

EVENT INVESTIGATION REPORT

C-Farm AOP-015 Event of July 18, 2014
Event Investigation Report Number EIR-2014-025

Event Investigation Team Lead

7/30/2014
Date

PER Responsible Manager

08/04/2014
Date

PER No. WRPS-PER-2014-1317 (Trend only as a roll-up to Significant PER WRPS-PER-2014-0602)

Investigation Summary

At approximately 1515 hours on Friday, July 18, 2014, two SST Retrievals Nuclear Chemical Operators (NCOs) experienced odors while approaching MO-522 at the south east side of 241-C-Farm. The two NCOs then proceeded towards another entry point (MO-512, middle C-Farm change trailer) when one of them started to feel light headed/dizzy. The NCOs notified their Retrieval Operations Engineer (OE) and the Central Shift Manager (CSM) who properly entered TF-AOP-015, *Response to Reported Odors or Unexpected Changes to Vapor Conditions*.

The NCOs stated that the odor was strong (turpentine/ammonia) but not pungent nor repulsive.

On Saturday, July 19, 2014, fact finding interviews were held with those involved who were present.

Event Timeline

07/18/2014

- 1150 C-102 slurry pump was started
- 1206 AN-101 supernate pump was started
- 1515 NCOs (2) experience an unusual strong odor near MO-522

Additional Information – Hanford Site Weather Station Report. Winds from the NW at ~ 20 miles per hour.

Tower Information				Sat Jul 19				00:02:20 PST 2014			
yr	mo	day	hr	Solar	Prevailing Wind			Peak Gust			
					Degrees	Speed	Direction	Degrees	Speed	Time	Stab
14	7	18	1	0.00	290.0	15.0	WNW	293.4	28.888	00:57	D
14	7	18	2	0.00	290.0	15.2	WNW	327.0	25.944	01:01	D
14	7	18	3	0.00	300.0	10.8	WNW	306.9	22.579	02:10	E
14	7	18	4	0.00	180.0	2.4	S	125.3	7.229	03:58	F
14	7	18	5	0.01	210.0	1.2	SSW	122.0	7.229	04:04	F
14	7	18	6	0.12	290.0	5.0	WNW	300.5	8.280	05:39	F
14	7	18	7	0.31	350.0	3.8	N	313.9	6.808	06:04	D
14	7	18	8	0.57	20.0	3.6	NNE	22.3	7.860	07:24	B
14	7	18	9	0.83	150.0	2.4	SSE	132.5	7.860	08:50	B
14	7	18	10	0.98	10.0	3.0	NNE	332.9	9.963	09:40	A
14	7	18	11	1.10	300.0	5.1	WNW	313.7	12.276	10:33	A
14	7	18	12	0.95	220.0	4.8	SW	195.8	14.589	11:16	B
14	7	18	13	0.66	280.0	2.8	W	273.4	10.593	12:36	A
14	7	18	14	1.01	310.0	5.5	NW	281.8	18.794	13:43	A
14	7	18	15	1.07	300.0	11.8	NW	317.0	31.411	14:57	A
14	7	18	16	0.31	320.0	19.7	NW	310.2	31.621	15:07	A
14	7	18	17	0.55	320.0	19.6	NW	322.1	30.780	16:51	A
14	7	18	18	0.28	310.0	21.5	NW	308.2	31.411	17:46	B
14	7	18	19	0.08	300.0	19.4	WNW	313.7	34.986	18:03	D
14	7	18	20	0.01	310.0	22.7	NW	299.9	38.771	19:51	D
14	7	18	21	0.00	310.0	25.7	NW	311.7	40.243	20:26	E
14	7	18	22	0.00	310.0	27.3	NW	320.5	44.659	21:31	E
14	7	18	23	0.00	300.0	20.1	WNW	310.7	38.981	22:04	D
14	7	18	24	0.00	310.0	18.9	NW	311.6	31.201	23:00	D

14 71824 884 848-999 752 755 761 751 750 747 745 741 99311999302799313331310

Delta T1 = T200 - T3 = -0.2 Pasquill Category = D
 Delta T2 = T250 - T50 = -1.4 200 ft Winds = 3027
 Delta T3 = T200 - T30 = -0.5 (NRC) Least Dilution = 18.7

1520 NCO develops symptoms (light headed, dizziness) and reported this information to the Retrieval OE

1530 Retrieval OE contacts CSM and informs him of the situation and that the NCO who was experienced symptoms was being taken to HPMC. Note the other NCO who did not experience symptoms also went to HPMC.

C-Farm AOP-015 Event of July 18, 2014

- 1533 CSM enters TF-AOP-015 for the C-Farm event
- 1538 241-C-102 retrieval shut down with flush (both slurry and supernate pumps)
- 1544 Guidance was given to the Production Operations shift Industrial Hygiene Technicians (IHTs) to respond to the event using Sample Plan IHP-09001 and to perform iTX and ppbRAE direct reading monitoring. The SST Retrievals IHTs were assigned to assist.
- 1550 CSM contacted Hanford patrol to establish road blocks to maintain the area secure
- 1608 CSM received confirmation the Production Operations OE had established road blocks at the Buffalo and 7th street intersection and on 7th Street west of C-Farm and that patrol could remove their road blocks.
- 1635 IHTs obtain three bag samples from the area of concern and perform direct reading monitoring.
- 1711 Employees were released from HPMC. The one NCO who had symptoms will remain on restriction until chemistry work is completed. The other NCO was released with no restriction.
- 1819 IH reports preliminary Hapsite analysis of 0 ppb VOCs, 0 ppm Nitrous oxide and 8ng/m³ mercury. Total analytes were <20 ppb.
- 1858 SOEN message sent with regards to Event investigation being initiated
- 2006 Actions required from TF-AOP-015 were complete and the AOP was exited for the C-farm event.
- 2349 241-C-102 retrieval was restarted

07/19/2014

- 0800 Fact Finding interviews were conducted. (NCO, OE, IHT Lead)

07/22/2014

- 0500 Interviewed the other NCO who had been on scheduled days off.

Compensatory Measures

1. 7/18/2014 Area REA was placed near MO-522.
2. 7/19/2014 Ventilation valving was re-positioned to provide additional vacuum on C-102 which would increase air flow from that tank.
3. SST Retrievals IH established increase personnel sampling for those working on C-102 retrieval.

4. 7/21/14 All Employee message

TO:	All WRPS Employees (Please pass this message on to those who did not receive it.)
ISSUED:	July 21, 2014
FROM:	External Affairs
SUBJECT:	Vapor event update

Late Friday afternoon two WRPS employees smelled abnormal odors near the change trailer south of C Tank Farm. Access to the area where the odors were detected was restricted.

One of the workers reported symptoms; the other did not. Both were sent to the Hanford Site medical provider for a medical evaluation and were later released to return to work.

Preliminary Extent of Condition Review

The area where this event occurred was an established vapor reduction zone. The extent of condition for this event indicates that downwind positions from active retrieval operations should be a possible vapor reduction area.

Discussion of Potential Causes

The probable cause for this event was vapors coming from the POR-107 exhauster that was transported via the light wind in to the area.

Discussion of Barriers That Could Have Impacted the Cause

1. Operations Equipment Configuration. During the time of this event, the POR-107 exhauster was operating at approximately 1400-1500 cubic feet per minute (cfm). This exhauster has the capacity to operate over 2000 cfm. This higher air flow would help dilute the vapors being released during retrieval operations.
2. Operations Procedures. TF-AOP-015 process was followed as designed with no issues. One opportunity for improvement that was noted during the interviews is to have the IH communication report sent to the responsible shift organization (in this case the Retrieval OE) for their information and communication to the shift workers.
3. Operations Procedure. The C-102 retrieval was stopped once AOP-015 was entered and due to the location of the issue of concern. The timing was that this shut down occurred before the IHTs responded to the area to obtain samples and direct reading monitoring and therefore the condition had changed and the resultant information gathered was not under the same conditions as to when the event had occurred.

Recommendations/Proposed Corrective Actions

1. Establish and maintain a higher flow rate through POR-107 during C-102 retrieval waste disturbing activities.
2. Establish the process to distribute the results from AOP-15 sampling/monitoring to the affected groups as well as the Central Shift Office.

3. Remind Retrieval personnel that during certain weather conditions the best entry point into C-Farm maybe from the upwind direction which would normally be MO-512.
4. Also see [WRPS-PER-2014-0602](#), Significant; AOP-15 Entries.

Lessons Learned

To be addressed, if required by the causal analysis via a corrective action under WRPS-PER-2014-1317.

Also see [WRPS-PER-2014-0602](#), Significant; AOP-15 Entries.

Attachment:

1. Photos/Sketches

Attachment 1 – C Farm and location of detected odors

