W0032-ITC-026

START 9713511.0002

0046057

INTERNATIONAL TECHNOLOGY CORPORATION

MAY 1994 RECEIVED SDLA

DEC 1996 RECEIVED EDMC

Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

Dear Mr. Lerch:

Thank you for purchasing analytical testing services from IT Corporation. It is our intention to supply our clients with data packages which not only meet the industry's highest standards for quality, but are also easy to use. Features which we point out are:

1. A Data Summary Packet which allows you to review your data without searching through the complete data package.

   Your Data Summary Packet contains the following items:

   - Case Narrative: listing of sample identifications, analyses performed, explanation of any problem associated with samples, corrective action taken.
   - Quality control sample identifications and analyses performed.
   - Data summary.

2. A data package which meets the specific requirements you requested and is easy to use as well. The package is organized in accordance with the Table of Contents which you will find at the beginning of each section. Sections are separated by color-coded tabs, making it easy to find individual analytical parameters which may be of particular interest to you. The data package is custody-sealed at the laboratory - your assurance that parts of the package are not missing.

We are constantly searching for ways to improve our service to you. This current product has many of the features which you have told us are important to you. Your suggestions regarding additional improvements will be appreciated.

Please contact me with any questions or suggestions.

Sincerely,

Wade H. Price
Project Manager

Regional Office
13715 N. Rider Trail • Earth City, Missouri 63045-1205 • 314-298-8566 • FAX: 314-298-8757

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W0032

HANFORD ANALYTICAL SERVICES MANAGEMENT

RECORD OF DISPOSITION

ROD-94-0083
Record of Disposition No.

DATE: April 4, 1994	LABORATORY: IT
PROJECT TITLE/NO.: 200-UP-2 SAF 94-065	NCR NO.: n/a

SAMPLE IDENTIFICATION NUMBERS:

all vegetation samples

DESCRIPTION OF EVENT:

It is anticipated that field sampling teams may not be able to collect sufficient sample volumes to meet the IT requirements for vegetation.

DISPOSITION OF SAMPLES:

In the event the inadequate vegetation sample volumes are provided to perform all requested analyses, IT is instructed to prioritize the requested analyses as listed below:

priority 1 - radiochemistry
priority 2 - metals

APPROVAL SIGNATURES:

J. A. Lerch — 4/4/94
CAS Project Coordinator (Print/Sign Name) — Date

M. A. Wasemiller — 4/11/94
Technical Representative (Print/Sign Name) — Date

N/A
Quality Assurance (Print/Sign Name) — Date

9713531.0004

Analytical Data Package Prepared For

Westinghouse Hanford

MAY 1994
RECEIVED
SDLA

Chemical Analysis By

IT Analytical Services
St. Louis Laboratory

Sample Delivery Group Number: W0032

WHC IDENTIFICATION NUMBER
BOBP32

ITAS-ST. LOUIS ID NUMBER
4908-001

RECORD COPY

9715311.0005

INTERNATIONAL TECHNOLOGY CORPORATION

May 19, 1994

MAY 1994 RECEIVED SDLA

J. A. Lerch
Buyer's Technical Representative
Westinghouse Hanford Company
P.O. Box 1970
2355 Stevens Drive
Richland, WA 99352

Reference: Contract MPV-SVV-239000.

Dear Mr. Lerch:

Accompanying this letter are the Data Package Deliverable and the Diskette Deliverable for Chemical analyses on the following WHC sample:

SDG NUMBER	SAF NUMBER	WHC ID NUMBER	ITAS-RICHLAND ID NUMBER
W0032	94-065	BOBP32	40427601

The Radiochemical Deliverables will be submitted later, under separate cover.

If you have any questions regarding this data package or require any additional information please contact me at 375-3131.

Sincerely,

Van H. Pettey
Project Manager

Receipt of this letter and package are acknowledged by:

Doris E. Ayres	May 19, 1994	3:23 p.m.
Name	Date	Time

XC: Rebecca Cartwright
Jim Harvey
Wade Price
File

Regional Office
2800 George Washington Way • Richland, Washington 99352-1613 • 509-375-3131 • FAX: 509-375-5590

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U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0BP32

ab Name: ITAS_ST._LOUIS Contract: 519.04
ab Code: ITMO Case No.: SAS No.: SDG No.: W0032
atrix (soil/water): SOIL Lab Sample ID: 4908-001
evel (low/med): LOW Date Received: 04/14/94
Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	124		*	P
7440-36-0	Antimony	5.0	U		P
7440-38-2	Arsenic	0.14	U		F
7440-39-3	Barium	32.0	B		P
7440-41-7	Beryllium	0.06	B		P
7440-43-9	Cadmium	0.44	B		P
7440-70-2	Calcium	20700			P
7440-47-3	Chromium	0.84	U		P
7440-48-4	Cobalt	0.84	U		P
7440-50-8	Copper	7.9			P
7439-89-6	Iron	359		*	P
7439-92-1	Lead	0.46	B	*	F
7439-95-4	Magnesium	4210		*	P
7439-96-5	Manganese	27.5			P
7439-97-6	Mercury	0.05	U		CV
7440-02-0	Nickel	3.7	U		P
7440-09-7	Potassium	8790			P
7782-49-2	Selenium	0.36	U	W	F
7440-22-4	Silver	0.74	U		P
7440-23-5	Sodium	245	B		P
7440-28-0	Thallium	0.14	U		F
7440-62-2	Vanadium	3.1	B		P
7440-66-6	Zinc	18.5		E*	P
7440-32-6	Titanium	23.2		N*	P

olor Before: BROWN Clarity Before: Texture: MEDIUM
olor After: YELLOW Clarity After: Artifacts:

omments:

FORM I - IN ILM03.0

9716511.0007

INTERNATIONAL TECHNOLOGY CORPORATION

CERTIFICATE OF ANALYSIS

MAY 1994 RECEIVED SDLA

Westinghouse Hanford Company
P.O. Box 1970
Richland, Washington 99352

May 13, 1994

Attention: J. A. Lerch

Project number	:	519.04
Date Received by Lab	:	April 14, 1994
Number of Samples	:	One (1)
Sample Type	:	Solid
SDG Number	:	W0032

I. Introduction

On April 14, 1994, one (1) solid sample was received by ITAS-Richland and transferred to ITAS-St. Louis for chemical analysis. Upon receipt, the sample was given the following laboratory ID number to correspond with the specific client ID:

St. Louis ID	WHC ID	Richland ID	Matrix	Date of Receipt
4908-001	BOBP32	40427601A	Solid	04/14/94

II. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results, and the appropriate detection limits.

Regional Office
13715 N. Rider Trail • Earth City, Missouri 63045-1205 • 314-298-8566 • FAX: 314-298-8757

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Analyses requested: Metals including Cyanide using CLP methodology.

III. Quality Control

A Laboratory Control Sample and Method Blank were analyzed with each preparation batch. Matrix Spike and Duplicate analyses were performed for all analytes in this SDG.

IV. Comments

Sample matrix was vegetation.

All sample results for this SDG are reported in wet weight. The 100% solids on the CLP forms is used for calculation purposes only and is not an analytically determined value.

The LCS for titanium(Ti) is made up of a 1000ug/L Ti spike added to the MS0023-94 soil LCS mix. The soil LCS mix has been determined analytically to contain 870ug/L without the additional spike. The total concentration of 1870ug/L is used as the true concentration of Ti for determining Ti LCS recovery.

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:

Wade H. Price
Project Manager
z:\annelars\hanw0032.nar

Westinghouse Hanford Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

006268

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS STAND Alone Deliverable
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
404276 01 BOBP32	V	4-5-94	1045	(1) 500 ml P	Metals -CLP TAL Titanium Mercury Pb- CPL	4-6-94
40427701 BOBP32	V	4-5-94	1045	(1) Plastic Bag	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-14-94	1500	Kevin Todd Inley 4-14-94 15:00

*Matrix
A = Air
DL = Drum Liquids
DS = Drum Solids
L = Liquid
O = Oil
S = Soil
SE = Sediment
SL = Sludge
SO = Solid
T = Tissue
W = Water
WI = Wipe
X = Other

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

0000008

9713511.0010

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT)
Westinghouse Hanford		W94-0-0448-17

PART I - TO BE COMPLETED BY ORIGINATOR

~~Hanford~~ Analytical Services	Section Field Analytical Services	Unit Sampling & Mobile Labs

The following items are to be shipped from [X] Contractor [ ] Vendor

Routing Truck [X] Prepaid [ ] Collect

Shipped to
Company International Technology Corp.
Address 2800 Geo. Washington Way
City Richland State WA. Zip Code 99352
Country

Off-site Custodian: Tami Heidelberg

On-site Custodian: J.G. Hogan Payroll No. 57783

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
1		Polycooler: Environmental Samples packed on wet ice, double bagged. Sample #'s 94158-01.D12, 94158-02.D12 C.O.C. # ~~906812~~ 906813 S.A.F. # 94-158 Ice Chest # Rm 33 wt. 20 lbs.	

[ ] Classified [X] Unclassified [ ] Shipped Under DOE Contract [ ] Shipped Under Contractor's Use Permit Contract

Necessity for the off-site use of this property

[X] Required for Project Work. List Project No. 94-158

[ ] Business Trip

[ ] Off-site Assignment

[ ] Shipment to Subcontractor. List Subcontract No.

[X] Other (Please specify) Samples require analysis not presently available at this site.

60000009

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
[signature]	S167711	4-14-94

Location of and Contact for Property (Name/Phone No./Bldg./Area)
J.G. Hogan/ 373-4541/ 202-S Annex/ 200 West

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
9-13-94	KP214 12911	N/A

Originated By	Date	Authorized By	Date
[signature] J.G. Hogan	4-13-94	Jannette E Hyatt [signature]	13-14-94

Property Management Approval	Date
J Hankel	4/14/94

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date

DISTRIBUTION (AFTER FINAL SIGNATURES)

White - Property Management Yellow - Shipping Green - Accounts Payable Pink - Originator Goldenrod - Property Management

[illegible] 4-14-94 [illegible]

54-3000-479 (05/93)

9213511.0011

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
1020 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(Per Shipping Container)

Date/Time Received 4-14-94 15:00 Client Name WHC

Project/Client # 94-065 Batch or Case # 006268

Cooler ID (if noted on the outside of cooler) GWS-127

1. Condition of shipping container? O.K.
2. Custody Seals on cooler intact? Yes ☑ No ☐
3. Custody Seals dated and signed? Yes ☑ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☑ No ☐
5. Vermiculite/packing material is: Wet ☐ Dry ☑
6. Each sample is in a plastic bag? Yes ☑ No ☐
7. Number of sample containers in cooler: 2
8. Samples have: ✓ tape ____ hazard labels
   ✓ custody seals ____ appropriate sample labels
9. Samples are: ✓ in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☑ No ☐
    Sample temperature 4°C
11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #'(s) 006268
    Request for analysis #(s) N/A
    Airbill # N/A Carrier N/A
12. Have any anomalies been identified above? Yes ☐ No ☑
13. Memos have been initiated for all anomalies identified above? Yes ☑

Printed Name/Signature Karen Ottenburg Date/Time 4-14-94 15:00

FORM NO. LS-042, Rev.0, 2/94

0000010

Emergency Contact (509) 373-3800 ERG # 61 Attached

OFFSITE RADIOACTIVE SHIPMENT RECORD
– EXTERIOR INSPECTION PERMITTED –

19740

SHIPPING INST.

SHIP TO:
Company: IT Analytical
Address: 3500 George Washington Way
City, State, Zip: Richland WA 99352
Attention: Tom Heidelberg

Contractor: ☐ PNL ☐ KEH ☒ WHC
Site/Carrier: RT Sickle
PR No. 67312 Veh. No. 68B-4555

Ship: ☒ Prepaid ☐ Collect Via:
☒ Motor/Rail ☐ Air/Pkg
☐ Excl. Use ☐ Air/Cargo
☐ DOE Veh. ☐ Multi
☐ UPS Sur. ☒ Government Vehicle

SHIPMENT DESCRIPTION AND CERTIFICATION

Proper Shipping Name — UN Number
Radioactive Material,
1. Empty Packages — ☐ UN 2908
2. Low Specific Activity, n.o.s. — ☐ UN 2912
3. Limited quantity, n.o.s. — ☐ UN 2910
4. N.O.S. — ☐ UN 2982
5. Fissile n.o.s. — ☐ UN 2918
6. Special Form, n.o.s. — ☐ UN 2974
7. Instruments & Articles — ☐ UN 2911
8. Excepted Package Limited Quantity ☒ UN 2910

Material Form: ☐ Special (A1) ☒ Normal (A2)

Labels Applied: ☐ Empty ☐ Radioactive LSA ☐ White I ☐ Yellow II ☐ Yellow III ☒ None ☐ Danger (Air Cargo) ☐ Secondary

Material Category: ☐ Empty ☐ Low Specific Act. (LSA) ☒ Limited Quantity ☐ Type A Quantity ☐ Type B Quantity ☐ Highway Route Controlled Quantity

For Normal Form — Identify:
Physical Form: ☒ Solid ☐ Liquid ☐ Gas
Chemical Form: ☐ Metal ☐ Oxide ☒ Elemental ☐ Nitrate ☒ Other Vegetation

TYPE PACKAGE: ☒ Strong Tight ☐ Type A ☐ Type B ☐ Type B (U) ☐ Type B (M)

CONSTRUCTION: ☐ Box/FB ☐ Wood ☐ Steel ☐ Drum ☐ Cask ☒ Other Poly Cooler

FISSILE CLASS: ☒ Non Fissile ☐ Fissile Exempt ☐ Fissile I ☐ Fissile II ☐ Fissile III
Grams Fissile

SNM: ☒ No ☐ Yes ☐ < 1 gr ☐ Category I ☐ Category II ☐ Category III

ACCOUNTABILITY/SECURITY CONTROL: ☐ Classified ☒ Unclassified
Consignee authorized to receive shipment ☒
Sig. Security Svc. Req. ☐ N/A ☒
Pu/EU > 1 g ☐ N/A NU/DU > 1 Kg ☐ N/A
Security Escorts Req. ☐ Not Req. ☒
External Cask Temperature (Max. 122°F LTL, 180°F Ex. Use) N/A ☒

Packaging conforms to appropriate packaging procedure ☐ N/A ☒ Yes
Complies with D.O.T. packaging marking and labeling requirements ☐ N/A ☒ Yes
Container acceptability documented (incl. 7A cert.) ☒ N/A ☐ Yes
Container examined: No evidence of deterioration or damage ☒ Yes
QA Inspection Current ☐ Yes ☒ N/A Seals required ☒ No ☐ Yes
Shipping Doc. ACE 21TS 421 Authorization No. N/A

No. Pkgs.	Model Package	COC/Spec. No.	Serial No.	Seal No.	Isotopes	Curies/Pkg	T.I.	Gr. Wt.
1	Poly Cooler/Strong Tight	NA	GW5055	Tape Applied	Cs-137, Sr-90	89 mCi	4/1 N/A	32 lbs
	SAE 94-065 (5.3)	(2) 5 Gal bottle, (4) 1 Gal, (1) 100 mL			COC # 6465	93.14 mCi		
	* LTD QTY STATEMENTS IN ALL 3 COOLERS *							
2	Poly Cooler/Strong Tight	NA	GW5-47 SNL 413	Tape Applied	Cs-137, Sr-90	8.8 uCi		35 lbs.
	WE 94-065 (Vegetation)	2 plastic bags		COC # 6269	6268	(9.4 uCi/kg)		43 lbs.
(Shipper may describe package in detail on one of unused lines above)					TOTAL	101.94 uCi		110 lbs

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation, according to the applicable federal, state, local and international regulations for the transportation of hazardous materials.

Certifier's Signature	Date	Organization	Complete Cost Code (inc. and function)
[signature]	4/14/94	Sampling & Mobile Labs	12910 / PT2 WA

AREA MONITOR

Surface Dose Rate of Package: ☒ ≤ 0.5 or ___ mrem/hr (N + B γ)
Dose Rate at 1 Meter from Surface of Package: ☒ ≤ 0.5 or ___ mrem/hr (N + B γ)
Smears of Outer Container: ☒ ≤ 22 dpm β γ/cm² ☒ ≤ 2.2 dpm α/cm²
TRUCK LOAD OR INTERIOR USE: Surface: ☒ ≤ 200 mrem/hr (N + B γ) @ 6 feet: ☒ ≤ 10 mrem/hr (N + B γ) @ Cab or Sleeper: ☒ ≤ 2.0 mrem/hr (N + B γ)

Additional Data and Instructions (inc. Readings on Internal Packaging)
TOODAY DATE WHEN DONE

Signature - Radiation Monitoring: [signature] Bldg. 202-S Survey No. 91107711 Date 4-14-94

AUTHORIZATION FOR SHIPMENT

APPROVAL

AIR TRANSPORT CERTIFICATION: Cargo Only: ☐ Danger Labels Applied — Passenger: ☐ 1. Ltd. Qty. ☐ 3. Research or Medical Diagnosis ☐ 2. ≤ 3T.3 ☐ 4. Human Medical Research — N/A — Pkg. Dimensions: N/A

Traffic has inspected and verified preshipment compliance to DOT regulations.
Authorized Signature: Merrie C. Miller Printed Name: Merrie C. Miller Date: 4/14/94

APPROVED FOR OFFSITE SHIPMENT

TRAFFIC

B.L. No.	Date Shipped	E.T.A.	Routing	Placards
EMW 8595	4/14/94	4/14/94	Govt Vehicle - No B/L issued	☐ Yes ☒ No
Surveyed By	Seals	Approved for Shipment	Date	Route Plan
		Merrie C. Miller	4/14/94	☐ Yes ☒ No

PU-... 6992-491-866/00000 54-0000-000 (10/88)

AL 2173

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

Oils are Category I.
B0BKN8 and B0BP33 are cat. II.
B0BP32 is Cat. III. JKN 15 apr 94

Customer Code	Recieved Date	Recieved Time	Screening Prep Date	Screening Prep Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	BACKGROUND Beta	BACKGROUND Mnts
WHC			41494		414	10	7	59	60

	Customer ID WHC/SOIL	pH <2 Rcvd/Reiq	Pinchit Wght (mGrms)	Vol. Anal. mG mL	Sample Size Gm L	SMPLE CNT DATA Hldr Num.	Total Counts Alpha	Total Counts Beta	Net Sample Counts/Minute Alpha	Net Sample Counts/Minute Beta	DPM / Aliqout Alpha	DPM / Aliqout Beta	uCi per Sample Alpha	uCi per Sample Beta	2 Sigma Error uCi per Sample Alpha	2 Sigma Error uCi per Sample Beta	pCi/(Gm or L) Alpha	pCi/(Gm or L) Beta	Catagory 1 Yes/No	Aliquot to Cat 1 Gm or Ltr Alpha	Aliquot to Cat 1 Gm or Ltr Beta
II	B0BKN8		97.3	97	1300.0	50	11	517	0.98	50.72	7.5E+00	1.3E+02	4.5E-02	7.7E-01	4.4E-05	8.9E-05	3.5E+01	5.9E+02	No	2.9E+02	1.7E+02
	WHC/VEG												0.0E+00	0.0E+00							
III	B0BP32		76.6	77	1000.0	51	8	788	0.68	77.82	2.2E+00	1.9E+02	1.3E-02	1.1E+00	2.9E-05	7.0E-03	1.3E+01	1.1E+03	No	7.9E+02	9.0E+01
II	B0BP33		95.4	95	1050.0	52	5	471	0.38	46.12	1.4E+00	1.2E+02	6.9E-03	5.8E-01	2.1E-05	4.5E-03	6.6E+00	5.5E+02	No	1.5E+03	1.8E+02
	WHC/OIL												0.0E+00	0.0E+00							
I	94156-01.D12		6.5	7	200.0	53	0	12	-0.12	0.22	-5E-01	5.5E-01	-7E-03	7.6E-03	-1E-05	9.9E-06	-4E+01	3.8E+01	Yes	-3E+02	2.6E+03
I	94156-02.D12		8.9	9	200.0	54	3	10	0.18	0.02	8.2E-01	-9E-02	8.3E-03	-9E-04	1.3E-05	-3E-07	4.1E+01	-5E+00	Yes	2.4E+02	-2E+04
	TOTAL	uCi							-0.12	-0.98	-4E-01	-2E+00	6.8E-02	2.5E+00	ERR	ERR	ERR	ERR	No	ERR	ERR

0000012

SAMPLE STATUS REPORT FOR E 6315. E-BLANK BOBP32 TIME: 4/11/94 10:53
DISPATCHED: 4/ 4/94 11:54 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/ 6/94 7:47

EXT.	DETER.	RESULTS OR STATUS		OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********		***	***	******
1210	TB MISC	1.05000E 03 pCi/G		N	Y	VOGEL
1211	AT MISC	< 8.09000E-01 pCi/G		N	Y	VOGEL
2183	GEA-MISC	< 3.51000E 00 pCi/G	Cs-137	N	Y	VOGEL
4271	TOT-ACT	3.97560E 02 pCi/G		N	Y	VOGEL

END OF REPORT

200:

0.7 mr/hr contact, ungrounded
0.15 mr/hr " , metals
JRM 14 Apr 94

Beta Sr-90

1050 pCi/g × 4000 g = 4200000 pCi

4.2 mCi

Tr = .40 4200/1000 = .004 = 4000000 pCi

$$\frac{4200000}{40000000} = .0105$$

Jeff [illegible]

0000013

BEST AVAILABLE COPY

97135911.0015

POTENTIAL HAZARDS

HEALTH HAZARDS

Low-level radioactive material; little personal radiation hazard.
Many packages are not required to have radioactive materials labels or markings.
Some radioactive materials cannot be detected by commonly available instruments.

FIRE OR EXPLOSION

Some of these materials may burn, but none of them ignites readily.
Radioactivity does not change flammability or other properties of the materials.

EMERGENCY ACTION

Keep unnecessary people away; isolate hazard area and deny entry.
Response actions may be performed prior to any radiation measurements.
Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters' protective clothing will provide limited protection.
Notify Radiation Authority of accident conditions.
Detain uninjured persons, isolate equipment with suspected contamination, and delay cleanup until instruction of Radiation Authority.
[redacted] FOR EMERGENCY ASSISTANCE.
(509) 373-3800

FIRE

Do not move damaged containers; move undamaged containers out of fire zone.
Small Fires: Dry chemical, CO_2, water spray or regular foam.
Large Fires: Water spray, fog (flooding amounts).

SPILL OR LEAK

Do not touch damaged containers or spilled material.
Small Liquid Spills: Take up with sand, earth or other noncombustible absorbent material.
Cover powder spill with plastic sheet or tarp to minimize spreading.

FIRST AID

Use first aid treatment according to the nature of the injury.
Advise medical personnel that victim may be contaminated with low-level radioactive material.

RADIOACTIVE MATERIAL,
EXCEPTED PACKAGE - LIMITED QUANTITY
OF MATERIAL, 7, UN 2910

0000014

INTERNATIONAL TECHNOLOGY CORPORATION

CLR 121
Temp 2

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 340376
Page 1 of 1

Project Name/No. 1 SAF 94-065
Sample Team Members 2
Profit Center No. 3 4632
Project Manager 4 VAN PETTEY
Purchase Order No. 6
Required Report Date 11

Samples Shipment Date 7 4-15-94
Lab Destination 8 ST. LOUIS
Lab Contact 9
Project Contact/Phone 12
Carrier/Waybill No. 13

Bill to: 5 IT Richland
Report to: 10 IT Richland

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Pre-servative 19	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
40427601A	BOBP32/veg.	4/5 1045	plastic	500ml	Cool 4°C	metals - CLP TAL Tl, Hg	100% full	
					↑ SW		FOR LAB USE ONLY	
					amber glass - SW	04-16-94		
	JH 4/15/94							
							FOR LAB USE ONLY	

Special Instructions: 23 As per WHC Contract

Possible Hazard Identification: 24
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☒

Sample Disposal: 25
Return to Client ☒ Disposal by Lab ☐ Archive (mos.)

Turnaround Time Required: 26
Normal ☒ Rush ☐

QC Level: 27
I. ☐ II. ☐ III. ☐ Project Specific (specify): SDG W0032

1. Relinquished by 28 (Signature/Affiliation) Hedeberg JE	Date: 4/15/94 Time: 16:00	1. Received by 28 (Signature/Affiliation) Sue Anderson	Date: 04.16.94 Time: 0930
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: 29

0000015

MCA 3/15/91

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

INTERNATIONAL TECHNOLOGY CORPORATION

C.U.R. and C.O.C.
COPIED TO: W. Price
DATE: 04-16-94
TIME: 1230
BY: Sd

Work Order No.: 4908

Condition Upon Receipt Variance Report
ITAS - St. Louis Laboratory

~~Client:~~

Date: 04-16-94 0930

Project No: 579.04

Initiated by: Sue Anderson

Analysis Requested: Refer to RFA/COC

RFA/COC Numbers: 340376

Client Sample Numbers Affected: Entire Login

Condition/Variance (Check all that apply): Circle Number to Denote that Item was Evaluated. "NA" = "Not Applicable".

1. NA Not enough sample received for proper analysis.
   Received approximately: _____
2. ☐ Sample received broken/leaking.
3. ☑ Sample received without proper preservative.
   - ☐ Cooler temperature not within 4°C ± 2°C
     Record temperature: 2°
   - ☐ pH _____
   - ☐ other: _____
4. ☐ Sample received in improper container.
5. ☐ Sample received without proper paperwork. Explain: _____
6. ☐ Paperwork received without sample.
7. ☐ No sample ID on sample container.
8. ☑ Custody tape disturbed/broken/missing. on samples
9. NA Sample splits performed by lab.
10. NA Volatile sample received with approximately _____ mm headspace.
11. ☑ Sample ID on container does not match sample ID on paperwork. Explain:
    C-O-C ~~sample~~ reads 40427601A
    jar reads 40427601
12. ☐ All coolers on airbill not received with shipment.
13. ☐ Other (explain below):
    Shipping containers not rad surveyed.

Notes: _____

Corrective Action:

☐ Client's Name: _____ Informed verbally on: _____ By: _____

☐ Client's Name: _____ Informed in writing on: _____ By: _____

☐ Sample(s) processed "as is". Comments: _____

☐ Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor Review: (or designate) _____ Date: _____

Project Management Review: W. Price Date: 4/19/94

0000016

ITAS - St. Louis April 19, 1994 05:33 pm
Account: 10722 Project: 519.04 ITAS - Richland QAS No. 480 Rev. 0
Master Sample Login: 4908

Project Manager: W. Price

Draft: Final: Entered and Reviewed by: PM Review:

Sample Header Template:

Sample No. / Comments	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category Rad Sample No.
4908-001	B08P32	Solid	05-APR-94 10:45	14-APR-94 09:30	19-MAY-94	FED-EX	3 R2173-001
Metals - TAL + Titanium. Richland ID 4276014							

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-500ml	AS/CLP90/Q4	S	COLD	12-MAY-94	11-OCT-94	R1C	(74434:100)
1		HG/CLP90/Q4	S	COLD	12-MAY-94	10-MAY-94	R1C	(74434:100)
1		ICAP/CLP90/Q4	S	COLD	12-MAY-94	11-OCT-94	R1C	(74434:100)
1		PB/CLP90/Q4	S	COLD	12-MAY-94	11-OCT-94	R1C	(74434:100)
1		SE/CLP90/Q4	S	COLD	12-MAY-94	11-OCT-94	R1C	(74434:100)
1		TL/CLP90/Q4	S	COLD	12-MAY-94	11-OCT-94	R1C	(74434:100)

Sample No. / Comments	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category Rad Sample No.
4908-001DUP	B08P32	Solid	05-APR-94 10:45	14-APR-94 09:30	19-MAY-94	FED-EX	3 R2173-001
Metals - TAL + Titanium. Richland ID 4276014							

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-500ml	AS/CLP90/Q4	S	COLD	12-MAY-94	11-OCT-94	R1C	(74434:100)
1		HG/CLP90/Q4	S	COLD	12-MAY-94	10-MAY-94	R1C	(74434:100)
1		ICAP/CLP90/Q4	S	COLD	12-MAY-94	11-OCT-94	R1C	(74434:100)
1		PB/CLP90/Q4	S	COLD	12-MAY-94	11-OCT-94	R1C	(74434:100)
1		SE/CLP90/Q4	S	COLD	12-MAY-94	11-OCT-94	R1C	(74434:100)
1		TL/CLP90/Q4	S	COLD	12-MAY-94	11-OCT-94	R1C	(74434:100)

Sample No. / Comments	Client ID	C-Matrix	Date: Collected	Received	Due	Shipper	Rad Category Rad Sample No.
4908-001MS	B08P32	Solid	05-APR-94 10:45	14-APR-94 09:30	19-MAY-94	FED-EX	3 R2173-001
Metals - TAL + Titanium. Richland ID 4276014							

#	Container Type	Analysis	Class	Preservative	Anal. Due Date	Hold Date	Site	(Container Numbers:% Filled)
1	AN - Amber Glass-500ml	AS/CLP90/Q4	S	COLD	12-MAY-94	11-OCT-94	R1C	(74434:100)
1		HG/CLP90/Q4	S	COLD	12-MAY-94	10-MAY-94	R1C	(74434:100)
1		ICAP/CLP90/Q4	S	COLD	12-MAY-94	11-OCT-94	R1C	(74434:100)
1		PB/CLP90/Q4	S	COLD	12-MAY-94	11-OCT-94	R1C	(74434:100)
1		SE/CLP90/Q4	S	COLD	12-MAY-94	11-OCT-94	R1C	(74434:100)
1		TL/CLP90/Q4	S	COLD	12-MAY-94	11-OCT-94	R1C	(74434:100)

3*=Sample has not been rad screened.

0000017

9713511.0018

9/35616019

U.S. EPA - CLP

1
INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0BP32

Lab Name: ITAS_ST._LOUIS_____ Contract: 519.04____
Lab Code: ITMO___ Case No.:_____ SAS No.:_____ SDG No.: W0032_____
Matrix (soil/water): SOIL_ Lab Sample ID: 4908-001
Level (low/med): LOW__ Date Received: 04/14/94
% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	124		*	P
7440-36-0	Antimony_	5.0	U		P
7440-38-2	Arsenic__	0.14	U		F
7440-39-3	Barium___	32.0	B		P
7440-41-7	Beryllium	0.06	B		P
7440-43-9	Cadmium__	0.44	B		P
7440-70-2	Calcium__	20700			P
7440-47-3	Chromium_	0.84	U		P
7440-48-4	Cobalt___	0.84	U		P
7440-50-8	Copper___	7.9			P
7439-89-6	Iron____	359		*	P
7439-92-1	Lead____	0.46	B	*	F
7439-95-4	Magnesium	4210		*	P
7439-96-5	Manganese	27.5			P
7439-97-6	Mercury__	0.05	U		CV
7440-02-0	Nickel___	3.7	U		P
7440-09-7	Potassium	8790			P
7782-49-2	Selenium_	0.36	U	W	F
7440-22-4	Silver___	0.74	U		P
7440-23-5	Sodium___	245	B		P
7440-28-0	Thallium_	0.14	U		F
7440-62-2	Vanadium_	3.1	B		P
7440-66-6	Zinc____	18.5		E*	P
7440-32-6	Titanium_	23.2		N*	P

Color Before: BROWN____ Clarity Before: _____ Texture: MEDIUM
Color After: YELLOW___ Clarity After: _____ Artifacts: _____

Comments:

0000026

9713511.0020

INTERNATIONAL TECHNOLOGY CORPORATION

JUN 1994 RECEIVED SDLA

June 1, 1994

J. A. Lerch
Buyer's Technical Representative
Westinghouse Hanford Company
P.O. Box 1970
2355 Stevens Drive
Richland, WA 99352

Reference: Contract MPV-SVV-239000.

Dear Mr. Lerch:

Accompanying this letter is the Data Package Deliverable and the Diskette Deliverable for Radiochemical analyses on the following WHC sample:

SDG NUMBER	SAF NUMBER	WHC ID NUMBER	ITAS-RICHLAND ID NUMBER
W0032	94-065	BOBP32	40427701

If you have any questions regarding this data package or require any additional information please contact me at 375-3131.

Sincerely,

Van H. Pettey
Project Manager

Receipt of this letter and package are acknowledged by:

Doris E. Ayres	June 1, 1994	4:45 p.m.
Name	Date	Time

XC: Rebecca Cartwright
Jim Harvey
Wade Price/Sheree' Schneider
File

Regional Office
2800 George Washington Way • Richland, Washington 99352-1613 • 509-375-3131 • FAX: 509-375-5590

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9713511.0021

INTERNATIONAL TECHNOLOGY CORPORATION

RECORD COPY

JUN 1994
RECEIVED
SDLA

Analytical Data Package Prepared For

Westinghouse Hanford

Radiochemical Analysis By

IT Analytical Services
Richland Laboratory

Sample Delivery Group Number: W0032

WHC IDENTIFICATION NUMBER	ITAS RICHLAND ID NUMBER
BOBP32	40427701

Regional Office
2800 George Washington Way • Richland, Washington 99352-1613 • 509-375-3131 • FAX: 509-375-5590

IT Corporation is a wholly owned subsidiary of International Technology Corporation

INTERNATIONAL TECHNOLOGY CORPORATION

CERTIFICATE OF ANALYSIS

Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

June 1, 1994

Attention: J.A.Lerch

SAF Number	:	94-065
Date SDG Closed	:	April 28, 1994
Number of Samples	:	One (1)
Sample Type	:	Vegetation
SDG Number	:	W0032
Data Deliverable	:	Stand Alone

I. Introduction

On April 14, 1994, one vegetation sample was received by ITAS-Richland for radiochemical analysis. Upon receipt, the sample was assigned the following laboratory ID number to correspond with the WHC specific ID:

ITAS-Richland ID	WHC ID	Matrix	Date of Receipt
404277-01A	B0BP32	Vegetation	4/14/94

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were:

Alpha Spectroscopy
Americium-241, Curium-244 by method ITAS-RD-3302
Neptunium-237 by method ITAS-RD-3208
Plutonium-238, 239/40 by method ITAS-RD-3209
Uranium-234, 235, 238 by method ITAS-RD-3234
Gamma Spectroscopy
Gamma Scan by method ITAS-RD-3219
Iodine-129 by method ITAS-RD-3219
Gas Proportional Counting
Gross Alpha by method ITAS-RD-3222
Gross Beta by method ITAS-RD-3222
Strontium-90 by method ITAS-RD-3204
Liquid Scintillation Counting
Selenium-79 by method ITAS-RD-3253
Technetium-99 by method ITAS-IT-RS-0001
Total Uranium
Total Uranium by method ITAS-RD-4200

III. Quality Control

The analytical results for each analysis performed under SDG W0032 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate.

Quality control sample results are reported in the same units as sample results except for gross alpha and gross beta quality control sample results which are reported in pCi/sample.

IV. Comments

The initial radioactivity screening of the sample classified it as Category III.

Alpha Spectroscopy

Americium-241, Curium-244 by method ITAS-RD-3302
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BP32) results are within contractual requirements.

Neptunium-237 by method ITAS-RD-3208
The batch was reanalyzed due to low matrix spike recoveries (37.6% and 17.0%). The reanalysis verified the original analysis within 3 sigma and also exhibited low matrix spike recoveries, verifying a matrix effect. The original data are accepted and reported. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BP32) results are within contractual requirements.

Plutonium-238, 239/40 by method ITAS-RD-3209
Due to a technician error, plutonium was not eluted from the column during the initial preparation of the sample batch and the batch was reanalyzed. The reanalysis batch was acceptable with the exception of the reanalysis LCS. The reanalysis LCS was unacceptable due to a tracer yield of less than the 20% lower limit. The batch was reanalyzed a second time. The second reanalysis results are within 3 sigma of the first reanalysis. The LCS, batch blank, and sample results are within contractual requirements. A duplicate of sample B0BP32 was not analyzed with the second reanalysis, however, the first reanalysis duplicate is within 3 sigma of the first and second analysis of sample B0BP32, therefore, the first reanalysis duplicate is accepted and reported.

Uranium-234, 235, 238 by method ITAS-RD-3234
The initial analysis of the samples was rejected due to tracer yields of less than 30% for the batch blank, sample B0BP32, and the duplicate of sample B0BP32. The reanalysis results are acceptable and reported. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BP32) results are within contractual requirements.

Gamma Spectroscopy

Gamma Scan by method ITAS-RD-3219
Due to the high activity noted in the screening of the sample, a 200 ml geometry was used for counting rather than a Marinelli beaker. The batch was counted for 200 minutes and the detection limits were not met for several isotopes and the sample and sample duplicate were outside of the 3 sigma control limit for some isotopes. The batch was recounted for 600 minutes with unacceptable results, and recounted again for 1000 minutes. The 1000 minute counts are acceptable. The LCS, batch blank, matrix spike, sample and sample duplicate are within the contractual requirements.

Iodine-129 by method ITAS-RD-3219
The detection limit was not met for sample B0BP32 and the duplicate of B0BP32 due to matrix interference. The blank meets the MDA for I-129 and the sample and its duplicate exhibit the same effect which verifies that the interference is a matrix effect without necessitating a reanalysis of the sample batch. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BP32) results are accepted and reported.

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BP32) results meet contractual requirements.

Gross Beta by method ITAS-RD-3222
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BP32) results meet contractual requirements.

Strontium-90 by method ITAS-RD-3204
The original analysis failed due to low chemical yields. The low yields are attributed to a matrix effect caused by sulfate present in the vegetation matrix. The effects of the sulfate on the chemical yields were reduced by extending the metathesis of the sample batch during the reanalysis. The reanalysis is accepted and reported. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BP32) results meet contractual requirements.

Liquid Scintillation Counting

Selenium-79 by method ITAS-RD-3253
Two matrix spikes were analyzed and their average chemical yield is used for the batch yield corrections. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BP32) results are within contractual requirements.

Technetium-99 by method ITAS-IT-RS-0001
The initial analysis of the sample batch failed due to excessive quench. An error in sample batching caused the reanalysis of sample B0BP32 to be batched with SDGs W0022 and W0033. The LCS, matrix spikes, batch blank, sample and sample duplicate (duplicate of sample B0BP32) results associated with this batch are acceptable and reported. The sample results were not yield corrected by the matrix spike recoveries.

Total Uranium

Total Uranium by method ITAS-RD-4200
The batch was reanalyzed due to low matrix spike recoveries (32.0% and 49.6%). The reanalysis of the batch is acceptable and reported. Two matrix spikes were analyzed with the batch and their average yield is used for yield correcting the sample results. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BP32) results meet contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:

Suzanne Gaines

Suzanne Gaines
Project Manager

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0032
LAB SAMPLE ID: 40427701
MATRIX: VEGETATION
WHC ID: B0BP32
DATE RECEIVED: 4/14/94
REPORTING UNITS: pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	YIELD	METHOD NUMBER
AM-241	-3.92E-03	3.92E-03	4.01E-03	0.298	RD3302
CM-242	-1.18E-03	2.35E-03	2.37E-03	0.298	RD3302
CM-244	-9.83E-04	1.97E-03	1.98E-03	0.298	RD3302
NP-237	0.00E+00	0.00E+00	0.00E+00	1	RD3208
PU239/40	4.77E-03	9.55E-03	9.57E-03	0.839	RD3209
PU-238	-1.91E-03	2.70E-03	2.72E-03	0.839	RD3209
U-234	1.27E-01	5.09E-02	5.34E-02	0.757	RD3234
U-235	1.38E-02	1.73E-02	1.74E-02	0.757	RD3234
U-238DA	1.28E-01	5.08E-02	5.34E-02	0.757	RD3234
K-40	1.04E+01	5.32E-01	1.17E+00	N/A	RD3219
CO-60	2.33E-03	1.19E-02	1.19E-02	N/A	RD3219
EU-152	1.43E-02	4.93E-02	4.93E-02	N/A	RD3219
CS-137DA	4.15E-01	2.96E-02	5.10E-02	N/A	RD3219
CS-134	-6.68E-04	1.14E-02	1.14E-02	N/A	RD3219
RU-106DA	3.45E-02	1.10E-01	1.11E-01	N/A	RD3219
RA-224DA	5.29E-02	3.89E-02	3.92E-02	N/A	RD3219
NA-22	-5.66E-03	1.35E-02	1.35E-02	N/A	RD3219
EU-155	1.01E-02	6.86E-02	6.86E-02	N/A	RD3219
EU-154	-8.38E-03	3.71E-02	3.71E-02	N/A	RD3219
BE-7	1.23E+00	2.86E-01	3.11E-01	N/A	RD3219
TL-208	2.56E-02	1.95E-02	1.96E-02	N/A	RD3219
PB-212	5.04E-02	3.71E-02	3.74E-02	N/A	RD3219
TH-232DA	1.66E-01	6.63E-02	6.83E-02	N/A	RD3219
I-129LP	1.54E+00	1.67E+00	1.68E+00	N/A	RD3219
ALPHA	2.44E+00	2.82E+00	2.84E+00	1	RD3222
BETA	1.81E+03	2.75E+01	1.22E+02	1	RD3222
TOTAL-SR	3.60E+02	2.28E+00	8.53E+01	0.714	RD3204
SE-79	-2.17E-01	6.30E-01	1.71E+00	0.651	RD3253
TC-99	3.00E+01	7.01E-01	3.99E+00	0.951	ITAS-IT-RD-0001
URANIUM	3.25E-01	N/A	4.88E-02	0.774	RD4200

682A-6-93

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006268

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS STAND Alone Deliverable
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
404276 01 BOBP32	V	4-5-94	1045	(1) 500 ml P	Metals -CLP TAL Titanium Mercury RR EPL CLP	4-6-94
BOBP32 40427701	V	4-5-94	1045	(1) Plastic Bag	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-14-94	1500	4-14-94 15:00

*Matrix
A = Air
DL = Drum Liquids
DS = Drum Solids
L = Liquid
O = Oil
S = Soil
SE = Sediment
SL = Sludge
SO = Solid
T = Tissue
W = Water
WI = Wipe
X = Other

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

0047

SAMPLE STATUS REPORT FOR E 6315. E-BLANK BOBP32 TIME: 4/11/94 10:53
DISPATCHED: 4/ 4/94 11:54 SAMPLE HAS NOT BEEN SLURPED
RECEIVED: 4/ 6/94 7:47

EXT.	DETER.	RESULTS OR STATUS		OUT OF RANGE?	GOOD ANS?	CHARGE CODE
****	********	**********		***	***	******
1210	TB MISC	1.05000E 03 pCi/G		N	Y	VOGEL
1211	AT MISC	< 8.09000E-01 pCi/G		N	Y	VOGEL
2183	GEA-MISC	< 3.51000E 00 pCi/G	Cs-137	N	Y	VOGEL
4271	TOT-ACT	3.97560E 02 pCi/G		N	Y	VOGEL

END OF REPORT

4000g

0.7 mr/hr contact, unground
0.15 mr/hr " , metals
gkm 14 Apr 94

Beta Sr-90

1050 pCi/g x 4000g = 4200000 pCi

4.2 uCi

Az = .4Ci Az/1000 = .004 = 400000000 pCi

$$\frac{4200000}{40000000} = .0105$$

Vegetation

9713511.0049

INTERNATIONAL TECHNOLOGY CORPORATION

Regional Office
2800 George Washington Way
Richland, Washington 99352

SAMPLE CHECK-IN LIST

(1 Per Shipping Container)

Date/Time Received 4-14-94 15:00 Client Name WHC

Project/Client # 94-065 Batch or Case # 006268

Cooler ID (if noted on the outside of cooler) GWS-127

1. Condition of shipping container? O.K.
2. Custody Seals on cooler intact? Yes ☑ No ☐
3. Custody Seals dated and signed? Yes ☑ No ☐
4. Chain of Custody record is taped on inside of cooler lid? Yes ☑ No ☐
5. Vermiculite/packing material is: Wet ☐ Dry ☑
6. Each sample is in a plastic bag? Yes ☑ No ☐
7. Number of sample containers in cooler: 2
8. Samples have: ✓ tape ✓ hazard labels
   ✓ custody seals ____ appropriate sample labels
9. Samples are: ✓ in good condition ____ leaking
   ____ broken ____ have air bubbles
   ____ other
10. Coolant present? Yes ☑ No ☐
    Sample temperature 4°C
11. The following paperwork should be accounted for (N/A if not applicable):
    Chain of Custody #'(s) 006268
    Request for analysis #(s) N/A
    Airbill # N/A Carrier N/A
12. Have any anomalies been identified above? Yes ☐ No ☑
13. Memos have been initiated for all anomalies identified above? Yes ☑

Printed Name/Signature Karen Hettinburg Date/Time 4-14-94 15:00

FORM NO. LS-042, Rev.0, 2/94

TENNELEC #1

SCREENING CALCULATION SPREADSHEET

Oils are Category I.
B0BKN8 and B0BP33 are cat. II.
B0BP32 is Cat. III. JKN 25 apr 94

Customer Code	Recieved Date	Time	Screening Prep Date	Time	Count Date	Mnts. Cntd	BACKGROUND Alpha	Beta	Mnts
WHC			41494		414	10	7	59	60

	Customer ID WHC/SOIL	pH <2 Rcvd/Req	Pincht Wght (mGrms)	Vol. Anal. mG mL	Sample Size Gm L	SMPLE CNT DATA Hldr Num.	Total Alpha	Counts Beta	Net Sample Counts/Minute Alpha	Beta	DPM / Aliqout Alpha	Beta	uCi per Sample Alpha	Beta	2 Sigma Error uCi per Sample Alpha	Beta	pCi/(Gm or L) Alpha	Beta	Catagory 1 Yes/No	Aliquot to Cat 1 Gm or Ltr Alpha	Beta
II	B0BKN8		97.3	97	1300.0	50	11	517	0.98	50.72	7.5E+00	1.3E+02	4.5E-02	7.7E-01	4.4E-05	8.9E-05	3.5E+01	5.9E+02	No	2.9E+02	1.7E+02
	WHC/VEG												0.0E+00	0.0E+00							
III	B0BP32		78.6	77	1000.0	51	8	788	0.68	77.82	2.2E+00	1.9E+02	1.3E-02	1.1E+00	2.9E-05	7.0E-03	1.3E+01	1.1E+03	No	7.9E+02	9.0E+01
II	B0BP33		95.4	95	1050.0	52	5	471	0.38	46.12	1.4E+00	1.2E+02	8.9E-03	5.8E-01	2.1E-05	4.5E-03	6.6E+00	5.5E+02	No	1.5E+03	1.8E+02
	WHC/OIL												0.0E+00	0.0E+00							
I	94158-01.D12		6.5	7	200.0	53	0	12	-0.12	0.22	-5E-01	5.5E-01	-7E-03	7.6E-03	-1E-05	9.9E-06	-4E+01	3.8E+01	Yes	-3E+02	2.6E+03
I	94158-02.D12		8.9	9	200.0	54	3	10	0.18	0.02	8.2E-01	-9E-02	8.3E-03	-9E-04	1.3E-05	-3E-07	4.1E+01	-5E+00	Yes	2.4E+02	-2E+04
	TOTAL	uCi							-0.12	-0.98	-4E-01	-2E+00	8.6E-02	2.5E+00	ERR	ERR	ERR	ERR	No	ERR	ERR

0030

5/16/94

9713511.0032 *** AM/CMISO ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF 94-065

SAMPLE DELIVERY GROUP W0032

MATRIX : ~~OTHER~~ TH 4/16/94 Vegetation

BATCH NUMBER 4-277

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0427701B				
	L0427701S				
1)	40427701		WHC	BOBP32	
	F0427701-DUP				

ACTIONS (Initial & Date)

INITIATED JH 4/16/94

PREP LAB RECEIVED 5/9/94 JH

SAMPLE REMAINDER STORED 5/9/94 AR

SEPARATION LAB RECEIVED 5/16/94 AR

oxalates formed 5/14/94 JMH

5) COUNTING/MEASUREMENT LAB DD 5/18/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED RG 5/20/94

5.18.94

0051

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE 5/20/94

REANALYSIS / RECOUNT

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS Am

NAME/DATE MTK / 5-17-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0032

MATRIX Veg

BATCH NUMBER

ITAS ID	CUSTOMER ID	COMMENTS
1) 404277 01		2.05
2) F0427701		2.03
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC L0427728

ITAS ID - BLANK ~~L0427272~~ MTK 5-17-94

ITAS ID - SPIKE L0427725

CLIENT CODE

ACTIONS (Initial & Date)

PREP LAB RECEIVED

SAMPLE REMAINDER RETURNED TO SCG ☐ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB 5/20/94 JP

COUNTING/MEASUREMENT 5/27/94 MD

DATA REVIEWED CB for MMK 5/23/94

ANALYTICAL PREP STORED

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT

DATA REVIEWED

ANALYTICAL PREP STORED

ADDITIONAL COMMENTS: MTK 5-17-94

5-21-94

Do not use this data 5-23-94 MMK

RC-048 12/92 REV 2

9215511.0050

*** NP-237 ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF 94-065

SAMPLE DELIVERY GROUP W0032

MATRIX : OTHER Vegetation

BATCH NUMBER 4-277

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L04277 B, W04277701				
	L04277 S, W04277				
1)	40427701		WHC	B0BP32	
	F0427701-01				

ACTIONS (Initial & Date)

1) INITIATED JH 4/16/94

2) PREP LAB RECEIVED 5/5/94 [illegible]

3) SAMPLE REMAINDER STORED 5/5/94 [illegible]

4) SEPARATION LAB RECEIVED 5/12/94 [illegible]

5) COUNTING/MEASUREMENT LAB SK 5-19-94

6) DATA REVIEWED AND ANALYTICAL PREP STORED [illegible] 5-23-94

[illegible] 5-23-94 [illegible]

5-23-94 [illegible]

C.RP 5.18.94 [illegible]

9216551.0035

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE 5-20-94

REANALYSIS / RECOUNT
CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS NP

NAME/DATE TK / 5-23-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0032

MATRIX Vegetation

BATCH NUMBER

ITAS ID	CUSTOMER ID	COMMENTS
1) ~~402~~ TK 5-23-94		
2) 404/27701		2.16g
3) F0427701		2.06
4) W0427701		1.98
5) W0427710		2.08
6)		
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC

ITAS ID - BLANK L0427912B 7 TK 5-23-94

ITAS ID - SPIKE L0427925 TK 5-23-94 7

CLIENT CODE WHC

ACTIONS (Initial & Date)

PREP LAB RECEIVED 5/23/94 TK

SAMPLE REMAINDER RETURNED TO SCG TK ☒ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB DRM 5/24/94

COUNTING/MEASUREMENT AS 5/26/94

DATA REVIEWED MMM 5-27-94

ANALYTICAL PREP STORED MMM 5-27-94

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT

DATA REVIEWED

ANALYTICAL PREP STORED

ADDITIONAL COMMENTS:

TK 5-23-94

COPY 5.26.94 TK

RC-048 12/92 REV 2

0054

9713511.0036

5/10/94

*** PUISO ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF 94-065 SAMPLE DELIVERY GROUP W0032

MATRIX : OTHER Vegetation BATCH NUMBER 4-277

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0427718				
	L0427715				
1)	40427701		WHC	B0BP32	
	F0427701-01				

ACTIONS (Initial & Date)

INITIATED JH 4/16/94

PREP LAB RECEIVED 5/9/94 GH

SAMPLE REMAINDER STORED 5/9/94 GH

SEPARATION LAB RECEIVED 5/14/94 JH

oxalates 5/14/94 JMH

5) COUNTING/MEASUREMENT LAB

6) DATA REVIEWED AND ANALYTICAL PREP STORED MMM 5-23-94

Rerun

0055

9713511.0056

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE 5/20/94

REANALYSIS / RECOUNT

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS Pu

NAME/DATE [illegible] / 5-17-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP WC032

MATRIX [illegible]

BATCH NUMBER

ITAS ID	CUSTOMER ID	COMMENTS
1) 404277 01		2.05
2) ~~404279 01~~	MR 5-17-94	
3) F04277 01		2.03
4)		
5)		
6)		
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC MR 5-17-94

ITAS ID - BLANK L404277 2B

ITAS ID - SPIKE L04277 2S

CLIENT CODE WHC

ACTIONS (Initial & Date)

PREP LAB RECEIVED [illegible] 5.18.94

SAMPLE REMAINDER RETURNED TO SCG [illegible] ☒ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB [illegible] 5-19-94

COUNTING/MEASUREMENT [illegible] 5/19/94

DATA REVIEWED [illegible] 5-23-94

ANALYTICAL PREP STORED [illegible] 5-23-94

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT [illegible] 5-19-94

DATA REVIEWED

ANALYTICAL PREP STORED

ADDITIONAL COMMENTS: MR 5-17-94

EP 5.19.94

RC-048 12/92 REV 2

9214551.0038

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE _____

REANALYSIS / RECOUNT

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS Pu

NAME/DATE mmn / 5-23-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0032

MATRIX veg

BATCH NUMBER _____

ITAS ID	CUSTOMER ID	COMMENTS
1) 40427701		2.0g
2)		
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC

ITAS ID - BLANK 404277 3B

ITAS ID - SPIKE 404277 3S

CLIENT CODE WHC

ACTIONS (Initial & Date)

PREP LAB RECEIVED jk 5/23/94

SAMPLE REMAINDER RETURNED TO SCG N ☐ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB 5/24/94 Em

COUNTING/MEASUREMENT AS 5/26/94

DATA REVIEWED mmn 5-26-94

ANALYTICAL PREP STORED mmn 5-26-94

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT _____

DATA REVIEWED _____

ANALYTICAL PREP STORED _____

ADDITIONAL COMMENTS:

ED-5-25-94 Pu

RC-048 12/92 REV 2

9213511.003 *** UISO ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF 94-068 SAMPLE DELIVERY GROUP W0032

MATRIX : OTHER Vegetation BATCH NUMBER 4-277

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L04277, B ✓				
	L04277, S ✓				
1)	40427701		WHC	B0BP32	
	F0427701-DUP				

ACTIONS (Initial & Date)

) INITIATED JH 4/16/94

) PREP LAB RECEIVED 5/9/94 [illegible]

) SAMPLE REMAINDER STORED 5/9/94 [illegible]

SEPARATION LAB RECEIVED 5/12/94 [illegible]

5) COUNTING/MEASUREMENT LAB [illegible] 5/18/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED [illegible] 5-20-94

[illegible] 5-17-94

[illegible] 5-10-94

Use Recon data
SCG 5/30/94

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE 5-20

REANALYSIS / RECOUNT

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS Uiso

NAME/DATE mmk / 5-20-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0032

MATRIX veg

BATCH NUMBER

ITAS ID	CUSTOMER ID	COMMENTS
1) 40427701		2.21
2) F 01		2.10
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC

ITAS ID - BLANK 042772 B

ITAS ID - SPIKE 772 S

CLIENT CODE WHC

ACTIONS (Initial & Date)

PREP LAB RECEIVED 5-20-94 [illegible]

SAMPLE REMAINDER RETURNED TO SCG ☑ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB 5/23/94 [illegible]

COUNTING/MEASUREMENT AS 5/26/94

DATA REVIEWED mmk 5-27-94

ANALYTICAL PREP STORED mmk 5-27-94

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT

DATA REVIEWED

ANALYTICAL PREP STORED

ADDITIONAL COMMENTS:

RC-048 12/92 REV 2

9713511.0041 *** GAMMA ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF 94-065

SAMPLE DELIVERY GROUP W0032

MATRIX : OTHER Vegetation

BATCH NUMBER 4-277

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L04277IB				
	L04277IS				
1)	40427701		WHC	BOBP32	
	E0427701	DUP			

ACTIONS (Initial & Date)

) INITIATED JH 4/6/94

) PREP LAB RECEIVED JN 4-27-94

) SAMPLE REMAINDER STORED JN 5-9-94

) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB GK 5-9-94

6) DATA REVIEWED AND ANALYTICAL PREP STORED MK 5-22-94

0060

827

9716511.0042

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE 5/23/94

REANALYSIS / RECOUNT

~~CHAIN-OF-CUSTODY~~ BATCH ANALYSIS RECORD

ANALYSIS Gamma

NAME/DATE JK / 5-23-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0032

MATRIX Vegetation

BATCH NUMBER

ITAS ID	CUSTOMER ID	COMMENTS
1) 40427701		
2) F0427701		
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC

ITAS ID - BLANK L0427 71X CAL 827

ITAS ID - SPIKE L0427 71M CAL 816

CLIENT CODE

ACTIONS (Initial & Date)

PREP LAB RECEIVED JN 5-23-94

SAMPLE REMAINDER RETURNED TO SCG ☑ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB NA

COUNTING/MEASUREMENT RVM 5/25/94 FOR KC 5/23/94 NA RVM 5/25/94

DATA REVIEWED JK 5-25-94

ANALYTICAL PREP STORED JK 5-25-94

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT ~~KCS 5-23-94~~ 5/25/94

DATA REVIEWED

ANALYTICAL PREP STORED

ADDITIONAL COMMENTS:

RC-048 12/92 REV 2

9715511.0065 *** I-129LP ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF

SAMPLE DELIVERY GROUP W0032

MATRIX : OTHER 94-065
Vegetation

BATCH NUMBER 4-277

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0427715				
	L0427715 EQZKOIL			1002.5 ± 11.899	
1)	40427701		WHC	B0BP32	
	E0427701L		PUP		

ACTIONS (Initial & Date)

) INITIATED JH 4/16/94

) PREP LAB RECEIVED JN 4-27-94

) SAMPLE REMAINDER STORED JN 5-9-94

) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB SK 5-9-94

6) DATA REVIEWED AND ANALYTICAL PREP STORED JK 5-19-94

00062

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF 94-065

SAMPLE DELIVERY GROUP W0032

MATRIX : ~~OTHER~~ TH 4/16/94 Vegetation

BATCH NUMBER 4-277

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0427713				
	L0427715		EQEG 202		10.018 ± .096069
1)	40427701		WHC	BOBF32	
	F0427701	DUP			

ACTIONS (Initial & Date)

) INITIATED JH 4/16/94

) PREP LAB RECEIVED JN 4-27-94

) SAMPLE REMAINDER STORED JN 5-6-94

) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB OD 5/10/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED JK 5-12-94

9413511.0045

*** BETA ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF

SAMPLE DELIVERY GROUP W0032

MATRIX : ~~OTHER~~ TH 4/16/94 94-005 vegetation

BATCH NUMBER 4-277

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0427718				
	L0427715	EQBA045		25.096 ± .35405	
1)	40427701		WHC	B0BP32	
	F0427701	DUP			

ACTIONS (Initial & Date)

1) INITIATED TH 4/16/94

2) PREP LAB RECEIVED JN 4-27-94

3) SAMPLE REMAINDER STORED JN

4) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB OD 5/10/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED JK 5-12-94

0064

JK 6/13

*** TOTAL-SR ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF 94-065 SAMPLE DELIVERY GROUP W0032

MATRIX : OTHER Vegetation BATCH NUMBER 4-277

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L04277 1 B				
	L04277 1 S				
1)	40427701		WHC	B0BP32	
	F04277 01 - DUP				

ACTIONS (Initial & Date)

) INITIATED JH 4/16/94

) PREP LAB RECEIVED 5/9/94 [illegible]

) SAMPLE REMAINDER STORED 5/9/94 [illegible]

) SEPARATION LAB RECEIVED 5/9/94 [illegible]

5) COUNTING/MEASUREMENT LAB OD 19 May 94

6) DATA REVIEWED AND ANALYTICAL PREP STORED SEB 5/31/94

Reanalyze NCM

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE _____

REANALYSIS / RECOUNT

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS Sr-90 J

NAME/DATE GTR / 5/26

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0032

MATRIX Veg

BATCH NUMBER _____

ITAS ID	CUSTOMER ID	COMMENTS
1) 40427701		6.06
2) F0427701		3.56
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC

ITAS ID - BLANK L042772B

ITAS ID - SPIKE L042772S

EQGF008 : 50.992 ± 1.641 DPM

CLIENT CODE _____

ACTIONS (Initial & Date)

PREP LAB RECEIVED GTR 5/25/94

SAMPLE REMAINDER RETURNED TO SCG _____ ☐ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB 5/25/94

COUNTING/MEASUREMENT KCS-26-94

DATA REVIEWED GTR 5/31/94

ANALYTICAL PREP STORED GT 5/31/94

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT KCS-26-94

DATA REVIEWED _____

ANALYTICAL PREP STORED _____

ADDITIONAL COMMENTS:

RC-048 12/92 REV 2

9215L.004B

*** SE-79 ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF 94-005 SAMPLE DELIVERY GROUP W0032

MATRIX : OTHER Vegetation BATCH NUMBER 4-277

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0427701B	L0427701			
	L0427701S	~~P0427701~~ 5/19/94			
1)	40427701	W0427702	WHC	BOBP32	
	P0427701-DUP				

ACTIONS (Initial & Date)

1) INITIATED JH 4/16/94

2) PREP LAB RECEIVED 5/5/94

3) SAMPLE REMAINDER STORED 5/5/94

4) SEPARATION LAB RECEIVED 5-16-94 Susan

5) COUNTING/MEASUREMENT LAB 5/18/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED 5/20/94

BATCH SUMMARY/CHAIN OF CUSTODY

ANALYSIS Tc-99 MATRIX Veg. DUE DATE _____

WC032 & WC033

WORK ORDER	SEQUENCE #	CLIENT	COMMENTS
L 04277	-1B	WHC	QC BATCH REAGENT BLANK
L 04277	-1X		QC BATCH MATRIX BLANK
L 04277	-1M or 1S (circle)		QC BATCH MATRIX/REAGENT SPIKE
L 04277 L 04277	-2M or 2S (circle) 3 M		QC BATCH MATRIX/REAGENT SPIKE
F 0427701 F 0427901	-		Duplicate of Sample # 40427701 40427901
	-		
40427701	- 01		WC032
40427901	- 01		WC033
	-		
	-		
	-		
	-		
	-		
	-		
	-		
	-		
	-		

Batched and QC updated by MM on 5/18/94 Rec'd in C.R. by SK on 5-18-94

Rec'd in Prep Lab by MM on 5/10/94 Data Reviewed and anal. Prep stored [illegible] on 5/24/94

Rec'd in Sep Lab by MM on 5/10/94

Rec'd in Sep lab by NA on NA Samples Disposed by _____ on _____

Original batch sheet and complete calculation file to be filed with the FIRST listed work order number.

FORM NO.: RC-52, 1/94, Rev. 4

*** TC-99 ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF 94-065 SAMPLE DELIVERY GROUP W0032

MATRIX : OTHER Vegetation BATCH NUMBER 4-277

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0427718		L0427752M	L0427718	L0427713N
	L0427718		L0427753M	~~HOL~~ 5/18/94	L0427724N
1)	40427701		WHC	BOBP32	

ACTIONS (Initial & Date)

1) INITIATED JH 4/16/94

2) PREP LAB RECEIVED JN 4-27-94

3) SAMPLE REMAINDER STORED JN 5-6-94

4) SEPARATION LAB RECEIVED TM 5-10-94

5) COUNTING/MEASUREMENT LAB OD 5/18/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED

9214511.0051

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE _____

REANALYSIS / RECOUNT
~~CHAIN-OF-CUSTODY~~ BATCH ANALYSIS RECORD

ANALYSIS Tc-99

NAME/DATE GE / 5/25/94

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0032 & W0033 & W0032

MATRIX veg.

BATCH NUMBER _____

ITAS ID	CUSTOMER ID	COMMENTS
1) L042771N	F0427701 W0032	
2) L042772N	40427901 W0033	
3) L042771B	40412001	
4) W0427701	F0412001 W0013	
5) W0412001	40412002	
6) L041201M		
7) L042771M		
8) L041201X		
9) 4042771X		
10) 40427701 W0032		

REANALYSIS

REFERENCED QC

ITAS ID - BLANK L042771B

ITAS ID - SPIKE L042771M

CLIENT CODE WHC

ACTIONS (Initial & Date)

PREP LAB RECEIVED GE 5/25/94

SAMPLE REMAINDER RETURNED TO SCG _____ ☐ (CHECK ONE)

NO SAMPLE REMAINING _____ ☐

SEPARATION LAB GE 5/25/94

COUNTING/MEASUREMENT B 5/25/94

DATA REVIEWED GE 9/27/94

ANALYTICAL PREP STORED GE 9/27/94

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT _____

DATA REVIEWED _____

ANALYTICAL PREP STORED _____

ADDITIONAL COMMENTS:

RC-048 12/92 REV 2

9214931.0052 *** URANIUM ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF 94-005

SAMPLE DELIVERY GROUP WC032

MATRIX : OTHER Vegetation

BATCH NUMBER 4-277

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0427713	L0427701			
	L0427715	L0427713D			
1)	40427701		WHC	BOBP32	
	F0427701-Dup				

ACTIONS (Initial & Date)

1) INITIATED JH 4/6/94

2) PREP LAB RECEIVED 5/9/94 [illegible]

3) SAMPLE REMAINDER STORED 5/9/94 [illegible]

4) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB [illegible] 5/18

6) DATA REVIEWED AND ANALYTICAL PREP STORED PK 5/19/94

Needs reanalysis

9213511.0053

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE 5/20/94

REANALYSIS / RECOUNT

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS Unat

NAME/DATE PK / 5/20/94

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0032

MATRIX Veg.

BATCH NUMBER UA

ITAS ID	CUSTOMER ID	COMMENTS
1) L0427711 B		1.00
2) L0427715		1.08
3) W0427701		1.06
4) W0427711D		1.16
5) 40427701		1.32
6) F0427701		1.04
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC

ITAS ID - BLANK L0427711B

ITAS ID - SPIKE L0427715

CLIENT CODE WHC

ACTIONS (Initial & Date)

PREP LAB RECEIVED [illegible] 5.23.94

SAMPLE REMAINDER RETURNED TO SCG [illegible] ☒ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB [illegible] 5-24-94

COUNTING/MEASUREMENT AP 5/25/94 UJ PK 5/26/94

DATA REVIEWED PK 5/26/94

ANALYTICAL PREP STORED

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT AP 5/25/94 ~~AP 6, PK 5/26/94~~

DATA REVIEWED ~~PK 5/26/94~~ PK 5/26/94

ANALYTICAL PREP STORED

ADDITIONAL COMMENTS: Redo tow-extract F04 2771C

[illegible] 5-24-94 hexane extraction

[illegible] CR 5-25-94

RC-048 12/92 REV 2

9713511.0054

5/16/94

*** AM/CMISO ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF 94-065

SAMPLE DELIVERY GROUP W0032

MATRIX : ~~OTHER~~ TH 4/16/94 Vegetation

BATCH NUMBER 4-277

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L042771B				
	L042771S				
1)	40427701		WHC	BOBP32	
	F0427701-DUP				

ACTIONS (Initial & Date)

) INITIATED JH 4/16/94

) PREP LAB RECEIVED 5/9/94 JH

) SAMPLE REMAINDER STORED 5/9/94 AR

) SEPARATION LAB RECEIVED 5/16/94 AR

oxalates formed 5/14/94 JMM

5) COUNTING/MEASUREMENT LAB 5/18/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED 5/20/94

5.18.94

0076

9713561.0055

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE 5/20/94

REANALYSIS / RECOUNT

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS Am

NAME/DATE ATK / 5-17-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0032

MATRIX Veg

BATCH NUMBER

ITAS ID	CUSTOMER ID	COMMENTS
1) 40427701		2.05
2) F0427701		2.03
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC L0427728

ITAS ID - BLANK ~~L0427721~~ ATK 5-17-94

ITAS ID - SPIKE L0427725

CLIENT CODE

ACTIONS (Initial & Date)

PREP LAB RECEIVED

SAMPLE REMAINDER

RETURNED TO SCG ☐ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB 5/20/94 JP

COUNTING/MEASUREMENT 5/27/94 [illegible]

DATA REVIEWED [illegible] 5/23/94

ANALYTICAL PREP STORED

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT

DATA REVIEWED

ANALYTICAL PREP STORED

ADDITIONAL COMMENTS: ATK 5-17-94

5-21-94

Do not use this for [illegible] 5-23-94

RC-048 12/92 REV 2

0077

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 404277

Lab Sample Numbers or SDG: 470032

Method/Test/Parameter: RD3206 / Am/Cm

	Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level review (✓)
A. 1	**Calibration** Is the calibration documentation included where applicable?			✓	✓
B. 1	**Sample Analysis** Are the sample Yields within acceptance criteria?	✓			✓
2.	Were all sample holding times met?	✓			✓
C. 1	**QC Samples** Is the Blank Yield within acceptance criteria?	✓			✓
2.	Is the Minimum Detectable Activity for the Blank result ≤ the Contract Detection Limit?	✓			✓
3.	Is the Blank result ≤ the Contract Detection Limit?	✓			✓
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			✓	✓
5.	Is the LCS result within acceptance criteria?	✓			✓
6.	Is the LCS yield within acceptance criteria?	✓			✓
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?	✓			✓
8.	MS/MSD results and yield meet acceptance criteria?			✓	✓
9.	Duplicate sample results and yield meet acceptance criteria?	✓			✓
D. 1	**Other** Are all nonconformances included and noted?			✓	✓
2.	Are all required forms filled out?	✓			✓
3.	Correct methodology used?	✓			✓
4.	Transcription checked?	✓			✓
5.	Were all calculations checked at a minimum frequency?	✓			✓
6.	Units checked?	✓			✓

Comments on any "No" response:

Analyst: Roxie Ross Date: 5/20/94

Second Level Review: Suzy Davies Date: 5/23/94

Form No: LS-038, 3/94, Rev 2

ok to Transfer (B) 5/20/94

9213511.0052 *** NP-237 ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF 94-065 SAMPLE DELIVERY GROUP W0032

MATRIX : OTHER Vegetation BATCH NUMBER 4-277

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L04277 B W04277701				
	L04277 S W04277				
1)	40427701		WHC	BOBP32	
	F0427701-01				

ACTIONS (Initial & Date)

1) INITIATED JH 4/16/94

2) PREP LAB RECEIVED 5/5/94 [illegible]

3) SAMPLE REMAINDER STORED 5/5/94 [illegible]

4) SEPARATION LAB RECEIVED 5/12/94 [illegible]

5) COUNTING/MEASUREMENT LAB SK 5-19-94

6) DATA REVIEWED AND ANALYTICAL PREP STORED [illegible] 5-23-94

[illegible] 5-23-94 [illegible]

5-23-94 [illegible]

C:BP + 5.18.94 [illegible]

0197

9315511.0058

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE 5-20-94

REANALYSIS / RECOUNT
CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS NP

NAME/DATE TK / 5-23-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0032

MATRIX Vegetation

BATCH NUMBER

ITAS ID	CUSTOMER ID	COMMENTS
1) ~~402~~ TK 5-23-94		
2) 404/27701		2.16g
3) F0427701		2.06
4) W0427701		1.98
5) W0427710		2.08
6)		
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC 7 TK 5-23-94

ITAS ID - BLANK L0427902B

ITAS ID - SPIKE L0427925 TK 5-23-94

CLIENT CODE WHC 7

ACTIONS (Initial & Date)

PREP LAB RECEIVED 5/23/94 TK

SAMPLE REMAINDER RETURNED TO SCG TK ☒ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB DRM 5/24/94

COUNTING/MEASUREMENT AS 5/26/94

DATA REVIEWED MMN 5-27-94

ANALYTICAL PREP STORED MMN 5-27-94

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT

DATA REVIEWED

ANALYTICAL PREP STORED

ADDITIONAL COMMENTS:

TK 5-23-94

Copy + 5.26.94/

RC-048 12/92 REV 2

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 404277

Lab Sample Numbers or SDG: W0032 -

Method/Test/Parameter: RD 3203 Np

	Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level review (✓)
A. 1	**Calibration** Is the calibration documentation included where applicable?			✓	✓
B. 1	**Sample Analysis** Are the sample Yields within acceptance criteria?	✓			✓
2.	Were all sample holding times met?	✓			✓
C. 1	**QC Samples** Is the Blank Yield within acceptance criteria?	✓			✓
2.	Is the Minimum Detectable Activity for the Blank result ≤ the Contract Detection Limit?	✓			✓
3.	Is the Blank result ≤ the Contract Detection Limit?	✓			✓
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			✓	✓
5.	Is the LCS result within acceptance criteria?	✓			✓
6.	Is the LCS yield within acceptance criteria?	✓			✓
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?	✓			✓
8.	MS/MSD results and yield meet acceptance criteria?			✓	✓
9.	Duplicate sample results and yield meet acceptance criteria?	✓			✓
D. 1	**Other** Are all nonconformances included and noted?	✓			✓
2.	Are all required forms filled out?	✓			✓
3.	Correct methodology used?	✓			✓
4.	Transcription checked?	✓			✓
5.	Were all calculations checked at a minimum frequency?	✓			✓
6.	Units checked?	✓			✓

Comments on any "No" response:

Analyst: M K Ellis Date: 6-1-94

Second Level Review: Doug [illegible] Date: 6/1/94

Form No: LS-038, 3/94, Rev 2

OK to transfer original data to ITH
6-1-94 [illegible]

9715511.0060

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-0151 page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): MMK 5-27-94

PARAMETER(S): Np

SAMPLE NUMBER(S) AFFECTED: W0427711 and F0427701 rerun W0032

MATRIX: veg

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1 ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt
   - 2.2 ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3 ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1 ☐ *QA/QC:*
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2 ☐ *CONFIRMATION:*
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3 ☐ *DILUTION:*
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4 ☐ *OTHER: (see #10)*
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☐ **Other (specify):** matrix spike + sample duplicate are switched
10. ☐ **Comments/Explanation:**

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Sherry Jones 5/30/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

IT CORPORATION

LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☐ ROOT CAUSE: INITIALS/DATE mmm 5-27-94

W0427710 and F0427701 rerun are switched on the rerun.

☐ CORRECTIVE ACTION: INITIALS/DATE mmm 5-27-94

The rerun 40427701 is within 3σ of the original 40427701 and F0427701. The original matrix spike recovery was 37.6 and 17 and the rerun matrix spike is 34.2 indicating the original data is acceptable to report.

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE_____

FIRST LEVEL SUPERVISOR: M Kellogg DATE: 5-27-94

RESPONSIBLE MANAGER: (2) Mike Pillar DATE: 5/31/94

QC REVIEW

☒ NONCONFORMANCE ☐ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO

QC COORDINATOR: DATE: 5/31/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: DATE: 5/31/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WITC

NCM INITIATED BY (Name/Date): mmr 5-27-94

PARAMETER(S): Np

SAMPLE NUMBER(S) AFFECTED: W0427701, W0427710 W0032

MATRIX: veg

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY
☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1 ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2 ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3 ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1 ☐ *QA/QC:*
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2 ☐ *CONFIRMATION:*
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3 ☐ *DILUTION:*
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4 ☐ *OTHER: (see #10)*
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☐ **Other (specify):** matrix spike recovery < 60%
10. ☐ **Comments/Explanation:**

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Suzy Davies 5/30/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

IT CORPORATION LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☐ ROOT CAUSE: INITIALS/DATE mmm 5-27-94

matrix spike recovery < 60%

☐ CORRECTIVE ACTION: INITIALS/DATE mmm 5-27-94

New guidelines have reduced the required matrix spike recovery to 30%. One matrix spike was 37.6% and the duplicate was 17%. Rerunning the sample resulted in a matrix spike of 34.2%. The duplicate matrix spike was switched with the sample duplicate. The original and its duplicate are within 3σ of the serum 40427701 sample.

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE _____

FIRST LEVEL SUPERVISOR: M Kellogg DATE: 5-27-94

RESPONSIBLE MANAGER: [signature] DATE: 5/31/94

QC REVIEW

☐ NONCONFORMANCE ☐ DEFICIENCY ☑ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO

QC COORDINATOR: [signature] DATE: 5/31/94

CORRECTIVE ACTION VERIFICATION

☑ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON

NCM CLOSURE

QC COORDINATOR: [signature] DATE: 5/31/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☐ PROJECT FILE

9213511.0064

5/10/94

*** PUISO ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF 94-065 SAMPLE DELIVERY GROUP W0032

MATRIX : OTHER Vegetation BATCH NUMBER 4-277

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0427718				
	L0427715				
1)	40427701		WHC	B0BP32	
	F0427701-OP				

ACTIONS (Initial & Date)

) INITIATED JH 4/16/94

) PREP LAB RECEIVED 5/9/94 GK

) SAMPLE REMAINDER STORED 5/9/94 GK

) SEPARATION LAB RECEIVED 5/14/94 JH

oxalates 5/14/94 JMH

5) COUNTING/MEASUREMENT LAB

6) DATA REVIEWED AND ANALYTICAL PREP STORED MMM 5-23-94

Rerun

0323

MM

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE 5/20/94

REANALYSIS / RECOUNT

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS Pu

NAME/DATE mmk / 5-17-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0032

MATRIX veg

BATCH NUMBER

ITAS ID	CUSTOMER ID	COMMENTS
1) 40 427701		2.05
2) ~~40 427901~~	TR 5-17-94	
3) F04 27701		2.03
4)		
5)		
6)		
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC TR 5-17-94

ITAS ID - BLANK L04 2772B

ITAS ID - SPIKE L04 2772S

CLIENT CODE WHC

ACTIONS (Initial & Date)

PREP LAB RECEIVED 5.18.94

SAMPLE REMAINDER RETURNED TO SCG ☒ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB mmk 5-19-94

COUNTING/MEASUREMENT 5/19/94

DATA REVIEWED mmk 5-23-94

ANALYTICAL PREP STORED mmk 5-23-94

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT 5/19/94

DATA REVIEWED

ANALYTICAL PREP STORED

ADDITIONAL COMMENTS: TR 5-17-94

EP 5.19.94

RC-048 12/92 REV 2

9715111.0066

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE _____

REANALYSIS / RECOUNT

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS Pu

NAME/DATE mmn / 5-23-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0032

MATRIX veg

BATCH NUMBER _____

ITAS ID	CUSTOMER ID	COMMENTS
1) 40427701		2.0g
2)		
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC

ITAS ID - BLANK 404277 3B

ITAS ID - SPIKE 404277 3S

CLIENT CODE WHC

ACTIONS (Initial & Date)

PREP LAB RECEIVED JK 5/23/94

SAMPLE REMAINDER RETURNED TO SCG N ☐ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB 5/24/94 Eu

COUNTING/MEASUREMENT AS 5/26/94

DATA REVIEWED mmn 5-26-94

ANALYTICAL PREP STORED mmn 5-26-94

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT _____

DATA REVIEWED _____

ANALYTICAL PREP STORED _____

ADDITIONAL COMMENTS:

ED-5-25-94 Pu

RC-048 12/92 REV 2

0325

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 404277 rerun

Lab Sample Numbers or SDG: W0032 -

Method/Test/Parameter: PD 3302 Pu

	Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level review (✓)
A. 1	**Calibration** Is the calibration documentation included where applicable?			✓	✓
B. 1	**Sample Analysis** Are the sample Yields within acceptance criteria?	✓			✓
2.	Were all sample holding times met?	✓			✓
C. 1.	**QC Samples** Is the Blank Yield within acceptance criteria?	✓			✓
2.	Is the Minimum Detectable Activity for the Blank result ≤ the Contract Detection Limit?	✓			✓
3.	Is the Blank result ≤ the Contract Detection Limit?	✓			✓
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			✓	✓
5.	Is the LCS result within acceptance criteria?	✓			✓
6.	Is the LCS yield within acceptance criteria?	✓			✓
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?	✓			✓
8.	MS/MSD results and yield meet acceptance criteria?			✓	✓
9.	Duplicate sample results and yield meet acceptance criteria?		✓		✓
D. 1	**Other** Are all nonconformances included and noted?	✓			✓
2.	Are all required forms filled out?	✓			✓
3.	Correct methodology used?	✓			✓
4.	Transcription checked?	✓			✓
5.	Were all calculations checked at a minimum frequency?	✓			✓
6.	Units checked?	✓			✓

Comments on any "No" response:

A duplicate was not analyzed with the reanalysis. The reanalysis agrees within 3σ of the original result and the original duplicate.

Analyst: M Mellon Date: 5-26-94

Second Level Review: Suzy Davies Date: 5/30/94

Form No: LS-038, 3/94, Rev 2

OK to transfer 5-26-94 MMM

9213511.0068 167

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): mmM 5-23-94

PARAMETER(S): Pu

SAMPLE NUMBER(S) AFFECTED: L0427725 W0032

MATRIX: veg

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1 ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2 ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3 ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1 ☐ *QA/QC:*
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2 ☐ *CONFIRMATION:*
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3 ☐ *DILUTION:*
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4 ☐ *OTHER: (see #10)*
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☐ Other (specify): spike tr yd < 20%
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Sang [illegible] 5/30/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

CORRECTIVE ACTION

☐ ROOT CAUSE: INITIALS/DATE MMM 5-23-94

Strontium yield < 20% at 18.6%. Radioisotope recovery is 115.2%.

☐ CORRECTIVE ACTION: INITIALS/DATE MMM 5-23-94

Filtered sample Sr yields are > 20%. Pu 239 recovery is acceptable.
Rerun 5-23-94

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE _____

Investigating low Pu tracer recoveries.

FIRST LEVEL SUPERVISOR: [signature] DATE: 5-23-94

RESPONSIBLE MANAGER: [signature] DATE: 5/31/94

QC REVIEW

☐ NONCONFORMANCE ☐ DEFICIENCY ☒ RERUN

☐ FURTHER ACTION REQUIRED

ASSIGNED TO

QC COORDINATOR: [signature] DATE: 5/31/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON

NCM CLOSURE

QC COORDINATOR: [signature] DATE: 5/31/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

INTERNATIONAL TECHNOLOGY CORPORATION

DS 6/1/94

LOG #: RD-94-0153 page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WAC

NCM INITIATED BY (Name/Date): MMM 6-1-94

PARAMETER(S): Pu

SAMPLE NUMBER(S) AFFECTED: 40427701 W0032

MATRIX: reg

AREA: ☐ SHIP/REC ☐ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1. ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2. ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3. ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ *QA/QC:*
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2. ☐ *CONFIRMATION:*
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3. ☐ *DILUTION:*
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☐ *OTHER: (see #10)*
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☐ Other (specify): Pu not eluted off column
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Sanj Daines 6/1/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

0328A

IT CORPORATION LOG #: RD-94- 0153

CORRECTIVE ACTION

☐ **ROOT CAUSE:** INITIALS/DATE mmm 6-1-94

Pu was not eluted from column. Technician error, initial sample prep urs destroyed.

☐ **CORRECTIVE ACTION:** INITIALS/DATE mmm 6-1-94

Rerun sample.
Rerun spike < 20% tracer yield – rerun second time.
Second rerun was acceptable + was within 30 of first rerun and the duplicate. Report second rerun for 40427701 and F0427701 from first rerun.

☐ **RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:**

☐ **ACTIONS TO PREVENT RECURRENCE:** INITIALS/DATE

FIRST LEVEL SUPERVISOR: M Vallez **DATE:** 6-1-94

RESPONSIBLE MANAGER: **DATE:**

QC REVIEW

☒ NONCONFORMANCE ☐ DEFICIENCY ~~☒ RERUN~~ DS 6/1/94

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO

QC COORDINATOR: **DATE:** 6/1/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: **DATE:** 6/1/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE 0328B

9213511.0092 *** UISO ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF 94-068 SAMPLE DELIVERY GROUP W0032

MATRIX : OTHER Vegetation BATCH NUMBER 4-277

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0427713 ✓				
	L0427715 ✓				
1)	40427701		WHC	BOBP32	
	F0427701-DUP				

ACTIONS (Initial & Date)

1) INITIATED 4/16/94

2) PREP LAB RECEIVED 5/9/94

3) SAMPLE REMAINDER STORED 5/9/94

4) SEPARATION LAB RECEIVED 5/12/94

5) COUNTING/MEASUREMENT LAB 5/18/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED 5-20-94

5-17-94

5-20-94

Use Reun data
SCG 5/30/94

9715511.0075

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE 5-20

REANALYSIS / RECOUNT
CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS Uiso

NAME/DATE mmm / 5-20-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0032

MATRIX veg

BATCH NUMBER

ITAS ID	CUSTOMER ID	COMMENTS
1) 40427701		2.21
2) F 01		2.10
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC

ITAS ID - BLANK 404277 2B

ITAS ID - SPIKE 772 S

CLIENT CODE WHC

ACTIONS (Initial & Date)

PREP LAB RECEIVED 5-20-94 [illegible]

SAMPLE REMAINDER RETURNED TO SCG ☑ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB 5/23/94 Eu

COUNTING/MEASUREMENT AB 5/26/94

DATA REVIEWED mmk 5-27-94

ANALYTICAL PREP STORED mm 5-27-94

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT

DATA REVIEWED

ANALYTICAL PREP STORED

ADDITIONAL COMMENTS:

RC-048 12/92 REV 2

0493

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 404277 Perm

Lab Sample Numbers or SDG: W0032 -

Method/Test/Parameter: R0323Y Uw

	Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level review (✓)
A. 1	**Calibration** Is the calibration documentation included where applicable?			✓	✓
B. 1	**Sample Analysis** Are the sample Yields within acceptance criteria?	✓			✓
2.	Were all sample holding times met?	✓			✓
C. 1	**QC Samples** Is the Blank Yield within acceptance criteria?	✓			✓
2.	Is the Minimum Detectable Acuvity for the Blank result ≤ the Contract Detection Limit?	✓			✓
3.	Is the Blank result ≤ the Contract Detection Limit?	✓			✓
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			✓	✓
5.	Is the LCS result within acceptance criteria?	✓			✓
6.	Is the LCS yield within acceptance criteria?	✓			✓
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?	✓			✓
8.	MS/MSD results and yield meet acceptance criteria?			✓	✓
9	Duplicate sample results and yield meet acceptance criteria?	✓			✓
D. 1	**Other** Are all nonconformances included and noted?	✓			✓
2.	Are all required forms filled out?	✓			✓
3.	Correct methodology used?	✓			✓
4.	Transcription checked?	✓			✓
5.	Were all calculations checked at a minimum frequency?	✓			✓
6.	Units checked?	✓			✓

Comments on any "No" response:

Analyst: M Kellogg Date: 5-27-94

Second Level Review: Suzy Davies Date: 5/30/94

Form No: LS-038, 3/94, Rev 2

review date

UH [illegible] 5-27-94 [illegible]

INTERNATIONAL TECHNOLOGY CORPORATION

9715911.0075 169

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): MMK 5-27-94

PARAMETER(S): Uiso

SAMPLE NUMBER(S) AFFECTED: 4042-1701, F01, L1B W0032

MATRIX: water

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1 ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2 ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3 ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1. ☐ *QA/QC:*
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2. ☐ *CONFIRMATION:*
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3. ☐ *DILUTION:*
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4. ☐ *OTHER: (see #10)*
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☐ Other (specify): tr yd < 30%
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Suzy Davies 5/30/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

CORRECTIVE ACTION

☐ ROOT CAUSE: INITIALS/DATE [illegible]

[illegible]

☐ CORRECTIVE ACTION: INITIALS/DATE [illegible]

Rerun

[illegible]

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

FIRST LEVEL SUPERVISOR: [illegible] DATE: [illegible]

RESPONSIBLE MANAGER: [illegible] DATE: [illegible]

QC REVIEW

☐ NONCONFORMANCE ☐ DEFICIENCY ☒ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO

QC COORDINATOR: [illegible] DATE: 5/31/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: [illegible] DATE: 5/31/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

9213511.007 *** GAMMA ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF 94-065

SAMPLE DELIVERY GROUP W0032

MATRIX : OTHER Vegetation

BATCH NUMBER 4-277

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0427715				
1)	40427701		WHC	BOBP32	
	E0427701	DUP			

ACTIONS (Initial & Date)

) INITIATED 4/20/94

) PREP LAB RECEIVED 4-27-94

) SAMPLE REMAINDER STORED 5-9-94

) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB 5-9-94

6) DATA REVIEWED AND ANALYTICAL PREP STORED 5-22-94

0663

827

9215511.0078

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE 5/23/94

REANALYSIS / RECOUNT

~~CHAIN-OF-CUSTODY~~ BATCH ANALYSIS RECORD

ANALYSIS Gamma

NAME/DATE JK 5-23-94

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0032

MATRIX Vegetation

BATCH NUMBER

	ITAS ID	CUSTOMER ID	COMMENTS
1)	4042770 1		
2)	F042770 1		
3)			
4)			
5)			
6)			
7)			
8)			
9)			
10)			

REANALYSIS

REFERENCED QC

ITAS ID - BLANK L042771X CAL 827

ITAS ID - SPIKE L042771M CAL 816

CLIENT CODE

ACTIONS (Initial & Date)

PREP LAB RECEIVED JN 5-23-94

SAMPLE REMAINDER RETURNED TO SCG ☑ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB NA

COUNTING/MEASUREMENT RVM 5/25/94 FOR KC 5/23/94 NA RVM 5/25/94

DATA REVIEWED JK 5-25-94

ANALYTICAL PREP STORED JK 5-25-94

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT ~~KCS 5-23-94~~ 5/25/94

DATA REVIEWED

ANALYTICAL PREP STORED

ADDITIONAL COMMENTS:

RC-048 12/92 REV 2

0664

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 404277

Lab Sample Numbers or SDG: SDGW0032

Method/Test/Parameter: Gamma

	Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level review (✓)
A. 1.	**Calibration** Is the calibration documentation included where applicable?			✓	✓
B. 1.	**Sample Analysis** Are the sample Yields within acceptance criteria?			✓	✓
2.	Were all sample holding times met?	✓			✓
C. 1	**QC Samples** Is the Blank Yield within acceptance criteria?			✓	✓
2.	Is the Minimum Detectable Activity for the Blank result ≤ the Contract Detection Limit?	✓			✓
3.	Is the Blank result ≤ the Contract Detection Limit?	✓			✓
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			✓	✓
5.	Is the LCS result within acceptance criteria?	✓			✓
6.	Is the LCS yield within acceptance criteria?			✓	✓
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?	✓			✓
8.	MS/MSD results and yield meet acceptance criteria?			✓	✓
9.	Duplicate sample results and yield meet acceptance criteria?	✓			✓
D. 1.	**Other** Are all nonconformances included and noted?	✓			✓
2.	Are all required forms filled out?	✓			✓
3.	Correct methodology used?	✓			✓
4.	Transcription checked?	✓			✓
5.	Were all calculations checked at a minimum frequency?	✓			✓
6.	Units checked?	✓			✓

Comments on any "No" response:

Analyst: Jed T Kimpson Date: 5-25-94

Second Level Review: Suzy Davies Date: 5/25/94

Form No: LS-038, 3/94, Rev 2

Transfer to count Data

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): Joel T Kempema 5-22-94

PARAMETER(S): Gamma

SAMPLE NUMBER(S) AFFECTED: 4C1/27701 W0032

MATRIX: Vegetation

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1 ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt.
   - 2.2 ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3 ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1 ☐ *QA/QC:*
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2 ☐ *CONFIRMATION:*
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3 ☐ *DILUTION:*
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4 ☐ *OTHER: (see #10)*
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☒ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☒ contract limits ☐ other (see #10)

   Due to:
   - ☒ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☒ other (see #10)
9. ☐ Other (specify):
10. ☒ Comments/Explanation: low sample density for volume, volume of sample analyzed and count time

NOTIFICATION [check appropriate item(s)]:

1. ☒ Client notified by (name and date): SCC
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☒ Other (explain) case narrative
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Suzy Davies 5/25/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

0666

IT CORPORATION

LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☒ ROOT CAUSE: INITIALS/DATE JR 5-22-94

high screening activity Cat III led to decision to analyze in a 200 ml geometry rather than a marinelli beaker in order to protect detector from contamination

☒ CORRECTIVE ACTION: INITIALS/DATE JR 5-22-94

JR 5-25-94 ~~data accepted~~ Recount ~~data~~ JR 5-25-94 in Marinelli beaker recount data accepted JR 5-25-94

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

FIRST LEVEL SUPERVISOR: [signature] DATE: 5-25-94

RESPONSIBLE MANAGER: [signature] DATE: 5/31/94

QC REVIEW

☐ NONCONFORMANCE ☐ DEFICIENCY ☒ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO

QC COORDINATOR: [signature] DATE: 5/31/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: [signature] DATE: 5/31/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

*** I-129LP ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF

SAMPLE DELIVERY GROUP W0032

MATRIX : OTHER 94-065
Vegetation

BATCH NUMBER 4-277

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0427715				
	L0427715 FQZKOIL			1002.5 ± 11.899	
1)	40427701		WHC	BOBP32	
	F0427701L	PUP			

ACTIONS (Initial & Date)

) INITIATED JH 4/16/94

) PREP LAB RECEIVED JN 4-27-94

) SAMPLE REMAINDER STORED JN 5-9-94

) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB SK 5-9-94

6) DATA REVIEWED AND ANALYTICAL PREP STORED JTK 5-19-94

0801

9215371.0085

INTERNATIONAL TECHNOLOGY CORPORATION

WHC SDG-W0032

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 404277

Lab Sample Numbers or SDG: L0427718 - L0427715 W0032

Method/Test/Parameter: I129

	Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level review (✓)
A. 1.	**Calibration** Is the calibration documentation included where applicable?			✓	✓
B. 1.	**Sample Analysis** Are the sample Yields within acceptance criteria?			✓	✓
2.	Were all sample holding times met?	✓			✓
C. 1.	**QC Samples** Is the Blank Yield within acceptance criteria?			✓	✓
2.	Is the Minimum Detectable Activity for the Blank result ≤ the Contract Detection Limit?	✓			✓
3.	Is the Blank result ≤ the Contract Detection Limit?	✓			✓
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			✓	✓
5.	Is the LCS result within acceptance criteria?	✓			✓
6.	Is the LCS yield within acceptance criteria?			✓	✓
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?	✓			✓
8.	MS/MSD results and yield meet acceptance criteria?			✓	✓
9.	Duplicate sample results and yield meet acceptance criteria?	✓			✓
D. 1.	**Other** Are all nonconformances included and noted?	✓			✓
2.	Are all required forms filled out?	✓			✓
3.	Correct methodology used?	✓			✓
4.	Transcription checked?	✓			✓
5.	Were all calculations checked at a minimum frequency?	✓			✓
6.	Units checked?	✓			✓

Comments on any "No" response: NCM MDA

Analyst: Jul Kempers Date: 5-19-94

Second Level Review: Sergy Dzina Date: 5/23/94

Form No: LS-038, 3/94, Rev 2

9215511.0084

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

0326

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): Joel T Kempema 5-19-94

PARAMETER(S): I 129 Gamma Lops

SAMPLE NUMBER(S) AFFECTED: 404277, F04277 WC032

MATRIX: Vegetation

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to:
   - 2.1 ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt
   - 2.2 ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3 ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1 ☐ *QA/QC:*
       - ☐ surrogates ☐ internal standards
       - ☐ spike recovenes ☐ blank contamination
     - 2.3.2 ☐ *CONFIRMATION:*
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3 ☐ *DILUTION:*
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4 ☒ *OTHER: (see #10)*
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☒ Other (specify): MDA > contract limit
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Suzy Davies 5/23/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

0803

IT CORPORATION

LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☒ ROOT CAUSE: INITIALS/DATE MK 5-19-94

matrix effect

☒ CORRECTIVE ACTION: INITIALS/DATE MK 5-19-94

Blank meets MDA, in addition the sample & its duplicate ~~also~~ MK 5-19-94 exhibit same effect.

Data Accepted

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

FIRST LEVEL SUPERVISOR: Joel Kempema DATE: 5-20-94

RESPONSIBLE MANAGER: W MacKellar DATE: 5/23/94

QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO

QC COORDINATOR: Jodie Cr DATE: 5/24/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: Jodie Cr DATE: 5/24/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

9715511.0046 *** ALPHA ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF

SAMPLE DELIVERY GROUP W0032

MATRIX : ~~OTHER~~ TH 4/16/94 Vegetation 14-065

BATCH NUMBER 4-277

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0427713				
	L0427715		EQEG 202	10.018 I	.096069
1)	40427701		WHC	BOBP32	
	F0427701	DUP			

ACTIONS (Initial & Date)

INITIATED JH 4/16/94

PREP LAB RECEIVED JN 4-27-94

SAMPLE REMAINDER STORED JN 5-6-94

SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB OD 5/10/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED JK 5-12-94

0846

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 404277

Lab Sample Numbers or SDG: W0032

Method/Test/Parameter: Alpha

	Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level review (✓)
A. 1.	**Calibration** Is the calibration documentation included where applicable?			✓	✓
B. 1.	**Sample Analysis** Are the sample Yields within acceptance criteria?			✓	✓
2.	Were all sample holding times met?	✓			
C. 1.	**QC Samples** Is the Blank Yield within acceptance criteria?			✓	✓
2.	Is the Minimum Detectable Activity for the Blank result ≤ the Contract Detection Limit?	✓			✓
3.	Is the Blank result ≤ the Contract Detection Limit?	✓			✓
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			✓	✓
5.	Is the LCS result within acceptance criteria?	✓			✓
6.	Is the LCS yield within acceptance criteria?			✓	✓
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?	✓			✓
8.	MS/MSD results and yield meet acceptance criteria?			✓	✓
9.	Duplicate sample results and yield meet acceptance criteria?	✓			✓
D. 1.	**Other** Are all nonconformances included and noted?			✓	✓
2.	Are all required forms filled out?	✓			✓
3.	Correct methodology used?	✓			✓
4.	Transcription checked?	✓			✓
5.	Were all calculations checked at a minimum frequency?	✓			✓
6.	Units checked?	✓			✓

Comments on any "No" response:

Analyst: [illegible] Date: 5-13-94

Second Level Review: [illegible] Date: 5/17/94

Form No: LS-038, 3/94, Rev 2

9213511.0088

*** BETA ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF

SAMPLE DELIVERY GROUP W0032

MATRIX : ~~OTHER~~ vegetation JH 4/16/94 94-105

BATCH NUMBER 4-277

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0427718				
	L0427715	EQBA045			25.096 ± .35405
1)	40427701		WHC	B0BP32	
	F0427710	DUP			

ACTIONS (Initial & Date)

1) INITIATED JH 4/16/94

2) PREP LAB RECEIVED JN 4-27-94

3) SAMPLE REMAINDER STORED JN

4) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB OD 5/10/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED JK 5-12-94

0872 6/13

9/15541 0089

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 404277

Lab Sample Numbers or SDG: SDGW0032

Method/Test/Parameter: Beta

	Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level review (✓)
A. 1.	**Calibration** Is the calibration documentation included where applicable?			✓	✓
B. 1.	**Sample Analysis** Are the sample Yields within acceptance criteria?			✓	✓
2.	Were all sample holding times met?	✓			✓
C. 1.	**QC Samples** Is the Blank Yield within acceptance criteria?			✓	✓
2.	Is the Minimum Detectable Activity for the Blank result ≤ the Contract Detection Limit?	✓			✓
3.	Is the Blank result ≤ the Contract Detection Limit?	✓			✓
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			✓	✓
5.	Is the LCS result within acceptance criteria?	✓			✓
6.	Is the LCS yield within acceptance criteria?			✓	✓
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?	✓			✓
8.	MS/MSD results and yield meet acceptance criteria?			✓	✓
9.	Duplicate sample results and yield meet acceptance criteria?	✓			✓
D. 1.	**Other** Are all nonconformances included and noted?			✓	✓
2.	Are all required forms filled out?	✓			✓
3.	Correct methodology used?	✓			✓
4.	Transcription checked?	✓			✓
5.	Were all calculations checked at a minimum frequency?	✓			✓
6.	Units checked?	✓			✓

Comments on any "No" response:

Analyst: Joel T Kauzlarich Date: 5-13-94

Second Level Review: Greg Davies Date: 5/17/94

Form No: LS-038, 3/94, Rev 2

9413641.0890

*** TOTAL-SR ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF 94-065 SAMPLE DELIVERY GROUP W0032

MATRIX : OTHER vegetation BATCH NUMBER 4-277

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0427718				
	L0427715				
1)	40427701		WHC	BOBP32	
	F0427701-DUP				

ACTIONS (Initial & Date)

) INITIATED JH 4/16/94

) PREP LAB RECEIVED 5/9/94 [illegible]

) SAMPLE REMAINDER STORED 5/9/94 [illegible]

) SEPARATION LAB RECEIVED 5-9/94 [illegible]

5) COUNTING/MEASUREMENT LAB OD 19 May 94

6) DATA REVIEWED AND ANALYTICAL PREP STORED SEB 5/3/94

Reanalyze

NCM

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE _____

REANALYSIS / RECOUNT

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS SvTOT

NAME/DATE GTR / 5/26

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0032

MATRIX Veg

BATCH NUMBER _____

ITAS ID	CUSTOMER ID	COMMENTS
1) 4042770 1		6.06
2) F0427701		5.56
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC

ITAS ID - BLANK L042772B

ITAS ID - SPIKE L042772S

EQGF008 : 30.992 E11641 DPM

CLIENT CODE _____

ACTIONS (Initial & Date)

PREP LAB RECEIVED GTR 5/25/94

SAMPLE REMAINDER RETURNED TO SCG _____ ☐ (CHECK ONE)

NO SAMPLE REMAINING _ ☐

SEPARATION LAB 5/25/94 GTR

COUNTING/MEASUREMENT KCS 5-26-94

DATA REVIEWED GTR 5/31/94

ANALYTICAL PREP STORED GTR 5/31/94

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT KCS-26-94

DATA REVIEWED _____

ANALYTICAL PREP STORED _____

ADDITIONAL COMMENTS:

RC-048 12/92 REV 2

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 404277

Lab Sample Numbers or SDG: - W0032

Method/Test/Parameter: Total SR

	Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level review (✓)
A. 1	**Calibration** Is the calibration documentation included where applicable?			X	✓
B. 1	**Sample Analysis** Are the sample Yields within acceptance criteria?	X			✓
2.	Were all sample holding times met?			X	✓
C. 1	**QC Samples** Is the Blank Yield within acceptance criteria?	X			✓
2.	Is the Minimum Detectable Activity for the Blank result ≤ the Contract Detection Limit?	X			✓
3.	Is the Blank result ≤ the Contract Detection Limit?	X			✓
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			X	✓
5.	Is the LCS result within acceptance criteria?	X			✓
6.	Is the LCS yield within acceptance criteria?	X			✓
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?	X			✓
8.	MS/MSD results and yield meet acceptance criteria?			X	✓
9.	Duplicate sample results and yield meet acceptance criteria?	X			✓
D. 1	**Other** Are all nonconformances included and noted?	X			✓
2.	Are all required forms filled out?	X			✓
3.	Correct methodology used?	X			✓
4.	Transcription checked?	ZM			✓
5.	Were all calculations checked at a minimum frequency?	X			✓
6.	Units checked?	X			✓

Comments on any "No" response:

Analyst: [illegible] Date: 5/31/94

Second Level Review: [illegible] Date: 5/31/94

Form No: LS-038, 3/94, Rev 2

INTERNATIONAL TECHNOLOGY CORPORATION 9215611.0093

0170

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): SB 5/31/94

PARAMETER(S): Sr90T

SAMPLE NUMBER(S) AFFECTED: WO 404277 W0032

MATRIX: VGA

AREA: ☐ SHIP/REC ☑ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to
   - 2.1 ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt
   - 2.2 ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3 ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1 ☐ *QA/QC:*
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2 ☐ *CONFIRMATION:*
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3 ☐ *DILUTION:*
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4 ☐ *OTHER: (see #10)*
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☑ Other (specify): Known original ~0% chemical yield
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Suzy Daines 5/31/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

CORRECTIVE ACTION

☒ ROOT CAUSE: INITIALS/DATE GEL 5/31/94

matrix interference. This problem solved by extended metathesis of sample during the reanalysis. thus reducing the effect of sulfate on the the chemical yield.

☒ CORRECTIVE ACTION: INITIALS/DATE GEL 5/31/94

Report rerun results

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

FIRST LEVEL SUPERVISOR: [signature] DATE: 5/31/94

RESPONSIBLE MANAGER: Scott Lordy DATE: 5/31/94

QC REVIEW

☐ NONCONFORMANCE ☐ DEFICIENCY ☒ RERUN

☐ FURTHER ACTION REQUIRED

ASSIGNED TO

QC COORDINATOR: [signature] DATE: 6/1/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON

NCM CLOSURE

QC COORDINATOR: [signature] DATE: 6/1/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

*** SE-79 ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF SAMPLE DELIVERY GROUP W0032

MATRIX : OTHER 94-065 BATCH NUMBER 4-277
Vegetation

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0427713	L0427701			
	L0427713	~~P0427701~~ 5/19/94			
1)	40427701	W0427702	WHC	BOBP32	
	P0427701-Dup				

ACTIONS (Initial & Date)

1) INITIATED JH 4/16/94

2) PREP LAB RECEIVED 5/5/94

3) SAMPLE REMAINDER STORED 5/5/94

4) SEPARATION LAB RECEIVED 5-16-94 Susan

5) COUNTING/MEASUREMENT LAB 5/18/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED 5/20/94

921591.0096

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): W0032

Lab Sample Numbers or SDG: 4-277

Method/Test/Parameter: Sr-79

	Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level review (✓)
A. 1.	**Calibration** Is the calibration documentation included where applicable?			✓	✓
B. 1.	**Sample Analysis** Are the sample Yields within acceptance criteria?	✓			✓
2.	Were all sample holding times met?			✓	✓
C. 1.	**QC Samples** Is the Blank Yield within acceptance criteria?	✓			✓
2.	Is the Minimum Detectable Activity for the Blank result ≤ the Contract Detection Limit?	✓			✓
3.	Is the Blank result ≤ the Contract Detection Limit?	✓			✓
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			✓	✓
5.	Is the LCS result within acceptance criteria?	✓			✓
6.	Is the LCS yield within acceptance criteria?	✓			✓
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?			✓	✓
8.	MS/MSD results and yield meet acceptance criteria?	✓			✓
9.	Duplicate sample results and yield meet acceptance criteria?	✓			✓
D. 1.	**Other** Are all nonconformances included and noted?	✓			✓
2.	Are all required forms filled out?	✓			✓
3.	Correct methodology used?	✓			✓
4.	Transcription checked?	✓			✓
5.	Were all calculations checked at a minimum frequency?	✓			✓
6.	Units checked?	✓			✓

Comments on any "No" response:

Analyst: [illegible] Date: 5/20/94

Second Level Review: Gary Davies Date: 5/20/94

Form No: LS-038, 3/94, Rev 2

BATCH SUMMARY/CHAIN OF CUSTODY

ANALYSIS Tc-99 MATRIX Veg. DUE DATE _____

WCC32 & WCC33

WORK ORDER	SEQUENCE #	CLIENT	COMMENTS
L 04277	-1B	WHC	QC BATCH REAGENT BLANK
L 04277	-1X		QC BATCH MATRIX BLANK
L 04277	-1M or 1S (circle)		QC BATCH MATRIX/REAGENT SPIKE
L 04277 L 04277	-2M or 2S (circle) 3 M		QC BATCH MATRIX/REAGENT SPIKE
F 0427701 F 0427901	-		Duplicate of Sample # 40427701 40427901
	-		
40427701	- 01		WCC32
40427901	- 01		WCC33
	-		
	-		
	-		
	-		
	-		
	-		
	-		
	-		
	-		

Batched and QC updated by MM on 5/18/94 Rec'd in C.R. by SK on 5-18-94

Rec'd in Prep Lab by MM on 5/10/94 Data Reviewed and anal. Prep stored [illegible] on 5/24/94

Rec'd in Sep Lab by MM on 5/10/94

Rec'd in Sep lab by NA on NA Samples Disposed by _____ on _____

Original batch sheet and complete calculation file to be filed with the FIRST listed work order number.

FORM NO.: RC-52, 1/94, Rev. 4

*** TC-99 ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF 94-005 SAMPLE DELIVERY GROUP W00032

MATRIX : OTHER Vegetation BATCH NUMBER 4-277

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0427771B L0427771M		L0427772M L0427773M	L0427771X ~~L10L~~ 5/18/94	L0427771N L0427772N L0427773N L0427774N
1)	40427701		WHC	BOBF32	

ACTIONS (Initial & Date)

1) INITIATED JH 4/16/94

2) PREP LAB RECEIVED JN #27-94

3) SAMPLE REMAINDER STORED JN 5-6-94

4) SEPARATION LAB RECEIVED TM 5-10-94

5) COUNTING/MEASUREMENT LAB OD 5/18/94

6) DATA REVIEWED AND ANALYTICAL PREP STORED

9415111.0990

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE _____

REANALYSIS / RECOUNT
~~CHAIN-OF-CUSTODY~~ BATCH ANALYSIS RECORD

ANALYSIS Tc-99

NAME/DATE GE / 5/25/94

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0032 & W0033 & W0032

MATRIX veg.

BATCH NUMBER _____

ITAS ID	CUSTOMER ID		COMMENTS
1) L042771N	F0427701	W0032	
2) L042772N	40427701	W0033	
3) L042771B	40412001		
4) W042771	F0412001	~~W0033~~ W0032	
5) W041200	40412002		SCG 6/1/94
6) L041201M			
7) L042771M			
8) L041201X			
9) 4042771X			
10) 40427701 W0032			

5/27/94

REANALYSIS

REFERENCED QC

ITAS ID - BLANK L042771B

ITAS ID - SPIKE L042771M

CLIENT CODE WHC

ACTIONS (Initial & Date)

PREP LAB RECEIVED GE 5/25/94

SAMPLE REMAINDER
RETURNED TO SCG _____ ☐ (CHECK ONE)
NO SAMPLE REMAINING _ ☐

SEPARATION LAB GE 5/25/94

COUNTING/MEASUREMENT A 5/25/94

DATA REVIEWED GE 5/27/94

ANALYTICAL PREP STORED GE 5/27/94

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT _____

DATA REVIEWED _____

ANALYTICAL PREP STORED _____

ADDITIONAL COMMENTS:

RC-048 12/92 REV 2

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): ~~W04277~~ 404277 404279
404120 ~~404~~ 5/27/94

Lab Sample Numbers or SDG: SDG W0032 W0033 W0034

Method/Test/Parameter:

	Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level review (✓)
A. 1.	**Calibration** Is the calibration documentation included where applicable?			X	✓
B. 1.	**Sample Analyses** Are the sample Yields within acceptance criteria?	X			✓
2.	Were all sample holding times met?			X	✓
C. 1.	**QC Samples** Is the Blank Yield within acceptance criteria?	X			✓
2.	Is the Minimum Detectable Activity for the Blank result ≤ the Contract Detection Limit?	X			✓
3.	Is the Blank result ≤ the Contract Detection Limit?	X			✓
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			✓	✓
5.	Is the LCS result within acceptance criteria?	X			✓
6.	Is the LCS yield within acceptance criteria?	X			✓
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?	X			✓
8.	MS/MSD results and yield meet acceptance criteria?	X			✓
9.	Duplicate sample results and yield meet acceptance criteria?	X			✓
D. 1.	Other Are all nonconformances included and noted?	X			✓
2.	Are all required forms filled out?	X			✓
3.	Correct methodology used?	X			✓
4.	Transcription checked?	SM			✓
5.	Were all calculations checked at a minimum frequency?	X			✓
6.	Units checked?	X			✓

Comments on any "No" response:

Analyst: [signature] Date: 5/27/94

Second Level Review: [signature] Date: 5/28/94

Form No: LS-038, 3/94, Rev 2

351

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): SEW 5/27/94

PARAMETER(S): Tc99

SAMPLE NUMBER(S) AFFECTED: WO. 404120 404277 404279. W00032 W00033 W00022

MATRIX:

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis.
2. ☐ Holding time exceeded by _____ days due to
   - 2.1 ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt
   - 2.2 ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3 ☐ CATEGORY III: Laboratory Reruns
     - 2.3.1 ☐ *QA/QC:*
       - ☐ surrogates ☐ internal standards
       - ☐ spike recoveries ☐ blank contamination
     - 2.3.2 ☐ *CONFIRMATION:*
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3 ☐ *DILUTION:*
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4 ☐ *OTHER: (see #10)*
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☒ Other (specify): Rinsing initial gas's experienced much growth.
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date): _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response:
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Suzy Davis 5/28/94

FURTHER ACTION REQUIRED, SEE PAGE 2 OF 2

991A

9716511.0112

IT CORPORATION

LOG #: RD-94-_____ page 2 of 2

CORRECTIVE ACTION

☒ ROOT CAUSE: INITIALS/DATE SB 5/27/94

Excessive quench in original run

Second run OK

☒ CORRECTIVE ACTION: INITIALS/DATE SB 5/27/94

Report Reanalyses

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

FIRST LEVEL SUPERVISOR: [signature] DATE: 5/27/94

RESPONSIBLE MANAGER: [signature] DATE: 5/28/94

QC REVIEW

☐ NONCONFORMANCE ☒ DEFICIENCY ☐ RERUN

☐ FURTHER ACTION REQUIRED

ASSIGNED TO

QC COORDINATOR: [signature] DATE: 5/28/94

CORRECTIVE ACTION VERIFICATION

☐ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON

NCM CLOSURE

QC COORDINATOR: [signature] DATE: 5/28/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

991B

9215511.0153 *** URANIUM ***

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

16-Apr-1994
Page 1

CUSTOMER: WHC SAF 94-065

SAMPLE DELIVERY GROUP WC032

MATRIX : OTHER Vegetation

BATCH NUMBER 4-277

	ITAS ID	DUP	ACCOUNT	CUSTOMER ID	COMMENTS
	L0427713	L0427701			
	L0427713	L0427713D			
1)	40427701		WHC	BOBP32	
	F0427701-Dup				

ACTIONS (Initial & Date)

1) INITIATED JH 4/6/94

2) PREP LAB RECEIVED 5/9/94 YA

3) SAMPLE REMAINDER STORED 5/9/94 YA

4) SEPARATION LAB RECEIVED NA

5) COUNTING/MEASUREMENT LAB 5/18

6) DATA REVIEWED AND ANALYTICAL PREP STORED PK 5/19/94

Needs reanalysis

9216110104

INTERNATIONAL TECHNOLOGY CORPORATION

DUE DATE 5/20/94

REANALYSIS / RECOUNT

CHAIN-OF-CUSTODY BATCH ANALYSIS RECORD

ANALYSIS Unat

NAME/DATE PK / 5/20/94

CUSTOMER WHC

SAMPLE DELIVERY GROUP W0032

MATRIX Veg.

BATCH NUMBER VA

ITAS ID	CUSTOMER ID	COMMENTS
1) L0427701 B		1.00
2) L0427701S		1.08
3) W0427701		1.06
4) W0427701D		1.16
5) 40427701		1.32
6) F0427701		1.04
7)		
8)		
9)		
10)		

REANALYSIS

REFERENCED QC

ITAS ID - BLANK L0427701B

ITAS ID - SPIKE L0427701S

CLIENT CODE WHC

ACTIONS (Initial & Date)

PREP LAB RECEIVED [illegible] 5-23-94

SAMPLE REMAINDER RETURNED TO SCG [illegible] ☒ (CHECK ONE)

NO SAMPLE REMAINING ☐

SEPARATION LAB [illegible] 5-24-94

COUNTING/MEASUREMENT HP 5/25/94 by PK 5/26/94

DATA REVIEWED PK 5/26/94

ANALYTICAL PREP STORED

RECOUNT

ACTIONS (Initial & Date)

COUNTING/MEASUREMENT ~~AP 6.2K 5/24/94~~ 5/25/94

DATA REVIEWED ~~PK 5/24/94~~ PK 5/26/94

ANALYTICAL PREP STORED

ADDITIONAL COMMENTS: F04 2770 dual tone-extract

[illegible] 5-24-94 hexane extraction

[illegible] CR 5-25-94

RC-048 12/92 REV 2

1030

INTERNATIONAL TECHNOLOGY CORPORATION

ITAS Data Review Checklist
RADIOCHEMISTRY

Work Order No(s): 404277

Lab Sample Numbers or SDG: W 0032

Method/Test/Parameter: Ilnat

	Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level review (✓)
A. 1.	**Calibration** Is the calibration documentation included where applicable?	✓			✓
B. 1.	**Sample Analysis** Are the sample Yields within acceptance criteria?			✓	✓
2.	Were all sample holding times met?	✓			✓
C. 1.	**QC Samples** Is the Blank Yield within acceptance criteria?			✓	✓
2.	Is the Minimum Detectable Activity for the Blank result ≤ the Contract Detection Limit?	✓			✓
3.	Is the Blank result ≤ the Contract Detection Limit?	✓			✓
4.	Is the Blank result greater than the Contract Detection Limit but the Sample result less than the Contract Detection Limit?			✓	✓
5.	Is the LCS result within acceptance criteria?	✓			✓
6.	Is the LCS yield within acceptance criteria?			✓	✓
7.	Is the LCS Minimum Detectable Activity less than or equal to the Contract Detection Limit?			✓	✓
8.	MS/MSD results and yield meet acceptance criteria?	✓			✓
9.	Duplicate sample results and yield meet acceptance criteria?	✓		RK 5/26/94	✓
D. 1.	**Other** Are all nonconformances included and noted?	✓			✓
2.	Are all required forms filled out?	✓			✓
3.	Correct methodology used?	✓			✓
4.	Transcription checked?	PK			✓
5.	Were all calculations checked at a minimum frequency?	✓			✓
6.	Units checked?	✓			✓

Comments on any "No" response:

reanalysis performed when original analysis gave low yields

Analyst: Pam Kenitzer Date: 5-26-94

Second Level Review: Sherry Daines Date: 5/30/94

Form No: LS-038, 3/94, Rev 2

INTERNATIONAL TECHNOLOGY CORPORATION

LOG #: RD-94-_____ page 1 of 2

ITAS-Richland
LABORATORY NONCONFORMANCE MEMO (NCM)

PROJECT ID (Name/Number): WHC

NCM INITIATED BY (Name/Date): P Kenitzer

PARAMETER(S): U nat

SAMPLE NUMBER(S) AFFECTED: 404277 W0032

MATRIX: vegetation

AREA: ☐ SHIP/REC ☒ RADIOCHEM ☐ COUNTING ☐ BIOASSAY ☐ DATA VERIF ☐ REPORTING ☐ OTHER:

NONCONFORMANCE [check appropriate item(s)]:

1. ☐ Not enough sample received for proper analysis
2. ☐ Holding time exceeded by _____ days due to
   - 2.1 ☐ CATEGORY I: Out of Laboratory Control
     - ☐ Holding time expired at receipt
   - 2.2 ☐ CATEGORY II: Laboratory Dependent
     - ☐ work backlog ☐ instrument failure
     - ☐ communication ☐ other (see #10)
   - 2.3 ☒ CATEGORY III: Laboratory Reruns
     - 2.3.1 ☒ *QA/QC:*
       - ☐ surrogates ☐ internal standards
       - ☒ spike recoveries ☐ blank contamination
     - 2.3.2 ☐ *CONFIRMATION:*
       - ☐ second column ☐ contamination check
       - ☐ other (see #10)
     - 2.3.3 ☐ *DILUTION:*
       - ☐ over calibration ☐ under calibration
       - ☐ other (see #10)
     - 2.3.4 ☐ *OTHER: (see #10)*
3. ☐ Sample lost during extraction/analysis; no re-prep or re-analysis possible.
4. ☐ QC data reported to client outside of:
   - ☐ method limits ☐ internal limits
   - ☐ QAPP limits ☐ contract limits
   - ☐ regulatory limits ☐ blank criteria
5. ☐ Incorrect procedure(s) used. (See #10)
6. ☐ Invalid instrument calibration. (See #10)
7. ☐ Incorrect/incomplete data reported to client. (See #10)
8. ☐ Reported detection limit(s) higher than:
   - ☐ method limits ☐ QAPP limits
   - ☐ contract limits ☐ other (see #10)

   Due to:
   - ☐ sample matrix ☐ insufficient sample
   - ☐ instrumentation ☐ other (see #10)
9. ☐ Other (specify):
10. ☐ Comments/Explanation:

NOTIFICATION [check appropriate item(s)]:

1. ☐ Client notified by (name and date) _____
   - ☐ in writing ☐ by FAX
   - ☐ by phone ☐ Other (explain)
2. ☐ Client's name _____ and response
   - ☐ process "as is" ☐ resample
   - ☐ on hold til ____ ☐ Other (explain)

PROJECT MANAGER (signature & date): Sery Haines 5/30/94

FURTHER ACTION REQUIRED. SEE PAGE 2 OF 2

CORRECTIVE ACTION

☐ ROOT CAUSE: INITIALS/DATE PK 5/26/94

Samples had to be reanalyzed when matrix QC gave only 32% & 49.6% yields

☐ CORRECTIVE ACTION: INITIALS/DATE PK 5/26/94

Reanalysis

☐ RESPONSIBILITY FOR PERFORMING CORRECTIVE ACTION ASSIGNED TO:

☐ ACTIONS TO PREVENT RECURRENCE: INITIALS/DATE

FIRST LEVEL SUPERVISOR: Pam Kirstein DATE: 5-26-94

RESPONSIBLE MANAGER: [illegible] DATE: 5/31/94

QC REVIEW

☐ NONCONFORMANCE ☐ DEFICIENCY ☒ RERUN

☐ FURTHER ACTION REQUIRED:

ASSIGNED TO

QC COORDINATOR: [signature] DATE: 5/31/94

CORRECTIVE ACTION VERIFICATION

☒ VERIFIED ☐ CANNOT VERIFY (specify reason)

REASON:

NCM CLOSURE

QC COORDINATOR: [signature] DATE: 5/31/94

SIGNED ORIGINAL MUST BE RETAINED IN FILE: ☐ QUALITY/OPERATIONS FILE ☒ PROJECT FILE

9413511.0193

MEMORANDUM

JUN 1994
RECEIVED
700

TO: 200-UP-2 Project QA Record

June 4, 1994

FR: Christina Jensen, Golder Associates Inc.

RE: INORGANICS DATA VALIDATION SUMMARY FOR DATA PACKAGE: W0032-ITC-026 (923-E418 W0032M.UP2)

INTRODUCTION

This memo presents the results of data validation on data package W0032-ITC-026 prepared by Internation Technology Corporation (IT) laboratory. The samples validated along with the analyses reported and the methods of analysis are provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B0BP32	11/05/93	VEGETATION	SEE NOTE 1

Notes: 1. The sample was analyzed for CLP target analyte list (TAL) metals and titanium.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 provide the following information as indicated below:

RECEIVED
JUN 8 1994
VALIDATION DOCUMENT
SDLA

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met with the exception of the deficiencies identified below.

Accuracy. Goals for accuracy were met with the exception of the deficiencies identified below.

Sample Result Verification. All sample results were supported in the raw data.

Detection Limits. Detection limit goals were met for all sample results as specified in the reference analytical method.

Completeness. The data package was complete for all requested analyses. A total of one sample was validated in this data package with a total of 24 determinations reported, all of

which were deemed valid. This results in a completeness of 100 percent which meets normal work plan objectives of 90 percent.

MAJOR DEFICIENCIES

No major deficiencies were identified during data validation which required qualification of data as unusable.

MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of data.

Holding Times

- The holding time for the mercury analysis was unacceptable. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

Laboratory Blanks

- Beryllium was detected in the preparation blank at a positive concentration. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

- Silver, thallium and vanadium were detected in the calibration blanks at negative concentrations. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

Spike Sample Recovery

- Spike sample recoveries were unacceptable for titanium and selenium. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

Laboratory Duplicates

- The laboratory duplicate criteria was exceeded for iron and titanium. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

Serial Dilutions

- The serial dilution percent difference for zinc was unacceptable. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

Analytical Spike Recovery

- The analytical spike recovery for selenium was unacceptable. Attachments 2 and 5 provide a summary of the samples affected, data qualifications applied and supporting documentation.

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation, Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Chemical Analyses, WHC-SD-EN-SPP-002, Rev. 2., 1993. Westinghouse Hanford Company, Richland, Washington.

971351.001

Attachment 1

Glossary of Data Reporting Qualifiers

GLOSSARY OF INORGANIC DATA REPORTING QUALIFIERS

B - Indicates the constituent was analyzed for and detected. The concentration reported is less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). The associated data should be considered usable for decision making purposes.

U - Indicates the constituent was analyzed for and not detected. The concentration reported is the sample detection limit corrected for aliquot size, dilution and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and not detected. Due to a minor quality control deficiency identified during data validation the concentration may not accurately reflect the sample detection limit. The associated data have been qualified as estimated but should be considered usable for decision making purposes.

BJ - Indicates the constituent was analyzed for and detected at a concentration less than the contract required detection limit (CRDL) but greater than the instrument detection limit (IDL). Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. Due to a minor quality control deficiency identified during data validation the associated data have been qualified as estimated, but should be considered usable for decision making purposes.

UR - Indicates the constituent was analyzed for and not detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. Due to a major quality control deficiency identified during data validation, the associated data have been qualified as unusable for decision making purposes.

9713511.0113

Attachment 2

Summary of Data Qualifications

DATA QUALIFICATION SUMMARY

SDG:	VALIDATOR: C Jensen	DATE: 6/4/94	PAGE 1 OF 1
COMMENTS: Inorganics W0032-ITC-026			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Mercury	J	B0BP32	Holding Time
Beryllium	U	B0BP32	PBLK Contamination
Silver	UJ	B0BP32	negative CCB
Thallium	UJ	B0BP32	negative PBLK
Vanadium	BJ	B0BP32	negative CCB
Titanium	J	B0BP32	SSR < 75 but > 30
Selenium	UJ	B0BP32	SSR < 75 but > 30
Iron	J	B0BP32	RPD exceeded
Titanium	J	B0BP32	RPD exceeded
Zinc	J	B0BP32	Serial Dil %D
Selenium	UJ	B0BP32	Analytical Spk %R

9713511.0115

Attachment 3

Qualified Data Summary and Annotated Laboratory Reports

Validated Data Summary, Data Package: W0032-ITC-026

	Samp#	BOBP32	
	Date	4/05/94	
	Location	---	
	Depth	---	
	Type	SOIL	
	Comments	---	
Parameter	Units	Result	Q
ALUMINUM	MG/KG	124.000	
ANTIMONY	MG/KG	5.000	U
ARSENIC	MG/KG	0.140	U
BARIUM	MG/KG	32.000	B
BERYLLIUM	MG/KG	0.060	U
CADMIUM	MG/KG	0.440	B
CALCIUM	MG/KG	20700.000	
CHROMIUM	MG/KG	0.840	U
COBALT	MG/KG	0.840	U
COPPER	MG/KG	7.900	
IRON	MG/KG	359.000	J
LEAD	MG/KG	0.460	B
MAGNESIUM	MG/KG	4210.000	
MANGANESE	MG/KG	27.500	
MERCURY	MG/KG	0.050	UJ
NICKEL	MG/KG	3.700	U
POTASSIUM	MG/KG	8790.000	
SELENIUM	MG/KG	0.360	UJ
SILVER	MG/KG	0.740	UJ
SODIUM	MG/KG	245.000	B
THALLIUM	MG/KG	0.140	UJ
VANADIUM	MG/KG	3.100	BJ
ZINC	MG/KG	18.500	J
TITANIUM	MG/KG	23.200	J

Page 10 of 14

60-09

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B0BP32

Lab Name: ITAS ST. LOUIS Contract: 519.04

Lab Code: ITMO Case No.: SAS No.: SDG No.: W0032

Matrix (soil/water): SOIL Lab Sample ID: 4908-001

Level (low/med): LOW Date Received: 04/14/94

% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M	
7429-90-5	Aluminum	124		*	P	
7440-36-0	Antimony	5.0	U		P	
7440-38-2	Arsenic	0.14	U		F	
7440-39-3	Barium	32.0	B		P	
7440-41-7	Beryllium	0.06	~~B~~		P	U
7440-43-9	Cadmium	0.44	B		P	
7440-70-2	Calcium	20700			P	
7440-47-3	Chromium	0.84	U		P	
7440-48-4	Cobalt	0.84	U		P	
7440-50-8	Copper	7.9			P	
7439-89-6	Iron	359		*	P	J
7439-92-1	Lead	0.46	B	*	F	
7439-95-4	Magnesium	4210		*	P	
7439-96-5	Manganese	27.5			P	
7439-97-6	Mercury	0.05	~~U~~		CV	UJ
7440-02-0	Nickel	3.7	U		P	
7440-09-7	Potassium	8790			P	
7782-49-2	Selenium	0.36	~~U~~	W	F	UJ
7440-22-4	Silver	0.74	~~U~~		P	UJ
7440-23-5	Sodium	245	B		P	
7440-28-0	Thallium	0.14	~~U~~		F	UJ
7440-62-2	Vanadium	3.1	~~B~~		P	BJ
7440-66-6	Zinc	18.5		E*	P	J
7440-32-6	Titanium	23.2		N*	P	J

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts:

Comments:

Verified 5/6/94

FORM I - IN ILM03.0

971531.0118

Attachment 4

Laboratory Narrative and Chain-of-Custody Documentation

INTERNATIONAL TECHNOLOGY CORPORATION

CERTIFICATE OF ANALYSIS

MAY 1994
RECEIVED
SDLA

Westinghouse Hanford Company
P.O. Box 1970
Richland, Washington 99352

May 13, 1994

Attention: J. A. Lerch

Project number	:	519.04
Date Received by Lab	:	April 14, 1994
Number of Samples	:	One (1)
Sample Type	:	Solid
SDG Number	:	W0032

I. Introduction

On April 14, 1994, one (1) solid sample was received by ITAS-Richland and transferred to ITAS-St. Louis for chemical analysis. Upon receipt, the sample was given the following laboratory ID number to correspond with the specific client ID:

St. Louis ID	WHC ID	Richland ID	Matrix	Date of Receipt
4908-001	BOBP32	40427601A	Solid	04/14/94

II. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results, and the appropriate detection limits.

Regional Office
13715 N. Rider Trail • Earth City, Missouri 63045-1205 • 314-298-8566 • FAX: 314-298-8757

IT Corporation is a wholly owned subsidiary of International Technology Corporation

---

Analyses requested: Metals including Cyanide using CLP methodology.

III. Quality Control

A Laboratory Control Sample and Method Blank were analyzed with each preparation batch. Matrix Spike and Duplicate analyses were performed for all analytes in this SDG.

IV. Comments

Sample matrix was vegetation.

All sample results for this SDG are reported in wet weight. The 100% solids on the CLP forms is used for calculation purposes only and is not an analytically determined value.

The LCS for titanium(Ti) is made up of a 1000ug/L Ti spike added to the MS0023-94 soil LCS mix. The soil LCS mix has been determined analytically to contain 870ug/L without the additional spike. The total concentration of 1870ug/L is used as the true concentration of Ti for determining Ti LCS recovery.

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:

Wade H. Price
Project Manager
z:\annelars\hanw0032.nar

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006268

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS STAND Alone Deliverable
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
404276 01 BOBP32	V	4-5-94	1045	(1) 500 ml P	Metals -CLP TAL Titanium Mercury RZ- CPL CLP	4-6-94
404277 01 BOBP32	V	4-5-94	1045	(1) Plastic Bag	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-14-94	1500	4-14-94 15:00

*Matrix
A = Air
DL = Drum Liquids
DS = Drum Solids
L = Liquid
O = Oil
S = Soil
SE = Sediment
SL = Sludge
SO = Solid
T = Tissue
W = Water
WI = Wipe
X = Other

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

0000008

C-14

WO032

HANFORD ANALYTICAL SERVICES MANAGEMENT

RECORD OF DISPOSITION

ROD-94-0083
Record of Disposition No.

DATE: April 4, 1994	LABORATORY: IT
PROJECT TITLE/NO.: 200-UP-2 SAF 94-065	NCR NO.: n/a

SAMPLE IDENTIFICATION NUMBERS:

all vegetation samples

DESCRIPTION OF EVENT:

It is anticipated that field sampling teams may not be able to collect sufficient sample volumes to meet the IT requirements for vegetation.

DISPOSITION OF SAMPLES:

In the event the inadequate vegetation sample volumes are provided to perform all requested analyses, IT is instructed to prioritize the requested analyses as listed below:

priority 1 - radiochemistry
priority 2 - metals

APPROVAL SIGNATURES:

J. A. Lerch [signature] 4/4/94
CAS Project Coordinator (Print/Sign Name) Date

M. A. Wasemiller [signature] 4/11/94
Technical Representative (Print/Sign Name) Date

N/A
Quality Assurance (Print/Sign Name) Date

971531L.0125

Attachment 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200 UP2 DV		DATA PACKAGE: W0032 ITC-026	
VALIDATOR: CJensen	LAB: IT		DATE: 6/4/94
CASE:		SDG:	

ANALYSES PERFORMED

☑ CLP/ICP	☑ CLP/GFAA	☑ CLP/Hg	☐ CLP/Cyanide	☑ Ti	☐
☐ SW-846/ICP	☐ SW-846/GFAA	☐ SW-846/Hg	☐ SW-846 Cyanide	☐	☐

SAMPLES/MATRIX ~~5/6/94~~ B0B732

Vegetation

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Is technical verification documentation present? . . . . . (Yes) No N/A

Is a case narrative present? . . . . . (Yes) No N/A

Comments: Verification performed by WHC.

2. HOLDING TIMES

Are sample holding times acceptable? . . . . . Yes (No) N/A

Comments: Soil holding times were used to evaluate the sample matrix (vegetation)

The mercury holding time was not met, the sample B0B732 was qualified as estimated (J).

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. INSTRUMENT PERFORMANCE AND CALIBRATIONS

Were initial calibrations performed on all instruments? . . . . Yes No N/A
Are initial calibrations acceptable? . . . . . Yes No N/A
Are ICP interference checks acceptable? . . . . . Yes No N/A
Were ICV and CCV checks performed on all instruments? . . . . . Yes No N/A
Are ICV and CCV checks acceptable? . . . . . Yes No N/A

Comments:

4. BLANKS

Were ICB and CCB checks performed for all applicable analyses? Yes No N/A
Are ICB and CCB results acceptable? . . . . . Yes No N/A
Were preparation blanks analyzed? . . . . . Yes No N/A
Are preparation blank results acceptable? . . . . . Yes No N/A
Were field/trip blanks analyzed? . . . . . Yes No N/A
Are field/trip blank results acceptable? . . . . . Yes No N/A

Comments: Beryllium, Silver, thallium, Vanadium detected in blank. required qualification of results. See attachment 2.

5. ACCURACY

Were spike samples analyzed? . . . . . Yes No N/A
Are spike sample recoveries acceptable? . . . . . Yes No N/A
Were laboratory control samples (LCS) analyzed? . . . . . Yes No N/A
Are LCS recoveries acceptable? . . . . . Yes No N/A

Comments: Titanium SSR was 66%, Sample results qualified J, Selenium %R 74.8 also used to qualify results.

LCS results were acceptable based on a soil matrix, Sample is vegetation.

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

6. PRECISION

Were laboratory duplicates analyzed? . . . . . Yes No N/A
Are laboratory duplicate samples RPD values acceptable? . . . . Yes No N/A
Were ICP serial dilution samples analyzed? . . . . . Yes No N/A
Are ICP serial dilution %D values acceptable? . . . . . Yes No N/A
Are field duplicate RPD values acceptable? . . . . . Yes No N/A
Are field split RPD values acceptable? . . . . . Yes No N/A

Comments: Dup. RPD/ranges exceeded for Fe, Ti resulting in qualification of B0BP32 as J. Al, Pb, Mg, Zn results are within 2xCRDL therefore, no qualification was applied. Serial Dilution %D exceeded for Zn, result for B0BP32 qualified J.

7. FURNACE AA QUALITY CONTROL

Were duplicate injections performed as required? . . . . . Yes No N/A
Are duplicate injection %RSD values acceptable? . . . . . Yes No N/A
Were analytical spikes performed as required? . . . . . Yes No N/A
Are analytical spike recoveries acceptable? . . . . . Yes No N/A
Was MSA performed as required? . . . . . Yes No N/A
Are MSA results acceptable? . . . . . Yes No N/A

Comments: MSA run for B0BP32 duplicate only, ~~5/24/94~~ does not affect sample B0BP32 results for Se.

Se analytical spike %R was unacceptable. B0BP32 qualified as UJ.

8. REPORTED RESULTS AND DETECTION LIMITS

Are results reported for all requested analyses? . . . . . Yes No N/A
Are all results supported in the raw data? . . . . . Yes No N/A
Are results calculated properly? . . . . . Yes No N/A
Do results meet the CRDLs? . . . . . Yes No N/A

Comments:

HOLDING TIME SUMMARY

SDG:	VALIDATOR: C. Jensen	DATE: 6/4/94	PAGE 1 OF 1
COMMENTS: Inorganics W0032-ITC-026			

FIELD SAMPLE ID	ANALYSIS TYPE	DATE SAMPLED	DATE PREPARED	DATE ANALYZED	PREP. HOLDING TIME, DAYS	ANALYSIS HOLDING TIME, DAYS	QUALIFIER
B0BP32	ICP	4/5/94	5/4/94	5/4/94 5/5/94	29	0, 1	none
	Hg	4/5/94	5/6/94	5/6/94	31	0	J
	GFAA Se	4/5/94	5/4/94	5/6/94	29	2	none
	As	↓	↓	5/9/94	29	5	none
	Tl	↓	↓	5/9/94	29	↓	none
	Pb	↓	↓	5/9/94	29	↓	none

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3
BLANKS

Lab Name: ITAS_ST._LOUIS_____ Contract: 519.04____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0032_____

Preparation Blank Matrix (soil/water): SOIL_

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	51.2	U	52.2	B	51.2	U	60.2	B	10.240	U	P
Antimony	24.8	U	24.8	U	24.8	U	24.8	U	4.960	U	P
Arsenic	0.7	U	0.7	U	0.7	U	0.7	U	0.140	U	F
Barium	2.2	U	2.2	U	2.2	U	2.2	U	0.440	U	P
Beryllium	0.5	B	0.9	B	0.9	B	0.9	B	0.062	B	P
Cadmium	1.6	U	1.6	U	1.6	U	1.6	U	0.320	U	P
Calcium	26.6	U	61.0	B	29.4	B	87.7	B	14.752	B	P
Chromium	4.2	U	4.2	U	4.2	U	4.2	U	0.840	U	P
Cobalt	4.2	U	4.2	U	4.2	U	4.2	U	0.840	U	P
Copper	4.9	U	4.9	U	4.9	U	4.9	U	0.980	U	P
Iron	7.2	U	23.0	B	38.1	B	29.0	B	4.928	B	P
Lead	0.4	U	0.4	U	0.4	U	0.4	U	0.080	U	F
Magnesium	32.3	U	32.4	B	32.3	U	62.8	B	6.460	U	P
Manganese	2.7	U	2.7	U	2.7	U	2.7	U	0.540	U	P
Mercury	0.1	B	0.1	U	0.1	U			0.050	U	CV
Nickel	18.6	U	18.6	U	18.6	U	18.6	U	3.720	U	P
Potassium	263.4	U	263.4	U	263.4	U	263.4	U	70.998	B	P
Selenium	1.8	U	1.8	U	1.8	U	3.0	B	0.360	U	F
Silver	3.7	U	3.7	U	3.7	U	-4.6	B	0.740	U	P
Sodium	46.7	U	49.7	B	48.2	B	56.4	B	22.968	B	P
Thallium	0.7	U	0.7	U	0.7	U	1.7	B	-0.188	B	F
Vanadium	12.2	U	12.2	U	12.2	U	-16.7	B	2.440	U	P
Zinc	1.5	U	3.8	B	3.3	B	4.7	B	1.012	B	P
Titanium	3.0	U	3.0	U	3.6	B	3.0	U	0.788	B	P

BOBP32 ICP

FORM III - IN

ILM03.0

circled results quality sample results for BOBP32

5/6/90

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

B0BP32S

Lab Name: ITAS_ST._LOUIS_____ Contract: 519.04____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0032_____

Matrix (soil/water): SOIL__ Level (low/med): LOW___

% Solids for Sample: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum									NR
Antimony	75-125	101.0320		4.9600	U	100.00	101.0		P
Arsenic	75-125	7.3460		0.1400	U	8.00	91.8		F
Barium	75-125	415.3940		31.9960	B	400.00	95.8		P
Beryllium	75-125	10.3400		0.0620	B	10.00	102.8		P
Cadmium	75-125	10.1200		0.4440	B	10.00	96.8		P
Calcium									NR
Chromium	75-125	48.5180		0.8400	U	40.00	121.3		P
Cobalt	75-125	97.0640		0.8400	U	100.00	97.1		P
Copper	75-125	58.0740		7.9460		50.00	100.3		P
Iron									NR
Lead	75-125	4.4860		0.4620	B	4.00	100.6		F
Magnesium									NR
Manganese	75-125	120.3940		27.4800		100.00	92.9		P
Mercury	75-125	0.5300		0.0500	U	0.50	106.0		CV
Nickel	75-125	104.4280		3.7200	U	100.00	104.4		P
Potassium									NR
Selenium	75-125	1.4960		0.3600	U	2.00	74.8		F
Silver	75-125	9.4700		0.7400	U	10.00	94.7		P
Sodium									NR
Thallium	75-125	9.1040		0.1400	U	10.00	91.0		F
Vanadium	75-125	106.7040		3.0560	B	100.00	103.6		P
Zinc	75-125	124.9320		18.5320		100.00	106.4		P
Titanium	75-125	155.2080		23.1780		200.00	66.0	N	P

Comments: Se, Ti results qualified J
6/6/2/6/4

FORM V (Part 1) - IN ILM03.0

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U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

B0BP32D

Lab Name: ITAS_ST._LOUIS_____ Contract: 519.04____

Lab Code: ITMO__ Case No._____ SAS No._____ SDG No.: W0032_____

Matrix (soil/water): SOIL_ Level (low/med): _LOW__

% Solids for Sample: 100.0 % Solids for Duplicate: _100.0

Concentration Units (ug/L or mg/kg wet weight): MG/KG

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum	40.0	123.7960		83.5680		38.8	*	P
Antimony		4.9600	U	4.9600	U			P
Arsenic		0.1400	U	0.1400	U			F
Barium		31.9960	B	31.3440	B	2.1		P
Beryllium		0.0620	B	0.0620	B	0.0		P
Cadmium		0.4440	B	0.4120	B	7.5		P
Calcium		20664.0060		20039.0240		3.1		P
Chromium		0.8400	U	0.8400	U			P
Cobalt		0.8400	U	0.8400	U			P
Copper	5.0	7.9460		10.3180		26.0		P
Iron	40	358.9000		260.3600		31.8	*	P
Lead	0.6	0.4620	B	1.2320		90.9	*	P
Magnesium	1000.0	4213.0220		2785.6060		40.8	*	P
Manganese		27.4800		22.8160		18.5		P
Mercury		0.0500	U	0.0500	U			CV
Nickel		3.7200	U	3.7200	U			P
Potassium		8790.4660		9706.7020		9.9		P
Selenium		0.3600	U	0.3600	U			F
Silver		0.7400	U	0.7400	U			P
Sodium		244.8340	B	365.1760	B	39.5		P
Thallium		0.1400	U	0.1400	U			F
Vanadium		3.0560	B	2.6020	B	16.0		P
Zinc	4.0	18.5320		23.1940		22.3	*	P
Titanium	4.0	23.1780		15.1180		42.1	*	P

OK 2xCRD

OK

OK 2xCRD

OK

OK

FORM VI - IN

CJ 6/7/94

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Al, Pb and Mg, Zn sample results are within 2x the CRDL therefore no qualification is required.

Fe and Ti results exceed limits, qualified B0BP32 as J

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9

ICP SERIAL DILUTION

EPA SAMPLE NO.

B0BP32L

Lab Name: ITAS_ST._LOUIS_____ Contract: 519.04____

Lab Code: ITMO__ Case No.: _____ SAS No.: _____ SDG No.: W0032_____

Matrix (soil/water): SOIL_ Level (low/med): LOW__

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	618.98		844.85	B	36.5		P
Antimony	24.80	U	124.00	U			P
Arsenic							NR
Barium	159.98	B	160.63	B	0.4		P
Beryllium	0.31	B	1.55	B	400.0		P
Cadmium	2.22	B	8.00	U	100.0		P
Calcium	103320.03		105006.93		1.6		P
Chromium	4.20	U	21.00	U			P
Cobalt	4.20	U	21.00	U			P
Copper	39.73		43.57	B	9.7		P
Iron	1794.50		1965.21		9.5		P
Lead							NR
Magnesium	21065.11		20878.40	B	0.9		P
Manganese	137.40		144.58		5.2		P
Mercury							NR
Nickel	18.60	U	93.00	U			P
Potassium	43952.33		43910.07		0.1		P
Selenium							NR
Silver	3.70	U	18.50	U			P
Sodium	1224.17	B	1466.88	B	19.8		P
Thallium							NR
Vanadium	15.28	B	61.00	U	100.0		P
Zinc	92.66		123.22		33.0	E	P
Titanium	115.89		129.70		11.9		P

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FORM IX - IN

ILM03.0

En result for B0BP32 qualified J

5/14/94

ACCURACY DATA SUMMARY

SDG:	VALIDATOR: CGenson	DATE: 6/4/94	PAGE 1 OF 1	
COMMENTS: Inorganics W0032-ITC-026 GFAA				
SAMPLE ID	COMPOUND	% RECOVERY	SAMPLE(S) AFFECTED	QUALIFIER REQUIRED
	Selenium	57.5	B0B932	UJ

9413110.0035

MEMORANDUM

JUN 1994 RECEIVED TQO

TO: 200-UP-2 Project QA Record June 24, 1994

FR: Kent Angelos, Golder Associates Inc.

RE: RADIOCHEMISTRY DATA VALIDATION SUMMARY FOR DATA PACKAGE: W0032-ITC-026, (923-E418, Filename W0032R.UP2)

INTRODUCTION

This memo presents the results of data validation on data package W0032-ITC-026 prepared by IT Analytical Services of Richland, Washington. A list of sample validated along with the analyses reported and the method of analysis is provided in the following table.

SAMPLE ID	SAMPLE DATE	MEDIA	ANALYSIS
B0BP32	4/5/94	VEGETATION	SEE NOTE 1

Note 1. The sample were analyzed for americium-241, neptunium-237, plutonium-238, 239/240 and uranium-234, 235 and 238 by alpha spectroscopy; iodine-129 and selected radionuclides by gamma spectroscopy; gross alpha, gross beta and strontium-90 by gas proportional counting; selenium-79 and technetium-99 by liquid scintillation counting and total uranium by kinetic phosphorimetry.

Data validation was conducted in accordance with the WHC statement of work (WHC 1993a) and validation procedures (WHC 1993b). Attachments 1 through 5 provide the following information as indicated below:

Attachment 1. Glossary of Data Reporting Qualifiers
Attachment 2. Summary of Data Qualifications
Attachment 3. Qualified Data Summary and Annotated Laboratory Reports
Attachment 4. Laboratory Narrative and Chain-of-Custody Documentation
Attachment 5. Data Validation Supporting Documentation

RECEIVED JUN 27 1994 VALIDATION DOCUMENTATION SDLA

DATA QUALITY OBJECTIVES

This section presents a summary of the data quality in terms of the referenced validation criteria.

Precision. Goals for precision were met with the exception of the deficiencies identified under "Minor Deficiencies".

Accuracy. Goals for accuracy were met with the exception of the deficiencies identified under "Minor Deficiencies".

Sample Result Verification. All sample results were supported in the raw data. Minimum detectable activities (MDA's) for neptunium-237 and selenium-79 could not be verified by recalculation using the formulae provided by IT resulting in qualification of nondetect results

as estimated (UJ). Attachments 2 and 5 provide a summary of the samples affected and qualifications applied.

Detection Limits. Detection limit goals were met for all analytes except americium-241, europium-155 and iodine-129. The iodine-129 detection limit was elevated due to matrix interference. No explanation was provided by the laboratory for the elevated detection limits for americium-241 and europium-155.

Completeness. The data package was complete for all requested analyses. One sample was validated in this data package with a total of 30 determinations reported, all of which were deemed valid. This results in a completeness of 100 percent, which meets normal work plan objectives of 90%.

MAJOR DEFICIENCIES

No major deficiencies were identified which resulted in qualification of sample results as unusable.

MINOR DEFICIENCIES

The following minor deficiencies were identified during data validation which required qualification of data.

Calibration Checks

- Calibration checks for plutonium were not conducted within one week of sample analysis resulting in qualification of the sample results as estimated (UJ). Attachments 2 and 5 provide supporting documentation.

Laboratory Duplicates

- Duplicate sample relative percent difference was greater than 35% for thallium-208. Attachments 2 and 5 provide a summary of the qualifications applied and supporting documentation.

Spike Sample Recovery

- Spike sample recoveries for neptunium-237 and selenium-79 were unacceptable. Attachments 2 and 5 provide a summary of the qualifications applied and supporting documentation.

DATA REPORTING

- Results reported at a concentration of less than the minimum detectable activity (MDA) have been qualified as undetected (U) and the MDA is reported in the validated data summary in Attachment 3.

Revised Page
6/27/94

002

REFERENCES

WHC 1993a, Validation of 200-UP-2 Data, Statement of Work, Analytical Laboratory Data Validation, Task Order S-94-18, December 14, 1993, Purchase Order M073750. Westinghouse Hanford Company, Richland, Washington.

WHC 1993b, Data Validation Procedures for Radiochemical Analyses, WHC-SD-EN-SPP-001, Rev. 1, 1993. Westinghouse Hanford Company, Richland, Washington.

ATTACHMENT 1

GLOSSARY OF RADIOCHEMISTRY DATA REPORTING QUALIFIERS

U - Indicates the constituent was analyzed for, but was not detected at a concentration above the minimum detectable activity (MDA). The concentration reported is the MDA corrected for sample aliquot size, dilution factors and percent solids (in the case of solid matrices) by the laboratory. The associated data should be considered usable for decision making purposes.

UJ - Indicates the constituent was analyzed for and was not detected at a concentration above the MDA. Due to a quality control deficiency identified during data validation, the concentration reported may not accurately reflect the sample MDA. The associated data should be considered usable for decision making purposes.

J - Indicates the constituent was analyzed for and detected. The concentration reported is qualified as estimated due to a quality control deficiency identified during data validation. The associated data should be considered usable for decision making purposes.

UR - Indicates the constituent was analyzed for and not detected. The concentration reported is qualified as unusable due to a quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

R - Indicates the constituent was analyzed for and detected. The concentration reported is qualified as unusable due to a quality control deficiency identified during data validation. The associated data should be considered unusable for decision making purposes.

ATTACHMENT 2

SUMMARY OF DATA QUALIFICATIONS

SDG: W0032-ITC-026	VALIDATOR: KA	DATE: June 24, 1994	PAGE 1 OF 1
COMMENTS: RADIOCHEMISTRY			
ANALYTE	QUALIFIER	SAMPLES AFFECTED	REASON
Plutonium-238,239/240	UJ	B0BP32	Calibration check not performed within one week of sample analysis
Neptunium-237 and Selenium-79	UJ	B0BP32	Spike sample recovery >10% but <60%
Thallium-208	J	B0BP32	Duplicate sample RPD >35%
Neptunium-237 and Selenium-79	UJ	B0BP32	MDA's could not be verified by recalculation using the formulae provided by IT

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ATTACHMENT 3

QUALIFIED DATA SUMMARY AND ANNOTATED LABORATORY REPORTS

Validated Data Summary, Data Package: W0032-ITC-026

	Samp#	B0BP32	
	Date	4-5-94	
	Location	---	
	Depth	---	
	Type	VEGETATION	
	Comments	---	
Parameter	Units	Result	Q
AMERICIUM-241	PCI/G	0.065	U
CURIUM-242	PCI/G	0.059	U
CURIUM-244	PCI/G	0.049	U
NEPTUNIUM-237	PCI/G	0.011	UJ
PLUTONIUM-239/240	PCI/G	0.013	UJ
PLUTONIUM-238	PCI/G	0.027	UJ
URANIUM-234	PCI/G	0.127	
URANIUM-235	PCI/G	0.025	U
URANIUM-238	PCI/G	0.128	
POTASSIUM-40	PCI/G	10.400	
COBALT-60	PCI/G	0.020	U
EUROPIUM-152	PCI/G	0.086	U
CESIUM-137	PCI/G	0.415	
CESIUM-134	PCI/G	0.019	U
RUTHENIUM-106	PCI/G	0.184	U
RADIUM-224	PCI/G	0.053	
SODIUM-22	PCI/G	0.022	U
EUROPIUM-155	PCI/G	0.114	U
EUROPIUM-154	PCI/G	0.060	U
BERYLLIUM-7	PCI/G	1.230	
THALLIUM-208	PCI/G	0.026	J
LEAD-232	PCI/G	0.050	
THORIUM-232	PCI/G	16.600	
IODINE-129	PCI/G	2.850	U
ALPHA	PCI/G	4.320	U
BETA	PCI/G	1810.000	
TOTAL STRONTIUM	PCI/G	360.000	
SELENIUM-79	PCI/G	1.220	UJ
TECHNETIUM-99	PCI/G	30.000	
URANIUM	UG/GM	0.325	

Verified
MMS
6/24/94

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

SAMPLE RESULTS

LAB NAME: ITAS-RICHLAND
SDG NO.: W0032
LAB SAMPLE ID: 40427701
MATRIX: VEGETATION
WHC ID: B0BP32
DATE RECEIVED: 4/14/94
REPORTING UNITS pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
AM-241	-3.92E-03	3.92E-03	4.01E-03	6.53E-02 U	0.298	RD3302
CM-242	-1.18E-03	2.35E-03	2.37E-03	5.91E-02 U	0.298	RD3302
CM-244	-9.83E-04	1.97E-03	1.98E-03	4.94E-02 U	0.298	RD3302
NP-237	0.00E+00	0.00E+00	0.00E+00	1.12E-02 U J	1	RD3208
PU239/40	4.77E-03	9.55E-03	9.57E-03	1.29E-02 U J	0.839	RD3209
PU-238	-1.91E-03	2.70E-03	2.72E-03	2.70E-02 U J	0.839	RD3209
U-234	1.27E-01	5.09E-02	5.34E-02	3.08E-02	0.757	RD3234
U-235	1.38E-02	1.73E-02	1.74E-02	2.48E-02 U	0.757	RD3234
U-238DA	1.28E-01	5.08E-02	5.34E-02	2.66E-02	0.757	RD3234
K-40	1.04E+01	5.32E-01	1.17E+00	N/A	N/A	RD3219
CO-60	2.33E-03	1.19E-02	1.19E-02	2.02E-02 U	N/A	RD3219
EU-152	1.43E-02	4.93E-02	4.93E-02	8.61E-02 U	N/A	RD3219
CS-137DA	4.15E-01	2.96E-02	5.10E-02	N/A	N/A	RD3219
CS-134	-6.68E-04	1.14E-02	1.14E-02	1.86E-02 U	N/A	RD3219
RU-106DA	3.45E-02	1.10E-01	1.11E-01	1.84E-01 U	N/A	RD3219
RA-224DA	5.29E-02	3.89E-02	3.92E-02	N/A	N/A	RD3219
NA-22	-5.66E-03	1.35E-02	1.35E-02	2.20E-02 U	N/A	RD3219
EU-155	1.01E-02	6.86E-02	6.86E-02	1.14E-01 U	N/A	RD3219
EU-154	-8.38E-03	3.71E-02	3.71E-02	6.03E-02 U	N/A	RD3219
BE-7	1.23E+00	2.86E-01	3.11E-01	N/A	N/A	RD3219
TL-208	2.56E-02	1.95E-02	1.96E-02	N/A J	N/A	RD3219
PB-212	5.04E-02	3.71E-02	3.74E-02	N/A	N/A	RD3219
TH-232DA	1.66E-01	6.63E-02	6.83E-02	N/A	N/A	RD3219
I-129LP	1.54E+00	1.67E+00	1.68E+00	2.85E+00 U	N/A	RD3219
ALPHA	2.44E+00	2.82E+00	2.84E+00	4.32E+00 U	1	RD3222
BETA	1.81E+03	2.75E+01	1.22E+02	3.70E+00	1	RD3222
TOTAL-SR	3.60E+02	2.28E+00	8.53E+01	1.62E-01	0.714	RD3204
SE-79	-2.17E-01	6.30E-01	1.71E+00	1.22E+00 U J	0.651	RD3253
TC-99	3.00E+01	7.01E-01	3.99E+00	6.90E-01	0.951	ITAS-IT-RD-0001
URANIUM	3.25E-01	N/A	4.88E-02	2.98E-03	0.774	RD4200

6/22/94

682A-6-93

ATTACHMENT 4

LABORATORY NARRATIVE AND CHAIN-OF-CUSTODY DOCUMENTATION

9713511.0142

INTERNATIONAL TECHNOLOGY CORPORATION

CERTIFICATE OF ANALYSIS

Westinghouse Hanford Company
P.O. Box 1970
Richland, WA 99352

June 1, 1994

Attention: J.A.Lerch

SAF Number	:	94-065
Date SDG Closed	:	April 28, 1994
Number of Samples	:	One (1)
Sample Type	:	Vegetation
SDG Number	:	W0032
Data Deliverable	:	Stand Alone

I. Introduction

On April 14, 1994, one vegetation sample was received by ITAS-Richland for radiochemical analysis. Upon receipt, the sample was assigned the following laboratory ID number to correspond with the WHC specific ID:

ITAS-Richland ID	WHC ID	Matrix	Date of Receipt
404277-01A	B0BP32	Vegetation	4/14/94

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

Regional Office
2800 George Washington Way • Richland, Washington 99352-1613 • 509-375-3131 • FAX: 509-375-5590

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The requested analyses were:

Alpha Spectroscopy
Americium-241, Curium-244 by method ITAS-RD-3302
Neptunium-237 by method ITAS-RD-3208
Plutonium-238, 239/40 by method ITAS-RD-3209
Uranium-234, 235, 238 by method ITAS-RD-3234
Gamma Spectroscopy
Gamma Scan by method ITAS-RD-3219
Iodine-129 by method ITAS-RD-3219
Gas Proportional Counting
Gross Alpha by method ITAS-RD-3222
Gross Beta by method ITAS-RD-3222
Strontium-90 by method ITAS-RD-3204
Liquid Scintillation Counting
Selenium-79 by method ITAS-RD-3253
Technetium-99 by method ITAS-IT-RS-0001
Total Uranium
Total Uranium by method ITAS-RD-4200

III. Quality Control

The analytical results for each analysis performed under SDG W0032 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate.

Quality control sample results are reported in the same units as sample results except for gross alpha and gross beta quality control sample results which are reported in pCi/sample.

IV. Comments

The initial radioactivity screening of the sample classified it as Category III.

Alpha Spectroscopy

Americium-241, Curium-244 by method ITAS-RD-3302
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BP32) results are within contractual requirements.

Neptunium-237 by method ITAS-RD-3208
The batch was reanalyzed due to low matrix spike recoveries (37.6% and 17.0%). The reanalysis verified the original analysis within 3 sigma and also exhibited low matrix spike recoveries, verifying a matrix effect. The original data are accepted and reported. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BP32) results are within contractual requirements.

Plutonium-238, 239/40 by method ITAS-RD-3209
Due to a technician error, plutonium was not eluted from the column during the initial preparation of the sample batch and the batch was reanalyzed. The reanalysis batch was acceptable with the exception of the reanalysis LCS. The reanalysis LCS was unacceptable due to a tracer yield of less than the 20% lower limit. The batch was reanalyzed a second time. The second reanalysis results are within 3 sigma of the first reanalysis. The LCS, batch blank, and sample results are within contractual requirements. A duplicate of sample B0BP32 was not analyzed with the second reanalysis, however, the first reanalysis duplicate is within 3 sigma of the first and second analysis of sample B0BP32, therefore, the first reanalysis duplicate is accepted and reported.

Uranium-234, 235, 238 by method ITAS-RD-3234
The initial analysis of the samples was rejected due to tracer yields of less than 30% for the batch blank, sample B0BP32, and the duplicate of sample B0BP32. The reanalysis results are acceptable and reported. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BP32) results are within contractual requirements.

Gamma Spectroscopy

Gamma Scan by method ITAS-RD-3219
Due to the high activity noted in the screening of the sample, a 200 ml geometry was used for counting rather than a Marinelli beaker. The batch was counted for 200 minutes and the detection limits were not met for several isotopes and the sample and sample duplicate were outside of the 3 sigma control limit for some isotopes. The batch was recounted for 600 minutes with unacceptable results, and recounted again for 1000 minutes. The 1000 minute counts are acceptable. The LCS, batch blank, matrix spike, sample and sample duplicate are within the contractual requirements.

Iodine-129 by method ITAS-RD-3219
The detection limit was not met for sample B0BP32 and the duplicate of B0BP32 due to matrix interference. The blank meets the MDA for I-129 and the sample and its duplicate exhibit the same effect which verifies that the interference is a matrix effect without necessitating a reanalysis of the sample batch. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BP32) results are accepted and reported.

Gas Proportional Counting

Gross Alpha by method ITAS-RD-3222
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BP32) results meet contractual requirements.

Gross Beta by method ITAS-RD-3222
The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BP32) results meet contractual requirements.

Strontium-90 by method ITAS-RD-3204
The original analysis failed due to low chemical yields. The low yields are attributed to a matrix effect caused by sulfate present in the vegetation matrix. The effects of the sulfate on the chemical yields were reduced by extending the metathesis of the sample batch during the reanalysis. The reanalysis is accepted and reported. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BP32) results meet contractual requirements.

Liquid Scintillation Counting

Selenium-79 by method ITAS-RD-3253
Two matrix spikes were analyzed and their average chemical yield is used for the batch yield corrections. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BP32) results are within contractual requirements.

Technetium-99 by method ITAS-IT-RS-0001
The initial analysis of the sample batch failed due to excessive quench. An error in sample batching caused the reanalysis of sample B0BP32 to be batched with SDGs W0022 and W0033. The LCS, matrix spikes, batch blank, sample and sample duplicate (duplicate of sample B0BP32) results associated with this batch are acceptable and reported. The sample results were not yield corrected by the matrix spike recoveries.

Total Uranium

Total Uranium by method ITAS-RD-4200
The batch was reanalyzed due to low matrix spike recoveries (32.0% and 49.6%). The reanalysis of the batch is acceptable and reported. Two matrix spikes were analyzed with the batch and their average yield is used for yield correcting the sample results. The LCS, batch blank, sample and sample duplicate (duplicate of sample B0BP32) results meet contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:

Suzanne Gaines

Suzanne Gaines
Project Manager

Westinghouse Hanford Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	Page 1 of 1
		006268

Collector R.T. Sickle
Company Contact C.A. Rowley
Telephone 372-3293
SAF No. 94-065
Project Designation 200-UP-2
Sampling Locations
Ice Chest No.
Bill of Lading/Airbill No. N/A
Offsite Property No.
Method of Shipment Government truck
Field Logbook No.
Shipped to IT
SPECIAL INSTRUCTIONS STAND Alone Deliverable
Possible Sample Hazards/Remarks None Detected
Special Handling and/or Storage Keep cool

Sample Number	*	Date Collected	Time	Number and Type of Containers	Analysis Required	Preservative
404276 01 BOBP32	V	4-5-94	1045	(1) 500 ml P	Metals -CLP TAL Titanium Mercury RZ ept CLP	4-6-94
BOBP32 404277 01	V	4-5-94	1045	(1) Plastic Bag	Gross Alpha/Beta ITAS-RD-3322 Gamma Spec. Cs-134,137, I-129, Co-60, K-40, Eu-152/154/155, Ru-106, Na-22 ITAS-RD-3219; Total Uranium ITAS-RD-4200 OR 4201 U-235/234/238 ITAS-RD-3234 Np-237 ITAS-RD-3208; Pu-238/239/240 ITAS-RD-3209; Sr-90 ITAS-RD-3204; Tc-99 ITAS-RD-RS-0001; Am-241, Cm-244 ITAS-RD-3302; Se-79 ITAS-RD-3253	

Chain of Possession Relinquished By (Sign and Print Names)	Date	Time	Received By
R.T. Sickle	4-14-94	1500	4-14-94 15:00

*Matrix
A = Air
DL = Drum Liquids
DS = Drum Solids
L = Liquid
O = Oil
S = Soil
SE = Sediment
SL = Sludge
SO = Solid
T = Tissue
W = Water
WI = Wipe
X = Other

LABORATORY SECTION	Received By	Title	Date/Time
Final Sample Disposition	Disposal Method:	Disposed by:	Date/Time:

015
~~0047~~

ATTACHMENT 5

DATA VALIDATION SUPPORTING DOCUMENTATION

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 200-UP-2		DATA PACKAGE: W0032-ITC-026
VALIDATOR: K.A.	LAB: IT	DATE: 6/22/94
CASE:		SDG:

ANALYSES PERFORMED

☑ Gross Alpha/Beta	☑ Strontium-90	☑ Technetium-99	☑ Alpha Spectroscopy	☑ Gamma Spectroscopy	
☑ Total Uranium	☐ Radium-22	☐ Tritium	☐		

SAMPLES/MATRIX B0B5P32/Vegetation

1. Completeness . . . . . ~~☐ N/A~~

Technical verification forms present? . . . . . (Yes) No N/A

Comments:

2. Initial Calibration . . . . . ☐ N/A

Instruments/detectors calibrated within one year of sample analysis? . . . . . Yes (No) N/A

Initial calibration acceptable? . . . . . (Yes) No N/A

Standards NIST traceable? . . . . . (Yes) No N/A

Standards Expired? . . . . . Yes (No) N/A

Comments:

3. Continuing Calibration . . . . . ☐ N/A

Calibration checked within one week of sample analysis? . . . Yes (No) N/A
Calibration check acceptable? . . . . . (Yes) No N/A
Calibration check standards NIST traceable? . . . . . Yes (No) N/A
Calibration check standards expired? . . . . . Yes (No) N/A

Comments: Cal check for Pu not checked w/i one week results qualified J/UJ.

4. Blanks . . . . . ☐ N/A

Method blank analyzed? . . . . . (Yes) No N/A
Method blank results acceptable? . . . . . (Yes) No N/A
Analytes detected in method blank? . . . . . (Yes) No N/A
Field blank(s) analyzed? . . . . . Yes No (N/A)
Field blank results acceptable? . . . . . Yes No (N/A)
Analytes detected in field blank(s)? . . . . . Yes No (N/A)
Transcription/Calculation Errors? . . . . . Yes (No) N/A

Comments: No qualification was necessary for the analyte detected in the blanks.

5. Matrix Spikes . . . . . ☐ N/A

Matrix spike analyzed? . . . . . (Yes) No N/A
Spike recoveries acceptable? . . . . . Yes (No) N/A
Spike source traceable? . . . . . (Yes) No N/A
Spike source expired? . . . . . Yes (No) N/A
Transcription/Calculation Errors? . . . . . and Set 9 . . . . . Yes (No) N/A

Comments: MS % R for Np237 >10 but <60 qualify results as J/UJ.

6. Laboratory Control Samples . . . . . ☐ N/A

LCS analyzed? . . . . . (Yes) No N/A
LCS recoveries acceptable? . . . . . Yes (No) N/A
LCS traceable? . . . . . (Yes) No N/A
Transcription/Calculation Errors? . . . . . Yes (No) N/A

Comments: LCS % R for I-129 and Se 79 >130% i.e. detects qualified as J No qualification required since results are all U

7. Chemical Recovery . . . . . ☐ N/A

Chemical carrier added? . . . . . (Yes) No N/A
Chemical recovery acceptable? . . . . . (Yes) No N/A
Chemical carrier traceable? . . . . . (Yes) No N/A
Chemical carrier expired? . . . . . Yes (No) N/A
Transcription/Calculation errors? . . . . . Yes (No) N/A

Comments:

8. Duplicates . . . . . ☐ N/A

Duplicates Analyzed? . . . . . (Yes) No N/A
RPD Values Acceptable? . . . . . Yes (No) N/A
Transcription/Calculation Errors? . . . . . Yes (No) N/A

Comments: RPD >35% for TL-208 results qualified J.

9. Field QC Samples . . . . . ☑ N/A

Field duplicate sample(s) analyzed? . . . . . Yes No (N/A)
Field duplicate RPD values acceptable? . . . . . Yes No (N/A)
Field split sample(s) analyzed? . . . . . Yes No (N/A)
Field split RPD values acceptable? . . . . . Yes No (N/A)
Performance audit sample(s) analyzed? . . . . . Yes No (N/A)
Performance audit sample results acceptable? . . . . . Yes No (N/A)

Comments:

10. Holding Times

MW 6/27/94

Are sample holding times acceptable? . . . . . 4/5/94 (Yes) No N/A

Comments: Sample collected in 4/4/94 all analysis completed in May 94 and not less than 180 days.

11. Results and Detection Limits (Levels D & E) . . . . . ☐ N/A

Results reported for all required sample analyses? . . . . . (Yes) No N/A
Results supported in raw data? . . . . . (Yes) No N/A
Results Acceptable? . . . . . (Yes) No N/A
Transcription/Calculation errors? . . . . . (Yes) No N/A
MDA's meet required detection limits? . . . . . Yes (No) N/A
Transcription/calculation errors? . . . . . (Yes) No N/A

Comments: ~~Results and~~ MDA's could not be verified for Np237 and Se79. Non-detects qualified UJ. MDA's exceeded RDCLs for Am241, Eu155 and ~~Np237~~ I-129

MW 6/23/94

Revised page MW 11/27/94

9213511.0155

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

DUPLICATE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0032

LAB SAMPLE ID: F0427701

WHC ID: B0BP32

REPORTING UNITS: pCi/g & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
AM-241	1.58E-02	3.45E-02	3.47E-02	6.91E-02	U 0.212	RD3302
CM-242	-1.65E-03	3.30E-03	3.33E-03	8.30E-02	U 0.212	RD3302
CM-244	-4.14E-03	4.79E-03	4.90E-03	8.61E-02	U 0.212	RD3302
NP-237	8.25E-03	1.17E-02	1.18E-02	1.12E-02	UJ 1	RD3208
PU239/40	-1.29E-02	1.29E-02	1.32E-02	1.11E-01	UJ 0.255	RD3209
PU-238	-3.23E-03	6.46E-03	6.50E-03	7.73E-02	UJ 0.255	RD3209
U-234	1.28E-01	5.50E-02	5.75E-02	3.54E-02	0.693	RD3234
U-235	1.97E-02	2.30E-02	2.32E-02	3.54E-02	U 0.693	RD3234
U-238DA	8.40E-02	4.44E-02	4.58E-02	3.06E-02	0.693	RD3234
K-40	1.11E+01	4.87E-01	1.21E+00	N/A	N/A	RD3219
CO-60	-5.02E-03	1.13E-02	1.13E-02	1.82E-02	U N/A	RD3219
EU-152	9.17E-03	4.36E-02	4.36E-02	7.57E-02	U N/A	RD3219
CS-137DA	4.27E-01	2.86E-02	5.14E-02	N/A	N/A	RD3219
CS-134	-4.00E-03	1.05E-02	1.05E-02	1.73E-02	U N/A	RD3219
RU-106DA	-9.36E-03	1.06E-01	1.06E-01	1.78E-01	U N/A	RD3219
RA-224DA	4.01E-02	3.85E-02	3.87E-02	N/A	N/A	RD3219
NA-22	-1.22E-03	1.26E-02	1.26E-02	2.15E-02	U N/A	RD3219
EU-155	-1.40E-02	7.29E-02	7.29E-02	1.12E-01	U N/A	RD3219
EU-154	-3.69E-02	3.64E-02	3.66E-02	5.89E-02	U N/A	RD3219
BE-7	1.30E+00	3.50E-01	3.74E-01	N/A	N/A	RD3219
TL-208	4.29E-02	2.09E-02	2.13E-02	N/A	J N/A	RD3219
PB-212	3.82E-02	3.67E-02	3.69E-02	N/A	N/A	RD3219
I-129LP	1.11E+00	1.59E+00	1.59E+00	2.70E+00	U N/A	RD3219
ALPHA	3.81E+00	3.23E+00	3.26E+00	4.33E+00	U 1	RD3222
BETA	1.84E+03	2.78E+01	1.25E+02	3.82E+00	1	RD3222
TOTAL-SR	3.89E+02	2.29E+00	9.23E+01	1.55E-01	0.731	RD3204
SE-79	5.48E-01	6.73E-01	1.86E+00	1.82E+00	UJ 0.651	RD3253
TC-99	3.13E+01	7.11E-01	4.13E+00	6.90E-01	0.951	ITAS-IT-RD-0001
URANIUM	2.14E-01	N/A	3.21E-02	2.98E-03	0.774	RD4200

6/22/94

9713541.0154

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

RPD CALCULATIONS

LAB NAME: ITAS-RICHLAND SDG NO.: W0032

LAB SAMPLE ID: 40427701

WHC ID: BOBP32

REPORTING UNITS: pCi/g & ug/g

ISOTOPE	SAMPLE RESULT	DUPLICATE RESULT	RPD	
AM-241	-3.92E-03 U	1.58E-02 U	332	dk
CM-242	-1.18E-03 U	-1.65E-03 U	33	dk
CM-244	-9.83E-04 U	-4.14E-03 U	123	dk
NP-237	0.00E+00 U	8.25E-03 U	200	dk
PU239/40	4.77E-03 U	-1.29E-02 U	435	dk
PU-238	-1.91E-03 U	-3.23E-03 U	51	dk
U-234	1.27E-01	1.28E-01	1	
U-235	1.38E-02 U	1.97E-02 U	35	dk
U-238DA	1.28E-01	8.40E-02	42	dk w/i 2xRDL
K-40	1.04E+01	1.11E+01	7	
CO-60	2.33E-03 U	-5.02E-03 U	546	dk
EU-152	1.43E-02 U	9.17E-03 U	44	dk
CS-137DA	4.15E-01	4.27E-01	3	
CS-134	-6.68E-04 U	-4.00E-03 U	143	dk
RU-106DA	3.45E-02 U	-9.36E-03 U	349	ok
RA-224DA	5.29E-02	4.01E-02	28	
NA-22	-5.66E-03 U	-1.22E-03 U	129	dk
EU-155	1.01E-02 U	-1.40E-02 U	1236	dk
EU-154	-8.38E-03 U	-3.69E-02 U	126	dk
BE-7	1.23E+00	1.30E+00	6	
TL-208	2.56E-02	4.29E-02	51	no RDL w/MDA J/UJ
PB-212	5.04E-02	3.82E-02	28	
I-129LP	1.54E+00	1.11E+00	32	
ALPHA	2.44E+00 U	3.81E+00 U	44	dk
BETA	1.81E+03	1.84E+03	2	
TOTAL-SR	3.60E+02	3.89E+02	8	
SE-79	-2.17E-01 U	5.48E-01 U	462	ok
TC-99	3.00E+01	3.13E+01	4	
URANIUM	3.25E-01	2.14E-01	41	

MAK 6/22/94

9715511.0155

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

BLANK RESULTS

LAB NAME: ITAS -RICHLAND SDG NO.: W0032

LAB SAMPLE ID: L042771B

REPORTING UNITS: pCi/G & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
AM-241	1.01E-02	1.56E-02	1.57E-02	2.51E-02 U	0.662	RD3302
CM-242	0.00E+00	0.00E+00	1.71E-02	1.54E-02 U	0.662	RD3302
CM-244	0.00E+00	0.00E+00	1.65E-02	1.49E-02 U	0.662	RD3302
NP-237	0.00E+00	0.00E+00	0.00E+00	1.13E-02 U	1	RD3208
K-40	9.51E-01	2.01E-01	2.23E-01	4.32E-01	N/A	RD3219
CO-60	7.54E-03	1.01E-02	1.01E-02	1.90E-02 U	N/A	RD3219
EU-152	5.73E-02	5.58E-02	5.61E-02	1.05E-01 U	N/A	RD3219
CS-137DA	4.56E-03	1.01E-02	1.01E-02	1.84E-02 U	N/A	RD3219
CS-134	2.51E-03	1.00E-02	1.00E-02	1.75E-02 U	N/A	RD3219
RU-106DA	3.03E-02	9.01E-02	9.02E-02	1.58E-01 U	N/A	RD3219
NA-22	4.80E-03	1.06E-02	1.06E-02	1.98E-02 U	N/A	RD3219
EU-155	3.40E-03	2.17E-02	2.17E-02	3.50E-02 U	N/A	RD3219
EU-154	1.34E-02	2.97E-02	2.97E-02	5.56E-02 U	N/A	RD3219
I-129LP	8.02E-02	2.33E-01	2.33E-01	4.47E-01 U	N/A	RD3219
ALPHA	-3.81E-02	4.72E-02	4.77E-02	1.28E-01 U	1	RD3222
BETA	3.30E-02	3.32E-01	3.32E-01	7.87E-01 U	1	RD3222
SE-79	-7.16E-01	6.64E-01	1.78E+00	1.46E+00 U	0.651	RD3253
TC-99	1.78E-01	2.98E-01	1.05E+00	6.90E-01 U	0.951	ITAS-IT-RD-0001
URANIUM	4.28E-03	N/A	6.41E-04	2.98E-03	1	RD4200

No qualification necessary since results > 5 X blank values

[illegible] 6/22/94

9213911.0156

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

BLANK RESULTS

LAB NAME: ITAS - RICHLAND SDG NO.: W0032

LAB SAMPLE ID: L042771X

REPORTING UNITS: pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	METHOD NUMBER
K-40	8.38E-02	4.67E-02	4.75E-02	N/A	N/A	RD3219
CO-60	-6.90E-04	1.78E-03	1.78E-03	2.93E-03 U	N/A	RD3219
EU-152	1.50E-02	8.02E-03	8.16E-03	1.58E-02 U	N/A	RD3219
CS-137DA	2.61E-05	1.55E-03	1.55E-03	2.55E-03 U	N/A	RD3219
CS-134	-4.53E-04	1.50E-03	1.50E-03	2.49E-03 U	N/A	RD3219
RU-106DA	-6.95E-03	1.41E-02	1.41E-02	2.36E-02 U	N/A	RD3219
NA-22	1.93E-03	1.49E-03	1.50E-03	2.86E-03 U	N/A	RD3219
EU-155	5.62E-04	4.25E-03	4.25E-03	7.08E-03 U	N/A	RD3219
EU-154	1.98E-03	4.47E-03	4.48E-03	7.83E-03 U	N/A	RD3219
TC-99	3.41E-01	3.01E-01	1.06E+00	6.90E-01	0.951	ITAS-IT-RD-0001

No qualification necessary
Results > 5 X Blank results

MWT 6/22/94

682A-6-93

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

LABORATORY CONTROL SAMPLES

LAB NAME: ITAS-RICHLAND SDG NO.: W0032

LAB SAMPLE ID: L042771S

REPORTING UNITS: pCi/G & ug/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	EXPECTED	% RECOVERY
AM-241	4.68E+00	3.52E-01	8.82E-01	1.79E-02	0.549	4.51E+00	103.77
NP-237	5.48E+00	3.02E-01	1.22E+00	1.90E-02	1	5.65E+00	96.99
U-238DA	1.08E+00	8.37E-02	1.37E-01	N/A	N/A	1.05E+00	102.86
CS-137DA	3.69E-01	4.19E-02	5.58E-02	N/A	N/A	3.58E-01	103.07
RA-226DA	9.83E-01	9.71E-02	1.38E-01	N/A	N/A	1.16E+00	84.74
TH-232DA	2.08E+00	1.85E-01	2.78E-01	N/A	N/A	1.87E+00	111.23
I-129LP	1.26E+01	1.03E+00	1.63E+00	N/A	N/A	9.03E+00	139.53
ALPHA	4.59E+00	4.34E-01	8.85E-01	8.66E-02	1	4.51E+00	101.77
BETA	1.10E+01	1.04E+00	1.30E+00	7.76E-01	1	1.13E+01	97.35
SE-79	6.05E+01	1.60E+01	1.60E+01	N/A	0	4.51E+01	134.15
URANIUM	8.37E+00	N/A	1.26E+00	2.98E-03	1	1.01E+01	82.87

Qualify detects J for I-129, Se79

LAB SAMPLE ID: L042772S

REPORTING UNITS: pCi/g

ISOTOPE	RESULT	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	YIELD	EXPECTED	% RECOVERY
U-234	1.68E+00	2.04E-01	3.05E-01	3.67E-02	0.674	1.62E+00	103.70
U-235	9.59E-02	4.95E-02	5.12E-02	3.67E-02	0.674	7.39E-02	129.77
U-238DA	1.89E+00	2.17E-01	3.34E-01	3.82E-02	0.674	1.70E+00	111.18
TOTAL-SR	5.69E+00	2.66E-01	1.45E+00	1.37E-01	0.9	6.08E+00	93.59

6/22/94

682A-6-93

IT ANALYTICAL SERVICES
RICHLAND, WA
(509) 375-3131

MATRIX SPIKE RESULTS

LAB NAME: ITAS-RICHLAND SDG NO.: W0032

LAB SAMPLE ID: W042771D

REPORTING UNITS pCi/g & ug/g

ISOTOPE	SPIKE RESULT*	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	SAMPLE RESULT	EXPECTED	% RECOVERY
NP-237	9.55E-01	1.22E-01	2.39E-01	1.06E-02	0.00E+00	5.61E+00	17.02
URANIUM	9.40E+00	N/A	1.41E+00	2.98E-03	3.25E-01	8.66E+00	108.55

Qualify Np237 J/UJ

LAB SAMPLE ID: W0427701

REPORTING UNITS pCi/g & ug/g

ISOTOPE	SPIKE RESULT*	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	SAMPLE RESULT	EXPECTED	% RECOVERY
NP-237	2.08E+00	1.84E-01	4.85E-01	1.11E-02	0.00E+00	5.53E+00	37.61
SE-79	3.32E+01	6.15E+00	6.15E+00	N/A	N/A	4.40E+01	75.45
TC-99	1.92E+01	8.67E-01	6.01E+00	6.90E-01	3.00E+01	2.26E+01	84.96
URANIUM	9.24E+00	N/A	1.39E+00	2.98E-03	3.25E-01	9.48E+00	97.47

LAB SAMPLE ID: W0427702

REPORTING UNITS pCi/g

ISOTOPE	SPIKE RESULT*	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA	SAMPLE RESULT	EXPECTED	% RECOVERY
SE-79	2.15E+01	4.50E+00	4.50E+00	N/A	N/A	3.92E+01	54.85

Qualify Se79 J/UJ

*SPIKE RESULT CORRECTED FOR SAMPLE RESULT

W0032-ITC-026

Americium/Curium		
HEIS No.:	B0BP32	
Lab ID:	40427701	
Aliquot:	1.99E+00	
Am241 net cpm:	-0.0016	
Am241 bkg cpm:	0.0016	
Spl count time:	200	
Bkg count time:	2500	
Eff d/c:	3.225	
Decay:	1	
Yield:	0.298	
Am241 calc:	-3.92E-03	OKAY
Am241 rptd:	-3.92E-03	
Am241 MDA calc:	6.54E-02	OKAY
Am241 MDA rptd:	6.53E-02	
Cm244 net cpm:	-0.0004	
Cm244 bkg cpm:	0.0004	
Cm244 decay:	1.005	
Cm244 calc:	-9.85E-04	OKAY
Cm244 rptd:	-9.83E-04	
Cm244 MDA calc:	4.95E-02	OKAY
Cm244 MDA rptd:	4.90E-02	
Cm242 net cpm:	-0.0004	
Cm242 bkg cpm:	0.0004	
Cm242 decay:	1.248	
Cm242 calc.:	-1.22E-03	OKAY
Cm242 rptd:	-1.18E-03	
Cm242 MDA calc:	6.15E-02	OKAY
Cm242 MDA rptd:	5.90E-02	
Neptunium		
HEIS No.:	B0BP32	
Lab ID:	40427701	
Aliquot:	2.16E+00	
Np237 net cpm:	0.0096	
Np237 bkg cpm:	0.0004	
Spl count time:	200	
Bkg count time:	2500	
Eff d/c:	3.7	
Decay:	1	
Yield:	1	
Np237 calc:	7.41E-03	OKAY
Np237 rptd:	7.41E-03	
Np237 MDA calc:	1.55E-02	UJ
Np237 MDA rptd:	1.10E-02	

W0032-ITC-026

Plutonium		
HEIS No.:	B0BP32	
Lab ID:	40427701	
Aliquot:	2.08E+00	
Pu238 net cpm:	-0.002	
Pu238 bkg cpm:	0.002	
Spl count time:	200	
Bkg count time:	1000	
Pu238 Eff d/c:	3.703	
Decay:	1	
Yield:	0.839	
Pu238 calc:	-1.91E-03	OKAY
Pu238 rptd:	-1.91E-03	
Pu238 MDA calc:	2.70E-02	OKAY
Pu238 MDA rptd:	2.70E-02	
Pu239 net cpm:	0.005	
Pu239 bkg cpm:	0	
Pu239 d/c:	3.7	
Pu239 decay:	1	
Pu239 calc:	4.78E-03	OKAY
Pu239 rptd:	4.77E-03	
Pu239 MDA calc:	1.29E-02	OKAY
Pu239 MDA rptd:	1.30E-02	
Uranium		
HEIS No.:	B0BP32	
Lab ID:	40427701	
Aliquot:	2.21E+00	
U-234 net cpm:	0.1272	
U-234 bkg cpm:	0.0028	
Spl count time:	200	
Bkg count time:	2500	
Eff d/c:	3.7	
Decay:	1	
Yield:	0.757	
U-234 calc:	1.27E-01	OKAY
U-234 rptd:	1.27E-01	
U-234 MDA calc:	3.08E-02	OKAY
U-234 MDA rptd:	3.08E-02	
U-235 net cpm:	0.0138	
U-235 bkg cpm:	0.0012	
U-235 decay:	1	
U-235 calc:	1.37E-02	OKAY
U-235 rptd:	1.38E-02	
U-235 MDA calc:	2.48E-02	OKAY
U-235 MDA rptd:	2.48E-02	
U-238 net cpm:	0.1284	
U-238 bkg cpm:	0.0016	
U-238 decay:	1	
U-238 calc.:	1.28E-01	OKAY
U-238 rptd:	1.28E-01	
U-238 MDA calc:	2.66E-02	OKAY
U-238 MDA rptd:	2.66E-02	

W0032-ITC-026

Gross Alpha		
HEIS No.:	B0BP32	
Lab ID:	40427701	
Aliquot:	5.00E-02	
Net counts:	0.054	
Bkg counts:	0.036	
Spl count time:	100	
Bkg count time:	500	
d/c:	5.024	
Calc.:	2.44E+00	OKAY
Rptd:	2.44E+00	
MDA calc:	4.34E+00	OKAY
MDA rptd:	4.32E+00	
Gross Beta		
HEIS No.:	B0BP32	
Lab ID:	40427701	
Aliquot:	2.50E-01	
Net counts:	346.428	
Bkg counts:	0.992	
Spl count time:	50	
Bkg count time:	500	
d/c:	2.899	
Calc.:	1.81E+03	OKAY
Rptd:	1.81E+03	
MDA calc:	3.71E+00	OKAY
MDA rptd:	3.70E+00	
Strontium 90		
HEIS No.:	B0BP32	
Sample:	40427701	
Sep date:	5/25/94	
Sep time:	10:20	
Count date:	5/26/94	
Count time:	08:55	
Hours:	*********	
Sample amt:	6.06E+00	
Net, cpm:	2005.02	
Count time:	50	
Bkg, cpm:	1.042	
Count time:	500	
D/C 1:	2.144	
D/C 2:	1.82	
D/C 3:	1.923	
Yield:	0.714	
Calc:	3.60E+02	OKAY
Rptd:	3.60E+02	
MDA, Calc:	1.62E-01	OKAY
MDA, rptd:	1.62E-01	

W0032-ITC-026

Selenium 79		
HEIS No.:	B0BP32	
Sample:	40427701	
Bkg cpm:	20.41	
Spl, amt:	1.07E+00	
Spl cpm:	19.95	
Count time:	100	
Spl dpm:	21.74	
d/c:	1.09	
Yield:	0.651	
Blk, dpm:	3.39E+01	
Calc:	-2.21E-01	OKAY
Rptd:	-2.17E-01	
MDA, calc:	1.50E+00	UJ
MDA, rptd:	1.22E+00	
Technetium-99		
HEIS No.:	B0BP32	
Sample:	40427701	
Bkg cpm:	24.97	
Spl, amt:	2.00E+00	
Spl cpm:	144	
Count time:	75	
Spl dpm:	153.74	
d/c:	1.068	
Yield:	0.951	
Blk, dpm:	2.84E+01	
Calc:	3.00E+01	OKAY
Rptd:	3.00E+01	
MDA, calc:	6.88E-01	OKAY
MDA, rptd:	6.90E-01	
Total Uranium		
HEIS No.:	B0BP32	
Lab ID:	40427701	
ng, raw:	2.51E+02	
g, sample:	1.32E+00	
Dil. vol:	100	
Yield, corr:	0.7735	
Calc.:	3.25E-01	OKAY
Rptd:	3.25E-01	

W0032-ITC-026

SAMP_NUM	PARAM	RESULT	Q	MDA	RDL	COMMENTS
B0BP32	AM-241	6.53E-02	U	6.53E-02	5.00E-02	MDA>RDL!
	CM-242	5.91E-02	U	5.91E-02	NO RDL	OKAY
	CM-244	4.94E-02	U	4.94E-02	5.00E-02	OKAY
	NP-237	1.12E-02	UJ	1.12E-02	2.00E-01	OKAY
	PU3940	1.29E-02	U	1.29E-02	5.00E-02	OKAY
	PU-238	2.70E-02	U	2.70E-02	5.00E-02	OKAY
	U-234	1.27E-01		3.08E-02	3.00E-01	OKAY
	U-235	2.48E-02	U	2.48E-02	3.00E-01	OKAY
	U-238	1.28E-01		2.66E-02	3.00E-01	OKAY
	K-40	1.04E+01			NO RDL	OKAY
	CO-60	2.02E-02	U	2.02E-02	5.00E-02	OKAY
	EU-152	8.61E-02	U	8.61E-02	1.00E-01	OKAY
	CS-137	4.15E-01			5.00E-02	OKAY
	CS-134	1.86E-02	U	1.86E-02	NO RDL	OKAY
	RU-106	1.84E-01	U	1.84E-01	NO RDL	OKAY
	RA-224	5.29E-02			NO RDL	OKAY
	NA-22	2.20E-02	U	2.20E-02	NO RDL	OKAY
	EU-155	1.14E-01	U	1.14E-01	1.00E-01	MDA>RDL!
	EU-154	6.03E-02	U	6.03E-02	1.00E-01	OKAY
	BE-7	1.23E+00			NO RDL	OKAY
	TL-208	2.56E-02	J		NO RDL	OKAY
	PB-212	5.04E-02			NO RDL	OKAY
	TH-232	1.66E+01				OKAY
	I-129	2.85E+00	U	2.85E+00	2.00E+00	MDA>RDL!
	ALPHA	4.32E+00	U	4.32E+00	1.00E+01	OKAY
	BETA	1.81E+03		3.70E+00	1.00E+01	OKAY
	TOTAL-SR	3.60E+02		1.62E-01	1.00E+00	OKAY
	SE-79	1.22E+00	UJ	1.22E+00	1.00E+01	OKAY
	TC-99	3.00E+01		6.90E-01	5.00E-01	OKAY
	URANIUM	3.25E-01		2.98E-03	1.00E-01	OKAY