



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

Inspections Performed for: FMC Technologies Completion	
Inspection Report for: LH-0033 – Coil 1	
Remaining Life: 10 YRS	Date of this Report: 09/11/2018
Average Corrosion Rate: 22 MPY	Next UT: 09/11/2021 Next VT: 09/11/2021
Manufacturer: DynaCorp Fabricators	Mfg Serial #: 6J111050
Date Built: 2012	National Board #: None
Alberta registration #: 617901	Canadian Registration #: T9862.2

FMC Technologies Completion LH-0033 Line Heater



PRESSURE VESSEL INVENTORY

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

VESSEL ID INFORMATION

Company Name : FMC Technologies Completion
Facility/Location Name : PA District
Field Name : N/A
Equipment Number : LH-0033
Eq/Circ. ID : LH0033-C1/ LH0033-C2
Equipment Name/Service : LH0033 Line Heater (w/two coils)
Physical Location : Canonsburg Yard
GPS Coordinates :

VESSEL DESCRIPTION AND SERVICE CONDITIONS

Type of Vessel: Horizontal Line Heater

Vessel Size: N/A Coils = 4.500"

Operating Pressure Range (psig):

Operating Temperature Range (°F):

Does the vessel have Internal Access? ☒ Yes ☐ No

Specify type of internal access, if available: When coils are removed (only internal access)

Vessel is located: ☐ Inside ☒ Outside ☐ Under Roof

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: _____

ORIGINAL VESSEL NAMEPLATE/STAMPING INFORMATION

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

Nameplate Coils # 1 and Coils # 2

AC 75010
Asset Count 2013

0617901

DYNACORP
F A B R I C A T O R S I N C

C.R.N. YEAR BUILT

SER. NO.

COIL A
M.A.W.P. PSI (KpA) at F (C) at
M.D.M.T F (C) at PSI (KpA)

COIL B
M.A.W.P. PSI (KpA) at F (C) at
M.D.M.T F (C) at PSI (KpA)

Coil #1 and Coil #2



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: 08/27/2013

API 510 PRESSURE VESSEL EXTERNAL INSPECTION

Company Name: FMC Technologies Completion	
Facility/Location Name: PA District	
Equipment Number: LH-0033	Eq/Circ. ID: LH0033 C1
Equipment Name/Service: Line Heater	
Physical Location: FMC Yard	
Manufacturer: DynaCorp Fabricators, INC	Manufacturer Serial Number: 6J111050
Year Built: 2012	National Board Number: None
Alberta Registration #: 617901	Canadian Registration # T9862.2

Is Vessel in-service: No.

Reason for Inspection: Scheduled API-510 External Inspection

Condition of Nameplate and/or Bracket: Nameplate is missing. May require an authorized inspector to install one.

Internal Access: Yes, with bundles pulled.

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 line heater was not in service at the time of this inspection.

Condition of Foundation and Anchor Bolts: The front plate is warped with a bulge. Coating is missing on the upper right quarter. The remainder of the coating has mild surface corrosion.

Condition of Steel Supports, Saddles, and Bolting: All 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: Nozzles and flanges are in good condition. Crossover piping is in place with chipping and minor surface corrosion.

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): N/A

Comments:

Piping is to be discarded.

Recommendations:

Repairs Needed:

Mike York/MTW

API 510 Inspector Signature

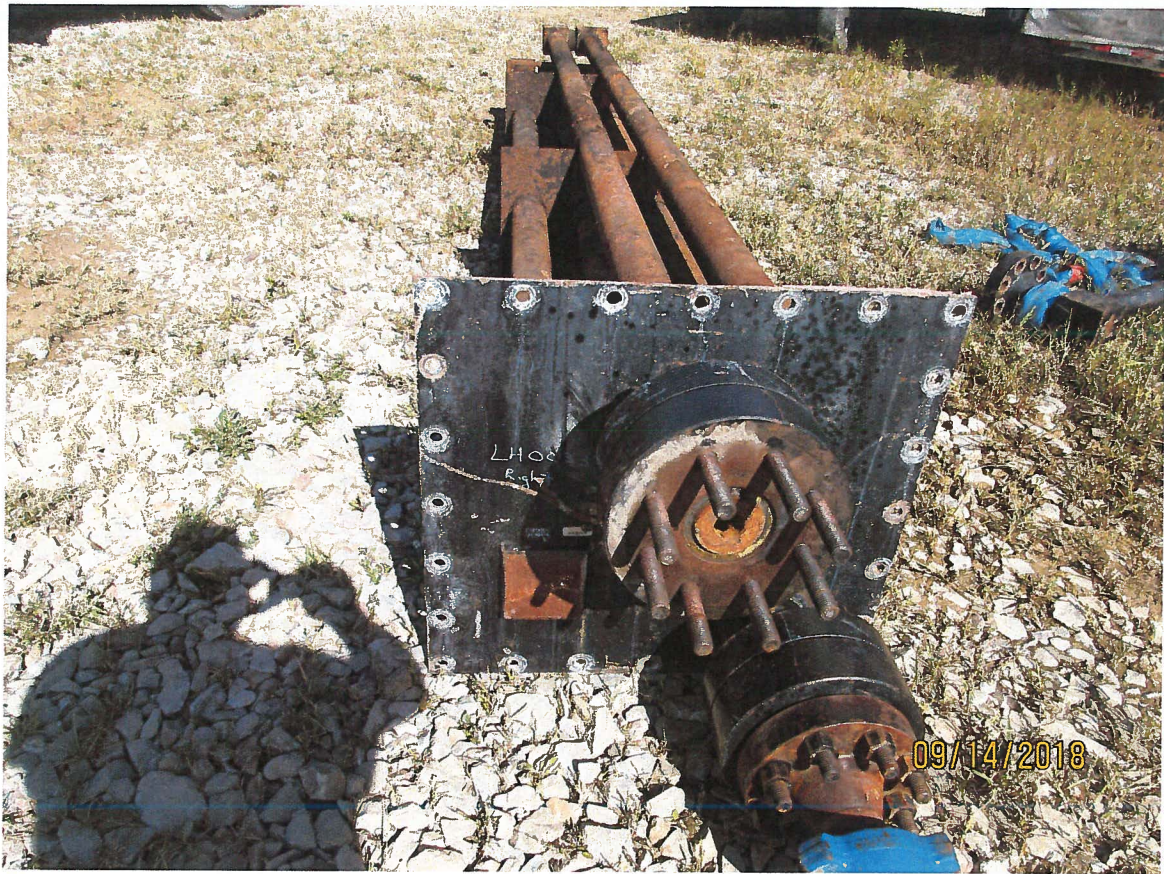
66475

API 510 Inspector Number

09/11/2018

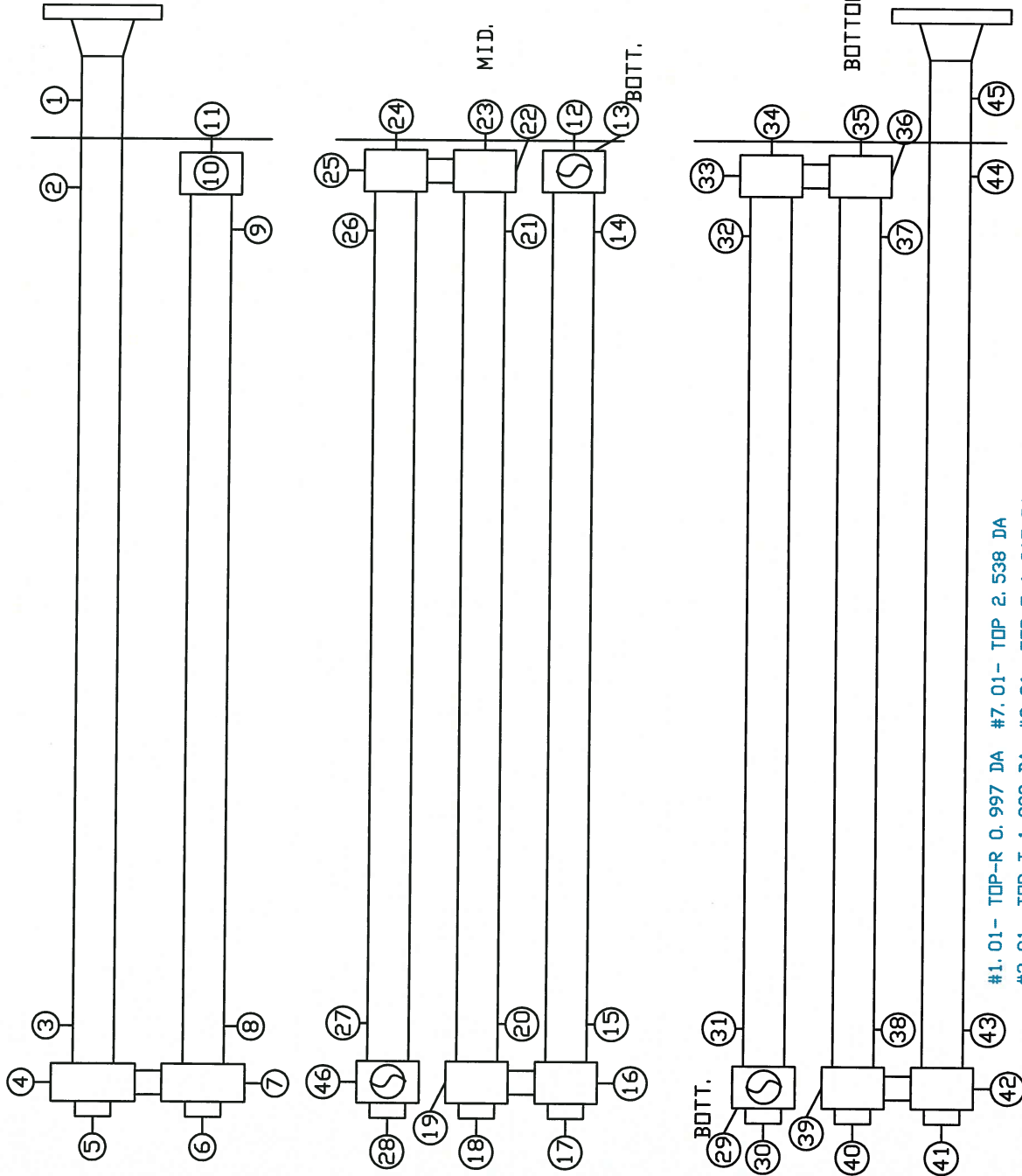
Date







EQUIP RETIREMENT DATE: 10/10/2022
NEXT INSPECTION IS DUE: 9/11/2019



#1. 01- TOP-R 0.997 DA #7. 01- TOP 2.538 DA
#2. 01- TOP-T 1.002 DA #8. 01- TOP-T 1.017 DA
#3. 01- TOP 1.031 DA #9. 01- TOP-T 1.009 DA
~~#4. 01- TOP 1.668 DA~~ #10. 01- TOP 1.637 DA
#5. 01- TOP 2.519 DC #11. 01- TOP 0.000 NT
~~#6. 01- TOP 1.653 DA~~ #12. 01- MID 0.000 NT

TOP

MID.

BOTT.

BOTTOM

DA-501

#13. 01- MID 0.000 NT #30. 01- BTM 1.639 DA
#14. 01- MID-T 1.018 DA #31. 01- BTM 0.994 DA
#15. 01- MID-R 0.965 DA #32. 01- BTM-L 0.993 DA
#16. 01- MID 1.634 DA #33. 01- BTM 0.000 NT
#17. 01- MID 2.513 DA #34. 01- BTM 2.486 DA
#18. 01- MID 1.663 DA #35. 01- BTM 1.659 DA
#19. 01- MID 0.000 NT #36. 01- BTM 0.000 NT
#20. 01- MID-L 1.038 DA #37. 01- BTM 0.000 NT
#21. 01- MID-L 1.009 DA ~~#38. 01- BTM 0.000 NI~~
#22. 01- MID 0.000 NT #39. 01- BTM 0.000 NT
#23. 01- MID 2.507 DA #40. 01- BTM 2.573 DA
#24. 01- MID 1.603 DA ~~#41. 01- BTM 1.622 DA~~
#25. 01- MID 2.539 DA #42. 01- BTM 2.525 DA
#26. 01- MID-T 0.984 DA #43. 01- BTM-R 1.020 DA
#27. 01- MID-L 1.019 DA ~~#44. 01- BTM-T 0.985 DA~~
~~#28. 01- MID 1.661 DC~~ #45. 01- BTM-L 1.009 DA
#29. 01- BTM 2.552 DA #46. 01- BTM 0.000 NT

CAL= 73°F

PIPE= 75°F

BUSINESS UNIT	FMC TECHNOLOGIES COMPLETION
EQ/CIRC ID #	LH0033-C1
EQUIP NAME	LINE HEATER (WITH 2 COILS)
DWG #	LH0033-C1

DESC: COIL A ON LH-0033 LINE HTR; SN: 6J111050
DWG#: LH0033-C1-1.01-46.01

NAMEPLATE INFO

MFG	DYNACORP
SERIAL NUMBER	6J111050
A NUMBER	617901
DATE BUILT	2012
DESIGN P & T	10,000 psi @ 180°F
NOTE	CRN # T9862-2

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: 10/30/2018

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

Unit: LH-0033
 Eq/Circ ID: LH0033-C1
 Eq Type: PIPING
 Class:
 CM RBI:
 Design Code: S8/D1

Flange Rating: 5734 lb/in²
 Design Pressure: 10000 lb/in²
 Design Temperature: 180 °F

Description: COIL A ON LINE HEATER; SN:6J111050

Summary: Group Name: Group Description:
 Insp. Due Date = 09/11/2021 RCR = 129.4 MPY
 Pred. Ret. Date = 10/10/2022 Rem. Life (from last survey 09/11/2018) = 4.1 yrs

0 C.A. Status: No
 Total Caution TMLs = 6

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
1.01	TOP-R	N	1.000 NM	06/15/2012	0.993 TC	11/11/2017	0.997 DA	09/11/2018	0	0.5	0.8	1.3	0.750 U	0.5	09/15/2512	09/11/2021
2.01	TOP-T	N	1.014	08/27/2013	0.962 TC	11/11/2017	1.002 DA	09/11/2018	0	2.4	5.6	12.4	0.750 U	2.4	09/12/2123	09/11/2021
3.01	TOP	N	0.987	08/27/2013	0.969 TC	11/11/2017	1.031 DA	09/11/2018	0	0	0	10.8	0.750 U	0.1	09/26/4018	09/11/2021
4.01	TOP	Y *	1.600	08/27/2013	1.586 TC	11/11/2017	1.668 DA	09/11/2018	0				1.000 U			09/11/2021
5.01	TOP	N	1.369	08/27/2013	2.458 TC	11/11/2017	2.519 DA	09/11/2018	0	0	0	0	0.750 U	0.1	09/26/4018	09/11/2021
6.01	TOP	Y	1.757	08/27/2013	1.619 TC	11/11/2017	1.653 DA	09/11/2018	0	20.6	24.6	32.8	1.000 U	20.6	05/24/2050	09/11/2021
7.01	TOP	N	1.625	08/27/2013	2.451 TC	11/11/2017	2.538 DA	09/11/2018	0	0	0	0	1.000 U	0.1	09/26/4018	09/11/2021
8.01	TOP-T	N	1.018	08/27/2013	0.796 TC	11/11/2017	1.017 DA	09/11/2018	0	0.2	17.2	52.8	0.750 U	0.2	09/21/3353	09/11/2021
9.01	TOP-T	N	1.012	08/27/2013	0.956 TC	11/11/2017	1.009 DA	09/11/2018	0	0.6	4.7	13.3	0.750 U	0.6	05/15/2450	09/11/2021
10.01	TOP	N	1.653	08/27/2013	1.560 TC	11/11/2017	1.637 DA	09/11/2018	0	3.2	9.3	22.1	1.000 U	3.2	10/06/2217	09/11/2021
11.01	TOP	N	2.500 NM	06/15/2012	2.494	08/27/2013	2.476 TC	11/11/2017	4.3	4.4	4.4	5.0	1.000 U	4.4	04/29/2353	11/11/2021
12.01	MID	N	1.625 NM	06/15/2012	1.668	08/27/2013	1.630 TC	11/11/2017	9.0	0	1.7	9.0	1.000 U	9.0	11/11/2087	11/11/2021
13.01	MID	N	1.000 NM	06/15/2012		N/A	1.104	08/27/2013	N/A	0	N/A	0	0.750 U	0.1	09/11/4013	08/27/2021
14.01	MID-T	N	1.026	08/27/2013	0.964 TC	11/11/2017	1.018 DA	09/11/2018	0	1.6	5.9	0359.2	0.750 U	1.6	03/13/2186	09/11/2021
15.01	MID-R	N	0.997	08/27/2013	0.970 TC	11/11/2017	0.965 DA	09/11/2018	6.0	6.3	6.4	6.4	0.750 U	6.3	10/27/2052	09/11/2021
16.01	MID	N	1.618	08/27/2013	1.627 TC	11/11/2017	1.634 DA	09/11/2018	0	0	0	5.8	1.000 U	0.1	09/26/4018	09/11/2021
17.01	MID	N	2.496	08/27/2013	2.476 TC	11/11/2017	2.513 DA	09/11/2018	0	0	0	4.8	1.000 U	0.1	09/26/4018	09/11/2021
18.01	MID	N	1.617	08/27/2013	1.577 TC	11/11/2017	1.663 DA	09/11/2018	0	0	0	9.5	1.000 U	0.1	09/26/4018	09/11/2021
19.01	MID	N		N/A		N/A	1.625 NM	06/15/2012	N/A	N/A	N/A	0	1.000 U	0.1	06/30/4012	06/15/2013
20.01	MID-L	N	0.997	08/27/2013	0.970 TC	11/11/2017	1.038 DA	09/11/2018	0	0	0	6.4	0.750 U	0.1	09/26/4018	09/11/2021

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: 10/30/2018

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

Unit: LH-0033
 Eq/Circ ID: LH0033-C1
 Eq Type: PIPING
 Class:
 CM RBI:
 Design Code: S8/D1

Flange Rating: 5734 lb/in²
 Design Pressure: 10000 lb/in²
 Design Temperature: 180 °F

Description: COIL A ON LINE HEATER; SN:6J111050

Summary: Group Name:
 Insp. Due Date = 09/11/2021
 Pred. Ret. Date = 10/10/2022

Group Description:
 RCR = 129.4 MPY
 Rem. Life (from last survey 09/11/2018) = 4.1 yrs

0 C.A. Status: No
 Total Caution TMLs = 6

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	MID-L	N	1.008	08/27/2013	0.950 TC	11/11/2017	1.009 DA	09/11/2018	0	0	4.3	13.8	0.750 U	0.1	09/26/4018	09/11/2021
22.01	MID	N	1.000 NM	06/15/2012		N/A	1.674	08/27/2013	N/A	0	N/A	0	0.750 U	0.1	09/11/4013	08/27/2014
23.01	MID	N	2.476	08/27/2013	2.462 TC	11/11/2017	2.507 DA	09/11/2018	0	0	0	20.0	1.000 U	0.1	09/26/4018	09/11/2021
24.01	MID	N	1.612	08/27/2013	1.591 TC	11/11/2017	1.603 DA	09/11/2018	0	1.8	2.8	10.8	1.000 U	1.8	09/14/2353	09/11/2021
25.01	MID	N	2.490	08/27/2013	2.455 TC	11/11/2017	2.539 DA	09/11/2018	0	0	0	8.3	0.750 U	0.1	09/26/4018	09/11/2021
26.01	MID-T	N	1.000	08/27/2013	0.955 TC	11/11/2017	0.984 DA	09/11/2018	0	3.2	5.6	10.7	0.750 U	3.2	10/27/2091	09/11/2021
27.01	MID-L	N	1.023	08/27/2013	0.973 TC	11/11/2017	1.019 DA	09/11/2018	0	0.8	4.4	11.9	0.750 U	0.8	12/14/2354	09/11/2021
28.01	MID	Y *	2.490	08/27/2013	2.479 TC	11/11/2017		09/11/2018			.		1.000 U			09/11/2021
29.01	BTM	N	1.625 NM	06/15/2012	2.457 TC	11/11/2017	2.552 DA	09/11/2018	0	0	0	0	1.000 U	0.1	09/26/4018	09/11/2021
30.01	BTM	N	1.629	08/27/2013	1.570 TC	11/11/2017	1.639 DA	09/11/2018	0	0	3.2	14.0	1.000 U	0.1	09/26/4018	09/11/2021
31.01	BTM	N	1.025	08/27/2013	0.955 TC	11/11/2017	0.994 DA	09/11/2018	0	6.2	9.6	16.6	0.750 U	6.2	01/18/2058	09/11/2021
32.01	BTM-L	N	1.003	08/27/2013	0.942 TC	11/11/2017	0.993 DA	09/11/2018	0	2.0	6.0	14.5	0.750 U	2.0	03/13/2140	09/11/2021
33.01	BTM	N	1.625 NM	06/15/2012	1.637	08/27/2013	1.616 TC	11/11/2017	5.0	1.7	2.5	5.0	1.000 U	5.0	01/24/2141	11/11/2021
34.01	BTM	N	2.511	08/27/2013	2.475 TC	11/11/2017	2.486 DA	09/11/2018	0	5.0	6.1	8.6	1.000 U	5.0	11/26/2315	09/11/2021
35.01	BTM	N	1.663	08/27/2013	1.622 TC	11/11/2017	1.659 DA	09/11/2018	0	0.8	3.7	9.7	1.000 U	0.8	06/18/2842	09/11/2021
36.01	BTM	N	2.500 NM	06/15/2012		N/A	2.535	08/27/2013	N/A	0	N/A	0	1.000 U	0.1	09/11/4013	08/27/2014
37.01	BTM	N *	1.000 NM	06/15/2012	1.007	08/27/2013	0.954 TC	11/11/2017	12.6	8.5	9.6	12.6	0.750 U	12.6	01/20/2034	11/11/2021
38.01	BTM	Y *	1.000 NM	06/15/2012	1.062	08/27/2013	0.955 TC	11/11/2017	25.4	8.3	12.8	25.4	0.750 U	25.4	12/07/2025	11/11/2021
39.01	BTM	N		N/A		N/A	1.000 NM	06/15/2012	N/A	N/A	N/A	0	0.750 U	0.1	06/30/4012	
40.01	BTM	N	1.742	08/27/2013	2.485 TC	11/11/2017	2.573 DA	09/11/2018	0	0	0	0	1.000 U	0.1	09/26/4018	09/11/2021
41.01	BTM	Y *	2.520	08/27/2013	1.642 TC	11/11/2017	1.622 DA	09/11/2018	24.0	178.2	188.0	208.6	1.000 U	178.2	03/09/2022	09/11/2021

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:10/30/2018

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

Unit: LH-0033
 Eq/Circ ID: LH0033-C1
 Eq Type: PIPING
 Class:
 CM RBI:
 Design Code: S8/D1

Flange Rating: 5734 lb/in²
 Design Pressure: 10000 lb/in²
 Design Temperature: 180 °F

Description: COIL A ON LINE HEATER; SN:6J111050

Summary: Group Name:
 Insp. Due Date = 09/11/2021
 Pred. Ret. Date = 10/10/2022

Group Description:
 RCR = 129.4 MPY
 Rem. Life (from last survey 09/11/2018) = 4.1 yrs

0 C.A. Status: No
 Total Caution TMLs = 6

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
42.01	BTM	N	1.648	08/27/2013	2.487 TC	11/11/2017	2.525 DA	09/11/2018	0	0	0	0	1.000 U	0.1	09/26/4018	09/11/2021
43.01	BTM-R	N	0.996	08/27/2013	0.970 TC	11/11/2017	1.020 DA	09/11/2018	0	0	0	6.2	0.750 U	0.1	09/26/4018	09/11/2021
44.01	BTM-T	Y *	0.982	08/27/2013	0.987 TC	11/11/2017	0.985 DA	09/11/2018		0	0	236.5	0.750 U	2.4		09/11/2021
45.01	BTM-L	N	1.034	08/27/2013	1.017 TC	11/11/2017	1.009 DA	09/11/2018	9.6	5.0	4.7	9.6	0.750 U	9.6	09/03/2045	09/11/2021
46.01	BTM	N	1.000 NM	06/15/2012		N/A	1.582 TC	11/11/2017	N/A	0	N/A	0	0.750 S	0.1	11/26/4017	

Corrosion Monitoring Eq/Circ ID Analysis Report

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Report Date: 10/30/2018

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

Flange Rating: 5734 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 180 °F

Unit: LH-0033
Eq/Circ ID: LH0033-C1
Design Code: S8/D1
Eq Type: PIPING
Class:
CM RBI:

Description: COIL A ON LINE HEATER; SN:6J111050

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	:	31.6 MPY
(B) -- Average Max 25.0% of TMLs, Min of 2	:	129.4 MPY
(C) -- Formula Corrosion Rate (Sigma = 1.28)	:	37.6 MPY
(D) -- Default Corrosion Rate	:	0.1 MPY

Representative Corrosion Rate = 129.4 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 = 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 10/10/2022

Recommended Eq/Circ UT/RT Inspection Date is 09/11/2019
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 6 Caution TMLs in this Eq/Circ ID.



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

Inspections Performed for: FMC Technologies Completion	
Inspection Report for: LH-0033 – Coil 2	
Remaining Life: 20+ YRS	Date of this Report: 09/11/2018
Average Corrosion Rate: 17.3 MPY	Next UT: 09/11/2021 Next VT: 09/11/2021
Manufacturer: DynaCorp Fabricators	Mfg Serial #: 6J111050
Date Built: 2012	National Board #: None
Alberta registration #: 617901	Canadian Registration #: T9862.2

FMC Technologies Completion LH-0033 Line Heater



PRESSURE VESSEL INVENTORY

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

VESSEL ID INFORMATION

Company Name : FMC Technologies Completion
Facility/Location Name : PA District
Field Name : N/A
Equipment Number : LH-0033
Eq/Circ. ID : LH0033-C1/ **LH0033-C2**
Equipment Name/Service : LH0033 Line Heater (w/two coils)
Physical Location : Canonsburg Yard
GPS Coordinates :

VESSEL DESCRIPTION AND SERVICE CONDITIONS

Type of Vessel: Horizontal Line Heater

Vessel Size: N/A Coils = 4.500"

Operating Pressure Range (psig):

Operating Temperature Range (°F):

Does the vessel have Internal Access? ☒ Yes ☐ No

Specify type of internal access, if available: When coils are removed (only internal access)

Vessel is located: ☐ Inside ☒ Outside ☐ Under Roof

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: _____

ORIGINAL VESSEL NAMEPLATE/STAMPING INFORMATION

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

Nameplate Coils # 1 and Coils # 2

AC 75010
Asset Count 2013

8017901

DYNACORP
F A B R I C A T O R S I N C

C.R.N. YEAR BUILT

SER. NO.

COIL A

M.A.W.P.	<input type="text" value="10000"/>	PSI (KpA) at	<input type="text" value="120"/>	F (C) at
M.D.M.T	<input type="text" value="-40"/>	F (C) at	<input type="text" value="10000"/>	PSI (KpA)

COIL B

M.A.W.P.	<input type="text" value="10000"/>	PSI (KpA) at	<input type="text" value="120"/>	F (C) at
M.D.M.T	<input type="text" value="-40"/>	F (C) at	<input type="text" value="10000"/>	PSI (KpA)

Coil # 1 and Coil # 2



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: 08/27/2013

API 510 PRESSURE VESSEL EXTERNAL INSPECTION

Company Name: FMC Technologies Completion	
Facility/Location Name: PA District	
Equipment Number: LH-0033	Eq/Circ. ID: LH0033-C2
Equipment Name/Service: Line Heater	
Physical Location: FMC Yard	
Manufacturer: DynaCorp Fabricators, INC	Manufacturer Serial Number: 6J111050
Year Built: 2012	National Board Number: None
Alberta Registration #: 617901	Canadian Registration # T9862.2

Is Vessel in-service: No.

Reason for Inspection: Scheduled API-510 External Inspection

Condition of Nameplate and/or Bracket: Nameplate is missing. May require an authorized inspector in install a replacement nameplate.

Internal Access: Yes, with bundles removed.

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 line heater was not in service at the time of this inspection.

Condition of Foundation and Anchor Bolts: The front plate is dented in.

Condition of Steel Supports, Saddles, and Bolting: Angle iron supports have corrosion and scale build up.

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: Nozzles and flanges are acceptable with some chipping and minor surface corrosion present.

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): N/A

Comments:

Piping is to be discarded.

Recommendations:

Repairs Needed:

Robert W. Menke/MTW

66475

09/11/2018

API 510 Inspector Signature

API 510 Inspector Number

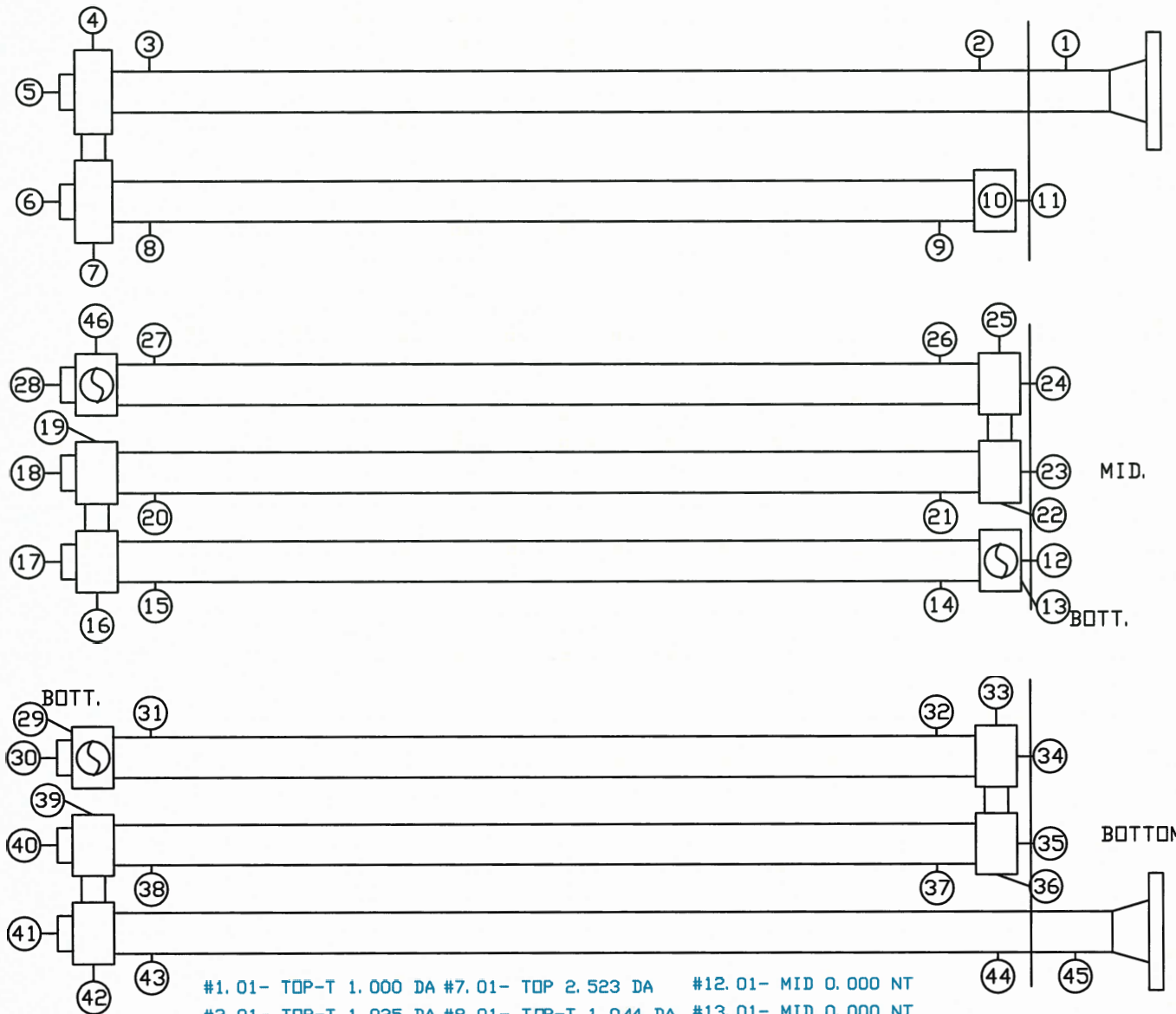
Date

EQUIP RETIREMENT DATE: 12/23/2035
NEXT INSPECTION IS DUE: 9/11/2019

NAMEPLATE INFO

MFG	DYNACORP
SERIAL NUMBER	6J11050
A NUMBER	617901
DATE BUILT	2012
DESIGN P & T	10,000 psi @ 180°F
NOTE	CRN # T9862-2

DA-501



TOP

MID.

BOTT.

BOTTOM

#14. 01- MID-L 1. 029 DA #30. 01- BTM 2. 483 DA
#15. 01- MID-L 1. 012 DA #31. 01- BTM-R 1. 046 DA
#16. 01- MID 2. 543 DA #32. 01- BTM-T 1. 000 DA
#17. 01- MID 1. 668 DA #33. 01- BTM 2. 567 DA
#18. 01- MID 2. 534 DA #34. 01- BTM 1. 648 DA
#19. 01- MID 0. 000 NT #35. 01- BTM 2. 520 DA
#20. 01- MID-T 1. 036 DA #36. 01- BTM 0. 000 NT
#21. 01- MID-R 1. 018 DA #37. 01- BTM 0. 000 NT
#22. 01- MID 0. 000 NT #38. 01- BTM 0. 000 NT
#23. 01- MID 1. 620 DA #39. 01- BTM 0. 000 NT
#24. 01- MID 2. 509 DA #40. 01- BTM 2. 505 DA
#25. 01- MID 1. 657 DA #41. 01- BTM 1. 652 DA
#26. 01- MID-T 0. 985 DA #42. 01- BTM 2. 557 DA
#27. 01- MID-T 1. 046 DA #43. 01- BTM-L 1. 027 DA
#28. 01- MID 2. 515 DA #44. 01- BTM-T 1. 038 DA
#29. 01- BTM 1. 621 DA #45. 01- BTM 0. 000 NT
#46. 01- BTM 0. 000 NT

CAL= 73°F

PIPE= 75°F

BUSINESS UNIT	FMC TECHNOLOGIES COMPLETION
EQ/CIRC ID #	LH0033-C2
EQUIP NAME	LINE HEATER (WITH 2 COILS)
DWG #	LH0033-C2

#1. 01- TOP-T 1. 000 DA #7. 01- TOP 2. 523 DA #12. 01- MID 0. 000 NT
#2. 01- TOP-T 1. 025 DA #8. 01- TOP-T 1. 044 DA #13. 01- MID 0. 000 NT
#3. 01- TOP-T 1. 039 DA #9. 01- TOP-T 1. 011 DA
#4. 01- TOP 1. 640 DA #10. 01- TOP 2. 537 DA
#5. 01- TOP 2. 532 DA #11. 01- TOP 0. 000 NT
#6. 01- TOP 1. 664 DA

DESC: COIL B ON LH-0033 LINE HTR; SN: 6J111050
DWG#: LH0033-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:10/30/2018

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

Unit: LH-0033
 Eq/Circ ID: LH0033-C2
 Eq Type: PIPING
 Class:
 CM RBI:
 Design Code: S8/D1

Flange Rating: 5734 lb/in²
 Design Pressure: 10000 lb/in²
 Design Temperature: 180 °F

Description: COIL B ON LINE HEATER; SN:6J111050

Summary: Group Name:
 Insp. Due Date = 09/11/2021
 Pred. Ret. Date = 12/23/2035

Group Description:
 RCR = 29.1 MPY
 Rem. Life (from last survey 09/11/2018) = 17.3 yrs

0 C.A. Status: No
 Total Caution TMLs = 5

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
1.01	TOP-T	N	1.000 NM	06/15/2012	1.004 TC	11/11/2017	1.000 DA	09/11/2018	4.8	0	0	4.8	0.750 U	4.8	10/11/2070	09/11/2021
2.01	TOP-T	N	1.059	08/27/2013	0.976 TC	11/11/2017	1.025 DA	09/11/2018	0	6.7	11.0	19.7	0.750 U	6.7	09/28/2059	09/11/2021
3.01	TOP-T	N	1.008	08/27/2013	0.987 TC	11/11/2017	1.039 DA	09/11/2018	0	0	0	5.0	0.750 U	0.1	09/26/4018	09/11/2021
4.01	TOP	N	1.625	08/27/2013	1.588 TC	11/11/2017	1.640 DA	09/11/2018	0	0	0.8	8.8	1.000 U	0.1	09/26/4018	09/11/2021
5.01	TOP	N	2.469	08/27/2013	2.441 TC	11/11/2017	2.532 DA	09/11/2018	0	0	0	6.7	1.000 U	0.1	09/26/4018	09/11/2021
6.01	TOP	N	1.609	08/27/2013	1.607 TC	11/11/2017	1.664 DA	09/11/2018	0	0	0	13.3	1.000 U	0.1	09/26/4018	09/11/2021
7.01	TOP	N	2.516	08/27/2013	2.502 TC	11/11/2017	2.523 DA	09/11/2018	0	0	0.1	3.3	1.000 U	0.1	09/26/4018	09/11/2021
8.01	TOP-T	N	1.020	08/27/2013	0.966 TC	11/11/2017	1.044 DA	09/11/2018	0	0	0.9	12.8	0.750 U	0.1	09/26/4018	09/11/2021
9.01	TOP-T	N	1.016	08/27/2013	0.963 TC	11/11/2017	1.011 DA	09/11/2018	0	1.0	4.8	12.6	0.750 U	1.0	09/13/2279	09/11/2021
10.01	TOP	N	2.521	08/27/2013	2.501 TC	11/11/2017	2.537 DA	09/11/2018	0	0	0	4.8	1.000 U	0.1	09/26/4018	09/11/2021
11.01	TOP	N	1.625 NM	06/15/2012	1.640	08/27/2013	1.581 TC	11/11/2017	14.0	8.1	9.7	14.0	1.000 U	14.0	05/13/2059	09/11/2021
12.01	MID	N	2.500 NM	06/15/2012	2.501	08/27/2013	2.485 TC	11/11/2017	3.8	2.8	3.0	3.8	1.000 U	3.8	08/29/2408	09/11/2021
13.01	MID	N	1.625 NM	06/15/2012		N/A	1.759	08/27/2013	N/A	0	N/A	0	1.000 U	0.1	09/11/4013	09/11/2021
14.01	MID-L	N	1.014	08/27/2013	0.957 TC	11/11/2017	1.029 DA	09/11/2018	0	0	2.4	13.5	0.750 U	0.1	09/26/4018	09/11/2021
15.01	MID-L	N	0.983	08/27/2013	0.974 TC	11/11/2017	1.012 DA	09/11/2018	0	0	0	14.2	0.750 U	0.1	09/26/4018	09/11/2021
16.01	MID	N	2.523	08/27/2013	2.489 TC	11/11/2017	2.543 DA	09/11/2018	0	0	0	8.1	1.000 U	0.1	09/26/4018	09/11/2021
17.01	MID	N	1.623	08/27/2013	1.614 TC	11/11/2017	1.668 DA	09/11/2018	0	0	0	2.1	1.000 U	0.1	09/26/4018	09/11/2021
18.01	MID	N	2.459	08/27/2013	2.464 TC	11/11/2017	2.534 DA	09/11/2018	0	0	0	34.2	1.000 U	0.1	09/26/4018	09/11/2021
19.01	MID	N	1.625 NM	06/15/2012		N/A	1.620	08/27/2013	N/A	4.2	N/A	4.2	1.000 U	4.2	04/11/2161	09/11/2021
20.01	MID-T	N	1.037	08/27/2013	0.981 TC	11/11/2017	1.036 DA	09/11/2018	0	0.2	4.4	13.3	0.750 U	0.2	09/22/3448	09/11/2021

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:10/30/2018

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

Unit: LH-0033
 Eq/Circ ID: LH0033-C2
 Eq Type: PIPING
 Class:
 CM RBI:
 Design Code: S8/D1

Flange Rating: 5734 lb/in²
 Design Pressure: 10000 lb/in²
 Design Temperature: 180 °F

Description: COIL B ON LINE HEATER; SN:6J111050

Summary: Group Name:
 Insp. Due Date = 09/11/2021
 Pred. Ret. Date = 12/23/2035

Group Description:
 RCR = 29.1 MPY
 Rem. Life (from last survey 09/11/2018) = 17.3 yrs

0 C.A. Status: No
 Total Caution TMLs = 5

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	MID-R	N	1.009	08/27/2013	0.969 TC	11/11/2017	1.018 DA	09/11/2018	0	0	1.9	9.5	0.750 U	0.1	09/26/4018	09/11/2021
22.01	MID	N		N/A		N/A	1.000 NM	06/15/2012	N/A	N/A	N/A	0	0.750 U	0.1	06/30/4012	09/11/2021
23.01	MID	N	1.662	08/27/2013	1.614 TC	11/11/2017	1.620 DA	09/11/2018	0	8.3	9.3	11.4	1.000 U	8.3	05/24/2093	09/11/2021
24.01	MID	Y	2.593	08/27/2013	2.490 TC	11/11/2017	2.509 DA	09/11/2018	0	16.7	19.2	24.5	1.000 U	16.7	01/21/2109	09/11/2021
25.01	MID	N	1.650	08/27/2013	1.572 TC	11/11/2017	1.657 DA	09/11/2018	0	0	5.1	18.5	1.000 U	0.1	09/26/4018	09/11/2021
26.01	MID-T	N	1.003	08/27/2013	0.942 TC	11/11/2017	0.985 DA	09/11/2018	0	3.6	7.1	14.5	0.750 U	3.6	12/22/2083	09/11/2021
27.01	MID-T	N	1.034	08/27/2013	0.986 TC	11/11/2017	1.046 DA	09/11/2018	0	0	2.1	11.4	0.750 U	0.1	09/26/4018	09/11/2021
28.01	MID	N	1.609	08/27/2013	1.604 TC	11/11/2017	2.515 DA	09/11/2018	0	0	0	13.3	1.000 U	0.1	09/26/4018	09/11/2021
29.01	BTM	Y *	1.893	08/27/2013	1.568 TC	11/11/2017	1.621 DA	09/11/2018	0	54.0	61.5	77.2	1.000 U	54.0	03/12/2030	09/11/2021
30.01	BTM	N	2.503	08/27/2013	2.486 TC	11/11/2017	2.483 DA	09/11/2018	3.6	4.0	4.0	4.0	1.000 U	4.0	06/14/2389	09/11/2021
31.01	BTM-R	N	1.002	08/27/2013	0.970 TC	11/11/2017	1.046 DA	09/11/2018	0	0	0	7.6	0.750 U	0.1	09/26/4018	09/11/2021
32.01	BTM-T	N	0.996	08/27/2013	0.964 TC	11/11/2017	1.000 DA	09/11/2018	0	0	1.9	7.6	0.750 U	0.1	09/26/4018	09/11/2021
33.01	BTM	N	2.494	08/27/2013	2.484 TC	11/11/2017	2.567 DA	09/11/2018	0	0	0	5.0	1.000 U	0.1	09/26/4018	09/11/2021
34.01	BTM	Y *	1.895	08/27/2013	1.602 TC	11/11/2017	1.648 DA	09/11/2018	0	49.0	55.7	69.6	1.000 U	49.0	12/02/2031	09/11/2021
35.01	BTM	N	2.520	08/27/2013	2.489 TC	11/11/2017	2.520 DA	09/11/2018	0	0	2.4	7.4	1.000 U	0.1	09/26/4018	09/11/2021
36.01	BTM	N	1.625 NM	06/15/2012		N/A	1.859	08/27/2013	N/A	0	N/A	0	1.000 U	0.1	09/11/4013	09/11/2021
37.01	BTM	N *	1.000 NM	06/15/2012	0.977	08/27/2013	0.965 TC	11/11/2017	2.9	6.5	5.5	19.2	0.750 U	6.5	12/09/2050	09/11/2021
38.01	BTM	Y *	1.000 NM	06/15/2012	1.039	08/27/2013	0.972 TC	11/11/2017	15.9	5.2	8.0	15.9	0.750 U	15.9	10/29/2031	09/11/2021
39.01	BTM	N		N/A		N/A	1.000 NM	06/15/2012	N/A	N/A	N/A	0	0.750 U	0.1	06/30/4012	09/11/2021
40.01	BTM	N	1.613	08/27/2013	2.475 TC	11/11/2017	2.505 DA	09/11/2018	0	0	0	10.0	1.000 U	0.1	09/26/4018	09/11/2021
41.01	BTM	Y *	2.500 NM	06/15/2012	1.610 TC	11/11/2017	1.652 DA	09/11/2018	0	135.9	146.2	212.9	1.000 U	135.9	06/29/2023	09/11/2021



TechnipFMC

/Circ ID Analysis Report

tion Services
F, Evanston, WY 82930
0 FAX 307-789-2822

Report Date:10/30/2018

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

Unit: LH-0033
Eq/Circ ID: LH0033-C2
Eq Type: PIPING
Class:
CM RBI:
Design Code: S8/D1

Flange Rating: 5734 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 180 °F

Description: COIL B ON LINE HEATER; SN:6J111050

Summary: Group Name:
Insp. Due Date = 09/11/2021
Pred. Ret. Date = 12/23/2035

Group Description:
RCR = 29.1 MPY
Rem. Life (from last survey 09/11/2018) = 17.3 yrs

0 C.A. Status: No
Total Caution TMLs = 5

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
42.01	BTM	N	1.634	08/27/2013	2.467 TC	11/11/2017	2.557 DA	09/11/2018	0	0	0	0	1.000 U	0.1	09/26/4018	09/11/2021
43.01	BTM-L	N	1.030	08/27/2013	0.983 TC	11/11/2017	1.027 DA	09/11/2018	0	0.6	4.0	11.2	0.750 U	0.6	05/15/2480	09/11/2021
44.01	BTM-T	N	1.047	08/27/2013	0.979 TC	11/11/2017	1.038 DA	09/11/2018	0	1.8	6.4	16.2	0.750 U	1.8	09/12/2178	09/11/2021
45.01	BTM	N *	1.000 NM	06/15/2012	1.031	08/27/2013	0.996 TC	11/11/2017	8.3	0.7	2.7	8.3	0.750 U	8.3	07/02/2047	09/11/2021
46.01	BTM	N	1.000 NM	06/15/2012		N/A	2.492 TC	11/11/2017	N/A	0	N/A	0	0.750 U	0.1	11/26/4017	09/11/2021

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: 10/30/2018

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

Flange Rating: 5734 lb/in²
Design Pressure: 10000 lb/in²
Design Temperature: 180 °F

Unit: LH-0033
Eq/Circ ID: LH0033-C2
Design Code: S8/D1
Eq Type: PIPING
Class:
CM RBI:

Description: COIL B ON LINE HEATER; SN:6J111050

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	:	7.4 MPY
(B) -- Average Max 25.0% of TMLs, Min of 2	:	29.1 MPY
(C) -- Formula Corrosion Rate (Sigma = 1.28)	:	8.8 MPY
(D) -- Default Corrosion Rate	:	0.1 MPY

Representative Corrosion Rate = 29.1 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 = 17.3 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 12/23/2035

Recommended Eq/Circ UT/RT Inspection Date is 09/11/2021
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 5 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-0033 Fuel Gas Scrubber	
Remaining Life: 17.9 YRS	Date of this Report: 09/11/2018
Representative Corrosion Rate: 3.4 MPY	Next UT: 09/11/2021 Next VT: 09/11/2021
Manufacturer: LoTech Mfg.	Mfg Serial #: 1006.5889
Date Built: 2011	National Board #: None
Alberta registration #:	Canadian Registration #: OH7154.21345

FMC Technologies Completion - LH-0033 Line Heater Fuel Gas Scrubber



PRESSURE VESSEL INVENTORY

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

VESSEL ID INFORMATION

Company Name : Technip FMC
Facility/Location Name : Pennsylvania District
Field Name :
Equipment Number : LH-0033
Eq/Circ. ID : LH0033-FGS
Equipment Name/Service : (Line Heater) Fuel Gas Scrubber
Physical Location : On LH-0033 in FMC Yard
GPS Coordinates :

VESSEL DESCRIPTION AND SERVICE CONDITIONS

Type of Vessel: Vertical Fuel Gas Scrubber

Vessel Size: 6.625" O.D.

Operating Pressure Range (psig): Not in-service

Operating Temperature Range (°F): Not in-service

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?

Any stamping pertaining to materials of construction?

****Diameter****(strap equipment): 6.625 O.D.

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) 2011

Any other pertinent information: _____

PRESSURE VESSEL INVENTORY

ORIGINAL VESSEL NAMEPLATE/STAMPING INFORMATION

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



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: Jeff Wall

Date: 11/11/2017

API 510 PRESSURE VESSEL EXTERNAL INSPECTION REPORT

Company Name: FMC Technologies Completion	
Field/Location: PA District	
Equipment Number: LH-0033	Eq/Circ. ID: LH0033-FGS
Equipment Name/Service: Fuel Gas Scrubber	
Physical Location: In PA Yard	
Manufacturer: LoTech Mfg., Inc.	Manufacturer Serial Number: 1006.5889
Year Built: 2011	National board #: None
Alberta Registration #: None	Canadian Registration # : OH 7154.21345

Is Vessel in-service? No

Reason for Inspection: Initial API-510 on Stream Inspection

Condition of Nameplate and/or Bracket: Nameplate is intact and legible. 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 is grounded through the skid. The unit was not in service at the time of this inspection.

Condition of Foundation and Anchor Bolts: There are no anchor bolts. The vessel is welded to a baseplate which is welded to the skid deck/frame. Baseplate-to-deck/frame attachment welds appear sound. There is light peeling and moderate surface corrosion on the baseplate.

Condition of Steel Supports, Saddles, and Bolting: All support structural welds appear sound. Vessel is welded to baseplate. There is minor peeling and moderate surface corrosion.

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. Vessel sits in a steel box.

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? Yes. 150 psi.

Date PSV last tested (if there is a tag on the valve): 01/2018 by Portersville.

Comments:

Recommendations:

Repairs Needed:

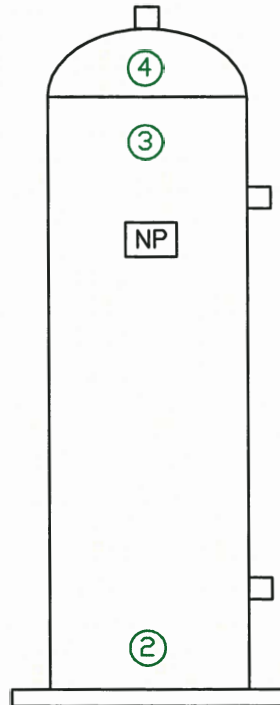
Robert W. Menke/MJW
API 510 Inspector Signature

0131
API 510 Inspector Number

09/11/2018
Date

EQUIP RETIREMENT DATE: 8/12/2036
NEXT INSPECTION IS DUE: 9/11/2019

#2. 01- SH BTM - F 0. 279 FH
 #2. 02- SH BTM - L 0. 274 FH
 #2. 03- SH BTM - BK 0. 273 FH
 #2. 04- SH BTM - R 0. 280 FH
 #3. 01- SH TOP - F 0. 282 FH
 #3. 02- SH TOP - L 0. 292 FH
 #3. 03- SH TOP - BK 0. 283 FH
 #3. 04- SH TOP - R 0. 284 FH
 #4. 01- HD TOP - F 0. 284 FH
 #4. 02- HD TOP - L 0. 279 FH
 #4. 03- HD TOP - BK 0. 281 FH
 #4. 04- HD TOP - R 0. 281 FH



FH2E-D

NAMEPLATE INFO	
MFG	LOTECH MANUFACTURING, INC.
SERIAL NUMBER	1006.5889
NATIONAL BOARD #	NONE
DATE BUILT	2011
DESIGN P & T	150 PSIG @ 650°F
NOTE	CRN # DH 7154. 21345 NO 'U' STAMP

CAL BLK=73°F VESSEL=75°F

BUSINESS UNIT	FMC TECHNOLOGIES COMPLETION
EQ/CIRC ID #	LH0033-FGS
EQUIP NAME	FUEL GAS SCRUBBER
LOCATION	WITH LINE HEATER LH-0033
DWG #	LH0033-FGS

DESC: FUEL GAS SCRUBBER; SN:1006.5889
DWG#: LH0033-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:10/29/2018

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

Unit: LH-0033
 Eq/Circ ID: LH0033-FGS
 Eq Type: PIPING
 Class:
 CM RBI:
 Design Code: S8/D1

Flange Rating: 0 lb/in²
 Design Pressure: 150 lb/in²
 Design Temperature: 650 °F

Description: FUEL GAS SCRUBBER; SN:1006.5889

Summary: Group Name:
 Insp. Due Date = 09/11/2021
 Pred. Ret. Date = 08/12/2036

Group Description:
 RCR = 3.4 MPY
 Rem. Life (from last survey 09/11/2018) = 17.9 yrs

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

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
2.01	SH BTM - F	N	0.280 NM	06/01/2011	0.273 TC	11/11/2017	0.273 RR	09/11/2018	0	1.0	1.0	1.1	0.210 U	1.0	09/11/2081	09/11/2021
2.02	SH BTM - L	N *	0.280 NM	06/01/2011	0.260 TC	11/11/2017	0.260 RR	09/11/2018	0	2.7	2.9	3.1	0.210 S	2.7	03/19/2037	09/11/2021
2.03	SH BTM - BK	N	0.280 NM	06/01/2011	0.271 TC	11/11/2017	0.271 RR	09/11/2018	0	1.2	1.3	1.4	0.210 S	1.2	07/12/2069	09/11/2021
2.04	SH BTM - R	N	0.280 NM	06/01/2011	0.276 TC	11/11/2017	0.276 RR	09/11/2018	0	0.5	0.6	0.6	0.210 S	0.5	09/12/2150	09/11/2021
3.01	SH TOP - F	N *	0.280 NM	06/01/2011	0.267 TC	11/11/2017	0.267 RR	09/11/2018	0	1.8	1.9	2.0	0.210 S	1.8	05/12/2050	09/11/2021
3.02	SH TOP - L	N *	0.280 NM	06/01/2011	0.267 TC	11/11/2017	0.267 RR	09/11/2018	0	1.8	1.9	2.0	0.210 S	1.8	05/12/2050	09/11/2021
3.03	SH TOP - BK	N	0.280 NM	06/01/2011	0.278 TC	11/11/2017	0.278 RR	09/11/2018	0	0.3	0.3	0.3	0.210 S	0.3	05/14/2245	09/11/2021
3.04	SH TOP - R	N	0.280 NM	06/01/2011	0.277 TC	11/11/2017	0.277 RR	09/11/2018	0	0.4	0.4	0.5	0.210 S	0.4	03/13/2186	09/11/2021
4.01	HD TOP - F	N *	0.280 NM	06/01/2011	0.254 TC	11/11/2017	0.254 RR	09/11/2018	0	3.6	3.7	4.0	0.210 S	3.6	12/01/2030	09/11/2021
4.02	HD TOP - L	N *	0.280 NM	06/01/2011	0.254 TC	11/11/2017	0.254 RR	09/11/2018	0	3.6	3.7	4.0	0.210 S	3.6	12/01/2030	09/11/2021
4.03	HD TOP - BK	N *	0.280 NM	06/01/2011	0.258 TC	11/11/2017	0.258 RR	09/11/2018	0	3.0	3.2	3.4	0.210 S	3.0	09/11/2034	09/11/2021
4.04	HD TOP - R	N *	0.280 NM	06/01/2011	0.259 TC	11/11/2017	0.259 RR	09/11/2018	0	2.9	3.0	3.3	0.210 S	2.9	08/04/2035	09/11/2021

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: 10/29/2018

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

Unit: LH-0033
Eq/Circ ID: LH0033-FGS
Design Code: S8/D1
Eq Type: PIPING
Class:
CM RBI:

Flange Rating: 0 lb/in²
Design Pressure: 150 lb/in²
Design Temperature: 650 °F

Description: FUEL GAS SCRUBBER; SN:1006.5889

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	:	1.9 MPY
(B) -- Average Max 25.0% of TMLs, Min of 2	:	3.4 MPY
(C) -- Formula Corrosion Rate (Sigma = 1.28)	:	2.6 MPY
(D) -- Default Corrosion Rate	:	0.1 MPY

Representative Corrosion Rate = 3.4 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 = 17.9 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 08/12/2036

Recommended Eq/Circ UT/RT Inspection Date is 09/11/2021
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.