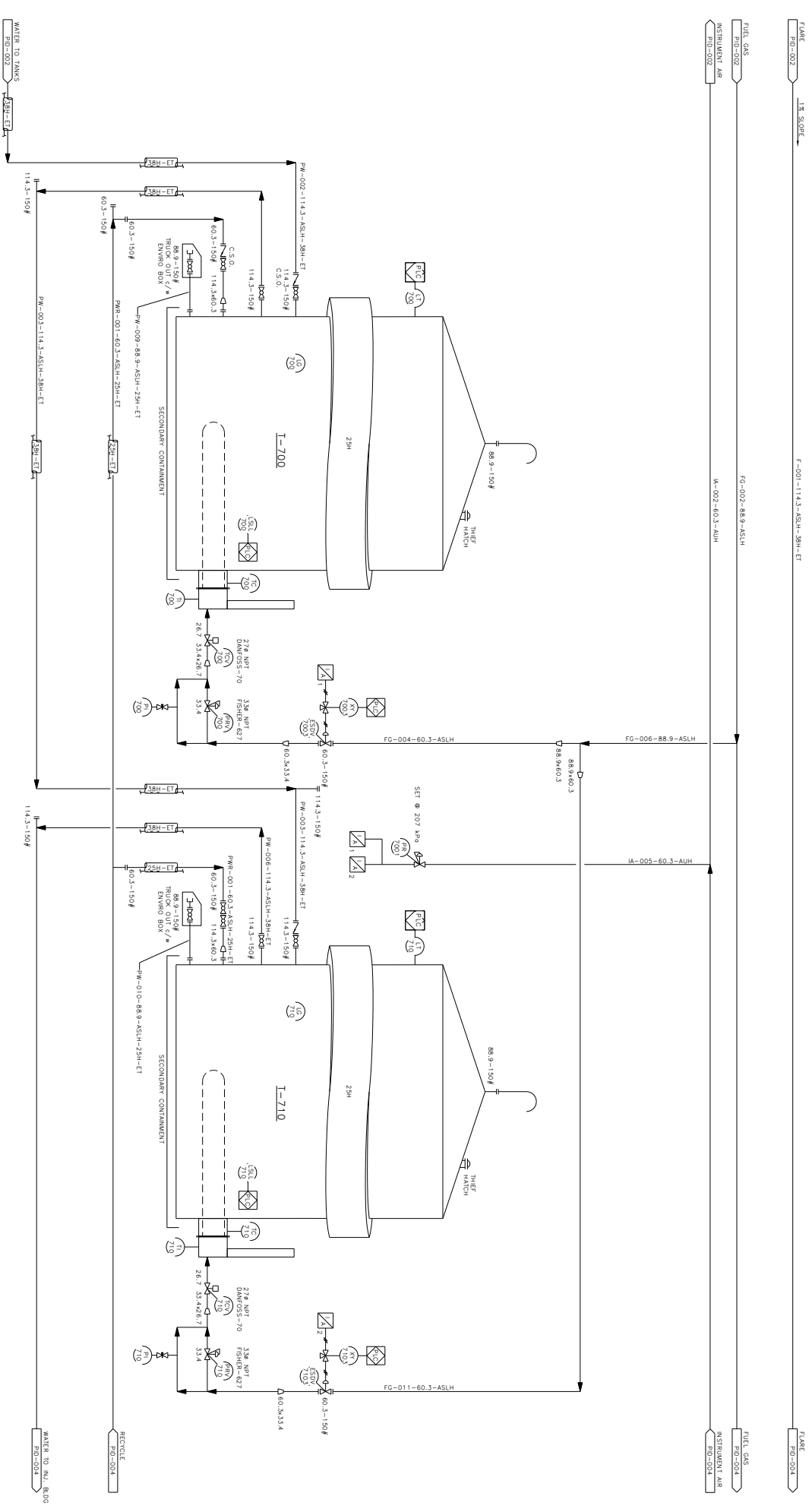


I-210  
 WATER TANK  
 CAPACITY: 260000 LBS  
 SIZE: 3658mm OD x 6096mm HIGH  
 EXISTING

I-210  
 WATER TANK  
 CAPACITY: 260000 LBS  
 SIZE: 3658mm OD x 6096mm HIGH  
 EXISTING



REV	DATE	BY	APPR	DESCRIPTION
0	02/09/16	BS	BS	ISSUED FOR APPROVAL
1	02/09/16	BS	BS	REVISION FOR INSTRUMENTATION
2	02/09/16	BS	BS	AS-BUILT AS PER FIELD MARK UPS

REV	DATE	BY	APPR	DESCRIPTION
0	02/09/16	BS	BS	ISSUED FOR APPROVAL
1	02/09/16	BS	BS	REVISION FOR INSTRUMENTATION
2	02/09/16	BS	BS	AS-BUILT AS PER FIELD MARK UPS

NOTES:  
 1. QUALIFIED AREAS DENOTE NEW EQUIPMENT/CHANGES WITHIN EXISTING SKED  
 2. FOUR DIGIT TAG NO'S DENOTE NEW INSTRUMENTATION

**FALCON EDF LTD.**  
 CAL GARY ALBERTA

**Husky Energy**  
 MUSKWA COMPRESSOR & WATER INJECTION  
 LSD 5-25-84-26 W4M  
 WATER TANKS P&ID

SCALE: NONE  
 PROJ: H-3066  
 DRAWING NUMBER: H3066-PI-003  
 REV: 2



# Storage Tank NDE Report

**Equip Id** 66063009      **SAP ID** 66063009      **Asset Type** Storage Tank  
**Plant** Northwest Alberta      **Unit** Muskwa Booster Stn      **System** N/A  
**Description** TANK, AST, 400 BBL, T-700  
**FLOC** W2-02-010-00005      **LSD** 05-25-084-26W4  
  
**Insp Date** Jun 23, 2015      **Inspector** Roman Wynnyk      **Insp Type** NDE  
**Company** Husky Energy      **Confidence** High

## Details

Insp Loc	Comp	Descr	Nom Thck	Curr Rdg	Ignore	Tmin	Comments
001	Shell		4.77	6.13	N	0	
002	Shell		4.77	5.60	N	0	
003	Shell		4.77	5.34	N	0	
004	Shell		4.77	5.43	N	0	
005	Shell		4.77	5.62	N	0	
006	Shell		4.77	5.62	N	0	
007	Shell		4.77	5.36	N	0	
008	Shell		4.77	5.72	N	0	
009	Bottom		6.35	7.06	N	0	
010	Bottom		6.35	7.14	N	0	
011	Bottom		6.35	7.25	N	0	
012	Bottom		6.35	7.45	N	0	
013	Bottom		6.35	7.47	N	0	
014	Bottom		6.35	7.69	N	0	
015	Bottom		6.35	7.34	N	0	
016	Bottom		6.35	7.07	N	0	
017	Bottom		6.35	7.62	N	0	
018	Bottom		6.35	7.52	N	0	
019	Bottom		6.35	7.07	N	0	
020	Bottom		6.35	7.19	N	0	

## Summary

UT thickness readings were taken on the floor and first coarse of the shell. No issues noted. All readings above nominal thickness.  
Tanks is fit for continued service.

# Storage Tank External Visual Inspection Report



Organization: Husky	Inspection Date: 23/06/2015 12:00:00AM
Plant: Northwest Alberta	Equipment ID: 66063009
	Asset No: 66063009
	System: N/A
	Operating Unit: Muskwa Booster Stn

## Background

Description:	TANK, AST, 400 BBL, T-700
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## Inspection

Inspector:	Roman Wynnyk	Company:	Husky Energy	Insulated:	N
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## External Location Categories

Barrier Penetrations:		Damaged Insulation:		Shell to Floor Joint Insulated:		Insulation Rings:	
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## Inspection Comments

ID	Description	Condition	Location	NCR	Comments
T1	General Other (Please Explain)	Good			Nameplate is attached and legible.
T2	General Corrosion	Good			Minor corrosion on the exposed metal.
T3	General Leaks	No			
T4	Vibration	No			
T5	Dissimilar Flange Rating	No			
T6	Ladder/Stairway	Fair			No cage on ladder.
T7	Platform	N/A			
T8	Electrical Ground	Yes			
T9	Cathodic Protection	No			No Anodes in tanks
T11	Coating/Painting	Fair			Painted insulation.
T12	Level Gauge	Good			Attached and secure.
T13	Bottom	Good			
T14	Secondary Containment	Good			C- Ring.
T15	Shell	Good			No visible damage
T16	Roof	Good			
T32	Foundation	Good			Sleepers
T33	Anchor Bolts	No			Welded to sleepers.

## Storage Tank External Visual Inspection Report

ID	Description	Condition	Location	NCR	Comments
T41	Connections Other (Please explain)	Good			Inlet outlet, and bypass all secure.
T43	Nozzles	Good			No damage or leaks
T48	Inadequate Thread Engagement	No			
T47	Reinforcing Pads	No			
T49	Bolting	Good			
T50	Flanges	Fair			
T61	Insulation Other (Please explain)	Yes			External 2" foam spray on shell and roof.
T62	Damage	Yes			holes on lower section of insulation,

### Inspection Summary

A visual External inspection was performed on the tank. The tank was isolated for entry. All blinds and blanks installed. The tank is set on piles and sleepers. All appear level with adequate support. The tank is a 400 bbl skided tank. The gauge board is attached and functional. The ladder is attached securely to the vertical skid of the tank. There is no cage surrounding the ladder. The level control and high level controller are securely attached. The flanges for the manways are in good condition with no visible corrosion. The insulation on the tank is foam spray with minor damage. There appears to be no bulging. There is no visible damage on the shell, floor, or roof of the tank. The tank is grounded to the plant grid thru a ground cable attached to the skid.

## **Storage Tank External Visual Inspection Report**

**Inspection Planning**

Date of Inspection: \_\_\_\_\_ Date of last Inspection: \_\_\_\_\_ Date of Next Inspection: \_\_\_\_\_

The signature below certify that the above is a true report of the inspection / test of the equipment specified and consider fit for service until the date of next inspection.

Competent Inspector: \_\_\_\_\_ Report Generation Date: \_\_\_\_\_

**Reviewed and Accepted by:**

Next Inspection Date: \_\_\_\_\_

**Approved by:**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

# Storage Tank Internal Visual Inspection Report



Organization: Husky

Inspection Date: 24/06/2015 12:00:00AM

Plant: Northwest Alberta

Equipment ID: 66063009

Asset No: 66063009

System: N/A

Operating Unit: Muskwa Booster Stn

## Background

Description:	TANK, AST, 400 BBL, T-700
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## Inspection

Inspector:	Roman Wynnyk	Company:	Husky Energy	Internal Lining/Coating:	N
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## Inspection Comments

ID	Description	Condition	Location	NCR	Comments
V1	General (Other)	Fair			Overall internal condition is fair.
V2	Corrosion	No			
V3	Erosion	No			
V4	Distortion	No			
V5	Blisters	Yes			Minor blisters visible on coating
V6	Deposits	No			Tank completely cleaned.
V7	Welds	Good			Seam welds appear smooth with no corrosion, cracking or risers
V8	Nozzles	Good			Set thru nozzles are properly back welded
V9	Shell	Good			No internal damage or distortion visible.
V10	Roof	Good			
V21	Internals Other (Please explain)	Good			Internal nozzles are secure with no visible damage.
V27	Nonmetallic Linings	Fair			Coating damage identified on coating. Requires repairs
V28	Internal steam coil or other piping	Good			Firetube removed and MT's No concerns.
V29	Level gauge	Good			All cables attached and functional.
T11	Floor	Fair			

## ***Storage Tank Internal Visual Inspection Report***

### **Inspection Summary**

A Visual Internal inspection was performed on the inside to the tank. The tank was completely cleaned for inspection. Coating damage was identified on the floor. Previous coating repairs causing localized corrosion under the coating. The old coating was removed using a sander and Devoe 142 patch coating was applied to cleaned surfaces. Welds and door seams were coated as required. The chips on the internal nozzles were not coated. All attachment plates and welds were properly coated. The support for the firetube was secure with no damage. The floor coating is in overall good condition with no peeling. The shell and roof both appeared in good condition.. The fire tube was removed, sandblasted and MT inspection was performed on the welds. The overall condition of the tube was good with no visible corrosion or pitting.

No NCRS or IDRS were issued at this inspection.

The tank is fit for continued service.

## **Storage Tank Internal Visual Inspection Report**

### **Inspection Planning**

Date of Inspection: \_\_\_\_\_ Date of last Inspection: \_\_\_\_\_ Date of Next Inspection: \_\_\_\_\_

The signature below certify that the above is a true report of the inspection / test of the equipment specified and consider fit for service until the date of next inspection.

Competent Inspector: \_\_\_\_\_ Report Generation Date: \_\_\_\_\_

### **Reviewed and Accepted by:**

Next Inspection Date: \_\_\_\_\_

### **Approved by:**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_



*Maskwa EQ.66063009 + 66063019*

**MAGNETIC PARTICLE EXAMINATION REPORT**

2507 - 84 Avenue, Edmonton, Alberta T6P 4K1  
Phone (780) 417-7777 Fax: (780) 417-1185

CLIENT: **HUSKY ENERGY** DATE: **JUNE 23/15** PAGE: **1** OF **1**  
INVOICE ADDRESS: **WORK LOCATION: SLAVE LAKE**

EXAMINATION STANDARD: **ASME V Article 7** ACCEPTANCE STANDARD: **ASME B31.3 N**

TEAM PROCEDURE: **MT.ASME.EDM.1.R0** EXAMINATION OF: **TWO FIRE TUBES**

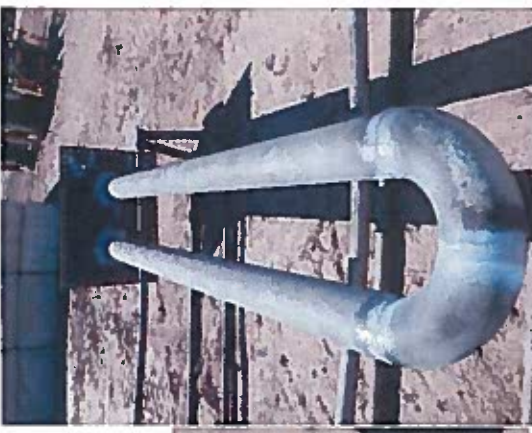
SURFACE CONDITION:  AS GROUND  MACHINED  PAINTED  SAND BLAST  BASE METAL  AS WELDED  
MATERIAL: **CARBON STEEL** THICKNESS: **STD** TEMPERATURE: **15** °C

TEAM JOB NO.: **6705**  
BRANCH NO.: **5311**  
PO NO.: **---**  
WO NO.: **---**

EQUIPMENT	MODEL AND SERIAL NO.	CURRENT	TEST MEDIUM	MANUFACTURER / BATCH NO./CONCENTRATION
<input checked="" type="checkbox"/> EM YOKE	Contour Probe B300 Serial#1563 - 4AMP	<input checked="" type="checkbox"/> AC	<input checked="" type="checkbox"/> WET VISIBLE	Magnaflux 7HF/14G24K/
<input type="checkbox"/> PERM. MAGNET	CAL DUE SEPT 1 /15	<input type="checkbox"/> DC	<input type="checkbox"/> DRY POWDER	ANCHOR RED/16451
<input checked="" type="checkbox"/> WHITE LIGHT	> 100 foot candles	<input checked="" type="checkbox"/> CONTINUOUS	<input checked="" type="checkbox"/> CONTRAST PAINT	Magnaflux WCP-2/14L18K
<input checked="" type="checkbox"/> LIGHT INTENSITY		<input type="checkbox"/> RESIDUAL	<input type="checkbox"/> WET FLUORESCENT	Magnaflux 14A in Water
<input type="checkbox"/> BLACKLIGHT			Settling Test	

BLACK LIGHT INTENSITY BEFORE EXAMINATION: **μw/CM²** BLACK LIGHT INTENSITY AFTER EXAMINATION: **μw/CM²** WHITE LIGHT/BACKGROUND:

**PURPOSE:** A VISIBLE WET CONTRAST MT EXAMINATION WAS CARRIED OUT ON THE ITEM(S) DETAILED IN THE PHOTOGRAPH(S). NO RECORDABLE INDICATIONS WERE DETECTED DURING THE EXAMINATION. ITEM(S) EXAMINED ARE ACCEPTABLE TO ASME B31.3 CODE.100% VISUAL.



**RESULTS:**

**CONCLUSIONS:**



2 OT HOURS ,11 MPI SUPPLIES  
COST=\$509.00  
GST=\$25.45  
TOTAL=\$534.45

**TECHNICIANS**  
(PRINT): **BLAINE GULLION** II REG. NO.: **7233** (SIGN): *[Signature]*  
(PRINT): **MARTIN CLARK** #N/A REG. NO.: **#N/A** (SIGN): *[Signature]*  
THE ABOVE REPRESENTATION IS A PROFESSIONAL OPINION. FINAL INTERPRETATION IS THE RESPONSIBILITY OF THE CLIENT. I HAVE READ AND AM IN FULL AGREEMENT WITH THE CONTENTS OF THIS REPORT.  
CLIENT REPRESENTATIVE: **ROMAN WYNYK** (PRINT): *[Signature]* (SIGN): *[Signature]*

A026 MPE R1

*Maskwa EQ.66063009 + 66063019*

**MAGNETIC PARTICLE EXAMINATION REPORT**

2507 - 84 Avenue, Edmonton, Alberta T6P 4K1  
Phone (780) 417-7777 Fax: (780) 417-1185

CLIENT: HUSKY ENERGY DATE: JUNE 23/15 PAGE: 1 OF 1  
 INVOICE ADDRESS: WORK LOCATION: SLAVE LAKE  
 EXAMINATION STANDARD: ASME V Article 7 ACCEPTANCE STANDARD: ASME B31.3 N  
 TEAM PROCEDURE: MT.ASME.EDM.1.R0 EXAMINATION OF: TWO FIRE TUBES

**MT - 0806 - BG**

TEAM JOB NO.: 6705  
 BRANCH NO.: 5311  
 PO NO.: ---  
 WO NO.: ---

SURFACE CONDITION:  AS GROUND  MACHINED  PAINTED  SAND BLAST  BASE METAL  AS WELDED  
 MATERIAL: CARBON STEEL THICKNESS: STD TEMPERATURE: 15 °C

**TEST EQUIPMENT AND MATERIALS:**

EQUIPMENT	MODEL AND SERIAL NO.	CURRENT	TEST MEDIUM	MANUFACTURER / BATCH NO./CONCENTRATION
<input checked="" type="checkbox"/> EM YOKE	Contour Probe B300 Serial#1563 - 4AMP	<input checked="" type="checkbox"/> AC	<input checked="" type="checkbox"/> WET VISIBLE	Magnaflux 7HF/14G24K/
<input type="checkbox"/> PERM. MAGNET	CAL DUE SEPT 1 / 15	<input type="checkbox"/> DC	<input type="checkbox"/> DRY POWDER	ANCHOR RED/16451
<input checked="" type="checkbox"/> WHITE LIGHT	> 100 foot candles	<input checked="" type="checkbox"/> CONTINUOUS	<input checked="" type="checkbox"/> CONTRAST PAINT	Magnaflux WCP-2/14L18K
<input checked="" type="checkbox"/> LIGHT INTENSITY		<input type="checkbox"/> RESIDUAL	<input type="checkbox"/> WET FLUORESCENT	Magnaflux 14A in Water
<input type="checkbox"/> BLACKLIGHT			Settling Test	

BLACK LIGHT INTENSITY BEFORE EXAMINATION: µw/CM² BLACK LIGHT INTENSITY AFTER EXAMINATION: µw/CM² WHITE LIGHT/BACKGROUND:

**PURPOSE:** A VISIBLE WET CONTRAST MT EXAMINATION WAS CARRIED OUT ON THE ITEM(S) DETAILED IN THE PHOTOGRAPH(S). NO RECORDABLE INDICATIONS WERE DETECTED DURING THE EXAMINATION. ITEM(S) EXAMINED ARE ACCEPTABLE TO ASME B31.3 CODE.100% VISUAL.

**RESULTS:**

**CONCLUSIONS:**



2 OT HOURS ,11 MPI SUPPLIES  
 COST=\$509.00  
 GST=\$25.45  
 TOTAL=\$534.45

A026 MPE R1

**TECHNICIANS**

INTERPRETATION IS IN ACCORDANCE WITH THE ABOVE MENTIONED STANDARDS, TO THE BEST OF MY PROFESSIONAL ABILITY  
 (PRINT): BLAINE GULLION II REG. NO.: 7233 (SIGN): [Signature]  
 (PRINT): MARTIN CLARK #N/A REG. NO.: #N/A (SIGN): [Signature]  
 THE ABOVE REPRESENTATION IS A PROFESSIONAL OPINION. FINAL INTERPRETATION IS THE RESPONSIBILITY OF THE CLIENT. I HAVE READ AND AM IN FULL AGREEMENT WITH THE CONTENTS OF THIS REPORT.  
 CLIENT REPRESENTATIVE: ROMAN WYNYK (PRINT): [Signature] (SIGN): [Signature]



# Storage Tank NDE Report

**Equip Id** 66063019      **SAP ID** 66063019      **Asset Type** Storage Tank  
**Plant** Northwest Alberta      **Unit** Muskwa Booster Stn      **System** N/A  
**Description** TANK, AST, 400 BBL, T-710  
**FLOC** W2-02-010-00005      **LSD** 05-25-084-26W4  
  
**Insp Date** Jun 23, 2015      **Inspector** Roman Wynnyk      **Insp Type** NDE  
**Company** Husky Energy      **Confidence** High

## Details

Insp Loc	Comp	Descr	Nom Thck	Curr Rdg	Ignore	Tmin	Comments
001	Shell		4.77	5.58	N	0	
002	Shell		4.77	5.42	N	0	
003	Shell		4.77	5.24	N	0	
004	Shell		4.77	5.20	N	0	
005	Shell		4.77	5.53	N	0	
006	Shell		4.77	5.39	N	0	
007	Shell		4.77	5.60	N	0	
008	Shell		4.77	5.93	N	0	
009	Bottom		6.35	6.89	N	0	
010	Bottom		6.35	6.95	N	0	
011	Bottom		6.35	6.98	N	0	
012	Bottom		6.35	7.16	N	0	
013	Bottom		6.35	7.20	N	0	
014	Bottom		6.35	7.16	N	0	
015	Bottom		6.35	7.09	N	0	
016	Bottom		6.35	6.98	N	0	
017	Bottom		6.35	7.03	N	0	
018	Bottom		6.35	7.02	N	0	
019	Bottom		6.35	6.89	N	0	
020	Bottom		6.35	6.64	N	0	

## Summary

UT thickness readings were taken on the floor and first course of the tank. All readings were at or above nominal thickness. No issues or concerns.

# Storage Tank External Visual Inspection Report



Organization: Husky

Inspection Date: 23/06/2015 12:00:00AM

Plant: Northwest Alberta

Equipment ID: 66063019

Asset No: 66063019

System: N/A

Operating Unit: Muskwa Booster Stn

## Background

Description:	TANK, AST, 400 BBL, T-710
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## Inspection

Inspector:	Roman Wynnyk	Company:	Husky Energy	Insulated:	N
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## External Location Categories

Barrier Penetrations:		Damaged Insulation:		Shell to Floor Joint Insulated:		Insulation Rings:	
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## Inspection Comments

ID	Description	Condition	Location	NCR	Comments
T1	General Other (Please Explain)	Good			Overall condition is good. Nameplate is attached and legible.
T2	General Corrosion	Fair			Surface corrosion visible on frame and piping
T3	General Leaks	No			
T4	Vibration	N/A			
T5	Dissimilar Flange Rating	No			
T6	Ladder/Stairway	Fair			Ladder attached but no cage around ladder
T7	Platform	N/A			
T8	Electrical Ground	Yes			Back to plant ground system.
T9	Cathodic Protection	No			No anodes
T10	Painted Inactive Corrosion	No			
T11	Coating/Painting	Fair			
T12	Level Gauge	Fair			gauge board attached.
T13	Bottom	Good			
T14	Secondary Containment	Good			c-Ring.
T15	Shell	Good			No visible damage.

## Storage Tank External Visual Inspection Report

ID	Description	Condition	Location	NCR	Comments
T16	Roof	Good			Appears intact.
T31	Supports Other (Please explain)	Good			Steel skid
T32	Foundation	Good			piles
T43	Nozzles	Good			
T48	Inadequate Thread Engagement	No			
T49	Bolting	Good			
T50	Flanges	Good			
T61	Insulation Other (Please explain)	Fair			Minor cuts and cracks in insulation noted around the tank.

### Inspection Summary

A Visual External inspection was performed on the tank. The tank is a 400 bbl skidded tank set on piles and a steel frame it is set approx. 2 feet above the ground. The underside of the tank is also set on skids. The piles appear to be straight with no tilting of the tank. The ladder is attached to the skid of the tank, however there is no cage leading up the ladder. The gauge board is securely attached to the outside of the tank. The exterior piping is securely attached to the tank with no missing bolting or visible corrosion on the flanges. The firetube flange is in good condition with minor coating chips from cleaning. Coating damage was repaired using Devco 142 patch coat. The tank is insulated with spray foam insulation and is in fair condition.

Unload box is securely attached to tank and insulated. The Firetube for the burner is attached at the top of the tank. Remaining piping is tight with no leaks visible. No NCRs or IDRs were issued at this inspection. Tank appears fit for continued service.

## **Storage Tank External Visual Inspection Report**

**Inspection Planning**

Date of Inspection: \_\_\_\_\_ Date of last Inspection: \_\_\_\_\_ Date of Next Inspection: \_\_\_\_\_

The signature below certify that the above is a true report of the inspection / test of the equipment specified and consider fit for service until the date of next inspection.

Competent Inspector: \_\_\_\_\_ Report Generation Date: \_\_\_\_\_

**Reviewed and Accepted by:**

Next Inspection Date: \_\_\_\_\_

**Approved by:**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

# Storage Tank Internal Visual Inspection Report



Organization: Husky

Inspection Date: 23/06/2015 12:00:00AM

Plant: Northwest Alberta

Equipment ID: 66063019

Asset No: 66063019

System: N/A

Operating Unit: Muskwa Booster Stn

## Background

Description:	TANK, AST, 400 BBL, T-710
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## Inspection

Inspector:	Roman Wynnyk	Company:	Husky Energy	Internal Lining/Coating:	Y
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## Inspection Comments

ID	Description	Condition	Location	NCR	Comments
V1	General (Other)	Good			Overall conditon is good.
V2	Corrosion	Fair			Minor corrosion noted under poorly applied coating patches.
V3	Erosion	No			
V4	Distortion	No			
V6	Deposits	No			Tank was properly cleaned for inspection.
V7	Welds	Good			No pitting or cracks visible.
V8	Nozzles	Good			All secure.
V9	Shell	Good			No visible damage

## Inspection Summary

A visual internal inspection was performed on the tank. The inside was adequately cleaned for inspection. The interior of the tank is coated with Devoe 253 epoxy coating. The previous patch coating performed on the previous inspection(s) is peeling off and requires removal due to corrosion under the cracked coating. The peeled coating was removed and tank prep'd for new coating. Patch coating was applied. The remainder of the tank interior appears to be in good condition. Internal risers are secure. The coating on the shell and roof appears to be in good conditon. No visible damage noted on the shell, floor, or roof of the tank. The internal float is attached and functional. The fire tube guide is securely attached to the floor via welding. Some of the coating has become discolored from the heat of the fire tube, but is of no concern.

The fire tube was removed from the tank and sandblasted for inspeciton. MT inspection was performed on the welds of the tube. No cracks or anomalies were found. The tube was re-installed into the tank once the inspection was complete. No issues or concerns. No NCRs or IDRs were issued.

# **Storage Tank Internal Visual Inspection Report**

**Inspection Planning**

Date of Inspection: \_\_\_\_\_ Date of last Inspection: \_\_\_\_\_ Date of Next Inspection: \_\_\_\_\_

The signature below certify that the above is a true report of the inspection / test of the equipment specified and consider fit for service until the date of next inspection.

Competent Inspector: \_\_\_\_\_ Report Generation Date: \_\_\_\_\_

**Reviewed and Accepted by:**

Next Inspection Date: \_\_\_\_\_

**Approved by:**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_