ANNUAL SUMMARY OF COMPONENT LEAK DETECTION AND REPAIRS – 2020

A total of two component leak surveys were conducted during 2020, in accordance with subsection 39(1), on the following dates:

- September 1 – September 22
- November 16 – November 23

The leak survey for April 1 to June 30 time period was not completed due to COVID-19.

The combined annual percentage of leaking valves in 2020 is 1.0%. The annual average concentration of VOCs from leaking components during 2020 is 4632 ppm.

BE#3

2020 Operation Dates

BE# was shut down for maintenance turnarounds March 20th through April 2nd and October 16th through October 30th. Otherwise the BE#3 Unit was charged with hydrocarbon and considered in operation from LDAR monitoring perspective throughout 2020.

Components

As of the end of 2020, there were a total of 2867 components containing a minimum of 2% 1:3-butadiene in BE#3, and therefore subject to the Petrochemical – Industry Standard (PCIS) Leak Detection and Repair (LDAR) requirements. None of these components have been identified as unsafe components, but 759 of these components are excluded from LDAR monitoring because they are inaccessible components.

Component Leak Surveys

The BE#3 2020 surveys were performed by a portable gas detector, and these surveys occurred on the following dates:

- September 1 – September 22
- November 16 – November 23

A total of 2108 components were surveyed in 2020, which includes 2 inaccessible components (insulation temporarily removed) but did not include 2 accessible components that were out of service in 2020.

The BE#3 2020 LDAR component leak performance was as follows:
98.5% of components had leak rates <=1000 ppm
1.0% of components had readings >1000 ppm and <=5000 ppm
0.3% of components had readings >5000 ppm and <=10,000 ppm
0.2% of components had leak rates >10,000 ppm and <=25,000 ppm
0% of components had leak rates >25,000 ppm

Component Repairs

A total of 29 components were identified as having a leak rate >=1000 ppm in 2020. Of the components identified with a leak rate >=1000 ppm, 2 were repaired to <1000 ppm more than once in 2020, representing 0.07% of total components in BE#3 (7% of components identified with leak rate >1000 ppm in 2020).

The following table provides a summary of successful repair timeframes for components with leak rates >=1000 ppm in 2020.

BE#3 – 2020 Component Repair Summary				
Component Type	Number Repaired to <1000ppm Leak Rate	Shortest Repair Timeframe[(1)]	Longest Repair Timeframe[(1)]	Average Repair Timeframe[(1)]
Valves	4	same day	1 day	1 day
Pumps	1	8 days	8 days	8 days
Flanges/Connectors	26	same day	57 days	5 days

[(1)] Timeframe between leak detection and successful component repair (includes days component was out of service awaiting completion of repair)

In 2020 there were no valves in BE#3 that required replacement with a low-emission valve, or for packing to be replaced with a low emission packing.

The following table provides a summary of component repairs for the calendar years since the date registered to the Petrochemical – Industry Standard.

BE#3 – Component Repair Summary		
Component Type	2018 Number Repaired to <1000ppm Leak Rate	2019 Number Repaired to <1000ppm Leak Rate
Valves	6	7
Pumps	4	4
Flanges/Connectors	33	25

K-1 East

2020 Operation Dates

The K-1 East equipment operated for the full year in 2020.

Components

As of the end of 2020, there were a total of 2226 components containing a minimum of 2% 1:3-butadiene in K-1 East, and therefore subject to the Petrochemical – Industry Standard (PCIS) Leak Detection and Repair (LDAR) requirements. None of these components have been identified as unsafe components, but 903 of these components are excluded from LDAR monitoring because they are inaccessible components.

Component Leak Surveys

The K-1 East 2020 surveys were performed by a portable gas detector, and these surveys occurred on the following dates:

- September 1 – September 22
- November 16 – November 23

A total of 1323 components were surveyed in 2020, which includes all accessible components.

The K-1 East 2020 LDAR component leak performance was as follows:
98.9% of components had leak rate <=1000 ppm
0.8% of components had leak rate >1000 ppm and <=5000 ppm
0.2% of components had leak rate >5000 ppm and <=10,000 ppm
0.1% of components had leak rate >10,000 ppm and <=25,000 ppm
0% of components had leak rate >25,000 ppm

Component Repairs

A total of 14 components were identified as having a leak rate >=1000 ppm in 2020. Of the components identified with a leak rate >=1000 ppm, 1 was repaired to <1000 ppm more than once in 2020, representing 0.04% of total components in K-1 East (7% of components identified with leak rate >1000 ppm in 2020).

The table on the following page provides a summary of successful repair timeframes for components with leak rates >=1000 ppm in 2020.

K-1 East – 2020 Component Repair Summary				
Component Type	Number Repaired to <1000ppm Leak Rate	Shortest Repair Timeframe[1]	Longest Repair Timeframe[1]	Average Repair Timeframe[1]
Valves	4	1 day	1 day	1 day
Pumps	4	1 day	28 days	11 days
Flanges/Connectors	7	same day	28 days	6 days

[1] Timeframe between leak detection and successful component repair (includes days component was out of service awaiting completion of repair)

In 2020 the valve that was on the delay of repair list, was replaced with a low emission valve. No valve packing was replaced with low emission packing in 2020.

The following table provides a summary of component repairs for the calendar years since the date registered to the Petrochemical – Industry Standard.

K-1 East – Component Repair Summary		
Component Type	2018 Number Repaired to <1000ppm Leak Rate	2019 Number Repaired to <1000ppm Leak Rate
Valves	5	8
Pumps	2	2
Flanges/Connectors	20	15

K-1 West

2020 Operation Dates

K-1 West operated for the full year with the exception of the 83 components that are associated with the West Flare which did not operate in 2020. These 83 components are typically classified as exempt (<300 hours) but did operate for more than 300 hours in 2019 (May 8 - May 30).

Components

As of the end of 2020, there were a total of 2314 components containing a minimum of 2% 1:3-butadiene in K-1 West, and therefore subject to the Petrochemical – Industry Standard (PCIS) Leak Detection and Repair (LDAR) requirements. None of these components have been identified as unsafe components but 83 that are typically exempt on the basis of <300 hours service (associated with the West Flare), and an additional 615 are excluded from LDAR monitoring because they are inaccessible components.

Component Leak Surveys

The K-1 West 2020 surveys were performed by a portable gas detector, and these surveys occurred on the following dates:

- September 1 – September 22
- November 16 – November 23

A total of 1612 components were surveyed in 2020, which includes all but 35 of the accessible components which were out of service in 2020 (31 of these are associated with the West which was out of service in 2020).

The K-1 West 2020 LDAR component leak performance was as follows:
99.1% of components had leak rate <=1000 ppm
0.8% of components had leak rate >1000 ppm and <=5000 ppm
0.1% of components had leak rate >5000 ppm and <=10,000 ppm
0% of components had leak rate >10,000 ppm and <=25,000 ppm
0% of components had leak rate >25,000 ppm

Component Repairs

A total of 14 components were identified as having a leak rate >=1000 ppm in 2020. Of the components identified with a leak rate >=1000 ppm, 1 was repaired to <1000 ppm more than once in 2020, representing 0.04% of total components in K-1 West (7% of components identified with leak rate >1000 ppm in 2020).

The following table provides a summary of successful repair timeframes for components with leak rates >=1000 ppm in 2020.

K-1 West – 2020 Component Repair Summary				
Component Type	Number Repaired to <1000ppm Leak Rate	Shortest Repair Timeframe[(1)]	Longest Repair Timeframe[(1)]	Average Repair Timeframe[(1)]
Valves	5	1 day	13 days	4 days
Pumps	1	2 days	2 days	2 days
Flanges/Connectors	9	same day	2 days	1 day

[(1)] Timeframe between leak detection and successful component repair (includes days component was out of service awaiting completion of repair)

In 2020 there were no valves in K-1 West that required replacement with a low-emission valve, or for packing to be replaced with a low emission packing.

The following table provides a summary of component repairs for the calendar years since the date registered to the Petrochemical – Industry Standard.

K-1 West – Component Repair Summary		
Component Type	2018 Number Repaired to <1000ppm Leak Rate	2019 Number Repaired to <1000ppm Leak Rate
Valves	1	8
Pumps	0	2
Flanges/Connectors	26	18

ARLANXEO
Performance Elastomers

Gary Archambeault
Ministry of Environment, Conservation and Parks
1094 London Road
Sarnia, ON, N7T 1P1

December 10, 2020

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Sarnia, Ontario Canada
N7T 7M2

Peter West
Manager, TSS & HSEQ
Phone 519-337-8251 x7730

Peter.West@arlanxeo.com

Dear Gary:

RE: Petrochemical Industry Standard Delay of Repair List Report

Please find attached the Delay of Repair List for the ARLANXEO West Site, to satisfy the Petrochemical Industry Standard (PCIS) subsection 44(4) requirements.

The leaking LDAR component set out in the record required by subsection 44(2) could not be repaired though means other than replacement, and replacement will not be possible until this equipment is taken out of service during BE#3 shutdown planned for June 2021.

If you require any clarification or further information, please do not hesitate to contact myself or Heather Campbell (heather.michelin@arlanxeo.com or 337-8251 ext. 4050).

Sincerely,

Peter West

Cc: Erin White, Sarnia District Office

DELAY OF REPAIR LIST
2020-12-10

ARLANXEO
Performance Elastomers

LEAKERS - REPAIR DELAYED UNTIL NEXT SHUTDOWN

Operating Unit/Area	Component ID	Name (Type)	Butadiene Leak Rate (ppm)	Duration Listed (days)
K-1 East	016298 D DF	3" flange	1061.5	22

TOTAL 1,3-Butadiene (ppm) = 1061.5

TOTAL 1,3- Butadiene (ppm) from previous report (June 12, 2020) = 1174.5 ppm

COMPARISON of number of "Delay of Repair" components:
December 19, 2018 report = 3
June 27, 2019 report = 3
December 19, 2019 report = 1
June 12, 2020 report = 1