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List attachments.

Date Release Required: 5/19/93

Title: Appraisal of Radioactive Airborne Emissions Monitoring Program at T-Plant July 1991

Unclassified Category: UC-

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Author/Requestor (Printed/Signature): STEVE SZENDRE [signature] Date: 5/5/93

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Responsible Manager (Printed/Signature): E.M. GREAGER [signature] Date: 5/6/93

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Part 1

ID Number EFA-91-014

Lead Author	Phone	MSIN	Other Author(s) or Requestor
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Project or Program	**Lead Org Code**		**Sponsor Agency (DOE, DOT, NRC, USGS, etc.)**
	88410		
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- [] Project or program manager concurs with the issuance of this report.
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APPRAISAL

OF

RADIOACTIVE AIRBORNE EMISSIONS

MONITORING PROGRAM

AT

T PLANT

APPRAISAL NO.: EFA-91-014

JULY 1991

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EXECUTIVE SUMMARY

An appraisal of Radioactive Airborne Emission Monitoring Program (RAEMP) at T Plant was conducted between July 22, 1991, and September 12, 1991. The purpose of the appraisal was to assess compliance of the RAEMP at T Plant with applicable regulations and requirements. The appraisal also evaluated related WHC management control systems.

The regulations, requirements, and other documents reviewed during the appraisal are listed in appendix E on page 23 of this report. The evaluation of management control systems mainly focused on WHC-CM-7-5, Part D. Other documents specific to T Plant were also evaluated. This appraisal took place during a time of significant staff change, program upgrade, and equipment upgrade that was in process by both T Plant and the Environmental Protection (EP) personnel. Some stack equipment was being upgraded to achieve compliance, as were several draft versions of procedures identified as required for compliance. The T Plant Safety Analysis Report (SAR) was being upgraded during the appraisal period and the Facility Effluent Monitoring Plan (FEMP) was still in the draft form. The dynamic atmosphere in which this appraisal took place increased the difficulty in identifying the exact status of each element of the program. This appraisal will report the status as of September 12, 1991 - the last day of interviews at T Plant and EP.

The appraisal resulted in four (4) findings and seven (7) observations. The major findings were related to measurement of air flow in the stacks and record keeping. One major observation regarding management control systems was that the WHC-CM-7-5, Part D does not directly address Quality Assurance program requirements of 40 Code of Federal Regulations (CFR) 61.93,(b)(2)(iv). Other observations were mainly related to the conditions at the T Plant.

The areas of responsibility and accountability for various parts of the T Plant RAEMP are not well defined. There is a lack of cohesiveness due to compartmentalization of responsibilities. A Quality Assurance Program Plan (QAPP) for Radionuclide Airborne Emissions Monitoring (WHC-EP-0536) for the Hanford Site does not discuss emissions from T Plant. It is being revised to include T Plant but no timetable is set for completion of the revision. A Quality Assurance Project Plan (QAPjP) for RAEMP at T Plant was not available at the time of the appraisal. The T Plant also does not have a schedule for preparation of QAPjP.

Several positive aspects, such as augmentation of staff, development of computerized and written procedures for analysis and record keeping, upgrading of plant equipment, preparation of the FEMP and updating of the SAR were noted. The new computer program and procedures for data reporting will assist in making the monitoring program more manageable when it is complete. A contractor to WHC is conducting a particulate line loss study at the T Plant. Modifications to stack in Building 2706-T are also underway. When modifications are complete, the stack will be monitored. The WHC-7-5, Part D is currently undergoing extensive revision.

CHAPTER 1. SCOPE

An appraisal of Radioactive Airborne Emissions Monitoring Program at T Plant was conducted between July 22, 1991, and September 12, 1991. The purpose of the appraisal was to assess the compliance of the RAEMP at T Plant with applicable regulations and requirements. The regulations, requirements, and other documents reviewed during the audit/appraisal are listed in Appendix E, on page 23 of this report. The appraisal included other WHC organizations which are involved in airborne radioactive effluent monitoring at the T Plant.

CHAPTER 2. FINDINGS AND OBSERVATION

2.1 Synopsis of findings and Observations

As noted in the executive summary of this report, four findings and seven observations identified during the appraisal of the RAEMP. Table 1 on page 3 of this report presents the synopsis of each identified findings and observations.

2.2 Findings and Observations

The four findings and seven observations are presented on pages 4 through 20 of this report. A discussion is included with each finding and observation.

2.2 Appraisal Response

The T Plant management must respond to findings and observations listed in this Chapter within 30 days of receipt of this report. The responses should be on the appropriate forms and should clearly state the plan and schedule for corrective action. Copies of responses should be addressed to:

J. A. Rivera, B2-16
D. G. Ranade, B2-16
M. J. Oliva, Environment, Health, Safety & Quality, Data Base Administrator, B2-16

Findings and observations should be assigned a priority/severity category (P/S C) as described in WHC-CM-1-3, Corrective Action Management System, MRP 5.1, Rev. 1, Section 5.1.3, "Determining Priority/Severity Category." Figures 1, 2, and 4 from WHC-CM-1-3, MRP 5.1, Rev. 1 should be used for adverse conditions documents, corrective action system elements, and graded approach to corrective action. These figures are not included in this report.

Table 1: Synopsis of Findings and Observations

Finding/Observation	Actionee	P/S C	Summary
EFA-F01	G. W. Faulk	B3, III	291-T-1 stack operated above the design capacity
EFA-F02	G. W. Faulk	B3, III	291-T-13 stack testing procedures not meeting the requirements
EFA-F03	G. W. Faulk	A3, II	291-T-1 stack sampling not meeting the requirements for the isokinetic conditions
EFA-F04	G. W. Faulk	B3, III	A QAPjP not available for T Plant
EFA-OB01	R. J. Landon	C3, IV	WHC-CM-7-5, Part D does not discuss quality assurance program requirements
EFA-OB02	G. W. Faulk	C3, IV	T plant FEMP and SAR include 224-T stack for which T Plant has no responsibility
EFA-OB03	G. W. Faulk	C3, IV	Remote location for CAM alarms
EFA-OB04	G. W. Faulk	C3, IV	Records for B CAM for 291-T -1 not available at T Plant
EFA-OB05	G. W. Faulk	C3, IV	221-T laboratory stack monitoring equipment in poor condition
EFA-OB06	G. W. Faulk	C3, IV	Accountability of stack data at T Plant
EFA-OB07	G. W. Faulk	C3, IV	Some air sampling not meeting WHC-CM-7-5, Part D requirements.

Audit/Appraisal No.	Finding No.	Title	Auditor/Appraiser/Org.
EFA-91-014	EFA-F01	Radioactive Airborne Emissions Monitoring Program at T Plant	D.G. Ranade/31400

PART 1

REQUIREMENT

American National Standards Institute (ANSI)/American Society of Mechanical Engineers (ASME) N509:

Section 2.0, "Applicable Documents," states in part that.....the following documents supplement this standard and are a part of it to the extent indicated in the text. ."

Section 4.3, "Size (Installed Capacity) of Air Cleaning Unit," states in part that.... the installed capacity [cubic feet per minute (cfm)] of the air cleaning unit shall be no greater than the limiting installed capacity of any bank of components contained in the air cleaning unit through which the airflow must pass. The installed capacity of any bank or stage of components should not exceed the number of components in the bank time the rated capacity of the individual components. . . ."

Section 5.6.6, "General Requirements (for filter housings)," states in part that....housings shall be designed and constructed to meet the structural and pressure loadings of Section 4. . . ."

Item 2.1 of ANSI/ASME N509 lists Energy Research Development Agency (ERDA) 76-21.

ERDA 76-21:

Section 2.3.6 states in part that.....the operation of a system at airflows greater tha the installed airflow capacity of the system should be avoided. . . When airflow rates exceed rated airflow capacity of High Efficiency Particulate Air (HEPA) filters, filter life decreases more rapidly than the equivalent increase in flow rate . . ."

Section 3.2.4 states in part that.....another important property of HEPA filters is the ability to withstand continuous overpressure. By specification, new HEPA filters must have sufficient structural strength to withstand a continuously applied overpressure of 10 in. wg. or higher, for at least 15 minutes without visible damage or loss of efficiency. For used filters, a value of 8 in. wg. is recommended. . ."

Department of Energy (DOE) 5480.4:

Attachment 3, "Reference Environmental Safety & Health Standards," section 2.f(2)(m), lists ERDA 76-21, "Nuclear Air-Cleaning Handbook," as a reference on good practice.

FINDING

The 291-T-1 stack is operated above the indicated design capacity, contrary to DOE 5480 and ANSI/ASME N509.

Discussion

The design capacities were determined from the design name plates on the units. Most current measurements of flow rates indicate that the flow through 3 of the 4 HEPA filte is above the design limit for the HEPA filters, 10,000 CFM. Based on review of air flo capacity tests, the 291-T-1 stack appears to be operated above the stated design capaci of 10,000 cfm per HEPA filter train, and the prefilter stage design capacity of 1000 cf

Review of surveillances which were performed in February and August of 1991 ("Airflow Capacity and Distribution Tests," Maintenance Procedure 7-GN-56) indicate that the 291-

One stack for the 221 Canyon is operated at flow rates of 9522 to 11,862 cfm (48.6-60.5 m/s) for each individual train of HEPA filters. There are four filter trains of one prefilter and two HEPA filter banks each. Each train is marked with a data nameplate which states the rated design capacity of the HEPA filter housing unit to be "10,000 cf at -15" H_2O" and of the prefilter housing unit to be "1000 cfm at -15" H_2O." The reported normal configuration of the ventilation system results in a flow rate of 27,00 cfm total, which is approximately 6750 cfm per train. This would still be well in exce of the 1000 cfm capacity marked on the prefilter housings.

Use at overcapacity will reduce the effectiveness of the HEPA filters and lead to a los of confinement. Data from 1990 indicate that this may have happened during the week of October 10, 1990. Stack monitoring results show that for five weeks the weekly concentration of Pu and Am isotopes was approximately 10X the Derived Concentration Gui (DCG).

Facility: T Plant Building: None

Subject Code: AD-08 Priority/Severity: B3, III

Responsible Manager/Org. Code: G. Faulk /87400

Lead Auditor/Appraiser	Issue Date
D.G. Ranade	

PART 2

INTERIM/PERMANENT CORRECTIVE ACTION PLAN

Underlying Cause of the Deficiency/Root Cause Code(s):

Action Manager/Date	Responsible Manager/Date	Action Completion Due Da

Lead Auditor/Appraiser Evaluation:
Signature/Date

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PART 3

Actions Taken to Correct Deficiency and Prevent Recurrence

Investigation of Previously Performed Work Which May Be Affected

Investigation of Areas, External to the Audit/Appraisal Scope, Where the Deficiency May Exist

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PART 4

Auditor/Appraiser Followup/Verification Statement

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PART 1

REQUIREMENT

1. 40 CFR 60, Appendix A, Method 2- "Determination of Stack Gas Velocity and Volumetr Flow Rate (Type S Pitot Tube)," states in part that the procedure is not applicabl at measurement sites which fail to meet the criteria of Method 1, Section 2.1, or for direct measurement in cyclonic or swirling gas streams. Method 1, Section 2.1 "Selection of Measurement Site," states in part that sampling or velocity measurements are performed at a site located at least eight stack or duct diameter downstream and two diameters upstream from any flow disturbance, or alternatively at a position at least two stack or duct diameters downstream and a half diameter upstream from any flow disturbance, if necessary.

2. Following regulations apply to IN PLACE TESTING OF HEPA FILTER SYSTEMS (MULTIPLE STAGES).

   ANSI/ASME N510, states in part, in the following sections:

   a. Section 9, "Air-Aerosol Mixing Uniformity Test," identifies this test as a prerequisite to the HEPA FILTER BANK IN PLACE TEST, and states that a separat mixing uniformity test is required for each filter bank.

   b. "9.2 Summary of Method" dioctyl phthalate (DOP) aerosol is introduced into th airstream at a previously selected injection point. Aerosol concentration readings are taken across a plane parallel to, and a short distance upstream of the HEPA filter bank or adsorber stage. The uniformity of the readings establishes the acceptability of the injection port location. DOP aerosol is used to establish uniform challenge/air mixing upstream of both HEPA filter...banks."

   c. Section 10.2, "Summary of Method" states that a DOP challenge is injected int the airstream upstream of the HEPA filter bank. Concentrations are determine upstream and downstream of the filter bank. Percent leakage is determined fr the ratio of the downstream to upstream concentrations.

   d. Section 10.5.3 instructs to connect aerosol detection instrument sample lines to the upstream and downstream sample ports.

   e. Section 10.3, "Prerequisites" states that the upstream sample and injection points to be used are those qualified per Section 9. Single point downstream sample points shall be downstream of a fan, or downstream sample manifolds shall be qualified per ANSI/ASME N509.

   f. The NOTE under Section 10.4, "Apparatus" states that sample line length shoul be minimized to reduce sample response time and the lengths to upstream and downstream sampling points should be approximately equal to eliminate time delay errors."

   g. Sections 10.5.5 to 10.5.8 are as follows:

      10.5.5 Connect DOE aerosol generator to injection port and start injection.

10.5.6 Record upstream concentration reading.

10.5.7 Record downstream concentration reading.

10.5.8 Repeat steps 10.5.6 and 10.5.7 until readings are repeatable within +/- 5% of respective readings. . .

h. Section 10.5.10 states that when the housing contains more than one bank of HEPA filters in series which are required to be leak tested, repeat the procedure for each bank.

FINDING

1. The measurement site being used for determination of velocity and volumetric flow rate for the roof stack 296-T-13, is approximately one stack diameter downstream from a right angle turn with a change from a rectangular filter housing to a 67 in diameter circular duct, and less than one foot upstream from the fan unit housing. A review of the applicable literature indicates that disturbed flow is probable at the location used. No errors with the actual flow rate measurements were observed except site selection.

2. It was not apparent that the system was designed to achieve uniform mixing under t observed test conditions, or that such a test was performed for each bank's injection port.

3. The concentration downstream was determined. Given the observed test method, it would not be physically possible to determine upstream concentrations. It was concluded that the test as performed would not detect a leak at or near the design efficiency of 99.97% per filter bank.

4. The single point downstream sample point was approximately two feet (0.6 m) upstre of the system fan. There did not appear to be a sample manifold.

5. The downstream sample line length, if minimized, would have been less than 20 feet (6.1 m). The length of sample line, as noted during the appraisal, was in excess of 50 feet. There was no upstream sample line, although the downstream sample line w connected to the "UPSTREAM" sample port, as previously noted. The duration of eac of the two samples appeared to be less than that required to draw sample through t entire length of the sample line. This would negate any positive measurement due to the inability of the challenge aerosol to reach the instrument.

6. Two readings did not appear to be sufficient to verify repeatability within the specified range.

7. The test was performed by testing both banks simultaneously from downstream of the second bank, with challenge aerosol injected upstream of each bank. This would no be a test of individual banks.

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EFA-91-014	EFA-F02	Airborne Radioactive Effluent Monitoring at T Plant	

Facility: T Plant Building: None

Subject Code: AD-08 Priority/Severity: B3, III

Responsible Manager/Org. Code: G. Faulk /87400

Lead Auditor/Appraiser	Issue Date
D.G. Ranade	

PART 2

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Investigation of Areas, External to the Audit/Appraisal Scope, Where the Deficiency May Exist

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Westinghouse Hanford Company	FINDING		Page 1 of 2
Audit/Appraisal No. EFA-91-014	Finding No. EFA-F03	Title Radioactive Airborne Emissions Monitoring Program at T Plant	Auditor/Appraiser/Org. D.G. Ranade/31400

PART 1

REQUIREMENT

WHC-CM-7-5, Part D, Rev. 1, Section 7.3 states that sampling systems shall provide representative sampling. Standard error in proportional sampling shall not exceed 20 % on a continuous basis (i.e., near isokinetic)

WHC-CM-7-5, Part D, Rev.1, Section 7.5 states that sample probes shall withdraw a near-isokinetic sample.....

40 CFR 61.93, (b)(2)(ii) states that the effluent stream shall be directly monitored continuously with an in-line detector or representative samples of the effluent stream shall be withdrawn continuously from the sampling site following the guidance presented in ANSI/ASME N13.1-1969.

FINDING

For the reported normal configuration, the canyon stack sampler at 291-T-1 samples unde isokinetic conditions.

The 296-T-13 Building roof exhaust is currently sampled at only 35% of stack flow.

Discussion

According to the data provided by a Health Physics (HP) engineer, the stack linear flow rate is 814 linear feet/min (lfm) (4.2 m/s), and the sample probe velocity is 813 lfm (4.2 m/s).

This flow rate is for the reported normal configuration with total system volumetric fl at approximately 27,000 cfm (12.7 m^3/s). However, review of logs for operation of the ventilation system indicates that the system is often operated in other flow configurations. For example, the system operated at 27,000 cfm for only about 20 weeks in 1990. The remaining 32 weeks the system operated at other velocities, primarily at approximately 15,000 cfm (2.3 m/s) and 39,000 cfm (5.7 m/s), although other velocities/flow rates were used. The differences are sufficient to create nonisokinetic conditions.

Effluents are sampled using a 47 mm particulate filter. The sample flow rate is approximately 2 cfm. When the flow rate was checked during the audit for 291-T-1 it re 2.2 cfm. When other flow rates are used, i.e. two fans are on line or damper settings are changed, there is no indication that any adjustment is made on the flow of the reco sampler. Isokinetic conditions would therefore not be maintained when this occurs. Sample records indicate stack flow varies widely over the year. There is no automatic feedback method for sample flow adjustment as is recommended in DOE EH-0173T, and a review of records of the monitor for 291-T-1 indicates that flow is maintained constant between 1.6 and 2.0 cfm, resulting in variability greater than the 10% recommended for the accuracy of flow measurements.

The 296-T-13 Building roof exhaust is a HEPA filtered exhaust system, flowing at a nominal rate of 37,750 CFM and with a capacity of 70,000 CFM. One prefilter and two HE filters in series are used for filtration.

The roof stack sample line appears to have a single extraction point. The duct has a cross-sectional area of approximately 13 ft^2 (1.3 m^2). According to (ANSI/ASME) N13.1-1969, Appendix A, a rectangular stacks of 2 to 25 square feet area should have between 6 and 12 extraction points. Also, according to calculations based on flow measurements and on available plant diagrams, the stack flow is at 2716 lfm and the record sampler samples at 954 lfm. This is not near isokinetic and the correction factors found in ANSI/ASME N13.1 Table C1 for nonisokinetic corrections do not extend this far. The WHC-CM-7-5, Part D, Rev. 1, Sec. 7.3 requirement is for +/-20% of isokinetic. The current probe samples at only 35% of stack flow (a -185% error).

Facility: T Plant Building: None

Subject Code: AD-08 Priority/Severity: A3, II

Responsible Manager/Org. Code: G. Faulk /87400

Lead Auditor/Appraiser	Issue Date
D.G. Ranade	

PART 2

INTERIM/PERMANENT CORRECTIVE ACTION PLAN

Underlying Cause of the Deficiency/Root Cause Code(s):

Action Manager/Date	Responsible Manager/Date	Action Completion Due Da

Lead Auditor/Appraiser Evaluation:
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PART 3

Actions Taken to Correct Deficiency and Prevent Recurrence

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Auditor/Appraiser Followup/Verification Statement

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Westinghouse Hanford Company	FINDING		Page 1 of 2
Audit/Appraisal No. EFA-91-014	Finding No. EFA-F04	Title Radioactive Airborne Emissions Monitoring Program at T Plant	Auditor/Appraiser/Org. D.G. Ranade/31400

PART 1

REQUIREMENT

40 CFR 61, App. B, Method 114 (4) states that each facility required to measure their radionuclide emissions shall conduct a quality assurance program in conjunction with th radionuclide measurements.

FINDING

The sitewide QAPP does not discuss emissions from T Plant. A QAPjP for RAEMP at T Plan was not available at the time of the appraisal. No time table is set for preparing one

Facility: T Plant Building: None

Subject Code: AD-08 Priority/Severity: B3, III

Responsible Manager/Org. Code: G. Faulk /87400

Lead Auditor/Appraiser	Issue Date
D.G. Ranade	

PART 2

INTERIM/PERMANENT CORRECTIVE ACTION PLAN

Underlying Cause of the Deficiency/Root Cause Code(s):

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Lead Auditor/Appraiser Evaluation:
Signature/Date

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Audit/Appraisal No.	Finding No.	Title	Page 2 of 2
EFA-91-014	EFA-F04	Airborne Radioactive Effluent Monitoring at T Plant	

PART 3

Actions Taken to Correct Deficiency and Prevent Recurrence

Investigation of Previously Performed Work Which May Be Affected

Investigation of Areas, External to the Audit/Appraisal Scope, Where the Deficiency May Exist

Action Manager/Date	Responsible Manager/Date

Lead Auditor/Appraiser Evaluation:
Signature/Date

[ ] Accept

[ ] Reject

PART 4

Auditor/Appraiser Followup/Verification Statement

Close Out Verification Signature/Date	Lead Auditor Closure Signature/Date

Westinghouse Hanford Company	OBSERVATION		Page 1 of 1
Audit/Appraisal No. EFA-91-014	Observation No. EFA-OB01	Title Radioactive Airborne Emissions Monitoring Program at T Plant	Auditor/Appraiser/Org. D.G Ranade/31400

OBSERVATION Facility: T Plant Building: None

Subject Code: AD-08 Priority/Severity: C3, IV

The WHC-CM-7-5, Part D does not address quality assurance program requirements of 40 CF 61.93,(b)(2)(iv).

Discussion

WHC-CM-7-5, Part D lists 40 CFR 61 as a reference but there is no discussion on the quality assurance program requirements.

Responsible Manager/Org. Code: R. Landon/81150

RESPONSE

Underlying Cause of the Deficiency/Root Cause Code(s):

Action Manager/Date	Responsible Manager/Date	Action Completion Due Dat

Lead Auditor/Appraiser Evaluation:
Signature/Date

[ ] Accept

[ ] Reject

Westinghouse Hanford Company	OBSERVATION		Page 1 of 1
Audit/Appraisal No. EFA-91-014	Observation No. EFA-OB02	Title Radioactive Airborne Emissions Monitoring Program at T Plant	Auditor/Appraiser/Org. D.G Ranade/31400

OBSERVATION Facility: T Plant Building: None

Subject Code: AD-08 Priority/Severity: C3, IV

The T Plant draft FEMP and SAR includes Building 224-T, a plutonium waste storage facility, in its purview. However, T Plant staff do not have the responsibility for monitoring the two record stacks on the building, reducing the accountability for the monitoring program at 224-T.

Discussion

T Plant staff do not have the responsibility for monitoring the two record stacks on 224-T Building, although both the draft FEMP and the SAR list 224-T as a T Plant Building. Waste Operations has the responsibility for conducting the monitoring at thi building. The SAR and the WHC annual report on Air Emissions also identify these two stacks as a physical component of T Plant. The SAR and Annual Emissions Report should not include 224-T if it is not a part of T Plant. A recommendation would be to consolidate the operations of environmental monitoring under the plant boundaries noted by WHC documentation.

Responsible Manager/Org. Code: G. Faulk/87400

RESPONSE

Underlying Cause of the Deficiency/Root Cause Code(s):

Action Manager/Date	Responsible Manager/Date	Action Completion Due Dat

Lead Auditor/Appraiser Evaluation:
Signature/Date

[ ] Accept

[ ] Reject

Westinghouse Hanford Company	OBSERVATION		Page 1 of 1
Audit/Appraisal No. EFA-91-014	Observation No. EFA-OB03	Title Radioactive Airborne Emissions Monitoring Program at T Plant	Auditor/Appraiser/Org. D.G Ranade/31400

OBSERVATION Facility: T Plant Building: None

Subject Code: AD-08 Priority/Severity: C3, IV

Remote alarm indicators are in place in T Plant in a location that is not routinely occupied.

Discussion

WHC-CM-7-5, Part D, Rev. 1, Section 6.3 states that audible and visible indications sha be easily discernible to responsible personnel in continuously or frequently occupied areas. A guideline for "frequently occupied" is once every one-half hour.

During the appraisal there were no personnel in the room where the alarms are located o the adjoining room. One alarm for the beta Continuous Air Monitor (CAM) was indicating malfunction. This was noted on the alarm panel. There are also remote strip chart recorders for the CAMs in the same location. These are monitored routinely on a daily basis, although no indication is made on the strip chart recorder paper itself. Doing so should be instituted as a method to verify the monitoring. Monitoring of the recorders should also be increased to every four hours as a minimum, as once per shift is insufficient to promptly note upward trends in stack activity.

Responsible Manager/Org. Code: G. Faulk/87400

RESPONSE

Underlying Cause of the Deficiency/Root Cause Code(s):

Action Manager/Date	Responsible Manager/Date	Action Completion Due Dat

Lead Auditor/Appraiser Evaluation:
Signature/Date

[ ] Accept

[ ] Reject

Westinghouse Hanford Company	OBSERVATION		Page 1 of 1
Audit/Appraisal No. EFA-91-014	Observation No. EFA-OB04	Title Radioactive Airborne Emissions Monitoring Program at T Plant	Auditor/Appraiser/Org. D.G Ranade/31400

OBSERVATION Facility: T Plant Building: None

Subject Code: AD-08 Priority/Severity: C3, IV

The records for calibration of the ß continuous air monitor for 291-T-1 were not available.

The Plant Instrumentation Surveillance and Evaluation System (PISCES) records system i use at T Plant does not contain sufficient information to show specifications for calibrations.

Discussion

WHC-CM-7-5, Part D, Rev. 1, Section 6.6 states in part that .....records or exact conditions of calibration should be maintained in accordance with ANSI/ASME N13.1. Paragraph 6, Page 23.

WHC-CM-7-5, Part D, Rev. 1, Section 6.7 states in part that the facility maintenance organization shall keep a record of maintenance, calibrations, system anomalies, etc., for each instrument for a period of at least 2 years. These records shall be maintaine in accordance with the requirements stated in ANSI/ASME NQA-1.

The records for calibration of the ß continuous air monitor for 291-T-1 were not available. The beta CAM, serial no. 619 is not in the T Plant's PISCES records. This CAM is being loaned from Solid Waste Operations (SWO). T Plant must rely on SWO to inform them that calibration is due on this CAM. This is a poor practice, which could result in an uncalibrated CAM in use at the T Plant main stack.

Responsible Manager/Org. Code: G. Faulk/87400

RESPONSE

Underlying Cause of the Deficiency/Root Cause Code(s):

Action Manager/Date	Responsible Manager/Date	Action Completion Due Dat

Lead Auditor/Appraiser Evaluation:
Signature/Date

[ ] Accept

[ ] Reject

Westinghouse Hanford Company	OBSERVATION		Page 1 of 1
Audit/Appraisal No. EFA-91-014	Observation No. EFA-OB05	Title Radioactive Airborne Emissions Monitoring Program at T Plant	Auditor/Appraiser/Org. D.G Ranade/31400

OBSERVATION Facility: T Plant Building: None

Subject Code: AD-08 Priority/Severity: C3, IV

The 221-T lab stack monitoring equipment was in a degraded condition. Although it is n a record stack, the operation of malfunctioning equipment is a poor practice.

Discussion

Although a potential for significant release of radioactivity in the area or from work evolutions occurring in this area is small, the conditions of the sampling system were poor. The transport line was deteriorated and the sample point was only 18" above the exhaust fan. The flowmeter for the sampler was in poor condition. The rotameter was tilted at a 45° angle, rendering the reading inaccurate, as the rotameter is designed f vertical use only. The meter was so dirty it could not be read. A nearby air sample record form on the open door to the laboratory indicated that the sampler had been running from February 5, 1991, until the date of observation, August 13, 1991. Data provided by EP showed evidence of past occurrences of sample results above the DCG for gross alpha and gross beta. These records are incomplete.

Responsible Manager/Org. Code: G. Faulk/87400

RESPONSE

Underlying Cause of the Deficiency/Root Cause Code(s):

Action Manager/Date	Responsible Manager/Date	Action Completion Due Dat

Lead Auditor/Appraiser Evaluation:
Signature/Date

[ ] Accept

[ ] Reject

Westinghouse Hanford Company	OBSERVATION		Page 1 of 1
Audit/Appraisal No. EFA-91-014	Observation No. EFA-OB06	Title Radioactive Airborne Emissions Monitoring Program at T Plant	Auditor/Appraiser/Org. D.G Ranade/31400

OBSERVATION Facility: T Plant Building: None

Subject Code: AD-08 Priority/Severity: C3, IV

There is no accountability for measurements of stack flow rates or volumes required for determining the degree of isokinetic sampling and the total effluent discharges from th record stacks at the T Plant. Up to the final week of the appraisal, no T Plant personnel could be identified who currently performed these measurements (as required quarterly by Airflow Capacity and Distribution Tests Maintenance Procedure 7-GN-56, Rev 1, 12-8-89). A single hand written calculation of 291-T-1 stack measurements and isokinetic conditions was delivered on the final day of the appraisal. This calculatio was correctly performed. An engineer from Ventilation and Balance (V&B) stated they no longer keep current records of measurements, but they still send data to T Plant. No personnel at T Plant were identified as being responsible for making and recording thes measurements, although it was determined that informally a set of flow measurements for 291-T-1 is kept by a T plant engineer.

Responsible Manager/Org. Code: G. Faulk/87400

RESPONSE

Underlying Cause of the Deficiency/Root Cause Code(s):

Action Manager/Date	Responsible Manager/Date	Action Completion Due Dat

Lead Auditor/Appraiser Evaluation:
Signature/Date

[ ] Accept

[ ] Reject

Westinghouse Hanford Company	OBSERVATION		Page 1 of 1
Audit/Appraisal No. EFA-91-014	Observation No. EFA-0B07	Title Radioactive Airborne effluent Monitoring Program at T Plant	Auditor/Appraiser/Org. D.G Ranade/31400

OBSERVATION Facility: T Plant Building: None

Subject Code: AD-08 Priority/Severity: C3, IV

Several results are listed only 1-2 days apart, instead of a 7-day minimum as required by WHC-CM-7-5, Part D, Rev. 1, Sec. 7.6.

Discussion

WHC-CM-7-5, Part D, Section 7.6 states that . . . . Unless otherwise informed, to achieve the analytical requirements, the samples should be collected at a flow rate of 0.06 cu. meters/minute (2 cfm) for a minimum of 1 week.

Some samples are collected only 1-2 days apart. They are analyzed and recorded. justification for the variance from the WHC-CM-7-5, Part D requirements is not documented. A procedure should exist to identify conditions leading to departure from WHC-CM-7-5 requirements. Guidance should be provided to the technicians and data contr operators on acceptability of the samples.

Responsible Manager/Org. Code: G. Faulk/87400

RESPONSE

Underlying Cause of the Deficiency/Root Cause Code(s):

Action Manager/Date	Responsible Manager/Date	Action Completion Due Dat

Lead Auditor/Appraiser Evaluation:
Signature/Date

[ ] Accept

[ ] Reject

APPENDIX A: PARTICIPATING APPRAISAL TEAM MEMBERS

D. G. Ranade (Raja), Appraisal Team Leader
G. A. Simiele (Jerry), Appraiser
P. C. Olsen (Peter), Appraiser/Consultant
G. R. Cicotte (George), Appraiser/Consultant

APPENDIX B: Pre-Appraisal Conference Attendees

Name	Company/organization	Phone No.	MSIN
E. J. Adams	WHC/ESQ/OHS	373-2927	T3-25
G. W. Faulk	WHC/RR/SLW	373-4319	T3-28
D. W. Fritz	WHC/ESQ/EA	373-2928	T1-30
D. P. McCarthy	PNL	373-6814	K3-56
P. C. Olsen	PNL	375-2819	K3-56
D. G. Ranade	WHC/ESQ/EA	376-9676	B2-16
L. W. Roberts	WHC/RR?SLW	373-1713	T3-28
M. E. Thurman	WHC/RR/SLW	373-4329	T3-28

APPENDIX C: Post-Appraisal Conference Attendees

Name	Company/Organization	Phone No.	MSIN
D. E. McKenney	RR/SLW	373-1713	T3-28
P.C. Olsen	PNL	375-2819	K3-56
D. G. Ranade	WHC/ESQ/EA	373-9676	B2-16

APPENDIX D: PERSONNEL CONTACTED DURING THE APPRAISAL

Name	Organization	MSIN	Phone Number	Topic
E. J. Adams	ESQ/OHS	T3-20	373-2927	HP sampling and results
J. T. Belcher	RR/SLW	T3-28	373-5384	Personnel contact
C. G. Deusner	RR/SLW	T3-20	373-2464	Plant Engineering Drawing
W. T. Frisbee	ESQ/OHS	T3-20	373-3173	Stack flow measurements
D. W. Fritz Jr.	ESQ/EA	T1-30	373-2908	Environmental Monitoring
D. G. Ham	RR/SLW	T3-28	373-3555	Stack flow measurements
R. L. Meador	ESQ/QA	T3-28	373-5491	QA/Qc program
J. M. Nickels	ESQ/EA	T1-30	373-4306	FEMP
M. A. Ortega	RR/SLW	T3-28	373-3844	Records, JCS, PISCES, Calibrations
S. P. Thomas	ESQ/EA	T1-30	373-5119	Stack Monitoring results

APPENDIX E: APPLICABLE REGULATIONS AND DOCUMENTS REVIEWED

ANSI/ASME N13.1-1969, Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities, American National Standards Institute, Incorporated;

ANSI/ASME N510, Testing of Nuclear Air-Treatment Systems, American National Standards Institute, Incorporated;

DOE Order 5400.5, Radiation Protection of the Public and the Environment, June 1990. US DOE, Washington DC.;

DOE Order 5480.4, Environmental Protection, Safety, and Health Protection Standards, US DOE, Washington DC.;

DOE EH-0173-T, Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance, January 1991, US DOE, Washington DC.;

DOE/RL-91-10, Calendar Year 1990 Air Emissions Report for the Hanford Site, US DOE, Richland, Washington;

40 CFR 61.93(b)(2)(ii), Office of the Federal Register, Washington DC.;

Title 40 CFR 60, Appendix A, Method 1, Section 2.1, Selection of Measurement Site;

40 CFR 60, Appendix A, Method 2- Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube);

WHC-CM-7-5, Part D, Rev. 1, Sec., Environmental Compliance, Part D, "Radioactive Airborne Emissions," June 28, 1991;

WHC-EP-0536, Quality Assurance Program Plan for Radionuclide Airborne Emissions Monitoring," December 15, 1991

SD-CP-SAR-007 Rev. 0., T Plant Safety Analysis Report, J. P. Hinckley. February 1985. Rockwell, International, Richland, Washington;

Facility Environmental Monitoring Plan for the T Plant Facility, Final Draft, July 12, 1991. SAIC, Incorporated, Richland, Washington;

WHC Maintenance Procedure 7-GN-56, Airflow Capacity and Distribution Tests;

WHC maintenance procedure 7-GN-61, In-Place Testing of HEPA Filter Systems (Multiple Stages);

Engineering Change Notice ECN 146114, T Plant Exhaust System Upgrade, May 1990. WHC;

WHC calibration records;

HWS 10278;

WHC T Plant in-plant health physics surveys and surveillance logs for 1990 and 1991;

Plant diagrams:

H-2-92408, T Plant Canyon Exhaust Stack Monitor Installation

H-2-93415, 291-T-1 Stack Monitor Installation

H-2-92503, Sample Flow Splitter Assembly

H-2-92504, Sample Flow Splitter Details

H-2-93415, Stack Monitor Flow Diagram 291-T-1