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056907

0048780

Job No. 22192
Written Response Required: NO
Due Date: N/A
Action: N/A
Close CCN: N/A
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ERA: N/A
Subject Code: 8300

MAR 04 1998

U.S. Department of Energy
Richland Operations Office
J. P. Sands, Project Manager
Restoration Projects Division
P.O. Box 550, MSIN H0-12
Richland, Washington 99352



Contract No. DE-AC06-93RL12367
Subject: **TRANSMITTAL OF REQUESTED INFORMATION REGARDING THE 202-S
PU LOADOUT HOOD**

Dear Mr. Sands:

Attached please find one copy of Occurrence Report Number RL—BHI-DND-1996-0006, "202-S Flange Leak of Potentially Fissionable Material from Flange in North Sample Gallery" (Attachment 1), and data from the sampling of the substance found from the flange in the 202-S north sample gallery (Attachment 2). Both attachments were requested in a recent meeting between the U.S. Department of Energy, Richland Operations Office (RL) and the U.S. Environmental Protection Agency (EPA) regarding the 202-S Pu Loadout Hood Sampling and Analysis Plan (SAP).

Please forward the attachments to Ms. Pamela S. Innis of EPA as soon as possible to facilitate approval of the 202-S Pu Loadout Hood SAP.



Bechtel Hanford, Inc.

056907

J. P. Sands

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MAR 04 1998

If you require additional information, please contact Mr. J. E. Rugg of my staff on 373-6585.

Sincerely,



J. J. McGuire, Project Manager
Surveillance/Maintenance and Transition Projects

JER:cmj

- Attachments:
1. Occurrence Report Number RL—BHI-DND-1996-0006, "202-S Flange Leak of Potentially Fissionable Material from Flange in North Sample Gallery"
 2. Sample Data of the substance from the flange in the 202-S north sample gallery

cc: J. D. Goodenough (RL) H0-12, w/o

Attachment 1

OCCURRENCE REPORT

Decontamination & Decommissioning

(Name of Facility)

Environmental Restoration Operations

(Facility Function)

Hanford Site / Bechtel Hanford Incorporated

(Name of Laboratory, Site or Organization)

Name: J. J. McGuire
Title: Project Manager

Telephone No.: (509)373-7253

(Facility Manager/Designee)

Name: QUINN, T S
Title: ORPS PROGRAM ADMINISTRATOR

Telephone No.: (509)372-9257

(Originator/Transmitter)

Name:

Date:

(Authorized Classifier (AC))

1. OCCURRENCE REPORT NUMBER: RL--BHI-DND-1996-0006
202-S Flange Leak of potentially fissionable material from flange in
North Sample Gallery

2. REPORT TYPE AND DATE:

	Date	Time
<input type="checkbox"/> Notification	03/14/1996	1736 MTZ
<input type="checkbox"/> Initial Update	03/18/1996	0922 MTZ
<input type="checkbox"/> Latest Update	03/04/1997	1448 MTZ
<input checked="" type="checkbox"/> Final	05/19/1997	1202 MTZ

3. OCCURRENCE CATEGORY:
[] Emergency [X] Unusual [] Off-Normal [] Cancelled

4. NUMBER OF OCCURRENCES: 1 ORIG. OR:

5. DIVISION OR PROJECT: Decontamination/Decommissioning Prj

6. SECRETARIAL OFFICE: EM - Environmental Management

7. SYSTEM, BLDG., OR EQUIPMENT:
202-S REDOX Facility North Sample Gallery

8. UCNI?: No

9. PLANT AREA: 200 West

10. DATE AND TIME DISCOVERED:
03/11/1996 1000 (PTZ)

11. DATE AND TIME CATEGORIZED:
03/13/1996 1200 (PTZ)

12. DOE NOTIFICATION:

03/13/1996 1220 (PTZ) M. Peck DOE

13. OTHER NOTIFICATIONS:

03/11/1996	1130 (PTZ)	L. Curry	BHI
03/11/1996	1145 (PTZ)	J. Nemec	BHI
03/11/1996	1130 (PTZ)	J. Tarpinian	BHI
03/13/1996	1220 (PTZ)	M. Peck	DOE/RL
03/11/1996	1130 (PTZ)	S. Liedle	BHI

14. SUBJECT OR TITLE OF OCCURRENCE:

202-S Flange Leak of potentially fissionable material from flange in North Sample Gallery

15. NATURE OF OCCURRENCE:

10) Cross-Category Items
C. Potential Concerns/Issues

16. DESCRIPTION OF OCCURRENCE:

While doing light decontamination work in the 202 S Building North Sample Hood area, a D&D worker noticed what appeared to be moisture around a flange. The D&D worker wiped the flange down. Smear readings from material on plastic around

pipe were 10,000,000 dpm alpha contamination. The flange is part of the deactivated process piping. The substance was suspected to have fissionable material of unknown concentration.

The substance on the flange may have dripped into a sample box located below sometime during the past. The amount of substance retained in the sample box (if any) is unknown. Potential criticality concerns have been evaluated by DOE/BHI/WHC criticality staff.

DURING ALL THE DECONTAMINATION ACTIVITIES, NO LIQUID MATERIAL WAS OBSERVED LEAKING FROM THE FLANGE.

On March 11, 1996, decontamination and decommissioning (D&D) work activities were being performed in the 202-S North Sample Gallery under an RWP (PS-202S-005) which instructed workers to egress from the area if the maximum disintegrations per minute (dpm) exceeded one million dpm beta-gamma or 28,000 dpm alpha. One of the D&D workers was performing decontamination work activities on the sampler box #146 directly under a blind flanged valve on the L-16 to E-3 line. The area appeared to have a tear-drop shaped, semi-solid material present on the exterior bottom of the valve flange. A Radiological Control Technician (RCT) scanned the area being decontaminated which indicated high alpha readings. The reading level was brought to the attention of the supervisor, who was also working in the area. The supervisor responded and inspected the area. The D&D worker informed the supervisor that they believed the L-16 to E-3 pipe appeared to be leaking from the flange area on the pipe. Directly beneath the pipe's point of leakage is the sampler box. The sampler box was originally covered securely with plastic, but now, due to deterioration, showed a visible split in the plastic. Concern was addressed that the pipe may be leaking the contaminated material into the sample box. The supervisor then made the decision to wrap the leaking pipe with a 10 ml radiological storage bag. The bag was cut on the side seams, wrapped around the pipe, and secured with duct tape in order to contain any fluid that might continue to leak from the pipe. A smear from the area of concern was taken and the team then egressed from the 202-S North Sample Gallery.

Upon exiting the facility, the supervisor notified two

radiological control personnel that a pipe in the 202-S North Sample Gallery appeared to be leaking at a rate of less than one drop every forty-five minutes. The task lead for S&M work activities was also notified. The smear sample was locked in the radiological control trailer overnight.

March 12. Tuesday

The smear sample was surveyed with a bumblebee, an instrument capable of registering lower range alpha readings. The reading of the smear sample was too high for the bumblebee to register a count rate. The radiological control team then obtained a black widow, an instrument capable of registering higher range alpha readings, and determined the smear sample had a reading of ten million dpm alpha. The site supervisor notified the radiological engineer of the reading and that the color and consistency of the smear indicated the possibility that the smear sample might be process fluid.

The field supervisor notified the radiological engineer, the S&M task lead and the site supervisor (all had knowledge of the event); his immediate supervisor and two D&D Project engineers closely associated with the facility (none had prior knowledge of the event) of the current status of the situation.

The radiological engineer sent notification of a five foot boundary in the area where contamination was a concern. Radiological control personnel and the EAL Director discussed the possibility of obtaining an isotopic of the smear. The EALs limit for sample analysis is 10,000 dpm alpha, therefore the suggestion was made to obtain a smear of a smear and then have the EAL perform an analysis. The EAL had knowledge of the 250,000 count reading, but discussed with radiological control personnel the possibility of performing an isotopic analysis using certain control measures. The smear was to be brought to the EAL Wednesday, March 13.

March 13. Wednesday

The radiological engineer discussed concerns with a BHI nuclear engineer. Radiological control personnel determined a hold should be placed on the RWP for the 202-S Facility.

BHI's nuclear engineer and Quality Safety and Health Manager discussed the situation and expressed concern of proximity of the process fluid and the sampler box.

The nuclear engineer placed a call to a criticality expert at BHI-Oak Ridge to discuss if fluid was leaking, what potential of criticality there might be. The Quality Safety and Health Manager notified the Vice President of Operations of the situation and the concern of a criticality issue.

The Manager of Projects, Quality Safety and Health Manager, the nuclear engineer, and the field supervisor discussed various aspects of the situation such as: how the sample gallery was left, configuration of the plastic wrapped around the pipe, amount of room left in the plastic wrap to accumulate any leaking fluid, the slit in the plastic covering the sampler box, and the leak rate (determined to be unknown). The group concluded a conservative approach would be the best course of action.

A smear of a smear was delivered to the EAL. EAL informed radiological control personnel that the smear of a smear exceeded the 10,000 limit for the EAL.

The President of BHI and Environmental Manager of DOE-RL were notified of the situation and the potential for criticality.

BHI categorized the event as an unusual occurrence (UO), with RL concurrence. The event was classified as a UO due to the potential for criticality in both the sample box and the plastic bag wrapped around the L-16 to E-3 pipe flange area. The 202-S Facility was placed on lock down, access was controlled, keys from Westinghouse Hanford (WHC) were returned, and personnel in the trailers adjacent to the north side of the 202-S Facility were removed. The lead planner for S&M work activities notified the following of the UO classification: shift manager at REDOX, personnel occupying the 233-S trailers directly behind the 202-S Facility, BHI Safety and Health Representative, RL Project Manager, Captain of the Fire Department, and Captain of Hanford Patrol.

The EAL instructed the radiological control personnel to remove the sample from the EAL and deliver the sample to the 222-S Lab.

A lock down of the 202-S Facility was completed and all keys to the 202-S Facility were in the possession of the S&M personnel.

Initial scan and spectrum analysis of the smear indicated activity in the range of Pu239. A meeting with BHI, DOE-RL, WHC, PFP, Criticality, and Robotics was held to discuss course of action. Official gamma specifications were received back from the 222-S Lab which verified the smear was of Pu239.

The 202-S Evaluation team was formulated and team members were selected. The Fire Department's assistance was requested. The Work Plan was formalized and the team determined a phased approach would be the most effective approach.

March 14, Thursday

A meeting was conducted at 100-N with key personnel from BHI-RL, WHC, PFP, and others to discuss and bring members up-to-date on the 202-S situation. S&M Task Lead presented the phased approach that had been developed.

March 15, Friday

The response team investigated the valve flange and DETERMINED THROUGH VISUAL OBSERVATIONS THAT NO LIQUIDS WERE COLLECTING IN THE PLASTIC WRAP AROUND THE VALVE FLANGE.

March 18, Monday

The Sampler Box #146 was surveyed on March 18th and 19th to determine whether sufficient plutonium may have accumulated in the sampler to constitute a criticality concern. A team of scientists and technicians from WHC, and Scientific Ecology Group (SEG) performed a series of measurements using a high efficiency gamma ray detector mounted on a robot. Readings from the sampler box were the same as background readings taken in the same area. The investigation was semiquantitative in nature and no effort was made to establish an actual value for the amount of plutonium held up in the sampler box. Comparison of the readings obtained at the box with those standards in a mockup of the area measured concluded that there was significantly less than

166 grams of Plutonium (i.e., one-third of a critical mass) within the #146 Sampler Box. At this point, Phase I of the investigation was completed and the major criticality issue was answered thus reducing the time sensitive response requirements to this Unusual Occurrence.

April 8, Monday

A team comprised of Radiation Control Technicians, D&D workers, Remote Video Technicians and the Field Superintendent performed a visual inspection of the interior of Sampler Box #146. This was accomplished utilizing a light pipe assembly with a built in video camera and incandescent lights. No significant contents were discovered and the sampler was completely dry with the drain open at the bottom of the box. There was a piece of stained plastic located approximately halfway down the sampler and old stains along the bottom of the box which suggested at one time some liquids had been present. This was not of recent vintage and may have been left from the final deactivation of the plant in 1967. In addition, the RCTs took seven smear samples from the box. These samples ranged from 700 - 300,000,000 dpm alpha and 2,000 - 20,000 dpm beta/gamma. The drain read 300 mR gamma at ¼" and 30 mR gamma at 12". This activity completed Phase II of the investigation which confirmed no liquids had accumulated within the Sampler Box #146.

April 9, Tuesday-Next Two Weeks

During the next two week period, the Sampler Box #146 was decontaminated and a fixative applied to the walls and bottom. In addition, a new piece of plastic was fitted and glued into place over the opening on top of the box. The suspected leaking flange on the L-16 to E-3 valve was also decontaminated and a tape gasket fabricated and a bank was placed over the entire flange area. DURING ALL THE DECONTAMINATION ACTIVITIES, NO LIQUID WAS OBSERVED LEAKING FROM THE FLANGE. The tear-drop shaped semi-solid material on the flange read 700,000,000 dpm alpha. The drain line for the sampler box connected to the sampler drain header that runs under all the sample boxes in the North Sample Gallery. This header is a concrete encased stainless steel line that terminates in the D Cell (waste treatment and concentration cell). No further investigation was performed

on this header because it is contained within the canyon cells of the 202-S Building. During decontamination and demolition (D&D) of the REDOX Complex, these lines will be sampled, characterized and final disposition determined. They pose no threat to the worker, environment or public during the Surveillance and Maintenance (S&M) mode of operation.

17. OPERATING CONDITIONS OF FACILITY AT TIME OF OCCURRENCE:
The 202S facility is an inactive facility.
-

18. ACTIVITY CATEGORY:
Facility Decontamination/Decommissioning
-

19. IMMEDIATE ACTIONS TAKEN AND RESULTS:
The smear sample from the plastic below the flange is being analyzed at 222-S labs to determine isotopic content. The area around the flange has been wrapped with plastic, and sealed with duct tape to prevent spread of contamination. The plastic was wrapped fairly tightly to minimize the volume that could be collected in the wrap. All workers exited the building and the building has been isolated. No personnel entry will be allowed until further evaluation is complete. The 202 S Building is an inactive facility scheduled for decommissioning.
-

20. DIRECT CAUSE:
8) Radiological/Hazardous Material Problem
A. Legacy Contamination

21. CONTRIBUTING CAUSE(S):
8) Radiological/Hazardous Material Problem
A. Legacy Contamination

22. ROOT CAUSE:
8) Radiological/Hazardous Material Problem
A. Legacy Contamination

23. DESCRIPTION OF CAUSE:

April 22, Monday

BHI and SEG personnel began the analysis of preliminary data gathered during the NDA investigation of the L-16 to E-3 line. The data indicates up to 100 grams of plutonium is present in this line from the entrance point on the North wall of the North Sample Gallery to the Sampler Box #146. The material is primarily concentrated in the welded elbows of the stainless steel line. In addition, the E-16 vessel in the old Plutonium Loadout Hood located in North Sample Gallery could contain up to a maximum of 500 grams of Plutonium.

A thermal imaging camera and ultrasonic transducer (UT) were utilized on the L-16 to E-3 line to determine if any liquid was still present within the line. THE RESULTS OF THESE TESTS WERE NEGATIVE THUS CONFIRMING THAT NO LIQUID MATERIAL REMAINED AFTER THE INITIAL DEACTIVATION WAS COMPLETED. This completed Phase III of the investigation.

As part of the deactivation in 1967, past practices required that the process lines be flushed. The flushing process appeared to be less than adequate to ensure that significant quantities of processing materials were removed from low points in the system.

Knowing this, BHI used a graded approach to conducting corrective actions and root cause analysis similar to that referenced in DOE-NE-STD-1004-92.

24. EVALUATION: (By Facility Manager/Designee)

BHI formed a task team to determine how to safely re-enter the facility, in an effort to determine what, if any, inventory is in the sample box. Based on this survey a critical analysis was performed prior to working on the flange and/or taking additional samples. The results indicated that criticality was not possible with the amount and configuration of material.

03/15/96 Update - Working closely with RL-ER, RL-QSH, DOE-

EH, and WHC criticality experts, BHI prepared a plan of action to re-enter 202-S. The most time-critical data point needed was the status of the plastic wrap which had been applied on 03/11/96. Entry to the sample hood area was planned using appropriate radiological controls and Non-Destructive Testing (NDT) equipment via a robotic tractor.

At approximately 1400 hours, a team entered the North Sample Hood area according to the action plan. INFORMATION RELAYED FROM THE ENTRY TEAM INDICATED THAT THE PLASTIC WRAP CONTAINED NO NOTICEABLE LIQUID. SINCE THE TIME LAPSE FROM INITIAL DISCOVERY TO THE ENTRY TEAM SURVEY WAS 4 DAYS, BHI CURRENTLY BELIEVES THAT THE FLANGE IS NOT LEAKING AT ALL. The entry team is currently collecting count data from the sample box beneath the flange using a shielded gamma detector mounted on a robot.

UPDATE 04/26/96

Analysis of the event is still ongoing. ERC is continuing its efforts to resolve issues and close the investigation of the event. The revised completion date of these activities and submittal of the final report is June 28, 1996.

UPDATE 06/28/96

A copy of the detailed final report can be obtained by phoning Mr. Bob Egge at 509-373-2774, or his secretary at 509-373-1320.

25. IS FURTHER EVALUATION REQUIRED?: Yes [] No [X]

26. CORRECTIVE ACTIONS:

(* = Date added/revised since final report was signed off)

01) ERC is in the process of performing additional non-destructive analysis data gathering on the plutonium load-out hood.

TARGET COMPLETION DATE: 08/30/1996 COMPLETION DATE: 08/30/1996

02) During the decontamination and demolition (D&D) of the REDOX complex long-term storage configuration requirements will be incorporated in the D&D planning to support the scheduled D&D in 2016.

TARGET COMPLETION DATE: 09/28/1996 COMPLETION DATE: 09/28/1996

27. IMPACT ON ENVIRONMENT, SAFETY AND HEALTH:

The current conditions at 202-S are contained within the facility and pose no impact to the workers, the environment, or the health and safety of facility personnel. 202-S is a documented contaminated facility. The location of the North Sample Gallery is such that there was no potential for either an onsite or off site release to the environment or exposure to the public.

28. PROGRAMMATIC IMPACT:

At the time of this incident, 202-S was on a surveillance and maintenance (S&M) schedule. 202-S had been inactive since its deactivation in 1967. This condition did not affect other S&M activities elsewhere. The total costs incurred as a result of the incident's analysis are currently not available and will probably not be compiled.

In addition, the pre-existing conditions surveys for all facilities managed by the ERC, did not include all high radiation areas or air-borne contamination areas. Therefore, not all areas of every inactive/surplus building in the ERC were entered as part of the pre-existing surveys. If it is determined that these areas require additional "walkdowns"/analysis (other than scheduled S&M) then new work activities will need to be scoped in order to complete this in a safe and efficient manner.

29. IMPACT UPON CODES AND STANDARDS:

There were no impacts on national codes and standards, program standards, or DOE orders based on this event.

30. LESSONS LEARNED:

Early in process BHI recognized the need for technical assistance and expertise that was not resident within ERC. Hanford Site contractors were quick to respond with technical expertise, equipment, and related support by compiling necessary information as quickly and accurately as possible.

It is important to include outside sources when evaluating and developing action plans. No one organization may have the expertise or capability to fully evaluate a given situation.

31. SIMILAR OCCURRENCE REPORT NUMBERS:

1) None

32. USER FIELD #1:

33. USER FIELD #2:

34. DOE FACILITY REPRESENTATIVE INPUT:

Entered by:

Date:

35. DOE PROGRAM MANAGER INPUT:

Entered by:

Date:

36. SIGNATURES: (FM's original signature on hardcopy)

Approved by: J. J. McGuire
Facility Manager/Designee

Date: 03/04/1997
Telephone No.: (509)373-7253

Approved by: PECK, MICHAEL S

Date: 04/14/1997

DOE Facility Representative/Designee Telephone No.: (509)373-0731

Approved by: JANASKIE, MARK T
DOE Program Manager/Designee

Date: 05/19/1997
Telephone No.: (301)427-1775

Attachment 2

VIAL #18 FILE 733 #3

WHC Hanford Operations

SAMPLE

Serial No.	Requestor	Run No.	Date Submitted	Work Order	Material FT 6077-01 D
<input type="checkbox"/> Emis. Spec.	<input type="checkbox"/> C _____	<input checked="" type="checkbox"/> PU _____	<input type="checkbox"/> _____	Circle Applicable Conditions Unclassified Confidential • Secret	Classification Entered By
<input type="checkbox"/> Mass. Spec.	<input type="checkbox"/> Pu AS _____	<input type="checkbox"/> FE _____	<input type="checkbox"/> _____		After Fill-In
<input type="checkbox"/> SPG	<input checked="" type="checkbox"/> H+I _____	<input type="checkbox"/> Am _____	<input type="checkbox"/> _____		After Data Fill-In
Analysis <u>H⁺</u> $\frac{(81)(.1905)}{100} = .154^m$		Analysis <u>TOTAL VOLUME</u> 175 mL		Analysis <u>Pu</u> 2.0 mL 10.0 mL 1.233E-2 g Au/L 2.70E-1 g Pu/L	
Date 7-16-96	Analyst 81808	Approved	Date 7/17/96	Analyst 65731	Approved

 * Pu SOLUTION 1507.0 TO RESULTS *
 * (Version 2.1 30-Jan-95) *

SAMPLE DILUTION - BEFORE EXTRACTION

SAMPLE DESCRIPTION : FT70066-01D
 SPECTRUM FILE NO. : 733.CHN
 DETECTOR NUMBER : 3
 CADMIUM ABSORBER : 20 mils
 ALIQUOT VOLUME : 2.00 ml
 DILUTED TO : 10.00 ml
 VIAL # : 18
 DATE : 18-Jul-96 (200.7 96)

ANALYSIS PARAMETERS :

COUNT TIME 600.0 minutes
 DEADTIME 1.6 %
 Cd CORR. FACTOR 1.011
 VIAL CORR. FACTOR 1.000
 VOLUME CORR. FACTOR 1.000
 CALCULATED FWHM .028
 MEASURED FWHM .16 %
 NGFIT 96.0
 NGFIT 1.000

	CPM/ML	PCTERR	NO. ATOMS	AT. FOL. CORR
Pu239	2.064E+06	38.00	2.058E+19	0.576 58.893
Pu239 = 2.014E+07	9.19		5.149E+17	59.1814 2.339
Pu240	1.109E+07	22.07	5.519E+16	5.5999 21.152
Pu241	4.020E+08	5.23	4.77E+15	.7644 10.813
Pu241 (CORR.) = 74.31	CALCULATED VALUE			
Am241	9.157E+07	2.77	3.04E+16	5.219 8.126

GRAB Pu/L = .229 +/- 8.42% (SYSTEM TIME BASE)
 Am 241 PPM = 53198.49
 g Am 241/L = .1219E-01

** NGFIT IS OUTSIDE THE CONTROL LIMITS. **
 ** THE FOLLOWING ANALYSIS USES THE 59.54, 129. AND 208 keV GAMMA PEAKS. **

AREA Am 241 (59.54 keV) 14064540.
 AREA Pu 239 (129.3 keV) 13392.
 AREA U 237/Pu 241 (208 keV) 16159.

Am241 DPM/ML .936E+08
 g Am 241/L .1233E-01
 Am 241 PPM 45643.07

Pu 239 DPM/ML .347E+08
 g Pu 239/L .2524E+00
 g Pu/L .276
 (g Pu 239 = 93.4816)

WHC Hanford Operations

SPIKE BLANK

Serial No.	Requestor	Run No.	Date Submitted	Work Order	Material FT 6077-01C
<input type="checkbox"/> Emis. Spec.	<input type="checkbox"/> C _____	<input type="checkbox"/> PU _____	<input type="checkbox"/> _____	Circle Applicable Conditions Unclassified Confidential Secret	Classification Entered By
<input type="checkbox"/> Mass. Spec.	<input type="checkbox"/> Pu AS _____	<input type="checkbox"/> FE _____	<input type="checkbox"/> _____		After Fill-In
<input type="checkbox"/> SPG	<input checked="" type="checkbox"/> [H+] _____	<input type="checkbox"/> Am _____	<input type="checkbox"/> _____		After Data Fill-In
Analysis <u>H⁺</u> <u>(203)(.1905)</u> <u>100 = .387^m</u>		Analysis <u>TOTAL VOLUME</u> <u>10ml</u>		Analysis _____	
Date 7-16-96	Analyst 81808	Approved <i>[Signature]</i>	Date	Analyst	Approved

234-5 LABORATORY

BD-6000-447 (06/90)

WHC Hanford Operations

SPIKE BLANK

Serial No.	Requestor	Run No.	Date Submitted	Work Order	Material FT 6077-00B
<input type="checkbox"/> Emis. Spec.	<input type="checkbox"/> C _____	<input type="checkbox"/> PU _____	<input type="checkbox"/> _____	Circle Applicable Conditions Unclassified Confidential Secret	Classification Entered By
<input type="checkbox"/> Mass. Spec.	<input type="checkbox"/> Pu AS _____	<input type="checkbox"/> FE _____	<input type="checkbox"/> _____		After Fill-In
<input type="checkbox"/> SPG	<input checked="" type="checkbox"/> [H+] _____	<input type="checkbox"/> Am _____	<input type="checkbox"/> _____		After Data Fill-In
Analysis <u>H⁺</u> <u>(182)(.1905)</u> <u>100 = .347^m</u>		Analysis <u>TOTAL VOLUME</u> <u>10ml</u>		Analysis _____	
Date 7-16-96	Analyst 81808	Approved <i>[Signature]</i>	Date	Analyst	Approved

234-5 LABORATORY

BD-6000-447 (06/90)

WHC Hanford Operations

PREP BLANK

Serial No.	Requestor	Run No.	Date Submitted	Work Order	Material FT 6077-01A
<input type="checkbox"/> Emis. Spec.	<input type="checkbox"/> C _____	<input type="checkbox"/> PU _____	<input type="checkbox"/> _____	Circle Applicable Conditions Unclassified Confidential Secret	Classification Entered By
<input type="checkbox"/> Mass. Spec.	<input type="checkbox"/> Pu AS _____	<input type="checkbox"/> FE _____	<input type="checkbox"/> _____		After Fill-In
<input type="checkbox"/> SPG	<input checked="" type="checkbox"/> [H+] _____	<input type="checkbox"/> Am _____	<input type="checkbox"/> _____		After Data Fill-In
Analysis <u>H⁺</u> <u>(166)(.1905)</u> <u>25¹⁰</u> <u>100 = .316^m</u>		Analysis <u>TOTAL VOLUME</u> <u>10ml</u>		Analysis _____	
Date 7-16-96	Analyst 81808	Approved <i>[Signature]</i>	Date	Analyst	Approved

234-5 LABORATORY

BD-6000-447 (06/90)

Serial No.	Requestor	Run No.	Date Submitted	Work Order	Material
				Circle Applicable Conditions Unclassified Confidential Secret	FT-6077-01D PU EXT
Analysis: Pu/Am 4.65E-03 g/L Pu 9.34E-03 g/L Am		Analysis: _____		Classification Entered By _____ After Fill-In After Data Fill-In	
<input type="checkbox"/> Emit. Spec.	<input type="checkbox"/> C	<input checked="" type="checkbox"/> Pu	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> Mass. Spec.	<input type="checkbox"/> Pu AS	<input type="checkbox"/> FE	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> SPG	<input type="checkbox"/> IH+1	<input type="checkbox"/> Am	<input type="checkbox"/>	<input type="checkbox"/>	
Date: 7/24/96	Analyst: S808	Approved: [Signature]	Date: _____	Analyst: _____	Approved: _____
234.5 LABORATORY					
BD-6000-447 (06/90)					

 Pu/Am SOLUTION RESULTS
 (Last Update: 1-Feb-96)

SAMPLE ID FT6077-01D PU EXT
 SAMPLE TYPE AQUEOUS
 SPECTRUM FILE NO. 3147.DHN
 DETECTOR NUMBER 1
 CADMIUM ABSORBER 20 mils
 ALIQUOT VOLUME .5000 mL
 DILUTED TO 10.0000 mL
 VIAL # 2
 DATE 24-Jul-96 (206.4 96)

AREA Am 241 1695956. +/- .16 %
 AREA Pu 239 45. +/- 60.03 %
 AREA U 235 -6. +/- 394.25 %
 AREA U 237 509. +/- 9.33 %
 (ERROR ESTIMATES: 95% CONFIDENCE INTERVAL)

ANALYSIS PARAMETERS :
 COUNT TIME 50.0 minutes
 EFFICIENCY CORR. FACTOR 1.000
 VIAL CORR. FACTOR .793
 SYSTEM DEADTIME 1.5 %

DATE: 122248-05

SYSTEM CHECKS :
 Am 241 CENTROID: 894.1
 FWHM: 5.68
 U 237 CENTROID: 2059.2
 FWHM: 9.20

	ATTENUATION FACTORS	CRITICAL LEVEL
	Pu MATRIX	NET COUNTS
Am 241 (59.54 keV)	1.0000 1.0920	3.048E+07
Pu 239 (129.23 keV)	1.0000 1.0710	3.740E+01
U 235 (185.72 keV)	1.0000 1.0634	3.512E+01
U 237 (207.97 keV)	1.0000 1.0619	6.219E+01

CPM/mL Am 241 7.096E+07 * 60 * 4.505⁻¹³ / .008 = 0.24 Ci ^{Am 241}

CPM/mL Pu 239 5.929E+05 * 60 * 4.505⁻¹³ / .008 = 0.01 uPu

0.25 TOTAL Ci

CPM/mL U 235 6.447E+01
 C/L U 235 .00135

[17] From: Samuel T Hurlbut at -HANFORD03A 7/23/96 3:45PM (1831 bytes: 1 ln)
To: Melanie L Myers at -WHC121, Lawrence L Morrison at -WHC169
cc: E W (Liz) Curfman at -WHC27, George A Westsik at -HANFORD03B
Subject: 202-S samples

----- Message Contents -----

Melanie,

Just thought that you would need a description of what was done to your samples.

We measured the H+ molarity so that I could calculate the amount of concentrated nitric acid needed to adjust the H+ to 2.5M. Listed below are those results and the volume of 15.9M HNO3 that I used, along with the dilution factors that you will need to be applied to the ICP, Cr(VI) or any other results.

Sample	H+	Sample Vol.	Acid Vol.	Dilution Factor
FT 6077-01A	.316M	7 mL	1.888 mL	1.27
FT 6077-01B	.347	7	1.125	1.16
FT 6077-01C	.387	7	1.104	1.16
FT 6077-01D	.154	30	5.250	1.18

Note that these dilution factors assume that the volume of sample plus the volume of acid is additive. While this is not strictly correct, I felt that the difference would be insignificant.

After adjusting the acid the samples were contacted with a mixture of 25% tributyl phosphate in NPH to remove plutonium. The details of the extraction can be found in our procedure ZA-503-302.

If I can answer any questions feel free to call.

Sam Hurlbut 373-3979