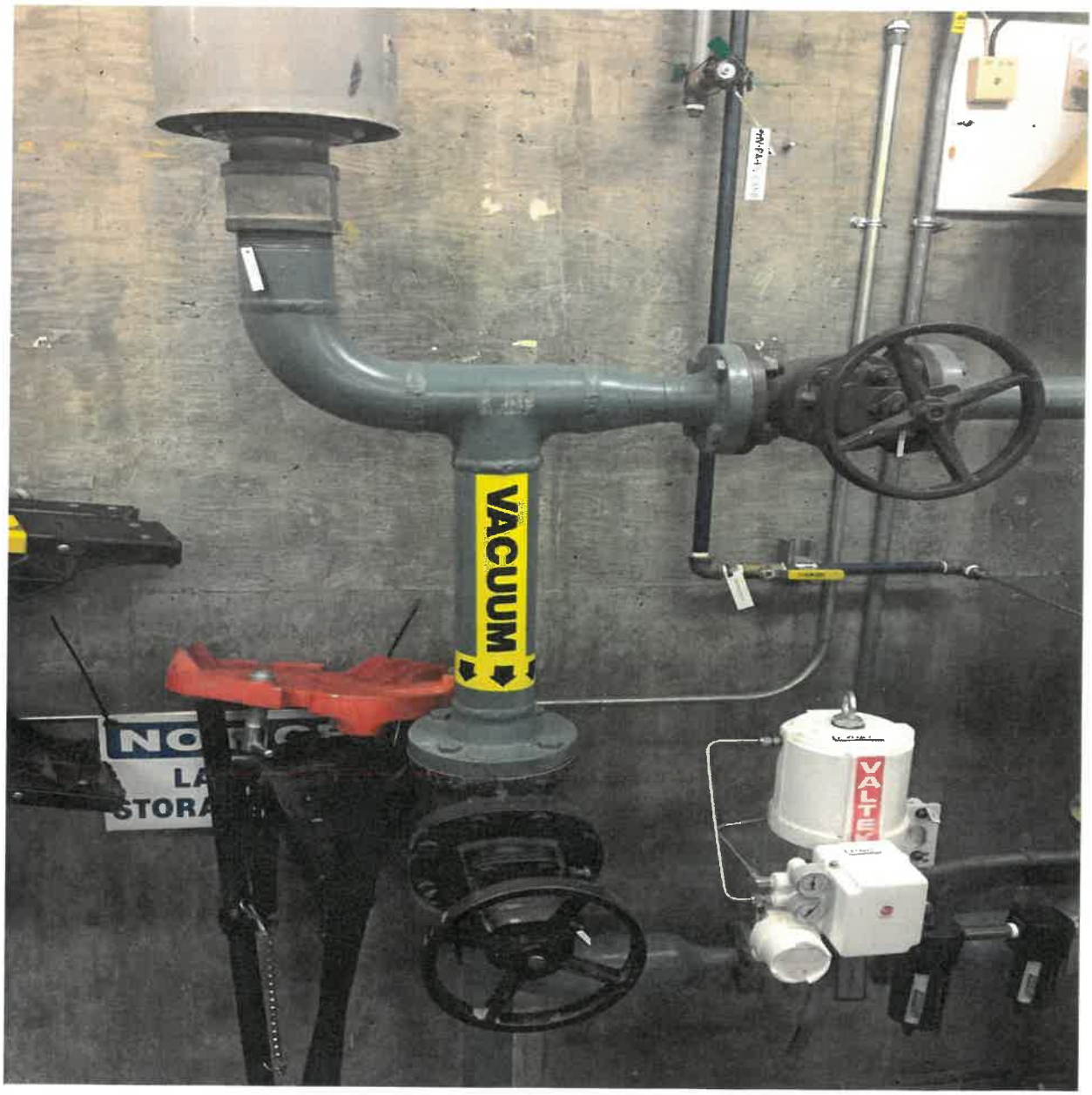
COMBINED EVENT INVESTIGATION / CAUSE ANALYSIS REPORT

Investigation of TF-AOP-015 Entry in the 242-A Condenser Room

EIR-2019-051

WRPS-PER-2019-2400



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Event Investigation EIR-2019-051/Apparent Cause Analysis WRPS PER-2019-2019-2400
Title: ***Investigation of TF-AOP-015, Entry in the 242-A Condenser Room***

Cause Analysis Type.....Apparent Cause Analysis
Approving Manager.....[redacted]
Cause Analyst.....[redacted]
ORP Facility Representative.....[redacted]
Safety Management Program Owner Reviewer.....[redacted]
PER Discovery Date.....December 09, 2019

Washington River Protection Solutions, LLC

February 4, 2020

washington river protection solutions

Prepared for the U.S. Department of Energy
Office of River Protection
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[redacted]

Event Investigator / Cause Analyst

02/05/2020
Date

[redacted]

PER Responsible Manager

2/5/2020
Date

Problem Statement

On, Monday, December 9 2019, a WRPS field work supervisor (FWS) and nuclear chemical operation (NCO), performing work set-up in the condenser room, reported smelling an odor described as musty, earthy, stagnant air, like nitrous oxide while performing work setup in the 242-A Condenser Room. The 242-A Shift manager restricted access to the condenser room and notified the central shift manager (CSM) who initiated a TF-AOP-015, *Response to Reported Odors or Unexpected Changes to Vapor Conditions.* Neither of the workers reported symptoms and declined medical evaluation at HPMC.

Executive Summary

On Monday, December 9 2019, at approximately 0830, a Production Operations field work supervisor (FWS) and nuclear chemical operator (NCO) were staging material for the replacement of two pressure control valves (PCVs) on the 5th level of the 242-A Evaporator Condenser Room when they detected an odor that was described as musty, earthy, stagnant air and a little like nitrous oxide. While exiting the employees also detected the odor on the 4th, 3rd, and 2nd levels. Upon exiting the condenser room, the employees notified the 242-A Shift manager. Neither of the workers reported any symptoms and declined a medical evaluation at HPMC. The 242-A shift manager (SM) restricted access to the condenser room and notified the central shift manager (CSM), who entered into TF-AOP-015 *Response to Reported Odors or Unexpected Changes to Vapor Conditions*. The CSM issued a shift office event notification (SOEN) for the 242-A condenser room and made notification to the on-call DOE-ORP facility representative. The central shift office issued Event Investigation Report number EIR-2019-051 and assigned a point-of-contact (POC). The CSM contacted Production Operations Industrial Hygienists (IH) who deployed an Industrial Hygiene technician (IHT) supervisor and two industrial hygiene technicians (IHTs) to respond to the event. The IHT supervisor and IHTs were offered voluntary respiratory protection by the IH and CSM to enter the condenser room (TF-AOP-015 RPF Task 4). The IHT Supervisor and IHTs elected to enter the condenser room without wearing respiratory protection. Upon entering the condenser room (2nd level), the IHTs performed monitoring with their direct reading instruments (DRI) and collected general area bag samples on the 3rd and 4th levels. They made their way up the stairs to each level, monitoring as they went. The source of the odor was found on the 4th level at F-C-2 air intake filter. It was later determined that the source was the F-C-2 intake filter 4-2 bypass valve which had been placed in the open position as instructed by TO-680-010, *Perform Scheduled Electrical Power Outage at the 242-A Evaporator* at the completion of a scheduled electrical outage 08/11/2019 through 09/05/2019. DRI reading results showed levels of 44 ppm Ammonia (NH_3) and 2500 ppb VOCs at the source. The highest general area reading on the 4th level was 1 ppm NH_3 (Action Limit = 12 ppm general area) and 20 ppb VOCs (Action Limit = 2 ppm). All IH personnel exited the condenser room and informed the 242-A shift manager of the DRI monitoring results. All bag sample results were below NH_3 and VOC action limits.

WRPS-PER-2019-2400 was initiated to document, and conduct an apparent cause analysis (ACA) of the event. The responsible manager approved combining the EIR and ACA reports.

Apparent Cause 1 (AC01) – TO-680-010, *Perform Scheduled Electrical Power Outage at the 242-A Evaporator* instructions were less than adequate (LTA). When restoring 242-A systems, the procedure instructs the operator to position the F-C-2 intake filter 4-2 bypass valve in the open position creating a potential open pathway from the 241-AW 102 tank headspace to the 242-A condenser room.

Event Timeline

05/08/2014

Procedure TO-680-010, *Perform Scheduled Electrical Power Outage at the 242-A Evaporator,* A-0 (USQ # EV-14-0881-D R0) was issued.

08/11/2019-09/05/2019

The 242-A Evaporator entered and exited a scheduled electrical outage in accordance with the instructions in TO-680-010, *Perform Scheduled Electrical Power Outage at the 242-A Evaporator,* B-8 (USQ # EV-17-1332-D R5). Step 5.4.7 instructs F-C-2 inlet filter bypass valve 4-2 to be placed in the open position when restoring 242-A systems.

12/09/2019

0815 FWS and NCO entered 242-A Evaporator condenser room (entrance is on 2nd level) to stage material for PCV replacement (WO# 558694 and 505103)

0830 Odors detected by employees while performing work set up on 5th level. Employees exited the condenser room (2nd level) and notified the 242-A SM of the odor. While exiting, odor was detected on 4th, 3rd, and 2nd levels.

0832 The SM restricted access to the condenser room, notified the CSM, and instructed employees to complete Odor Response Cards.

0842 Production Operations (PO) IHs arrive at the Central Shift Office (CSO).

0843 PO IHs are briefed by the CSM: odor is reported in the 242A condenser room as earthy, Musty as employees were staging materials on the 5th floor of the condenser room.

0845 Odor Response Cards arrive at the CSO. Shift Operations Manager confirms employees have No symptoms and did not want a precautionary medical evaluation.

0846 IHT Supervisor directs IHTs to CSO to receive response briefing.

0848 CSM notified on-call DOE facility rep. and Project IH. SOEN: "Entered TF-AOP-015 for 242-A condenser room. Access is restricted to the 242-A condenser room" CSM

0915 IHT Supervisor and two IHTs enter condenser room without respiratory protection to perform monitoring with DRI and to collect bag samples. A faint odor of bleach was noted as they reached the top of the 4th level stairs. On the 4th level at F-C-2 air intake filter, the source reading was approximately 40 ppm NH_3 and 2.5 ppm Volatile Organic Compounds (VOC). General area results for NH_3 was 1 ppm (Action Limit = 12 ppm general area) and 20 ppb VOCs (Action Limit = 2 ppm general area).

1010 All IH personnel exit condenser room

1030 Procedure change authorization (PCA) initiated for TO-600-060, "Shutdown 242-A Evaporator System" to allow closing of valve 4-1 to isolate F-C-2 air intake filter presumed to be the source of the odor.

1100 Develop plan to enter Condenser Room with IHT and NCO to close valve 4-1 and verify with DRI that source of the odor has been eliminated.

1606 Revision to procedure TO-600-060, "Shutdown 242-A Evaporator System" issued through WRAP.

12/10/19

1000 IHTs and IHT Supervisor receive response briefing at CSO from PO IHs.

1015 An IHT supervisor, two IHTs, and one NCO enter Condenser Room to collect source and area bag samples and perform DRI monitoring for NH_3 and VOCs. A minimum of a full-face air-purifying respirator (FFAPR) with a chemical cartridge is required for entry.

1039 IHTs monitor F-C-2 piping and reported DRI readings of 62ppm NH_3 and 6.070 ppm VOCs at the source. Readings one foot away from the source were 12 ppm NH_3 and 1.060 ppm VOCs. General area readings were 3 ppm NH_3 and 0.210 ppm VOCs.

1045 NCO closes valve 4-1. IHTs monitor for ammonia; levels do not decrease. IHT supervisor notice valve 4-2 (F-C-2 air intake filter bypass valve) in the open position. IHT supervisor informs NCO that valve 4-2 is open and inquires about closing it.

1050 NCO exits condenser room to inform the 242-A shift manager that ammonia readings are still elevated after closing valve 4-1 and that valve 4-2 is in the open position.

1055 The SM reviews 242-A systems drawings and conferences with the 242-A engineering team. The SM identifies valve 4-2 as being the source of the elevated readings and instructs the NCO to reenter the condenser room and close valve 4-2.

1105 NCO reenters condenser room, closes valve 4-2. It required several turns of the valve hand wheel to close the valve. NH_3 levels decreased rapidly. F-C-2 inlet filter source readings were 4 ppm NH_3 and 0.20 ppm VOCs. Readings one foot away from the source were 1 ppm NH_3 and 0.060 ppm VOCs. General area readings were 1 ppm NH_3 and 0.030 ppm VOCs.

1140 IHTs, IHT supervisor, and NCO exit 242-A Evaporator condenser room. Readings reported to CSM.

1253 IHT Supervisor reports bag sample results and DRI post-use function test results to PO IHs.

1350 SOEN: "Response actions for the TF-AOP-015 event at 242-A condenser room have been completed and the results are below action limits. Exiting AOP-015"

1354 242-A Evaporator SM directs NCO to restore access to normal at condenser room

Immediate Actions

1. Employees exited the 242-A Condenser Room and notified the SM.
2. CSM made SOEN notifications and contacted On-Call Facility Representative.
3. IHTs performed DRI monitoring and collected grab samples on multiple levels.

Remedial Actions

1. Initiated procedure change authorization (PCA) to TO-600-060, "Shutdown 242-A Evaporator System" to REQUEST Backside Operator to ensure valve 4-1, F-C-2 air intake filter isolation valve is CLOSED.
2. Closed 4-2 bypass valve to the F-C-2 air intake filter

Compensatory Action/Measure

1. The SM restricted access to the condenser room.

Investigation

On August 11, 2019, the 242-A Evaporator entered into a scheduled electrical outage in accordance with TO-680-010, *Perform Scheduled Electrical Power Outage at the 242-A Evaporator,* B-8 (USQ # EV-17-1332-D R5). **Field Preparation** section 4.3.22 States, "**CLOSE** VALVE 4-2". **Restore 242-A Systems** section 5.4.7 states, **OPEN** VALVE 4-2. These are the only references to valve 4-2 in the procedure, which places the valve in the open positon upon completion of the electrical outage on September 05, 2019.

On Wednesday, December 4, 2019, a relay (solenoid failure) in cabinet RC-4 at the 242-A Evaporator failed, initiating a system safety shutdown. When this occurred, it actuated a vessel vent shut down and the 242-A Evaporator Dump valves HV-CA-7 & 9 failing in the open position creating a potential open pathway from the 241-AW 102 Tank (headspace) to the Evaporator. At the time, the AW Farm exhausters were in service and pulling negative ventilation on the Evaporator. The Evaporator building ventilation was not affected and was in service.

On Friday, December 6, 2019, at approximately 1442, the AW operator secured (shutdown) the AW Farm exhausters to support the ABB software system upgrades. The exhausters were scheduled to be secured from 12/06 to 12/08 to support this activity. In accordance with the instruction in TO-060-107, *Operate AW Tank Farm Primary Ventilation System (VTP),* it is required that the AW operator notify the 242-A Shift Manager prior to Start-up and Shut-down of the AW Farm exhausters. Notification, via radio, to the 242-A shift manager of the intent to shut down the exhausters for the ABB software upgrades was made prior to shut down on 12/06/2019. The AW operator notified all potentially affected facilities and personnel as required. On 12/07/2019, it was realized that the upgrades would not be completed as scheduled and therefore the exhausters could not be returned to service on the date previously communicated. A notification, via the Daily Report, was available 12/09/2019 on the Production Operations web page. The 242-A shift manager also contacted the AW operator daily for updates on the status of the AW exhausters. The AW Farm exhausters were returned to service on 12/10/2019 @ 1610.

On Monday, December 9, 2019, at approximately 0830, two Production Operations employees (NCO and FWS) reported encountering unexpected odors described as musty, earthy, stagnant air, and a little like nitrous oxide while performing work setup in the 242-A Condenser Room. The employees were staging material for replacement of pressure control valves (PCVs) on the fifth level under work orders #558694

and #505103. The NCO first noticed the odor while performing work in the northeast corner of the fifth level. The NCO then asked the FWS if they noticed the odor as well. The FWS was working near the south wall of the fifth level and had not detected the odor until moving closer to the area where the NCO was. The odor was most noticeable within 15-20 feet of the F-C-2 air intake filter, located on the 4th level. The odor was also encountered in the stairway on the 3rd, and 2nd levels as the FWS and NCO were exiting the condenser room (exit door is on the 2nd level). The odor was described by them as, a "musty, earthy, stagnant air, and a little like nitrous oxide". Upon exiting, the employees immediately notified the 242-A Shift Manager (SM) who then restricted access to the Condenser Room and notified the Central Shift Manager (CSM) of the odor event. The FWS and NCO did not report any symptoms and declined to undergo a medical evaluation at the Hanford Site Medical Provider, HPMC. The CSM declared TF-AOP-015 event, issued a SOEN notification, contacted the Department of Energy On-Call Facility Representative, Production Operations IHs, and initiated Event Investigation EIR-2019-051.

IHT Supervisor and two IHTs receive a response briefing at the Central Shift Office (CSO). The IHT Supervisor and IHTs were offered voluntary respiratory protection (TF-AOP-015 RPF Task 4) to enter the condenser room by the IH and CSM. The IHT supervisor and IHTs elected to enter the condenser room without wearing respiratory protection. At approximately 0915, the IHT supervisor and IHTs entered the condenser room on the 2nd level. The IHTs performed monitoring with their direct reading instruments (DRI) and collected general area bag samples on the 3rd and 4th levels. The IHTs made their way up the stairs to each level, monitoring as they went up. A faint odor of bleach was noted as they reached the top of the 4th level stairs. The source of the odor was found on the 4th level at F-C-2 air intake filter. DRI source reading results showed levels of Ammonia (NH_3) at 44ppm. The highest general area NH_3 reading during the initial response was 1 ppm (Action Limit = 12 ppm). The IHTs exited the condenser room and informed the 242-A shift manager of the DRI monitoring results. All bag sample results were below action limits.

WRPS-PER-2019-2400 was initiated to document and conduct an apparent cause analysis (ACA) for the event. The responsible manager approved combining the EIR and ACA reports.

The 242-A Evaporator SM reviewed drawings to research the potential source of the odor/readings and concluded that the source of the readings/odor was the open 4-1 isolation valve to the F-C-2 air intake filter. A procedure revision to TO-600-060 was issued, that allowed the 4-1 isolation valve to the F-C-2 air intake filter to be closed to isolate the source and in support of shutdown activities.

On December 10, 2019, an IHT Supervisor and two IHTs arrived at the 242-A evaporator. The IHTs and an NCO entered the condenser room, wearing approved respiratory protection equipment (RPE) prescribed in 242A-FC2-00001. The IHTs wore full-face air purifying respirators (FFAPR) with chemical cartridges and the NCO wore a self-contained breathing apparatus (SCBA). Once inside and on the 4th level, the IHTs took DRI readings in the area of the F-C-2 air intake filter. The results were consistent with the readings taken the previous day. The IHT supervisor, wearing the same PPE as the IHTs, arrived on the 4th level as the NCO closed valve 4-1 in accordance with the revised procedure. The IHTs took source DRI readings of F-C-2 air intake filter, but there was no change in the results. The IHTs also performed DRI readings 1 foot from the F-C-2 air intake filter and general area readings. The IHT Supervisor noticed 4-2 bypass valve was in the open position (valve stem position) and was likely the source. The IHT supervisor told the NCO that valve 4-1 was not the source and that valve 4-2 was and inquired about closing it. **NOTE: The IHT supervisor was once a D&D operator and had past experience manipulating valves.** The NCO exited the condenser room to inform the 242-A SM that the source DRI readings did not decrease after the 4-1 valve was closed. The NCO also informed the 242-A

SM that the IHT supervisor noticed that the 4-2 valve was open and inquired about closing it to eliminate the source. The SM reviewed system drawings of the condenser and conferenced with the 242-A evaporator engineering team to confirm the source of the readings to be the 4-2 valve in the open position. After discussions with engineering, it was determined that the 4-2 bypass valve was the source of the readings. The SM instructed the NCO to reenter the condenser room and close the 4-2 valve. The NCO entered the condenser room, wearing an SCBA as before, and closed the 4-2 valve. After the NCO closed valve 4-2, the IHTs took direct readings in the same areas around the F-C-2 air intake filter and found no actionable readings. At this point, it was confirmed that the 4-2 valve, in the open position, was the source of the readings.

On January 16, 2020 the 242-A Evaporator Engineering team reviewed P&ID Vacuum Condenser System diagrams H-2-98988 Sheet 1 rev. 23, H-2-98988 Sheet 2 rev. 21, and H-2-98999 Sheet 1, rev 22. They concluded that when the Evaporator dump valves HV-CA-7 & 9 and the 4-2 bypass valve are in the open position it creates an open pathway to the 241-AW 102 Tank. Engineering also concluded that when Evaporator dump valves HV-CA-7 & 9 are in the open position, 4-1 valve is in the open position, and valve 4-2 in the closed position, this **DOES NOT** create an open pathway to the 241-AW 102 Tank.

On February 3, 2020 discussions with 242-A management and 242-A Engineering concluded that there is no technical basis for opening valve 4-2 at the conclusion of TO-680-010, *Perform Scheduled Electrical Power Outage at the 242-A Evaporator* **Restore 242-A Systems** activities. These instructions appear in the first issue of the procedure revision A-0 on 05/08/2014. A procedure change request (PCA) should be submitted to delete section 5.4.7.

EXTRANEOUS CONDITION ADVERSE TO QUALITY NOT RELATED TO CAUSE

The 242-A Evaporator facility configuration (valve 4-2 in the open position) discussed in this Apparent Cause Analysis created an open pathway from the 241-AW 102 Tank (feed tank to the Evaporator) to the 242-A Evaporator condenser room. Tank (headspace) vapors contain flammable gases, which present a potential hazard to the facility and personnel. A Hazard Analysis evaluation should be performed to determine the likely hood and/or potential consequences of flammable gas build-up in the applicable areas of the 242-A Evaporator in the event of a similar or like scenario occurring in the future. **WRPS-PER-2020-0072** has been initiated to identify and document this concern.

On December 9, 2019, an IHT supervisor and two IHTs responded to a TF-AOP- 015 at the 242-A Evaporator. They were offered voluntary respiratory protection by the 242-A shift manager and the Industrial Hygienist in accordance with Respiratory Protection Form TF-AOP-015 Task 4 states, *"Voluntary Use" Respond to reported odors or unexpected changes to vapor condition OUTSIDE OF TANK FARM BOUNDARIES. (TF-AOP-015 3.1.14.3).* They elected to make the entry without respiratory protection per TF-AOP-015, *when entry criteria has deemed the origin of the odor not suspected from tank waste and outside a Tank Fam boundary (3.1.14).* The odor was later determined to be from an open bypass valve that resulted in air inside the vacuum system to be exhausted into the Condenser Room. The open valve also created an open pathway from the 241-AW-102 Tank (tank headspace) to the Condenser Room. Criteria used to determine potential source during the establishment of entry criteria for an event in TF-AOP-015 should be reviewed to consider facilities that could have potential piping links as being inside a Tank Farm Boundary. **WRPS-PER-2020-0119** was initiated to identify and document this concern.

Historical Review

A search of the WRPS Issues Management system (i. e., PER database) between the dates 11/01/2010 and 1/20/2020 was performed using the key word phases "procedure error" and "changed configuration". The search yielded three PERs with none of the events similar to the event discussed in this ACA.
On December 4, 2019, there was a TF-AOP-015 event in the 242-A condenser room as a result of workers detecting an unexpected odor (EIR-2019-050). The description of the odor (burnt smell) did not resemble Tank Waste vapors, IH monitoring results were below actionable limits, and the source of the odor could not be identified. The conclusion of the EIR was reviewed but deemed not to be a like or similar event. EIR-2019-025, an AOP-015 event occurring during the weekend of June 7-9, 2019, was also reviewed but also deemed not to be a like or similar event as the event occurred outside and the odor described as a sewer smell.

Positive Aspects of the Event

- Odors were detected prior to work crew reporting to work site (condenser room)
- Personnel exited the area immediately upon detection of the odor
- Prompt notifications were made.
- IHT supervisor was once a D&D operator and had past experience manipulating valves.

Extent of Condition

TO-680-010, *Perform Scheduled Electrical Power Outage at the 242-A Evaporator* is specific to 242-A Evaporator. The 241-AW 102 Tank is the feed tank to the 242-A Evaporator therefore the two are linked via piping systems. Because the 242-A Evaporator is the only facility with this distinct connection, this type of event is unique and bound to the 242-A Evaporator. The 242-A Engineering team should analyze other potential abnormal condition scenarios where the configuration of the facility could create potential pathways from the 242-AW 102 Tank to the 242-A Evaporator. EOC-01

Facility Impact

Work was delayed for approximately one day until procedure TO-600-060, "Shutdown 242-A Evaporator System" could be revised to allow the closing of valve 4-1 to isolate F-C-2 air intake filter.

HPI Error Precursors

3B-Lack of knowledge (faulty mental model)
3I-Unawareness of critical parameters
4C-Assumptions (inaccurate mental picture)
4F-Inaccurate risk perception (Pollyanna)
4L-Tunnel vision (lack of big picture)

Cause Analysis

A "Barrier Analysis" was used in conjunction with a "WHY" analysis to identify causal factors related to administrative and/or procedural barriers of controls that should have prevented the event(s).

Barrier	Did the Barrier Exist?	Effectiveness	Summary
TO-680-010, *Perform Scheduled Electrical Power Outage at the 242-A Evaporator*	**Yes**	**Not Effective**	The procedure instructions allowed F-C-2 intake filter bypass valve 4-2 to be left in the open positon when restoring 242-A systems. This created a potential open pathway from the 241-AW 102 tank to the 242-A Evaporator. No technical basis exists for this configuration. AC01
AW exhausters	**Yes**	**Not Effective**	Exhausters were not effective because they had been secured to install the ABB software upgrades.
Evaporator dump valves HV-CA-7 & 9	**Yes**	**Not Effective**	Evaporator dump valves, HV-CA-7&9, failed in the open position as a result of the failed relay.
242-A Evaporator building ventilation	**Yes**	**Effective**	Although effective, exacerbated the condition by pulling a negative inside condenser room. Vapors/gases were pulled from the vacuum system piping (F-C-2 inlet filter).
Vessel vent system	**Yes**	**Not Effective**	Vessel vent vacuum system was secured as a result of the failed relay.

Why Analysis:

Problem Statement: On, Monday, December 9 2019, a WRPS field work supervisor (FWS) and nuclear chemical operation (NCO), performing work set-up in the condenser room, reported smelling an odor described as musty, earthy, stagnant air, like nitrous oxide. The 242-A Sift manager restricted access to the condenser room and notified the central shift manager (CSM) who initiated a TF-AOP-015, *Response to Reported Odors or Unexpected Changes to Vapor Conditions.* Neither of the workers reported symptoms and declined medical evaluation at HPMC.

WHY

242-A Evaporator entered and completed a scheduled electrical outage 08/11/2019 to 09/05/2019

AND

When restoring 242-A systems, TO-680-010, *Perform Scheduled Electrical Power Outage at the 242-A Evaporator* section 5.4.7 instructed that bypass valve 4-2 be left in the open position

AND

There is no technical basis for leaving valve 4-2 in the open position

WHY

The 242-A configuration created a potential open pathway from the 241-AW 102 tank to the condenser room allowing Tank Farm vapors/gases to vent into the condenser room

WHY

Preventive barriers were not effective

WHY

TO-680-010 instructions were less than adequate (LTA)

Cause Analysis Summary

Procedure TO-680-010, *Perform Scheduled Electrical Power Outage at the 242-A Evaporator* was walked down 04/14/2014 through 05/06/2014. When initially released on 05/08/2014, the procedure reviewers did not consider multiple safety barriers failing that could potentially create an open pathway from the 241-AW 102 tank to the evaporator. The event was created because the following barriers either failed, were operable, or were taken out of service:

- Failed relay in RC-4 actuated a vessel vent shut down and caused evaporator dump valves HV-CA-7 & 9 to open. This created an open pathway from the 241-AW 102 Tank headspace to the Evaporator through vacuum system piping.
- Vessel vent vacuum system secured.
- AW Farm exhausters taken out of service to install ABB software upgrades. No negative ventilation pull on 241-AW Tank 102.
- AW The shutdown occurred when a relay (solenoid failure) failed in cabinet RC-4 actuating a vessel vent shut down which created an open pathway from the 241-AW 102 Tank headspace to the Evaporator.
- Restoring 242-A system at the completion of electrical outage in September 2019, TO-680-010 instructed operator to open F-C-2 intake filter bypass valve 4-2. There is no technical basis to open the valve to support electrical outage activities.
- 242-A Evaporator building ventilation was operating pulling a negative in the condenser room

The analysis concludes that procedure TO-680-010, *Perform Scheduled Electrical Power Outage at the 242-A Evaporator* contained was less than adequate instructions because there was no technical basis for placing bypass valve 4-2 in the open position at the conclusion of the outage as part of restoring 242-A systems. With the condition of aforementioned barriers, leaving valve 4-2 in the open position created a potential open pathway from 241-AW 102 tank to the condenser room. This allowed vapors/gases to be vented into the room, which caused the event.

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The following conditions existed at the time of the event:

- AW Farm exhausters were out of service due to the ABB software upgrades. Therefore, there was no negative ventilation on 241-AW 102 Tank.
- Evaporator dump valves HV-CA-7 & 9 were in the open position as the result of a failed relay. The vessel vent shutdown occurred when a relay (solenoid failure) failed in cabinet RC-4 which created an open pathway from the 241-AW 102 Tank headspace to the Evaporator.
- Isolation valve 4-1 was open
- Vessel vent vacuum system was secured
- The bypass valve (4-2) to F-C-2 air intake filter was open
- 242-A Evaporator building ventilation was operating

Cause (s)

Apparent Cause 1 (AC01) – TO-680-010, *Perform Scheduled Electrical Power Outage at the 242-A Evaporator* instructions were less than adequate (LTA). When restoring 242-A systems, the procedure instructs the operator to position the F-C-2 intake filter 4-2 bypass valve in the open position creating a potential open pathway from the 241-AW 102 tank headspace to the 242-A condenser room.

Cause Codes

A5B2C03- Data/computations wrong/incomplete

Cause	Corrective Action
AC01: TO-680-010, *Perform Scheduled Electrical Power Outage at the 242-A Evaporator* instructions were less than adequate (LTA). When restoring 242-A systems, the procedure instructs the operator to position the F-C-2 intake filter 4-2 bypass valve in the open position. It was unknown that this system configuration created a potential open pathway from the 241-AW 102 tank headspace to the 242-A condenser room. A5B2C03	**Action AC01-01:** 242-A Engineering team evaluate the technical basis for TO-680-010, *Perform Scheduled Electrical Power Outage at the 242-A Evaporator* and step 5.4.7 to open valve 4-2. If no basis exists to open the valve, revise TO-680-010 to modify the procedure. **Actionee:** [redacted] **Due Date:** March 20, 2020 **Deliverable:** Copy of email communicating the results of the evaluation attached in ESTARS. A copy of the revised procedure, if applicable, attached in ESTARS
EOC01:	**Action EC01-01:** The 242-A Engineering team should evaluate other potential abnormal condition scenarios where the configuration of the facility could create potential pathways from the 242-AW 102 Tank to the 242-A Evaporator. **Actionee:** [redacted] **Due Date:** March 20, 2020 **Deliverable:** Copy of email communicating the results of the evaluation attached in ESTARS.

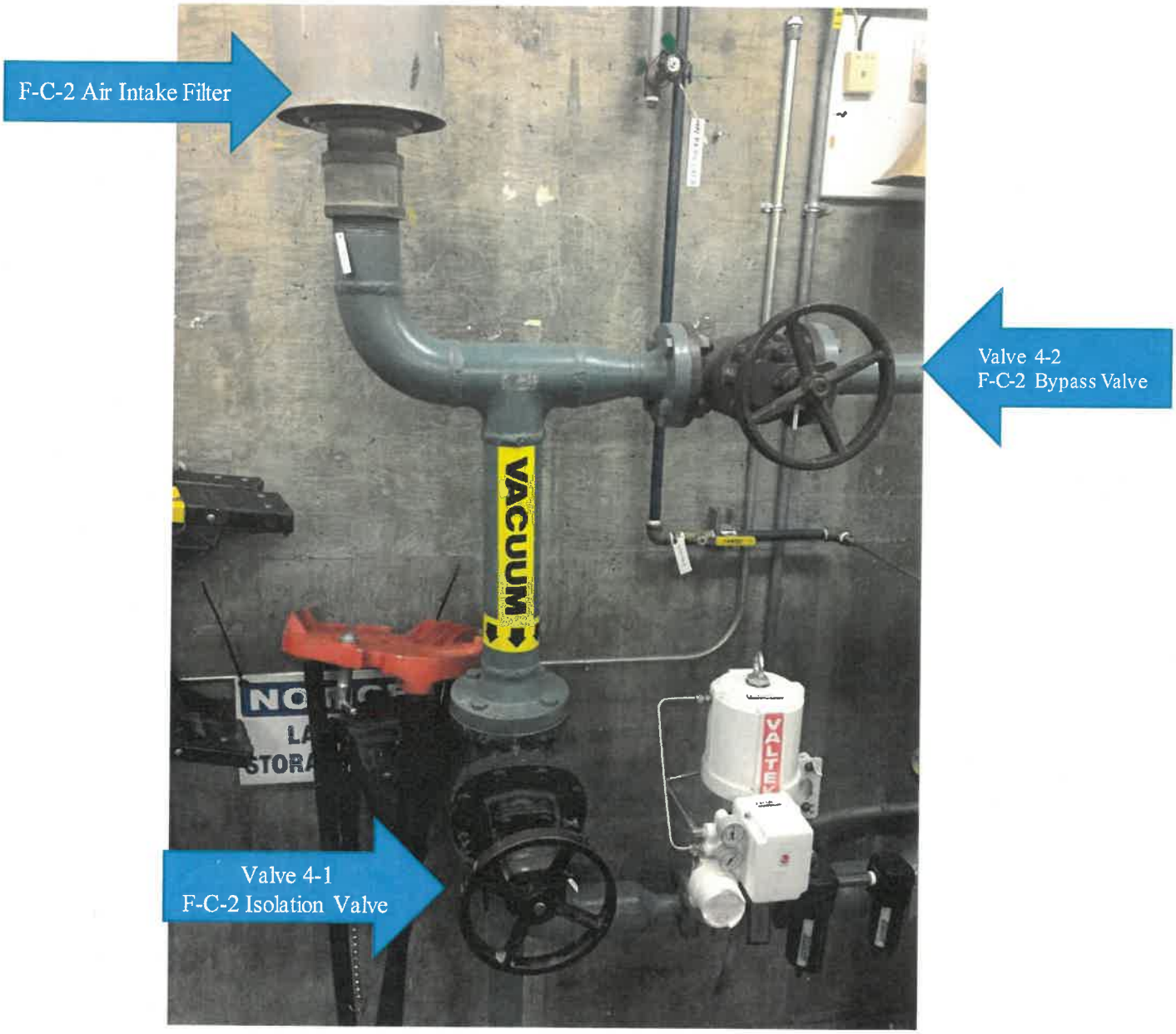
References:

TO-600-060, *Shut Down 242-A Evaporator System*
TO-600-010, *242-A Evaporator Initial Valving Verification*
TO-680-010, *Perform Scheduled Electrical Power Outage at the 242-A Evaporator*

Attachments:

1. Picture of F-C-2 Air intake filter, 4-1 isolation valve, and 4-2 isolation valve
2. TF-AOP-015 RPF Task 4
3. 242A-FC2-00001 RPF
4. P&ID Vacuum Condenser System diagrams H-2-98988 Sheet 1 rev. 23, H-2-98988 Sheet 2 rev. 21, and H-2-98999 Sheet 1, rev 22
5. 242-A shift manager log book entries
6. 242-A shift log book entries
7. Picture of 4-2 (F-C-2 bypass valve) as found on 12/10/2019 open position
8. Picture of 4-2 (F-C-2 bypass valve) in closed position 01/23/2020
9. Odor Response Cards 242-A Condenser Room 12/09/2019 EIR-2019-051 are in IDMS
10. TO-680-010, *Perform Scheduled Electrical Power Outage at the 242-A Evaporator*

ATTACHMENT 1
Picture of F-C-2 air intake filter, 4-1 isolation valve, and 4-2 isolation valve



ATTACHMENT 2
TF-AOP-015 RPF Task 4

RESPIRATORY PROTECTION FORM

1. Work Control Document: TF-AOP-015
2. RPF No: ☒ N/A
3. Form Rev No: 6
4. Form Expiration Date: 05/08/2020
5. Work Location
200 East Area, 200 West Area, and 600 Areas controlled by WRPS except at the 222-S Laboratory Complex

6. Task Description:
Task 1: "Minimum required respiratory protection" Response to reported odors or unexpected changes to vapor conditions INSIDE OF TANK FARM BOUNDARIES when odor is suspected to originate FROM TANK WASTE. (TF-AOP-015 3.1.11.3)

7. Select ONLY One ☐ N/A
☐ Radiological ☒ Industrial Hygiene/Chemical ☐ Radiological and Industrial Hygiene/Chemical

8. Select Appropriate Respirator(s)
☐ 1/2-APR ☐ FF-APR ☐ FF-PAPR ☐ PAPR-HOOD ☐ E-Z Flo Airline SAR
☐ SKA-PAK SAR ☐ Cam-Air ☒ SCBA ☐ PremAire SAR w/Vortex Cooler
☐ Other: N/A

9. Required Cartridge(s) *(if applicable)* ☐ P100/HE ☐ Other ☒ N/A

10. Cartridge Change Out Schedule(s) ☒ N/A

11. Special Instruction(s): ☒ N/A

6. Task Description:
Task 2: "Respiratory protection use when required" Response to reported odors or unexpected changes to vapor conditions OUTSIDE OF TANK FARM BOUNDARIES when odor is suspected to originate FROM TANK WASTE. (TF-AOP-015 3.1.12.3)

7. Select ONLY One ☐ N/A
☐ Radiological ☒ Industrial Hygiene/Chemical ☐ Radiological and Industrial Hygiene/Chemical

8. Select Appropriate Respirator(s)
☐ 1/2-APR ☐ FF-APR ☐ FF-PAPR ☐ PAPR-HOOD ☐ E-Z Flo Airline SAR
☐ SKA-PAK SAR ☐ Cam-Air ☒ SCBA ☐ PremAire SAR w/Vortex Cooler
☐ Other: N/A

9. Required Cartridge(s) *(if applicable)* ☐ P100/HE ☐ Other ☒ N/A

10. Cartridge Change Out Schedule(s) ☒ N/A

11. Special Instruction(s): ☒ N/A

6. Task Description
Task 3: "Respiratory protection use when required by management" Response to reported odors or unexpected changes to vapor conditions OUTSIDE OF TANK FARM BOUNDARIES when odor is NOT suspected to originate FROM TANK WASTE. (TF-AOP-015 3.1.12.3)

7. Select ONLY One ☐ N/A
☐ Radiological ☒ Industrial Hygiene/Chemical ☐ Radiological and Industrial Hygiene/Chemical

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ATTACHMENT 2 (continued)
TF-AOP-015 RPF Task 4

RESPIRATORY PROTECTION FORM (Continued)

1. Work Control Document: TF-AOP-015
2. RFP No.: ☒ N/A 3. Form Rev No.: 6 4. Form Expiration Date: 05/08/2020
8. Select Appropriate Respirator(s):
☐ 1/2-APR ☐ FF-APR ☐ FF-PAPR ☐ PAPR-HOOD ☐ E-Z Flo Airline SAR
☐ SKA-PAK SAR ☐ Carri-Air ☒ SCBA ☐ PremAire SAR w/Vortex Cooler
☐ Other: N/A
9. Required Cartridge(s) *(if applicable)* ☐ P100/HE ☐ Other ☒ N/A
10. Cartridge Change Out Schedule(s): ☒ N/A
11. Special Instruction(s): ☒ N/A
6. Task Description:
Task 4: *Voluntary Use* Response to reported odors or unexpected changes to vapor conditions OUTSIDE OF TANK FARM BOUNDARIES. (TF-AOP-015 3.1.14.3)
7. Select ONLY One: ☐ N/A
☐ Radiological ☒ Industrial Hygiene/Chemical ☐ Radiological and Industrial Hygiene/Chemical
8. Select Appropriate Respirator(s).
☒ 1/2-APR ☒ FF-APR ☒ FF-PAPR ☒ PAPR-HOOD ☐ E-Z Flo Airline SAR
☐ SKA-PAK SAR ☐ Carri-Air ☒ SCBA ☐ PremAire SAR w/Vortex Cooler
☒ Other: N-95
9. Required Cartridge(s) *(if applicable)* ☒ P100/HE ☒ Other ☐ N/A

MSA 1/2APR: N-95 for nuisance dust	815394 818357 818346
N-95 nuisance level dust w/nuisance Level OV removal	818347
P-95 for low level dust	818354
p-95 for low level dust w/nuisance level OV removal	818355
P-100 for particulate	818342 818369 10123079 10146939
P-100 for particulate w/nuisance level OV and O3 removal	818343
P-100 for particulate w/nuisance level AG, HF removal	818344
GMA for organic vapor (OV)	815355
GMA/P-100 for particulate and organic vapor (P-100,OV)	815362
GMB for acid gas (CL,SD,CD,HC,HS)	815356
GMB/P-100 for particulate and acid gas (P-100,CL,SD,CD,HC,HS)	815363
GMC for organic vapor and acid gas (OV,CL,SD,CD,HC,HS)	815357

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ATTACHMENT 2 (continued)
TF-AOP-015 RPF Task 4

RESPIRATORY PROTECTION FORM (Continued)

1. **Work Control Document:** TF-AOP-015

2. **RFP No.:** ☒ N/A 3. **Form Rev No.:** 6 4. **Form Expiration Date:** 05/08/2020

	GMC/P-100 for particulate, acid gas, and organic vapor (P-100,OV,CL,SD,CD,HC,HS)	815364
	GMD for ammonia and methylamine (AM,MA)	815358
	GMD/P-100 for particulate, ammonia and methylamine (P-100,AM,MA)	815365
	GME for chemical vapor (OV,CL,HC,SD,AM,MA,CD,FM,HF)	815359
	GME/P-100 for particulate and chemical vapor (P-100,OV,CL,HC,SD,AM,MA,CD,ND,FM,HF)	815363
	GMI for particulate and iodine vapor (P-100,OV)	815641
	Mersorb/P-100 for Mercury vapor (P-100,MV,CL)	815368
3M FF-APR:	P-100 for particulate (P-100)	P-100
	Organic Vapor (OV)	6001
	Acid Gases (CL,HC,SD,CD,HS)	6002
	Organic Vapor/Acid Gases (OV,CL,HC,SD,CD,HS,HF)	6003
	Ammonia/Methylamine (AM,MA)	6004
	Formaldehyde/Organic Vapor (OV,FM)	6005
	Multi-Gas/Vapor (OV,CL,HC,SD,CD,HS,HF,AM,MA,FM)	6006
	Mercury Vapor/Chlorine Gas (MV,CL,SD)	6009
	Organic vapor and particulates (P-100,OV)	6092
	Organic vapor, acid gases and particulates (OV,CL,HC,SD,CD,HS,HF)	60923
	particulate and chemical vapor (P-100,OV,CL,HC,SD,CD,HS,HF,AM,MA,FM)	60926
MSA FF-APR:	R95 for Oil Aerosols	816287
	P-100 for particulate (P-100)	815175 815176 815177
	GMA for Organic vapor (OV)	464031
	GMA/P-100 for particulate and organic vapor (P-100,OV)	815178 815186
	GMB for Acid Gas (Cl,SD,CD,HC,HS)	464032
	GMB/P-100 for particulate and Acid Gas (P-100,Cl,SD,CD,HC,HS)	815179
	GMC for acid gas and organic vapor (OV,CL,SD,CD,HC,HS)	464046
	GMC/P-100 for particulate, acid gas, and organic vapor	815180

ATTACHMENT 2 (continued)
TF-AOP-015 RPF Task 4

RESPIRATORY PROTECTION FORM (Continued)

1. Work Control Document: TF-AOP-015

2. RFP No.: ☒ N/A 3. Form Rev No.: 6 4. Form Expiration Date: 05/08/2020

(P-100,OV,CL,SD,CD,HC,HS)	815186
GMD for ammonia and methylamine (AM,MA)	464033
GMD/P-100 for particulate ammonia and methylamine (P-100,AM,MA)	815181
GME for chemical vapor (OC,CL,SD,CD,HC,HS,AM,MA,FM,HF)	492790
GME/P-100 for particulate and chemical vapor (P-100,OC,CL,SD,CD,HC,HS,AM,MA,FM,HF)	815182
GMI/P-100 for particulate and iodine vapor (P-100,OV)	815184
Mersorb for particulate and mercury vapor (P-100,CL,MV)	815185
SCOTT FF-APR:P-100 for particulate (P-100)	7422-FP1
Particulate and Mercury Vapor (P-100,CL,MV)	7422-MB1
MSA FF-PAPR: OptiFilter HE (P-100)	10080455
OptiFilter OV/CL/CD/HC/HS/SD/HE/HF (OV,CL,CD,HC,HS,SD,HE,HF)	10080454
OptiFilter AM/CL/CD/FM/HC/HS/MA/SD/HE/HF (AM,CL,CD,FM,HC,HS,MA,SD,HE,HF)	10080456
MSA Optimair TL PAPR-HOOD:	
OptiFilter HE (P-100)	10080455
OptiFilter OV/CL/CD/HC/HS/SD/HE/HF (OV,CL,CD,HC,HS,SD,HE,HF)	10080454
OptiFilter AM/CL/CD/FM/HC/HS/MA/SD/HE/HF (AM,CL,CD,FM,HC,HS,MA,SD,HE,HF)	10080456
3M Breathe Easy PAPR-HOOD:	
HE(P3) (P-100)	450-00-01R12
OV/HE (AP3) (P-100,OV)	453-00-01R06
OV/AG/HE (ABP3) (P-100,OV,CL,HC,SD)	453-03-01R06
OV/AG/HF/HE (ALP3) (P-100,OV,SD,HF)	453-07-01R06
AG/FORM/HE (FP3) (P-100,CL,HC,SD,SD,FM)	453-01-01R06
AMM/HE (KP3) (P-100,AM,MA)	453-02-01R06
FR-57 (P-100,OV,SD,CL,HC,AM,MA,HF,CD,FM)	453-03-02R06

10 Cartridge Change Out Schedule(s): ☐ N/A

ATTACHMENT 2 (continued)
TF-AOP-015 RPF Task 4

RESPIRATORY PROTECTION FORM (Continued)

1. Work Control Document: TF-AOP-015

2. RFP No.. ☒ N/A 3. Form Rev No.. 6 4. Form Expiration Date: 05/08/2020

3 Hours

11. Special Instruction(s): ☐ N/A

Voluntary use is NOT prescribed, only approved. Be cognizant of physical limitations, visibility limitations, and communication limitations created by respirator use. Voluntary respiratory use is appropriate for most activities. When a job, task or work assignment includes scaffolding, hoisting and rigging, ladders, or use of personal fall protection equipment, arc-flash protection equipment, and/or limited work space; a safety evaluation and approval is needed before issuance.

12. Radiological Engineer/Radiological Work Planner:

[redacted] — Print First and Last Name | [redacted] — Signature | 5/8/19 — Date | [redacted] — Phone Number

13. Industrial Hygienist:

[redacted] — Print First and Last Name | [redacted] — Signature | 05/08/2019 — Date | [redacted] — Phone Number

*Both signatures are required for form to be valid

ATTACHMENT 3
242A-FC2-00001 RPF

RESPIRATORY PROTECTION FORM

1. Work Control Document: TF-ACP-015 3.1.14

2. RPF No.: 242A-FC2-00001 ☐ N/A

3. Form Rev No.: 0 4. Form Expiration Date: 12/10/2020

5. Work Location:
242A/Condenser Room

6. Task Description:
Task 1: 'MINIMUM REQUIRED' Respiratory Protection Equipment for 242A Condenser Room Odor Response Plan to close F-C-2 isolation valve 4-1.

7. Select ONLY One: ☐ N/A
☐ Radiological ☒ Industrial Hygiene/Chemical ☐ Radiological and Industrial Hygiene/Chemical

8. Select Appropriate Respirator(s):
☐ 1/2-APR ☒ FF-APR ☐ FF-PAPR ☐ PAPR-HOOD ☐ E-Z Flo Airline SAR
☐ SKA-PAK SAR ☐ Carri-Air ☐ SCBA ☐ PremAire SAR w/Vortex Cooler
☐ Other:

9. Required Cartridge(s) *(if applicable)* ☐ P100/HE ☒ Other ☐ N/A
MSA GME Chemical Vapor- Part No. 492790

10. Cartridge Change Out Schedule(s): ☐ N/A
One Shift

11. Special Instruction(s): ☒ N/A

6. Task Description:
Task 2: 'VOLUNTARY UPGRADE' Respiratory Protection Equipment for 242A Condenser Room Odor Response Plan to close F-C-2 isolation valve 4-1.

7. Select ONLY One: ☐ N/A
☐ Radiological ☒ Industrial Hygiene/Chemical ☐ Radiological and Industrial Hygiene/Chemical

8. Select Appropriate Respirator(s):
☐ 1/2-APR ☒ FF-APR ☐ FF-PAPR ☐ PAPR-HOOD ☐ E-Z Flo Airline SAR
☐ SKA-PAK SAR ☐ Carri-Air ☒ SCBA ☐ PremAire SAR w/Vortex Cooler
☐ Other.

9. Required Cartridge(s) *(if applicable)* ☐ P100/HE ☒ Other ☐ N/A
MSA GME/P100 Chemical Vapor & Particulate- Part No. 815182

10. Cartridge Change Out Schedule(s): ☐ N/A
One Shift

11. Special Instruction(s): ☒ N/A

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ATTACHMENT 3 (continued)
242A-FC2-00001 RPF

RESPIRATORY PROTECTION FORM (Continued)

1. Work Control Document: TF-AOP-015 3.1.14
2. RPF No.: 242A-FC2-00001 ☐ N/A
3. Form Rev No.: 0
4. Form Expiration Date: 12/10/2020

12. Radiological Engineer/Radiological Work Planner:

Print First and Last Name	Signature	Date	Phone Number
[redacted]	[redacted]	12/10/19	[redacted]

13. Industrial Hygienist:

Print First and Last Name	Signature	Date	Phone Number
[redacted]	[redacted]	12/10/19	[redacted]

*Both signatures are required for form to be valid

Page 2 of 2

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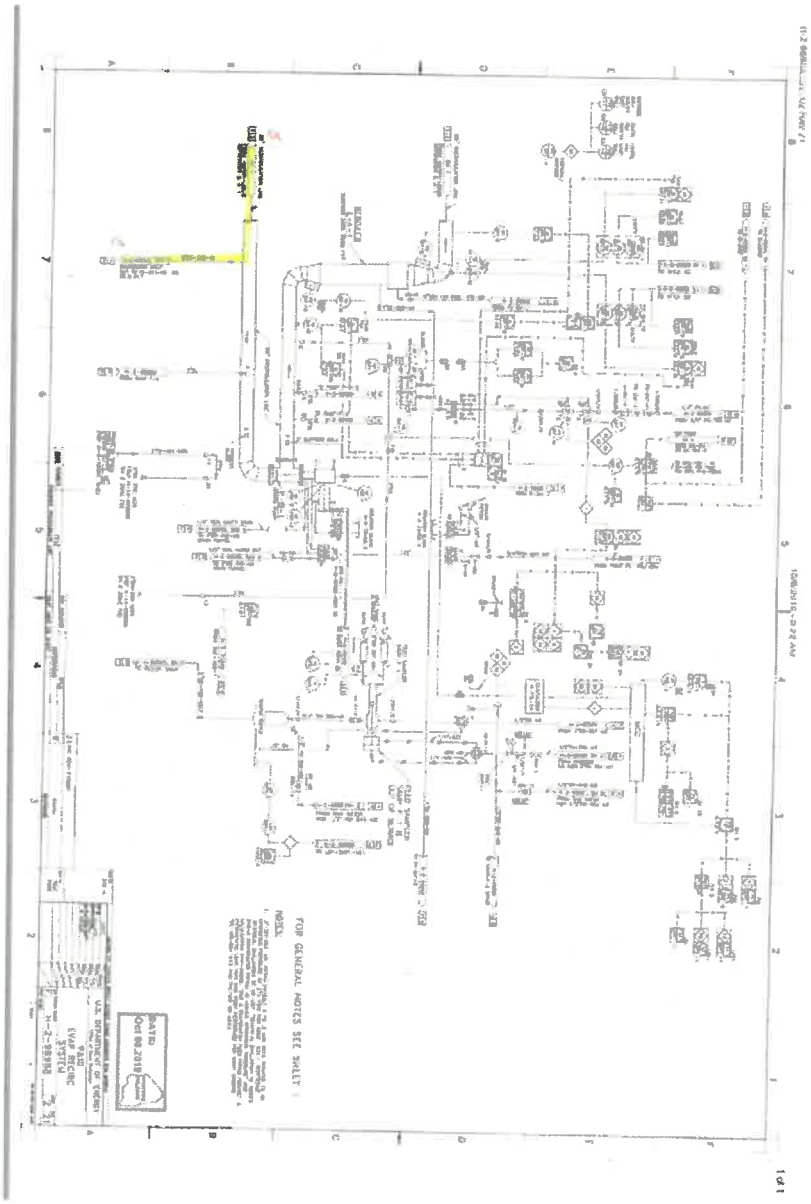
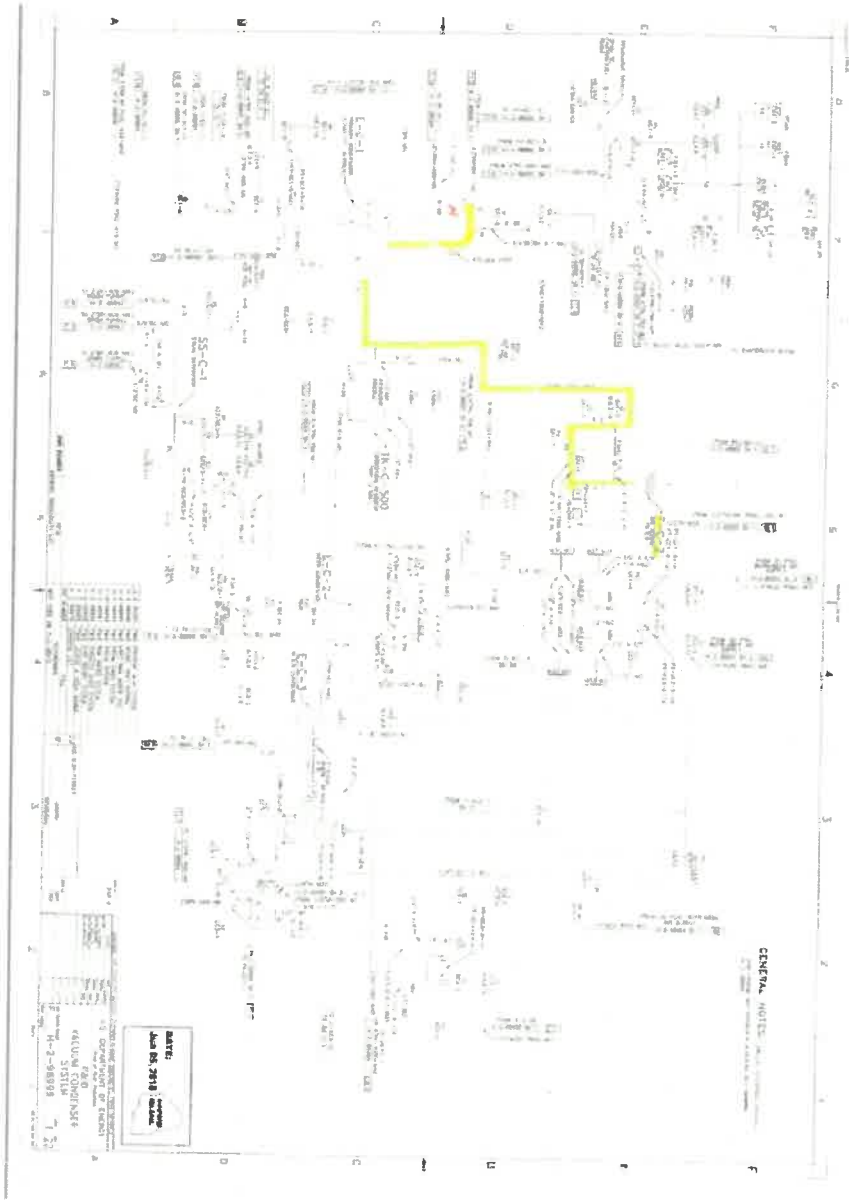
ATTACHMENT 4
P&ID H-2 98988 Sheet 1

ATTACHMENT 4 (continued)
P&ID H-2 98988 Sheet 2



ATTACHMENT 4 (continued)
P&ID H-2 98999 Sheet 1



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ATTACHMENT 5
242-A SHIFT MANAGER LOG BOOK ENTRIES

1530 - NOTED A VERY LOUD BUZZING NOISE FROM PANEL RC-4
NOTIFIED MAINT, THEY INVESTIGATED + REPORTED A RELAY
SOLENOID WAS THE SOURCE + THAT IT NEEDED TO BE DE-
ENERGIZED IMMEDIATELY. DETERMINED PANELBOARD C
CKT 8 FEEDS THE RELAY, MAINT OPENED PANELBOARD C
CKT 8 + THIS STOPPED THE RELAY BUZZING. NUMEROUS
FACILITY COMPONENTS CHANGED CONFIGURATION FROM
OPENING PANELBOARD C CKT 8. VESSEL VENT SHUTDOWN
BUMP VALVES AV-CAI-7 + -9 OPENED. EFFLUENT MONITORING
SYSTEMS WENT TO DIVERT. K1 + K2 SYSTEMS ARE SAT.
NOTIFIED AW ADM + CSM OF BUMP VALVES OPEN + VV SYSTEM
DOWN. [redacted]

12-4-19 1710 NOTIFIED ENVIRONMENTAL OF VESSEL VENT
SHUTDOWN (DAN COUGHLIN), DUE TO SOLENOID
FAILURE ON ABOVE ENTRY. [redacted]

12/6/19 [illegible] SM notified by MCO that 3-1 has been
isolated per procedure TO-620-040 [redacted]

12/6/19 M/C Completed replacement of valve 2-53
and removed valve 242-A-14 associated
with this valve. [redacted]

12/6/19 2355 Weekly RATC review completed [redacted]

12/9/19 0818 Revised log back to 11/14/19. [redacted]

12-9-19 0815 NOTIFIED OF ODOR IN CONDENSER ROOM
by FWS + MCO, Detected at 3rd or 4th
Level in STAIRWAY. Both individuals
Declined HPME at this time. Directed to
POST Condenser RM. Restricted access
AND complete ODOR response cards.

0835 NOTIFIED CSM OF ADP-015 EVENT. Individuals
exposed in EVENT REPORT NO SYMPTOMS

0845 INT'S ENTERED CONDENSER ROOM IN
SEARCH OF SOURCE OF ODORS (CONT)

(CONT) INT'S REPORT APPROX. 40 ppm H2S? MCO'S
AT 5-C-2 either INLET.

1030 INITIATING PCR TO TO-600-040 TO ALLOW SHUTTING
OF VALVE 4-1 TO ISOLATE F-C-2

1100 Plan to enter Condenser RM with SM + MCO
SHUT 4-1 and verify with DIRECT READING INSTRUMENT.
SOURCE IS CONTROLLED [redacted]

12-10-19 1030 INT'S AND MCO'S ENTERING CONDENSER ROOM
with DRI TO CLOSE 4-1 and RESERVING MCO.

1035 VALVE 4-1 IS CLOSED, INT REPORTED READING
WAS SIMILAR to yesterday before closing valve.
MCO, DIRECTED MCO TO VERIFY POSITION OF 4-2.

1045 Levels Detected Decreased immediately following
CLOSURE OF 4-1, CENTRAL SHIFT OFFICE EXITED
ADP-15 with concurrence.

1155 DIRECTED MCO TO RESTORE ACCESS to NORMAL
AT CONDENSER ROOM. (Exit Condenser RM Restricted)
[redacted]

12-10-19 1930 [redacted] Shift Manager observed abnormal pressures on the
C-A-1 Vessel after the 241-AW Primary Exhaustor was
restarted. In addition, an unusual flow through
the Vessel Vent was also observed. The Shift
Manager contacted Engineering and related the
observations. The Engineer directed no actions at
this time except to monitor the C-A-1 Vessel
pressure and notify him in the event of any
significant changes [redacted]

12-11-19 1600 - Completed INSTALLATION OF LIT 242A-19-10
FOR REPLACEMENT OF FAILED RELAY IN RC-4 CABINET
[redacted]

12-12-19 1000 STATUS SEAL INSTALLED ON VALVE 4-2 and
VERIFIED IN CLOSED POSITION. [redacted]

ATTACHMENT 6
242-A SHIFT LOG BOOK ENTRIES

16

12-9-19 "B" shift [redacted]

0000 - 242-A shift report, [redacted] 242-A is IN shutdown mode. K-1-5-1 is on, K-1-5-2 is on, K-1-5-3 in STBY, K-2-5-1 is on, VV is Down.

0500 SM RV [redacted] Logbook [redacted]

0630 - Turnover to [redacted]

0630 - Received turnover from [redacted]

0740 sheetmetal worker entered facility for walkdown.

0756 Sheet metal walkdown complete worker exited facility

0811 Reviewed log back to 12/5/19. [redacted]

0815 work crew entered facility to work pkg's 558694 replace PCV-EA1-1/2, 505103 replace PCV-EA1-3, [redacted] 505584 compressor drain replacement

0820 HPT entered courtyard to perform routines

0833 Odor detected in condenser room, condenser room posted, restricted access.

0833 entered AOP-15 unusual odors detected on the third, fourth and fifth floor of the condenser room. CSM notified

0848 HPT's entered unloading and pump storage room to perform weekly routines.

0912 crew working pkg's 505103, 505584 and 558694 have exited facility

0927 HPT's entered condenser room to perform odor response.

0934 HPT's exited unloading room and the door is secured.

0943 HPT entered facility to perform RMH inspections

0945 HPT finished unloading room surveys and exited facility

0949 HPT finished courtyard survey and exited facility

ATTACHMENT 6 (continued)
242-A SHIFT LOG ENTRIES

12-10-19 D-Shift [redacted] 19

1007 Software Engineer in facility to perform alarm reports on VCS.
1010 Crew of I.H. in facility to perform recovery actions from Odor response of 12-9-19.
1018 Crew working circuit verification package #539771 in facility to perform work.
1030 Valve 4-1 closed per TO-600-060 as part of recovery actions from AOP-15 event on 12-9-19.
1037 Crew performing circuit verification package #539771 has completed work and are leaving facility.
1057 PIC-CA1-7 excercised per TO-600-999a+ SM. request.
1140 I.H. recovery action team has completed activities and have left the facility.
1225 Crew working package # 583021 back in the facility. Will be doing more setup in the courtyard.
1227 Software Engineer has completed his tasks and is leaving the facility
1235 West gate opened to allow crew working package # 583021 to come in and stage equipment
1303 HPTS in facility to inspect decon kit.
1305 HPTS inspecting decon kit have finished and are leaving the facility.
1352 AOP-15 exited for Odors in the Condenser Room. Response actions were sufficient to bring levels below action limits.
1357 Access to the Condenser Room restored.

ATTACHMENT 7
4-2 (F-C-2 AIR INTAKE FILTER BYPASS VALVE) AS FOUND ON 12/10/19 IN OPEN POSITION

ATTACHMENT 8
4-2 (F-C-2 AIR INTAKE FILTER BYPASS VALVE) IN CLOSED POSITION 01/23/2020