



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

Inspections Performed for: FMC Technologies Completion – PA District	
Inspection Report for: LH0035-C1 Line Heater	Date Last Inspected: 11/12/2017
Remaining Life: 5.4 YRS	Next UT: 11/12/2018 Next VT: 11/12/2018
Representative Corrosion Rate: 90 MPY	Mfg Serial #: 4049-01
Manufacturer: Coral Oilfield Services Inc.	Alberta Registration #: 626745
Year Built: 2013	Canadian Registration #: V6716.21

FMC Technologies Completion LH0035-C1 (Coil 1)



PRESSURE VESSEL INVENTORY

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

☐ High Consequence (HCO) ☐ Medium Consequence (MCO) ☐ Low Consequence (LCO)

VESSEL ID INFORMATION

Company Name : Pure Energy USA
Facility/Location Name : Wyoming District
Field Name :
Equipment Number : LH-0035
Eq/Circ. ID : LH0035-C1
Equipment Name/Service : Line Heater-Coil 1
Physical Location : In PA 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

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	4049-01	
YEAR BUILT	2013	
CRN	V6716.21	
MAWP (kPa)	COIL #1	COIL #2
TEMP (°C)	68950	
NPS (IN)	93	
THICKNESS (MM)	400	
MATERIAL (S.A.)	254	
XRAY	519	
CORR ALL (MM)	100	
CODE	3.175	
TEST PRESS (kPa)	331.3	
DRWG. NO.	103425	
PWHT	649/120	
MDMT	- 48 °C - 50 °F	
INSP. NO.	0626745	

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-0035	Eq/Circ. ID: LH0035-C1
Equipment Name/Service: Line Heater Coil 1	
Physical Location: In PA Yard	
Manufacturer: Coral Oilfield Services	MFG Serial Number: 4049-01
Year Built: 2013	National Board #: None
Alberta Registration #: 626745	Canadian Registration # : V6716.21

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 60 anchor bolt nuts are in place and secure. Front plate in acceptable condition.

Condition of Steel Supports, Saddles, and Bolting: All support structural welds appear sound. Supports have moderate corrosion/scale build up.

Condition of Nozzles, Flanges, Repads, and Weepholes: Nozzles and flanges are in good condition. Valves are removed. The outlet flanges are open.

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



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?

8

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

Comments:

Fired tubes on this unit were hammer tested. No areas of concern were found.

Recommendations:

Repairs Needed:

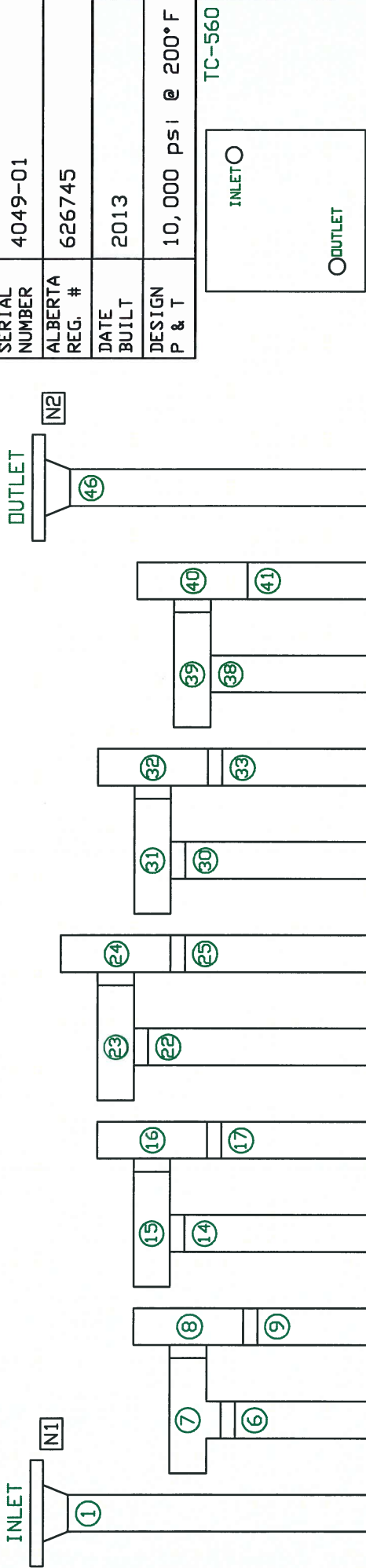
Robert W. Menke/JWW
API 510 Inspector Signature

0131
API 510 Inspector Number

11/12/2017
Date

EQUIP RETIREMENT DATE: 3/25/2023
NEXT INSPECTION IS DUE: 11/11/2018

NAMEPLATE INFO	
MFG	CORAL DILFIELD SERVICES INC.
SERIAL NUMBER	4049-01
ALBERTA REG. #	626745
DATE BUILT	2013
DESIGN P & T	10,000 psi @ 200°F



- #1. 01- STR-B 0.975 TC
- #2. 01- STR-T 0.967 TC
- #3. 01- END 1.167 DC
- #4. 01- END 1.262 DC
- #5. 01- STR-L 0.973 TC
- #6. 01- STR-T 0.996 DC
- #7. 01- END 1.206 TC
- #8. 01- END 1.225 TC
- #9. 01- STR-R 0.990 TC
- #10. 01- STR-R 0.976 DC
- #11. 01- END 1.271 TC
- #12. 01- END 1.152 TC
- #13. 01- STR-R 0.973 TC
- #14. 01- STR-B 0.978 TC
- #15. 01- END 1.244 TC
- #16. 01- END 1.230 TC
- #17. 01- STR-T 0.967 TC
- #18. 01- STR-L 0.985 TC
- #19. 01- END 1.214 TC
- #20. 01- END 1.196 TC
- #21. 01- STR-L 0.994 TC
- #22. 01- STR-T 0.966 TC
- #23. 01- END 1.238 TC
- #24. 01- END 1.234 TC
- #25. 01- STR-B 0.976 TC
- #26. 01- STR-R 0.986 DC
- #27. 01- END 1.248 TC
- #28. 01- END 1.205 TC
- #29. 01- STR-R 0.987 TC
- #30. 01- STR-L 0.993 TC
- #31. 01- END 1.240 TC
- #32. 01- END 1.267 TC
- #33. 01- STR-L 0.937 TC
- #34. 01- STR-L 0.987 DC
- #35. 01- END 1.195 DC
- #36. 01- END 1.145 DC
- #37. 01- STR-T 0.965 TC
- #38. 01- STR-T 0.986 TC
- #39. 01- END 1.209 TC
- #40. 01- END 1.266 TC
- #41. 01- STR-T 0.965 TC
- #42. 01- STR-R 0.974 TC
- #43. 01- END 1.261 TC
- #44. 01- END 1.274 TC
- #45. 01- STR-T 0.956 TC
- #46. 01- STR-B 0.970 TC

CAL BLK=35°F	PIPE=28°F
BUSINESS UNIT	FMC TECHNOLOGIES COMPLETION
EQ/CIRC ID #	LH0035-C1
EQUIP NAME	LINE HEATER
DWG #	LH0035-C1

4 READINGS TAKEN AROUND THE CIRCUMFERENCE RECORDED THE LOWEST.

DESC: COIL 1 ON LINE HEATER
DWG#: LH0035-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-0035
Eq/Circ ID: LH0035-C1
Eq Type: VESSEL
Class:
CM RBI:
Design Code: B31.3

Flange Rating: 0 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 200 °F

Description: COIL 1 ON LINE HEATER; SN:4049-01

Summary:

Group Name: 11/11/2018
Insp. Due Date = 03/25/2023
Pred. Ret. Date =

Group Description:
RCR = 90.0 MPY
Rem. Life (from last survey 11/11/2017) = 5.4 yrs

0 C.A. Status: NO
Total Caution TMLs = 33

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	1.009		08/21/2014	0.984 TC	0.984 TC	10/27/2016	0.975 TC	0.975 TC	11/11/2017	8.7	10.5	11.4	11.4	0.600 S	10.5	07/30/2053	11/11/2018
2.01	STR-T	Y	1.022		08/21/2014	0.995 TC	0.995 TC	10/27/2016	0.967 TC	0.967 TC	11/11/2017	26.9	17.1	15.9	26.9	0.600 S	26.9	07/04/2031	11/11/2018
3.01	END	N	1.009		10/20/2015	1.009 RR	1.009 RR	10/27/2016	1.167 TC	1.167 TC	11/11/2017	0	0	0	0	0.600 S	0.1	11/26/4017	11/11/2018
4.01	END	N	1.030		10/20/2015	1.030 RR	1.030 RR	10/27/2016	1.262 TC	1.262 TC	11/11/2017	0	0	0	0	0.600 S	0.1	11/26/4017	11/11/2018
5.01	STR-L	Y	1.028		08/21/2014	1.000 RR	1.000 RR	10/27/2016	0.973 TC	0.973 TC	11/11/2017	26.0	17.1	15.5	26.0	0.600 S	26.0	03/17/2032	11/11/2018
6.01	STR-T	N	0.998		08/21/2014	0.968 TC	0.968 TC	10/27/2016	0.968 RR	0.968 RR	11/11/2017	0	9.3	11.1	11.1	0.600 S	9.3	06/07/2057	11/11/2018
7.01	END	Y *	1.293		10/20/2015	1.286 TC	1.286 TC	10/27/2016	1.206 TC	1.206 TC	11/11/2017	76.9	42.2	42.3	76.9	0.600 S	76.9	09/28/2025	11/11/2018
8.01	END	Y	1.288		10/20/2015	1.259 TC	1.259 TC	10/27/2016	1.225 TC	1.225 TC	11/11/2017	32.7	30.6	30.6	32.7	0.600 S	32.7	12/22/2036	11/11/2018
9.01	STR-R	N	1.020		08/21/2014	1.003 TC	1.003 TC	10/27/2016	0.990 TC	0.990 TC	11/11/2017	12.5	9.3	8.6	12.5	0.600 S	12.5	01/23/2049	11/11/2018
10.01	STR-R	Y	1.029		08/21/2014	0.956 TC	0.956 TC	10/27/2016	0.956 RR	0.956 RR	11/11/2017	0	22.6	24.8	24.8	0.600 S	22.6	08/12/2033	11/11/2018
11.01	END	N	1.281		10/20/2015	1.281 RR	1.281 RR	10/27/2016	1.271 TC	1.271 TC	11/11/2017	9.6	4.9	4.9	9.6	0.600 S	9.6	10/04/2087	11/11/2018
12.01	END	Y *	1.292		10/20/2015	1.292 RR	1.292 RR	10/27/2016	1.152 TC	1.152 TC	11/11/2017	134.6	67.9	68.1	134.6	0.600 S	134.6	12/18/2021	11/11/2018
13.01	STR-R	Y	1.018		08/21/2014	0.996 TC	0.996 TC	10/27/2016	0.973 TC	0.973 TC	11/11/2017	22.1	14.0	13.8	22.1	0.600 S	22.1	09/28/2034	11/11/2018
14.01	STR-B	Y	1.046		08/21/2014	1.001 TC	1.001 TC	10/27/2016	0.978 TC	0.978 TC	11/11/2017	22.1	21.1	20.2	22.1	0.600 S	22.1	12/19/2034	11/11/2018
15.01	END	Y	1.310		10/20/2015	1.298 TC	1.298 TC	10/27/2016	1.244 TC	1.244 TC	11/11/2017	51.9	32.0	32.1	51.9	0.600 S	51.9	04/09/2030	11/11/2018
16.01	END	Y	1.299		10/20/2015	1.223 TC	1.223 TC	10/27/2016	1.223 RR	1.223 RR	11/11/2017	0	36.9	36.7	36.9	0.600 S	36.9	09/30/2034	11/11/2018
17.01	STR-T	Y	0.998		08/21/2014	0.986 TC	0.986 TC	10/27/2016	0.967 TC	0.967 TC	11/11/2017	18.3	9.6	9.7	18.3	0.600 S	18.3	12/01/2037	11/11/2018
18.01	STR-L	N	1.008		08/21/2014	0.982 TC	0.982 TC	10/27/2016	0.982 RR	0.982 RR	11/11/2017	0	8.1	9.6	9.6	0.600 S	8.1	01/08/2065	11/11/2018
19.01	END	Y *	1.301		10/20/2015	1.292 TC	1.292 TC	10/27/2016	1.214 TC	1.214 TC	11/11/2017	75.0	42.2	42.3	75.0	0.600 S	75.0	01/18/2026	11/11/2018
20.01	END	Y	1.310		10/20/2015	1.253 TC	1.253 TC	10/27/2016	1.196 TC	1.196 TC	11/11/2017	54.8	55.3	55.3	55.3	0.600 S	55.3	08/22/2028	11/11/2018

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-0035
Eq/Circ ID: LH0035-C1
Eq Type: VESSEL
Class:
CM RBI:

Flange Rating: 0 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 200 °F

Design Code: B31.3 Description: COIL 1 ON LINE HEATER; SN:4049-01

Summary: Group Name: Insp. Due Date = 11/11/2018
Pred. Ret. Date = 03/25/2023

Group Description:
RCR = 90.0 MPY
Rem. Life (from last survey 11/11/2017) = 5.4 yrs

0 C.A. Status: NO
Total Caution TMLs = 33

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-L	N	1.018	08/21/2014	0.984 TC	10/27/2016	0.984 RR	11/11/2017	0	10.5	12.4	12.4	0.600 S	10.5	06/08/2054	11/11/2018
22.01	STR-T	Y	1.038	08/21/2014	0.976 TC	10/27/2016	0.966 TC	11/11/2017	9.6	22.3	23.7	23.7	0.600 S	22.3	04/11/2034	11/11/2018
23.01	END	Y	1.298	10/20/2015	1.243 TC	10/27/2016	1.238 TC	11/11/2017	4.8	29.1	29.0	29.1	0.600 S	29.1	10/15/2039	11/11/2018
24.01	END	Y	1.305	10/20/2015	1.246 TC	10/27/2016	1.234 TC	11/11/2017	11.5	34.4	34.4	34.4	0.600 S	34.4	04/17/2036	11/11/2018
25.01	STR-B	Y	1.028	08/21/2014	1.006 TC	10/27/2016	0.976 TC	11/11/2017	28.8	16.1	14.9	28.8	0.600 S	28.8	12/02/2030	11/11/2018
26.01	STR-R	Y	1.036	08/21/2014	0.976 TC	10/27/2016	0.976 RR	11/11/2017	0	18.6	19.5	19.5	0.600 S	18.6	01/29/2038	11/11/2018
27.01	END	Y	1.310	10/20/2015	1.243 TC	10/27/2016	1.243 RR	11/11/2017	0	32.5	32.4	32.5	0.600 S	32.5	08/24/2037	11/11/2018
28.01	END	Y	1.298	10/20/2015	1.206 TC	10/27/2016	1.205 TC	11/11/2017	1.0	45.1	45.0	45.1	0.600 S	45.1	04/12/2031	11/11/2018
29.01	STR-R	Y	1.039	08/21/2014	0.987 TC	10/27/2016	0.987 TC	11/11/2017	0	16.1	16.0	16.1	0.600 S	16.1	11/25/2041	11/11/2018
30.01	STR-L	N	1.022	08/21/2014	0.989 RR	10/27/2016	0.993 TC	11/11/2017	0	9.0	8.4	9.0	0.600 S	9.0	07/12/2061	11/11/2018
31.01	END	Y	1.300	10/20/2015	1.292 TC	10/27/2016	1.240 TC	11/11/2017	50.0	29.1	29.2	50.0	0.600 S	50.0	08/30/2030	11/11/2018
32.01	END	Y	1.301	10/20/2015	1.252 TC	10/27/2016	1.252 RR	11/11/2017	0	23.8	23.7	23.8	0.600 S	23.8	04/04/2045	11/11/2018
33.01	STR-L	Y *	1.018	08/21/2014	1.001 RR	10/27/2016	0.937 TC	11/11/2017	61.5	25.1	22.6	61.5	0.600 S	61.5	05/05/2023	11/11/2018
34.01	STR-L	N	1.004	08/21/2014	0.967 TC	10/27/2016	0.967 RR	11/11/2017	0	11.5	13.3	13.3	0.600 S	11.5	10/10/2049	11/11/2018
35.01	END	N	1.010	10/20/2015	1.010 RR	10/27/2016	1.195 TC	11/11/2017	0	0	0	0	0.600 S	0.1	11/26/4017	11/11/2018
36.01	END	Y *	1.299	10/20/2015	1.287 TC	10/27/2016	1.145 TC	11/11/2017	136.5	74.7	74.9	136.5	0.600 S	136.5	11/08/2021	11/11/2018
37.01	STR-T	N	1.008	08/21/2014	0.967 TC	10/27/2016	0.965 TC	11/11/2017	1.9	13.3	13.5	13.5	0.600 S	13.3	04/22/2045	11/11/2018
38.01	STR-T	Y	1.030	08/21/2014	0.956 TC	10/27/2016	0.956 RR	11/11/2017	0	22.9	22.5	22.9	0.600 S	22.9	05/29/2033	11/11/2018
39.01	END	Y	1.300	10/20/2015	1.227 TC	10/27/2016	1.209 TC	11/11/2017	17.3	44.1	44.1	44.1	0.600 S	44.1	09/03/2031	11/11/2018
40.01	END	Y *	1.801	10/20/2015	1.267 TC	10/27/2016	1.266 TC	11/11/2017	1.0	259.5	258.7	259.5	0.600 S	259.5	06/05/2020	11/11/2018
41.01	STR-T	Y	1.016	08/21/2014	1.010 TC	10/27/2016	0.965 TC	11/11/2017	43.3	15.8	14.3	43.3	0.600 S	43.3	04/17/2026	11/11/2018

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-0035
Eq/Circ ID: LH0035-C1
Eq Type: VESSEL
Class:
CM RBI:
Design Code: B31.3

Description: COIL 1 ON LINE HEATER; SN: 4049-01

Flange Rating: 0 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 200 °F

Summary: Group Name:
Insp. Due Date = 11/11/2018
Pred. Ret. Date = 03/25/2023

Group Description:
RCR = 90.0 MPY
Rem. Life (from last survey 11/11/2017) = 5.4 yrs

0 C.A. Status: NO
Total Caution TMLs = 33

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
42.01	STR-R	Y	1.024		08/21/2014	0.968 TC	0.968 TC	10/27/2016	0.968 RR	0.968 RR	11/11/2017	0	17.4	17.7	17.7	0.600 S	17.4	01/05/2039	11/11/2018
43.01	END	Y	1.311		10/20/2015	1.258 TC	1.258 TC	10/27/2016	1.258 RR	1.258 RR	11/11/2017	0	25.7	25.6	25.7	0.600 S	25.7	06/20/2043	11/11/2018
44.01	END	N	1.296		10/20/2015	1.267 TC	1.267 TC	10/27/2016	1.267 RR	1.267 RR	11/11/2017	0	14.1	14.0	14.1	0.600 S	14.1	03/02/2065	11/11/2018
45.01	STR-T	Y	1.011		08/21/2014	0.980 TC	0.980 TC	10/27/2016	0.956 TC	0.956 TC	11/11/2017	23.1	17.1	17.3	23.1	0.600 S	23.1	04/10/2033	11/11/2018
46.01	STR-B	Y	1.038		08/21/2014	0.982 TC	0.982 TC	10/27/2016	0.970 TC	0.970 TC	11/11/2017	11.5	21.1	21.9	21.9	0.600 S	21.1	05/26/2035	11/11/2018

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

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

Unit: LH-0035
Eq/Circ ID: LH0035-C1
Design Code: B31.3
Eq Type: VESSEL
Class:
CM RBI:

Flange Rating: 0 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 200 °F

Description: COIL 1 ON LINE HEATER; SN:4049-01

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 1.00 : 36.2 MPY
(B) -- Average Max 25.0% of TMLs, Min of 2 : 90.0 MPY
(C) -- Formula Corrosion Rate (Sigma = 1.28) : 43.0 MPY
(D) -- Default Corrosion Rate : 0.1 MPY

Representative Corrosion Rate = 90.0 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 = 5.4 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 03/25/2023

Recommended Eq/Circ UT/RT Inspection Date is 11/11/2018
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 33 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-0035-C2 Line Heater	Date Last Inspected: 11/12/2017
Remaining Life: 3.4 YRS	Next UT: 11/12/2018 Next VT: 11/12/2018
Representative Corrosion Rate: 94.6 MPY	Mfg Serial #: 4049-02
Manufacturer: Coral Oilfield Services Inc.	Alberta Registration #: 626746
Year Built: 2013	Canadian Registration #: V6716.21

FMC Technologies Completion LH0035-C2 (Coil 2)



PRESSURE VESSEL INVENTORY

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

☐ High Consequence (HCO) ☐ Medium Consequence (MCO) ☐ Low Consequence (LCO)

VESSEL ID INFORMATION

Company Name : Pure Energy USA
Facility/Location Name : Wyoming District
Field Name :
Equipment Number : LH-0035
Eq/Circ. ID : LH0035-C2
Equipment Name/Service : Line Heater-Coil 2
Physical Location : In PA 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

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	4049-02	
YEAR BUILT	2013	CRN V6716.21
	COIL #1	COIL #2
MAWP (kPa)	83950	
@TEMP (°C)	93	
NPS (IN)	4.00	
THICKNESS (MM)	25.4	
MATERIAL (S.A.)	519	
XRAY	100	
CORR ALL (MM)	3.175	
CODE	B31.3	
TEST PRESS (kPa)	103425	
DRWG. NO.	3691-01	PWHT 649/120
MDMT -	46 °C	-50 °F
INSP. NO.	0626746	

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-0035	Eq/Circ. ID: LH0035-C2
Equipment Name/Service: Line Heater Coil 2	
Physical Location: In PA Yard	
Manufacturer: Coral Oilfield Services	MFG Serial Number: 4049-02
Year Built: 2013	National Board #: None
Alberta Registration #: 626746	Canadian Registration # : V6716.21

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

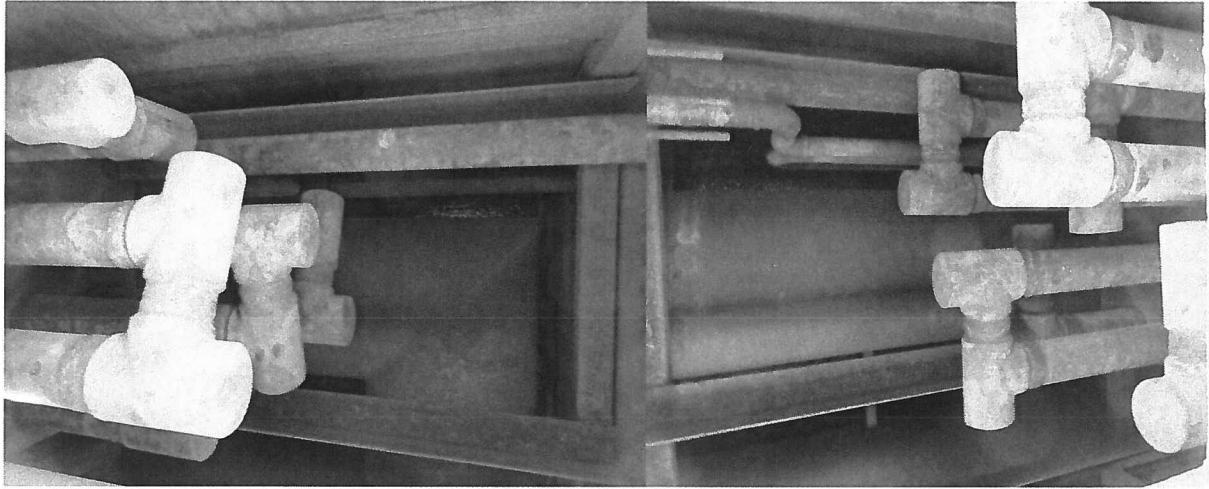
Grounding Device in Place and Secure?: N/A, the equipment is grounded through the skid. The Unit was not in service at the time of this inspection.

Condition of Foundation and Anchor Bolts: Anchor bolts are in place and secure. All 6- anchor bolt nuts are in place and secure. Front plate bolts are all secure.

Condition of Steel Supports, Saddles, and Bolting: All support structural welds appear sound. Supports have moderate/scale buildup. .

Condition of Nozzles, Flanges, Repads, and Weepholes: Nozzles and flanges are in good condition. Valve has been removed. The outlet flange is open.

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 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:

Recommendations:

Repairs Needed:

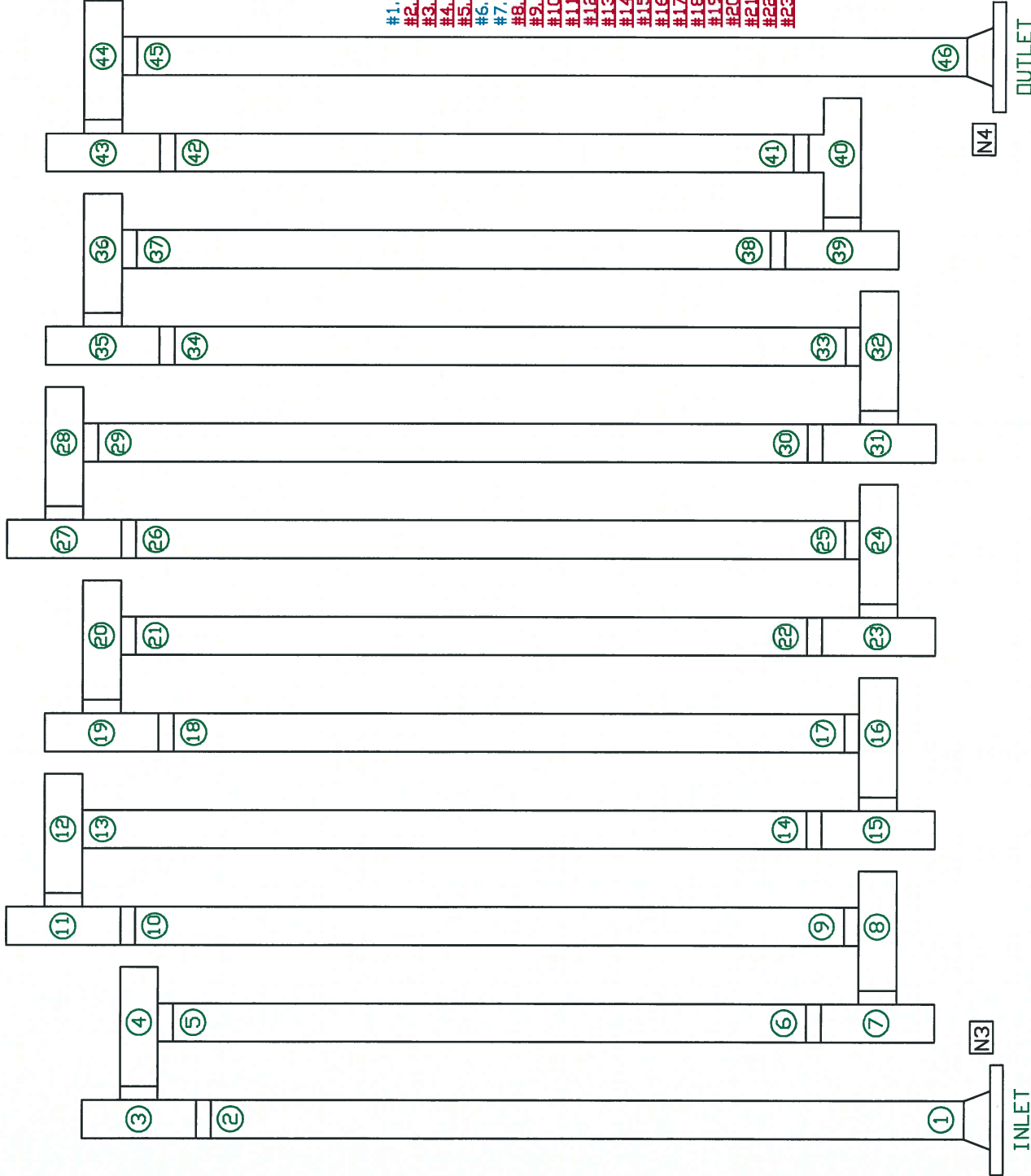
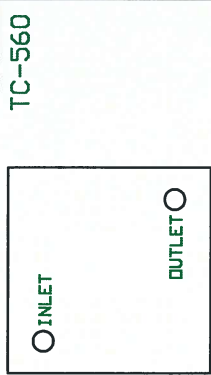
Robert W. Menke/JWW
API 510 Inspector Signature

0131
API 510 Inspector Number

11/12/2017
Date

EQUIP RETIREMENT DATE: 4/17/2021
NEXT INSPECTION IS DUE: 11/12/2018

NAMEPLATE INFO	
MFG	CORAL OILFIELD SERVICES INC.
SERIAL NUMBER	4049-02
ALBERTA REG. #	626746
DATE BUILT	2013
DESIGN P & T	10,000 psi @ 200°F



#1. 01- STR-L 0.980 TC	#24. 01- END 1.171 DC
#2. 01- STR-T 0.896 DC	#25. 01- STR-B 0.945 IC
#3. 01- END 1.245 TC	#26. 01- STR-T 0.912 IC
#4. 01- END 1.275 TC	#27. 01- END 1.221 IC
#5. 01- STR-T 0.875 DC	#28. 01- END 1.209 IC
#6. 01- STR-R 0.974 DC	#29. 01- STR-T 0.965 TC
#7. 01- END 1.259 TC	#30. 01- STR-T 0.967 IC
#8. 01- END 1.221 IC	#31. 01- END 1.186 IC
#9. 01- STR-R 0.979 IC	#32. 01- END 1.189 IC
#10. 01- STR-R 0.967 IC	#33. 01- STR-L 0.972 IC
#11. 01- END 1.216 TC	#34. 01- STR-B 0.879 DC
#12. 01- END 1.271 IC	#35. 01- END 1.243 IC
#13. 01- STR-B 0.971 IC	#36. 01- END 1.200 IC
#14. 01- STR-R 0.932 IC	#37. 01- STR-B 0.837 DC
#15. 01- END 1.136 DC	#38. 01- STR-R 0.958 IC
#16. 01- END 1.239 IC	#39. 01- END 1.236 IC
#17. 01- STR-T 0.969 IC	#40. 01- END 1.235 IC
#18. 01- STR-L 0.946 IC	#41. 01- STR-R 0.971 TC
#19. 01- END 1.201 TC	#42. 01- STR-L 0.846 DC
#20. 01- END 1.216 IC	#43. 01- END 1.296 TC
#21. 01- STR-L 0.953 IC	#44. 01- END 1.233 IC
#22. 01- STR-L 0.944 IC	#45. 01- STR-T 0.962 IC
#23. 01- END 1.257 IC	#46. 01- STR-R 0.994 TC

CAL BLK=35°F	PIPE=33°F
BUSINESS UNIT	FMC TECHNOLOGIES COMPLETION
EQ/CIRC ID #	LH0035-C2
EQUIP NAME	LINE HEATER
DWG #	LH0035-C2

4 READINGS TAKEN AROUND
THE CIRCUMFERENCE
RECORDED THE LOWEST.

DESC: COIL 2 ON LINE HEATER
DWG#: LH0035-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-0035
Eq/Circ ID: LH0035-C2
Eq Type: VESSEL
Class:
CM RBI:
Design Code: B31.3

Flange Rating: 0 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 200 °F

Description: COIL 2 ON LINE HEATER; SN:4049-02

Summary: Group Name:
Insp. Due Date = 11/12/2018
Pred. Ret. Date = 04/17/2021

Group Description:
RCR = 94.6 MPY
Rem. Life (from last survey 11/12/2017) = 3.4 yrs

0 C.A. Status: No
Total Caution TMLs = 39

TML No	Location	Ctn	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	STR-L	N	1.007	08/21/2014	0.972 TC	10/27/2016	0.972 RR	11/12/2017	0	10.8	13.0	34.4	0.600 S	10.8	04/23/2052	11/12/2018
2.01	STR-T	Y	1.006	08/21/2014	0.930 TC	10/27/2016	0.896 TC	11/12/2017	32.6	34.1	37.5	74.6	0.600 S	34.1	07/18/2026	11/12/2018
3.01	END	Y	1.298	10/21/2015	1.269 TC	10/27/2016	1.245 TC	11/12/2017	23.0	25.7	25.7	28.5	0.600 S	25.7	12/18/2042	11/12/2018
4.01	END	Y	1.296	10/21/2015	1.296 RR	10/27/2016	1.275 TC	11/12/2017	20.1	10.2	10.2	20.1	0.600 S	20.1	06/13/2051	11/12/2018
5.01	STR-T	Y *	1.001	08/21/2014	0.983 TC	10/27/2016	0.875 TC	11/12/2017	103.5	39.0	36.2	103.5	0.600 S	103.5	07/09/2020	11/12/2018
6.01	STR-R	N	0.990	08/21/2014	0.942 TC	10/27/2016	0.942 RR	11/12/2017	0	14.9	17.8	47.1	0.600 S	14.9	10/26/2040	11/12/2018
7.01	END	N	1.280	10/21/2015	1.267 TC	10/27/2016	1.259 TC	11/12/2017	7.7	10.2	10.2	12.8	0.600 S	10.2	06/22/2082	11/12/2018
8.01	END	Y	1.300	10/21/2015	1.231 TC	10/27/2016	1.221 TC	11/12/2017	9.6	38.3	38.2	67.7	0.600 S	38.3	01/29/2034	11/12/2018
9.01	STR-R	Y	0.997	08/21/2014	0.999 RR	10/27/2016	0.979 TC	11/12/2017	19.2	5.6	4.8	19.2	0.600 S	19.2	08/09/2037	11/12/2018
10.01	STR-R	Y	0.994	08/21/2014	0.993 TC	10/27/2016	0.967 TC	11/12/2017	24.9	8.4	7.6	24.9	0.600 S	24.9	08/08/2032	11/12/2018
11.01	END	Y	1.301	10/21/2015	1.296 TC	10/27/2016	1.216 TC	11/12/2017	76.7	41.2	41.4	76.7	0.600 S	76.7	11/23/2025	11/12/2018
12.01	END	Y	1.311	10/21/2015	1.307 TC	10/27/2016	1.271 TC	11/12/2017	34.5	19.4	19.5	34.5	0.600 S	34.5	04/25/2037	11/12/2018
13.01	STR-B	Y	0.986	08/21/2014	0.997 RR	10/27/2016	0.971 TC	11/12/2017	24.9	4.6	3.1	24.9	0.600 S	24.9	10/06/2032	11/12/2018
14.01	STR-R	Y	1.018	08/21/2014	0.946 TC	10/27/2016	0.932 TC	11/12/2017	13.4	26.6	30.0	63.8	0.600 S	26.6	05/07/2030	11/12/2018
15.01	END	Y *	1.311	10/21/2015	1.209 TC	10/27/2016	1.136 TC	11/12/2017	70.0	84.9	84.8	100.1	0.600 S	84.9	03/06/2024	11/12/2018
16.01	END	Y	1.299	10/21/2015	1.299 RR	10/27/2016	1.239 TC	11/12/2017	57.5	29.1	29.2	57.5	0.600 S	57.5	12/23/2028	11/12/2018
17.01	STR-T	Y	0.987	08/21/2014	0.999 TC	10/27/2016	0.969 TC	11/12/2017	28.8	5.6	3.8	28.8	0.600 S	28.8	09/05/2030	11/12/2018
18.01	STR-L	Y	1.018	08/21/2014	0.942 TC	10/27/2016	0.942 RR	11/12/2017	0	23.5	27.6	67.7	0.600 S	23.5	06/02/2032	11/12/2018
19.01	END	Y	1.299	10/21/2015	1.290 TC	10/27/2016	1.201 TC	11/12/2017	85.3	47.5	47.7	85.3	0.600 S	85.3	11/28/2024	11/12/2018
20.01	END	Y	1.310	10/21/2015	1.234 TC	10/27/2016	1.216 TC	11/12/2017	17.3	45.6	45.5	74.6	0.600 S	45.6	05/17/2031	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-0035
Eq/Circ ID: LH0035-C2
Eq Type: VESSEL
Class:
CM RBI:
Design Code: B31.3

Flange Rating: 0 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 200 °F

Description: COIL 2 ON LINE HEATER; SN:4049-02

Summary: Group Name:
Insp. Due Date = 11/12/2018
Pred. Ret. Date = 04/17/2021

Group Description:
RCR = 94.6 MPY
Rem. Life (from last survey 11/12/2017) = 3.4 yrs

0 C.A. Status: NO
Total Caution TMLs = 39

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
21.01	STR-L	Y	1.018		08/21/2014	0.997 TC	1.027 TC	10/27/2016	0.953 TC	TC	11/12/2017	42.2	20.1	19.2	42.2	0.600 S	42.2	03/25/2026	11/12/2018
22.01	STR-L	Y	1.018		08/21/2014	0.984 TC	1.027 TC	10/27/2016	0.944 TC	TC	11/12/2017	38.3	22.9	23.1	38.3	0.600 S	38.3	11/06/2026	11/12/2018
23.01	END	Y	1.296		10/21/2015	1.260 TC	1.260 TC	10/27/2016	1.257 TC	TC	11/12/2017	2.9	18.9	18.9	35.3	0.600 S	18.9	08/17/2052	11/12/2018
24.01	END	Y *	1.300		10/21/2015	1.298 TC	1.298 TC	10/27/2016	1.171 TC	TC	11/12/2017	121.7	62.6	62.8	121.7	0.600 S	121.7	07/23/2022	11/12/2018
25.01	STR-B	Y	1.000		08/21/2014	0.994 TC	1.027 TC	10/27/2016	0.945 TC	TC	11/12/2017	47.0	17.0	15.5	47.0	0.600 S	47.0	03/16/2025	11/12/2018
26.01	STR-T	Y	1.009		08/21/2014	0.953 TC	1.027 TC	10/27/2016	0.912 TC	TC	11/12/2017	39.3	30.1	31.7	51.1	0.600 S	39.3	10/21/2025	11/12/2018
27.01	END	Y	1.305		10/21/2015	1.305 RR	1.027 TC	10/27/2016	1.221 TC	TC	11/12/2017	80.5	40.7	40.9	80.5	0.600 S	80.5	07/31/2025	11/12/2018
28.01	END	Y	1.310		10/21/2015	1.273 TC	1.027 TC	10/27/2016	1.209 TC	TC	11/12/2017	61.4	49.0	49.0	61.4	0.600 S	61.4	10/14/2027	11/12/2018
29.01	STR-T	N	0.975		08/21/2014	0.973 TC	1.027 TC	10/27/2016	0.965 TC	TC	11/12/2017	7.7	3.1	3.0	9.9	0.600 S	7.7	04/08/2065	11/12/2018
30.01	STR-T	Y	1.030		08/21/2014	0.952 TC	1.027 TC	10/27/2016	0.952 RR	RR	11/12/2017	0	24.2	26.6	50.1	0.600 S	24.2	05/30/2032	11/12/2018
31.01	END	Y	1.296		10/21/2015	1.233 TC	1.027 TC	10/27/2016	1.186 TC	TC	11/12/2017	45.1	53.4	53.3	61.9	0.600 S	53.4	11/02/2028	11/12/2018
32.01	END	Y	1.303		10/21/2015	1.237 TC	1.027 TC	10/27/2016	1.189 TC	TC	11/12/2017	46.0	55.3	55.3	64.8	0.600 S	55.3	07/07/2028	11/12/2018
33.01	STR-L	Y	1.015		08/21/2014	0.960 TC	1.027 TC	10/27/2016	0.960 RR	RR	11/12/2017	0	17.0	18.8	35.3	0.600 S	17.0	01/16/2039	11/12/2018
34.01	STR-B	Y *	1.020		08/21/2014	0.975 TC	1.027 TC	10/27/2016	0.879 TC	TC	11/12/2017	92.0	43.7	42.2	92.0	0.600 S	92.0	11/24/2020	11/12/2018
35.01	END	Y	1.311		10/21/2015	1.243 TC	1.027 TC	10/27/2016	1.243 TC	TC	11/12/2017	0	33.0	32.9	66.8	0.600 S	33.0	05/08/2037	11/12/2018
36.01	END	Y	1.287		10/21/2015	1.287 RR	1.027 TC	10/27/2016	1.200 TC	TC	11/12/2017	83.4	42.2	42.4	83.4	0.600 S	83.4	01/22/2025	11/12/2018
37.01	STR-B	Y *	1.027		08/21/2014	0.979 RR	1.027 TC	10/27/2016	0.837 TC	TC	11/12/2017	136.1	58.9	53.0	136.1	0.600 S	136.1	08/10/2019	11/12/2018
38.01	STR-R	Y	1.031		08/21/2014	0.978 TC	1.027 TC	10/27/2016	0.958 TC	TC	11/12/2017	19.2	22.6	22.7	25.7	0.600 S	22.6	09/15/2033	11/12/2018
39.01	END	Y	1.297		10/21/2015	1.291 TC	1.027 TC	10/27/2016	1.236 TC	TC	11/12/2017	52.7	29.6	29.7	52.7	0.600 S	52.7	12/07/2029	11/12/2018
40.01	END	Y	1.303		10/21/2015	1.242 TC	1.027 TC	10/27/2016	1.235 TC	TC	11/12/2017	6.7	33.0	32.9	59.9	0.600 S	33.0	02/08/2037	11/12/2018
41.01	STR-R	N	1.015		08/21/2014	0.967 TC	1.027 TC	10/27/2016	0.967 RR	RR	11/12/2017	0	14.9	16.4	31.4	0.600 S	14.9	06/30/2042	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-0035
Eq/Circ ID: LH0035-C2
Eq Type: VESSEL
Class:
CM RBI:
Design Code: B31.3

Flange Rating: 0 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 200 °F

Description: COIL 2 ON LINE HEATER; SN:4049-02

Summary: Group Name:

Insp. Due Date = 11/12/2018
Pred. Ret. Date = 04/17/2021

Group Description:

RCR = 94.6 MPY
Rem. Life (from last survey 11/12/2017) = 3.4 yrs

0 C.A. Status: No
Total Caution TMLs = 39

TML No	Location	Ctn	First Survey TML	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	Y *	1.010		08/21/2014	0.966 TC		10/27/2016	0.846 TC		11/12/2017	115.0	50.8	49.1	115.0	0.600 S	115.0	01/02/2020	11/12/2018
43.01	END	N	1.297		10/21/2015	1.297 RR		10/27/2016	1.296 TC		11/12/2017	1.0	0.5	0.5	1.0	0.600 S	1.0	11/18/2713	11/12/2018
44.01	END	Y	1.304		10/21/2015	1.225 TC		10/27/2016	1.225 RR		11/12/2017	0	38.3	38.2	77.6	0.600 S	38.3	03/08/2034	11/12/2018
45.01	STR-T	Y	1.013		08/21/2014	0.983 TC		10/27/2016	0.962 TC		11/12/2017	20.1	15.8	16.6	25.5	0.600 S	20.1	11/16/2035	11/12/2018
46.01	STR-R	N	1.012		08/21/2014	0.973 TC		10/27/2016	0.973 RR		11/12/2017	0	12.1	14.1	34.4	0.600 S	12.1	09/09/2048	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

Unit: LH-0035
Eq/Circ ID: LH0035-C2
Design Code: B31.3
Eq Type: VESSEL
Class:
CM REI:

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

Flange Rating: 0 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 200 °F

Description: COIL 2 ON LINE HEATER; SN:4049-02

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 1.00 : 44.6 MPY
(B) -- Average Max 25.0% of TMLs, Min of 2 : 94.6 MPY
(C) -- Formula Corrosion Rate (Sigma = 1.28) : 53.0 MPY
(D) -- Default Corrosion Rate : 0.1 MPY
Representative Corrosion Rate = 94.6 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 = 3.4 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 04/17/2021

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 39 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-0035 Fuel Gas Scrubber	
Remaining Life: 20+ YRS	Date of this Report: 11/10/2017
Representative Corrosion Rate: 5.8 MPY	Next UT: 11/12/2018 Next VT: 11/12/2018
Manufacturer: Baron Oilfield Services, Ltd.	Mfg Serial #: 1007.12871
Date Built: 2012	National Board #: N/A
Alberta registration #: N/A	Canadian Registration #: N/A

FMC Technologies Completion LH-0035 Fuel Gas Scrubber



PRESSURE VESSEL INVENTORY

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

☐ High Consequence (HCO) ☐ Medium Consequence (MCO) ☐ Low Consequence (LCO)

VESSEL ID INFORMATION

Company Name : FMC Technologies Completion
Facility/Location Name : PA District
Field Name :
Equipment Number : LH-0035
Eq/Circ. ID : LH0035-FGS
Equipment Name/Service : Fuel Gas Scrubber
Physical Location : PA Yard
GPS Coordinates :

VESSEL DESCRIPTION AND SERVICE CONDITIONS

Type of Vessel: Vertical Fuel Gas Scrubber

Vessel Size: 8.625" OD

Operating Pressure Range (psig): N/A, not in-service during initial inspection.

Operating Temperature Range (°F): N/A, not in-service during initial inspection.

Does the vessel have Internal Access? No

Specify type of internal access, if available:

Vessel is located: Inside

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?

****Diameter****(strap equipment): 8" pipe, 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) _____

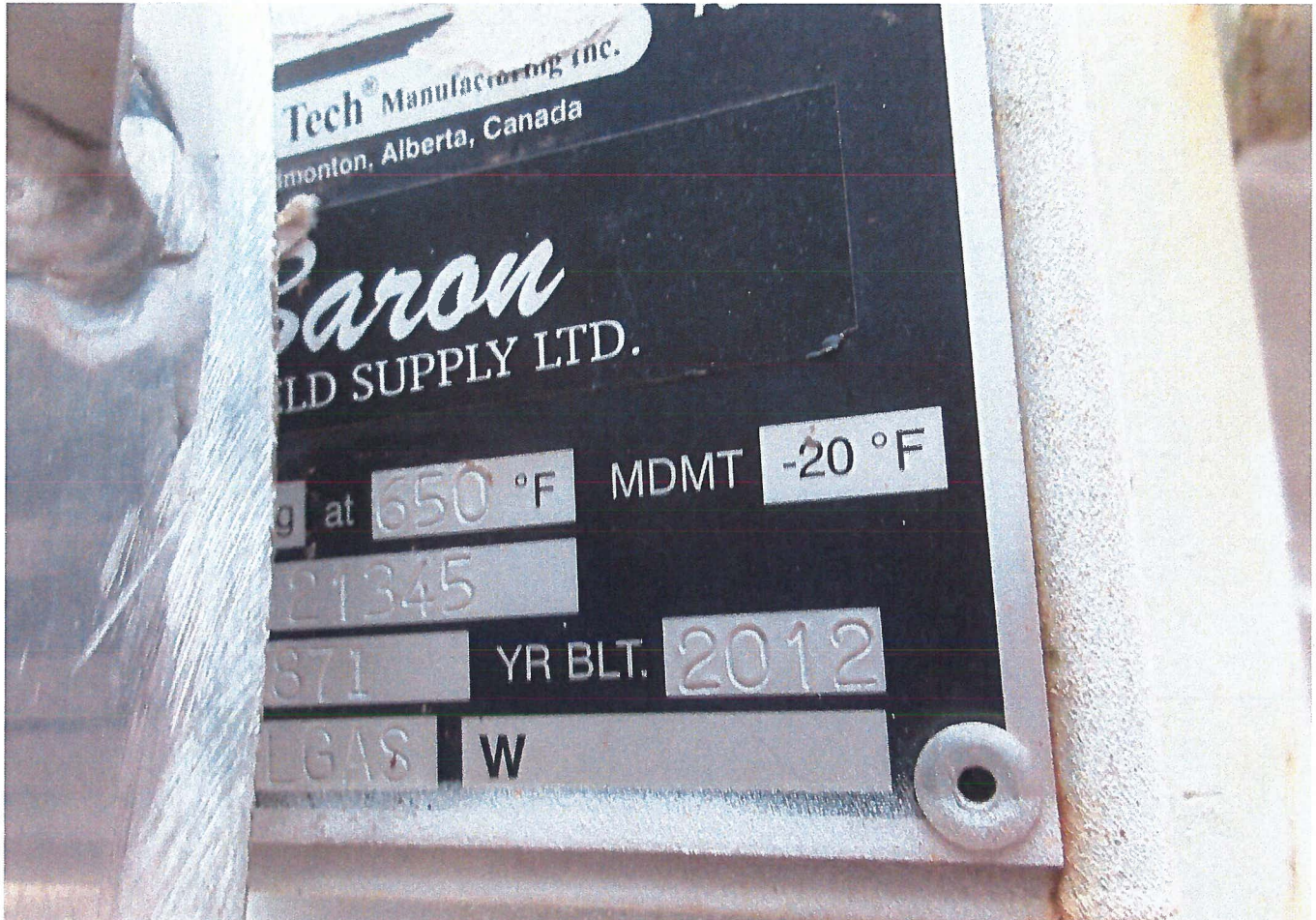
Any other pertinent information: _____

PRESSURE VESSEL INVENTORY

ORIGINAL VESSEL NAMEPLATE/STAMPING INFORMATION

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

There is limited access to the nameplate, due to close proximity of other equipment.



SUPPLEMENTAL VESSEL NAMEPLATE/STAMPING INFORMATION

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

Repaired By _____

Date of Repair _____

Nat'l Bd. R-Certification 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: Eric Crandall

Date: 08/21/2014

API 510 PRESSURE VESSEL EXTERNAL INSPECTION REPORT

Company Name: FMC Technologies Completion	
Field/Location: PA District	
Equipment Number: LH-0035	Eq/Circ. ID: LH0035-FGS
Equipment Name/Service: Fuel Gas Scrubber	
Physical Location: In PA Yard	
Manufacturer: Baron Oilfield Services, Ltd.	MFG Serial Number: 1007.12871
Year Built: 2012	National Board #: None
Alberta Registration #: N/A	Canadian Registration # : N/A

Is Vessel in-service? No

Reason for Inspection: Scheduled API-510 External Inspection

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

Internal Access?: No

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

Grounding Device in Place and Secure?: N/A, the equipment would be 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.

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

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? Yes

If Yes, is it set at or below the MAWP? Set pressure not verified.

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

Comments:

PSV removed for testing.

Recommendations:

Repairs Needed:

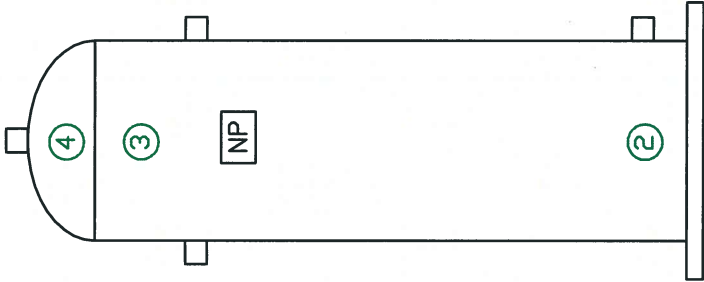
Robert W. Menke/JWW
API 510 Inspector Signature

0131
API 510 Inspector Number

11/10/2017
Date

EQUIP RETIREMENT DATE: 7/5/2319
NEXT INSPECTION IS DUE: 11/10/2018

- #2. 01- BTM SHELL-F 0. 333 TC
- #2. 02- BTM SHELL-L 0. 336 TC
- #2. 03- BTM SHELL-BK 0. 321 TC
- #2. 04- BTM SHELL-R 0. 315 DC
- #3. 01- TOP SHELL-F 0. 330 TC
- #3. 02- TOP SHELL-L 0. 334 TC
- #3. 03- TOP SHELL-BK 0. 327 TC
- #3. 04- TOP SHELL-R 0. 321 TC
- #4. 01- TOP HEAD-F 0. 281 TC
- #4. 02- TOP HEAD-L 0. 275 TC
- #4. 03- TOP HEAD-BK 0. 275 TC
- #4. 04- TOP HEAD-R 0. 275 TC



TC-560

NAMEPLATE INFO	
MFG	BARDON OILFIELD SERVICES LTD.
SERIAL NUMBER	1007. 12871
NATIONAL BOARD #	NONE
DATE BUILT	2012
DESIGN P & T	150 PSIG @ 650°F
NOTE	NP IS DIFFICULT TO ACCESS

CAL BLK=25°F	VESSEL=26°F
BUSINESS UNIT	FMC TECHNOLOGIES COMPLETION
EQ/CIRC ID #	LH0035-FGS
EQUIP NAME	FUEL GAS SCRUBBER
LOCATION	WITH LINE HEATER LH-0035
DWG #	LH0035-FGS

DESC: FUEL GAS SCRUBBER
DWG#: LH0035-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-0035

Eq/Circ ID: LH0035-FGS

Eq Type: VESSEL

Class:

CM RBI:

Design Code: S8/D1

Flange Rating: 0 lb/in²
Design Pressure: 150 lb/in²
Design Temperature: 100 °F

Description: FUEL GAS SCRUBBER SN: 1007.12871

Summary: Group Name:

Insp. Due Date = 11/10/2018

Pred. Ret. Date = 07/05/2319

Group Description:

RCR = 5.8 MPY

Rem. Life (from last survey 11/10/2017) = 301.6 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	0.319 TC	0.319 TC	08/21/2014	0.319 RR	0.319 RR	10/25/2016	0.333 TC	TC	11/10/2017	0	0	0	20.7	0.193 S	0.1	11/21/3417	11/10/2018
2.02	BTM SHELL-L	N	0.325 TC	0.325 TC	08/21/2014	0.325 RR	0.325 RR	10/25/2016	0.336 TC	TC	11/10/2017	0	0	0	15.7	0.193 S	0.1	11/22/3447	11/10/2018
2.03	BTM SHELL-BK	N	0.318 TC	0.318 TC	08/21/2014	0.318 RR	0.318 RR	10/25/2016	0.321 TC	TC	11/10/2017	0	0	0	21.5	0.193 S	0.1	11/19/3297	11/10/2018
2.04	BTM SHELL-R	N *	0.330 TC	0.330 TC	08/21/2014	0.324 TC	0.324 TC	10/25/2016	0.315 TC	TC	11/10/2017	8.6	4.7	4.4	11.6	0.193 S	8.6	01/17/2032	11/10/2018
3.01	TOP SHELL-F	N *	0.334 TC	0.334 TC	08/21/2014	0.334 RR	0.334 RR	10/25/2016	0.330 TC	TC	11/10/2017	3.8	1.2	1.1	8.3	0.193 S	3.8	11/29/2053	11/10/2018
3.02	TOP SHELL-L	N	0.327 TC	0.327 TC	08/21/2014	0.327 RR	0.327 RR	10/25/2016	0.334 TC	TC	11/10/2017	0	0	0	14.1	0.193 S	0.1	11/22/3427	11/10/2018
3.03	TOP SHELL-BK	N *	0.330 TC	0.330 TC	08/21/2014	0.328 TC	0.328 TC	10/25/2016	0.327 TC	TC	11/10/2017	1.0	0.9	0.9	11.6	0.193 S	1.0	11/12/2151	11/10/2018
3.04	TOP SHELL-R	N *	0.337 TC	0.337 TC	08/21/2014	0.324 TC	0.324 TC	10/25/2016	0.321 TC	TC	11/10/2017	2.9	5.0	5.1	6.0	0.193 S	5.0	06/17/2043	11/10/2018
4.01	TOP HEAD-F	N	0.273 TC	0.273 TC	08/21/2014	0.273 RR	0.273 RR	10/25/2016	0.279 RR	RR	11/10/2017	0	0	0	6.6	0.193 S	0.1	11/16/2877	11/10/2018
4.02	TOP HEAD-L	N *	0.274 TC	0.274 TC	08/21/2014	0.274 TC	0.274 TC	10/25/2016	0.274 RR	RR	11/10/2017	0	0	0	5.8	0.193 S	0.1	11/17/2827	11/10/2018
4.03	TOP HEAD-BK	N	0.270 TC	0.270 TC	08/21/2014	0.270 RR	0.270 RR	10/25/2016	0.275 TC	TC	11/10/2017	0	0	0	9.1	0.193 S	0.1	11/16/2837	11/10/2018
4.04	TOP HEAD-R	N *	0.272 TC	0.272 TC	08/21/2014	0.272 TC	0.272 TC	10/25/2016	0.272 RR	RR	11/10/2017	0	0	0	7.5	0.193 S	0.1	11/17/2807	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-0035
Eq/Circ ID: LH0035-PGS
Design Code: S8/D1
Eq Type: VESSEL
Class:
CM RBI:

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

Flange Rating: 0 lb/in²
Design Pressure: 150 lb/in²
Design Temperature: 100 °F

Description: FUEL GAS SCRUBBER SN: 1007.12871

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 1.00 : 1.6 MPY
(B) -- Average Max 25.0% of TMLs, Min of 2 : 5.8 MPY
(C) -- Formula Corrosion Rate (Sigma = 1.28) : 2.2 MPY
(D) -- Default Corrosion Rate : 0.1 MPY
Representative Corrosion Rate = 5.8 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 = 301.6 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 07/05/2319

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-0035 Associated Piping	
Size/Sched. Of Pipe: 3"	Eq/Circ. ID: LH0035-P
Service/System:	Piping Class ☐ 1 ☒ 2 ☐ 3 ☐ Other
Design Pressure: 10000 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	Coating has minor chipping and minor surface corrosion, but acceptable.

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.

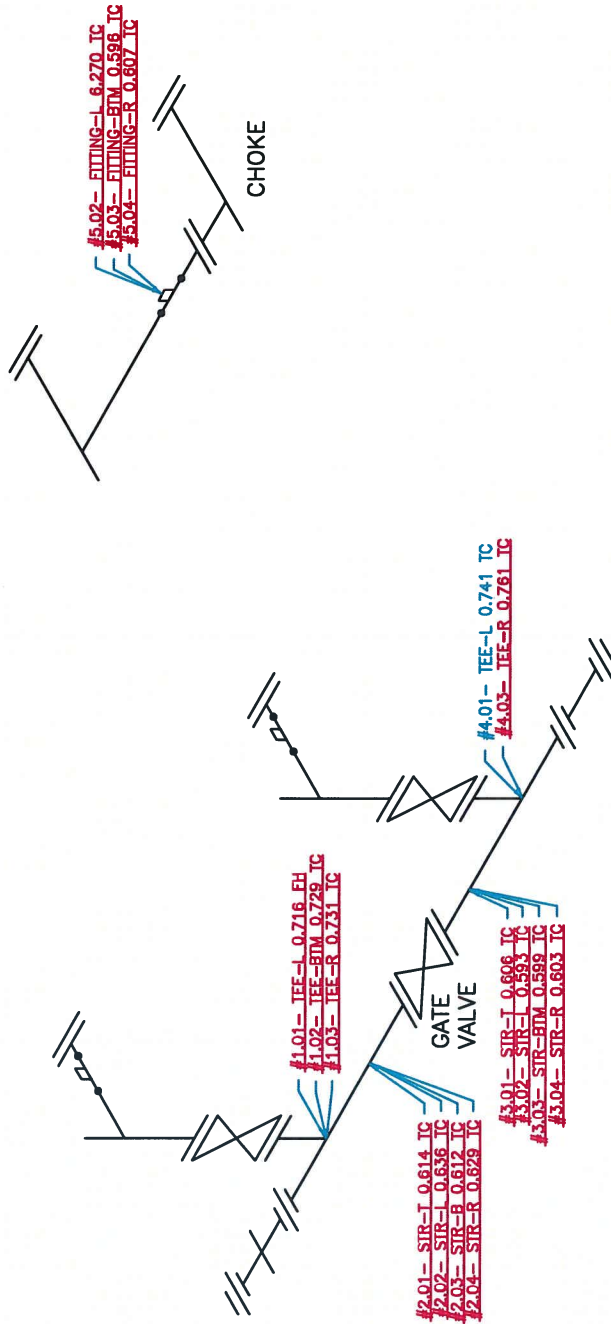
Relief Device:	Comments:
☐ PSV ☒ No PSV ☐ Rupture Disk ☐ Atmospheric ☐ No Relief Device Identified For This Equipment ☐ Tag Secure and Legible ☐ Set Pressure At Or Below MAWP ☐ Block Valve Not Locked/Car Sealed In Open Position ☐ Improper Drain Hole/Weather Cap On Atmos. Discharge ☐ Obstruction (i.e.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

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	Support is undone for valve replacement.

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 with minor surface corrosion.

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: 12/31/2021
NEXT INSPECTION IS DUE: 11/12/2018



LH0035-P

DESC: ASSOC PIPING ON LINE HEATER LH-0035
DWG#: LH0035-P-1.01-5.04

TEMP=31°F
CAL BLK=28°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-0035
Eq/Circ ID: LH0035-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-0035 ASSOCIATED PIPING

Summary: Group Name: 11/12/2018
Insp. Due Date = 12/31/2021
Pred. Ret. Date =

Group Description:
RCR = 92.9 MPY
Rem. Life (from last survey 11/12/2017) = 4.1 Yrs

0 C.A. Status: No
Total Caution TMLs = 15

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	
1.01	TEE-L	Y	0.846		10/21/2015	0.710	FH	10/27/2016	0.710	RR	11/12/2017	0	66.0	65.7	133.5	0.260	P	66.0	09/06/2024	11/12/2018
1.02	TEE-BTM	Y	0.870		10/21/2015	0.730	FH	10/27/2016	0.729	TC	11/12/2017	1.0	68.4	68.1	137.5	0.260	P	68.4	09/20/2024	11/12/2018
1.03	TEE-R	Y	0.892		10/21/2015	0.765	FH	10/27/2016	0.731	TC	11/12/2017	32.6	78.1	77.9	124.7	0.260	P	78.1	11/24/2023	11/12/2018
2.01	STR-T	Y	0.767		10/21/2015	0.611	FH	10/27/2016	0.611	RR	11/12/2017	0	75.7	75.4	153.2	0.260	P	75.7	07/03/2022	11/12/2018
2.02	STR-L	Y *	0.783		10/21/2015	0.610	FH	10/27/2016	0.610	RR	11/12/2017	0	83.9	83.6	169.9	0.260	P	83.9	01/14/2022	11/12/2018
2.03	STR-B	Y	0.759		10/21/2015	0.618	FH	10/27/2016	0.612	TC	11/12/2017	5.8	71.3	71.0	138.4	0.260	P	71.3	10/20/2022	11/12/2018
2.04	STR-R	Y	0.764		10/21/2015	0.620	FH	10/27/2016	0.620	RR	11/12/2017	0	69.8	69.6	141.4	0.260	P	69.8	01/09/2023	11/12/2018
3.01	STR-T	Y *	0.762		10/21/2015	0.616	FH	10/27/2016	0.606	TC	11/12/2017	9.6	75.7	75.4	143.4	0.260	P	75.7	06/08/2022	11/12/2018
3.02	STR-L	Y *	0.790		10/21/2015	0.609	FH	10/27/2016	0.593	TC	11/12/2017	15.3	95.6	95.2	177.7	0.260	P	95.6	05/07/2021	11/12/2018
3.03	STR-BTM	Y *	0.772		10/21/2015	0.623	FH	10/27/2016	0.599	TC	11/12/2017	23.0	83.9	83.7	146.3	0.260	P	83.9	11/27/2021	11/12/2018
3.04	STR-R	Y *	0.760		10/21/2015	0.639	FH	10/27/2016	0.603	TC	11/12/2017	34.5	76.2	76.0	118.8	0.260	P	76.2	05/14/2022	11/12/2018
4.01	TEE-L	N	0.716		10/21/2015	0.715	FH	10/27/2016	0.715	RR	11/12/2017	0	0.5	0.5	50.9	0.260	P	0.5	11/19/2927	11/12/2018
4.03	TEE-R	Y	0.889		10/21/2015	0.790	FH	10/27/2016	0.761	TC	11/12/2017	27.8	62.1	61.9	97.2	0.260	P	62.1	12/06/2025	11/12/2018
5.02	FITTING-L	Y	0.786		10/21/2015	0.646	FH	10/27/2016	0.646	RR	11/12/2017	0	67.9	67.6	137.5	0.260	P	67.9	07/20/2023	11/12/2018
5.03	FITTING-BTM	Y *	0.761		10/21/2015	0.592	FH	10/27/2016	0.592	RR	11/12/2017	0	82.0	81.6	165.9	0.260	P	82.0	11/29/2021	11/12/2018
5.04	FITTING-R	Y	0.751		10/21/2015	0.615	FH	10/27/2016	0.607	TC	11/12/2017	7.7	69.8	69.6	133.5	0.260	P	69.8	11/01/2022	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-0035
Eq/Circ ID: LH0035-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-0035 ASSOCIATED PIPING

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

Representative Corrosion Rate is the Maximum of:
(A) -- Average Corrosion Rate x 1.00
(B) -- Average Max 25.0% of TMLs, Min of 2
(C) -- Formula Corrosion Rate (Sigma = 1.28)
(D) -- Default Corrosion Rate
Representative Corrosion Rate = 92.9 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 = 4.1 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 12/31/2021

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 15 Caution TMLs in this Eq/Circ ID.