

W03191



0053572

Bechtel Hanford

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Analysis By

EDMC

Severn Trent Laboratories Richland

2800 G.W. Way, Richland, Wa 99352, (509) 375-3131

Report Nbr: 10692

SDG No.	SAF No.	CLIENT ID No.	STL ID No.
W03191	B00-045	B0YC91	9DECWA10



**AIR QUALITY
DOCUMENT**

Comments:

001

Quanterra
2800 George Washington Way
Richland, Washington 99352-1613

509 375-3131 Telephone
509 375-5590 Fax

CERTIFICATE OF ANALYSIS

Bechtel Hanford, Inc.
3350 George Washington Way
Richland, WA 99352

June 18, 2000

Attention: Joan Kessner

SAF Number	:	B00-045
Date SDG Closed	:	June 7, 2000
Number of Samples	:	One (1)
Sample Type	:	Other (Air Filter)
SDG Number	:	W03191
Data Deliverable	:	15 Day / Summary

I. Introduction

On June 7, 2000, one air filter (matrix: other) sample was received at STL Richland (STLR) for radiochemical analysis. Upon receipt, the sample was assigned the following laboratory ID number to correspond with the Bechtel Hanford, Inc. (BHI) specific ID:

<u>STLR ID#</u>	<u>BHI ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
9DECWA10	B0YC91	OTHER	6/7/00

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:

Gas Proportional Counting

Gross Alpha by method RICH-RC-5014

Gross Beta by method RICH-RC-5014

Total Strontium by method RICH-RC-5006

Alpha Spectroscopy

Plutonium-238, -239/40 by method RICH-RC-5010

Gamma Spectroscopy

Gamma Scan by method RICH-RC-5017



III. Quality Control

The analytical results for each analysis performed under SDG W03191 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

IV. Comments

Gas Proportional Counting

Gross Alpha by method RICH-RC-5014:

The LCS, batch blank, sample and sample duplicate (B0YC91) results are within contractual requirements.

Gross Beta by method RICH-RC-5014:

The LCS, batch blank, sample and sample duplicate (B0YC91) results are within contractual requirements.

Total Strontium by method RICH-RC-5006:

The LCS, batch blank, sample and sample duplicate (B0YC91) results are within contractual requirements.

Alpha Spectroscopy

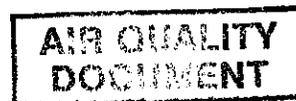
Plutonium-238, -239/40 by method RICH-RC-5010:

The LCS, batch blank, sample and sample duplicate (B0YC91) results are within contractual requirements.

Gamma Spectroscopy

Gamma Scan by method RICH-RC-5017:

The LCS, batch blank, sample and sample duplicate (B0YC91) results are within contractual requirements.



Bechtel Hanford, Inc.

June 18, 2000

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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:

A handwritten signature in cursive script that reads 'Jackie Waddell'.

Jackie Waddell
Project Manager

SAMPLE RESULTS

LAB NAME: STL Richland SDG: /RPT GRP: W03191 / 10692
 LOT,RPT DB ID: J0F080165-1 9DECWA10 MATRIX: FILTER
 CLIENT ID: B0YC91 DATE RECEIVED: 6/8/2000 8:38:00 AM

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/IDL	RPT UNIT	YIELD	METHOD NUMBER	WORK ORDE	BAT- CH
PU-238	6.87E-02	U	1.1E-01	1.1E-01	1.71E-01	pCi/sa	82.61%	RICHRC5010	DECWA	0160275
PU239/40	5.93E-01		3.0E-01	3.1E-01	1.50E-01	pCi/sa	82.61%	RICHRC5010	DECWA	0160275
CO-60	2.10E+00	U	2.6E+00	2.6E+00	5.09E+00	PCI/S		RICHRC5017	DECWA	0160278
CS-137	2.38E+00	U	2.0E+00	2.0E+00	3.93E+00	PCI/S		RICHRC5017	DECWA	0160278
EU-152	2.14E+00	U	4.8E+00	4.8E+00	8.51E+00	PCI/S		RICHRC5017	DECWA	0160278
EU-154	7.10E+00	U	6.2E+00	6.2E+00	1.30E+01	PCI/S		RICHRC5017	DECWA	0160278
EU-155	5.99E-01	U	3.4E+00	3.4E+00	5.78E+00	PCI/S		RICHRC5017	DECWA	0160278
ALPHA	1.84E+00		9.9E-01	1.1E+00	1.22E+00	pCi/sa	100.00%	RICHRC5014	DECWA	0160272
BETA	6.61E+00		2.8E+00	3.0E+00	5.13E+00	pCi/sa	100.00%	RICHRC5014	DECWA	0160273
STRONTIUM	1.17E+00	U	1.1E+00	1.2E+00	2.34E+00	pCi/sa	94.30%	RICHRC5006	DECWA	0160279

Number of Results: 10

AIR QUALITY
DOCUMENT

DUPLICATE RESULTS

LAB NAME: STL Richland SDG: /RPT GRP: W03191 / 10692
 LOT,RPT DB ID: J0F080165-1 DECWA16R MATRIX: FILTER
 CLIENT ID: B0YC91 DUP DATE RECEIVED: 6/8/2000 8:38:00 A
 ORIG LAB ID: 9DECWA10

ANALYTE	DUP RESULT	COUNTING Q ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
ALPHA	1.65E+00	9.4E-01	1.0E+00	1.19E+00	pCi/sa	100.00%	RICHRC5014	1.84E+00	10.91%

Number of Results:

AIR QUALITY
DOCUMENT

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

Severn Trent Laboratories Richland
rptChemRadDup; v3.41

0006

DUPLICATE RESULTS

LAB NAME: STL Richland SDG: /RPT GRP: W03191 / 10692
 LOT,RPT DB ID: J0F080165-1 DECWA17R MATRIX: FILTER
 CLIENT ID: B0YC91 DUP DATE RECEIVED: 6/8/2000 8:38:00 A
 ORIG LAB ID: 9DECWA10

ANALYTE	DUP RESULT	COUNTING Q ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
BETA	7.52E+00	2.9E+00	3.1E+00	5.12E+00	pCi/sa	100.00%	RICHRC5014	6.61E+00	12.80%

Number of Results:

AIR QUALITY
DOCUMENT

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL.

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rptChemRadDup; v3.41

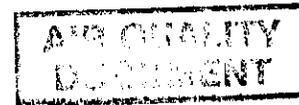
0007

DUPLICATE RESULTS

LAB NAME: STL Richland SDG: /RPT GRP: W03191 / 10692
 LOT,RPT DB ID: J0F080165-1 DECWA18R MATRIX: FILTER
 CLIENT ID: B0YC91 DUP DATE RECEIVED: 6/8/2000 8:38:00 A
 ORIG LAB ID: 9DECWA10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
PU-238	2.57E-02	U	6.8E-02	6.9E-02	1.69E-01	pCi/sa	97.83%	RICHRC5010	6.87E-02	90.95%
PU239/40	4.34E-01		2.4E-01	2.5E-01	1.55E-01	pCi/sa	97.83%	RICHRC5010	5.93E-01	30.93%

Number of Results:



Result = IDL When Not Detecte
 (Q)ualifiers: U = Analyte result < MDA/IDL,
 J = No U qualifier and result < RDL.

DUPLICATE RESULTS

LAB NAME: STL Richland SDG: /RPT GRP: W03191 / 10692
 LOT,RPT DB ID: J0F080165-1 DECWA19R MATRIX: FILTER
 CLIENT ID: B0YC91 DUP DATE RECEIVED: 6/8/2000 8:38:00 A
 ORIG LAB ID: 9DECWA10

ANALYTE	DUP RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
CO-60	1.95E+00	U	2.4E+00	2.4E+00	4.89E+00	PCI/S		RICHRC5017	2.10E+00	7.53%
CS-137	1.21E+00	U	1.7E+00	1.7E+00	3.26E+00	PCI/S		RICHRC5017	2.38E+00	65.35%
EU-152	-4.76E+00	U	4.1E+00	4.1E+00	6.39E+00	PCI/S		RICHRC5017	2.14E+00	527.36%
EU-154	3.33E+00	U	6.1E+00	6.1E+00	1.21E+01	PCI/S		RICHRC5017	7.10E+00	72.38%
EU-155	2.40E-01	U	2.6E+00	2.6E+00	4.55E+00	PCI/S		RICHRC5017	5.99E-01	85.65%

Number of Results:



Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
 J = No U qualifier and result < RDL.

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 rptChemRadDup; v3.41

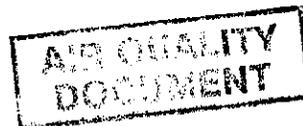
0009

DUPLICATE RESULTS

LAB NAME: STL Richland SDG: /RPT GRP: W03191 / 10692
 LOT,RPT DB ID: J0F080165-1 DECWA1AR MATRIX: FILTER
 CLIENT ID: B0YC91 DUP DATE RECEIVED: 6/8/2000 8:38:00 A
 ORIG LAB ID: 9DECWA10

ANALYTE	DUP RESULT	COUNTING Q ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	METHOD NUMBER	ORIG RESULT	RPD
STRONTIUM	8.18E-01	U 1.1E+00	1.2E+00	2.39E+00	pCi/sa	92.40%	RICHRC5006	1.17E+00	35.17%

Number of Results:



Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
 J = No U qualifier and result < RDL.

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 rptChemRadDup; v3.41

0010

BLANK RESULTS

LAB NAME: STL Richland SDG /RPT GRP: W03191 / 10692
LOT,RPT DB ID: JOF080000-272 DED3C11B MATRIX: FILTER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	RPT UNIT	YIELD	METHOD NUMBER	WORK ORDE	BAT- CH
ALPHA	-1.79E-02	U	2.5E-02	2.5E-02	1.04E-01	pCi/sa	100.00%	RICHRC5014	DED3C	0160272

Number of Results:

ALL QUALITY
DOCUMENT

Result = IDL When Not Detected
(Q)ualifiers: U = Analyte result < MDA/IDL,
J = No U qualifier and result < RDL

BLANK RESULTS

LAB NAME: STL Richland SDG /RPT GRP: W03191 / 10692
 LOT,RPT DB ID: J0F080000-273 DED3D11B MATRIX: FILTER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	RPT UNIT	YIELD	METHOD NUMBER	WORK ORDE	BAT- CH
BETA	4.31E-02	U	2.4E-01	2.4E-01	5.20E-01	pCi/sa	100.00%	RICHR5014	DED3D	0160273

Number of Results:

AIR QUALITY
DOCUMENT

BLANK RESULTS

LAB NAME: STL Richland SDG /RPT GRP: W03191 / 10692
 LOT,RPT DB ID: J0F080000-278 DED3H11B MATRIX: FILTER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	RPT UNIT	YIELD	METHOD NUMBER	WORK ORDE	BAT- CH
CO-60	6.31E-01	U	1.7E+00	1.7E+00	3.42E+00	PCI/SA		RICHRC5017	DED3H	0160278
CS-137	-1.92E-01	U	1.5E+00	1.5E+00	2.75E+00	PCI/SA		RICHRC5017	DED3H	0160278
EU-152	-2.91E+00	U	4.0E+00	4.0E+00	6.51E+00	PCI/SA		RICHRC5017	DED3H	0160278
EU-154	2.90E-01	U	4.2E+00	4.2E+00	8.31E+00	PCI/SA		RICHRC5017	DED3H	0160278
EU-155	8.31E-01	U	2.6E+00	2.6E+00	4.58E+00	PCI/SA		RICHRC5017	DED3H	0160278

Number of Results: 5

ALL QUALITY
ASSURED

BLANK RESULTS

LAB NAME: STL Richland SDG /RPT GRP: W03191 / 10692
 LOT,RPT DB ID: JOF080000-279 DED3J11B MATRIX: FILTER

ANALYTE	RESULT	Q	COUNTING ERROR (2s)	TOTAL ERROR (2s)	MDA/IDL	RPT UNIT	YIELD	METHOD NUMBER	WORK ORDE	BAT- CH
STRONTIUM	1.04E-01	U	2.1E-01	2.1E-01	4.44E-01	pCi/sa	94.10%	RICHRC5006	DED3J1	0160279

Number of Results:

AIR QUALITY
DOCUMENT

LABORATORY CONTROL SAMPLE

LAB NAME: STL Richland SDG: /RPT GRP: W03191 / 10692
 LAB SAMPLE ID: DED3D12S MATRIX: FILTER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
BETA	1.60E+01		8.6E-01	2.4E+00	5.17E-01	pCi/sa	100.00%	1.35E+01	118.46%

Number of Results:

AIR QUALITY
DOCUMENT

Result = IDL When Not Detecte
 (Q)ualifiers: U = Analyte result < MDA/IDL,
 J = No U qualifier and result < RDL.

LABORATORY CONTROL SAMPLE

LAB NAME: STL Richland SDG: /RPT GRP: W03191 / 10692
 LAB SAMPLE ID: DED3H12S MATRIX: FILTER

ANALYTE	RESULT	Q	COUNTING ERROR (2 s)	TOTAL ERROR (2 s)	MDA/ IDL	REPORT UNIT	YIELD	EXPECTED	RECOVERY
CO-60	6.31E+01		1.1E+01	1.1E+01	1.48E+01	PCI/S		7.68E+01	82.20%
CS-137	5.32E+01		9.2E+00	9.2E+00	4.30E+00	PCI/S		4.96E+01	107.44%
EU-152	1.43E+02		2.3E+01	2.3E+01	1.11E+01	PCI/S		1.54E+02	92.81%

Number of Results: 3

ANALYTICAL
DOCUMENT

Result = IDL When Not Detecte

(Q)ualifiers: U = Analyte result < MDA/IDL,
 J = No U qualifier and result < RDL.

Severn Trent Laboratories Richland
 rptChemRadLcs; v3.41

0019

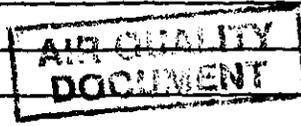
STL RICHLAND
Data Review Checklist
RADIOCHEMISTRY

Priority

Lot Number: JOFO80165
 Client ID: BNI
 Due Date: 6-23-00
 QC Batch Number: 0160275 SDG Number: W03191
 Method Test Parameter: PUI50
 Matrix: Filter

Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Calibration				
1. Is the calibration documentation included where applicable?			✓	✓
B. Sample Analysis				
1. Are the sample yields within acceptance criteria?	✓			✓
2. Were all sample holding times met?	✓			
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			
C. QC Samples				
1. Is the blank yield within acceptance criteria?	✓			
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			
3. Does the blank result meet the Contract criteria?	✓			
4. Is the blank result < the Contract Detection Limit?	✓			
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	
6. Is the LCS result within acceptance criteria?	✓			
7. Is the LCS yield within acceptance criteria?	✓			
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓			
9. Do the MS/MSD results and yields meet acceptance criteria?				
10. Do the duplicate sample results and yields meet acceptance criteria?	✓		✓	
D. Other				
1. Are all Nonconformances included and noted?			✓	
2. Are all required forms filled out?	✓			
3. Was the correct methodology used?	✓			
4. Was transcription checked?	✓			
5. Were all calculations checked at a minimum frequency?	✓			
6. Were units checked?	✓			✓

Comments on any "No" response: _____



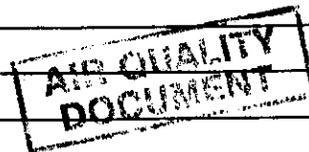
First Level Review: Pam Kunitz Date: 6-23-00
 Second Level Review: Jacqui Waddell Date: 6/15/00

STL RICHLAND
Data Review Checklist
RADIOCHEMISTRY

Priority

Lot Number: <i>TCF080165</i>				
Client ID: <i>BHI</i>				
Due Date: <i>6-23-00</i>				
QC Batch Number: <i>0160278</i>			SDG Number: <i>603191</i>	
Method Test Parameter: <i>gamma</i>				
Matrix: <i>filter</i>				
Review Item	Yes (v)	No (v)	N/A (v)	2 nd Level Review (v)
A. Calibration				
1. Is the calibration documentation included where applicable?			✓	
B. Sample Analysis				
1. Are the sample yields within acceptance criteria?			/	
2. Were all sample holding times met?	/			
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	/			
C. QC Samples				
1. Is the blank yield within acceptance criteria?			/	
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	/			
3. Does the blank result meet the Contract criteria?	/			
4. Is the blank result < the Contract Detection Limit?	/			
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			/	
6. Is the LCS result within acceptance criteria?	/			
7. Is the LCS yield within acceptance criteria?			/	
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	/			
9. Do the MS/MSD results and yields meet acceptance criteria?			/	
10. Do the duplicate sample results and yields meet acceptance criteria?	/		<i>12/9/00</i>	
D. Other				
1. Are all Nonconformances included and noted?			/	
2. Are all required forms filled out?	/			
3. Was the correct methodology used?	/			
4. Was transcription checked?	/			
5. Were all calculations checked at a minimum frequency?	/			
6. Were units checked?	/			✓

Comments on any "No" response: _____



First Level Review: *Pam K...*

Date: *6-9-00*

Second Level Review: *[Signature]*

Date: *6/9/00*

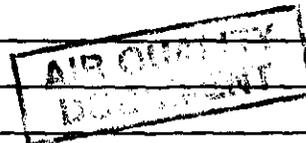
STL RICHLAND
Data Review Checklist
RADIOCHEMISTRY

Priority

Lot Number: 30F080165
 Client ID: BNE
 Due Date: 6-23-00
 QC Batch Number: 0160272 SDG Number: 3191
 Method Test Parameter: 2
 Matrix: FILTR

Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Calibration				
1. Is the calibration documentation included where applicable?			✓	✓
B. Sample Analysis				
1. Are the sample yields within acceptance criteria?			✓	
2. Were all sample holding times met?	✓			
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			
C. QC Samples				
1. Is the blank yield within acceptance criteria?			✓	
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			
3. Does the blank result meet the Contract criteria?	✓			
4. Is the blank result < the Contract Detection Limit?	✓			
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	
6. Is the LCS result within acceptance criteria?	✓			
7. Is the LCS yield within acceptance criteria?			✓	
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓			
9. Do the MS/MSD results and yields meet acceptance criteria?			✓	
10. Do the duplicate sample results and yields meet acceptance criteria?	✓			
D. Other				
1. Are all Nonconformances included and noted?			✓	
2. Are all required forms filled out?	✓			
3. Was the correct methodology used?	✓			
4. Was transcription checked?	✓			
5. Were all calculations checked at a minimum frequency?	✓			
6. Were units checked?	✓			✓

Comments on any "No" response: _____



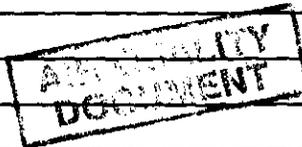
First Level Review: Pam K. Smith Date: 6-14-00
 Second Level Review: Julie Waddell Date: 6/15/00

STL RICHLAND
Data Review Checklist
RADIOCHEMISTRY

Priority

Lot Number: 30F080165				
Client ID: BHZ				
Due Date: 6-23-00				
QC Batch Number: 0160273			SDG Number: W03191	
Method Test Parameter: Beta				
Matrix: Filter				
Review Item	Yes (v)	No (v)	N/A (v)	2 nd Level Review (v)
A. Calibration				
1. Is the calibration documentation included where applicable?			/	✓
B. Sample Analysis				
1. Are the sample yields within acceptance criteria?			/	
2. Were all sample holding times met?	/			
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	/			
C. QC Samples				
1. Is the blank yield within acceptance criteria?			/	
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	/			
3. Does the blank result meet the Contract criteria?	/			
4. Is the blank result < the Contract Detection Limit?	/			
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			/	
6. Is the LCS result within acceptance criteria?	/			
7. Is the LCS yield within acceptance criteria?			/	
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	/			
9. Do the MS/MSD results and yields meet acceptance criteria?			/	
10. Do the duplicate sample results and yields meet acceptance criteria?	/			
D. Other				
1. Are all Nonconformances included and noted?			/	
2. Are all required forms filled out?	/			
3. Was the correct methodology used?	/			
4. Was transcription checked?	/			
5. Were all calculations checked at a minimum frequency?	/			
6. Were units checked?	/			✓

Comments on any "No" response: _____



First Level Review: Pam Kowitz

Date: 6-13-00

Second Level Review: Jackie Waddell

Date: 6/15/00

STL RICHLAND
Data Review Checklist
RADIOCHEMISTRY

Priority

Lot Number: J0F080165
 Client ID: BNI
 Due Date: 6-23-00
 QC Batch Number: 0160279
 Method Test Parameter: TITAN SR
 SDG Number: W03171

Review Item	Yes (✓)	No (✓)	N/A (✓)	2 nd Level Review (✓)
A. Calibration				
1. Is the calibration documentation included where applicable?			✓	✓
B. Sample Analysis				
1. Are the sample yields within acceptance criteria?	✓			
2. Were all sample holding times met?	✓			
3. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓			
C. QC Samples				
1. Is the blank yield within acceptance criteria?	✓			
2. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓			
3. Does the blank result meet the Contract criteria?	✓			
4. Is the blank result < the Contract Detection Limit?	✓			
5. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓	
6. Is the LCS result within acceptance criteria?	✓			
7. Is the LCS yield within acceptance criteria?	✓			
8. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓			
9. Do the MS/MSD results and yields meet acceptance criteria?			✓	
10. Do the duplicate sample results and yields meet acceptance criteria?			✓	
D. Other				
1. Are all Nonconformances included and noted?			✓	
2. Are all required forms filled out?	✓			
3. Was the correct methodology used?	✓			
4. Was transcription checked?	✓			
5. Were all calculations checked at a minimum frequency?	✓			
6. Were units checked?	✓			

Comments on any "No" response: _____



First Level Review: Pamela Kunitz Date: 6-14-00
 Second Level Review: Jacquie Waddell Date: 6/15/00

CHAIN OF CUSTODY

**AIR QUALITY
DOCUMENT**

Q-27038

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B00-045-02		Page 1 of 1		
Collector S. Ruisi		Company Contact D Jacques		Telephone No. 373-5299		Project Coordinator TRENT, SJ		Price Code 6G Data Turnaround 15 Days		
Project Designation 105-KW RadCon Air Filter Analysis		Sampling Location 105K West		SAF No. B00-045		Air Quality <input checked="" type="checkbox"/>				
Ice Chest No.		Field Logbook No.		COA B105KW2W23		Method of Shipment Hand Delivered				
Shipped To Quanterra Incorporated		Offsite Property No.				Bill of Lading/Air Bill No.				
POSSIBLE SAMPLE HAZARDS/REMARKS		Preservation		None						
		Type of Container		Zip Loc Bag						
		No. of Container(s)		1						
		Special Handling and/or Storage		Volume		1g				
SDG W03191		SAMPLE ANALYSIS Due 6-23 JOF080165		See item (1) in Special Instructions.						
Sample No.	Matrix *	Sample Date	Sample Time							
BOYC91	DECWA	OTHER SOLID	04-05-00	1530	X					
CHAIN OF POSSESSION		Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *
Relinquished By	Date/Time	Received By	Date/Time	(1) Gross Alpha; Gross Beta; Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Isotopic Plutonium; Strontium-89,90 - Total Sr; Activity Scan						S=Soil SE=Sediment SO=Solid S=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other
<i>[Signature]</i>	6-8-00/0750	<i>[Signature]</i>	6-8-00/0750							
Relinquished By	Date/Time	Received By	Date/Time							
<i>[Signature]</i>	6-8-00/838	<i>[Signature]</i>	6-8-00/838							
Relinquished By	Date/Time	Received By	Date/Time							
Relinquished By	Date/Time	Received By	Date/Time							
Relinquished By	Date/Time	Received By	Date/Time							
LABORATORY SECTION	Received By	Title				Date/Time				
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By				Date/Time				

AIR QUALITY DOCUMENT

002

ERC Radiological Counting Facility Analysis Report

RCF Number RCF7564

Sample Date & Time 4/5/00 1430

Project ID: 100-KW

SAF Number: B00-045

Date Analyzed 4/11/00 8:08:0

Sample ID: B0XXW7

Gamma Energy Analysis

Nuclide	Activity (uCi/cc)	Error (uCi/cc)	MDC (uCi/cc)
K-40	< 1.2E-11		1.2E-11
Co-60	< 1.7E-12		1.7E-12
Cs-137	< 1.3E-12		1.3E-12
Eu-152	< 4.9E-12		4.9E-12
Eu-154	< 7.0E-12		7.0E-12
Eu-155	< 4.2E-12		4.2E-12
Th-232D	< 4.0E-12		4.0E-12
U-235	< 9.4E-12		9.4E-12
U-238	< 2.2E-10		2.2E-10
Am-241	< 2.1E-12		2.1E-12

TIE TO SAMPLE
100SMT-00-0179

COPY

Total GEA (uCi/cc) +/-

	Activity (uCi/cc)	Error (uCi/cc)
Gross Alpha**	1.0E-13	+/- 7.1E-14
Gross Beta	7.0E-13	+/- 1.5E-13

12 pCi TA

Alpha MDC (uCi/cc)
3.4E-14
Beta MDC (uCi/cc)
2.8E-13

Definitions:

All errors reported at 2 standard deviations.
 N/R = no result or analysis not requested. <MDC = Less than detection limit.
 All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.
 Rounding error may result in the reported total GEA activity differing from the sum of the > MDC GEA values in the second significant digit.

For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pa-234m.
 The analysis of Np-237 is based on the activity of Pa-233.
 U-238_{da} is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.
 Th-232_{da} is the activity of Ac-228, Pb-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.
 Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.
 **The gross alpha results are not corrected for mass absorption
 # No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.



Analyst T. J. Snider 4/11/00

Report To DAVE ST JOHN Fax 372-9487

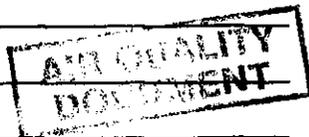
Figure 1. Sample Check-in List

Date/Time Received: 6/8/00 838 SDG#: W03191
 Work Order Number: JOF000165 SAF#: B00-045
 Shipping Container ID: Not marked Chain of Custody #: B00-045-02

1. Outermost shipping container damaged? Yes No
2. Custody Seals on shipping container intact? Yes No
3. Custody Seals dated and signed? Yes No
4. Chain-of-Custody record present? Yes No
5. Chain-of-Custody includes the following information:
 - Client name Yes No
 - Project name or number Yes No
 - Sample date/time for each sample Yes No
 - Container types, sizes and number of containers Yes No
 - Short description of sample, i.e., matrix Yes No
 - Analyses requested Yes No
 - Preservation used or "none" or N/A if not applicable Yes No
 - Date and time of relinquish and receipt Yes No
 - Signatures of those persons relinquishing and receiving Yes No
6. Sample numbers on chain of custody match those on sample containers? Yes No
7. Collection date and date of laboratory receipt are within project specific holding time requirements? Yes No
8. Cooler temperature: NA
9. Vermiculite/packing materials is: Wet Dry

10.	Samples have: <input checked="" type="checkbox"/> tape <input checked="" type="checkbox"/> custody seals	<input type="checkbox"/> hazard labels <input type="checkbox"/> appropriate sample labels
11.	Samples are: <input checked="" type="checkbox"/> in good condition <input type="checkbox"/> broken	<input type="checkbox"/> leaking <input type="checkbox"/> have air bubbles

12. Were any anomalies identified in sample receipt? Yes No
13. Description of anomalies (include sample numbers): _____



Sample Custodian/Laboratory: K. Robertson Date: 6-8-00

Telephone/Fax/E-mailed to: _____ On _____ By _____

RQC053

Severn Trent Laboratories, Inc.
Information Sheet Rad Prep

PRIORITY

Run Date: 6/08/00
Time: 11:21:58

Parent Batch:
Associated Batches:

:
:
:
:

*
* QC BATCH: 0160275 *
*

Page: 1

W03191
SO: Plutonium-238,239/40 by Alpha Spec
6L: PuAm PrpRC5016, SepRC5080(5003)/RC5010(5)
5I: CLIENT: HANFORD

Analytical Due Date: 6/23/00

Project Manager: JW2

Lot# Work Order	Analyt Due Client Matrix	Client Name Aliquot	Name Geometry	Count	Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Alpha	Info - (Ci) Beta	PM Bin
JOF080165-001 DECWA-1-05 Comments: FILTER	6/23/00 FILTER	Bechtel Hanford, .0000	Hanford, Geometry	.000		4/05/00 15:30		1.00E+00	pCi/g	**NYS 306	**NYS	JW2
JOF080165-001 X DECWA-1-08 Comments: FILTER	6/23/00 FILTER	Bechtel Hanford, .0000	Hanford, Geometry	.000		4/05/00 15:30		1.00E+00	pCi/g	**NYS 306	**NYS	JW2
JOF080000-275 B DED3G-1-01 Comments:	6/23/00 BIOLOGICAL	Bechtel Hanford,	Hanford, Geometry			4/05/00 15:30		1.00E+00	pCi/g	**NA	**NA	JW2
JOF080000-275 C DED3G-1-02 Comments:	6/23/00 BIOLOGICAL	Bechtel Hanford,	Hanford, Geometry			4/05/00 15:30			pCi/g	**NA	**NA	JW2

Total Number of Samples In Batch: 00004

Batch Information:

Dry Wt: ?

Decay Correct: Y

Blank Sub: None

Call In:

Uncert: Both

Sigma: 1.960

ODR: Target List + Other Detected

BLANK CRDL

Plutonium 238 1.00E+00
Plutonium 239/4 1.00E+00

Tracer Yield

Type
RPD
RPD

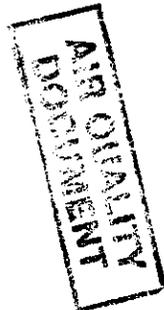
QC Control Limits

** NYS = Not Yet Screened

** NA = Not Applicable

** Other = Other than Gross Alpha or Gross Beta

** Indicates that Batch Information has changed for this sample. Print worksheet for details.



0030

COC Signature Page

W03191

Lot or Batch #: 01600275 Initials/Date Procedure #

Released By	<u>HL 6-8-00</u>	<u>Relier0009</u>
Received	<u>SK 6/8/00</u>	<u>RC 5016</u>
Released By	<u>SK 6/12/00</u>	<u>02</u>
Received	<u>pm 06-12-00</u>	<u>RC 5010</u>
Released By	<u>pm 06-12-00</u>	<u>02</u>
Received	<u>SD 6/12/00</u>	<u>RC 5039-2</u>
Released By	<u>SD 6/12/00</u>	<u>02</u>
Received	<u>CS 6/13/00</u>	<u>KSCMKDSDS/KJ</u>
Released By	<u>CS 6/13/00</u>	<u>02</u>
Received	<u>JMB 6-13-00</u>	<u>Radcalc V2.8.2.1</u>
Released By	<u>JMB 6-13-00</u>	<u>02</u>
Received	<u>PK6-13-00</u>	<u>Relier RC0002</u>
Released By	<u>PK6-13-00</u>	<u>02</u>
Received		

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AIR QUALITY DOCUMENT

0001

RQC053

Severn Trent Laboratories, Inc.
Information Sheet Rad Prep

Run Date: 6/08/00
Time: 11:22:30

Parent Batch:
Associated Batches:

PRIORITY

Page: 1

* QC BATCH: 0160278 *
* *****

W0391
TA: Gamma by HPGE
AW: Gamma PrpRCS017
SI: CLIENT: HANFORD

Analytical Due Date: 6/23/00

Project Manager: JW2

Lot# Work Order	Analyt Due Client Matrix	Client Name Aliquot Geometry	Count	Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Alpha	Info - (Ci) Beta	PM Bin
JOF080165-001 DECWA-1-03 FILTER Comments: FILTER	6/23/00	Bechtel Hanford, .0000	.000		4/05/00 15:30		5.00E-02	pCi/g	**NYS 306	**NYS	JW2
JOF080165-001 X DECWA-1-09 FILTER Comments: FILTER	6/23/00	Bechtel Hanford, .0000	.000		4/05/00 15:30		5.00E-02	pCi/g	**NYS 306	**NYS	JW2
JOF080000-278 B DED3H-1-01 BIOLOGICAL Comments:	6/23/00	Bechtel Hanford,			4/05/00 15:30		5.00E-02	pCi/g	**NA	**NA	JW2
JOF080000-278 C DED3H-1-02 BIOLOGICAL Comments:	6/23/00	Bechtel Hanford,			4/05/00 15:30			pCi/g	**NA	**NA	JW2

Total Number of Samples In Batch: 00004

Batch Information:

Dry Wt: ?

Decay Correct: Y

Blank Sub: None

Call In:

Uncert: Both

Sigma: 1.960

ODR: Target List + Other Detected

BLANK CRDL

Cobalt 60	5.00E-02
Cesium 137	1.00E-01
Europium 152	1.00E-01
Europium 154	1.00E-01
Europium 155	1.00E-01

Tracer Yield

Type
RPD

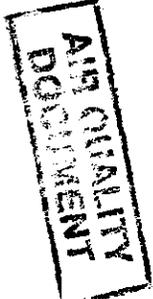
QC Control Limits

** NYS = Not Yet Screened

** NA = Not Applicable

** Other = Other than Gross Alpha or Gross Beta

++ Indicates that Batch Information has changed for this sample. Print worksheet for details.



0032

COC Signature Page

W03191

Lot or Batch #: 0160278

Initials/Date

Procedure #

	Initials/Date	Procedure #
Released By	<u>AA 6-8-00</u>	<u>Bialucacacg</u>
Received	<u>SIC 6/8/00</u>	<u>RC5017</u>
Released By	<u>SIC 6/8/00</u>	<u>na</u>
Received	<u>CS 6/8/00</u>	<u>RICHARD COOZ.2</u>
Released By	<u>OR 6/8/00</u>	<u>na</u>
Received	<u>PK 6-9-00</u>	<u>RICHARD COOZ</u>
Released By	<u>PK 6-9-00</u>	<u>na</u>
Received		
Released By		<u>na</u>
Received		
Released By		<u>na</u>
Received		
Released By		<u>na</u>
Received		

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AIR QUALITY DOCUMENT

RQC053

Severn Trent Laboratories, Inc.
Information Sheet Rad Prep

PRIORITY

Run Date: 6/08/00
Time: 11:20:44

Parent Batch:
Associated Batches:

* QC BATCH: 0160272 *

Page: 1

W03191
S7: Gross Alpha by GPC using Am-241 curve
BA: Gross Alpha PrpRC5016/5014
SI: CLIENT: HANFORD

Analytical Due Date: 6/23/00
Project Manager: JW2

Lot# Work Order	Analyt Due Client Matrix	Client Name Aliquot Geometry	Count	Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Alpha	Info - (Ci) Beta	PM Bin
JOF080165-001 DECWA-1-01 Comments: FILTER	6/23/00 FILTER	Bechtel Hanford, .0000	.000		4/05/00 15:30		10	pCi/g	**NYS 306	**NYS	JW2
JOF080165-001 X DECWA-1-06 Comments: FILTER	6/23/00 FILTER	Bechtel Hanford, .0000	.000		4/05/00 15:30		10	pCi/g	**NYS 306	**NYS	JW2
JOF080000-272 B DED3C-1-01 Comments:	6/23/00 BIOLOGICAL	Bechtel Hanford,			4/05/00 15:30		10	pCi/g	**NA	**NA	JW2
JOF080000-272 C DED3C-1-02 Comments:	6/23/00 BIOLOGICAL	Bechtel Hanford,			4/05/00 15:30			pCi/g	**NA	**NA	JW2

Total Number of Samples In Batch: 00004

Batch Information: Dry Wt: ? Decay Correct: Y Blank Sub: None Call In:

 Uncert: Both Sigma: 1.960 ODR: Target List + Other Detected

BLANK CRDL Tracer Yield Type QC Control Limits

 Gross Alpha 10 RPD

** NYS = Not Yet Screened
 ** NA = Not Applicable
 ** Other = Other than Gross Alpha or Gross Beta
 ++ Indicates that Batch Information has changed for this sample. Print worksheet for details.



0034

COC Signature Page

Lot or Batch #:	Initials/Date	Procedure #
W03191 0160272		
Released By	<u>RL 6-8-00</u>	<u>Richard0009</u>
Received	<u>BK 6/8/00</u>	<u>RCSD14 & RCSD16</u>
Released By	<u>SK 6/13/00</u>	<u>n.d.</u>
Received	<u>EPS 6/13/00</u>	<u>RICHARD 0003-2</u>
Released By	<u>EPS 6/13/00</u>	<u>n.d.</u>
Received	<u>SM6-13-00</u>	<u>Procalc 12.8-2.1</u>
Released By	<u>SM6-13-00</u>	<u>n.d.</u>
Received	<u>PK 6-13-00</u>	<u>RICHARD 0002</u>
Released By	<u>PK 6-14-00</u>	<u>n.d.</u>
Received		
Released By		<u>n.d.</u>
Received		
Released By		<u>n.d.</u>
Received		

RC-151, Rev. 1, 6/99



RQC053

Severn Trent Laboratories, Inc.
Information Sheet Rad Prep

Run Date: 6/08/00
Time: 11:21:16

Parent Batch:
Associated Batches:

* QC BATCH: 0160273 *

PRIORITY

Page: 1

W03191
S8: Gross Beta by GPC using Sr/Y-90 curve
BD: Gross Beta PrpRC5016/5014
SI: CLIENT: HANFORD

Analytical Due Date: 6/23/00

Project Manager: JW2

Lot# Work Order	Analyt Due Client Matrix	Client Name Aliquot Geometry	Count	Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Alpha	Info - (Ci) Beta	PM Bin
J0F080165-001 DECWA-1-02 Comments: FILTER	6/23/00 FILTER	Bechtel Hanford, .0000	.000		4/05/00 15:30		15	pCi/g	**NYS 306	**NYS	JW2
J0F080165-001 X DECWA-1-07 Comments: FILTER	6/23/00 FILTER	Bechtel Hanford, .0000	.000		4/05/00 15:30		15	pCi/g	**NYS 306	**NYS	JW2
J0F080000-273 B DED3D-1-01 Comments:	6/23/00 BIOLOGICAL	Bechtel Hanford,			4/05/00 15:30		15	pCi/g	**NA	**NA	JW2
J0F080000-273 C DED3D-1-02 Comments:	6/23/00 BIOLOGICAL	Bechtel Hanford,			4/05/00 15:30			pCi/g	**NA	**NA	JW2

Total Number of Samples In Batch: 00004

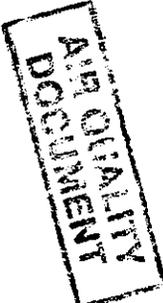
Batch Information: Dry Wt: ? Decay Correct: Y Blank Sub: None Call In:

 Uncert: Both Sigma: 1.960 ODR: Target List + Other Detected

BLANK CRDL Tracer Yield Type QC Control Limits

 Gross Beta 15 RPD

- ** NYS = Not Yet Screened
- ** NA = Not Applicable
- ** Other = Other than Gross Alpha or Gross Beta
- ** Indicates that Batch Information has changed for this sample. Print worksheet for details.



10036

COC Signature Page

W03191

Lot or Batch #: 0160273

Initials/Date

Procedure #

	Initials/Date	Procedure #
Released By	AA 6-8-00	RICHARD 00019
Received	SK 6/8/00	RC5014 & 5016
Released By	EPS SK 6/12/00	n.a.
Received	EPS 6/12/00	RICHARD 00032
Released By	al 6/13/00	n.a.
Received	JM 6-13-00	Radcal 12.8.2-1
Released By	JM 6-13-00	n.a.
Received	PK 6-13-00	RICHARD 0002
Released By	PK 6-14-00	n.a.
Received		
Released By		n.a.
Received		
Released By		n.a.
Received		

RC-131, Rev. 1, 6/99



1037

RQC053

Severn Trent Laboratories, Inc.
Information Sheet Rad Prep

Run Date: 6/08/00
Time: 11:22:59
Page: 1

PRIORITY

Parent Batch:
Associated Batches:
:
:
:
:

* QC BATCH: 0160279 *
*

W03191

TH: Total Strontium by GPC
CI: Sr-Total PrpRc5016, SepRC5006
SI: CLIENT: HANFORD

Analytical Due Date: 6/23/00
Project Manager: JW2

Lot# Work Order	Analyt Due Client Matrix	Client Name Aliquot	Name Geometry	Count	Time	Mid/Ave Date/Time	Tracer ID Spike ID	CRDL	Units	Screen Alpha	Info - (Ci) Beta	PM Bin
J0F080165-001 X DECWA-1-0A FILTER Comments: FILTER	6/23/00	Bechtel Hanford, .0000	Hanford,	.000	4/05/00 15:30			1.00E+00	pCi/g	**NYS 306	**NYS	JW2
J0F080165-001 DECWA-1-0A FILTER Comments: FILTER	6/23/00	Bechtel Hanford, .0000	Hanford,	.000	4/05/00 15:30			1.00E+00	pCi/g	**NYS 306	**NYS	JW2
J0F080000-279 B DED3J-1-01 BIOLOGICAL Comments:	6/23/00	Bechtel Hanford,			4/05/00 15:30			1.00E+00	pCi/g	**NA	**NA	JW2
J0F080000-279 C DED3J-1-02 BIOLOGICAL Comments:	6/23/00	Bechtel Hanford,			4/05/00 15:30				pCi/g	**NA	**NA	JW2

Total Number of Samples In Batch: 00004

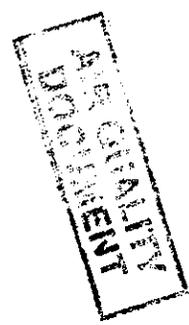
Batch Information: Dry Wt: Decay Correct: Y Blank Sub: None Call In:

 Uncert: Both Sigma: 1.960 ODR: Target List + Other Detected

BLANK CRDL Tracer Yield Type QC Control Limits

 Strontium 1.00E+00 RPD

** NYS = Not Yet Screened
** NA = Not Applicable
** Other = Other than Gross Alpha or Gross Beta
++ Indicates that Batch Information has changed for this sample. Print worksheet for details.



11038

COC Signature Page

W03191

Lot or Batch #: 0160279 Initials/Date Procedure #

Released By	<u>AK 6-8-00</u>	<u>RichRC0009</u>
Received	<u>SK 6/8/00</u>	<u>RC5016</u>
Released By	<u>SK 6/12/00</u>	<u>n.a</u>
Received	<u>RTM 6/12/00</u>	<u>RichRC5006</u>
Released By	<u>RTM 6/13/00</u>	<u>n.a</u>
Received	<u>AK 6/13/2000</u>	<u>RICHARDSON 3REN2</u>
Released By	<u>A 6/14/00</u>	<u>n.a</u>
Received	<u>JMG-14-00</u>	<u>Radral V2 8.2-1</u>
Released By	<u>JMG-14-02</u>	<u>n.a</u>
Received	<u>AK 6-14-00</u>	<u>RichRC0002</u>
Released By	<u>AK 6-14-00</u>	<u>n.a</u>
Received		
Released By		<u>n.a</u>
Received		

RC-151, Rev. 1, 6/99



0639