Summary

Page 1 of 1

Facility / Area : McMILLAN BOOSTER  
Scope of Project: VE, VI & UT TANK INSPECTIONS

*Form to be used to summarize findings of a group of inspections / work scope at a single facility or in a general area / field.*

Originator / Inspector: GUY NORMAND Date: February 13, 2009  
Company Name: SILVERTIP INSPECTION SERVICES LTD. Phone: 780-826-1596  
Field Operations Contact: GORD IVERSON Phone: 780-849-8161

Number of Inspection Reports (IR's) in This Package: 1

Approval by Husky Area Inspector: Name: DALE MARTIN Signature: \_\_\_\_\_

Thickness Survey: PCMS ☐  
Other ☒: Individual UT By: Silvertip Inspection Services Ltd.

### *Summary of Inspection Findings*

There are no significant findings to be reported.

### *Summary of Non-Compliance(s) Identified*

### *Summary of Deficiencies Identified*

Any deficiencies have been noted as recommendations.

### *Recommendations*

#### **McMILLAN BOOSTER** **NW-NA-013-00001-0018**

Company ID: BC-053922  
Equipment Description: PRODUCED WATER TANK  
Serial Number: F-97-298-2  
LSD: 12-24-076-04W5

At the next opportunity the two risers inside the tank should be cut off to allow proper operation of the tank's intended purpose.

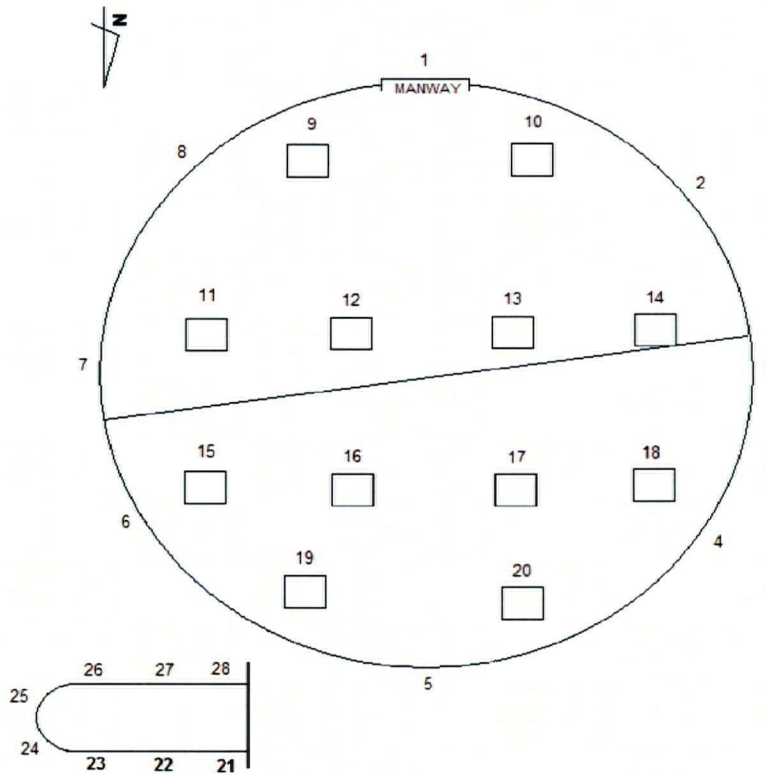
### *For Office Use Only:*

Package Sent To: (Business Unit Contact) \_\_\_\_\_ Date: \_\_\_\_\_  
Forward to Facility Office: \_\_\_\_\_ Date: \_\_\_\_\_  
Facility Contact: \_\_\_\_\_  
Sent By: \_\_\_\_\_ Date: \_\_\_\_\_



# STORAGE TANK UT REPORT

FACILITY: <b>MCMILLAN BOOSTER</b>		DATE: <b>FEBRUARY 03, 2009</b>		REPORT #: <b>IR090203GENa</b>	
AREA SUPERVISOR: <b>GORD IVERSON</b>				W.O. / C.C.#: <b>6011113</b>	
<b>STATIC DATA</b>					
Alberta Reg. #:		CRN:		National Board #:	
Equipment Number: <b>66060546</b>		Notification #: <b>6011063</b>		Vessel Class:	
Manufacturer: <b>GLM TANKS &amp; EQUIPMENT LTD.</b>				Serial Number: <b>F-97-298-2</b>	
Equip. Description: <b>PRODUCED WATER TANK</b>				Location (LSD): <b>12-24-076-04W5</b>	
Equipment Tag #: <b>-</b>		Year Built: <b>1997</b>		Company I.D.#: <b>BC-053922</b>	
Province Installed: <b>ALBERTA</b>		Registration #: <b>-</b>		Skid / Building #: <b>-</b>	
MAWP: <b>3</b> Kpa	Diameter: <b>4648</b> mm	Radiography: <b>NO</b>	Nozzle Rating: <b>#</b>	Internal Coating: <b>YES</b>	
MAWT: <b>°C</b>	Height: <b>7315</b> mm	Stress Relief: <b>NO</b>	Code Stamp: <b>12 F</b>	Tank Heated: <b>YES</b>	
MDMT: <b>°C</b>		External Coating: <b>NO</b>	Position: <b>VERTICAL</b>	Double Wall: <b>NO</b>	
Capacity: <b>120.00</b> m3		Insulated: <b>YES</b>	Tank Base:	Tank Portable: <b>NO</b>	
<b>Material</b>		<b>Thickness</b>		<b>Corrosion Allowance</b>	
Roof / Deck:	<b>SA-36</b>	<b>4.78</b> mm		<b>2.24</b> mm	
Floor:	<b>SA-36</b>	<b>6.35</b> mm		<b>3.81</b> mm	
Shell Course #1: (Bottom)	<b>SA-36</b>	<b>6.35</b> mm		<b>3.81</b> mm	
Shell Course #2:	<b>SA-36</b>	<b>4.78</b> mm		<b>2.24</b> mm	
Shell Course #3:	<b>SA-36</b>	<b>4.78</b> mm		<b>2.24</b> mm	
Shell Course #4:	<b>SA-36</b>	<b>4.78</b> mm		<b>2.24</b> mm	
<b>Nozzle Description</b>	<b>I.D. #</b>	<b>NPS</b>	<b>Flange Rating</b>	<b>Type</b>	<b>Material</b>
Inlet	-	76 mm	150 #	RFSO	SA-105N
Outlet	-	76 mm	150 #	RFSO	SA-105N
<b>PROCESS DATA</b>					
Product Description: <b>PRODUCED WATER</b>			Service: <b>SWEET</b>		
Operating Pressure: <b>Kpa</b>		Operating Temperature: <b>°C</b>			



NOTE: THE POINTS SHOWN ON THE OUTSIDE OF THE TANK SHELL ARE APPROXIMATELY 4' ABOVE THE FLOOR.  
\* THE FLOOR SCAN POINTS ARE 12" x 12". ONLY THE LOWEST READING PER SQUARE HAS BEEN RECORDED.

ALL VALUES ARE IN METRIC UNITS

POINT	NOMINAL mm	LOW POINT	BELOW NOMINAL	POINT	NOMINAL mm	LOW POINT	BELOW NOMINAL	POINT	NOMINAL mm	LOW POINT	BELOW NOMINAL
LOC001	6.4	6.9		LOC010	6.4	6.8		LOC019	6.4	6.8	
LOC002	6.4	7.1		LOC011	6.4	6.8		LOC020	6.4	6.8	
LOC003	6.4	7.0		LOC012	6.4	7.0		LOC021	7.1	6.6	0.6
LOC004	6.4	7.0		LOC013	6.4	6.7		LOC022	7.1	6.3	0.8
LOC005	6.4	6.9		LOC014	6.4	6.4		LOC023	7.1	6.1	1.0
LOC006	6.4	6.9		LOC015	6.4	6.8		LOC024	7.1	6.5	0.7
LOC007	6.4	7.1		LOC016	6.4	6.8		LOC025	7.1	6.9	0.3
LOC008	6.4	6.9		LOC017	6.4	6.9		LOC026	7.1	6.4	0.7
LOC009	6.4	6.8		LOC018	6.4	6.9		LOC027	7.1	6.1	1.0