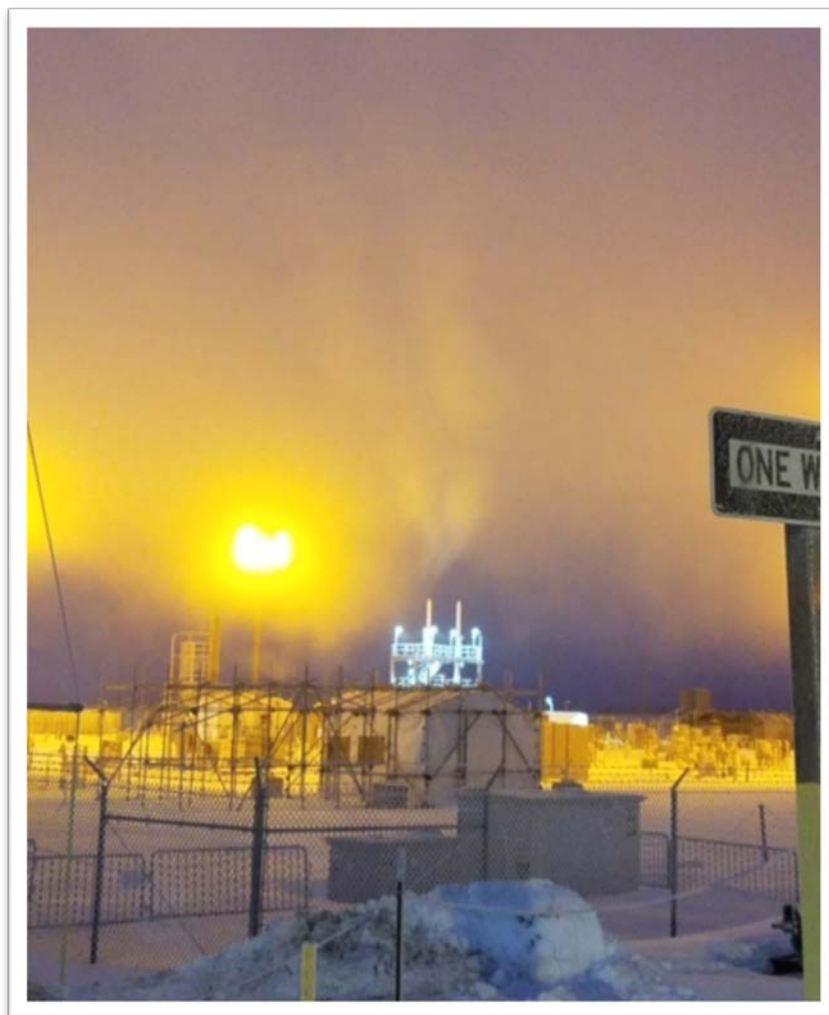




washington **river**  
**protection** solutions



*AP Stack Effluent and heavy fog on 01/13/2017 at 7:04 AM during AY-102 Retrieval*

**Tank Operations Contract**  
**Chemical **Protection Program** Office Weekly Report**  
**January 19, 2017**

## 1. CHEMICAL PROTECTION PROGRAM OFFICE (CPPO) ACTIVITIES STATUS

CPPO continues support to the WRPS and DOE-ORP integrated vapors mitigation project team. The most recent support efforts are focused on supporting the Comprehensive Vapor Action Plan. CPPO has written drafts for multiple chapters within the plan and will be developing and tracking the deliverables necessary to address all assessments recommendations (TVAT, NIOSH, OIG, EA-32). The intent will be to have the Specific, Measurable, Achievable, Relevant and Timely (SMART) required deliverables necessary for closure of the PERs corrective actions also included in the Comprehensive Vapor Action Plan.

CPPO has become an internal resource as the primary repository and provider of all formal content related to chemical vapors. Recent inquiries from a variety of WRPS personnel have resulted in CPPO providing specialty services including: assessing AY-102 retrieval stack, source, and area data; developing a variety of vapors related presentation materials; conveying vapors documents from the CPPO document library to support the external independent review of the AP Farm cartridge testing; providing AOP-015 information for specific AOP-015 events; responding to inquiries from the HanfordVapors.com website; and developing communication tools for the area, source, and personal sampling data from 2008 through 2016.

The CPPO recently met with the RJ Lee mobile lab team in response to requests made during the CVST meeting on January 11, 2017, to review the data collected to date and to discuss additional fields for their reports that allow for a faster and more efficient evaluation of the data. New hardware and software updates were also discussed as a means of increasing RJ Lee's instrument sensitivity and the number of compounds that can be detected by the lab, such as mercury.

This week the CPPO continued its work with PNNL on the creation of the Phoenix database and data visualization project. The first system mockups were created and feedback was provided on how to make the interfaces and information flow in a clearer and more effective manner.

The CPPO was joined by an additional member from The Center for Toxicology and Environmental Health (CTEH) who will be working to compile and summarize the over 15 million data points collected during the month of December's AY-102 retrieval operations, as well as provide data support for compilation of data within SWIHD.

## 2. CPPO COMMUNICATIONS

### **Communications with the Workforce**

The first installment of "Bring the CVST to the Workforce" initiative, was held Monday January 16<sup>th</sup> with the AY/AZ Tank Farms Staff. The Chemical Protection Integration Manager, ESH&Q manager and the CPPO Manager attended the staff meeting and provided vapors information to the area team. The discussion was well received, with a number of questions pertaining to cartridge testing, the potential of moving to PAPR/APRs, and what is the time frame for implementation. A recommendation was made to provide more information on vapors mitigation across the plateau. Another meeting is scheduled in January and it will be with the 616/WS Team.

The CVST meeting held on 1/11/17 included information presented on chemical cartridges, APRs and PAPRs, and the next phase of the vapors mitigation activities. Information was presented on the following topics: *Response to Readily Apparent Facility Odors*, the *AW Bottle Change Tent*, *AY-102 IH data*, and the *Worker's Compensation process with the Penser North America representative*. The Workers' Compensation Claims/Penser presented is being provided to the WRPS managers for dissemination via the CPPO notebook. The information is also available on the [Hanfordvapors.com](http://Hanfordvapors.com) website.

The CPPO Notebook presentation for the week of January 4, 2017 was on the Cartridge Testing. On January 11, 2017, a presentation on the VMDS pilot program currently being tested at A and AP Farms was redistributed at the request of several folks who missed the briefing due to the holidays and inclement weather. The presentation on Penser provided at the January 11, 2017 CVST will be the next information provided through the CPPO Notebook.

### **HanfordVapors.com Posts**

[The Office of Enterprise Assessment issues progress report and recommendations](#)

[Added a link to the Engineering Controls Document in the Document Library](#)

[Workers' Compensation 101 Presentation](#)

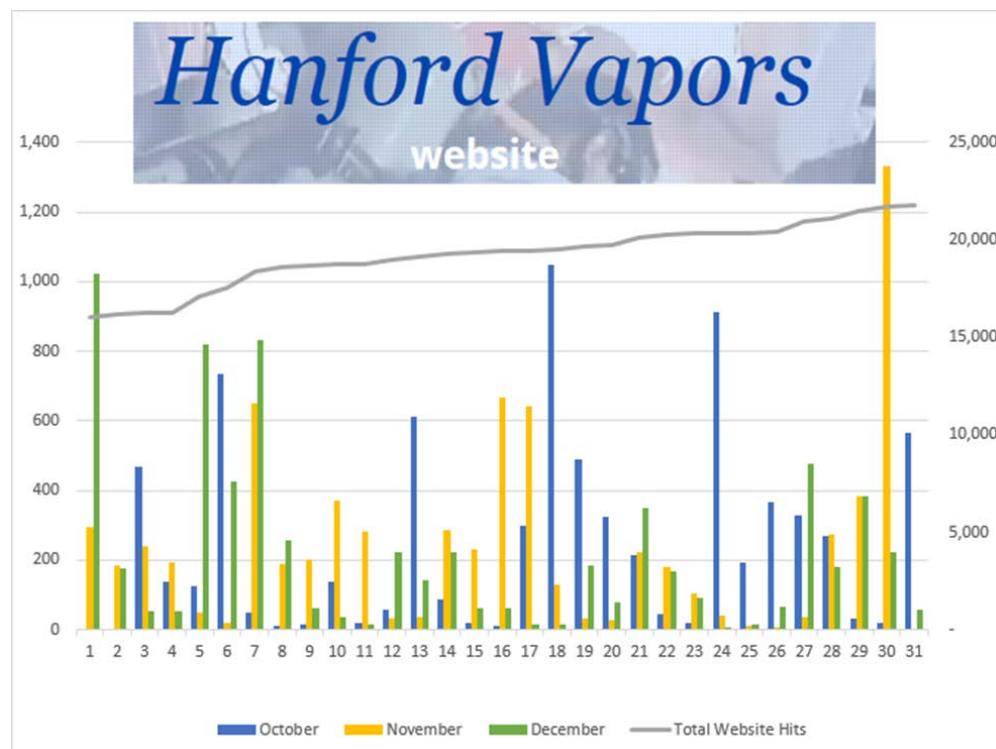
[Workflow Diagram for Labor and Industries Compensation](#)

[Updated link to Penser Workers' Compensation Claims contract](#)

[Vapors Weekly Update – January 6](#)

## **3. PERFORMANCE TRACKING**

The [HanfordVapors.com](#) website continues to be used to communicate issues and topics involving chemical vapors at Hanford. Below is a chart 1 showing the total hits each day for the past 3 months. The beginning of December continued to show high traffic as more and more people wanted to find out more on the odor related incident next to AX farm on November 30<sup>th</sup>. On November 30<sup>th</sup> and December 1<sup>st</sup>, we saw an increase of activity as news of the odor-related incident by AX change tent outside the farm was reported, in addition to the *NBC Today Show* Hanford News story on the morning of Monday, Nov. 29<sup>th</sup>. The Centers for Disease Control and Prevention National Institute for Occupational Safety and Health (NIOSH) report was distributed via the website on December 1<sup>st</sup>. On December 7<sup>th</sup>, the letter sent to Secretary Moniz from WA State Senators requested DOE use the NIOSH report to “develop an implementation plan which includes a clear schedule and the funding necessary” to successfully carry out the recommendations. This website activity shows people are using the website to seek out information.



**Chart 1. First Quarter FY17 - Website Analytics**

#### 4. TVAT PHASE 1 and PHASE 2 DETAILED STATUS

**TVAT Recommendations 1 and 9; Headspace Sampling:** As reported last week, for FY 2017, headspace sampling is being re-planned after the impacts to the transfer schedule caused by the switch of AP-106 and AW-106. There are only five waste disturbing activities planned so it is critical headspace sampling occurs during these five activities.

Schedule is being finalized by next week for FY17 activities, planning to do AY-102 Stack sampling this weekend on OT during Retrieval activities. Stack sampling (AP) is currently ongoing during AY-102 retrieval.

**TVAT Recommendations 2, 7, 16; Chemical Plating (Aerosol Study):** The Aerosol Study was pushed to FY19 for budgetary reasons.

**TVAT Recommendations 3-5; IH Instruments:** No update.

**TVAT Recommendation 6; IH Personnel Monitor Equipment:** C2Sense is developing a personal ammonia monitor under a grant from DOE-EM. EM requested that WRPS support testing of the new device in actual Hanford waste tank vapors. To that end, WRPS is coordinating with C2Sense to test its first prototype during the week of 20 February 2017. Actual vapor sample will be collected from the AP Stack and in AP Farm work areas. These Vapor samples will be used to test the C2Sense prototype at the CBAL Lab. The test plan for this test is currently in review and an Statement of Work (SOW) is being written to contract RJ Lee to provide lab space and analytical services to support the test. The EM Funded development contract will be completed at the end of March 2017. An SOW is being developed to complete the development and testing of the prototype.

**TVAT Recommendation 8; Dispersion Model Review:** As reported last week, a meeting was held on 12/8/16 to discuss plume modeling and what types of models are needed for near, intermediate, and far field predictions. This meeting identified IH Mod (a mathematical modeling software used for estimating occupational exposures) for near field, APGEMS (Air Pollutant Graphical Environmental Monitoring System) for mid field, and AERMOD (atmospheric dispersion modeling system) for far field modeling applications. The meeting identified two development issues that need to be addressed in FY17. First, the FY16 dispersion modeling report (PNNL-25654) needs to be updated to include an evaluation of the Kenexis Computational Fluid Dynamics (CFD) model and second, the APGEMS model needs to be upgraded to model plumes from multiple sources simultaneously. The dispersion modeling SOW is being modified to incorporate this work scope.

**TVAT Recommendation 10; Review/Update Chemical of Potential Concern (COPC) Listing:** PNNL has been subcontracted to review available headspace sampling data and available toxicological information to update the list of COPCs and develop acute and chronic occupational exposure limits (OELs) for all of the compounds. The OEL updates will be done in three phases: establishment of exposure limits for COPCs where regulatory guidelines exist, development of exposure limits for high priority COPCs, and development of exposure limits for low priority COPCs. PNNL expects to publish the OELs for COPCs where regulatory guidance exists by the end of February and High priority COPC OELs by the end of March. Further, PNNL will evaluate computational methods to evaluate vapor mixture effects.

**TVAT Recommendations 11-13, 15, 17-18; PNNL Health Study Roadmap:** A schedule for FY2017 has been developed for the Health Process Project. The project is broken down into seven tasks: 1) Schedule; 2) Establish Tank Operations contractor assessment team; 3) Establish an External Peer Review Health Panel; 4) Implement Routine Analysis and Screening Process for Updating COPCs;

5) Establish Acute/Transient and Chronic Exposure Action Levels; 6) Evaluate Computational Approaches for Predicting Exposure and Delivered Dose; and 7) Database Implementation and Management.

Weekly Accomplishments:

- Task 4: Continued literature review of sampling and analytical candidate methodologies.
- Task 5: Efforts have focused on COPC evaluation for acute and chronic OEL development for high priority chemicals of concern.
- Task 7: Final quote provided to PNNL. Held internal meeting to determine which tasks should be prioritized in the short-term to meet the goals in the quote.
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**TVAT Recommendations 14; Evaluate Medical Surveillance Program:** ORP Action. No status.

**TVAT Recommendations 19, 20; Toxicology Studies:** ORP Action. No status.

**TVAT Recommendation 21; Rounds and Routines:** The draft procedure is currently in the final review cycle. Admin and Technical procedure to enter work-flow next week to be issued by 3/1/17.

**TVAT Recommendation 22; Acute Bolus Assessment (RJ Lee Mobile Lab):** WRPS completed review of the final FY 2016 mobile lab report. Comments have been provided to RJ Lee. FY 2017 test plan has been received and is in review. The mobile lab continues to support the AY-102 retrieval. Data from the third and fourth weeks of sampling will be available for review on 1/19. A lease/buy analysis has been completed and communicated to management.

**TVAT Recommendation 28; Chemical Vapor Guidance Manual:** No update; currently on hold.

**TVAT Recommendations 29, 30; Enhanced Training:** Enhanced Chemical Hazards Awareness Training (CHAT) is on schedule for roll out next week. This training will be used as a supplement while the Chemical Worker training modules are developed and rolled out (anticipated summer 2017). Tank Farms training is working on scope and module development of the Chemical Worker training.

**TVAT Recommendations 32, 36; Bolus Assessment/Medical Stakeholders:** ORP Action. No status.

**TVAT Recommendation 33; Vapor Monitoring Detection System (VMDS):** The weekly VMDS reports are continually being updated and published on the website. The Phase 2 test plan is being modified to document testing objectives. Calibration of the UV-FTIR is being accelerated to support AY-102 retrieval. Down-select drafts are in the final stages for the SAFER system software and RAE system equipment. Further down-selects are scheduled after testing completes in mid-year 2017.

WRPS recently purchased a 900 MHz radio system (Digi International) for demonstration in VMDS equipment (Gastronics FIS and Lufft Met Station) that should resolve several ongoing communication issues. A small subset of the system (4 radios and gateway) will be tested and if the system is successful, additional radios will be procured and utilized in VMDS equipment.

Experts in Optical Gas Imaging will be traveling to Hanford 01/23/17 – 01/27/17 to assist WRPS in the configuration and setup of the automated Optical Gas Imager (OGI) and demonstrate the use of a portable OGI in conjunction with QPT100 to determine the efficacy of these units in identifying chemical plumes originating from tank sources. The OGI uses infrared cameras manufactured by FLIR. The week long analysis will concentrate on the analysis of 200 east tank farm exhausters, passive breather filters, and pits.



**TVAT Recommendation 34; Vapor Control Zones/Vapor Reduction Zones (VCZs/VRZs):** The task team completed the procedure view. Changes are being sent to workflow next week for issuance by 3/1/17.

**TVAT Recommendation 35; Cartridge Testing:** The report PNNL-26131, *Analysis of Respirator Cartridge Performance Testing on Hanford Tank A-101*, was issued. This report will be given to HAMTC to start the third party review of this report.

Fabrication of the new test jigs are underway to support FY 2017 testing of two different cartridges.

**TVAT Recommendation 37; IH Improvements Tracking:** All 47 TVAT recommendations (122 actions) were added to the PER system under WRPS-PER-2014-0602. The actions that were completed by the end of Phase 1 on 09/30/16, were assigned a due date of 01/31/2017. A meeting was held 01/12/17 with the people assigned actions in these ESTAR records. As a result of this meeting, the due dates for these Phase 1 completed actions were extended to 02/28/17.

**TVAT Recommendations 38-39, 41; Management Commitment:** A CVST meeting, held 01/11/17, discussed the new bottle change tent in AW Farm, Worker's comp claims/ Penser North America, Inc., and response to readily apparent or general purpose facility odors. The next CVST meeting is tentatively scheduled for 01/25/17.

**TVAT Recommendation 40; Improve EJTA:** No further actions required.

**TVAT Recommendation 42; Revise Exposure Letter:** No further actions required.

**TVAT Recommendation 43; IH Covello Training:** In FY 2016, scheduled multiple risk communication sessions with a nationally recognized risk communication expert, Dr. Vincent Covello. Covello's research on the topic of risk communication was specifically cited in the TVAT report. (According to preliminary discussions with Paul Gagnon) WRPS is planning another round of training and strategy sessions for select WRPS managers, employees and Industrial Hygiene Technicians and front-line supervisors in FY 2017. Communications and Public Relations has reached out to Industrial Hygiene to coordinate scheduling.

**TVAT Recommendation 44; Public Address (PA) System:** As reported last week, the three contracts are underway for support from Mission Support Alliance (MSA), ARES, and SAFER Systems. The conceptual design has been finished for location of the speakers and reader boards in all the farms. ARES is now moving on preliminary design for Phase 2A/2B, MSA continues design and install support for wireless access point, and SAFER Systems is expected to deliver the sound propagation study covering all Phase 2A-D Farms this week.

**TVAT Recommendation 45; Lab Support/Determination & Development of Similar Exposure Groups (SEGs):** No update; currently on hold.

**TVAT Recommendations 46, 47; Communications:** No update.

#### **OTHER VAPOR ACTIVITIES:**

**242-A Ammonia Analyzer Upgrade** - As reported last week, the 242-A Ammonia Analyzer been kicked off to start Phase 1 of upgrades.

**242-A Stack Extension** - As reported last week, the 95% design had to be re-started due to an issue with the calculation that was noticed during peer review. The 95% design was expected to be finished in December 2016.

**Leading Indicators** - As reported last week, the leading indicator contract has been put in place to continue FY 2017 work. PNNL is developing a schedule and it is expected in January. However, further progress is dependent on availability of headspace, cartridge breakthrough, VMDS, and Mobile Lab data. Little progress is possible until this data becomes available.

**Abatement Technologies** - An integrated project team was established to develop a feasibility study for installation of a Strobic Air Tri-Stack ventilator on the AW stack. This study is complete and will be published in January. Two abatement technology projects were funded in FY17. Installation of the Strobic Air Tri-Stack on the AW Stack and support for further development of the NUCON thermal oxidation technology. Tank Farm Projects will lead the design and installation of the ventilation upgrade for the AW stack with the CTO providing support to resolve technology maturation as needed. NUCON is funding the proof of concept testing of their thermal oxidizer. WRPS will witness these tests and make recommendations for conducting a pilot scale test on the Hanford site in FY18. Assuming a positive outcome of the proof of concept tests, WRPS will begin preparation for the FY18 pilot test.

**SCBA Equipment Evaluation** - Field testing of SCBAs during Phase 2 testing in a non-hazardous setting for approximately two weeks at the Volpentest HAMMER Federal Training Center was completed 12/07/16. The Phase 2 test report is currently drafted and is in the approval cycle. Release of the Phase 2 report in Smart Plant is scheduled for January.

Certification of existing air-line equipment was completed during the week of December 19th. Field crews will begin using air-line during single-shell tank and double-shell tank annulus videos by late January. This activity will serve as a pilot for determining if other projects can effectively utilize air-line systems across tank farms.

**VMDS Design and Chemical Vapor Quantitative Risk Assessment (Design Agent: Kenexis)** - The Kenexis contract has been awarded and the subcontractor will be visiting next week. A team to conduct a quantitative risk assessment (QRA) of the chemical vapor hazard is currently being assembled and will meet with Kenexis next week to kick off the activities. Next week's meeting will serve to educate the team and management of the QRA and VMDS design process. The team will also start the revision of the A and AP Tank Farm initial design. Finally, a WRPS plan and procedure is being drafted that will define the requirements and process for conducting the QRA process and VMDS design.

**Chemical Vapor Data Quality Objectives (DQO)** - WRPS is in the process of assembling a cross sectional team to develop Data Quality Objectives (DQO) to integrate many of the TVAT Phase 1 and 2 data collection activities. By developing DQO for the TVAT activities, the collection of data for each TVAT activity will have improved efficiency and the collect data can then be shared between activities, which will ultimately result in comprehensive data product.

**Phase 2 Implementation Plan** - Development of the Phase 2 implementation plan is ongoing. The draft is currently being compiled and is expected to be completed soon. A meeting is scheduled this week to discuss the current draft and ORP comments.

**AY-102 Retrieval** - AY-102 retrieval is currently ongoing on nights and weekends but has been intermittent due to weather conditions. The VMDS and mobile laboratory monitoring system are being used to capture data during retrieval.

The mobile laboratory has captured observations and photographs during monitoring of the AP Farm stack emission profile during foggy weather conditions (see Figure 1). The cold weather conditions were favorable to see the condensate formation as the warm gas flowed out the stack. The flow velocity appeared fairly low with the flow rising to nearly three times the stack height with considerable lateral dispersion.



**Figure 1. Emissions Profile from the AP Farm Stack on January 13, 2017**



## 5. VAPORS MITIGATION PROGRAM PLAN - TOP RISKS

The list of the top vapors mitigation risks, as documented in early December 2016 are shown in Table 1 below. Planning is currently underway to update the vapors risk register. CPPO will report the top risks in the weekly report.

ID	Status	Title	Owner	Description	Initial Risk Level	Handling Strategy Actions	Current Risk Level
VIP-003	Open	Testing Practices/Methodology Challenged	WRPS	The VMD&R project will perform instrument testing and provide recommendations on a path forward to detect and monitor vapors. A risk exists that the testing practices or methodology is challenged and further justification or rework is required.	High	1. Conduct Expert Panel reviews of testing scope and methods. 2. Utilize historical pricing from similar development activities.	High
VIP-004	Open	Integration with Other Key Projects more complex than expected.	WRPS	Multiple aspects of the program will interact and must be integrated with other WRPS activities or priorities. A risk exists that integration with other activities encounters difficulties and rework is required.	High	1. Identify key program interfaces early. 2. Engage with program/project managers early.	High
VIP-011	Open	Stakeholder Expectations Unrealistic/Conflicting	WRPS	WRPS maintains relationships with numerous stakeholders who have different interests and concerns related to WRPS priorities. As a result of the TVAT report and ongoing vapor incidents within the TOC stakeholders have expressed concern and desire to achieve objectives. A risk exists that stakeholders maintain	High	1. Develop and maintain communication plan. 2. Vapors Communication Organization.	High
VIP-012	Open (Realized)	New Requirements Imposed	ORP	WRPS is executing the VIP based on the recommendations outlined in the TVAT and the associated Vapors Implementation Plan. WRPS is compliant with existing OSHA standards as well as requirements from DOE, the WDOH, as well as other regulatory agencies. A risk exists that new or changing requirements are imposed and rework is required impacting program cost and schedule.	High	1. Evaluate new requirements as part of incorporation of change. 2. Establish WRPS company work priority list. 3. Plan Work schedule tasking to encompass SCBA bottle inventory limitations.	High
VIP-002	Open	Testing Identifies Additional Scope Required to Achieve Objectives	WRPS	The VMD&R project as part of this program will perform instrument testing and provide recommendations on a path forward to detect and monitor vapors. A risk exists that results from testing are inconclusive and more testing is required to achieve objectives.	High	1. Outline testing scope with customer buy-in as part of proposal. 2. Conduct Expert Panel reviews of testing scope and methods.	Medium
VIP-009	Open (Realized)	Resources Not Available When Required	WRPS	Resources are required for all program functions. A risk exists that resources are unavailable when required. Headspace sampling, cartridge testing resources and emergent workscope, construction contractors.	High	1. Identify resource needs up front. 2. Utilize resource loaded schedules where appropriate.	Medium
VIP-013	Open	Fail to Implement Real Time Controls Based on New Information	WRPS	Deployment of monitoring and detection systems will be executed as part of this program under a test conditions. A risk exists that during testing excessive alarms result in workforce concerns that result in a more restrictive temporary control set and work within the tank farms is impacted. Additional program cost and schedule impact would be associated to manage the response to these changing conditions.	High	1. Clearly identify and communicate nature of pilot program to key stakeholders. 2. Action levels are set in the test plan.	Medium
VIP-014	Open	Data Results Not Sufficient to Provide Predictive Tool	ORP	An objective of phase 2 of the project will be to provide a predictive tool to enhance worker protection and further tailor the farm specific control sets. A risk exists that the data results are not sufficient to provide a predictive tool and additional data collection is required.	Medium	1. Develop and maintain communication plan.	Medium
VIP-016	Open	Stakeholder Approvals Not Received When Needed	ORP	Approvals from external stakeholders will be required in a timely manner throughout the execution of this work scope. A risk exists that stakeholder approvals are not received when needed and work cannot progress as scheduled.	High	1. Identify key stakeholders and necessary approvals/concurrences.	Medium
VIP-024	Open (Realized)	Equipment design and current requirements are incompatible with Tank Farm Infrastructure.	WRPS	The UV-FTIR is typically used on large diameter stacks (i.e., 2m), however, optional design solutions will be provided by the vendor at WRPS request. In addition, the stack structure may not allow direct coupling of the stack and integration of the UV-FTIR on the stack may not be technically or programmatically viable. Tank farm communication infrastructure may not be able to support expansion of necessary vapors monitoring bandwidth.	Medium	1. Identify vapors monitoring infrastructure requires within the tank farms. 2. Start upgrades and equipment installs in order to support vapors monitoring activities.	Medium

**Table 1. December 6, 2016 Vapors Mitigation Program Plan – Top Risks**