

WRPS-1501737

Enclosure

EVENT INVESTIGATION REPORT

AN Farm AOP-015 Event 04-06-2015

Event Investigation Report Number: EIR-2015-018

Consisting of 17 pages, including coversheet

EVENT INVESTIGATION REPORT

AN Farm AOP-015 Event 04-06-2015

Event Investigation Report Number: EIR-2015-018

Event Investigation Team Lead

4-21-15

Date

PER Responsible Manager

4/21/15

Date

PER No. WRPS-PER-2015-0655

Investigation Summary

On Monday, April 6 2015, three workers, two electricians and a Health Physics Technician (HPT) were entering AN Farm to perform Ground Fault Circuit Interrupter (GFCI) Preventative Maintenance (PM). The team met at the AN Farm change trailer at approximately 0730 and proceeded into the Farm. Waste transfer activities were secured earlier in the morning at 0057 so no Personal Protective Equipment (PPE) was required for entry. As the workers walked into the area near the AN-104 vent pit, one smelled an odor described as rotten onions or bad body odor. He asked the other workers if they too were experiencing the odor. One worker thought he could smell a slight odor, the other worker did not smell an odor. Shortly after smelling the odor, the first worker became symptomatic describing the physiological response as “itchy mouth” and “swollen throat” and it was hard to swallow.

The workers exited AN Farm to the change trailer. The workers notified others working in the area and advised them to evacuate the farm. The Central Shift Office Shift Manager was notified as well as the worker’s supervisor. The symptomatic worker was taken to Occupational Medical Services (HPMC) for evaluation and released without restriction.

The conditions at the time of the odor encounter are as follows:

Wind, Strong breeze estimated at 18-25 mph from the Northwest based on ground level observation of local wind sock. Telemetry from the local weather tower indicates prevailing wind at 7 mph with gusts 12-14 mph.

Temperature: 42.5 F

A Temperature inversion was in progress.

Barometric Pressure: 29.03 inches of Mercury

Relative Humidity: 90%

A waste transfer from C-102 to AN-101 was secured at 0057.

The “sluice pit” 106 cover blocks were off. The AN-106 pump had been replaced approximately a week prior to this incident.

Industrial Hygiene Technicians (IHTs) sampled the area with direct reading instruments and found nothing above background levels. “Bag” samples were taken and analyzed with nothing found above action levels.

Event Timeline

Monday, April 6 2015 –

AN Farm AOP-015 Event 04-06-2015

0645 Pre-Job briefing conducted for AN Farm GFCI PMs.

0730 Work team met at the AN Farm change trailer

0745 First worker encounters odor near AN-101, asks others if they too smell the odor. Odor described as rotten onion or bad body odor.

0750 Workers have exited to the change trailer. First worker experiencing itchy mouth, swollen throat, difficulty swallowing. Other two workers experience no symptoms.

0800 Workers fill out odor response card. Workers notified other work team in area.

0805 Notification to Central Shift Office (CSO) complete.

0808 Maintenance supervisor notified CSO of odor event.

0816 AOP-015 is entered for AN Farm. First worker is reports to HPMC.

0821 Industrial Hygienist (IH) arrives at CSO and is briefed of the AOP-015 event.

0840 IH sampling conducted within AN Farm. No direct readings above action levels reported.

0910 IH arrives back at IH lab.

0915 Bag Samples analyzed with no results above action levels.

1220 HAPSITE Evaluation for AOP-015 event at AN Farm is complete with no results above background levels.

1230 AOP-015 exited for AN Farm.

Tuesday, April 7, 2015

1000 Interviews conducted with the three AN Farm workers.

Compensatory Measures

1. Radio communication of AOP-015 entry at AN-Farm.
2. Shift Office Event Notification (SOEN) sent for Entry into AOP-015 at AN Farm.

AN Farm AOP-015 Event 04-06-2015

3. Safe Evacuation of AN Farm conducted per TF-AOP-015 procedure.
4. IHT response for atmosphere sampling.

Preliminary Extent of Condition Review

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

Discussion of Potential Causes

Contributors to the odor may include:

Waste transfer activities from C-102 to AN-101 were secured at 0057 on 04-06-2015.

A Pump change out had occurred the week prior, leaving slurry pit housing pump 106 open with cover block removed.

No vapor producing work was being conducted at the time.

AN Farm ventilation confirmed to be operational and functioning.

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. No workers opted for voluntary respiratory protection upgrade.

Recommendations/Proposed Corrective Actions

None. The response to this event was conservative, timely, and comprehensive.

Attachments (as they apply):

1. List of personnel contacted
2. Logbook Entries
3. Industrial Hygiene Sample Analysis
4. Odor Response Card
5. Weather Data

AN Farm AOP-015 Event 04-06-2015

Attachment 1 List of Personnel Contacted

1. HPT assigned to work team
2. Two work team Electricians

AN Farm AOP-015 Event 04-06-2015

Attachment 2
Logbook Entries

4/6/15
1657 Relieved CSU by
1657 - Relieved CSU by [Signature]
1657 - Relieved CSU by [Signature]
1657 - Relieved CSU by [Signature]

[Redacted Box]

1657 - Relieved CSU by [Signature]
1657 - Relieved CSU by [Signature]

0855 - Relieved CSU by [Signature]
0719 - Relieved CSU by [Signature]
0719 - Assembled clothes into CSU.
0805 - notified CSU of a possible
vapor issue in AN Farm.

0808 - called CSU, 3 electricians
were in AN Farm conducting GFCI
inspections. They were walking between
AN101 and AN105 toward AN101
intimated that he smelled
rotten onions, said he
did not have symptoms but his throat
was starting to itch and he did not
want to go to HPMC.
0816 - called to notify that,
ow says he has symptoms
and is being taken to HPMC.
0816 - Entered TF-AOP-015 for vapors in
AN Farm.
0817 - AOP-015 radio announcement made.
0818 - AOP-015 Seen sent.
0819 - DUE FR notified of AOP-015
event and employee being sent to HPMC.
0838 - Seen sent for being taken
to HPMC Herb Lawrence notified.

4/6/15
1657

AN Farm AOP-015 Event 04-06-2015

Attachment 2
Logbook Entries

- 4/7/15 D Shift
- 0840 - Sr Mgmt Rep notified of AOP-015 event.
- 0845 - Late entry for 0825. Received email from DOE FR indicating that during the T-III job yesterday the vacuum breaker rolled over while it was being lifted from the rusted steel transportation base. After it was rolled it was placed on the riser. CSO was not made aware of the event until this email was sent from DOE FR.
- 0856 - T Farm PCM is back in service.
- 0900 - Called projects manager. Sheet metal employees contacted HAMTC Safety Rep this morning when they realized they had been assigned to the same job yesterday that is mentioned in entry 0845. notified around 0650. The event happened yesterday around 1315.
- 1013 - initiated an event investigation 2015-017 for T-III Vacuum Breaker Riser #16 event.
- 1230 - 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. Radio announcement made. SUTEN Sent Notified DOE FR - and Sr Mgmt Rep.

AN Farm AOP-015 Event 04-06-2015

Attachment 3 Industrial Hygiene Sample Analysis

From:
Sent: Tuesday, April 07, 2015 12:20 PM
To:
Cc:
Subject: Hapsite Evaluation of AOP-15 AN Farm 4-7-2015
Attachments: AN Farm AOP-15 DR 15-02417.jpg

Ladies and Gentlemen,

No Hazardous compounds were identified outside of background materials.

Please find attached an annotated chromatogram showing samples of the general area inside AN Farm, and the inside of the AN-101 tent.

Along with this, shown in red, is a bag sample containing high purity nitrogen to depict the normal bag background materials.

At these low of concentrations, the bag background becomes significant.

The only observed compounds differing from bag background, were a silicone compound that has been observed many times, and branched chain hydrocarbon of >C12 length.

These materials were estimated to have a concentration around 3 ppb.

If you should require further information, please give me a call \

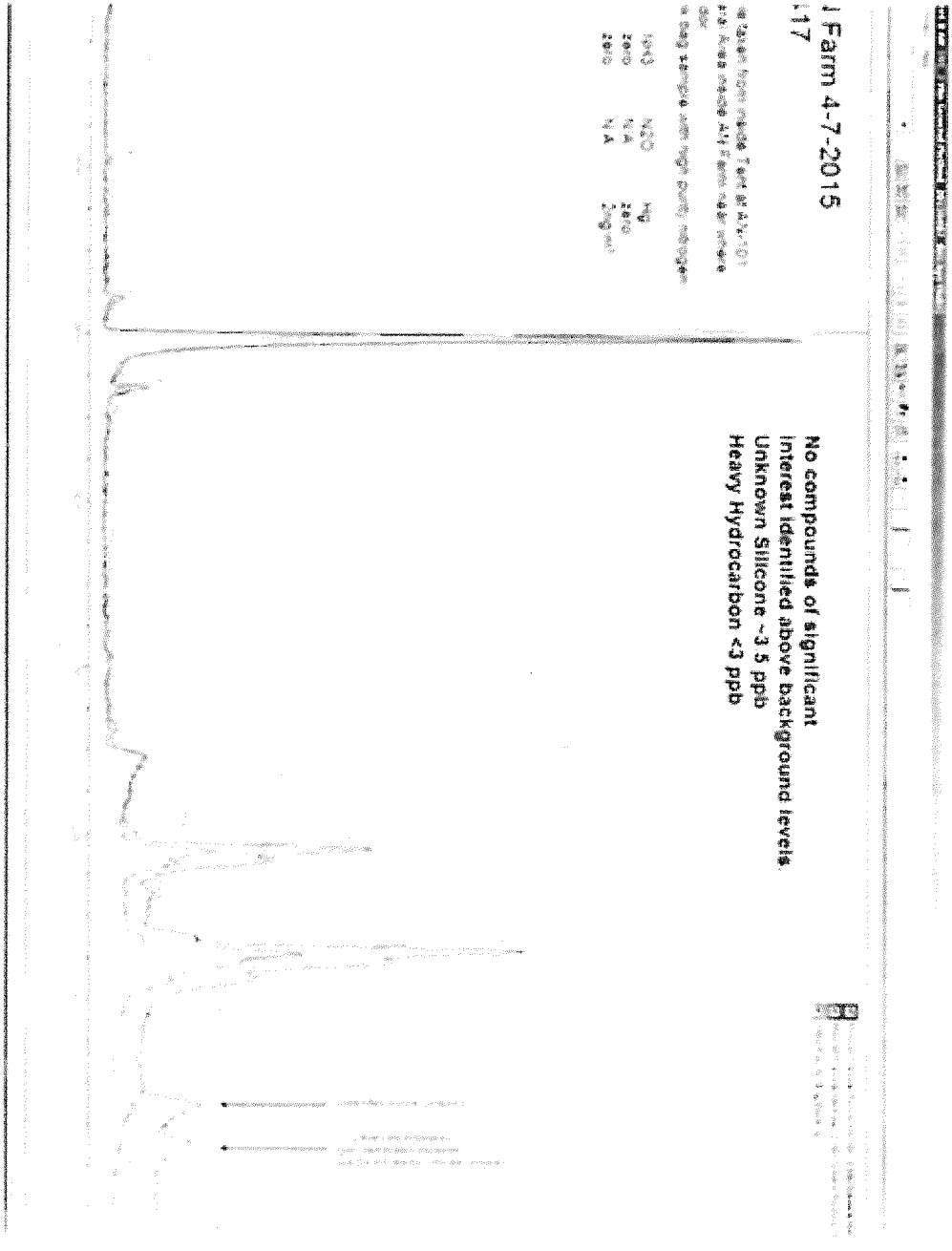
Industrial Hygiene Programs



Contractor to the U.S. Dept of Energy

AN Farm AOP-015 Event 04-06-2015

Attachment 3
Industrial Hygiene Sample Analysis



AN Farm AOP-015 Event 04-06-2015

Attachment 3
Industrial Hygiene Sample Analysis

Washington River Protection Solutions TF-AOP-015 INDUSTRIAL HYGIENE INVESTIGATION REPORT	PER Number:
Time/Date & Event location: 0800 04/07/2015 AN105, AN104, AN101 AREA.	
1. <u>Event Summary (including number of workers involved and activity in progress):</u> <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> <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> <p>0818 Shift IHT supervisor notifies PO IHs of AOP-015 entry by phone</p> <p>0819 SOEN: "Entering AOP-015 for odors in AN Farm. Stay clear of the area. CSM"</p> <p>0821 IHs arrive at CSO and briefed by CSM:</p> <ul style="list-style-type: none"> 3 electricians performing GFCI inspections (SEG 1) reported rotten onion odor. 1 electrician reported symptom "scratchy throat". Symptomatic electrician reported to HPMC for evaluation. <p>0822 Shift IHT supervisor and IHT supervisor arrive at CSO and report that IHTs had been mobilized and are in route to CSO.</p> <p>0825 CSM receives phone call from unnamed personnel who clarifies that odor was smelled near AN101.</p> <p>0827 IH briefs IHTs on monitoring plan: fill tedlar bag with atmosphere from around AN101 area and one tedlar bag with atmosphere from inside of AN101 pit tent.</p> <p>0828 IHTs head to mask station to acquire SCBA</p> <p>0829 CSM updated via phone that electrician first smelled odor while traversing from AN105 and AN104 to AN101 area.</p> <p>0831 IH arrives at mask station to update IHTs with new information.</p> <ul style="list-style-type: none"> IHTs notify IH that they had been asked to queue behind RPE delivery personnel after informing mask station personnel that they were requesting SCBA for AOP-015 response. Mask station questions various aspects of the AOP-015 RPF's validity before issuing RPE. <p>0836 IHTs acquire SCBA and head to IH lab to gather additional equipment</p> <p>0844 IHT supervisor leaves CSO in route to IH lab to strategize bag delivery and analysis.</p> <p>0905 Shift IHT supervisor leaves CSO in route to IH lab to support bag delivery and analysis and to administratively facilitate timeliness of data acquisition.</p> <p>0910 IHTs arrive back at IH lab from event scene and report to IH on preliminary readings from DRIs:</p> <ul style="list-style-type: none"> AN105, AN104, AN101 area: <ul style="list-style-type: none"> VOCs: ~18ppb NH3: ~0ppb AN101 Tent: <ul style="list-style-type: none"> VOCs: ~0ppb NH3: ~0ppb <p>0915 Tedlar bag contents analyzed with Lumex in IH lab.</p> <ul style="list-style-type: none"> AN105, AN104, AN101 area: <ul style="list-style-type: none"> Hg: ~0ng/m³ AN101 Tent: <ul style="list-style-type: none"> Hg: ~2ng/m³ <p>0918 IHT takes remaining tedlar bag contents to 2704HV for GSMS analysis and interpretation by Program Chemist.</p> <p>1009 PO IH inquired if the CSM had received the Odor Response Card. The CSM had not received it at this time.</p> <p>1051 Shift IHT supervisor delivers Odor Response Card to PO IH.</p> <p>1220 Program Chemist releases final report on GCMS analysis of atmosphere from tedlar bags.</p>	

Attachment 4
Odor Response Card

Odor Response Card

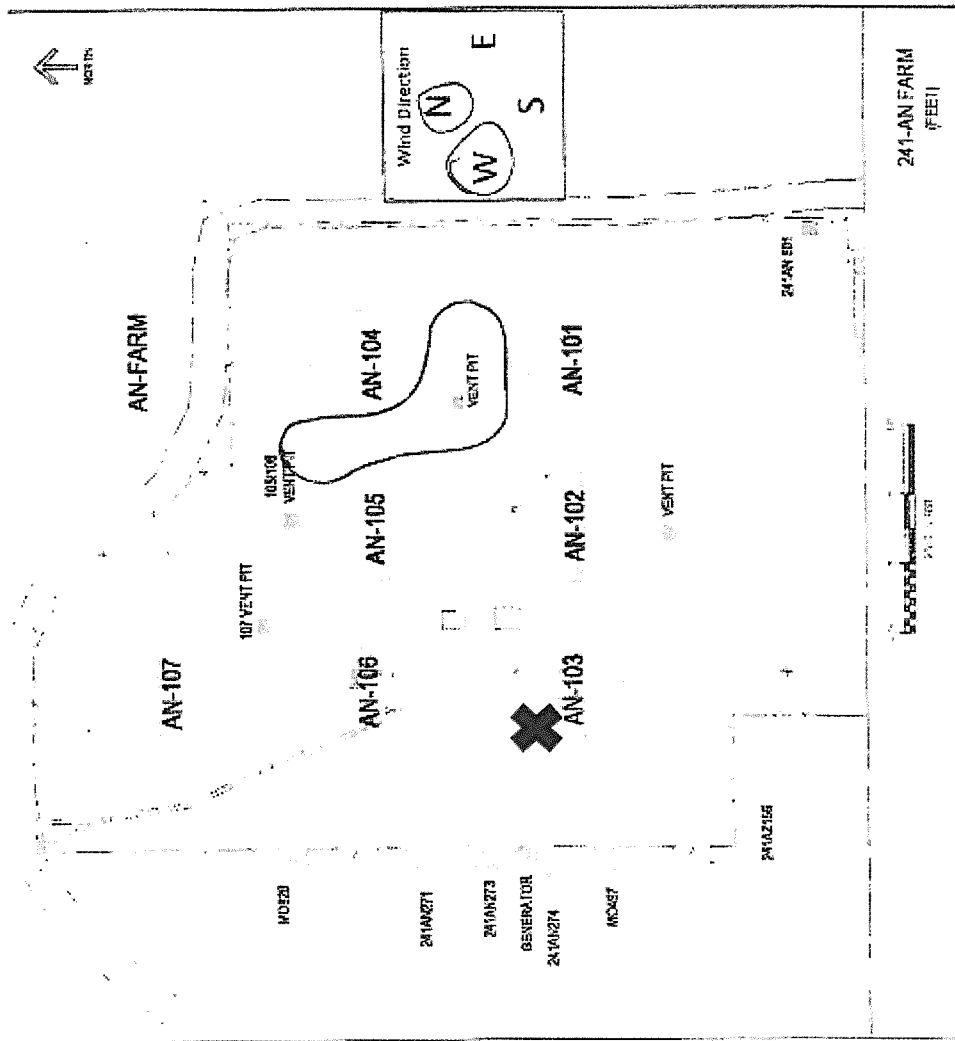
1. Contact CSM, [redacted] complete below bulleted information and map.

- Date and time odor was noticed 4.7.15 0800
- Your name and the work you were performing. ofc pva
- Location of odors (mark area on map and wind direction)
- Name of others in or near the affected area
- Was an IHT present? No
- Describe the odor Sweet Sour Musty Earthy Metallic Smoky Rotten Onion
- Possible source
- Your symptoms (if any) Headache Dizziness/Light-Headed Nausea Cough Fatigue/Drowsiness/Weakness Sore/Burning Throat Difficulty Breathing Watery/Irritated Eyes/Trouble with Vision Tingling/Numbness/Paralysis Rash/Itching Other Heavy throat, trouble swallowing

2. Send this card to the Central Shift Office.

Revised 2/9/15

Attachment 4
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 CSIM [redacted] complete below bulleted information and map.
 - Your name and the work you were performing
 - Your symptoms (if any)
 - Date and 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.

X - Indicates approximate location the odor was encountered.

AN Farm AOP-015 Event 04-06-2015

Attachment 5 Weather Data

Time	Station	Wind Direction (35 = 350 or North, 9 = 90 or East, 18 = 180 or South, 27 = 270 or West)	Average Speed		Temperature			Precipitation (Inches)	Barometric Pressure (Inches of Mercury)	Relative Humidity (%)
			(mph)	(mph)	Average (Degrees F)	Maximum (Degrees F)	Minimum (Degrees F)			
7	6200E		31	11	40.6	42.5	38.6	0	29.07	60
8	6200E		31	11	44	46.2	42.4	0	29.06	50.9
9	6200E		33	11	47.1	48.2	46	0	29.07	47.1
10	6200E		35	11	48.5	49.3	47.4	0	29.06	41.4
11	6200E		2	6	49.4	50.5	48.6	0	29.06	39.5
12	6200E		14	4	50.4	51	49.7	0	29.06	39.3
13	6200E		22	4	50.7	52.7	50.7	0	29.02	38.5
14	6200E		19	4	50.7	52.5	47.4	0	29.02	41.7
15	6200E		28	9	47.1	47.5	46.6	0	29.02	62.9
16	6200E		33	9	47.7	48.1	47.4	0	29.02	64.5
17	6200E		33	14	47.6	48.1	47.3	0	28.99	64.8
18	6200E		33	14	47.6	47.9	47.3	0	28.99	64.3
19	6200E		31	14	48.2	47.3	48.2	0	28.96	67.6
20	6200E		29	5	48.5	46.7	48.1	0	28.96	69.7
21	6200E		26	8	45.4	45.1	44.8	0	28.95	71.1
22	6200E		26	12	45.5	45.7	45.2	0	28.95	66.3
23	6200E		24	8	45.2	45.5	44.9	0	28.95	67.8
24	6200E		21	12	44.9	45.4	44.6	0	28.94	68.9
1	6200E		20	12	45.3	46.3	44.2	0	28.95	68.6
2	6200E		24	12	44	45.9	42.8	0.01	28.95	79
3	6200E		24	14	43	43.5	42.9	0.01	28.97	85.5
4	6200E		26	14	42.6	42.3	42.3	0.01	28.96	85.8
5	6200E		27	17	42	42.4	41.8	0.01	28.99	87.2
6	6200E		30	12	41.9	42.2	41.5	0.01	29.00	90.3
7	6200E		25	8	42.5	43	42.1	0	29.03	90
8	6200E		20	11	44.2	45.3	43.1	0	29.03	85.4

Page 1

Page 3

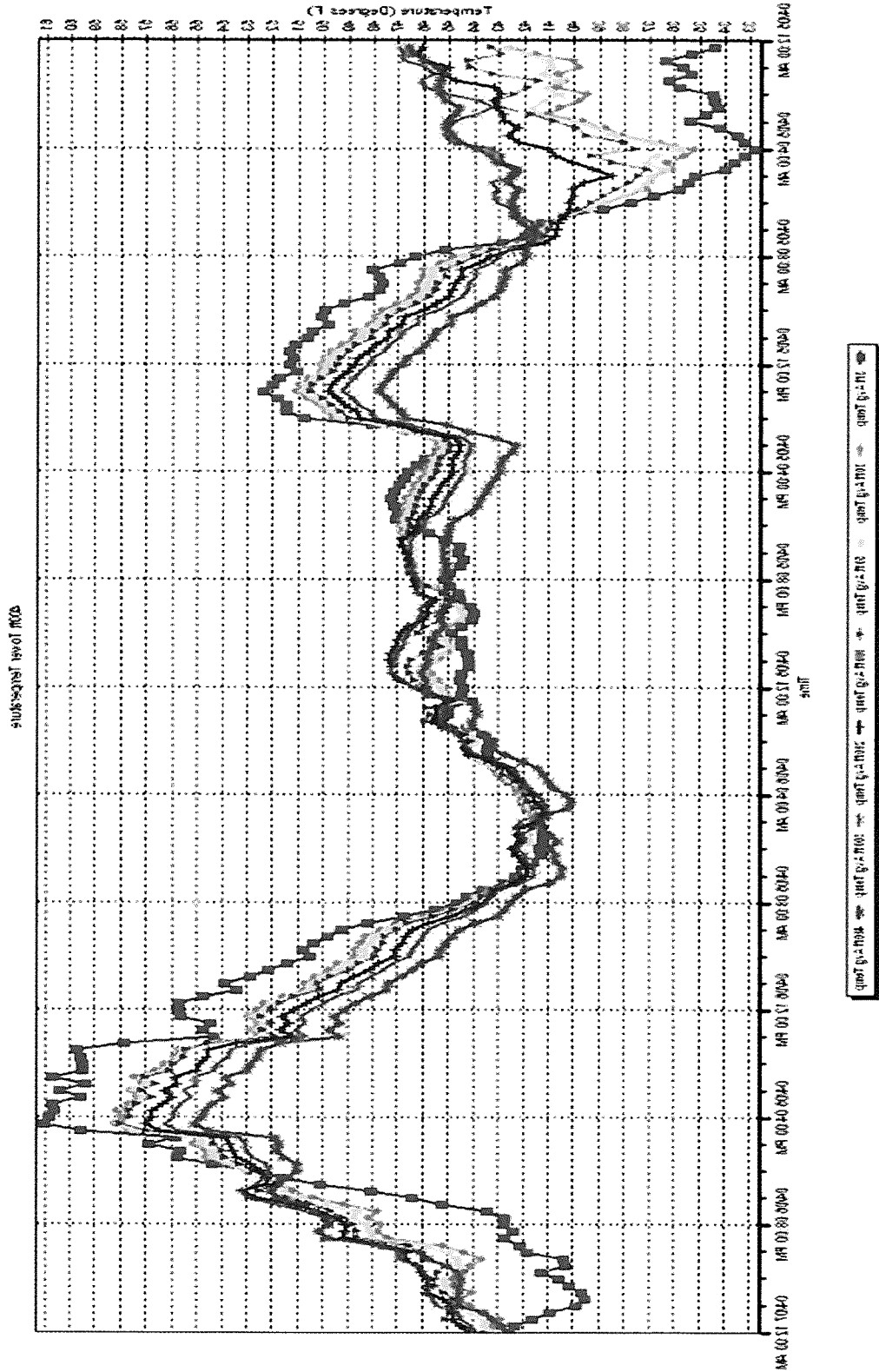
Page 2

AN Farm AOP-015 Event 04-06-2015

Attachment 5 Weather Data

Tower Information				Sun Apr 05		00:02:20 PST 2015											
yr	mo	day	hr	Solar	Prevailing Wind			Peak Gust		Time	Stab						
					Degrees	Speed	Direction	Degrees	Speed								
15	4	4	1	0.00	270.0	10.6	W	307.9	22.579	00:02	E						
15	4	4	2	0.00	250.0	8.0	WSW	262.2	16.481	01:17	E						
15	4	4	3	0.00	250.0	10.2	WSW	240.5	17.743	02:00	F						
15	4	4	4	0.00	250.0	7.7	WSW	271.6	16.481	03:47	E						
15	4	4	5	0.00	280.0	7.4	W	313.3	16.692	04:08	E						
15	4	4	6	0.01	280.0	7.4	W	273.3	12.065	05:55	E						
15	4	4	7	0.19	260.0	7.3	W	262.2	12.907	06:57	E						
15	4	4	8	0.45	260.0	7.1	W	265.1	14.378	07:53	D						
15	4	4	9	0.70	260.0	7.0	W	286.8	13.958	08:37	C						
15	4	4	10	0.92	200.0	5.5	SSW	201.0	13.327	09:36	D						
15	4	4	11	1.06	160.0	6.8	SSE	164.7	16.902	10:54	B						
15	4	4	12	1.14	170.0	5.3	SSE	176.9	18.374	11:37	C						
15	4	4	13	1.13	200.0	3.7	SSW	179.5	12.907	12:57	B						
15	4	4	14	1.04	30.0	1.0	NNE	79.7	13.537	13:19	B						
15	4	4	15	0.61	220.0	3.9	SW	248.1	13.117	14:09	C						
15	4	4	16	0.49	10.0	2.6	N	316.1	11.014	15:11	D						
15	4	4	17	0.46	50.0	5.2	NE	338.9	18.584	16:47	D						
15	4	4	18	0.18	120.0	4.4	ESE	141.1	16.692	17:10	D						
15	4	4	19	0.02	140.0	4.2	SE	114.3	9.121	18:53	E						
15	4	4	20	0.00	150.0	6.9	SSE	154.8	11.855	19:45	F						
15	4	4	21	0.00	160.0	9.2	SSE	155.6	11.855	20:05	F						
15	4	4	22	0.00	150.0	0.9	SSE	172.4	9.121	21:00	F						
15	4	4	23	0.00	330.0	4.9	NNW	319.8	8.491	22:38	F						
15	4	4	24	0.00	320.0	5.0	NW	313.2	7.229	23:57	F						
15	4	424	520	532-999	357	435	439	445	464	474	475	466	9932	59932	99933	631	79
				Delta T1 = T200 - T3 =	10.7							Pasquill Category =	F				
				Delta T2 = T250 - T50 =	3.5							200 ft Winds =	32.9				
				Delta T3 = T200 - T30 =	2.9 (NRC)							Least Dilution =	99.9 ALOFT				

Attachment 5
Weather Data



Areas where the red trace is below the others indicates a temperature inversion.