

WESTON/WESTINGHOUSE/HANFORD **0048383**  
**ISOTOPES**

Case Narrative/Cover Sheet for Reports of Analysis and Lab Data

Date 06-15-92  
TI #'s 68013 - 68015  
WO # 4-0065



**Comments:**

The matrix spike and matrix spike duplicate analysis for gamma have been deleted according to instructions by Westinghouse Hanford Company.

Activity for Matrix Spike TI #68014 and Matrix Spike Duplicate TI #68015

<u>Nuclide</u>	<u>Activity pCi/g</u>	<u>Acceptable Range</u>
Gross Alpha	33.6	25. - 42.
Gross Beta	68.	58. - 78.
Strontium-90	4.0	3.4 - 4.6
Uranium-235	0.14	0.0 - 6.14
Uranium-238	3.09	0.0 - 9.09



**Gross Alpha, Gross Beta:**

Spiked soil samples analyzed for Alpha and Beta activity can give results which are outside the expected range because the counting situation is different from the self-absorption calibration method.

In calibration, the radioactive standard solutions are evaporated together with varying amounts of sodium carbonate and sodium nitrate salts. The counting results of these standards are used to construct a self-absorption curve which indicates the effective counting efficiency as a function of residue mass. Experiments have shown that this method gives good agreement with finely divided silt sediments which have been spiked with standard solutions.

When soil samples are coarse, or contain mineral grains, the spiking solution does not penetrate to the interior of the solid particles. This results in a more efficient counting situation, so that the results are higher than expected. The disagreement, therefore is caused by the character of the soil sample.

**Contents:**

Reports of Analysis		<u>2</u>	Pages
Gross Alpha	PRO-032-1	<u>1</u>	Pages
Gross Beta		<u>-</u>	Pages
Sr-90	PRO-032-38	<u>3</u>	Pages
Gamma	PRO-042-5	<u>2</u>	Pages
U-235-238	PRO-052-32	<u>6</u>	Pages
C-O-C		<u>1</u>	Pages
Other		<u>-</u>	Pages

## TELEDYNE ISOTOPES

## REPORT OF ANALYSIS

RUN DATE 06/10/92

WORK ORDER NUMBER      CUSTOMER P.O. NUMBER      DATE RECEIVED      DELIVERY DATE      PAGE 1

4-0065      LL-0850-F4      02/27/92      03/31/92

MS JOSIE KING  
 WESTON/WESTINGHOUSE/HANFORD  
 208 WELSH POOL ROAD  
 PICKERING CREEK INDUSTRIAL PARK  
 LIONVILLE PA      19341-1313

## S O I L

TELEDYNE SAMPLE NUMBER	CUSTOMER'S IDENTIFICATION	STA NUM	COLLECTION-DATE		NUCLIDE	ACTIVITY (PCI/GM DRY)	NUCL-UNIT-% U/M *	MID-COUNT TIME		VOLUME - UNITS ASH-WGHT-% *	LAB.
			START DATE	STOP DATE				DATE	TIME		
68013	9112L675-001	801C06	12/04		GR-A	3.5 +-0.9 E 01		03/14			3
					GR-B	6.3 +-0.4 E 01		03/14			3
					SR-90	L.T. 1. E-01		03/25			3
					GR-A	L.T. 5. E 00		03/14			3
					GR-B	L.T. 3. E 00		03/14			3
					SR-90	0.0 +-0.100E 00		03/25			3
					BE-7	L.T. 2. E 00		06/05			4
					K-40	1.24+-0.12E 01		06/05			4
					MN-54	L.T. 4. E-02		06/05			4
					CO-58	L.T. 1. E-01		06/05			4
					FE-59	L.T. 8. E-01		06/05			4
					CO-60	L.T. 2. E-02		06/05			4
					ZN-65	L.T. 1. E-01		06/05			4
					ZR-95	L.T. 2. E-01		06/05			4
					RU-103	L.T. 6. E-01		06/05			4
					RU-106	L.T. 3. E-01		06/05			4
					CS-134	L.T. 4. E-02		06/05			4
					CS-137	8.27+-2.11E-02		06/05			4
					RA-140	L.T. 6. E 02		06/05			4
					CE-141	L.T. 2. E 00		06/05			4
					CE-144	L.T. 3. E-01		06/05			4
					FU-152	L.T. 8. E-02		06/05			4
					EU-154	L.T. 9. E-02		06/05			4
					EU-155	L.T. 1. E-01		06/05			4
					PA-226	8.74+-0.87E 00		06/05			4
					TH-228	6.98+-0.70E-01		06/05			4
					TH-234	L.T. 1. E 00		06/05			4
					U-235	4.3 +-0.6 E-01		05/20			6
					U-238	1.2 +-0.1 E 01		05/20			6
					U-235	L.T. 5. E-03		05/20			6
					U-238	L.T. 7. E-03		05/20			6





**Westinghouse  
Hanford Company**

Hanford Operations and Engineering Contractor  
for the US Department of Energy  
P.O. Box 1970 Richland, Wa. 99352

# NONCONFORMANCE REPORT

Page 1 of 1

No.

**B 06903**

1. MFR/ORG

WHC

ITEM/MATERIAL NAME Environ. Samples

PART NO. N/A

DRAWING/SPEC. NO. N/A

REV. N/A

PROGRAM/PROJECT 300-FF-1

P.O.W.O. NO. N/A

UNUSUAL OCCURRENCE  
REPORT REQUIRED

YES  NO

SYSTEM/END USE N/A

DATE 4/30/92

2. DESCRIPTION OF NONCONFORMANCE

Package  
ICP - Has pages 138, 138A  
- One page w/o # between p 126/127  
- Two pages w/o # between p 88/89  
- No WHC Chain of Custody  
Ion Chem - Has no pagination, No WHC Chain - O-Cust.  
Postlife - One page w/o # between p 76/77, 116/117, 139/140  
- Two pages w/o # between p 131/132  
- Has p 7, 7A  
VOC - One page w/o # between p 13/14, p 29/30  
- Two pages w/o # " p 93/94  
- Three pages w/o # " p 5/96, No WHC COC  
See data package G112L 675 YA submitted to EDMC  
on X00272.

3. REQUIREMENT VIOLATED

Data Package  
Completeness

DOCUMENT

WHC-SD-EN  
SPP-002

REV

Rev 1 para 2.

ZONE/PA

James C. Sanford  
ORIGINATOR

38610  
ORGANIZATION

4/30/92  
DATE

4. ASME CODE ITEM(s)

NO  YES. NOTIFY AUTHORIZED INSPECTOR.

WHC  
QAR

5. CAUSE OF NONCONFORMANCE

PROCEDURES  PERSONNEL  MATERIALS  
 EQUIPMENT  OTHERS

REMARKS:

SW-01 PN-002 PLS = D3

6. CORRECTIVE ACTION TO ELIMINATE CAUSE

OSM to verify all COC's  
are in req'd pkg.

INITIATION DATE

SERIAL NO.

Joan Kessner

RESPONSIBLE ORG. REP.

TITLE

DATE

7. RECOMMENDED DISPOSITION

ACCEPT

REJECT

REPAIR

REWORK

OTHER

8A. DISPOSITION JUSTIFICATION AND INSTRUCTIONS

Pagination is not a problem  
OSM to obtain missing chain  
of custody

8. ADDITIONAL REVIEWS REQUIRED

(WHC ONLY)  YES  NO  
IF YES, IDENTIFY:

9B. SUPPLIER ENQ.

SUPPLIER QA

10. DISPOSITION APPROVAL (WHC ONLY)

APPROVED  DISAPPROVED  
 OTHER (SEE CONTINUATION SHEET)

George Heuckel Callahan 8/1/92  
COGNIZANT ENGINEER DATE

J.R. McCallum Callahan 8/1/92  
COGNIZANT QA ENGINEER DATE

AUTHORIZED INSPECTOR REVIEW

DATE

11. ADDITIONAL APPROVALS

NAME	TITLE	DATE	NAME	TITLE	DATE

12. DISPOSITION ACTION COMPLETE

N/A

QTY. ACCEPT

QTY. REJ.



FOLLOW ON NCR

QA LOG NO.

EW4 42-063

The issuance and acceptance of this request in no way limits or affects the warranty provisions of the order.  
This request shall not establish a precedent or obligation to accept similar conditions in the future.

FOLLOW-UP  
LEVEL  A  
 B  
 C

91124675  
Gross  $\alpha, \beta$

### Supplemental Requirements for Analyses Using Gas Proportional Counters

#### A.0 Completeness Checklist

##### Analysis Results

- Results Report for Sample Analyses and Reanalyses
- Raw Data (Counting Logs, Printouts, Notebook Pages)
- Calculation Sheets
- Sample Identifications
- Detector Identification
- Analysis Date and Initials of Analyst
- Amounts of Samples Prepared or Counted
- Weights of Solids Counted

##### Initial and Continuing Calibration

- Detector Identification
- Calibration Date(s) and Initials of Analyst
- Identification of Calibration and Check Standards including Radionuclide, Certification, Expiration Date, and Activity
- Amount of (Check) Standard Used
- Raw Data including Counts and Count Duration for Standards
- Weights of Preparations
- Efficiencies
- Weights of Carriers Added, If Applicable
- Results of Statistical Tests Used to Evaluate Instrument Reliability and Efficiency Checks
- Raw Data of Background Counts and Count Duration
- Results of Statistical Test Used to Evaluate Instrument Background
- Control Limits for Check Source and Background Counts

##### Blanks

- Detector Identification
- Date of Analysis
- MDA of Method
- Amounts of Reagents Used in Blank

### Supplemental Requirements for Analyses Using Gas Proportional Counters (Cont.)

#### Radiometric and Gravimetric Yields

- Amounts (Volumes, Concentrations, Activity) of Spikes, Tracers, or Carriers Used
- Weights of Precipitates or Solids Counted
- Calculated Recoveries

#### Duplicates

- Detector Identification
- Date of Analysis
- Aliquots of Samples
- Weights of Solids Counted
- Count Durations
- Sample Identifications
- Calculated Precision

#### Laboratory Control Samples

- Detector Identification
- Date of Analysis
- Calculation of Recoveries
- Results of Analyses

Sr-90  
Supplemental Requirements for Analyses Using  
Gas Proportional Counters

A.0 Completeness Checklist

Analysis Results

- Results Report for Sample Analyses and Reanalyses
- Raw Data (Counting Logs, Printouts, Notebook Pages)
- Calculation Sheets
- Sample Identifications
- Detector Identification
- Analysis Date and Initials of Analyst
- Amounts of Samples Prepared or Counted
- Weights of Solids Counted

Initial and Continuing Calibration

- Detector Identification
- Calibration Date(s) and Initials of Analyst
- Identification of Calibration and Check Standards including Radionuclide, Certification, Expiration Date, and Activity
- Amount of (Check) Standard Used
- Raw Data including Counts and Count Duration for Standards
- Weights of Preparations
- Efficiencies
- Weights of Carriers Added, If Applicable
- Results of Statistical Tests Used to Evaluate Instrument Reliability and Efficiency Checks
- Raw Data of Background Counts and Count Duration
- Results of Statistical Test Used to Evaluate Instrument Background
- Control Limits for Check Source and Background Counts

Blanks

- Detector Identification
- Date of Analysis
- MDA of Method
- Amounts of Reagents Used in Blank

### Supplemental Requirements for Analyses Using Gas Proportional Counters (Cont.)

#### Radiometric and Gravimetric Yields

- Amounts (Volumes, Concentrations, Activity) of Spikes, Tracers, or Carriers Used
- Weights of Precipitates or Solids Counted
- Calculated Recoveries

#### Duplicates

- Detector Identification
- Date of Analysis
- Aliquots of Samples
- Weights of Solids Counted
- Count Durations
- Sample Identifications
- Calculated Precision

#### Laboratory Control Samples

- Detector Identification
- Date of Analysis
- Calculation of Recoveries
- Results of Analyses

## Supplemental Requirements for Analyses Using Alpha Spectroscopy

### B.0 Completeness Checklist

#### Analysis Results

- Results Report for Sample Analyses and Reanalyses
- Raw Data (Spectra, Printouts, Notebook Pages)
- Calculation Sheets
- Sample Identifications
- Detector Identification
- Analysis Date and Initials of Analyst
- Amounts of Samples Counted (Precipitated or Deposited)

#### Initial and Continuing Calibration

- Detector Identification
- Calibration Date(s) and Initials of Analyst
- Identification of Calibration and Check Standards including Radionuclide, Certification, Expiration Date, and Activity
- Amount of (Check) Standard Used
- Raw Data including Spectra or Counts per Channel
- Kev/channel
- Count Duration for Standards
- Efficiencies
- Raw Data of Background Counts, Dates Counted, and Duration of Counts

#### Blanks

- Detector Identification
- Date of Analysis
- MDA of Method
- Amounts of Reagents Used in Blank

### Supplemental Requirements for Analyses Using Alpha Spectroscopy (Cont.)

#### Duplicates

- Detector Identification
- Date of Analysis
- Amounts of Samples Counted
- Count Durations
- Sample Identifications
- Calculated Precision

#### Radiometric and Gravimetric Yields

- Amounts (Volumes, Concentrations, Activity) of Spikes, Tracers, or Carriers Used
- Weights of Precipitates or Solids Counted
- Calculated Recoveries

#### Laboratory Control Samples

- Detector Identification
- Date of Analysis
- Calculation of Recoveries
- Results of Analyses

Supplemental Requirements for Analyses Using  
Gamma Spectroscopy

C.0 Completeness Checklist

Analysis Results

- Results Report for Sample Analyses and Reanalyses
- Raw Data (Spectra, Printouts of Counts per Channel, Notebook Pages)
- Calculation Sheets
- Sample Identifications
- Detector Identification and Counting Position
- Analysis Date and Initials of Analyst
- Amounts of Samples Counted

Initial and Continuing Calibration

- Detector Identification
- Calibration Date(s) and Initials of Analyst
- Identification of Calibration and Check Standards including Radionuclides, Certification, Expiration Date, and Activity
- Amount of (Check) Standard Used
- Raw Data including Counts and Count Duration for Standards
- Efficiencies and/or Geometry and Matrix Factors
- Raw Data of Background Counts, Count Dates, and Duration of Counts
- Kev/Channel
- FWHM

Blanks

- Detector Identification
- Date of Analysis
- MDA of Method
- Amounts of Reagents Used in Blank
- Raw Data

### Supplemental Requirements for Analyses Using Gamma Spectroscopy (Cont.)

#### Duplicates

- Detector Identification
- Date of Analysis
- Amounts of Samples
- Count Durations
- Sample Identifications
- Results of Analyses and Calculated Precision
- Raw Data

#### Radiometric and Gravimetric Yields

- Amounts (Volumes, Concentrations, Activity) of Spikes, Tracers, or Carriers Used
- Weights of Precipitates or Solids Counted
- Calculated Recoveries

#### Laboratory Control Samples

- Detector Identification
- Date of Analysis
- Calculation of Recoveries
- Results of Analyses