



Client:  
**CNRL**

## PRESSURE EQUIPMENT DATA REPORT

### EQUIPMENT GENERAL INFORMATION

<b>District:</b>	Medicine Hat		
<b>Facility:</b>	Grand Forks Central		
<b>Location /LSD:</b>	07-32-012-13W4	<b>Operating Province:</b>	Alberta
<b>Equipment Name:</b>	GROUP TREATER		
<b>Equipment Status:</b>	Operating	<b>Orientation:</b>	Horizontal
<b>Skid No.:</b>	GROUP TREATER	<b>Unit:</b>	

### EQUIPMENT STATIC DATA

<b>AB Registration No.:</b>	0164522		<b>Serial No.:</b>	80-12-44	
<b>Registration No./Other:</b>			<b>Equipment No.:</b>	N/S	
<b>CRN NO.:</b>	D-9230.2		<b>Unique ID No.:</b>		
<b>National Board No.:</b>	N/S		<b>Oncor ID No.:</b>	159601	
<b>Manufacturer:</b>	PROCESS INDUSTRIES		<b>Year Built:</b>	1990	
<b>MAWP:</b>	75.00 (psi)	517.11 (Kpa)	<b>Temperature:</b>	350.00 (F)	176.67 (C)
<b>Diameter.:</b>	96.000 (In)	2438.40 (mm)	<b>Length:</b>	420.00 (In)	10668.00 (mm)
<b>Radiography:</b>	Spot		<b>Heat Treatment:</b>	No	
<b>Corrosion allowance:</b>	0.125 (In)	3.175 (mm)	<b>MDMT:</b>	-20.00	
<b>Lining Or Coated:</b>			<b>Painted:</b>	Yes	
<b>Insulated:</b>	Yes		<b>Internally Clad:</b>		
<b>Hand Hole:</b>	No		<b>Support Type:</b>	Saddle	
<b>Manway:</b>	Yes		<b>Manway Size(In):</b>	24.00	
<b>Capacity/Volume(m3):</b>	52.00		<b>Nozzle Rating:</b>	150.00	

### MATERIALS/COMPONENTS

Name	Joint Efficiency	Outside Diameter(in.)	Head Type	Material Type	Stress Value (PSI)	Nominal Thickness(In.)
SHELL	1.00	96.000		SA-516 70	17500	0.38
HEAD	1.00	96.000	Ellipsoidal	SA-516 70	17500	0.38
BOOT SHELL	1.00	24.000		SA-516 70	17500	0.38
BOOT HEAD	1.00	24.000	Ellipsoidal	Unknown	17500	
HEAD (FT)	1.00	96.000	Ellipsoidal	SA-516 70	17500	0.63

### PIPING STATIC DATA

<b>Primary Flange Rating:</b>	150	<b>ASME B16.5 - Table 2-1.1 @ 150F:</b>	285 (psi)
<b>Pressure Use For TMin:</b>	Vess Design Press	<b>Piping Operating Press:</b>	75 (psi)
<b>Stress Value:</b>	20000 (psi)	<b>E Value:</b>	1.00 Joint: SMLS

### SERVICE CONDITIONS

<b>Sweet</b>	<b>Sour</b> ✓	<b>Oil</b> ✓	<b>Gas</b> ✓	<b>Water</b> ✓
<b>Amine</b>	<b>LPG</b>	<b>Condensate</b>	<b>Air</b>	<b>Glycol</b>

### COMMENTS

MODIFICATIONS BY PROCESS INDUSTRIES INC AUG 1990

NO SAFE ACCESS TO P.S.V



**Client:**  
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**VISUAL INSPECTION REPORT**

<b>District:</b>	Medicine Hat	<b>Facility:</b>	Grand Forks Central	<b>Location/LSD:</b>	07-32-012-13W4
<b>Equipment Name:</b>	GROUP TREATER			<b>Prov Reg No. :</b>	0164522
<b>Serial No.:</b>	80-12-44	<b>Equip No.:</b>	N/S	<b>National Board No.:</b>	N/S

**INTERNAL INSPECTION**

<b>INSPECTION DATE:</b>	May 15, 2019	<b>INSPECTION INTERVAL:</b>		<b>NEXT INSPECTION DATE:</b>	
<b>ITEM</b>	<b>CONDITION</b>	<b>INSPECTION COMMENTS</b>			
COATING	ACCEPT	INTERNALLY COATED 100%. COATING IN VERY GOOD CONDITION. MINOR REPAIRS ON MANWAYS AND FIRETUBE SUPPORTS.			
ANODES	ACCEPT	8 ANODES IN TOTAL. ANODES BETWEEN 0 AND 10% CONSUMED			
INTERNAL PIPING	N/A	NO INTERNAL PIPING			
TRAYS	N/A	NO TRAYS			
BAFFLES, DEFLECTOR PLATES, ETC	ACCEPT	1 MAJOR BAFFLE, 2 UPPER BAFFLES. COATING IN GOOD CONDITION. NO ISSUES			
BOTTOM HEAD	ACCEPT	SOUTH HEAD. NO CONCERNS			
TOP HEAD	ACCEPT	NORTH HEAD. NO CONCERNS			
SHELL SECTIONS	ACCEPT	6 SHELL SECTIONS. NO CORROSION. VESSEL INTERNALLY COATED. COATING IN SOUND CONDITION. NO CONCERNS.			
DEMISTER PAD	N/A	NO DEMISTER PADS			
WELDS	ACCEPT	ALL WELDS COATED. NO CONCERNS			
REPAIRS REQUIRED	N/A				
NDE	ACCEPT	MT AND UT CONDUCTED ON VESSEL FIRETUBE. MT FOUND SEVERAL INDICATIONS TO BE REPAIRED. UT FOUND THINNING ON BURNER END OF TUBE.			
OTHER					

**RECOMMENDATIONS:**

VESSEL FIT FOR SERVICE.  
COATING CHIPS REPAIRED BY INSPECTOR.  
FIRETUBE SENT FOR REPAIR.

I have performed the above inspections and certify that they have been done in accordance with our approved manual and that the information is accurate.

<b>Inspector:</b>	Codey Chmilar	<b>ABSA PESL #:001158</b>	<b>Signature:</b>		<b>Date:</b>	May 15, 2019
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**REPORT SIGN-OFF**

Where required , the above reports has been reviewed and accepted as noted below:

<b>WQS Supervisor Name:</b>			
<b>WQS Supervisor Title/Cert No.:</b>		<b>Cert No.:</b>	
<b>WQS Supervisor Signature/Date:</b>		<b>Date:</b>	

Where required , the above reports has been reviewed and accepted as noted below:

<b>Client Supervisor Name:</b>			
<b>Client Supervisor Title/Cert No.:</b>		<b>Date:</b>	
<b>Client/Supervisor Signature/Date:</b>		<b>Date:</b>	



Client:  
**CNRL**

## PRESSURE EQUIPMENT DATA REPORT

### EQUIPMENT GENERAL INFORMATION

<b>District:</b>	Medicine Hat		
<b>Facility:</b>	Grand Forks Central		
<b>Location /LSD:</b>	07-32-012-13W4	<b>Operating Province:</b>	Alberta
<b>Equipment Name:</b>	FIRETUBE		
<b>Equipment Status:</b>	Operating	<b>Orientation:</b>	
<b>Skid No.:</b>	GROUP TREATER	<b>Unit:</b>	

### EQUIPMENT STATIC DATA

<b>AB Registration No.:</b>		<b>Serial No.:</b>	80-12-44	
<b>Registration No./Other:</b>		<b>Equipment No.:</b>		
<b>CRN NO.:</b>		<b>Unique ID No.:</b>		
<b>National Board No.:</b>		<b>Oncor ID No.:</b>	173096	
<b>Manufacturer:</b>	Process Industries		<b>Year Built:</b>	1990
<b>MAWP:</b>	14.90 (psi)	102.73 (Kpa)	<b>Temperature:</b>	100.00 (F) 37.78 (C)
<b>Diameter.:</b>	20.000 (In)	508.000 (mm)	<b>Length:</b>	(In) 0.00 (mm)
<b>Radiography:</b>		<b>Heat Treatment:</b>		
<b>Corrosion allowance:</b>	(In) 0.000 (mm)	<b>MDMT:</b>		
<b>Lining Or Coated:</b>	No		<b>Painted:</b>	
<b>Insulated:</b>	No		<b>Internally Clad:</b>	
<b>Hand Hole:</b>		<b>Support Type:</b>		
<b>Manway:</b>		<b>Manway Size(In):</b>		
<b>Capacity/Volume(m3):</b>		<b>Nozzle Rating:</b>		

### MATERIALS/COMPONENTS

Name	Joint Efficiency	Outside Diameter(in.)	Head Type	Material Type	Stress Value (PSI)	Nominal Thickness(In.)
SHELL	1.00	20.000		Unknown	17500	

### PIPING STATIC DATA

<b>Primary Flange Rating:</b>		<b>ASME B16.5 - Table 2-1.1 @ 150F:</b>	(psi)		
<b>Pressure Use For TMin:</b>	Vess Design Press	<b>Piping Operating Press:</b>	15 (psi)		
<b>Stress Value:</b>	20000 (psi)	<b>E Value:</b>	1.00	<b>Joint:</b>	SMLS

### SERVICE CONDITIONS

<b>Sweet</b>	<b>Sour</b>	<b>Oil</b>	<b>Gas</b>	<b>Water</b>
<b>Amine</b>	<b>LPG</b>	<b>Condensate</b>	<b>Air</b>	<b>Glycol</b>

### COMMENTS

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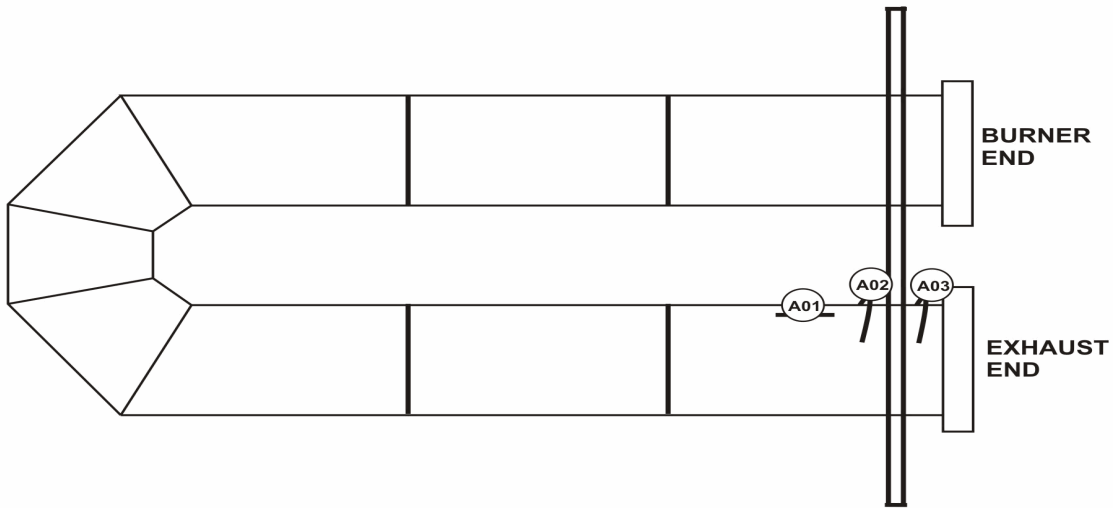
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**EXAMINATION ILLUSTRATION**

DISTRICT:	Medicine Hat	FACILITY:	Grand Forks Central	LOCATION/LSD:	07-32-012-13W4
EQUIP NAME:	FIRETUBE			PROV REG No.:	
SERIAL No.:	80-12-44	Equip No.:		National Board No.:	



#	LOW	AVG	#	LOW	AVG	#	LOW	AVG
A01	0.466	0.504	20			35		
A02	0.397	0.459	25			40		
A03	0.368	0.402	30			45		



OWNER: <b>CNRL</b>	SERIAL # <b>80-12-44</b>	INSPECTED BY:
INSTRUMENT NAME: <b>FIRE TUBE</b>	NB#	
REGISTRATION #	OWNER ID	
<b>FROM TREATER A 0164522</b>		





Client:  
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### ULTRASONIC CORROSION SURVEY REPORT

<b>DISTRICT:</b>	Medicine Hat	<b>FACILITY:</b>	Grand Forks Central	<b>LOCATION/LSD:</b>	07-32-012-13W4
<b>EQUIP NAME:</b>	FIRETUBE			<b>PROV REG No.:</b>	
<b>SERIAL No.:</b>	80-12-44	<b>Equip No.:</b>		<b>National Board No.:</b>	

#### SUMMARY

TYPE	LAST INSPECTIONS	INSPECTION INTERVAL (YEARS)	CORROSION RATE (IN/YR)		REMAINING LIFE (YEARS)	NEXT INSPECTION DATE
			SHORT TERM	LONG TERM		
VESSEL	May 15, 2019	0.0	0.0000	0.0000	198.0	May 15, 2019
PIPING						

#### VESSEL SURVEY READINGS

POINT NUMBER	TYPE	POINT DATA (INCH)			DATE	SURVEY READINGS			CALCULATIONS				Flag
		NOM.	C.A.	NOM-CA		LOW	AVG	T Req (inch)	short term corr	long term	remaining life		
A01	SHELL	0.0000	0.0000	0.0000	May 15/19	0.466	0.504	0.009	0.0000	0.0000	198.0	NO COMMENTS	
A02	SHELL	0.0000	0.0000	0.0000	May 15/19	0.397	0.459	0.009	0.0000	0.0000	198.0	NO COMMENTS	
A03	SHELL	0.0000	0.0000	0.0000	May 15/19	0.368	0.402	0.009	0.0000	0.0000	198.0	NO COMMENTS	

#### INSPECTOR-EQUIPMENT DATA


Inspected By	Signature	CGSB Level	CGSB No.	Survey Dat	UT Equipment	Due Date OF Calibration	NDE Procedure #
Codey Chmilar		SNT LV 2	20906	05/15/2019	101_91637903_EPOCH4+	04/29/2020	WQS UT-001



**Client:**  
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District	Medicine Hat	Facility	Grand Forks Central	Location/LSD	07-32-012-13W4
Equipment Name:	FIRETUBE			Prov Reg No.:	
Serial No.:	80-12-44	Equip No.:		National Board No.:	

**External Inspection**

Inspector:	Codey Chmilar	ABSA PESL #001158	Signature:		Date:	05/15/2019
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**External Corrosion**

There was no significant external corrosion found on the vessel/piping

Accept

**External Damage**

There was no external corrosion found on the vessel/piping

Accept

**Leakage**

No Leaks were found on the vessel or piping connections

Accept

**Vessel and Piping Supports**

Vessel support is Other and is acceptable

Accept

Vessel was not designed with anchor bolts

Accept

Vessel Foundation is Metal and is acceptable

Accept

Piping does not have additional supports but is supported by connected piping and is acceptable

Accept

**Insulation/Paint**

	Type	Findings	
Vessel	None		Accept
Inlet Piping	None		Accept
Outlet Piping	None		Accept

**Pressure Envelope Flanging**

	Bolting	Thread engagement	Gaskets	Flange Rating	
Manway	NA				Accept
Vessel	NA				Accept
Inlet Piping	NA				Accept
Outlet Piping	NA				Accept
Other Piping	NA				Accept

BURNER END FLANGE FACE SHOWING SIGNIFICANT THINNING AT 12 O'CLOCK POSITION. WARPE

**General**

NDE FOUND SEVERAL INDICATIONS ON FLANGE WELDS FOR BURNER AND EXHAUST FLANGES.

Reject

UT SURVEY FOUND GENERAL THINNING AT 6 O'CLOCK POSITION OF EXHAUST END.

**Comment** FIRETUBE SENT FOR REPAIR.

MAY 16: FLANGE REPAIRED.



# MAGNETIC PARTICLE EXAMINATION REPORT

<b>Registration #:</b>		<b>Province:</b>	AB	<b>Report Date:</b>	05/14/2019
<b>Equipment Name:</b>	GROUP TREATER			<b>Report #:</b>	
<b>District:</b>	Medicine Hat	<b>Location:</b>	Grand Forks Central	<b>LSD:</b>	07-32-012-13W4
<b>CRN:</b>		<b>Skid No.:</b>	GROUP TREATER	<b>SERIAL #:</b>	80-12-44
<b>Manway:</b>		<b>Coating:</b>			
<b>MAWP (psi):</b>		<b>Temp:</b>			
<b>Outstanding NCR's:</b>	No	<b>No.:</b>	0		

<b>CODE/STANDARD:</b>	ASME sect 8, Div 1, Appendix 6/ASME Sect 5 ARTICLE 7
<b>ITEM EXAMINED:</b>	FIRETUBE FROM GROUP TREATER A0164522

<b>TECHNIQUE DETAILS &amp; EQUIPMENT</b>			
<b>INSTRUMENT:</b>	AC YOKE SN 43530	<b>MT PROCESS:</b>	WET BLACK/WHITE/DRP
<b>CALIBRATION DATE:</b>	05/14/2019	<b>LIGHTING:</b>	FLASHLIGHT VTC 008 (>100 FOOT-CANDLES)
<b>MAGNETIZING METHOD:</b>	AC CONTINUOUS	<b>MT PROCEDURE:</b>	VTC - MT-1 REV 2
		<b>MATERIAL TYPE/THICK:</b>	CARBON STEEL/APPROX 1/2"
		<b>INSPECTION TIME:</b>	APPROX 10AM
<b>SUFACE CONDITION:</b>	GRIT BLASTED		

<b>SCOPE:</b>	MT INSPECTION OF ALL WELDS.  SURFACE TEMP 25C AEROSOLS: ARDOX 8032 (LOT#65091218)
<b>RESULTS:</b>	MULTIPLE INDICATIONS FOUND. -ONE INDICATION FOUND CAT C WELDS ON BURNER END FLANGE. -7 INDICATIONS FOUND ON INSIDE CAT C WELD ON EXHAUST END FLANGE.  FIRETUBE TO BE REPAIRED.

<b>CHIEF INSPECTOR:</b>	<b>PESL #:</b>	<b>SIGN OFF DATE:</b>	<b>STATUS:</b> Open
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<b>TECHNICIAN:</b> Codey, Chmilar	<b>SIGN:</b> 	<b>CGSB/SNT LEVEL:</b> SNT LV 2	<b>REG #:</b> 20906
<b>CLIENT REP:</b> _____	<b>SIGN:</b> _____	<b>DATE:</b> _____	

**PHOTOGRAPHS**



LSD

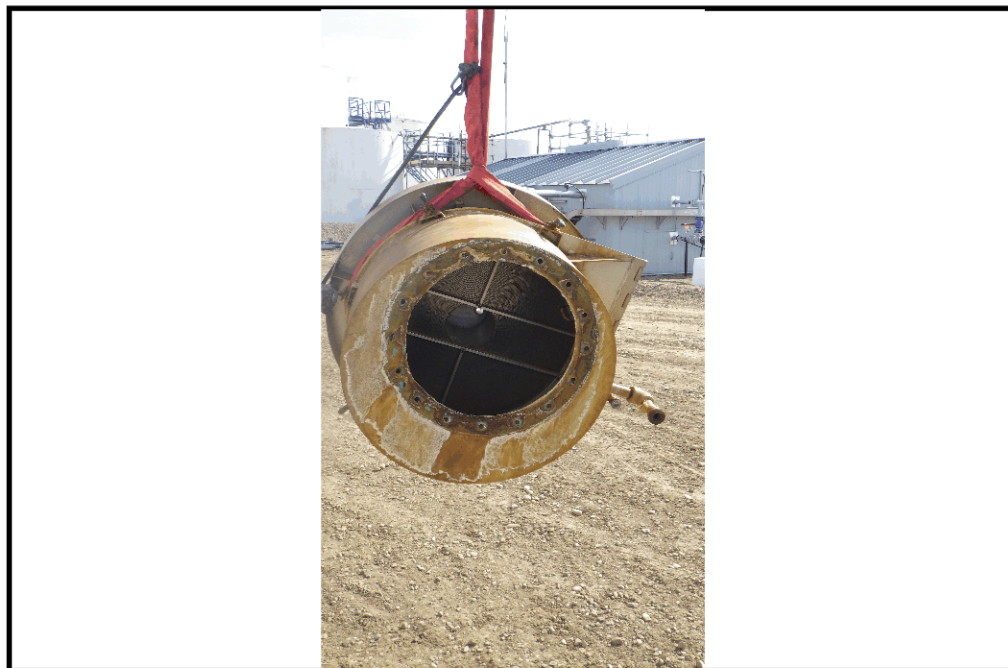


NAMEPLATE

**PHOTOGRAPHS**



NAMEPLATE



OVERALL



**PHOTOGRAPHS**



**SOUTH HEAD**



**ANODE 1 AND 2**

**PHOTOGRAPHS**



ANODE 1 AND 2



ANODE 1 AND 2



**PHOTOGRAPHS**



ANODE 3 AND 4



ANODE 3 AND 4



**PHOTOGRAPHS**

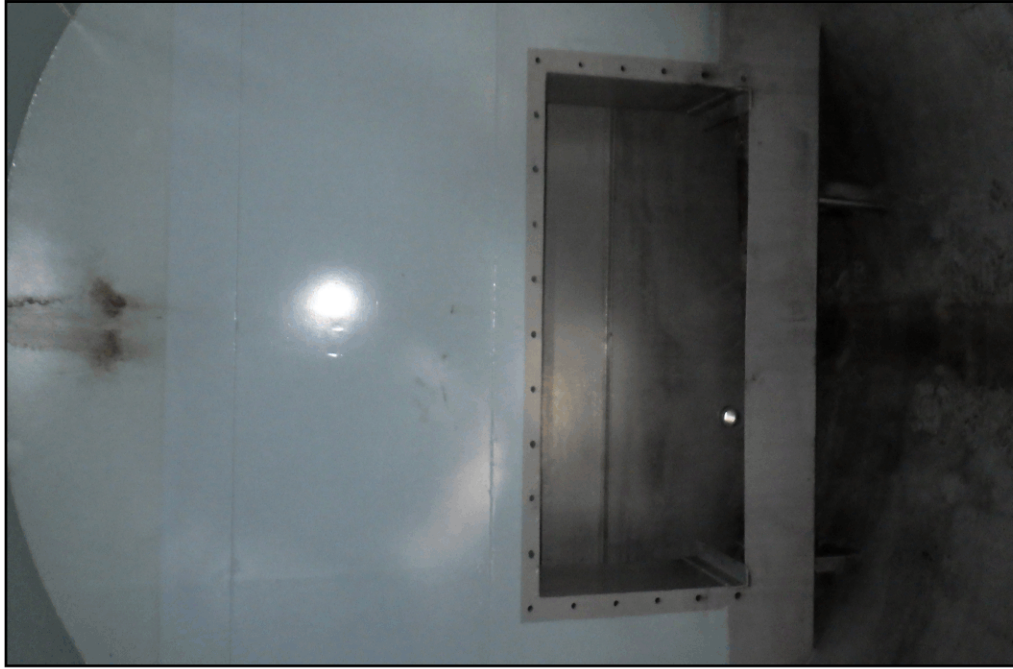


EAST SIDE MANWAY

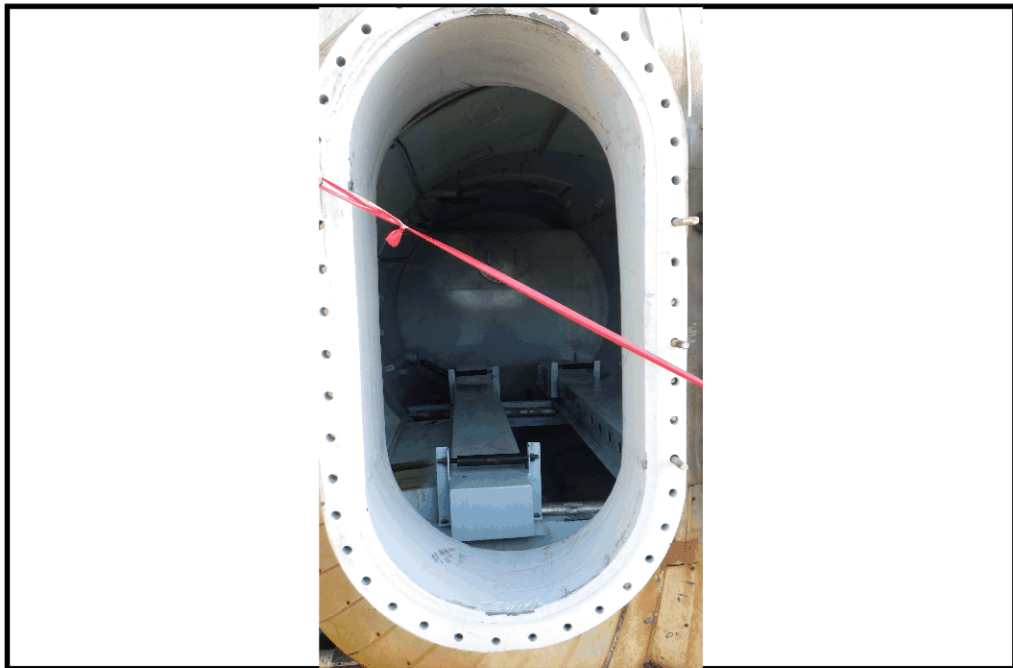


COATING CHIP

**PHOTOGRAPHS**



**BAFFLE**



**NORTH MANWAY**



**PHOTOGRAPHS**



COATING CHIPS



COATING CHIPS

**PHOTOGRAPHS**



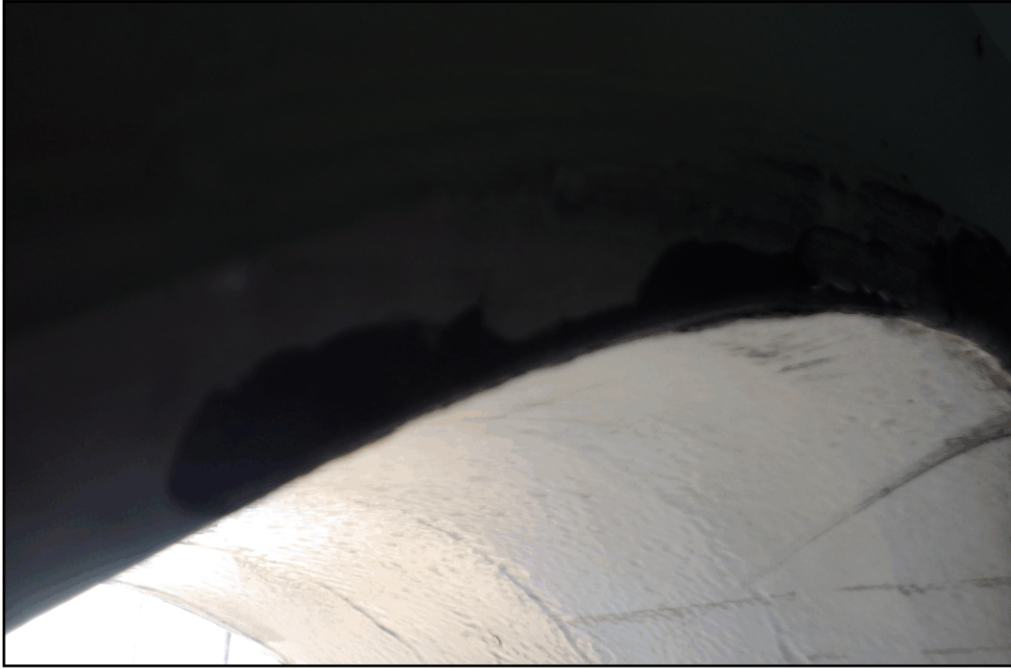
COATING CHIPS



COATING CHIPS



**PHOTOGRAPHS**

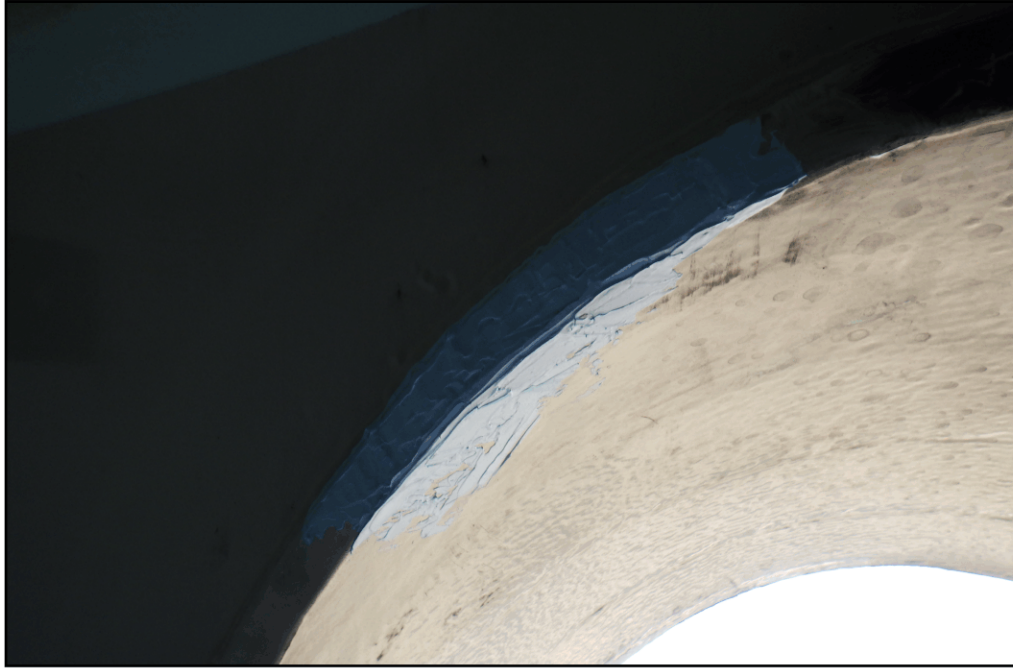


COATING CHIPS



COATING CHIPS

**PHOTOGRAPHS**



REPAIRED CHIPS



REPAIRED CHIPS

**PHOTOGRAPHS**



REPAIRED CHIPS



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**PHOTOGRAPHS**



REPAIRED CHIPS



REPAIRED CHIPS



**PHOTOGRAPHS**



REPAIRED CHIPS



REPAIRED CHIPS

**PHOTOGRAPHS**



REPAIRED CHIPS



ANODE 7 AND 8



**PHOTOGRAPHS**



ANODE 7 AND 8

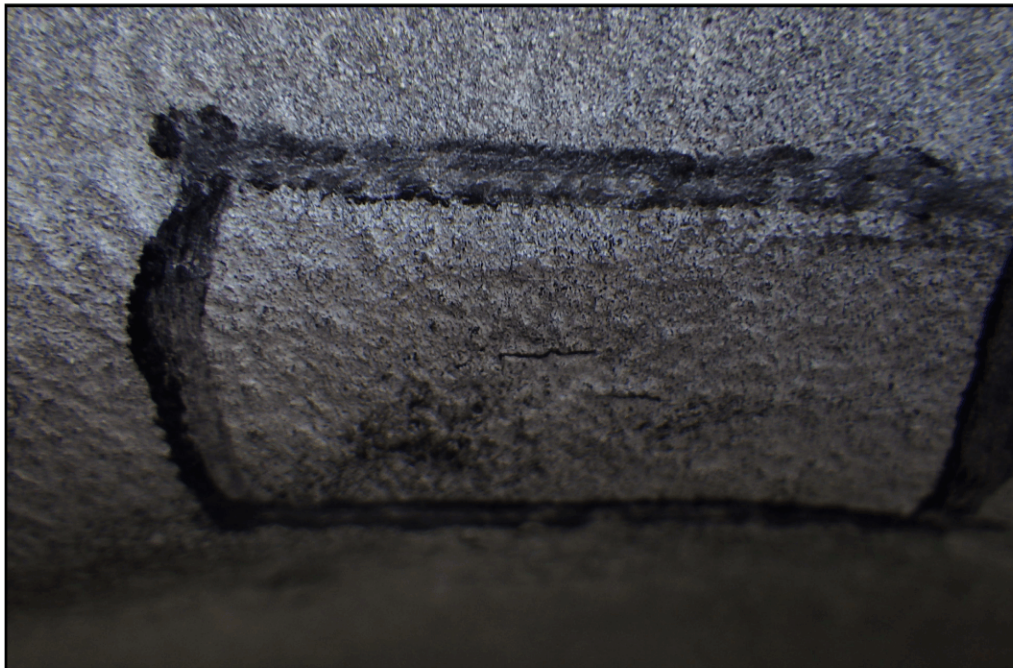


ANODES 5 AND 6

**PHOTOGRAPHS**



INDICATIONS



INDICATIONS



**PHOTOGRAPHS**



ANODE 5 AND 6



BOOT INSIDE

**PHOTOGRAPHS**



SOUTH MANWAY



MANWAY COATING CHIPS



**PHOTOGRAPHS**



MANWAYS COATING CHIPS



MANWAY COATING CHIPS

**PHOTOGRAPHS**



REPAIRED CHIPS



REPAIRED CHIPS



**PHOTOGRAPHS**

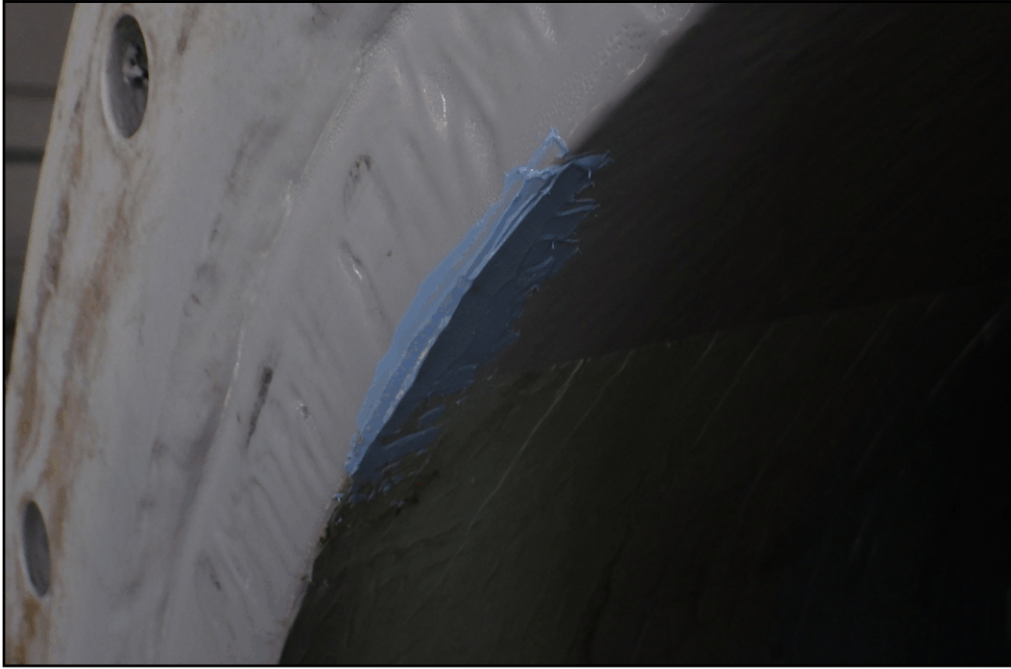


OVERALL REPAIRED



REPAIRED BURNER FLANGE

**PHOTOGRAPHS**



REPAIRED CHIPS



REPAIRED CHIPS



**PHOTOGRAPHS**

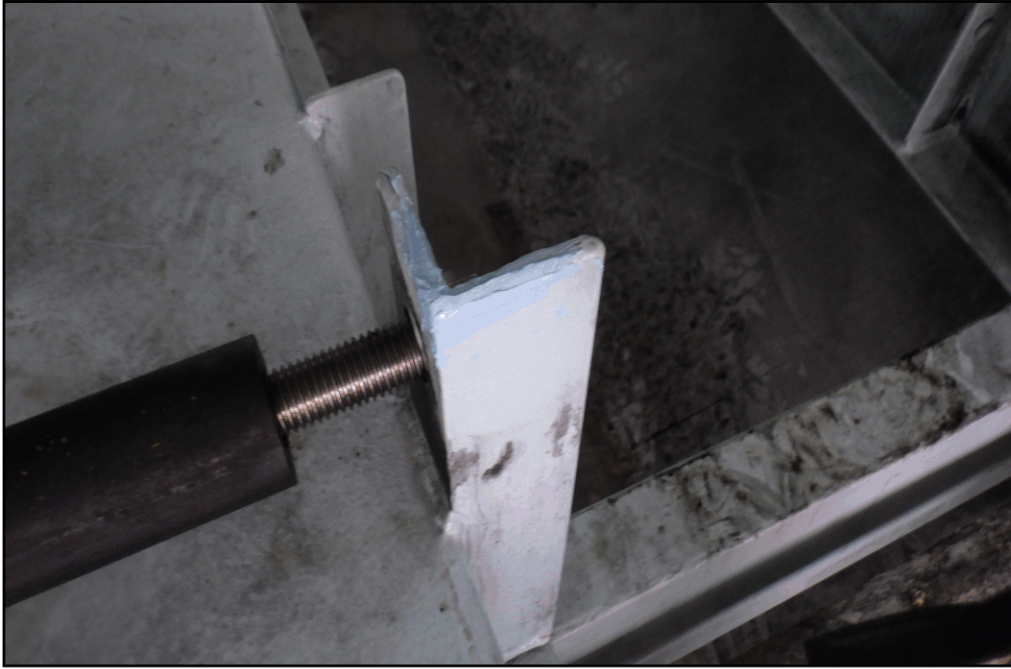


REPAIRED CHIPS ON FIRE TUBE SUPPORTS



REPAIRED CHIPS ON FIRE TUBE SUPPORTS

**PHOTOGRAPHS**



REPAIRED CHIPS ON FIRE TUBE SUPPORTS



REPAIRED CHIPS ON FIRE TUBE SUPPORTS



**PHOTOGRAPHS**



REPAIRED CHIPS ON FIRE TUBE SUPPORTS



REPAIRED CHIPS ON FIRE TUBE SUPPORTS

**PHOTOGRAPHS**



LSD



OVERALL

**PHOTOGRAPHS**



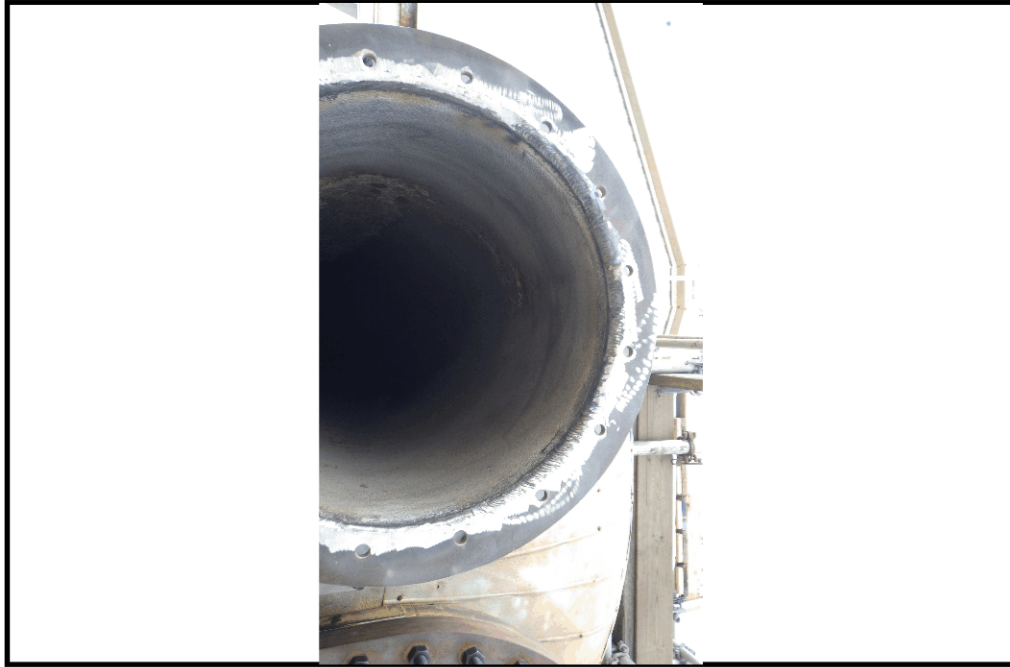
REPAIRED EXHAUST FLANGE



REPAIRED EXHAUST FLANGE



**PHOTOGRAPHS**



REPAIRED EXHAUST FLANGE



FLANGE THINNING



**PHOTOGRAPHS**



FLANGE THINNING



FLANGE THINNING

**PHOTOGRAPHS**



INDICATIONS



INDICATIONS



**PHOTOGRAPHS**



INDICATIONS

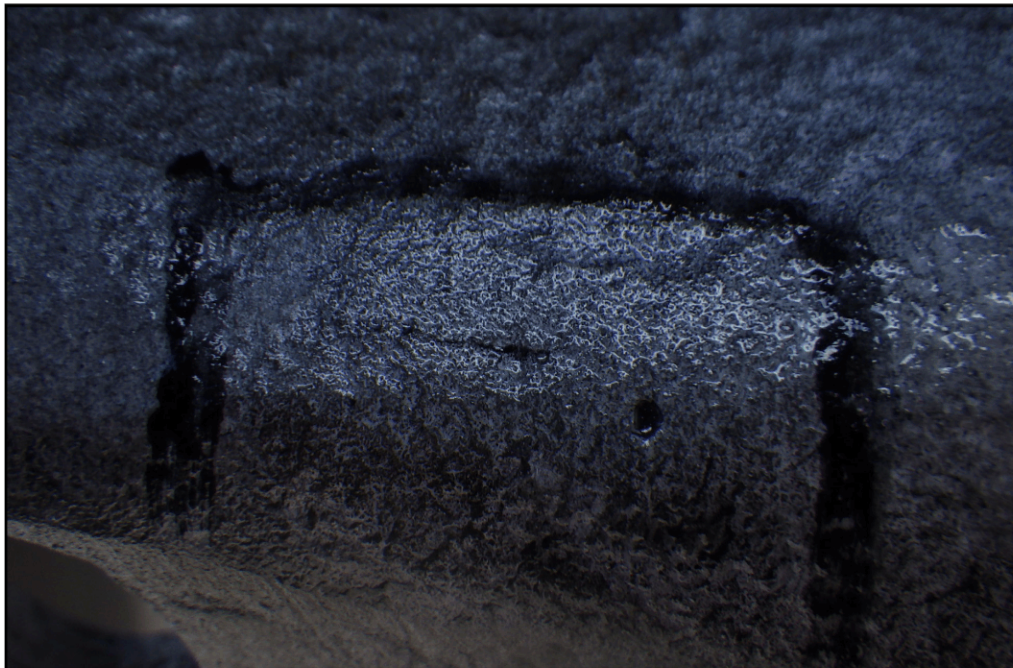


INDICATIONS

**PHOTOGRAPHS**



INDICATIONS



INDICATIONS



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INDICATIONS

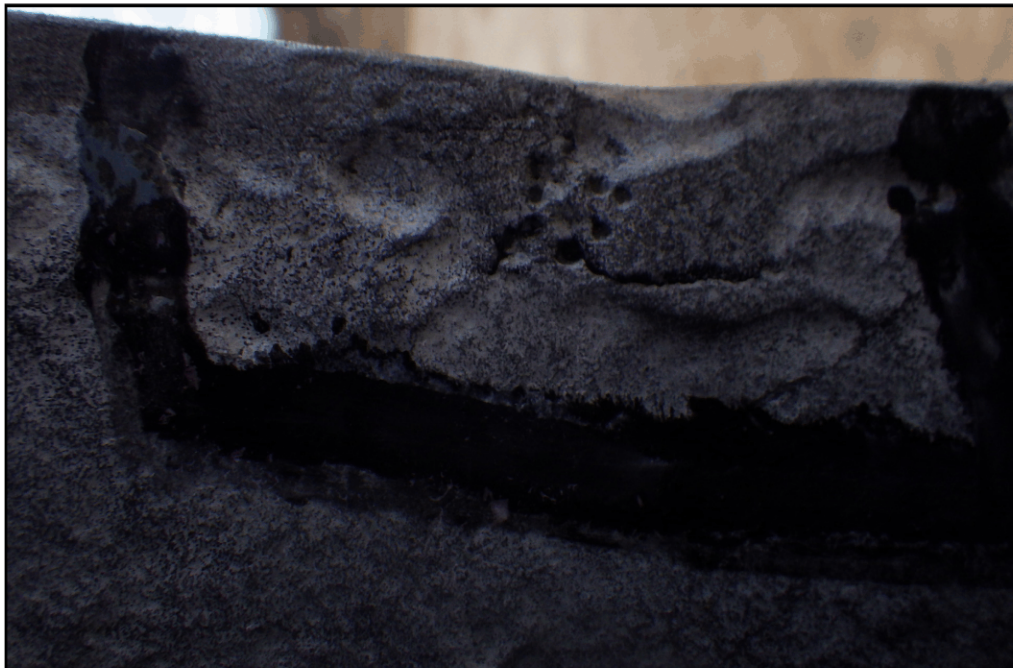


INDICATIONS

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INDICATIONS



INDICATIONS