

INTEROFFICE MEMORANDUM



WRPS-1500949

Date: March 4, 2015

To: [REDACTED]
Production Operations

From: [REDACTED]
Central Operations & Maintenance Services
Production Operations

Subject: EVENT INVESTIGATION REPORT, "AOP-015 Entry in AN Farm,"
EIR-20105-008

Submitted for your information and use is the Event Investigation Report, "AOP-015 Entry in AN Farm," EIR-2015-008. The enclosed report contains the information obtained during the investigation, but does not necessarily cover an exhaustive investigation of all issues.

On Tuesday February 10, 2015 at 1300 three (3) electricians entered AN-Farm to complete work laying yellow-jacket for electrical wires between the UT tent and AN-103. Two (2) of the electricians entered under standard Personal Protective Equipment (PPE) for farm work, while one (1) opted for a voluntary respiratory upgrade. Between approximately 1350 and 1410 one (1) of the electricians experienced stronger than normal odors on three different occasions when crouching below the 3 foot level. The electrician stated the smell of the odors were weaker on the first two occasions, but the third smell was more severe and within 10 minutes the electrician reported symptoms that included a metallic taste in his mouth and a headache. After reporting the symptoms to the co-workers and Field Work Supervisor (FWS) the Central Shift Office (CSO) was notified and the affected staff was immediately transported to the Hanford Site Medical Contractor, HPMC, for further evaluation. At 1430 AN Farm entered AOP-015. Neither of the other two (2) electricians inside of the farm experienced odors or symptoms.

Industrial Hygiene (IH) responded to the shift office after receiving the Central Shift Managers (CSM) radio call announcing entry of AOP-015 for AN-Farm. IH discussed location and sampling plan with CSM and then dispatched IHTs to take samples inside of AN Farm based on the description of where the affected electrician was working. IH sampling results were returned at 2144, reporting samples at or below background levels. AOP-015 was exited and AN Farm access signs were down posted.

Should you have any questions or need additional information regarding this report, please contact either [REDACTED].

Enclosure: EIR-2015-008, "AOP-015 Entry in AN-Farm." (19 Pages)

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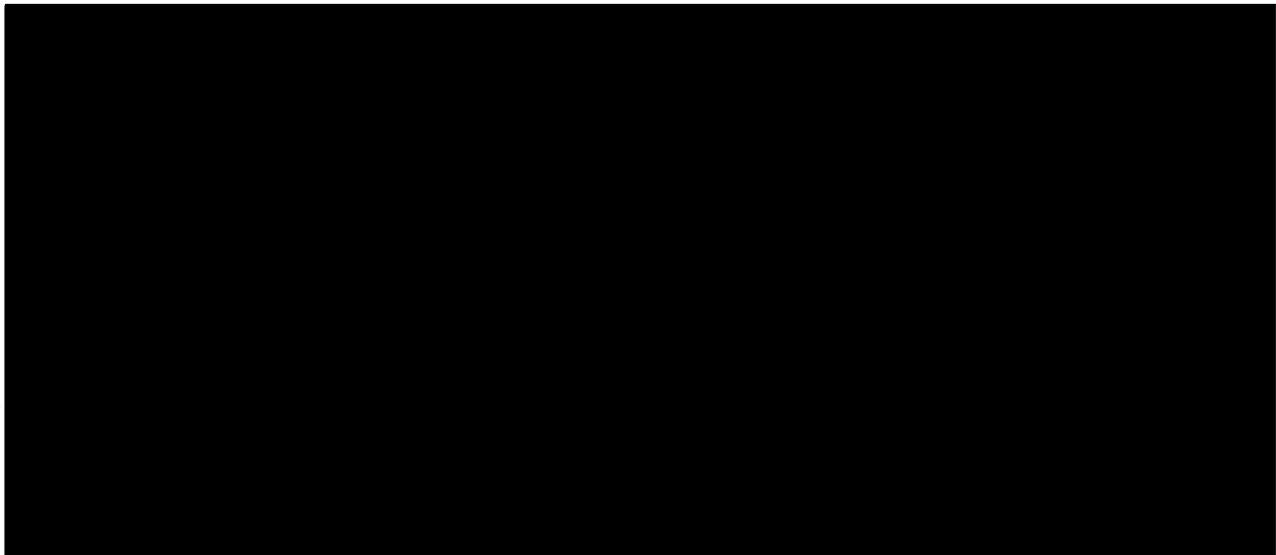
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WRPS-1500949

Subject: EVENT INVESTIGATION, "AOP-015 ENTRY IN AN-FARM," EIR-2015-008.

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WRPS Correspondence
Washington River Protection Solutions LLC (WRPS)



EVENT INVESTIGATION REPORT

**AOP-015 Entry for AN-Farm
Event Investigation Report Number EIR-2015-008**

	3/4/2015
Event Investigation Team Lead	Date
	3/4/2015
PER Responsible Manager	Date

PER No. WRPS-PER-2015-0274

Investigation Summary

On Tuesday February 10, 2015 at 1300 three (3) electricians entered AN Farm to complete work laying yellow-jacket for electrical wires between the UT tent and AN-103. Two (2) of the electricians entered under standard Personal Protective Equipment (PPE) for farm work, while one (1) opted for a voluntary respiratory upgrade. Between approximately 1350 and 1410 one (1) of the electricians (not wearing voluntary upgraded respiratory PPE) experienced stronger than normal odors on three different occasions when crouching below the 3 foot level. The electrician stated the smell of the odors were weaker on the first two occasions, but the third smell was more severe and within 10 minutes the electrician reported symptoms that included a metallic taste in his mouth and a headache. After reporting the symptoms to the co-workers and Field Work Supervisor (FWS) the Central Shift Office (CSO) was notified and the affected staff was immediately transported to the Hanford Site Medical Provider, HPMC, for further evaluation. At 1430 AN Farm entered AOP-015. None of the other two (2) electricians inside of the farm experienced odors or symptoms.

Industrial Hygiene (IH) responded to the shift office after receiving the Central Shift Managers (CSM) radio call announcing entry of AOP-015 for AN Farm. IH discussed location and sampling plan with CSM and then dispatched IHTs to take samples inside of AN-Farm based on the description of where the affected electrician was working. IH sampling results were returned at 2144, reporting samples at or below background levels. AOP-015 was exited and AN Farm access signs were down posted.

A fact finding meeting was held on February 11, 2015. In addition to the fact finding meeting, individual interviews were conducted with the Management, Central Shift Managers, Field Work Supervisor (FWS), IH, and Electricians. All pertinent documentation surrounding the event was obtained and reviewed.

Event Timeline

02/10/2014

- | | |
|-----------|---|
| 1215/1230 | Informal pre-job performed. Discussed farm conditions and optional PPE upgrade. One (1) of the three (3) electricians elects to take upgraded respiratory protection. |
| 1300 | Team of electricians enter AN Farm. |
| 1350-1410 | Electrician experienced odors on three separate occasions when crouching below or around three (3) feet off the ground. Stated symptoms were: Metallic taste and developed a headache. Electrician also stated during the fact finding meeting the odor was strongest near the white tent, and between AN-106 and AN-103. |
| 1420 | Electrician develops headache and reports to other Electricians and FWS. Electricians exit the farm and FWS takes the individual with headache to HPMC. |

- 1430 Shift office notified of odors in AN Farm and that one of the three workers inside of the farm has experienced metallic taste in mouth, smell odor and had a headache.
- 1430 Entered AOP-015 for AN-Farm. CSO makes radio announcement to clear farm.
- 1430-1445 Electrician arrived at HPMC and complete Odor Response Card which was verbally relayed back to the CSO and IH.
- 1438 Shift office initiates Event Investigation 2015-008 for AOP-015 entry.
- 1440 Shift Office Event Notification (SOEN) Sent: "Entering AOP-015 for odors in AN-Farm. Evacuate AN-Farm in an orderly fashion. CSM"
- 1440 IH arrives at shift office.
- 1443 IH talks with Industrial Hygiene Technician (IHT); IHT did not receive radio message.
- 1446 IHT arrive at shift office.
- 1448 Central Shift Manager (CSM) in communication with work crew to find out specifics of what was happening on the job.
- 1451 Shift manager is informed that the Electrician was only person to smell ammonia like odors.
- 1453 IH discusses plan with IHTs on sampling and directs IHTs on where to take their air sample analysis bags.
- 1455 IHTs leave to go get respiratory protection from mask station.
- 1457 IH directs IHT to call and have someone start the HAPSITE.
- 1459 IH reported to mask station to ensure respiratory protection was acquired in a timely manner.
- 1504 IH's receive masks from mask station and make their way to respond to AOP-015 at AN Farm.
- 1512 Separate IHT sent to AN Farm to take bag samples to HAPSITE for IHT shifters.
- 1527 Discussed preliminary information with IH Program Manager.

- 1550 Bag samples returned to 272AW lab to start processing with instrumentation.
- 1605 Bags transported to 2704HV to be run on HAPSITE.
- 1818 Production Operations East Safety & Health (S&H) Manager discussed with Program Subject Matter Expert (SME) that there were no abnormal findings on preliminary HAPSITE analysis.
- 1829 Prod. Ops East S&H Manager discussed preliminary results with CSM and Prod Ops Sr. Level 1 Manager.
- 2113 Summary of HAPSITE complete, notification sent to CSM by Production Operations East S&H Manager.
- 2144 SOEN Notification Sent: "Exiting AOP-015 for AN Farm. Sample analysis for the AOP-015 event has been completed and the results are at or below background levels. CSM"

Compensatory Measures

1. Radio communication of AOP-015 entry at AN-Farm.
2. SOEN Entry into AOP-015 at AN-Farm.
3. FWS implemented safe evacuation of AN-Farm, per TF-AOP-015 procedure.
4. IHT responded and took sampling bags to lab for testing.

Discussion of Potential Causes

Based on a review of the following, the source of the odors encountered by the electrician was not able to be determined:

- Input from workers during the fact finding meeting.
- Review of information and investigative IH monitoring and sampling of the area.
- Review of work planning in the AN Farm and immediate area.
- AN-Farm ventilation was confirmed as operational and functioning.
- No vapor producing work being conducted in the area.

Preliminary Extent of Condition Review

The AOP-015 entry was specific to the AN Farm, with no fugitive emission sources detectible and the potential cause being unknown the preliminary extent of conditions is bound to the AN Farm.

Discussion of Barriers That Could Have Impacted the Cause

The job, as planned, followed the General Hazards Analysis (GHA) for non-vapor producing activities and did not require respiratory protection (other PPE was required by the work package and Radiological Work Permit). Per Washington River Protection Solutions LLC (WRPS) policy and procedures, 1 of 3 opted to voluntary upgrade of respiratory protection.

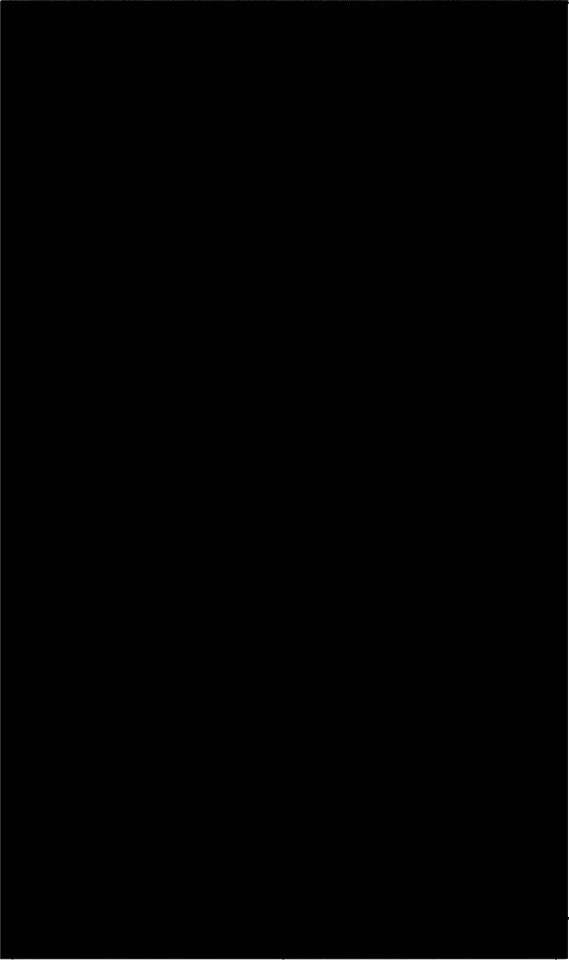
Recommendations/Proposed Corrective Actions

1. Evaluate effectiveness of informal Pre-Job briefings to ensure FWS are adequately addressing potential hazards, known hazards, anticipated working conditions, communicating co-located work, and farm configuration before starting work.
2. Clarify and establish the expectations for FWS with respect to providing the completed Odor Response Cards to CSM in a timely manner to support IHT response

Attachments (As they apply):

1. Event Investigation Attendance Form
2. Work Order TFC-WO-6287
3. Industrial Hygiene Sampling Plan
4. WRPS Job Hazard Analysis Checklist
5. Odor Response Card
6. Shift Logbook
7. IH Investigation Report

Event Investigation Attendance Form

Date: 2/11/15		EVENT INVESTIGATION ATTENDANCE FORM		
Event Title: <u>AOP-015 ENTRY AT AN FARM on 2/10/2015</u>				
Event Number: _____				
Print Name	Signature	HID	Job Position	Organization
			OPS SEC	P.A
			Tech Syst Mgr	P.O.
			Elect	COMS
			Cleef.	COMS
			IH PGM MGR	IHT PGM
			IHT Supervisor	PO
			FW 3	COMS
			FW5	COMS
			Maint. Mgr	COMS
			Prod. Shift Manager	PO
			IHT	PROD! OPS d
			IHT	PO
			COMS Mgr	COMS
			Ops Specialist	WASTE OPS
			FR	ORP
			E/ed.	COMS
			HAZMAT/Rep	P.O.
			Elect.	COMS
			IHT	PO
			IHT	PO
		OE	PO	

A-6003-100 (REV 2)

WORK ORDER TFC-WO-14-6287
241-AN Tank Farm Preparation for Ultrasonic Testing
Repetitive Use

5.8 HPT **PERFORM** post-job radiation and contamination survey.

5.8.1 **RECORD** RSR number(s) prior to end of shift.

RSR# BOAN 1400408 DATE 12-10-14

5.8.2 HPT **POST** as radiological conditions allow.

TASK 2: Miscellaneous Preparation Activities

5.9 HPT **PERFORM** a pre-job contamination and radiation survey of the work areas.

5.9.1 **RECORD** Radiological Survey Report (RSR) number prior to end of shift.

RSR# Boat-1500059 Date 1-14-15

NOTE – Step 5.8.2 can be performed **AND/OR** repeated throughout the duration of these work instructions.

5.9.2 **RECORD** subsequent RSR number(s) on site form A-6006-444, Radiological Survey Report Tracking Table, prior to end of shift.

NOTE 1 - Work Steps 5.10 through 5.17 may be worked concurrently, in any order, **AND/OR** repeated per direction of FWS.

NOTE 2 – For temporary power to the UT trailer, see TFC-WO-13-5053, "Repetitive use temporary power to UT trailer".

5.10 **MOBILIZE/SET-UP** UT trailer and UT tents.

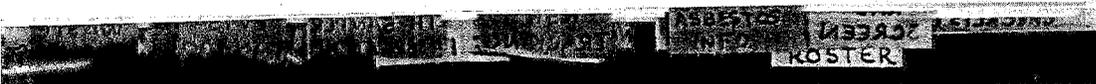
5.11 **INSTALL** riser extensions as required.

5.12 **STAGE/SET-UP** UT tent(s).

5.12.1 **SECURE** UT tent(s) as required.

5.13 **INSTALL** Cable Protectors (e.g., Yellow Jacket®, Linebacker®, etc.).

5.14 **ROUTE** UT/Camera cables.



Industrial Hygiene Sampling Plan

INDUSTRIAL HYGIENE SAMPLE PLAN				Contractor: Washington River Protection Solutions		IHSP Number EABO-11066 R3																																																					
General: <input checked="" type="checkbox"/>		Start Date 05/15/2013	Expiration Date N/A	Technical Document Number(s): TFC-ESHQ-S IH-C-48/TF-OPS-IHT-004;TF-OPS-IHT-005		TVIS Number TVIS-AN-001																																																					
Job Location: AN Farm		Brief Job Description and Type of Area: AN Farm SEG 1 Work Activities																																																									
Tank Farm COPC		Other Chemicals		Physical/Biological																																																							
<input checked="" type="checkbox"/> Ammonia	<input checked="" type="checkbox"/> 1-Butanol	<input type="checkbox"/> Flam Gas	<input type="checkbox"/> Asbestos	<input type="checkbox"/> Beryllium	<input type="checkbox"/> Heat	<input type="checkbox"/> Lighting	<input type="checkbox"/> IAQ																																																				
<input checked="" type="checkbox"/> Ethylamine	<input checked="" type="checkbox"/> N ₂ O	<input checked="" type="checkbox"/> VOCs	<input type="checkbox"/> CO	<input type="checkbox"/> Lead	<input type="checkbox"/> Noise	<input type="checkbox"/> Mold	<input type="checkbox"/> Other																																																				
<input checked="" type="checkbox"/> Formaldehyde		<input type="checkbox"/> Dust	<input type="checkbox"/> Metals																																																								
<input checked="" type="checkbox"/> Nitrosamines																																																											
<input checked="" type="checkbox"/> Mercury																																																											
Sampling Requirements		Monitoring Requirements		Special Conditions		IHT Coverage																																																					
SI 3	Personal	SI 6	Area		SLM/Dosimetry	<input type="checkbox"/> Waste Disturbing	<input type="checkbox"/> Continuous																																																				
	Area		Source		WBGT	<input type="checkbox"/> Soil Reconstruction	SI 2 <input type="checkbox"/> Intermittent																																																				
	Source		VCZ		Pulse Rate	<input type="checkbox"/> Temporarily Downpost VCZ	<input type="checkbox"/> Remote																																																				
	Surface																																																										
	Bulk																																																										
SPECIAL INSTRUCTIONS																																																											
<p>Note: IHT monitoring and/or sampling is not required for every work activity that is considered part of Similar Exposure Group (SEG) 1. Monitoring and/or sampling will be conducted only when requested by the project Industrial Hygienist.</p> <p>1. ACTION LEVELS</p> <ul style="list-style-type: none"> Action levels to be applied to worker area monitoring direct reading instrument results are: <ul style="list-style-type: none"> Ammonia: 12 ppm VOCs: 2 ppm If area monitoring results reach or exceed the specified action levels, work will be safely paused and workers will exit the farm. IHT will notify the responsible Industrial Hygienist and field work supervisor. A determination will be made by the project IH and management if a temporary VCZ needs to be established. <p>2. IHT COVERAGE</p> <ul style="list-style-type: none"> Intermittent IHT coverage when performing personal sampling or when conducting monitoring for ammonia and VOCs as directed by the project Industrial Hygienist. <p>3. PERSONAL SAMPLING</p> <ul style="list-style-type: none"> Intermittent IHT coverage to check sampling equipment and creation of field notes. When requested by the project Industrial Hygienist, personal STEL, Ceiling, EXC, and/or TWA samples are to be collected. Sample set can be distributed amongst several employees in representative work group. Attempt to collect at least one representative work activity personal sample set per day for analytes requested by the project Industrial Hygienist. Methods, recommended sampling flow rates, and target sample volumes for the COPCs are listed below for reference and may be adjusted per written direction of the Industrial Hygienist. <table border="1"> <thead> <tr> <th>Analysis</th> <th>Media</th> <th>Approximate Flow Rate</th> <th>Sampling Time (min)</th> </tr> </thead> <tbody> <tr> <td>Ammonia STEL</td> <td>SKC 226-26</td> <td>500 mL/min</td> <td>15</td> </tr> <tr> <td>Ethylamine STEL</td> <td>SKC 226-96</td> <td>500 mL/min</td> <td>15</td> </tr> <tr> <td>Formaldehyde Ceiling</td> <td>SKC 226-119</td> <td>300 mL/min</td> <td>15</td> </tr> <tr> <td>Mercury EXC</td> <td>SKC 226-17-1A</td> <td>250 mL/min</td> <td>30</td> </tr> <tr> <td>Nitrosamines EXC</td> <td>Thermosorb/N</td> <td>2 L/min</td> <td>30</td> </tr> <tr> <td>Ammonia TWA</td> <td>SKC 226-26</td> <td>500 mL/min</td> <td>30 - 480</td> </tr> <tr> <td>1-Butanol TWA</td> <td>TDU Carbocap 300</td> <td>50 mL/min</td> <td>30 - 480</td> </tr> <tr> <td>Ethylamine TWA</td> <td>SKC 226-96</td> <td>200 mL/min</td> <td>30 - 480</td> </tr> <tr> <td>Formaldehyde TWA</td> <td>SKC 226-119</td> <td>300 mL/min</td> <td>30 - 480</td> </tr> <tr> <td>Mercury TWA</td> <td>SKC 226-17-1A</td> <td>250 mL/min</td> <td>30 - 480</td> </tr> <tr> <td>Nitrosamines TWA</td> <td>Thermosorb/N</td> <td>2 L/min</td> <td>30 - 480</td> </tr> <tr> <td>Nitrous Oxide TWA</td> <td>Badge</td> <td>N/A</td> <td>30 - 480</td> </tr> </tbody> </table> <p>4. STEL, Ceiling, and EXC samples are to be collected for work tasks that are anticipated to have a minimum duration of 15 and 30 minutes, respectively, and during anticipated highest potential exposure.</p> <ul style="list-style-type: none"> If highest potential exposure work activity does not last a minimum of 15 minutes (for STEL/Ceiling) or 30 minutes (for EXC), continue sampling for remaining time. Do not void or discard sample. <p>4. SOURCE SAMPLING-N/A</p> <p>5. WORK AREA SAMPLING-N/A</p> <p>6. MONITORING</p> <ul style="list-style-type: none"> Intermittent ammonia and VOC monitoring to be conducted when requested by the project Industrial Hygienist. <p>7. SPILL RECONSTRUCTION SAMPLING-N/A</p> <p>8. VAPOR CONTROL ZONE-N/A</p> <p>9. SPECIAL PRE-JOB BRIEFING INFORMATION</p> <ul style="list-style-type: none"> Per SI 3, employees may be selected for personal sampling, depending upon the anticipated length of time in the farm and work scope. In accordance with TVIS-AN-001, work activities are considered to be SEG 1 during general farm entry. SEG 1 work activities do not include VCZ entry. The General Hazard Analysis (GHA) covers SEG 1 work activities. <p>10. OTHER</p> <ul style="list-style-type: none"> Sample plan may be modified per written direction from the project Industrial Hygienist; in accordance with the field deviation guidelines of TFC-PLN-3A. Record comments in field log. Transfer comments from field log to SWIHD comments field. Provide copy of field notes to project Industrial Hygienist. 								Analysis	Media	Approximate Flow Rate	Sampling Time (min)	Ammonia STEL	SKC 226-26	500 mL/min	15	Ethylamine STEL	SKC 226-96	500 mL/min	15	Formaldehyde Ceiling	SKC 226-119	300 mL/min	15	Mercury EXC	SKC 226-17-1A	250 mL/min	30	Nitrosamines EXC	Thermosorb/N	2 L/min	30	Ammonia TWA	SKC 226-26	500 mL/min	30 - 480	1-Butanol TWA	TDU Carbocap 300	50 mL/min	30 - 480	Ethylamine TWA	SKC 226-96	200 mL/min	30 - 480	Formaldehyde TWA	SKC 226-119	300 mL/min	30 - 480	Mercury TWA	SKC 226-17-1A	250 mL/min	30 - 480	Nitrosamines TWA	Thermosorb/N	2 L/min	30 - 480	Nitrous Oxide TWA	Badge	N/A	30 - 480
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Prepared By: [Redacted] Phone: [Redacted] Date: 05/16/2013																																																											
IH Sign: [Redacted]		IH Peer Review Sign: [Redacted]		IH Mgmt Sign: [Redacted]		Date: 05/16/2013																																																					
IHSP Field Change Approvals:		IH	Print: [Redacted]	Date:	IH Mgmt.	Print: [Redacted]	Date:																																																				

A-600A-732 /REV 01

WRPS Job Hazard Analysis Checklist

WRPS JOB HAZARD ANALYSIS CHECKLIST						
Prepared By (print)		(Sign)		11/19/2014 (Date)		
Work Package: TPC-WO-14-6287		Procedure No.:		**Standing JHA No.:		
Work Scope/Description: 241-AN Tank Farm Preparation for Ultrasonic Testing						
Specific Work Location(s): 241-AN Tank Farm						
Specific Hazard Analysis and Safety Work Requirements						
Known and/or Potential hazards have been evaluated at the task level with applicable tasks, non-skill based controls and method of control implementation is identified below. The GHA shall be reviewed for additional skill based controls relating to the hazards identified, and implemented by the FWS and work team as applicable.						
Approvals:						
Field Work Supervisor (print/sign/date)		Industrial Safety Rep. (print/sign/date)		Other (print/sign/date)		
Other (print/sign/date)		Other (print/sign/date)		Other (print/sign/date)		
Activity/Task Hazard Analysis						
		Yes	No	Method*	Method*	
1. Chemical Use If Yes, IH concurrence required List Non-GHA Chemicals MSDS/SDS# used.		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Emergency shower identified and available <input type="checkbox"/> Eye wash station (identified/available) <input type="checkbox"/> Portable eyewash w/drench hose (Number of units required for work activity): <input type="checkbox"/> Chemical Boots <input type="checkbox"/> Chemical Gloves <input type="checkbox"/> Chemical Goggles <input type="checkbox"/> Additional/Other Controls:	<input type="checkbox"/> IH Sample Plan #: <input type="checkbox"/> Respiratory Protection Form (Site Form A-6005-593) <input type="checkbox"/> Dermal PPE <input type="checkbox"/> Ventilation	
<input type="checkbox"/> See GHA for Skill Based Hazard Controls		Task:				
2. Radiological		<input checked="" type="checkbox"/>	<input type="checkbox"/>	RAD Risk Screening and development of appropriate controls are performed in accordance with: TFC-OPS-MAINT-C-01 and TFC-ESHQ-RP-RWP-C-03		
3. Potential Contact with Tank Waste If yes, IH concurrence required.		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Emergency shower identified and available <input type="checkbox"/> Portable eyewash w/drench hose (Number of units required for work activity): <input type="checkbox"/> Additional/Other Controls:	<input type="checkbox"/> Chemical Gloves <input type="checkbox"/> Dermal PPE	
4. Tank Farm Vapors If yes, IH concurrence required.		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> Tank Vapors Information Sheet (TVIS) # TVIS-AN-001 <input checked="" type="checkbox"/> IH Sample Plan# EABO-11066 <input type="checkbox"/> Additional/Other Controls:	<input type="checkbox"/> Respiratory Protection Form (Site Form A-6005-593) <input checked="" type="checkbox"/> Similar Exposure Group SEG 1	4 4
5. Beryllium(BCA/BRA) If yes, IH concurrence required.		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Beryllium Work Permit (Site Form A-6006-202) <input type="checkbox"/> Additional/Other Controls:	<input type="checkbox"/> IH Sample Plan#	
		Task: Preparing AN Farm for UT				

*Method: 1-Precaution/Limitation/Prerequisite. 2-WARNING/CAUTION. 3-Work/Procedure Instruction. 4-Permit/Plan/Evaluation
 **Method of implementation not applicable for Standing JHAs - Standing JHAs are used as supporting work documents.

WRPS JOB HAZARD ANALYSIS CHECKLIST

Work Package: TPC-WO-14-6287		Procedure No.:		Standing JHA No.:	
Activity/Task Hazard Analysis					
6. Asbestos If yes, IH concurrence required.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	<input type="checkbox"/> Asbestos Work Permit (Site Form A-6003-870) <input type="checkbox"/> Additional/Other Controls: Task:	Method*	Method*
			<input type="checkbox"/> IH Sample Plan#		
7. Electrical	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<input type="checkbox"/> EEWP <input type="checkbox"/> Additional/Other Controls: Task: Preparing AN Farm for UT		Method*
<input checked="" type="checkbox"/> See GHA for Skill Based Hazard Controls					
8. Confined Space Hazard If yes, IH concurrence required.	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	<input type="checkbox"/> Confined Space Hazard Identification (Site Form A-6005-724) <input type="checkbox"/> Confined Space Entry Permit (Site Form A-6005-717) <input type="checkbox"/> Additional/Other Controls: Task:	Method*	Method*
			<input type="checkbox"/> Non-Permit Confined Space Controls: <input type="checkbox"/> IH Sample Plan#		
9. Rotating/Moving Equipment or Pinch Points	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<input type="checkbox"/> Block parts against motion <input type="checkbox"/> Additional/Other Controls: Task: Preparing AN Farm for UT		Method*
<input checked="" type="checkbox"/> See GHA for Skill Based Hazard Controls					
10. Noise >85 dBA If yes, IH concurrence required.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<input type="checkbox"/> Noise Barrier <input type="checkbox"/> IH Sample Plan# <input type="checkbox"/> Additional/Other Controls: Task: Crane Operations * Hearing Protection required if within 25' of operating crane	Method*	Method*
			<input type="checkbox"/> Hearing Protection Boundary <input checked="" type="checkbox"/> Hearing Protection Specify: single pair (see * below)		1
11. Crane or Other Lifting Equipment Lifting and Rigging Objects	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<input type="checkbox"/> Special Lift <input type="checkbox"/> Utilities Notification <input type="checkbox"/> Additional/Other Controls: Task: Preparing AN Farm for UT	Method*	Method*
<input checked="" type="checkbox"/> See GHA for Skill Based Hazard Controls			<input type="checkbox"/> Critical Lift <input type="checkbox"/> EU notification		
12. Vehicular Traffic, Equipment and/or Forklift	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<input type="checkbox"/> Lane Closure <input type="checkbox"/> Additional/Other Controls: Task: Preparing AN Farm for UT	Method*	Method*
<input checked="" type="checkbox"/> See GHA for Skill Based Hazard Controls					
13. Elevating Work Platforms	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	<input type="checkbox"/> Lane Closure <input type="checkbox"/> Fall Protection Work Permit (Site Form A-6004-286) <input type="checkbox"/> Traffic Barricades <input type="checkbox"/> Additional/Other Controls: Task:	Method*	Method*
<input type="checkbox"/> See GHA for Skill Based Hazard Controls			<input type="checkbox"/> Cones <input type="checkbox"/> Signs		
14. Overhead Utilities	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	<input type="checkbox"/> De-energization req. <input type="checkbox"/> Wire watch req. <input type="checkbox"/> Safe work zone marked <input type="checkbox"/> Additional/Other Controls: Task:	Method*	Method*
			<input type="checkbox"/> Insulation blankets req. <input type="checkbox"/> Req. clearance distance <input type="checkbox"/> Electrical Utilities Notification		

*Method: 1-Precaution/Limitation/Prerequisite, 2-WARNING/CAUTION, 3-Work/Procedure instruction, 4-Permit/Plan/Evaluation

**Method of implementation not applicable for Standing JHAs - Standing JHAs are used as supporting work documents.

WRPS JOB HAZARD ANALYSIS CHECKLIST

Work Package: TFC-WO-14-6287	Procedure No.:	Standing JHA No.:
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Activity/Task Hazard Analysis						
	Yes	No		Method*	Method*	
15. Falls/Roof Work	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Engineering Evaluation		<input checked="" type="checkbox"/> Fall Protection Work Permit (Site Form A-6004-286)	1, 4
			<input type="checkbox"/> Fall Protection Equipment Pre-Use Inspection			
			<input type="checkbox"/> Additional/Other Controls:	Task: opening Annulus Risers 12" or greater + <i>Leather use for assembling Tanks.</i>		
16. Scaffolding	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Fall Protection Work Permit (Site Form A-6004-286)			
	<input type="checkbox"/> See GHA for Skill Based Hazard Controls			Task:		
17. Moving/Falling Objects from Height	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Barricade around potential fall area		<input type="checkbox"/> Warning Signs	
	<input type="checkbox"/> See GHA for Skill Based Hazard Controls			Task:		
18. Excavations, Trenching, and Shoring	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Site Excavation Permit (Site Form A-7400-373)		<input type="checkbox"/> Ground Scans	
	<input type="checkbox"/> See GHA for Skill Based Hazard Controls			Task:		
19. Underground Utilities (Line Locating)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Ground Scan		<input type="checkbox"/> Voltage rated gloves	
			<input type="checkbox"/> Insulated hand tools		<input type="checkbox"/> Maintain clearance distance	
			<input type="checkbox"/> Safe work zone marked		<input type="checkbox"/> Site Excavation Permit (Site Form A-7400-373)	
<input type="checkbox"/> See GHA for Skill Based Hazard Controls			Task:			
20. Fire Hazard Weld, Burn, Grind, Solder. If Yes, FPE and IH concurrence required.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Respiratory Protection		<input type="checkbox"/> Hot Work Permit	
			<input type="checkbox"/> Fire Blanket		<input type="checkbox"/> Welding Screen	
			<input type="checkbox"/> IH Sample Plan#		<input type="checkbox"/> Fire Marshall Permit#	
<input type="checkbox"/> See GHA for Skill Based Hazard Controls			Task:			
21. Hazardous Energy (Air/Steam/Fluid/Pressurized)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Depressurize		<input type="checkbox"/> Sleeving	
	<input type="checkbox"/> See GHA for Skill Based Hazard Controls			Task:		
22. Stored Energy	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Barricade Work Area		<input type="checkbox"/> Remove Energy	
	<input type="checkbox"/> See GHA for Skill Based Hazard Controls			Task:		
23. Eye, Foot, Head, Hand Hazards	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> Face Shield		<input type="checkbox"/> Goggles	
			<input type="checkbox"/> Cut Resistant Gloves		<input type="checkbox"/> Heat Resistant Gloves	
	<input checked="" type="checkbox"/> See GHA for Skill Based Hazard Controls			Task: Preparing AN Farm for UTP		

*Method: 1-Precaution/Limitation/Prerequisite. 2-WARNING/CAUTION. 3-Work/Procedure Instruction. 4-Permit/Plan/Evaluation

**Method of Implementation not applicable for Standing JHAs - Standing JHAs are used as supporting work documents.

WRPS JOB HAZARD ANALYSIS CHECKLIST

Work Package: TFC-WO-14-6287	Procedure No.:	Standing JHA No.:
---------------------------------	----------------	-------------------

Activity/Task Hazard Analysis

	Yes	No		Method*	Method*
24. Wall Ceiling Blind Penetration	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Area Scan where penetration will take place <input type="checkbox"/> Additional/Other Controls: Task:		
25. Tank Vapor Flammable/ Explosive Hazards	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Ignition Source Control Screening (Site form A-6003-774) <input type="checkbox"/> Additional/Other Controls: Task:		
26. Laboratory Hazards (e.g., Chemical Splashes, Chemical Compatibility, Reactive, Time Sensitive) If Yes, IH concurrence required.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Chemical Segregation <input type="checkbox"/> Fume Hoods <input type="checkbox"/> IH Sample Plan# <input type="checkbox"/> Additional/Other Controls: Task:	<input type="checkbox"/> Volume Limitations <input type="checkbox"/> Special Labeling or Postings <input type="checkbox"/> Lab Coat	
27. Heat Stress due to localized heat source or special PPE use	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Heat Stress Mitigation Checklist <input type="checkbox"/> Additional/Other Controls: Task:		
28. Removal of Abandoned/ Deactivated Equipment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/> Air Gaps <input type="checkbox"/> Flushing <input type="checkbox"/> Hot Tap <input type="checkbox"/> Additional/Other Controls: Task:	<input type="checkbox"/> Containment <input type="checkbox"/> Drain/Depressurize <input type="checkbox"/> Remove Stored Energy	
29. Other Describe:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Controls: Task:		Method*
30. Other Describe:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Controls: Task:		Method*

Comments:

*Method: 1-Precaution/Limitation/Prerequisite. 2-WARNING/CAUTION. 3-Work/Procedure Instruction. 4-Permit/Plan/Evaluation

**Method of Implementation not applicable for Standing JHAs – Standing JHAs are used as supporting work documents.

Odor Response Card

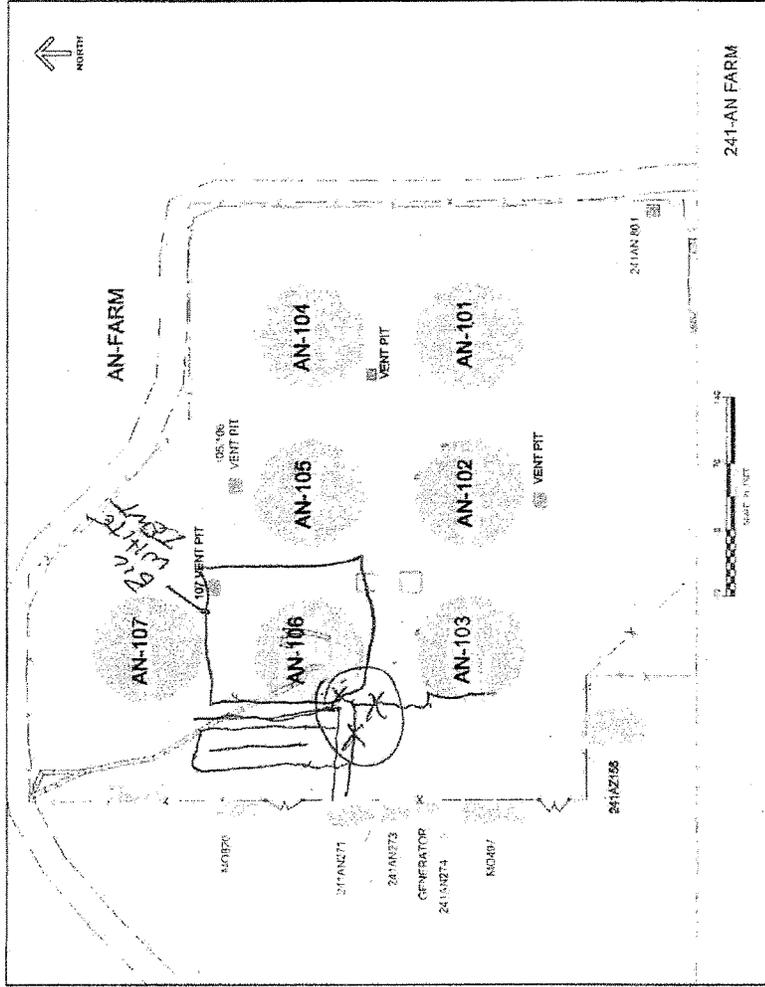
Odor Response Card

Odors Detected with NO Immediate symptoms

1. Notify Immediate Supervisor.
2. Contact Central Shift Manager, [REDACTED] Provide below bulleted information.
3. Complete map, return to Central Shift Office as soon as practicable.

Odors Detected WITH Symptoms

4. Notify Immediate Supervisor.
5. Contact CSM, [REDACTED] complete below bulleted information and map.
 - Your name and the work you were performing
 - Your symptoms (if any)
 - Time odor was noticed
 - Location of odors (mark area on map and wind direction)
 - Describe the odor
 - Name of others in or near the affected area
 - Was an IHT present?
 - Possible source
6. Provide information on the back of card.
7. Send this card immediately to the Central Shift Office.



WIND DIRECTION NONE
 X MARKS WHERE ODORS WERE PRESENT
 PULLING WATER

Odor Response Card

1. Contact CSM, [redacted] complete below bulleted information and map.

• Your name and the work you were performing. [redacted]

PULLING WIRE FOR "UT"

• Your symptoms (if any) HEADACHE METAL TASTE IN MOUTH

• Time odor was noticed 1400

• Location of odors (mark area on map and wind direction) BLOWING OUT OF MOUTH

• Describe the odor AMMONIA DOWN AT 8' LEVEL

• Name of others in or near the affected area [redacted]

• Was an IHT present? No

• Possible source PISON

2. Send this card to the Central Shift Office.

Shift Logbook

2/10/15

D-SWIFT

1415 - NOTIFIED BY ENGR [REDACTED] OF PER IN THE PROCESS OF BEING
 RE GUARDING INITIATED REGARDING THE USE OF "DP MEASUREMENT TT550" BEING
 USED FOR V&B TESTING ON GROUP "A" TANKS. THE TT550 DOLS
 NOT MEET I.S.C SET 2 REQUIREMENTS AS DOCUMENTED IN TFC-ENV-STD-13
 TABLE 8. THIS IS A VIOLATION OF KEY ELEMENT AC 5.9.2, NOT
 MEETING IGNITION CONTROLS. PER AC 5.4.1.E. REPORTED BY (C-24)
 IS BEING INVESTIGATED BY SR MGT.

1430 - ENTERING AOP-015 IN AN-FARM UT ELECTRICIAN
 SMELLED AN AMONIA ^{ODOR} SMELLS AT THE 3' LEVEL BETWEEN AN-106 AND
 AN-103 WHILE LAYING YELLOW JACKET DOWN. HE EXPERIENCED A
 HEADACHE AND METALIC TASTE IN HIS MOUTH. HE WAS TAKEN TO
 HPMC BY [REDACTED]. TWO OTHER WORKERS ON THE CREW INSIDE
 AN FARM AND TWO OUTSIDE THE FARM AT THE FENCE DID NOT SMELL
 ANY ODOR OR HAVE ANY SYMPTOMS AND REFUSED ANY FURTHER MEDICAL
 SURVEILLANCE AT HPMC. AN FARM HAS BEEN POSTED "RESTRICTED
 ACCESS AWAITING IM SAMPLE RESULTS. SOEN SENT, ON-CALL FAC REP
 [REDACTED] AND SR MGR [REDACTED] NOTIFIED ALONG WITH
 SAFETY

1438 - INITIATED EVENT INVESTIGATION 2015-008 FOR AOP-015 ENTRY.
 POC

1549 - PROCESS MEMO PM-14-031 "4TH QUARTER LOW CHECKLIST" CLOSED
 DWT.



1610 - UPDATED RED ARROW: DO NOT USE WARM-UP TENT HEATERS IN
 A/AX FARMS UNTIL POWER CORDS ARE REPLACED WITH APPROPRIATE
 10 GAUGE WIRE (POC: [REDACTED])

1611 - SOEN SENT, ON-CALL FAC REP [REDACTED] AND SR MGR [REDACTED]
 [REDACTED] NOTIFIED OF 1610 ENTRY. [REDACTED] REPORTED C-FARM
 ISSUES HAD BEEN CORRECTED

1711 - UPDATE TO AOP-015 ENTRY AT 1430. PER SUPERVISOR [REDACTED]
 WAS RELEASED TO RETURN TO WORK AND REFUSED
 ISLAND TESTING AT HPMC.

1715 - [REDACTED] WILL BE PERFORMING [REDACTED] SAMPLING IN C-FARM
 AT C-107. HE IS TAKING THE RAZ TRUCK INTO C-FARM FOR APPROX

2/10/15

D-SHIFT

1729- UPDATE TO 1115 ENTRY. HFO RELIEVED EXCESS PRESSURE ON FIRE SYSTEM AT 271-AP AND SYSTEM IS RESTORED TO NORMAL OPERATION.

1734- RECEIVED AS CSM BY [REDACTED]

1734- Assumed duties as CSM.

1807- notified the CSO that a toilet is leaking at 2750E D-wing, mens restroom, 3rd stall. It appears the valve may have failed.

1809- Notified water utilities dispatch to secure water at 2750E D-wing.

1845- Water utilities reported that they were able to secure the water at a valve on the toilet.

1848- Notified (Facilities Maint. Oncall) of the need to have Janitorial services.

2144- Exited AOP-015 for AN Farm. Sample analysis for the AOP-015 event has been completed and the results are at or below background levels. SOEN sent. Notified (Facrep), left voicemail for (Sr. Manager).

2208- AN Farm restricted access signs have been down posted.

2301- reported RAZ truck has been taken out of C-Farm.

2302- AW B-Train fan speed reduced to 1000 cfm due to tank vacuum above the normal range. Pressures have stabilized within range.

2317- IHT completed flammable gas readings for AY/AZ Farms. All readings 0% of the LFL.
*Next AY/AZ Farms. SR 3.7.1 due NLT 2/15/15 @ 0825.

➔ 2318- Entered LCO 3.1.A on 1/10/15 @ 1100 hours for AY/AZ Farms In-Service VTP o/s. LCO 3.1.A.2.1 due NLT 2/13/15 @ 0825 hours. LCO 3.1.A.2.3 due NLT 2/11/15 @ 1500 hours.

IH Investigation Report

Washington River Protection Solutions TF-AOP-015 INDUSTRIAL HYGIENE INVESTIGATION REPORT	PER Number: WRPS-2015-0274																																													
Time/Date & Event location: 14:00 2/10/2015 AN Farm between AN-106 and AN-103 Tanks																																														
1. <u>Event Summary (including number of workers involved and activity in progress):</u> 3 Electricians in work group that were installing "yellow jackets" (cord protectors) for UT group. One was wearing respiratory protection as a voluntary upgrade, two were not. Employee reported ammonia smell while bending over about 3 feet off the ground. <ul style="list-style-type: none"> ◦ Was an IHT Present? [] Yes [X] No ◦ Was Respiratory Protection Being Worn by Affected Worker(s)? [] Yes [X] No 																																														
2. <u>Summary of Employee Reported Information (e.g., symptoms):</u> Headache and metallic taste. <ul style="list-style-type: none"> ◦ Attach Completed Odor Response Card 																																														
3. <u>Identification of Source of the Concern:</u> [] Yes [X] No																																														
4. <u>Time Line of the Event:</u> 1435: Announcement of entering AOP-015 1440: Two IH arrive at shift office 1443: IH talks with IHT shifter; IHT shifters did not receive radio message 1446: IHT shifters arrive at shift office 1448: Shift manager in communication with work crew to find out specifics of what was happening on the job 1451: Shift manager informed that electrician was only person to smell ammonia like odors. Electrician taken to HPMC with a headache 1453: IH discusses plan with IHT's on sampling and pulling bags 1455: IHT's leave to go get respiratory protection from mask station 1457: IH directs IHT shift manager to call and have someone start the HAPSITE 1459: IH reported to mask station to ensure respiratory protection was acquired in a timely manner. 1504: IHT's receive masks from mask station and make their way to respond to AOP 015 1512: Separate IHT sent to AN farm to take bag samples to HAPSITE for IHT shifters. 1527: Discussed preliminary information with IH Program Manager 1550: Bag samples returned to 272AW lab to start processing with instrumentation 1605: Bags transported to 2704HV to be ran on HAPSITE 1818: Prod. Ops East S&H Manager Discussed with Program SME no abnormal findings on preliminary HAPSITE analysis. 1829: Prod. Ops East S&H Manager discussed preliminary results with Central Shift Manager and Prod Ops Sr Level 1 Manager 2113: Summary of HAPSITE complete, notification sent to CSM by Prod Ops East S&H Manager.																																														
5. <u>Summary of IH Monitoring and Sampling Data:</u> a. <u>Monitoring:</u> "Two IHT's responded to an AOP-15 in AN Farm. The area of concern was between AN-103 and AN-106 along the Yellow Jackets. One IHT pulled 2 bag samples and 1-IHT performed area monitoring at and around AN-103 and AN-106. The areas that were monitored includes, around the tents, in the general area between AN-103 & AN-106, along the yellow jacket, and along the fence on the west side to the northwest corner. The farm was entered at 1529 and exited at 1546." Per DRI 14-08157.																																														
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">AGENT</th> <th style="text-align: center;">@ODOR</th> <th style="text-align: center;">@SOURCE</th> <th style="text-align: center;">EXPOSURE LIMIT</th> <th style="text-align: center;">REPORTING LIMIT</th> </tr> </thead> <tbody> <tr> <td>Ammonia</td> <td style="text-align: center;">0ppm</td> <td style="text-align: center;">ppm</td> <td>25 ppm OEL/35ppm STEL</td> <td style="text-align: center;">>0 ppm</td> </tr> <tr> <td>Total VOCs</td> <td style="text-align: center;">0ppm</td> <td style="text-align: center;">ppm</td> <td style="text-align: center;">2 ppm AL</td> <td style="text-align: center;">>0 ppm</td> </tr> <tr> <td>Mercury</td> <td style="text-align: center;">.000005mg/m³</td> <td style="text-align: center;">mg/m³</td> <td style="text-align: center;">0.025 mg/m³ OEL</td> <td style="text-align: center;">0.000016 mg/m³</td> </tr> <tr> <td>Nitrous Oxide</td> <td style="text-align: center;">0ppm</td> <td style="text-align: center;">ppm</td> <td style="text-align: center;">25 ppm AL</td> <td style="text-align: center;">>0 ppm</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>		AGENT	@ODOR	@SOURCE	EXPOSURE LIMIT	REPORTING LIMIT	Ammonia	0ppm	ppm	25 ppm OEL/35ppm STEL	>0 ppm	Total VOCs	0ppm	ppm	2 ppm AL	>0 ppm	Mercury	.000005mg/m ³	mg/m ³	0.025 mg/m ³ OEL	0.000016 mg/m ³	Nitrous Oxide	0ppm	ppm	25 ppm AL	>0 ppm																				
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Washington River Protection Solutions		PER Number:
TF-AOP-015 INDUSTRIAL HYGIENE INVESTIGATION REPORT		WRPS-2015-0274
Time/Date & Event location:		
14:00 2/10/2015 AN Farm between AN-106 and AN-103 Tanks		
<p>b. <u>GCMS Sample Results:</u> The annotated GC-MS chromatogram is attached to survey DRI 14-08157. The results are unremarkable with an analyzed content of approximately 45 ppb of organics. No hazardous materials were observed. The predominant materials identified were consistent with normal paraffinic hydrocarbons, utilized in the PUREX process. These materials are ubiquitous throughout the Hanford site.</p>		
<p>c. <u>Sampling:</u></p> <ul style="list-style-type: none"> • <u>Source</u> [] Yes [X] No • <u>Area</u> [X] Yes [] No • <u>Personal</u> [] Yes [X] No 		
<p>6. <u>Weather Conditions at Time of Event:</u></p> <ul style="list-style-type: none"> • <u>Wind Direction & Speed</u> SE, avg 3 mph gusts 10mph • <u>Barometric Pressure (steady/rising/falling)</u> steady at 29.50in/Hg • <u>Temperature (°F)</u> 62.6F 		
<p>7. <u>Recommendations/Conclusions:</u> After discussions with CSM, Sr. Management and IH Programs SME the recommendation was to exit AOP15 for AN farm, no conclusive evidence was found around the area of reported concern.</p>		
<p>8. <u>Other:</u> N/A</p>		
<p>9. <u>IH Monitoring/ Sample Survey Reports:</u> DRI 14-08157 AOP -15 AN Farm</p>		
IH Author	(Print) [REDACTED] (Sign) [REDACTED]	[REDACTED] Phone Date 02/18/2015
S&H Program Mgmt.	(Print) [REDACTED] (Sign) [REDACTED]	[REDACTED] Phone Date 2/25/15