



# Direct Reading Instrumentation Weekly Summary

12/07/16 6:00 – 12/14/16 6:00

## Weekly Summary:

The ToxiRAE and MultiRAE instruments are personal monitors and were not deployed for use during this week. The AreaRAE systems were taken offline to address calibration issues and did not report data during this week<sup>1</sup>. RAE MeshGuards have sensors for ammonia and reported data. No ammonia was detected by the RAE MeshGuards during this week.

Gastronics instruments have sensors for NH<sub>3</sub>, VOCs and N<sub>2</sub>O. No ammonia was detected by Gastronics instruments that were in calibration. The NH<sub>3</sub> sensor on 512L is reporting a continuous value of 19 ppm NH<sub>3</sub> and is not in calibration.

VOC sensors were replaced and new sensors are being calibrated. Of the 512 instruments reporting, VOC sensors on 512A, Q, R, T, U, V, W, X, and 512Y were calibrated between 12/1 and 12/8. Units 512B, C, E, H, I, and U were calibrated on 12/12. VOC data are reported only when sensors are considered to be in calibration. On the calibrated units, no VOCs were detected by 512B, E, H, I, Q, R, T, and U. Units 512A and 512C reported VOCs <2 ppm (0.2 to 0.5 ppm). None of the calibrated units reported VOCs > 2 ppm. Sensors on the remaining units will be calibrated over the next week as access to the tank farms is allowed. A total VOC limit of 2 ppm currently is employed by the Industrial Hygiene Program Technical Basis<sup>2</sup>

The N<sub>2</sub>O sensors on 512 instruments in AP Farm (512A – 512T) were recently re-calibrated and will be observed for a period to determine whether the instruments will hold calibration. The N<sub>2</sub>O sensors on the 512 instruments have been difficult to keep in calibration and the calibration procedure for the N<sub>2</sub>O sensor/transmitter was modified to correct for transmitter output drift. The N<sub>2</sub>O data will remain suspect until the stability of the sensor and calibration can be confirmed. N<sub>2</sub>O has not been detected above background levels (0.3 to 0.4 ppm) by spectroscopic instruments along the fencelines around the farm.

## December 7<sup>th</sup> - December 14<sup>th</sup> 2016 Observations By Instrument:

HazScanner (501) – The HazScanners, 501A and 501B, have not been calibrated, and work is ongoing to complete their configuration. Therefore no data is presented from these instruments – other than up-time.

AreaRAE (502) – Not reporting during this week.

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<sup>1</sup> Note that instrument tags (labels) reported in OSI PI and often presented in weekly summary information are captured directly from OSI PI and that all gas monitoring instruments begin with 200-GM, followed by the target analyte (such as NH<sub>3</sub>), followed by the instrument type (three digit number), and the instrument unit as sequential letters. For example, "200-GM-NH3-512C" is an ammonia sensor reporting from Gastronics (denoted as "512") instrument "C".

<sup>2</sup> RPP-22491, Rev 1, "Industrial Hygiene Chemical Vapor Technical Basis": <http://hanfordvapors.com/wp-content/uploads/2016/10/Industrial-Hygiene-Chemical-Vapor-Technical-Basis-RPP-22491 - Rev 1.pdf>

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**Table 1. AreaRAE Comments.**

Compound (units)	Comment	OEL	Action Level	Detection Range
CO (ppm)	No data reported.	50	25	1 – 500
LEL (%)	No data reported.			0 – 100
NH <sub>3</sub> (ppm)	No data reported.	25	12.5	1 – 50
Oxygen (%)	No data reported.		<19.5	1 - 30
VOC (ppm)	No data reported.		2	1 - 200

ToxiRAE (503) – Not used during this week.

**Table 2. ToxiRAE Comments.**

Compound (units)	Comment	OEL	Action Level	Detection Range
VOC (ppm)	Not in use.	N/A	2	0.1 - 2000

MultiRAE (504) – Not used during this week.

**Table 3. MultiRAE Comments.**

Compound (units)	Comment	OEL	Action Level	Detection Range
CO (ppm)	A – Not in use. B – Not in use. C – Not in use.	50	25	0 – 500
LEL (%)	A – Not in use. B – Not in use. C – Not in use.	N/A		0 – 100
NH <sub>3</sub> (ppm)	A – Not in use. B – Not in use. C – Not in use.	25	12.5	1 – 500
Oxygen (%)	A – Not in use. B – Not in use. C – Not in use.		<19.5	1 – 30
VOC (ppm)	A – Not in use. B – Not in use. C – Not in use.	N/A	2	0.1 – 5000

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RAE MeshGuard (505) – Ammonia detection instruments located in A Tank Farm (18 sensors) and located in AP Tank Farms (4 sensors).

**Table 4. RAE MeshGuard Comments.**

Compound (units)	Comment	OEL	Action Level	Detection Range
NH <sub>3</sub> (ppm)	Instruments reporting: 505A, C, D, F, H, I, J, K, M, N, O, P, Q, R, S, T, U, V, and W. <ul style="list-style-type: none"> <li>• No ammonia detected.</li> <li>• Calibration/check tests: All 505s calibrated on 12/7</li> </ul>	25	12.5	1 – 50

FIS-Gastronics (512) – Monitor for ammonia, volatile organic compounds, and nitrous oxide.

**Table 5. Gastronics Comments.**

Compound (units)	Comment	OEL	Action Level	Detection Range
NH <sub>3</sub> (ppm)	No ammonia reported on any instrument (other than calibration tests)	25	12.5	1 – 500
VOC (ppm)	<ul style="list-style-type: none"> <li>• Instruments in calibration: 512U for entire reporting period; 512Q, R, and T for the last 5.5 days of the reporting period; and 512B, C, E, H, and 512I for the last 1.5 days of reporting period.</li> <li>• Instruments that reported no VOCs detected: 512B, E, H, I, Q, R, T, and U</li> <li>• Instruments that reported a maximum value of ≤ 2 ppm: 512A and C</li> <li>• Instruments that reported maximum values &gt; 2 ppm: None.</li> </ul>	N/A	2	0 – 1000
N <sub>2</sub> O (ppm)	N <sub>2</sub> O sensors reported from 512A, B, C, D, E, F, G, H, I, J, K, M, N, O, P, Q, R, S, T, and U. The N <sub>2</sub> O sensors on 512B, G, I, K, M, N, P, Q, R, and S reported N <sub>2</sub> O spikes. The N <sub>2</sub> O data remain suspect until the stability of the sensor and calibration can be confirmed.	50	25	0 – 1000

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## December 7<sup>th</sup> - December 14<sup>th</sup> 2016 Instrument Operational Status:

Time reporting is calculated using the amount of time sensors report to OSI PI System<sup>3</sup> for each instrument:

**Table 6. HazScanner (501) % Time Reporting by Instrument.**

Instrument	% Time Reporting	Instrument	% Time Reporting
501A	0	501B	0

**Table 7. AreaRAE (502) % Time Reporting by Instrument.**

Instrument	% Time Reporting	Instrument	% Time Reporting	Instrument	% Time Reporting	Instrument	% Time Reporting
502A	0	502D	0	502G	0	502J	0
502B	0	502E	0	502H	0		
502C	0	502F	0	502I	0		

Notes: % time reporting is estimated on review of graphs from OSI PI.

**Table 8. ToxiRAE (503) % Time Reporting by Instrument.  
(personal monitors only used when operators are in the field)**

Instrument	% Time Reporting	Instrument	% Time Reporting	Instrument	% Time Reporting
503A	0	503E	0	503I	0
503B	0	503F	0	503J	0
503C	0	503G	0	503K	0
503D	0	503H	0		

**Table 9. MultiRAE (504) Time Reporting by Instrument.  
(personal monitors only used when operators are in the field)**

Instrument	% Time Reporting	Instrument	% Time Reporting	Instrument	% Time Reporting
504A	0	504B	0	504C	0

**Table 10. RAE MeshGuard (505) % Time Reporting.**

Instrument	% Time Reporting	Instrument	% Time Reporting	Instrument	% Time Reporting	Instrument	% Time Reporting
505A	70	505H	94	505O	93	505V	96
505B	0	505I	94	505P	94	505W	93
505C	91	505J	96	505Q	96	505X	0
505D	87	505K	9	505R	81		
505E	0	505L	0	505S	3		
505F	80	505M	94	505T	96		
505G	0	505N	92	505U	93		

<sup>3</sup> OSI PI System is a data visualization software package from [OSIsoft](http://www.osisoft.com).

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**Table 11. Gastronics (512) % Time Reporting by Instrument.**

Instrument	% Time Reporting	Instrument	% Time Reporting	Instrument	% Time Reporting	Instrument	% Time Reporting
512A	94	512H	80	512N	29	512T	83
512B	74	512I	53	512O	94	512U	99
512C	82	512J	<1	512P	72	512V	0
512D	87	512K	95	512Q	79	512W	0
512E	84	512L	79	512R	8	512X	0
512F	94	512M	1	512S	15	512Y	0
512G	63						