



1595 So. Hwy 150, Suite F
Evanston, WY 82930

Inspections Performed for: FMC Technologies Completion – Pennsylvania	
Inspection Report for: LH0034-C1 Line Heater	Date Last Inspected: 11/12/2017
Remaining Life: 6.2 YRS	Next UT: 11/12/2018 Next VT: 11/12/2018
Representative Corrosion Rate: .1 MPY	Mfg Serial #: 1455-03
Manufacturer: Coral Oilfield Services Inc.	Alberta Registration #: 616771
Year Built: 2012	Canadian Registration #: V7026.2

FMC Technologies Completion LH0034-C1 (Coil 1)



PRESSURE VESSEL INVENTORY

☒ Code ☐ Code-invalidated ☐ Non-Code ☐ Unknown ☐ Code-Exempt

VESSEL ID INFORMATION

Company Name : Pure Energy USA
Facility/Location Name : Wyoming District
Field Name :
Equipment Number : LH-0034
Eq/Circ. ID : LH0034-C1
Equipment Name/Service : Line Heater-Coil 1
Physical Location : In Evanston Yard
GPS Coordinates :

VESSEL DESCRIPTION AND SERVICE CONDITIONS

Type of Vessel: Line Heater

Vessel Size:

Operating Pressure Range (psig): N/A

Operating Temperature Range (°F): N/A

Does the vessel have Internal Access? Yes

Specify type of internal access, if available: When bundles are pulled out.

Vessel is located: Outside

MISCELLANEOUS VESSEL INFORMATION: (IF VESSEL HAS NO NAMEPLATE, PLEASE OBTAIN AS MUCH OF THE FOLLOWING AS POSSIBLE FOR WORST CASE TMIN CALCULATIONS, *may have to check with operations personnel*).

Is there a Long Seam?: ☐ Yes ☐ No

Any stamping pertaining to materials of construction?: ☐ Yes ☐ No

****Diameter****(strap equipment):

Pressure (highest the equip. sees in the process and/or check PSV setting if available) psi

Temperature (highest the equipment would ever see in the process)

Approximate Date built or installed (check associated equipment or info at facility)

Any other pertinent information

PRESSURE VESSEL INVENTORY

ORIGINAL VESSEL NAMEPLATE/STAMPING INFORMATION

Code stamp: ☐ U stamp ☐ U2 stamp ☐ UM stamp ☐ API-ASME ☒ No stamp

MANUFACTURED & CERTIFIED BY		
CORAL OILFIELD SERVICES INC.		
780-402-9800 WWW.CORALOILFIELD.COM		
GRANDE PRAIRIE AB. CANADA		
MANUF SER NO. 1455-03		
YEAR BUILT 2012 CRN V7026-21		
MAWP (kPa)	COIL #1	COIL #2
TEMP (°C)	68948	
NPS (IN)	93	
THICKNESS (MM)	4	
MATERIAL (S.A.)	25.4	
XRAY	519	
CORR ALL (MM)	100	
CODE	3.175	
TEST PRESS (kPa)	B31.3	
DRWG. NO.	103422	
MDMT	3764-01	PWHT 1200
INSP. NO.	-20°C	-4°F
A 616771		

SUPPLEMENTAL VESSEL NAMEPLATE/STAMPING INFORMATION

Repair stamp: ☐ R stamp ☐ Other Stamp ☐ No stamp

Repaired By

Date of Repair

No Other Stamping Information

VESSEL DOCUMENTATION (Manufacturer Data Sheets)

☒ ASME U-1 or U-1A Forms (Canadian Equivalent)

☐ U2 or U4 Supplemental Forms

☐ Documentation relating to repair/alteration/rerating work (R-1 form, calculations, revised drawings, inspection reports, etc.).

Name:

Sterling Mack

Date: 09/28/2012

API 510 PRESSURE VESSEL EXTERNAL INSPECTION REPORT

Company Name: FMC Technologies Completion	
Field/Location: PA District	
Equipment Number: LH-0034	Eq/Circ. ID: LH0034-C1
Equipment Name/Service: Line Heater-Coil 1	
Physical Location: In FMC Yard	
Manufacturer: Coral Oilfield Services Inc.	Manufacturer Serial Number: 1455-03
Year Built: 2012	CRN: V7026.2
Alberta Registration Number: 616771	National Board Number: N/A

Is Vessel in-service? No

Reason for Inspection: Scheduled API-510 External Inspection

Condition of Nameplate and/or Bracket: Nameplate is intact and legible. The nameplate bracket is securely attached.

Internal Access? 4 man hatches.

Corrosion Monitoring Locations (CMLs) and baseline thickness data established? Yes

Grounding Device in Place and Secure? N/A, the equipment is grounded through the skid. The unit was not in service at the time of this inspection.

Condition of Foundation and Anchor Bolts: Anchor bolts are in place and secure. All 64 anchor bolt nuts are in place and secure. Front plate is all secure.

Condition of Steel Supports, Saddles and bolting: All support structural welds appear sound. Front plate is secure. There is minor chipping and surface corrosion on the supports.

Condition of Paint and/or Insulation: The paint is in acceptable condition with minor localized chipping and peeling. There is moderate surface corrosion on the Coils.

Condition of Nozzles, Flanges, Repads, and Weepholes: Nozzle and flanges are in good condition. All flange bolting is in place and secure.

Condition of Welds; Head and Shell Metal Surfaces: All (exposed) metal surfaces are painted. There is no distortion or indication of corrosion beneath the paint coating. The pressure boundary welds have no visual weld defects.

Condition of Ladders, Stairways, and Brackets: Access ladders and stairways are in acceptable condition.

If Equipment has Anomalous Data, did the Inspector check it? N/A

Is There a PSV on the Vessel? No

If Yes, is it set at or below the MAWP?

Date PSV last tested (if there is a tag on the valve)

Comments:

Fired tubes on this until were hammer tested and no areas of concern were found. Coils have moderate corrosion.





Recommendations:

None

Repairs Needed:

None

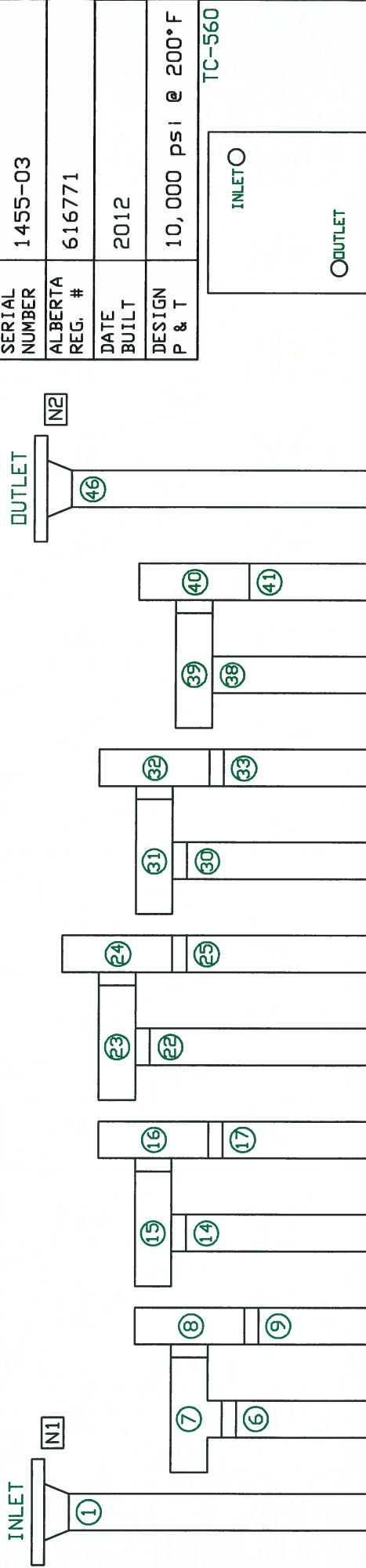
Robert W. Menke/JWW
API 510 Inspector Signature

0131
API 510 Inspector Number

10/27/2016
Date

EQUIP RETIREMENT DATE: 2/7/2024
NEXT INSPECTION IS DUE: 11/12/2018

NAMEPLATE INFO	
MFG	CDRAL DILFIELD SERVICES INC.
SERIAL NUMBER	1455-03
ALBERTA REG. #	616771
DATE BUILT	2012
DESIGN P & T	10,000 psi @ 200°F



#1. 01- STR-B 0.962 TC	#24. 01- EL 1.286 IC
#2. 01- STR-L 0.981 TC	#25. 01- STR-B 0.951 IC
#3. 01- EL 1.147 DC	#26. 01- STR-B 0.977 TC
#4. 01- EL 1.294 IC	#27. 01- EL 1.265 IC
#5. 01- STR-R 0.976 TC	#28. 01- EL 1.262 IC
#6. 01- STR-B 0.969 TC	#29. 01- STR-R 0.973 TC
#7. 01- EL 1.276 TC	#30. 01- STR-R 0.954 TC
#8. 01- EL 1.262 TC	#31. 01- EL 1.280 IC
#9. 01- STR-B 0.981 TC	#32. 01- EL 1.276 IC
#10. 01- STR-B 0.954 IC	#33. 01- STR-B 0.975 IC
#11. 01- EL 1.258 TC	#34. 01- STR-R 0.937 TC
#12. 01- EL 1.271 IC	#35. 01- EL 1.281 IC
#13. 01- STR-L 0.967 DC	#36. 01- EL 1.278 IC
#14. 01- STR-L 0.973 TC	#37. 01- STR-B 0.947 DC
#15. 01- EL 1.263 TC	#38. 01- STR-R 0.931 DC
#16. 01- EL 1.276 IC	#39. 01- EL 1.275 IC
#17. 01- STR-L 0.989 TC	#40. 01- EL 1.267 IC
#18. 01- STR-B 0.974 IC	#41. 01- STR-L 0.956 TC
#19. 01- EL 1.254 TC	#42. 01- STR-B 1.002 TC
#20. 01- EL 1.278 IC	#43. 01- EL 0.948 IC
#21. 01- STR-L 0.967 TC	#44. 01- EL 1.271 IC
#22. 01- STR-L 0.967 TC	#45. 01- STR-T 1.248 TC
#23. 01- EL 1.280 IC	#46. 01- STR-T 0.965 IC

CAL BLK=35°F		PIPE=28°F	
BUSINESS UNIT	FMC TECHNOLOGIES	COMPLETION	
EQ/CIRC ID #	LH0034-C1		
EQUIP NAME	LINE HEATER		
DWG #	LH0034-C1		

4 READINGS TAKEN AROUND
THE CIRCUMFERENCE
RECORDED THE LOWEST.

DESC: COIL 1 ON LINE HEATER
DWG#: LH0034-C1-1.01-46.01

Corrosion Monitoring Eq/circ ID Analysis Report

Eaton Inspection Services
1595 So Hwy 150, Suite F, Evanston, WY 82930
Phone 307-789-3540 FAX 307-789-2822

Report Date: 12/08/2017

(Report in Inches, Corrosion Rates in MPY)
Analysis: Straight Line

Unit: LH-0034
Eq/Circ ID: LH0034-C1
Eq Type: VESSEL
Class:
CM RBI:
Design Code: B31.3

Flange Rating: 5625 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 200 °F

Description: LH-0034 COIL 1; SN:1455-03

Summary: Group Name: 11/12/2018
Insp. Due Date = 02/07/2024
Pred. Ret. Date =

Group Description:
RCR = 0.1 MPY

Rem. Life (from last survey 11/12/2017) = 6.2 yrs

0 C.A. Status: No
Total Caution TMLs = 24

TML No	Location	Ctn TML	First Survey Thick	First Survey Nt	First Date	Previous Survey Thick	Previous Survey Nt	Previous Date	Last Survey Thick	Last Survey Nt	Last Date	Shrt Term Rate	Long Term Rate	Best Rate	Max Hist CR	Retirement Thickness	Rep TML CR	TML Retirement Date	TML Inspection Date
1.01	STR-B	N	0.975		09/28/2012	0.953 TC		10/26/2016	0.962 TC		11/12/2017	0	2.5	5.3	76.7	0.750 U	2.5	09/01/2102	11/12/2018
2.01	STR-L	N	1.012		09/28/2012	0.982 TC		10/26/2016	0.981 TC		11/12/2017	1.0	6.1	6.8	29.5	0.750 U	6.1	09/26/2055	11/12/2018
3.01	EL-T	Y *	1.335		09/28/2012	1.257 TC		10/26/2016	1.147 TC		11/12/2017	105.2	36.7	29.9	105.2	0.750 U	105.2	08/21/2021	11/12/2018
4.01	EL	Y	1.334		09/28/2012	1.319 TC		10/26/2016	1.294 TC		11/12/2017	23.9	7.8	4.3	29.5	0.750 U	23.9	08/17/2040	11/12/2018
5.01	STR-R	N	1.010		09/28/2012	0.973 TC		10/26/2016	0.976 TC		11/12/2017	0	6.6	7.5	32.5	0.750 U	6.6	02/09/2052	11/12/2018
6.01	STR-B	N	0.998		09/28/2012	0.974 TC		10/26/2016	0.969 TC		11/12/2017	4.8	5.7	5.9	62.5	0.750 U	5.7	04/14/2056	11/12/2018
7.01	EL	N	1.327		09/28/2012	1.281 TC		10/26/2016	1.276 TC		11/12/2017	4.8	10.0	11.1	46.3	0.750 U	10.0	06/19/2070	11/12/2018
8.01	EL	N	1.318		09/28/2012	1.262 TC		10/26/2016	1.262 TC		11/12/2017	0	10.9	12.0	45.3	0.750 U	10.9	11/02/2064	11/12/2018
9.01	STR-B	N	1.018		09/28/2012	0.996 TC		10/26/2016	0.981 TC		11/12/2017	14.3	7.2	4.5	57.7	0.750 U	14.3	01/07/2034	11/12/2018
10.01	STR-B	Y *	0.975		09/28/2012	0.993 TC		10/26/2016	0.954 TC		11/12/2017	37.3	4.1	4.0	76.7	0.750 U	37.3	05/03/2023	11/12/2018
11.01	EL	N	1.314		09/28/2012	1.267 TC		10/26/2016	1.258 TC		11/12/2017	8.6	10.9	12.5	55.1	0.750 U	10.9	06/21/2064	11/12/2018
12.01	EL	Y	1.319		09/28/2012	1.310 TC		10/26/2016	1.271 TC		11/12/2017	37.3	9.4	5.7	94.2	0.750 U	37.3	11/01/2031	11/12/2018
13.01	STR-L	N	1.020		09/28/2012	0.947 TC		10/26/2016	0.967 TC		11/12/2017	0	10.3	12.4	58.1	0.750 U	10.3	12/07/2038	11/12/2018
14.01	STR-L	N	0.989		09/28/2012	0.966 TC		10/26/2016	0.973 TC		11/12/2017	0	3.1	6.3	66.3	0.750 U	3.1	10/19/2089	11/12/2018
15.01	EL	N	1.326		09/28/2012	1.272 TC		10/26/2016	1.263 TC		11/12/2017	8.6	12.3	13.7	58.1	0.750 U	12.3	07/29/2059	11/12/2018
16.01	EL	Y	1.336		09/28/2012	1.313 TC		10/26/2016	1.276 TC		11/12/2017	35.4	11.7	9.2	65.4	0.750 U	35.4	09/21/2032	11/12/2018
17.01	STR-L	N	1.010		09/28/2012	0.996 TC		10/26/2016	0.989 TC		11/12/2017	6.7	4.1	3.9	23.1	0.750 U	6.7	07/15/2053	11/12/2018
18.01	STR-B	Y *	1.017		09/28/2012	1.006 TC		10/26/2016	0.974 TC		11/12/2017	30.6	8.4	6.8	30.6	0.750 U	30.6	03/09/2025	11/12/2018
19.01	EL	N	1.319		09/28/2012	1.264 TC		10/26/2016	1.254 TC		11/12/2017	9.6	12.7	13.6	82.7	0.750 U	12.7	07/20/2057	11/12/2018
20.01	EL	Y	1.334		09/28/2012	1.328 TC		10/26/2016	1.278 TC		11/12/2017	47.8	10.9	7.9	47.8	0.750 U	47.8	11/29/2028	11/12/2018

Corrosion Monitoring Eq/Circ ID Analysis Report

Eaton Inspection Services
1595 So Hwy 150, Suite F, Evanston, WY 82930
Phone 307-789-3540 FAX 307-789-2822

Report Date: 12/08/2017

(Report in Inches, Corrosion Rates in MPY)
Analysis: Straight Line

Unit: LH-0034
Eq/Circ ID: LH0034-C1
Eq Type: VESSEL
Class:
CW RBI:
Design Code: B31.3

Flange Rating: 5625 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 200 °F

Description: LH-0034 COIL 1; SN:1455-03

Summary: Group Name: Insp. Due Date = 11/12/2018
Pred. Ret. Date = 02/07/2024

Group Description:
RCR = 0.1 MPY
Rem. Life (from last survey 11/12/2017) = 6.2 yrs

0 C.A. Status: NO
Total Caution TMLs = 24

TML No	Location	Ctn TML	First Survey Thick	First Survey Nt	First Date	Previous Survey Thick	Previous Survey Nt	Previous Date	Last Survey Thick	Last Survey Nt	Last Date	Shrt Term Rate	Long Term Rate	Best Rate	Max Hist CR	Retirement Thickness	Rep TML CR	TML Retirement Date	TML Inspection Date
21.01	STR-L	Y	1.008		09/28/2012	0.983 TC	10/26/2016	0.967 TC	11/12/2017	15.3	8.0	7.5	25.0	0.750 U	15.3	01/18/2032	11/12/2018		
22.01	STR-L	N	0.979		09/28/2012	0.980 TC	10/26/2016	0.967 TC	11/12/2017	12.4	2.3	2.8	64.5	0.750 U	12.4	05/14/2035	11/12/2018		
23.01	EL	Y	1.338		09/28/2012	1.330 TC	10/26/2016	1.280 TC	11/12/2017	47.8	11.3	5.3	47.8	0.750 U	47.8	12/14/2028	11/12/2018		
24.01	EL	Y	1.319		09/28/2012	1.326 TC	10/26/2016	1.286 TC	11/12/2017	38.2	6.4	1.7	72.1	0.750 U	38.2	11/24/2031	11/12/2018		
25.01	STR-B	Y *	0.985		09/28/2012	0.972 TC	10/26/2016	0.951 TC	11/12/2017	20.1	6.6	6.8	46.0	0.750 U	20.1	11/12/2027	11/12/2018		
26.01	STR-B	N	0.997		09/28/2012	0.982 TC	10/26/2016	0.977 TC	11/12/2017	4.8	3.9	3.8	24.6	0.750 U	4.8	02/26/2065	11/12/2018		
27.01	EL	Y *	1.330		09/28/2012	1.337 TC	10/26/2016	1.265 TC	11/12/2017	68.8	12.7	7.8	68.8	0.750 U	68.8	05/08/2025	11/12/2018		
28.01	EL	Y	1.299		09/28/2012	1.303 TC	10/26/2016	1.262 TC	11/12/2017	39.2	7.2	7.3	39.2	0.750 U	39.2	12/05/2030	11/12/2018		
29.01	STR-R	N	1.016		09/28/2012	0.978 TC	10/26/2016	0.973 TC	11/12/2017	4.8	8.4	8.0	45.2	0.750 U	8.4	05/31/2044	11/12/2018		
30.01	STR-R	N	0.982		09/28/2012	0.950 TC	10/26/2016	0.954 TC	11/12/2017	0	5.5	8.4	60.1	0.750 U	5.5	12/15/2054	11/12/2018		
31.01	EL	Y	1.318		09/28/2012	1.302 TC	10/26/2016	1.280 TC	11/12/2017	21.0	7.4	5.3	21.0	0.750 U	21.0	02/07/2043	11/12/2018		
32.01	EL	Y	1.318		09/28/2012	1.298 TC	10/26/2016	1.276 TC	11/12/2017	21.0	8.2	7.9	22.6	0.750 U	21.0	11/30/2042	11/12/2018		
33.01	STR-BT	Y *	1.024		09/28/2012	1.029 TC	10/26/2016	0.975 TC	11/12/2017	51.6	9.6	5.1	51.6	0.750 U	51.6	03/24/2022	11/12/2018		
34.01	STR-R	N	0.989		09/28/2012	0.946 TC	10/26/2016	0.937 TC	11/12/2017	8.6	10.2	11.7	106.7	0.750 U	10.2	03/13/2036	11/12/2018		
35.01	EL	Y	1.352		09/28/2012	1.328 TC	10/26/2016	1.281 TC	11/12/2017	44.9	13.9	10.9	52.9	0.750 U	44.9	09/10/2029	11/12/2018		
36.01	EL	Y *	1.356		09/28/2012	1.338 TC	10/26/2016	1.278 TC	11/12/2017	57.4	15.2	10.3	57.4	0.750 U	57.4	01/24/2027	11/12/2018		
37.01	STR-B	Y *	0.998		09/28/2012	1.027 TC	10/26/2016	0.947 TC	11/12/2017	76.5	10.0	4.9	76.5	0.750 U	76.5	06/10/2020	11/12/2018		
38.01	STR-R	N	0.971		09/28/2012	0.922 TC	10/26/2016	0.931 TC	11/12/2017	0	7.8	11.7	89.0	0.750 U	7.8	01/26/2041	11/12/2018		
39.01	EL	Y	1.358		09/28/2012	1.293 TC	10/26/2016	1.275 TC	11/12/2017	17.2	16.2	13.9	36.3	0.750 U	17.2	05/22/2048	11/12/2018		
40.01	EL	Y *	1.342		09/28/2012	1.333 TC	10/26/2016	1.267 TC	11/12/2017	63.1	14.6	8.7	63.1	0.750 U	63.1	01/22/2026	11/12/2018		
41.01	STR-L	N	1.014		09/28/2012	0.948 TC	10/26/2016	0.956 TC	11/12/2017	0	11.3	12.4	47.3	0.750 U	11.3	02/05/2036	11/12/2018		

Corrosion Monitoring Eq/Circ ID Analysis Report

Eaton Inspection Services
1595 So Hwy 150, Suite F, Evanston, WY 82930
Phone 307-789-3540 FAX 307-789-2822

Report Date: 12/08/2017

(Report in Inches, Corrosion Rates in MPY)
Analysis: Straight Line

Unit: LH-0034
Eq/Circ ID: LH0034-C1
Eq Type: VESSEL
Class:
CM RBI:
Design Code: B31.3

Flange Rating: 5625 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 200 °F

Description: LH-0034 COIL 1; SN:1455-03

Summary: Group Name:
Insp. Due Date = 11/12/2018
Pred. Ret. Date = 02/07/2024

Group Description:
RCR = 0.1 MPY
Rem. Life (from last survey 11/12/2017) = 6.2 yrs

0 C.A. Status: NO
Total Caution TMLs = 24

TML No	Location	Ctn	First Survey Thick	First Survey Nt	First Date	Previous Survey Thick	Previous Survey Nt	Previous Date	Last Survey Thick	Last Survey Nt	Last Date	Shrt Term Rate	Long Term Rate	Best Rate	Max Hist CR	Retirement Thickness	Rep TML CR	TML Retirement Date	TML Inspection Date
42.01	STR-B	N	1.003		09/28/2012	1.008 TC	1.002 TC	10/21/2015	1.002 TC	10/26/2016	5.9	0.2	0.1	5.9	0.750 U	0.750 U	5.9	07/14/2059	10/26/2017
43.01	EL	Y *	1.338		09/28/2012	1.286 TC	0.948 TC	10/26/2016	0.948 TC	11/12/2017	323.2	76.1	57.1	323.2	0.750 U	0.750 U	323.2	06/24/2018	11/12/2018
44.01	EL	Y *	1.350		09/28/2012	1.368 TC	1.271 TC	10/26/2016	1.271 TC	11/12/2017	92.7	15.4	6.9	92.7	0.750 U	0.750 U	92.7	06/27/2023	11/12/2018
45.01	STR-T	N	0.975		09/28/2012	0.989 TC	1.248 TC	10/26/2016	1.248 TC	11/12/2017	0	0	0	76.7	0.750 U	0.750 U	0.1	11/27/4017	11/12/2018
46.01	STR-T	Y *	1.007		09/28/2012	0.987 TC	0.965 TC	10/26/2016	0.965 TC	11/12/2017	21.0	8.2	8.2	31.5	0.750 U	0.750 U	21.0	02/07/2028	11/12/2018

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Phone 307-789-3540 FAX 307-789-2822

Report Date: 12/08/2017

Unit: LH-0034
Eq/Circ ID: LH0034-C1
Design Code: B31.3
Eq Type: VESSEL
Class:
CM RBI:

(Report in Inches, Corrosion Rates in MPY)
Analysis: Straight Line

Flange Rating: 5625 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 200 °F

Description: LH-0034 COIL 1; SN:1455-03

TML Corrosion Rates are each the Maximum of:
(A) -- Calculated Corrosion Rates x 1.00
(B) -- Default Corrosion Rate

:
: Varies
: 0.1 MPY

Representative Corrosion Rate is the Maximum of:

(A) -- Average Corrosion Rate x 1.10 : Not Used.
(B) -- Average Max 25.0% of TMLs, Min of 2 : Not Used.
(C) -- Formula Corrosion Rate (Sigma = 1.28) : Not Used.
(D) -- Default Corrosion Rate : 0.1 MPY

Representative Corrosion Rate = 0.1 MPY

TML thickness readings have not been compensated for high Temperatures.
TML thickness readings have not been compensated for growths.

TML Life calculations are based on the Representative TML Corrosion Rate using Short Term and Long Term Corrosion Rates.

Nominal thickness is used for TML corrosion rate calculations with less than 3 surveys.

Minimum time between inspections required for corrosion rate calculation is 3 months.

TML Inspection Interval is:
(A) -- 1.00 years.

Eq/Circ ID Last Survey Date is based on the LAST of the last 0% of TML survey dates (Min 1).

Eq/Circ ID Estimated life = 6.2 years from the most recent survey date.
(Estimated Life based on the ave of the earliest 25% (Min 6) TML retirement dates.)

Predicted Eq/Circ ID Retirement date is 02/07/2024

Recommended Eq/Circ UT/RT Inspection Date is 11/12/2018
UT/RT Inspection Interval is 1.00 years.

Caution TML Logic: TML Corrosion Rate > 15.0 MPY .OR. TML Remaining Life < 3.00 Years.
There are 24 Caution TMLs in this Eq/Circ ID.



1595 So. Hwy 150, Suite F
Evanston, WY 82930

Inspections Performed for: FMC Technologies Completion – Pennsylvania	
Inspection Report for: LH0034-C2 Line Heater	Date Last Inspected: 11/12/2017
Remaining Life: 5.3 YRS	Next UT: 11/12/2018 Next VT: 11/12/2018
Representative Corrosion Rate: .1 MPY	Mfg Serial #: 1455-04
Manufacturer: Coral Oilfield Services Inc.	Alberta Registration #: 616772
Year Built: 2012	Canadian Registration #: V7026.2

FMC Technologies Completion LH0034-C2-Coil 2



PRESSURE VESSEL INVENTORY

☒ Code ☐ Code-invalidated ☐ Non-Code ☐ Unknown ☐ Code-Exempt

VESSEL ID INFORMATION

Company Name : Pure Energy USA
Facility/Location Name : Wyoming District
Field Name :
Equipment Number : LH-0034
Eq/Circ. ID : LH0034-C2
Equipment Name/Service : Line Heater
Physical Location : In Evanston Yard
GPS Coordinates :

VESSEL DESCRIPTION AND SERVICE CONDITIONS

Type of Vessel: Line Heater

Vessel Size:

Operating Pressure Range (psig): N/A

Operating Temperature Range (°F): N/A

Does the vessel have Internal Access? Yes

Specify type of internal access, if available: When bundles are pulled out.

Vessel is located: Outside

MISCELLANEOUS VESSEL INFORMATION: (IF VESSEL HAS NO NAMEPLATE, PLEASE OBTAIN AS MUCH OF THE FOLLOWING AS POSSIBLE FOR WORST CASE TMIN CALCULATIONS, *may have to check with operations personnel*).

Is there a Long Seam?: ☐ Yes ☐ No

Any stamping pertaining to materials of construction?: ☐ Yes ☐ No

****Diameter****(strap equipment):

Pressure (highest the equip. sees in the process and/or check PSV setting if available) psi

Temperature (highest the equipment would ever see in the process)

Approximate Date built or installed (check associated equipment or info at facility)

Any other pertinent information

PRESSURE VESSEL INVENTORY

ORIGINAL VESSEL NAMEPLATE/STAMPING INFORMATION

Code stamp: ☐ U stamp ☐ U2 stamp ☐ UM stamp ☐ API-ASME ☒ No stamp

MANUFACTURED & CERTIFIED BY
CORAL OILFIELD SERVICES INC.
780-402-9800 WWW.CORALOILFIELD.COM
GRANDE PRAIRIE AB. CANADA

MANUF SER NO 1455-04
YEAR BUILT 2012 CRN V7026.21

	COIL #1	COIL #2
MAWP (kPa)	<u>68948</u>	
TEMP (°C)	<u>93</u>	
NPS (IN)	<u>4</u>	
THICKNESS (MM)	<u>25.4</u>	
MATERIAL (S.A.)	<u>519</u>	
XRAY	<u>100</u>	
CORR ALL (MM)	<u>3.175</u>	
CODE	<u>B31.3</u>	
TEST PRESS (kPa)	<u>103422</u>	
DRWG. NO. <u>3764-01</u>	PWHT <u>1200</u>	
MDMT - <u>-20</u> °C - <u>4</u> °F		
INSP. NO. <u>Ⓐ 616772</u>		

SEP 29 2012

SUPPLEMENTAL VESSEL NAMEPLATE/STAMPING INFORMATION

Repair stamp: ☐ R stamp ☐ Other Stamp ☐ No stamp
Repaired By _____ Date of Repair _____
No Other Stamping Information

VESSEL DOCUMENTATION

Manufacturer Data Sheets: ☒ ASME U-1 or U-1A Forms ☐ U2 or U4 Supplemental Forms
☐ Documentation relating to repair/alteration/rerating work (R-1 form, calculations, revised drawings, inspection reports, etc.).

Name: Sterling Mack

Date: 09/28/2012

API 510 PRESSURE VESSEL EXTERNAL INSPECTION REPORT

Company Name: FMC Technologies Completion	
Field/Location: PA District	
Equipment Number: LH-0034	Eq/Circ. ID: LH0034-C2
Equipment Name/Service: Line Heater-Coil 2	
Physical Location: In FMC Yard	
Manufacturer: Coral Oilfield Services Inc.	Manufacturer Serial Number: 1455-03
Year Built: 2012	CRN: V7026.2
Alberta Registration Number: 616772	National Board Number: N/A

Is Vessel in-service? No

Reason for Inspection: Scheduled API-510 External Inspection

Condition of Nameplate and/or Bracket: Nameplate is intact and legible. The nameplate bracket is securely attached.

Internal Access? 4 man hatches.

Corrosion Monitoring Locations (CMLs) and baseline thickness data established? Yes

Grounding Device in Place and Secure? N/A, the equipment is grounded through the skid. The unit was not in service at the time of this inspection.

Condition of Foundation and Anchor Bolts: Anchor bolts are in place and secure. All 64 anchor bolt nuts are in place and secure. Front plate is secure.

Condition of Steel Supports, Saddles and Bolting: All support structural welds appear sound. Front plate is secure. There is minor chipping and surface corrosion on the supports.

Condition of Paint and/or Insulation: The paint is in acceptable condition with minor localized chipping and peeling. Coils have moderate corrosion with scaling.

Condition of Nozzles, Flanges, Repads, and Weepholes: Nozzle and flanges are in good condition. All flange bolting is in place and secure.

Condition of Welds; Head and Shell Metal Surfaces: All (exposed) metal surfaces are painted. There is no distortion or indication of corrosion beneath the paint coating. The pressure boundary welds have no visual weld defects.

Condition of Ladders, Stairways, and Brackets: Access ladders and stairways are in acceptable condition.

If Equipment has Anomalous Data, did the Inspector check it? N/A

Is There a PSV on the Vessel? No

If Yes, is it set at or below the MAWP?

Date PSV last tested (if there is a tag on the valve)

Comments:

Coils have moderate corrosion.



Recommendations:

Repairs Needed:

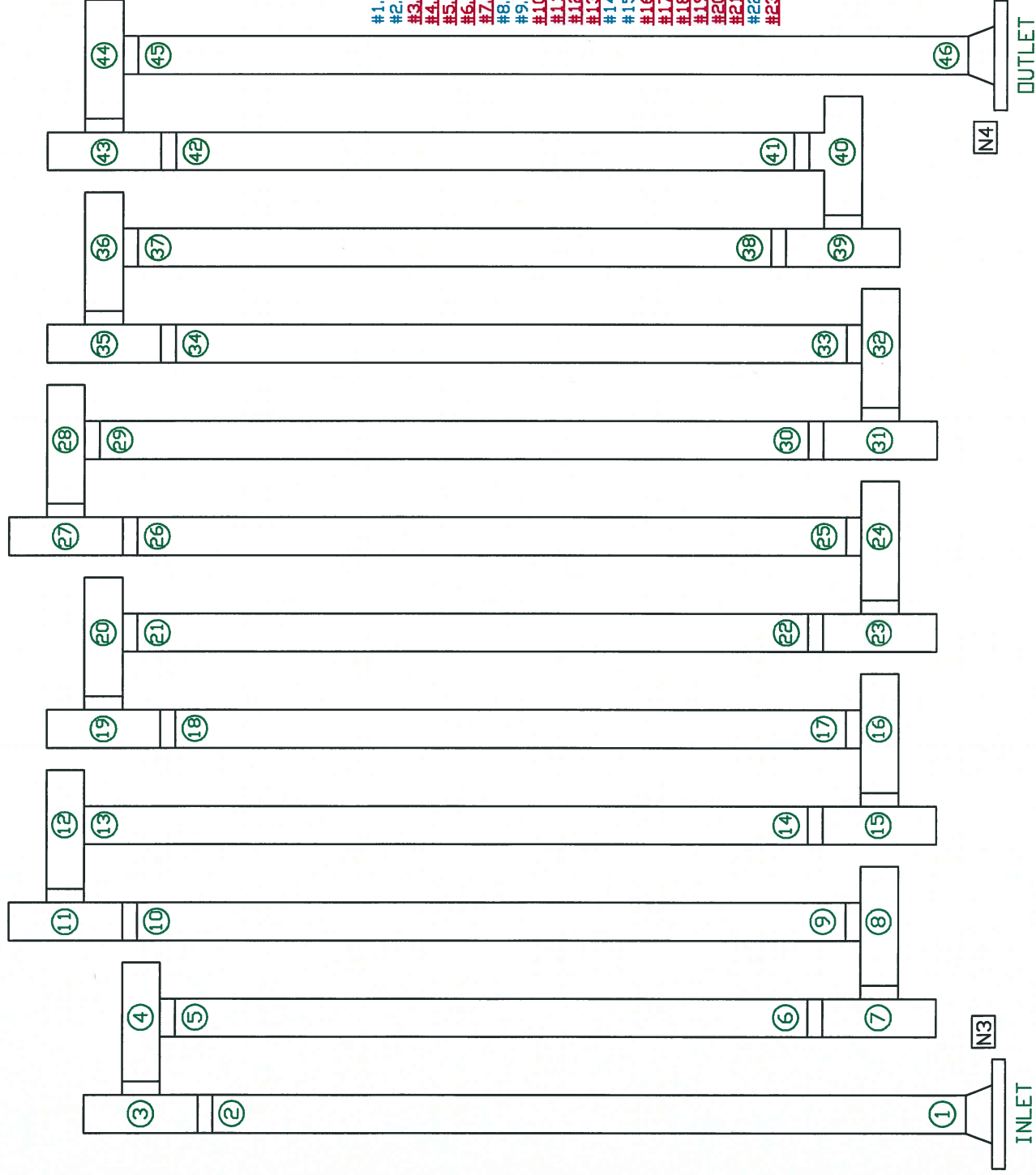
Robert W. Menke/JWW
API 510 Inspector Signature

0131
API 510 Inspector Number

11/12/2017
Date

EQUIP RETIREMENT DATE: 2/18/2023
NEXT INSPECTION IS DUE: 11/12/2018

NAMEPLATE INFO	
MFG	CORAL DILFIELD SERVICES INC.
SERIAL NUMBER	1455-04
ALBERTA REG. #	616772
DATE BUILT	2012
DESIGN P & T	10, 000 ps i @ 200°F



CAL BLK=35°F		PIPE=29°F	
BUSINESS UNIT	FMC TECHNOLOGIES COMPLETION		
EQ/CIRC ID #	LH0034-C2		
EQUIP NAME	LINE HEATER		
DWG #	LH0034-C2		

4 READINGS TAKEN AROUND
THE CIRCUMFERENCE
RECORDED THE LOWEST.

DESC: COIL 2 ON LINE HEATER
DWG#: LH0034-C2-1.01-46.01

Corrosion Monitoring Eq/Circ ID Analysis Report

Eaton Inspection Services
1595 So Hwy 150, Suite F, Evanston, WY 82930
Phone 307-789-3540 FAX 307-789-2822

Report Date:12/08/2017

(Report in Inches, Corrosion Rates in MPY)

Analysis: Straight Line

Unit: LH-0034
Eq/Circ ID: LH0034-C2
Eq Type: VESSEL
Class:
CM RBI:
Design Code: B31.3

Flange Rating: 5625 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 200 °F

Description: LH-0034 COIL 2; SN:1455-04

Summary: Group Name:
Insp. Due Date = 11/12/2018
Pred. Ret. Date = 02/18/2023

Group Description:
RCR = 0.1 MPY

Rem. Life (from last survey 11/12/2017) = 5.3 yrs

0 C.A. Status: No
Total Caution TMLs = 32

TML No	Location	Ctn	First Survey Thick	First Survey Nt	First Date	Previous Survey Thick	Previous Nt	Previous Date	Last Survey Thick	Last Nt	Last Date	Shrt Term Rate	Long Term Rate	Best Rate	Max Hist CR	Retirement Thickness	Rep TML CR	TML Retirement Date	TML Inspection Date
1.01	STR-R	N	1.005		09/28/2012	0.970 TC	0.970 TC	10/26/2016	0.984 TC	0.984 TC	11/12/2017	0	4.1	6.1	38.4	0.750 U	4.1	12/09/2074	11/12/2018
2.01	STR-R	N	1.015		09/28/2012	0.992 TC	0.992 TC	10/26/2016	0.985 TC	0.985 TC	11/12/2017	6.7	5.9	5.9	19.7	0.750 U	6.7	12/09/2052	11/12/2018
3.01	EL	Y *	1.296		09/28/2012	1.340 TC	1.340 TC	10/26/2016	1.252 TC	1.252 TC	11/12/2017	84.1	8.6	5.1	84.1	0.750 U	84.1	11/01/2023	11/12/2018
4.01	EL	Y	1.299		09/28/2012	1.345 TC	1.345 TC	10/26/2016	1.293 TC	1.293 TC	11/12/2017	49.7	1.2	0	49.7	0.750 U	49.7	10/16/2028	11/12/2018
5.01	STR-L	Y *	1.006		09/28/2012	0.996 TC	0.996 TC	10/26/2016	0.960 TC	0.960 TC	11/12/2017	34.4	9.0	7.5	34.4	0.750 U	34.4	12/21/2023	11/12/2018
6.01	STR-R	Y	0.982		09/28/2012	0.982 TC	0.982 TC	10/26/2016	0.954 TC	0.954 TC	11/12/2017	26.8	5.5	4.9	62.5	0.750 U	26.8	06/23/2025	11/12/2018
7.01	EL	Y	1.333		09/28/2012	1.304 TC	1.304 TC	10/26/2016	1.250 TC	1.250 TC	11/12/2017	51.6	16.2	13.3	51.6	0.750 U	51.6	07/22/2027	11/12/2018
8.01	EL	N	1.318		09/28/2012	1.271 TC	1.271 TC	10/26/2016	1.265 TC	1.265 TC	11/12/2017	5.7	10.3	10.8	36.4	0.750 U	10.3	11/12/2067	11/12/2018
9.01	STR-T	N	0.978		09/28/2012	0.955 TC	0.955 TC	10/26/2016	0.945 TC	0.945 TC	11/12/2017	9.6	6.4	8.4	67.5	0.750 U	9.6	03/06/2038	11/12/2018
10.01	STR-R	Y *	1.017		09/28/2012	1.028 TC	1.028 TC	10/26/2016	0.986 TC	0.986 TC	11/12/2017	40.2	6.1	3.8	40.2	0.750 U	40.2	09/26/2023	11/12/2018
11.01	EL	Y	1.328		09/28/2012	1.315 TC	1.315 TC	10/26/2016	1.254 TC	1.254 TC	11/12/2017	58.3	14.4	10.5	58.3	0.750 U	58.3	07/06/2026	11/12/2018
12.01	EL	Y	1.305		09/28/2012	1.288 TC	1.288 TC	10/26/2016	1.243 TC	1.243 TC	11/12/2017	43.0	12.1	10.5	94.2	0.750 U	43.0	05/01/2029	11/12/2018
13.01	STR-L	Y *	1.010		09/28/2012	1.024 TC	1.024 TC	10/26/2016	0.970 TC	0.970 TC	11/12/2017	51.6	7.8	4.8	51.6	0.750 U	51.6	02/16/2022	11/12/2018
14.01	STR-L	N	0.982		09/28/2012	0.952 TC	0.952 TC	10/26/2016	0.952 TC	0.952 TC	11/12/2017	0	5.9	8.6	66.3	0.750 U	5.9	02/07/2052	11/12/2018
15.01	EL	N	1.339		09/28/2012	1.275 TC	1.275 TC	10/26/2016	1.276 TC	1.276 TC	11/12/2017	0	12.3	12.6	43.3	0.750 U	12.3	08/18/2060	11/12/2018
16.01	EL	Y	1.323		09/28/2012	1.270 TC	1.270 TC	10/26/2016	1.225 TC	1.225 TC	11/12/2017	43.0	19.1	18.4	65.4	0.750 U	43.0	11/29/2028	11/12/2018
17.01	STR-T	Y *	1.020		09/28/2012	0.972 TC	0.972 TC	10/26/2016	0.936 TC	0.936 TC	11/12/2017	34.4	16.4	14.5	34.4	0.750 U	34.4	04/10/2023	11/12/2018
18.01	STR-L	Y	0.975		09/28/2012	0.996 TC	0.996 TC	10/26/2016	0.963 TC	0.963 TC	11/12/2017	31.6	2.3	0.2	76.7	0.750 U	31.6	08/09/2024	11/12/2018
19.01	EL	Y *	1.326		09/28/2012	1.291 TC	1.291 TC	10/26/2016	1.212 TC	1.212 TC	11/12/2017	75.5	22.3	18.3	82.7	0.750 U	75.5	12/26/2023	11/12/2018
20.01	EL	Y *	1.332		09/28/2012	1.362 TC	1.362 TC	10/26/2016	1.265 TC	1.265 TC	11/12/2017	92.7	13.1	6.6	92.7	0.750 U	92.7	06/03/2023	11/12/2018

Corrosion Monitoring Eq/Circ ID Analysis Report

Eaton Inspection Services
1595 So Hwy 150, Suite F, Evanston, WY 82930
Phone 307-789-3540 FAX 307-789-2822

Report Date:12/08/2017

(Report in Inches, Corrosion Rates in MPY)
Analysis: Straight Line

Unit: LH-0034
Eq/Circ ID: LH0034-C2
Eq Type: VESSEL
Class:
CM RBI:
Design Code: B31.3

Flange Rating: 5625 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 200 °F

Description: LH-0034 COIL 2; SN:1455-04

Summary: Group Name:
Insp. Due Date = 11/12/2018
Pred. Ret. Date = 02/18/2023

Group Description:
RCR = 0.1 MPY
Rem. Life (from last survey 11/12/2017) = 5.3 yrs

0 C.A. Status: No
Total Caution TMLs = 32

TML No	Location	Ctn TML	First Survey Thick Nt	First Date	Previous Survey Thick Nt	Previous Date	Last Survey Thick Nt	Last Date	Shrt Term Rate	Long Term Rate	Best Rate	Max Hist CR	Retirement Thickness	Rep TML CR	TML Retirement Date	TML Inspection Date
21.01	STR-B	Y	1.004	09/28/2012	1.003 TC	10/26/2016	0.973 TC	11/12/2017	28.7	6.1	4.6	28.7	0.750 U	28.7	08/20/2025	11/12/2018
22.01	STR-B	N	0.984	09/28/2012	0.944 TC	10/26/2016	0.948 TC	11/12/2017	0	7.0	10.0	66.0	0.750 U	7.0	02/24/2046	11/12/2018
23.01	EL	Y	1.286	09/28/2012	1.316 TC	10/26/2016	1.270 TC	11/12/2017	44.0	3.1	2.7	44.0	0.750 U	44.0	09/07/2029	11/12/2018
24.01	EL	Y	1.285	09/28/2012	1.310 TC	10/26/2016	1.235 TC	11/12/2017	71.7	9.8	6.5	72.1	0.750 U	71.7	08/18/2024	11/12/2018
25.01	STR-R	Y *	0.989	09/28/2012	0.990 TC	10/26/2016	0.954 TC	11/12/2017	34.4	6.8	7.6	38.4	0.750 U	34.4	10/18/2023	11/12/2018
26.01	STR-R	Y *	0.953	09/28/2012	1.011 TC	10/26/2016	0.956 TC	11/12/2017	52.6	0	0	144.3	0.750 U	52.6	10/12/2021	11/12/2018
27.01	EL	Y	1.322	09/28/2012	1.301 TC	10/26/2016	1.248 TC	11/12/2017	50.7	14.4	12.4	50.7	0.750 U	50.7	09/09/2027	11/12/2018
28.01	EL	Y	1.344	09/28/2012	1.300 TC	10/26/2016	1.250 TC	11/12/2017	47.8	18.4	13.7	47.8	0.750 U	47.8	04/29/2028	11/12/2018
29.01	STR-T	N	0.998	09/28/2012	0.973 TC	10/26/2016	0.976 TC	11/12/2017	0	4.3	6.1	45.2	0.750 U	4.3	06/04/2070	11/12/2018
30.01	STR-L	N	0.977	09/28/2012	0.974 TC	10/26/2016	0.971 TC	11/12/2017	2.9	1.2	3.2	70.6	0.750 U	2.9	01/27/2094	11/12/2018
31.01	EL	Y	1.305	09/28/2012	1.305 TC	10/26/2016	1.264 TC	11/12/2017	39.2	8.0	5.9	39.2	0.750 U	39.2	12/23/2030	11/12/2018
32.01	EL	Y *	1.324	09/28/2012	1.346 TC	10/26/2016	1.247 TC	11/12/2017	94.7	15.0	8.0	94.7	0.750 U	94.7	02/11/2023	11/12/2018
33.01	STR-L	Y	1.001	09/28/2012	0.991 TC	10/26/2016	0.971 TC	11/12/2017	19.1	5.9	6.3	28.6	0.750 U	19.1	06/08/2029	11/12/2018
34.01	STR-R	Y	0.980	09/28/2012	0.984 TC	10/26/2016	0.966 TC	11/12/2017	17.2	2.7	3.5	106.7	0.750 U	17.2	06/04/2030	11/12/2018
35.01	EL	Y *	1.337	09/28/2012	1.384 TC	10/26/2016	1.286 TC	11/12/2017	93.7	10.0	4.2	93.7	0.750 U	93.7	08/02/2023	11/12/2018
36.01	EL	Y *	1.321	09/28/2012	1.357 TC	10/26/2016	1.205 TC	11/12/2017	145.3	22.6	15.4	145.3	0.750 U	145.3	12/30/2020	11/12/2018
37.01	STR-BT	N	0.999	09/28/2012	0.973 TC	10/26/2016	0.973 TC	11/12/2017	0	5.1	5.9	26.6	0.750 U	5.1	08/04/2061	11/12/2018
38.01	STR-T	N	0.951	09/28/2012	0.969 TC	10/26/2016	0.960 TC	11/12/2017	8.6	0	0.7	150.4	0.750 U	8.6	04/14/2042	11/12/2018
39.01	EL	Y	1.315	09/28/2012	1.272 TC	10/26/2016	1.227 TC	11/12/2017	43.0	17.2	18.0	75.8	0.750 U	43.0	12/16/2028	11/12/2018
40.01	EL	Y	1.302	09/28/2012	1.259 TC	10/26/2016	1.219 TC	11/12/2017	38.2	16.2	17.3	76.8	0.750 U	38.2	02/21/2030	11/12/2018
41.01	STR-T	Y	0.984	09/28/2012	0.951 TC	10/26/2016	0.934 TC	11/12/2017	16.3	9.8	11.2	55.1	0.750 U	16.3	02/25/2029	11/12/2018

Corrosion Monitoring Eq/Circ ID Analysis Report

Eaton Inspection Services
1595 So Hwy 150, Suite F, Evanston, WY 82930
Phone 307-789-3540 FAX 307-789-2822

Report Date: 12/08/2017

(Report in Inches, Corrosion Rates in MPY)
Analysis: Straight Line

Unit: LH-0034
Eq/Circ ID: LH0034-C2
Eq Type: VESSEL
Class:
CM RBI:
Design Code: B31.3

Flange Rating: 5625 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 200 °F

Description: LH-0034 COIL 2; SN:1455-04

Summary: Group Name:
Insp. Due Date = 11/12/2018
Pred. Ret. Date = 02/18/2023

Group Description:
RCR = 0.1 MPY
Rem. Life (from last survey 11/12/2017) = 5.3 yrs

0 C.A. Status: NO
Total Caution TMLs = 32

TML No	Location	Ctn	First Survey Thick	First Survey Nt	First Date	Previous Survey Thick	Previous Survey Nt	Previous Date	Last Survey Thick	Last Survey Nt	Last Date	Shrt Term Rate	Long Term Rate	Best Rate	Max Hist CR	Retirement Thickness	Rep TML CR	TML Retirement Date	TML Inspection Date
42.01	STR-L	N	0.969		09/28/2012	0.949 TC		10/26/2016	0.947 TC		11/12/2017	1.9	4.3	6.5	95.1	0.750 U	4.3	09/06/2063	11/12/2018
43.01	EL	Y	1.315		09/28/2012	1.284 TC		10/26/2016	1.226 TC		11/12/2017	55.5	17.4	15.8	55.5	0.750 U	55.5	06/11/2026	11/12/2018
44.01	EL	Y	1.306		09/28/2012	1.301 TC		10/26/2016	1.235 TC		11/12/2017	63.1	13.9	12.7	63.1	0.750 U	63.1	07/20/2025	11/12/2018
45.01	STR-T	N	1.010		09/28/2012	0.983 TC		10/26/2016	0.972 TC		11/12/2017	10.5	7.4	7.3	16.7	0.750 U	10.5	01/03/2039	11/12/2018
46.01	STR-L	N	0.991		09/28/2012	0.964 TC		10/26/2016	0.960 TC		11/12/2017	3.8	6.1	7.5	39.4	0.750 U	6.1	04/16/2052	11/12/2018

Eaton Inspection Services
1595 So Hwy 150, Suite F, Evanston, WY 82930
Phone 307-789-3540 FAX 307-789-2822

Report Date: 12/08/2017

Unit: LH-0034
Eq/Circ ID: LH0034-C2
Design Code: B31.3
Eq Type: VESSEL
Class:
CM RBI:

(Report in Inches, Corrosion Rates in MPY)
Analysis: Straight Line

Flange Rating: 5625 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 200 °F

Description: LH-0034 COIL 2; SN:1455-04

TML Corrosion Rates are each the Maximum of:
(A) -- Calculated Corrosion Rates x 1.00 : Varies
(B) -- Default Corrosion Rate : 0.1 MPY

Representative Corrosion Rate is the Maximum of:
(A) -- Average Corrosion Rate x 1.10 : Not Used.
(B) -- Average Max 25.0% of TMLs, Min of 2 : Not Used.
(C) -- Formula Corrosion Rate (Sigma = 1.28) : Not Used.
(D) -- Default Corrosion Rate : 0.1 MPY
Representative Corrosion Rate = 0.1 MPY

TML thickness readings have not been compensated for high Temperatures.
TML thickness readings have not been compensated for growths.

TML Life calculations are based on the Representative TML Corrosion Rate using Short Term and Long Term Corrosion Rates.

Nominal thickness is used for TML corrosion rate calculations with less than 3 surveys.

Minimum time between inspections required for corrosion rate calculation is 3 months.

TML Inspection Interval is:
(A) -- 1.00 Years.

Eq/Circ ID Last Survey Date is based on the LAST of the last 0% of TML survey dates (Min 1).

Eq/Circ ID Estimated life = 5.3 years from the most recent survey date.
(Estimated Life based on the ave of the earliest 25% (Min 6) TML retirement dates.)

Predicted Eq/Circ ID Retirement date is 02/18/2023

Recommended Eq/Circ UT/RT Inspection Date is 11/12/2018
UT/RT Inspection Interval is 1.00 years.

Caution TML Logic: TML Corrosion Rate > 15.0 MPY .OR. TML Remaining Life < 3.00 Years.
There are 32 Caution TMLs in this Eq/Circ ID.



1595 So. Hwy 150, Suite F
Evanston, WY 82930

Inspections Performed for: FMC Technologies Completion – PA District	
Inspection Report for: LH-0034 Fuel Gas Scrubber	Date Last Inspected: 11/12/2017
Remaining Life: 20+ YRS	Next UT: 11/12/2018 Next VT: 11/12/2018
Representative Corrosion Rate: 5.1 MPY	Mfg Serial #: Unknown
Manufacturer: No Access to Nameplate	Alberta Registration #: N/A
Year Built: Unknown	Canadian Registration #: N/A

FMC Technologies Completion LH-0034 Fuel Gas Scrubber



PRESSURE VESSEL INVENTORY

☐ Code ☐ Code-invalidated ☐ Non-Code ☒ Unknown ☐ Code-Exempt

VESSEL ID INFORMATION

Company Name : FMC Technologies Completion
Facility/Location Name : Grand Junction
Field Name :
Equipment Number : LH0034-FGS
Eq/Circ. ID : LH0034-FGS
Equipment Name/Service : Fuel Gas Scrubber
Physical Location : FMC Grand Junction Yard
GPS Coordinates :

VESSEL DESCRIPTION AND SERVICE CONDITIONS

Type of Vessel: Vertical Fuel Gas Scrubber

Vessel Size: 8.625" OD

Operating Pressure Range (psig): Not in service during this inspection.

Operating Temperature Range (°F): Not in service during this inspection.

Does the vessel have Internal Access? No

Specify type of internal access, if available:

Vessel is located: Outside

MISCELLANEOUS VESSEL INFORMATION: (IF VESSEL HAS NO NAMEPLATE, PLEASE OBTAIN AS MUCH OF THE FOLLOWING AS POSSIBLE FOR WORST CASE TMIN CALCULATIONS, *may have to check with operations personnel*).

Is there a Long Seam?: No

Any stamping pertaining to materials of construction?: No

****Diameter****(strap equipment): 8.625" OD

Pressure (highest the equip. sees in the process and/or check PSV setting if available) psi

Temperature (highest the equipment would ever see in the process):

Approximate Date built or installed (check associated equipment or info at facility):

Any other pertinent information

PRESSURE VESSEL INVENTORY

ORIGINAL VESSEL NAMEPLATE/STAMPING INFORMATION

Code stamp: ☐ U stamp ☐ U2 stamp ☐ UM stamp ☐ API-ASME ☐ No stamp

No Access To Nameplate



SUPPLEMENTAL VESSEL NAMEPLATE/STAMPING INFORMATION

Repair stamp: ☐ R stamp ☐ Other Stamp ☐ No stamp

No supplemental nameplate or stamping located.

VESSEL DOCUMENTATION

- ☐ Manufacturer Data Sheets: (ASME U-1 or U-1A Forms)
- ☐ U2 or U4 Supplemental Forms
- ☐ Documentation relating to repair/alteration/rerating work (R-1 form, calculations, revised drawings, inspection reports, etc.).

Name: Dexter Bonner Date: 01/21/2014

API 510 PRESSURE VESSEL EXTERNAL INSPECTION

Company Name: FMC Technologies Completion	
District: PA District	
Physical Location: In FMC Yard	
Equipment Name: LH-0034 Fuel Gas Scrubber	Eq Circ ID: LH0034-FGS
Manufacturer: No Access to Nameplate	Mfg Serial #: Unknown
Date Built: Unknown	National Board #: Unknown
Alberta Registration #: Unknown	Canadian Registration #: Unknown

Is Vessel in-service? No

Reason for Inspection: Scheduled API-510 External Inspection

Condition of Nameplate and/or Bracket: Vessel is mounted where the nameplate cannot be viewed.

Internal Access: No

Corrosion Monitoring Locations (CMLs) and baseline thickness data established: Yes

Grounding Device in Place and Secure? N/A, the equipment is grounded through the skid. The unit was not in service at the time of this inspection.

Condition of Foundation and Anchor Bolts: Anchor bolts are in place and secure. All (4) anchor bolt nuts are in place and secure. Vessel is welded to the baseplate which is in good condition.

Condition of Steel Supports, Saddles, and Bolting: All support structural welds appear sound. Vessel is welded to baseplate.

Condition of Paint and/or Insulation: The paint is in acceptable condition with minor localized chipping and peeling.

Condition of Nozzles, Flanges, Repads, and Weepholes: All threaded connections. There is no evidence of leaks at any of the threaded connections.

Condition of Welds; Head and Shell Metal Surfaces: All (exposed) metal surfaces are painted. There is no distortion or indication of corrosion beneath the paint coating. The pressure boundary welds have no visual weld defects.

Condition of Ladders, Stairways, and Brackets: N/A

If Equipment has Anomalous Data, did the Inspector check it? N/A

Is There a PSV on the Vessel? PSV is removed for testing.

If yes, is it set at or below the MAWP?

Date PSV last tested (if there is a tag on the valve):

Comments:

Recommendations:

Repairs Needed:

Robert W. Menke/JWW
API 510 Inspector Signature

0131
API 510 Inspector Number

11/10/2017
Date

API 570 Piping External Inspection

Company Name: FMC Technologies	District: Pennsylvania
Line Name/Number: LH-0034 Associated Piping	
Size/Sched. Of Pipe: 3"	Eq/Circ. ID: LH0034-P
Service/System:	Piping Class ☐ 1 ☒ 2 ☐ 3 ☐ Other
Design Pressure: 10,000 PSI	Materials: ☒ CS ☐ SS ☐ Other
Design Temperature: 200°F	Note Stamping (If Any)
P&ID#:	Flange Rating:

Reason for Inspection: ☐ Initial API-570 on Stream Inspection.

☒ Scheduled API-570 External Inspection. ☐ Other:

Testing Performed:

☒ Visual ☒ UT ☐ PT ☐ MT ☐ Other:

Comments:

Insulation Observations:	Comments:
☐ Serviceable ☒ Not Insulated ☐ Missing/Damaged ☐ CUI Identification ☐ Corrosion Present (Describe) ☐ Other ☒ No Issues	Piping is not insulated.

Coating Condition:	Comments:
☐ Good ☒ Fair, Some Blistering/Peeling ☒ Corrosion Present (Describe) ☐ Other ☐ No Issues	Light chipping of coating with light surface corrosion present.

Loss of Containment:	Comments:
☐ Fluid Loss (Indicate How Much) ☐ Seeping or Evidence of Past Leakage ☐ Dripping (Size of Drops/Drops Per Minute) ☐ Leaking (Size of Stream, Noise Level, etc.) ☐ Clamps ☐ Other ☒ None Identified	Piping was not in service during this inspection.

Condition of Welds:	Comments:
☒ Welds Are Full, Smooth and Well Profiled ☐ Incomplete Fusion/Penetration ☐ Crack Located Near Weld Seam ☐ Weld Does Not Appear to Be Original ☐ Joints-Misaligned ☐ Undercut ☐ Other ☒ No Issues	Welds are full with a good weld profile.

Relief Device:	Comments:
☐ PSV ☒ No PSV ☐ Rupture Disk ☐ Atmospheric ☐ No Relief Device Identified For This Equipment ☐ Tag Secure and Legible ☐ Set Pressure At Or Below MAWP ☐ Block Valve Not Locked/Car Sealed In Open Position ☐ Improper Drain Hole/Weather Cap On Atmos. Discharge ☐ Obstruction (i.e. Debris) ☐ Relief Installed In A Position Other Than Horiz. Or Upright ☐ Other ☒ No Issues	No PSV.

Supports/Hangers:	Comments:
☐ In Serviceable Condition ☐ Foundation Is Damaged ☐ Additional Support Needed ☒ Hanger/Support Is Distorted/Broken/Missing ☐ Pipe Slide Or Shoe Is Off Of The Support ☐ Makeshift Support ☐ Loose Support Needed To Be Tightened ☐ Fireproofing Missing Or Damaged ☐ Support/Hanger Is Corroded ☐ Other ☐ No Issues	The supports are missing clamps and are bent.

Flanged Connections:	Comments:
☒ Bolting Serviceable ☐ Short, Missing Or Damaged Bolting ☐ Nuts Lack Full Engagement ☒ Flanges Serviceable ☐ Flange Material Or Rating Inconsistent For System ☐ Flanges Deformed Or Damaged ☒ Corrosion Present (Describe) ☐ Gaskets ☐ Flange Rating Issues ☐ Other ☐ No Issues	Bolts are in acceptable condition. The flanges have light chipping and peeling. There is light surface corrosion on the flanges.

Mechanical Observations:	Comments:
☐ Deadleg ☐ Damaged Flex Hose ☐ Crack ☐ Biological Growth ☐ Threaded Exposed ☐ Threaded Connections Not Seal Welded ☐ Expansion Joint Issues ☐ Low Point Without Drain ☐ Open Ended ☐ Vibration (Excessive) ☐ Weephole ☐ Other ☒ No Issues	There are no mechanical issues.

EQUIP RETIREMENT DATE: 3/19/2057
NEXT INSPECTION IS DUE: 11/10/2018

- #2. 01- BTM SHELL-F 0. 310 TC
- #2. 02- BTM SHELL-L 0. 313 TC
- #2. 03- BTM SHELL-BK 0. 302 TC
- #2. 04- BTM SHELL-R 0. 316 TC
- #3. 01- TOP SHELL-F 0. 318 TC
- #3. 02- TOP SHELL-L 0. 316 TC
- #3. 03- TOP SHELL-BK 0. 321 TC
- #3. 04- TOP SHELL-R 0. 324 TC
- #4. 01- TOP HEAD-F 0. 292 TC
- #4. 02- TOP HEAD-L 0. 300 TC
- #4. 03- TOP HEAD-BK 0. 291 TC
- #4. 04- TOP HEAD-R 0. 299 TC



TC-560

NAMEPLATE INFO	
MFG	UNKNOWN
SERIAL NUMBER	NO ACCESS
NATIONAL BOARD #	UNKNOWN
DATE BUILT	UNKNOWN
DESIGN P & T	NO ACCESS
NOTE	NO ACCESS TO NAMEPLATE

CAL BLK=25°F		VESSEL=23°F	
BUSINESS UNIT	FMC TECHNOLOGIES COMPLETION		
EQ/CIRC ID #	LH0034-FGS		
EQUIP NAME	FUEL GAS SCRUBBER		
LOCATION	WITH LINE HEATER LH-0034		
DWG #	LH0034-FGS		

DESC: FUEL GAS SCRUBBER WITH LH-0034
DWG#: LH0034-FGS-2.01-4.04

Corrosion Monitoring Eq/Circ ID Analysis Report

Eaton Inspection Services
1595 So Hwy 150, Suite F, Evanston, WY 82930
Phone 307-789-3540 FAX 307-789-2822

Report Date: 12/08/2017

(Report in Inches, Corrosion Rates in MPY)
Analysis: Straight Line

Unit: LH-0034
Eq/Circ ID: LH0034-FGS
Eq Type: VESSEL
Class:
CM RBI:
Design Code: S8/D1

Flange Rating: 3705 lb/in²
Design Pressure: 150 lb/in²
Design Temperature: 100 °F

Description: FUEL GAS SCRUBBER WITH LH-0034
NO ACCESS TO NAMEPLATE

Summary: Group Name:
Insp. Due Date = 11/10/2018
Pred. Ret. Date = 03/19/2057

Group Description:
RCR = 5.1 MPY
Rem. Life (from last survey 11/10/2017) = 39.4 yrs

0 C.A. Status: NO
Total Caution TMLs = 0

TML No	Location	Ctn	First Survey Thick	First Survey Nt	First Date	Previous Survey Thick	Previous Nt	Previous Date	Last Survey Thick	Last Nt	Last Date	Shrt Term Rate	Long Term Rate	Best Rate	Max Hist CR	Retirement Thickness	Rep TML CR	TML Retirement Date	TML Inspection Date
2.01	BTM SHELL-F	N *	0.314 TC		10/25/2016			N/A	0.310 TC		11/10/2017	N/A	3.8	N/A	3.8	0.188 S	3.8	01/07/2050	11/10/2018
2.02	BTM SHELL-L	N *	0.316 TC		01/24/2014	0.317 TC		10/25/2016	0.313 TC		11/10/2017	3.8	0.8	0.6	3.8	0.188 S	3.8	10/22/2050	11/10/2018
2.03	BTM SHELL-BK	N *	0.310 TC		01/24/2014	0.304 TC		10/25/2016	0.302 TC		11/10/2017	1.9	2.1	2.3	5.9	0.188 S	2.1	03/29/2072	11/10/2018
2.04	BTM SHELL-R	N	0.317 TC		01/24/2014	0.318 TC		10/25/2016	0.316 TC		11/10/2017	1.9	0.3	0.1	1.9	0.188 S	1.9	05/02/2085	11/10/2018
3.01	TOP SHELL-F	N	0.315 TC		10/25/2016			N/A	0.315 RR		11/10/2017	N/A	0	N/A	0	0.188 S	0.1	11/19/3289	11/10/2018
3.02	TOP SHELL-L	N *	0.320 TC		01/24/2014	0.324 TC		10/25/2016	0.316 TC		11/10/2017	7.7	1.1	0.5	7.7	0.188 S	7.7	07/05/2034	11/10/2018
3.03	TOP SHELL-BK	N *	0.330 TC		01/24/2014	0.325 TC		10/25/2016	0.321 TC		11/10/2017	3.8	2.4	2.4	4.9	0.188 S	3.8	11/29/2052	11/10/2018
3.04	TOP SHELL-R	N	0.312 TC		01/24/2014	0.318 TC		10/25/2016	0.318 RR		11/10/2017	0	0	0	0	0.188 S	0.1	11/21/3319	11/10/2018
4.01	TOP HEAD-F	N *	0.295 TC		01/24/2014	0.294 TC		10/25/2016	0.292 TC		11/10/2017	1.9	0.8	0.7	1.9	0.169 S	1.9	10/22/2082	11/10/2018
4.02	TOP HEAD-L	N	0.291 TC		01/24/2014	0.291 TC		10/25/2016	0.291 RR		11/10/2017	0	0	0	0	0.169 S	0.1	11/19/3241	11/10/2018
4.03	TOP HEAD-BK	N	0.298 TC		01/24/2014	0.292 TC		10/25/2016	0.291 TC		11/10/2017	1.0	1.8	2.1	5.9	0.169 S	1.8	11/10/2085	11/10/2018
4.04	TOP HEAD-R	N	0.290 TC		01/24/2014	0.292 TC		10/25/2016	0.292 RR		11/10/2017	0	0	0	0	0.169 S	0.1	11/19/3251	11/10/2018

Eaton Inspection Services
1595 So Hwy 150, Suite F, Evanston, WY 82930
Phone 307-789-3540 FAX 307-789-2822

Report Date: 12/08/2017

Unit: LH-0034
Eq/Circ ID: LH0034-FGS
Design Code: S8/D1
Eq Type: VESSEL
Class:
CM RBI:

(Report in Inches, Corrosion Rates in MPY)
Analysis: Straight Line

Flange Rating: 3705 lb/in²
Design Pressure: 150 lb/in²
Design Temperature: 100 °F

Description: FUEL GAS SCRUBBER WITH LH-0034
NO ACCESS TO NAMEPLATE

TML Corrosion Rates are each the Maximum of:
(A) -- Calculated Corrosion Rates x 1.00 : Varies
(B) -- Default Corrosion Rate : 0.1 MPY

Representative Corrosion Rate is the Maximum of:
(A) -- Average Corrosion Rate x 1.00 : 2.3 MPY
(B) -- Average Max 25.0% of TMLs, Min of 2 : 5.1 MPY
(C) -- Formula Corrosion Rate (Sigma = 1.28) : 3.1 MPY
(D) -- Default Corrosion Rate : 0.1 MPY
Representative Corrosion Rate = 5.1 MPY

TML thickness readings have not been compensated for high Temperatures.
TML thickness readings have been compensated for growths.

TML Life calculations are based on the Representative TML Corrosion Rate using Short Term and Long Term Corrosion Rates.

Nominal thickness is used for TML corrosion rate calculations with less than 3 surveys.

Minimum time between inspections required for corrosion rate calculation is 6 months.

TML Inspection Interval is:
(A) -- 1.00 years.

Eq/Circ ID Last Survey Date is based on the LAST of the last 0% of TML survey dates (Min 1).

Eq/Circ ID Estimated life = 39.4 years from the most recent survey date.
(Estimated Life based on the ave of the earliest 0% (Min 6) TML retirement dates.)

Predicted Eq/Circ ID Retirement date is 03/19/2057

Recommended Eq/Circ UT/RT Inspection Date is 11/10/2018
UT/RT Inspection Interval is 1.00 years.

Caution TML Logic: TML Corrosion Rate > 15.0 MPY .OR. TML Remaining Life < 3.00 Years.
There are 0 Caution TMLs in this Eq/Circ ID.

API 570 Piping External Inspection

Company Name: FMC Technologies	District: Pennsylvania
Line Name/Number: LH-0034 Associated Piping	
Size/Sched. Of Pipe: 3"	Eq/Circ. ID: LH0034-P
Service/System:	Piping Class ☐ 1 ☒ 2 ☐ 3 ☐ Other
Design Pressure: 10,000 PSI	Materials: ☒ CS ☐ SS ☐ Other
Design Temperature: 200°F	Note Stamping (If Any)
P&ID#:	Flange Rating:

Reason for Inspection: ☐ Initial API-570 on Stream Inspection.

☒ Scheduled API-570 External Inspection. ☐ Other:

Testing Performed:

☒ Visual ☒ UT ☐ PT ☐ MT ☐ Other:

Comments:

Insulation Observations:	Comments:
☐ Serviceable ☒ Not Insulated ☐ Missing/Damaged ☐ CUI Identification ☐ Corrosion Present (Describe) ☐ Other ☒ No Issues	Piping is not insulated.

Coating Condition:	Comments:
☐ Good ☒ Fair, Some Blistering/Peeling ☒ Corrosion Present (Describe) ☐ Other ☐ No Issues	Light chipping of coating with light surface corrosion present.

Loss of Containment:	Comments:
☐ Fluid Loss (Indicate How Much) ☐ Seeping or Evidence of Past Leakage ☐ Dripping (Size of Drops/Drops Per Minute) ☐ Leaking (Size of Stream, Noise Level, etc.) ☐ Clamps ☐ Other ☒ None Identified	Piping was not in service during this inspection.

Condition of Welds:	Comments:
☒ Welds Are Full, Smooth and Well Profiled ☐ Incomplete Fusion/Penetration ☐ Crack Located Near Weld Seam ☐ Weld Does Not Appear to Be Original ☐ Joints-Misaligned ☐ Undercut ☐ Other ☒ No Issues	Welds are full with a good weld profile.

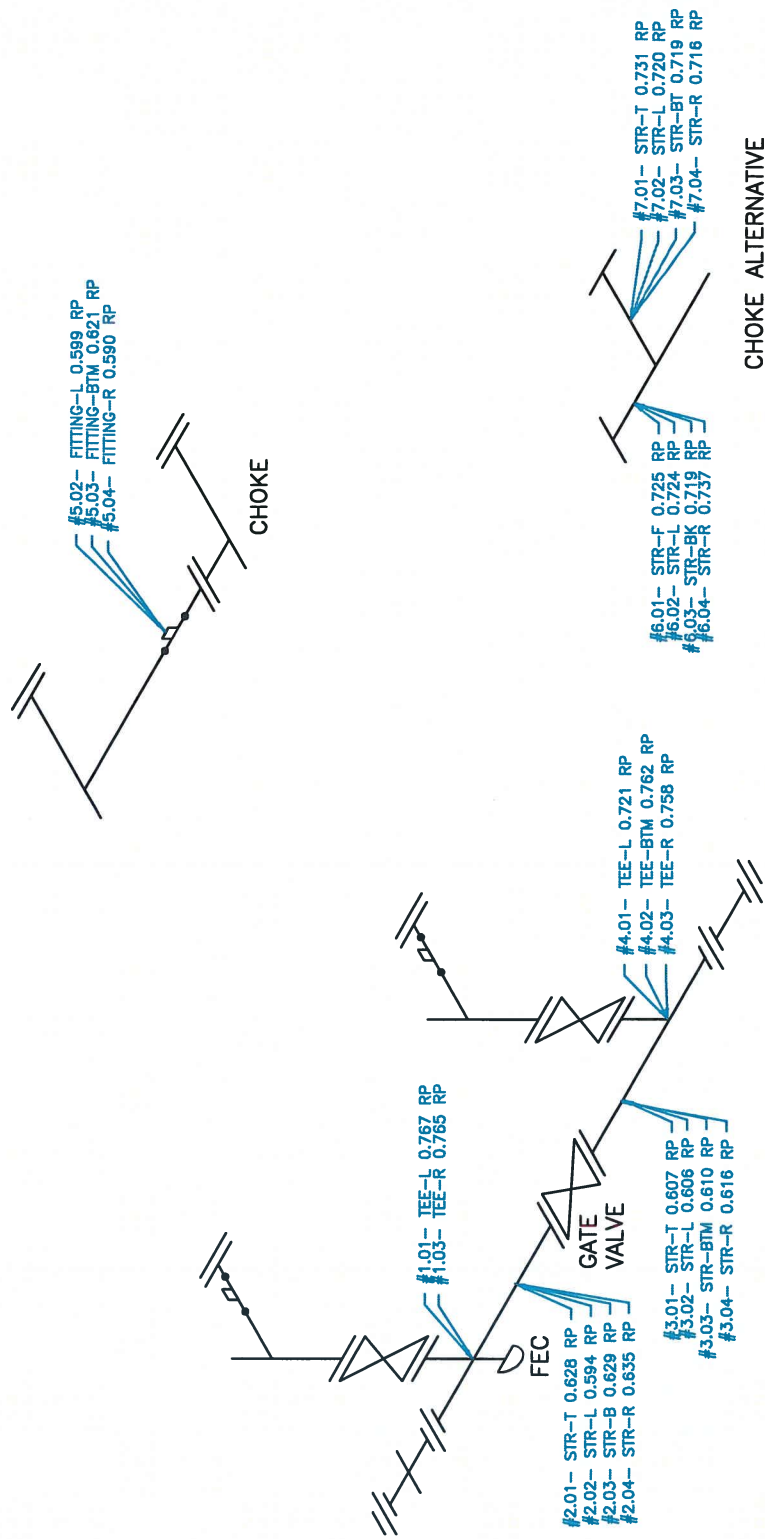
Relief Device:	Comments:
☐ PSV ☒ No PSV ☐ Rupture Disk ☐ Atmospheric ☐ No Relief Device Identified For This Equipment ☐ Tag Secure and Legible ☐ Set Pressure At Or Below MAWP ☐ Block Valve Not Locked/Car Sealed In Open Position ☐ Improper Drain Hole/Weather Cap On Atmos. Discharge ☐ Obstruction (i.e. Debris) ☐ Relief Installed In A Position Other Than Horiz. Or Upright ☐ Other ☒ No Issues	No PSV.

Supports/Hangers:	Comments:
☐ In Serviceable Condition ☐ Foundation Is Damaged ☐ Additional Support Needed ☒ Hanger/Support Is Distorted/Broken/Missing ☐ Pipe Slide Or Shoe Is Off Of The Support ☐ Makeshift Support ☐ Loose Support Needed To Be Tightened ☐ Fireproofing Missing Or Damaged ☐ Support/Hanger Is Corroded ☐ Other ☐ No Issues	The supports are missing clamps and are bent.

Flanged Connections:	Comments:
☒ Bolting Serviceable ☐ Short, Missing Or Damaged Bolting ☐ Nuts Lack Full Engagement ☒ Flanges Serviceable ☐ Flange Material Or Rating Inconsistent For System ☐ Flanges Deformed Or Damaged ☒ Corrosion Present (Describe) ☐ Gaskets ☐ Flange Rating Issues ☐ Other ☐ No Issues	Bolts are in acceptable condition. The flanges have light chipping and peeling. There is light surface corrosion on the flanges.

Mechanical Observations:	Comments:
☐ Deadleg ☐ Damaged Flex Hose ☐ Crack ☐ Biological Growth ☐ Threaded Exposed ☐ Threaded Connections Not Seal Welded ☐ Expansion Joint Issues ☐ Low Point Without Drain ☐ Open Ended ☐ Vibration (Excessive) ☐ Weephole ☐ Other ☒ No Issues	There are no mechanical issues.

EQUIP RETIREMENT DATE: 11/25/4017
NEXT INSPECTION IS DUE: 11/10/2018



CHOKE ALTERNATIVE

DESC: ASSOCIATED PIPING ON LINE HEATER
DWG#: LH0034-P-1.01-7.04

LH0034-P

TEMP=29°F
CAL BLK=31°F

FH2E-D

Corrosion Monitoring Eq/Circ ID Analysis Report

Eaton Inspection Services
1595 So Hwy 150, Suite F, Evanston, WY 82930
Phone 307-789-3540 FAX 307-789-2822

Report Date: 12/08/2017

(Report in Inches, Corrosion Rates in MPY)
Analysis: Straight Line

Unit: LH-0034
Eq/Circ ID: LH0034-P
Eq Type: PIPING
Class:
CM RBI:
Design Code: B31.3

Flange Rating: 5625 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 200 °F

Description: LH-0034 ASSOCIATED PIPING

Summary: Group Name: 11/10/2018
Insp. Due Date = 11/25/4017
Pred. Ret. Date =

Group Description:
RCR = 0.1 MPY
Rem. Life (from last survey 11/10/2017) = 2000.0 yrs

0 C.A. Status: No
Total Caution TMLs = 0

TML No	Location	Ctn TML	First Survey Thick	First Date	Previous Survey Thick	Previous Date	Last Survey Thick	Last Date	Shrt Term Rate	Long Term Rate	Best Rate	Max Hist CR	Retirement Thickness	Rep TML CR	TML Retirement Date	TML Inspection Date
1.01	TEE-L	N *		N/A		N/A	0.767 RP	11/10/2017	N/A	N/A	N/A	13.6	0.260 P	0.1	11/25/4017	11/10/2018
1.03	TEE-R	N *		N/A		N/A	0.765 RP	11/10/2017	N/A	N/A	N/A	3.6	0.260 P	0.1	11/25/4017	11/10/2018
2.01	STR-T	N *		N/A		N/A	0.628 RP	11/10/2017	N/A	N/A	N/A	15.8	0.260 P	0.1	11/25/4017	11/10/2018
2.02	STR-L	N *		N/A		N/A	0.594 RP	11/10/2017	N/A	N/A	N/A	61.0	0.260 P	0.1	11/25/4017	11/10/2018
2.03	STR-B	N *		N/A		N/A	0.629 RP	11/10/2017	N/A	N/A	N/A	16.7	0.260 P	0.1	11/25/4017	11/10/2018
2.04	STR-R	N *		N/A		N/A	0.635 RP	11/10/2017	N/A	N/A	N/A	8.2	0.260 P	0.1	11/25/4017	11/10/2018
3.01	STR-T	N *		N/A		N/A	0.607 RP	11/10/2017	N/A	N/A	N/A	28.6	0.260 P	0.1	11/25/4017	11/10/2018
3.02	STR-L	N *		N/A		N/A	0.606 RP	11/10/2017	N/A	N/A	N/A	23.9	0.260 P	0.1	11/25/4017	11/10/2018
3.03	STR-BTM	N *		N/A		N/A	0.610 RP	11/10/2017	N/A	N/A	N/A	13.5	0.260 P	0.1	11/25/4017	11/10/2018
3.04	STR-R	N *		N/A		N/A	0.616 RP	11/10/2017	N/A	N/A	N/A	43.3	0.260 P	0.1	11/25/4017	11/10/2018
4.01	TEE-L	N *		N/A		N/A	0.721 RP	11/10/2017	N/A	N/A	N/A	54.1	0.260 P	0.1	11/25/4017	11/10/2018
4.02	TEE-BTM	N *		N/A		N/A	0.762 RP	11/10/2017	N/A	N/A	N/A	32.5	0.260 P	0.1	11/25/4017	11/10/2018
4.03	TEE-R	N *		N/A		N/A	0.758 RP	11/10/2017	N/A	N/A	N/A	47.3	0.260 P	0.1	11/25/4017	11/10/2018
5.02	FITTING-L	N *		N/A		N/A	0.599 RP	11/10/2017	N/A	N/A	N/A	19.7	0.260 P	0.1	11/25/4017	11/10/2018
5.03	FITTING-BTM	N *		N/A		N/A	0.621 RP	11/10/2017	N/A	N/A	N/A	28.6	0.260 P	0.1	11/25/4017	11/10/2018
5.04	FITTING-R	N *		N/A		N/A	0.590 RP	11/10/2017	N/A	N/A	N/A	30.5	0.260 P	0.1	11/25/4017	11/10/2018
6.01	STR-F	N *		N/A		N/A	0.725 RP	11/10/2017	N/A	N/A	N/A	4.0	0.260 P	0.1	11/25/4017	11/10/2018
6.02	STR-L	N *		N/A		N/A	0.724 RP	11/10/2017	N/A	N/A	N/A	4.8	0.260 P	0.1	11/25/4017	11/10/2018
6.03	STR-BK	N *		N/A		N/A	0.719 RP	11/10/2017	N/A	N/A	N/A	0	0.260 P	0.1	11/25/4017	11/10/2018
6.04	STR-R	N *		N/A		N/A	0.737 RP	11/10/2017	N/A	N/A	N/A	0.6	0.260 P	0.1	11/25/4017	11/10/2018

Corrosion Monitoring Eq/Circ ID Analysis Report

Eaton Inspection Services
1595 So Hwy 150, Suite F, Evanston, WY 82930
Phone 307-789-3540 FAX 307-789-2822

Report Date: 12/08/2017

(Report in Inches, Corrosion Rates in MPY)
Analysis: Straight Line

Unit: LH-0034
Eq/Circ ID: LH0034-P
Eq Type: PIPING
Class:
CW RBI:
Design Code: B31.3

Flange Rating: 5625 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 200 °F

Description: LH-0034 ASSOCIATED PIPING

Summary: Group Name:
Insp. Due Date = 11/10/2018
Pred. Ret. Date = 11/25/4017

Group Description:
RCR = 0.1 MPY
Rem. Life (from last survey 11/10/2017) = 2000.0 Yrs

0 C.A. Status: NO
Total Caution TMLs = 0

TML No	Location	Ctn	First Survey TML Thick	First Survey Nt	First Survey Date	Previous Survey Thick	Previous Survey Nt	Previous Survey Date	Last Survey Thick	Last Survey Nt	Last Survey Date	Shrt Term Rate	Long Term Rate	Best Rate	Max Hist CR	Retirement Thickness	Rep TML CR	TML Retirement Date	TML Inspection Date	
7.01	STR-T	N *			N/A			N/A	0.731	RP	11/10/2017	N/A	N/A	N/A	2.9	0.260	P	0.1	11/25/4017	11/10/2018
7.02	STR-L	N *			N/A			N/A	0.720	RP	11/10/2017	N/A	N/A	N/A	5.8	0.260	P	0.1	11/25/4017	11/10/2018
7.03	STR-BT	N *			N/A			N/A	0.719	RP	11/10/2017	N/A	N/A	N/A	3.8	0.260	P	0.1	11/25/4017	11/10/2018
7.04	STR-R	N *			N/A			N/A	0.716	RP	11/10/2017	N/A	N/A	N/A	1.0	0.260	P	0.1	11/25/4017	11/10/2018

Eaton Inspection Services
1595 So Hwy 150, Suite F, Evanston, WY 82930
Phone 307-789-3540 FAX 307-789-2822

Report Date: 12/08/2017

Unit: LH-0034
Eq/Circ ID: LH0034-P
Design Code: B31.3
Eq Type: PIPING
Class:
CM RBI:

(Report in Inches, Corrosion Rates in MPY)
Analysis: Straight Line

Flange Rating: 5625 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 200 °F

Description: LH-0034 ASSOCIATED PIPING

TML Corrosion Rates are each the Maximum of:
(A) -- Calculated Corrosion Rates x 1.00 : Varies
(B) -- Default Corrosion Rate : 0.1 MPY

Representative Corrosion Rate is the Maximum of:
(A) -- Average Corrosion Rate x 1.00 : 0.1 MPY
(B) -- Average Max 25.0% of TMLs, Min of 2 : 0.1 MPY
(C) -- Formula Corrosion Rate (Sigma = 1.28) : 0.1 MPY
(D) -- Default Corrosion Rate : 0.1 MPY
Representative Corrosion Rate = 0.1 MPY

TML thickness readings have not been compensated for high Temperatures.
TML thickness readings have been compensated for growths.

TML Life calculations are based on the Representative TML Corrosion Rate using Short Term and Long Term Corrosion Rates.

Nominal thickness is used for TML corrosion rate calculations with less than 3 surveys.

Minimum time between inspections required for corrosion rate calculation is 3 months.

TML Inspection Interval is:
(A) -- 1.00 years.

Eq/Circ ID Last Survey Date is based on the LAST of the last 0% of TML survey dates (Min 1).

Eq/Circ ID Estimated life = 2000.0 years from the most recent survey date.
(Estimated Life based on the ave of the earliest 0% (Min 6) TML retirement dates.)

Predicted Eq/Circ ID Retirement date is 11/25/4017

Recommended Eq/Circ UT/RT Inspection Date is 11/10/2018
UT/RT Inspection Interval is 1.00 years.

Caution TML Logic: TML Corrosion Rate > 15.0 MPY .OR. TML Remaining Life < 3.00 Years.
There are 0 Caution TMLs in this Eq/Circ ID.