

FIRED HEATER INSPECTION REPORT

LSD: 12-05-054-20W5M

Date: May 11, 2016

SAP Equipment ID: 66068448 & 66068278

HEATER STATIC DATA						
Plant Galloway		Op Unit Plant		System		
Prov. Insp. #		CRN		Equip Tag #		
Description Indirect Fired Heater				Serial # 2001 6729 02		
Manufacturer ALCO Gas & Oil				Vessel Class		
Internal Access YES		Description West Flanged Head		Year Built 2001		
COIL #1 RADIANT DATA						
MAWP 230		PSI @ 550 °F		MDMT -20 °F		
CODE :		Fluid Service Sweet		PWHT : No		
Diameter 3.5" O. D.		Length (T/T) 114 in OAL mm		Horizontal		
Coil Mat'I SA106-B/234WPB		Thickness 0.216 in		Corr Allowance 0.0625 in		
Operating Pressure Not in operation		PSI		Operating Temperature Not in operation		°C
COIL #2 RADIANT DATA						
MAWP		@ °F		MDMT °F		
CODE :		Fluid Service		PWHT :		
Diameter		Length (T/T) in OAL mm		Vertical / Horizontal		
Coil Mat'I		Thickness mm		Corr Allowance mm		
Operating Pressure		kPa		Operating Temperature °C		
PSV STATIC DATA						
Serial No.	Location	Set Pressure	Capacity SCFM	Manufacturer	Model / Type	Service Date / Company
PSV DETAILS						
	Type (Thread/Flange)		ANSI Rating		Size (inches)	
PRD Inlet	Flanged		150		2.375"	
PRD Outlet	Flanged		150		3.5"	
NDE Equipment Records						
Procedure#	Description	Manufacturer	Model#	Serial#	Due Date	

INSPECTION SUMMARY

EXTERNAL VISUAL INSPECTIONS:

STABILIZER REBOILER (NON-CODE) SAP# 66068448

Vessel and piping is secured. Vessel is set on saddles, anchor bolted to floor outside of building and welded inside of building. The anchor bolt holes allow room for movement of vessel. The vessel is insulated/clad. Cladding is in good condition. The piping is insulated/clad in most sections. Cladding is in good condition. The areas with no clad are painted. Paint is in fair condition with failures noted. No external pitting located at these sections. Data plate is secured and legible. No short bolting found. Ground cable located. Gauges are clear & legible. Exhaust stack is in good condition. No warping noted and attachments are secure. Burner is in good condition, attachments are secure. Burner and Exhaust stack were removed for T/A. UT was done by Streamline Inspection May, 2016. UT was also performed on the bottom drain nozzle. The following was recorded: Nozzle- 2.375" O.D.; Nominal 0.154"; Low reading 0.136"; Avg reading 0.148". This is a 90 deg. elbow. Minor erosion was detected.

CONDENSATE PROCESS COIL, FIRED REBOILER, SAP#66068278

Coil Prov.# A0465810. See coil#1, radiant data for data plate info. Coil PSV vents to flare. The coil psv is located off of Separator A0465811 west shell. PSV was removed at time of inspection for servicing.

14"x17'9" FIRETUBE

Burner Tube: The burner tube is in good condition. No warping or mechanical damage noted. There was no external pitting/corrosion located at the time of this inspection. The tube slip on flange is in good condition, no warping or mechanical damage noted.

Exhaust Tube: The exhaust tube is in good condition. No warping or mechanical damage noted. There was no external pitting/corrosion located at the time of this inspection. The tube slip on flange is in good condition, no warping or mechanical damage noted. Product was baked on to the external shell tube section approximately 1/4 way down from the tube sheet. This section was buffed clean and no pitting was found. UT was done on this section by Streamline Inspection Ltd. and no pitting/corrosion was reported.

Tube Sheet: The tube sheet is in good condition. No warping or mechanical damage noted. The gasket face is in good condition. No pitting/corrosion noted at the time of this inspection.

MT was performed by Streamline Inspection on the fillet and miter welds. Linear indications were located in the HAZ of the tube to tube sheet fillet welds. See Streamline report MCG-160511-1 for details of results.

UT was performed by Streamline Inspection on the burner and exhaust tubes. No indications of internal wall loss was noted. See Streamline report UCG-160511-1 for details of results.

FIRED HEATER INSPECTION REPORT

LSD: FORMTEXT 12-05-054- 20W5M	Date: May 11, 2016	SAP Equipment ID: FORMTEXT 66068448 & 66068278
-----------------------------------	--------------------	---

INTERNAL VISUAL INSPECTIONS:

STABILIZER REBOILER (NON-CODE) SAP# 66068448

East Head: Good condition, no internal pitting/corrosion or mechanical damage located. No deterioration of the shell to head weld found.

East shell (Can 1): Good condition, no internal pitting/corrosion or mechanical damage located. The attachment welds are in good condition and secured. The fuel gas line is secured and in good condition. No warping or mechanical damage located on coil supports.

West shell (Can 2): Good condition, no internal pitting/corrosion or mechanical damage located. The attachment welds are in good condition and secured. No warping or mechanical damage located on coil supports.

West flange gasket face: Good condition with no pitting/corrosion noted. A minor mechanical damage was noted @ approx. 1:00 position. No warping noted.

CONDENSATE PROCESS COIL, FIRED REBOILER, SAP#66068278

Internal coils: No external pitting/corrosion located. There was no fretting found at the coil to baffle plate intersects. No warping or mechanical damage was located. Coils are in good condition. Random UT was done by Streamline Inspection on the U-bends and straight sections. No internal pitting was reported. See Streamline report# UCG-160511-2 for details of results

RECOMMENDATIONS

Ensure coil PSV is set at or below mawp after servicing is completed.


NONCONFORMANCES / INSPECTION DEFICIENCIES

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	Curtis Graham 	Date	May 11, 2016
Company	Streamline Inspection Ltd	PESL #	000785
Reviewed and Approved by	_____	Date	_____
		PESL #	_____
Criticality Assessment Rerun	_____	Inspection Planning Rerun	_____
Assessed Next Inspection Date	_____		

FIRED HEATER INSPECTION REPORT

LSD: FORMTEXT 12-05-054- Date: May 11, 2016 SAP Equipment ID: FORMTEXT
20W5M **DETAILED INSPECTION VISUAL EXTERNAL** 66068448 & 66068278

ID	Description	Condition	Location	NCR	Comments
H01	General Other (Please Explain)	N/A			
H02	Corrosion	N/A			
H03	Leaks	Acceptable	No leaks detected		
H04	Vibration	N/A			
H05	Platforms	N/A			
H06	Electrical Ground	Acceptable	Indirect		
H07	Painting	Good	Minor failures boted		
H21	Support Other (Please explain)	N/A			
H22	Foundation	Acceptable			
H23	Anchor Bolts	Acceptable	Secured		
H24	Slide Plates	N/A			
H25	Fireproofing	N/A			
H31	Connections Other (Please explain)	Acceptable	Instrumentation		
H32	Nozzles	Acceptable			
H33	Connecting Flanges	Acceptable	No short bolting found		
H34	Dissimilar Flange Rating	Acceptable			
H35	Bolting	Acceptable	No short bolting		
H36	Inadequate Thread Engagement	Acceptable			
H37	Small Branches	Acceptable			
H38	Reinforcing Pads	N/A			
H39	Manways	Acceptable	West Flange opening		
H40	Davits	N/A			
H41	Handholes	N/A			
H51	Casing Other (Please Explain)	N/A			
H52	Casing Thermographic Scan	N/A			
H53	Surface Irregularities	N/A	Insulated		
H61	Insulation Other (Please explain)	N/A			
H62	Insulation Damage	Acceptable	Good condition		
H63	Insulation Penetrations	Acceptable			
H64	Insulation Jacket	Acceptable	Good condition		
H65	Insulation Banding	N/A			
H66	Insulation Seals/Joints	Acceptable			
H71	Vent or Stack Other (Please Explain)	N/A			
H72	Vent or Stack Structural Appearance	Acceptable	Good condition		
H73	Vent or Stack Thermographic Scan	N/A			
H74	Stack Thickness	N/A			
H75	Vent or Stack Joints (Bolted Connections)	Acceptable	No warping		
H76	Guy Wires	N/A			
H77	Lightning Rods	N/A			
H80	Accessories and Attachments (Please Explain)	N/A			
H82	Damper Linkages	N/A			
H83	Regenerative Preheaters	N/A			
H84	Blowdown Equipment	N/A			
H85	Burners	Acceptable	Good condition		
H86	Related equipment	N/A			

FIRED HEATER INSPECTION REPORT

LSD: FORMTEXT 12-05-054- Date: May 11, 2016 SAP Equipment ID: FORMTEXT 20W5M 66068418 & 66068278

DETAILED INSPECTION VISUAL INTERNAL

ID	Description	Condition	Location	NCR	Comments
H01	General Other (Please Explain)	Acceptable	See inspection summary		
H02	Corrosion	Acceptable	No corrosion found		
H03	Leaks	Acceptable	No evidence of leaks		
H04	Tubes	Acceptable	Good condition		
H05	Tube Supports	Acceptable	Secured		
H06	Firebox	N/A			
H07	Vent or Stack	Acceptable	Good condition		
H21	Connections Other (Please explain)	N/A			
H22	Bolting	N/A			
H23	Fittings	N/A			
H24	Openings	N/A			
H31	Accessories Other (Please Explain)	N/A			
H32	Burners	Acceptable	Good condition		
H33	Damper	N/A			
H34	Soot Blower	N/A			
H41	Insulation Other (Please Explain)	N/A			
H42	Refractory	N/A			
H43	Insulation or Lining	N/A			

DETAILED INSPECTION OTHER TECHNIQUES

ID	Location	Observation/Measurement	Acceptance Criteria	NCR	Comments
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

DETAILED INSPECTION TUBE INSPECTION

Tube #	Flaw Type	Flaw Length	Location on Tube	Wall Loss	NCR	Comments

DETAILED INSPECTION UT THICKNESS

CML	Nom. Thk	Current Reading	Short Term Corr Rate	Long Term Corr Rate	Remaining Life	Comments

FIRED HEATER INSPECTION REPORT

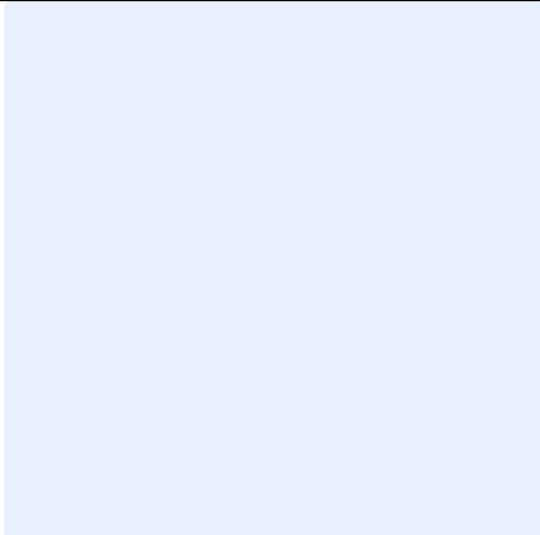
LSD: FORMTEXT 12-05-054-

Date: May 11, 2016

SAP Equipment ID:

FORMTEXT

PHOTOS



LSD



Stabilizer Reboiler Data Plate



Vessel Overview



Vessel Overview



Burner



Exhaust Stack

FIRED HEATER INSPECTION REPORT

LSD: FORMTEXT 12-05-054-
20W5M

Date: May 11, 2016

SAP Equipment ID: FORMTEXT
66068448 & 66068278



Process Coil Data Plate



Internal coils



PSV Removed for service



East Head (Internal)



Coil support bracket



Coil to baffle plate intersect

FIRED HEATER INSPECTION REPORT

LSD: FORMTEXT 12-05-054-
20W5M

Date: May 11, 2016

SAP Equipment ID: FORMTEXT
66068448 & 66068278



Fuel Gas Line



Internal shell overview



Internal shell & attachment overview



Mechanical damage on west flange Reboiler)



Reboiler Firetube



Firetube tube sheet (Process side)

FIRED HEATER INSPECTION REPORT

LSD: FORMTEXT 12-05-054-
20W5M

Date: May 11, 2016

SAP Equipment ID: FORMTEXT
66068448 & 66068278



Firetube Gasket Face



Tube Sheet Overview (Atmosphere side)



Product Baked on Exhaust Tube



Linear Indication, Exhaust Tube Side



Linear Indication, Burner Tube Side