0078891

CH2M-0802472

Enclosure 1

COMPLETION REPORT FOR SUPPLEMENTAL ENVIRONMENTAL PROJECT (T-FARM RADIAL FILTERS) REQUIRED BY RESOLUTION OF DISPUTE REGARDING WASHINGTON STATE DEPARTMENT OF ECOLOGY NOTICE OF STIPULATED PENALTY INCURRED AND DUE NO. 5218

Consisting of 9 pages, including coversheet

attached to 0078890

Enclosure 1

Completion Report for Supplemental Environmental Project (T-Farm Radial Filters) Required by Resolution of Dispute Regarding Washington State Department of Ecology Notice of Stipulated Penalty Incurred and Due No. 5218

1. Introduction

On April 14, 2008, the Washington State Department of Ecology (Ecology) and U.S. Department of Energy, Office of River Protection (ORP) signed a Resolution of Dispute resolving the parties' dispute regarding Ecology's Notice of Penalty Incurred and Due No. 5218. As part of that Resolution of Dispute, ORP agreed to a Supplemental Environmental Project (SEP) to spend $200,000 replacing radial filters in the single-shell tank (SST) farms. This letter report certifies the completion of the SEP by replacing fifteen radial filters in T-Farm, three in B-Farm, one in S-Farm, and one in SX-Farm.

2. Description of Supplemental Environmental Project

This SEP involved replacing passive breather filters in the SSTs at the Hanford Site. The purpose of a breather filter is to provide a filtered path for air moving in and out of the waste tanks. This high-efficiency particulate air (HEPA) filtered path minimizes the potential for pressure to build up in the waste tanks due to atmospheric pressure changes and thereby minimizes the potential to emit particulate contamination to the environment.

Typical air flow rates from an SST have ranged from 1-10 cfm. The traditional HEPA breather filters in T-Farm were large filters with a capacity of nominally 125 cfm. The filters consisted of two main styles: the G-1 housing and the "open-face" filter style. Both styles are significantly oversized when compared to the actual air flow that is encountered. Figure 2.1 shows typical breather filter configurations used in the tank farms.

The "open-face" housing utilizes HEPA filters that are simply sandwiched between a plenum on the contaminated/tank side of the filter and a raid shield on the clean/atmospheric side of the filter.

The G-1 style filters utilize a large cylindrical housing into which a HEPA filter is inserted and clamped in place. However, the G-1 housing also has a significant design flaw in that the housing shape allows for the collection of condensate in the housing, which can pool up and then saturate the filter media. When this happens the filter media becomes essentially plugged, and the filter can no longer provide the filtered vent path it is intended to provide.

Both of these traditional designs also require annual aerosol testing in accordance with the site air operating permit.

Figure 2.1: Typical Breather filter Configurations

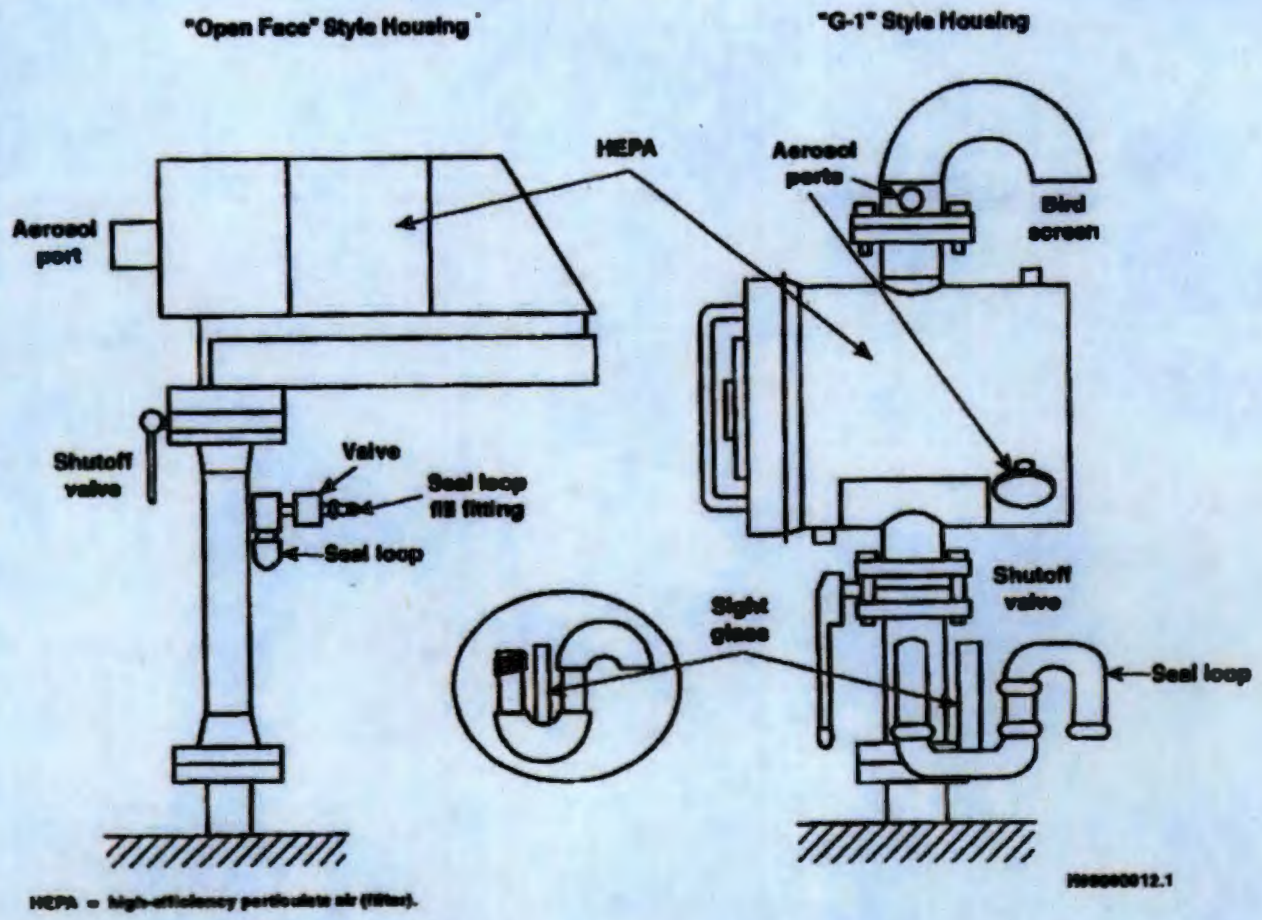
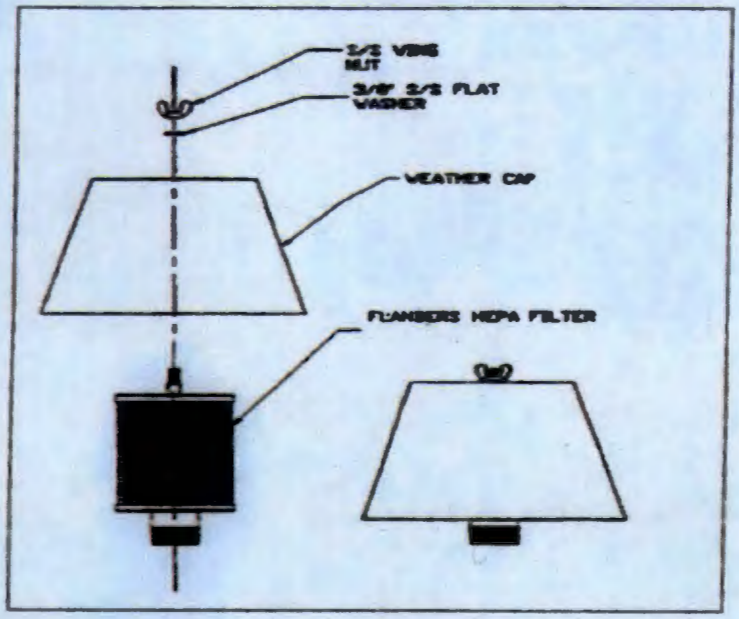


Figure 2.2 shows the new radial filter configuration. The new radial HEPA filter design utilizes a smaller filter (40 cfm rated) that is sized more appropriately to the air flow rates that are actually encountered. The radial HEPA filter design eliminates the condensate collecting design flaw of the G-1 housing. An agreement with the Washington State Department of Health allows for the annual replacement of radial HEPA filters in lieu of annual aerosol testing.

Figure 2.2: New Radial HEPA Filter Configuration



For this SEP CH2M HILL Hanford Group (CH2M HILL) replaced 15 filters in T-Farm, three filters in B-Farm (241-B-103, -105 and -203) and 241-S-102 and two filters in SX-Farm (241-SX-101 and -113). These tanks were chosen because they were scheduled for their yearly filter test within the time frame of the SEP. There was also a concern that the costs for the T-Farm filters would not meet the Resolution of Dispute requirements or that the schedule to replace all 15 filters would be difficult to meet. Radial filters were placed in the S-Farm and SX-Farm at the end of April 2008, and the B-Farm in early June 2008. T-Farm filters were replaced in mid to late August 2008. In all, 21 tanks were converted from the old configuration to the new configuration to meet the SEP requirements.

3. Itemized Costs and Documentation of Funds Dispensed

The SEP required the expenditure of at least $200,000 converting to radial filters, including labor and materials. Ecology would credit 50% of the capital costs to mitigate $100,000 of the penalty issued. Labor costs include planning as well as field activities. Considerable time was spent planning activities before workers actually enter the tank farm. Planning activities include engineering (design calculations, revising drawings), chemical exposure hazard analysis, work instructions, radiation work permits, and waste planning. Field activities include pre-job walk downs, pre-job review of work instructions and hazards analysis, in-farm activities associated with changing the filters, QC acceptance inspections and off-site fabrication of filter sub-assemblies. The full work packages for T-Farm, SX-Farm, S-Farm and B-Farm are provided in Appendix A, B, C, and D, respectively.

When the Resolution of Dispute was signed CH2M HILL created a separate cost account charge number (CACN) was established to capture labor and material cost. This code was not used consistently to capture all the costs associated with converting the identified SST filter configurations. A review of the Hanford Data Integrator (HANDI) report in early September 2008 showed that the CACN was not used to capture any of the costs associated with converting to radial filters in B-Farm, S-Farm or SX-Farm. Some of the hours associated with T-Farm conversions were captured. It appears that pre-job planning and engineering hours associated with T-Farm were captured, however none of the field hours were captured.

Field Work Supervisors responsible for the work were required to go back through the work packages for T-Farm and identify the actual resources used. Direction was given for those hours to be corrected in the accounting system within the week. There was no direction given to capture resources utilized in the B-Farm, S-Farm or SX-Farm because the work had been completed several months ago and records were not complete. When a new HANDI report was generated in late September 2008, it was clear again that the hours were not captured in total. For instance, while the work record documents that field activities took place for eight full shifts, the HANDI report suggests that Nuclear Waste Process Operators (NPO) were only utilized for 18.6 hours and Health Physics Technicians were only utilized for 9 hours (August and September).

While it would be very difficult to document the exact cost of this project, the following analysis will demonstrate that CH2M HILL did spent in excess of $187,381 converting 21 SSTs to the new radial filter configuration.

3.1 T-Farm Costs

Documentation and conservative labor estimates demonstrate that CH2M HILL spent at least $133,843 converting 15 SSTs in the T-Farm to the new filter configuration. The following documentation is provided in Appendix E:

- HANDI report and detail sheets documenting
  - CH2M HILL planning and field labor cost of $45,868.
  - Parsons Hanford Fabricators cost of $26,321 to fabricate (15) 40 cfm breather filter sub-assemblies.
  - Fluor Hanford of $25,162 for sheet metal support to install radial filters. (Pre-job briefing rosters and work records document the resources were provided and used in the field).
  - Other material costs of $8,004, and
  - Use taxes of $3,180
- Estimate of additional field labor costs not charged correctly to the CACN of $25,308. Field labor hours and costs were derived from information (work records, pre-job briefing rosters, and the field work supervisor's resource estimates at completion) within the work package and HANDI reports for fully burdened hourly labor costs.

Based on a total cost of $133,843 to convert 15 tanks to the new filter configuration, a unit cost of $8,923 can be assumed.

3.2 B-Farm, S-Farm and SX-Farm Costs

Cost information was not collected for these additional filters however, a strong argument can be made that the unit cost of converting these SSTs to the new configuration was as least equal to T-Farm unit costs for the following reasons:

- T-Farm tanks were all converted at the same time, therefore cost savings associated with the economy of scale were realized in both planning and execution.
- Work packages (Appendix B, C & D) document that in both B-Farm and SX-Farm crane and rigging support was utilized for at least four days. Using a moderate crew size, this cost is estimated at $4,530 / day.
- Work packages (Appendix B) document that for B-Farm work was performed using supplied air. This resulted in the need for much larger crews as evidenced by the pre-job briefing rosters.
- The Resolution of Dispute estimated that the unit costs for converting a single tank to the new filter configuration would be $14,425.

Based on these factors, it is reasonable to assume that the cost associated with converting of 241-B-103, 241-B-105, 241-B-203, 241-S-102, 241-SX-101 and 241-SX-113 to the new filter configuration cost at least $53,538.

In summary, this report documents in excess of $187,381 has been spent by CH2M HILL to convert 21 SSTs to the new radial filter configuration. The Resolution of Dispute points to EPA's May 1, 1998 Supplemental Environmental Projects Policy (Appendix H) when determining if the SEP obligations have been met. Section H(4) of that policy supports that if the SEP is satisfactorily completed, and CH2M HILL spent at least 90 percent of the amount of money required to be spent for the project, no further action is needed. This analysis demonstrates that CH2M HILL did spend at least 90% of the estimated cost.

4. Environmental and Public Health Benefits

The traditional HEPA breather filter designs consist of a relatively large capacity HEPA filter (125-250 cfm) contained in a metal housing. The filter is approximately 8 cubic feet in size and must be tested annually. If a filter fails, it is removed from the metal housing, replaced with a new filter and re-tested. Typically one in eight filters fails when tested. Because of the nature of the activities, and size and location of the filters, there is a significant potential for exposing tank farm workers to radiological and chemical exposures within the tank farms; in addition to the normal industrial hazards associated with lifting and working in the tank farms.

Use of newly developed radial filters (40cfm) and other filters of smaller, integrated designs reduce the potential for worker exposure to both radiological and chemical hazards by:

a. **Reducing the number of workers required in the farm** –Testing of the filters will no longer need to be performed. Testing typically requires a crew of 12 workers. With 149 SSTs, eliminating this task is significant in itself. One in eight filters fails each year, therefore, 19 filters must be changed each year, again typically requiring a crew of 12 workers. Once replaced, the new filter must be tested again, requiring another crew of 12 workers.

Once the tanks are converted to the newer radial filters, changing those filters will typically require a crew of six workers. Each filter will be replaced once per year and change outs can be scheduled with other work as a part of regular maintenance.

b. **Reducing the amount of time the crew needs to be in the field** – Table 4.1 shows a comparison of the number of man-hours in the field associated with each filter configuration. For the existing configuration, testing 149 filters with a crew of 12 workers, replacing 19 of those filters and retesting requires approximately 8,100 man hours in the field. By contrast, the new configuration requires a crew of six to replace 149 filters each year at 4 hours each, resulting in a total of 3,576 man-hours in the field. Clearly the potential for exposure is substantially reduced.

c. **Eliminating activities that have the highest potential for exposures** – Removing the filter from the casing and testing the existing filters are the activities that provide the greatest potential for exposure. Eliminating these activities greatly reduces exposure potential.

Table 4.1: Estimated Comparison of Yearly Filter Replacement Requirements

Activity	Number of Workers	Hrs/Activity /Tank	Number of Tanks	Total Worker Hours/Year
Old Filter Configuration				
Test 149 filters yearly	12	3	149	5,364
Replace 19 filters	12	9	19	2,052
Retest 19 filters	12	3	19	684
Total				**8,100**
New Radial Filter Configuration				
Replace 149 radial filters	6	4	149	**3,576**

5. Certification Statement

I certify under penalty of law that I have examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment. I also certify that the SEP has been fully implemented pursuant to the provisions of the settlement agreement.

CHEK for JCF

Dated: 10/9/08

John C. Fulton, President
and Chief Executive Officer
CH2M HILL Hanford Group, Inc.