URANOPHANE SYNTHESIS AND SOLUBILITY

CHEMICAL ANALYSES

MEMORANDUM

TO: James D. Prikryl
Division 20 Bldg. 57

FROM: Mike Dammann

RE: Project No.: 06002.01.071
Work Order: #23452
Samples Received: November 18, 2002

Analysis of water samples by IC.
Raw data and nuclear safety documentation for this project are archived in Division 01.

DATE: January 22, 2003

Enclosed, please find the sample results for the analyses referenced above.

The analyses performed comply with the SwRI Program Quality Plan, Document No. PQP-Nuclear Rev. 1, 10CFR 50 Appendix B, 10CFR 21, and 01-QPP-015 Revision 4.

If there are any questions, please feel free to contact me by voice mail at 522-5428 or by fax at 522-3649. I look forward to our continued analytical support of your projects.

Mike Dammann
DLS for.
Manager, Inorganic Group

for Jo Ann Boyd
Jeanette D. Garcia
Manager, Div. 01 Quality Assurance

SOUTHWEST RESEARCH INSTITUTE
NUCLEAR PROJECT
CLIENT: Division 20
WORK ORDER: 23452
SDG: 216253 (ANC-0A-1)
VTSR: November 18, 2002
PROJECT#: 06002.01.071

FINAL REPORT

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010001

Sample ID
ANC-0A-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216253

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.264	0.1
Chloride	717	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.140	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.355	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY

010002

Sample ID
ANC-0A-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216253

Work Order: 23452

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Fluoride	0.264	0.267	1.13%
Chloride	717	722	0.69%
Nitrite	<5	<5	0.00%
Bromide	<0.1	<0.1	0.00%
Nitrate	0.140	0.151	7.56%
Phosphate-P	<0.1	<0.1	0.00%
Sulfate	0.355	0.340	4.32%

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY

010003

Sample ID
ANC-0A-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216253

Work Order: 23452

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Fluoride	0.264	1.16	1.00	89.6%
Chloride	717	820	100	103%
Nitrite	<5	49.0	50.0	98.0%
Bromide	<0.1	3.89	4.00	97.3%
Nitrate	0.140	0.925	0.904	86.8%
Phosphate-P	<0.1	1.91	1.91	100%
Sulfate	0.355	4.26	4.00	97.6%

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010004

Sample ID
ANC-0A-10

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216254

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.370	0.1
Chloride	810	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.293	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.296	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010005

Sample ID
ANC-0A-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216255

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.333	0.1
Chloride	769	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.297	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.379	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010006

Sample ID
ANC-0A-3

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216256

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.339	0.1
Chloride	733	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.261	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.223	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010007

Sample ID
ANC-0A-4

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216257

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.301	0.1
Chloride	742	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.296	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.254	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010008

Sample ID
ANC-0A-5

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216258

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.279	0.1
Chloride	785	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.325	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.306	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010009

Sample ID
ANC-0A-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216259

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.350	0.1
Chloride	758	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.272	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.305	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

C10C10

Sample ID
ANC-0A-7

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216260

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.365	0.1
Chloride	766	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.293	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.289	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010011

Sample ID
ANC-0A-8

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216261

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.362	0.1
Chloride	792	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.335	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.350	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010012

Sample ID
ANC-0A-9

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216262

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.373	0.1
Chloride	803	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.298	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.306	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010013

Sample ID
ANC-0B-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216263

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.292	0.1
Chloride	722	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.290	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.298	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010014

Sample ID
ANC-0B-10

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216264

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.372	0.1
Chloride	845	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.351	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.310	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010015

Sample ID
ANC-0B-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216265

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.284	0.1
Chloride	745	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.123	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.479	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010016
Sample ID
ANC-0B-3

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216266

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.292	0.1
Chloride	745	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.278	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.313	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010017

Sample ID
ANC-0B-4

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216267

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.327	0.1
Chloride	747	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.314	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.250	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010018
Sample ID
ANC-0B-5

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216268

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.303	0.1
Chloride	759	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.290	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.235	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010019

Sample ID
ANC-0B-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216269

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.339	0.1
Chloride	781	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.266	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.266	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010020

Sample ID
ANC-0B-7

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216270

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.360	0.1
Chloride	785	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.295	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.238	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010021

Sample ID
ANC-0B-8

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216271

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.326	0.1
Chloride	801	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.290	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.305	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010022

Sample ID
ANC-0B-9

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216272

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.358	0.1
Chloride	819	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.304	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.238	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010023

Sample ID
ANC-1A-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216273

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	<0.1	0.1
Chloride	713	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.414	0.1
Phosphate-P	<0.1	0.1
Sulfate	<0.1	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY

010024

Sample ID
ANC-1A-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216273

Work Order: 23452

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Fluoride	<0.1	<0.1	0.00%
Chloride	713	713	0.00%
Nitrite	<5	<5	0.00%
Bromide	<0.1	<0.1	0.00%
Nitrate	0.414	0.409	1.22%
Phosphate-P	<0.1	<0.1	0.00%
Sulfate	<0.1	<0.1	0.00%

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY

010025

Sample ID
ANC-1A-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216273

Work Order: 23452

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Fluoride	<0.1	0.896	1.00	89.6%
Chloride	713	811	100.00	98.0%
Nitrite	<5	46.9	50.0	93.8%
Bromide	<0.1	4.39	4.00	110%
Nitrate	0.414	1.21	0.904	88.1%
Phosphate-P	<0.1	1.81	1.91	94.8%
Sulfate	<0.1	3.91	4.00	97.8%

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010026

Sample ID
ANC-1A-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216274

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	<0.1	0.1
Chloride	815	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	<0.1	0.1
Phosphate-P	<0.1	0.1
Sulfate	<0.1	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010027

Sample ID
ANC-1A-3

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216275

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	<0.1	0.1
Chloride	676	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.246	0.1
Phosphate-P	<0.1	0.1
Sulfate	<0.1	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010028

Sample ID
ANC-1A-4

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216276

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	<0.1	0.1
Chloride	730	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.122	0.1
Phosphate-P	<0.1	0.1
Sulfate	<0.1	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010029

Sample ID
ANC-1A-5

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216277

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	<0.1	0.1
Chloride	771	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.159	0.1
Phosphate-P	<0.1	0.1
Sulfate	<0.1	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010030

Sample ID
ANC-1A-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216278

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	<0.1	0.1
Chloride	760	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.122	0.1
Phosphate-P	<0.1	0.1
Sulfate	<0.1	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010031

Sample ID
ANC-1A-7

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216279

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	<0.1	0.1
Chloride	719	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.223	0.1
Phosphate-P	<0.1	0.1
Sulfate	<0.1	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010032

Sample ID
ANC-1A-8

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216280

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	<0.1	0.1
Chloride	772	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.935	0.1
Phosphate-P	<0.1	0.1
Sulfate	4.63	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010033

Sample ID
ANC-7A-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216281

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.313	0.1
Chloride	736	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.100	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.377	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010034

Sample ID
ANC-7A-10

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216282

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.316	0.1
Chloride	847	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.225	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.305	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010035

Sample ID
ANC-7A-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216283

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.308	0.1
Chloride	742	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	<0.1	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.543	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010036

Sample ID
ANC-7A-3

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216284

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.342	0.1
Chloride	739	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.165	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.244	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010037

Sample ID
ANC-7A-4

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216285

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.319	0.1
Chloride	753	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.179	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.285	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010038

Sample ID
ANC-7A-5

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216286

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.321	0.1
Chloride	769	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.272	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.307	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010039

Sample ID
ANC-7A-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216287

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.365	0.1
Chloride	788	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.176	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.328	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010040

Sample ID
ANC-7A-7

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216288

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.365	0.1
Chloride	764	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.216	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.334	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010041

Sample ID
ANC-7A-8

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216289

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.360	0.1
Chloride	783	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.235	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.358	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010042

Sample ID
ANC-7A-9

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216290

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.396	0.1
Chloride	810	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.195	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.644	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010043

Sample ID
ANC-7B-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216291

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.318	0.1
Chloride	733	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.159	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.236	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010044
Sample ID
ANC-7B-10

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216292

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.390	0.1
Chloride	822	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.222	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.283	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010045

Sample ID
ANC-7B-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216293

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.288	0.1
Chloride	719	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.199	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.372	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY 010046

Sample ID
ANC-7B-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216293

Work Order: 23452

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Fluoride	NA	NA	NA
Chloride	719	722	0.42%
Nitrite	<5	<5	0.00%
Bromide	NA	NA	NA
Nitrate	NA	NA	NA
Phosphate-P	NA	NA	NA
Sulfate	NA	NA	NA

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY 010047

Sample ID
ANC-7B-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216293

Work Order: 23452

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Fluoride	NA	NA	NA	NA
Chloride	719	817	100	98.0%
Nitrite	<5	45.4	50.0	90.8%
Bromide	NA	NA	NA	NA
Nitrate	NA	NA	NA	NA
Phosphate-P	NA	NA	NA	NA
Sulfate	NA	NA	NA	NA

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010048

Sample ID
ANC-7B-3

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216294

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.335	0.1
Chloride	710	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.202	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.297	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

010049

DUPLICATE SUMMARY

Sample ID
ANC-7B-3

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216294

Work Order: 23452

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Fluoride	0.335	0.336	0.30%
Chloride	NA	NA	NA
Nitrite	NA	NA	NA
Bromide	<0.1	<0.1	0.00%
Nitrate	0.202	0.190	6.12%
Phosphate-P	<0.1	<0.1	0.00%
Sulfate	0.297	0.319	7.14%

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY 010050

Sample ID
ANC-7B-3

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216294

Work Order: 23452

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Fluoride	0.335	1.26	1.00	92.5%
Chloride	NA	NA	NA	NA
Nitrite	NA	NA	NA	NA
Bromide	<0.1	4.05	4.00	101%
Nitrate	0.202	1.00	1.00	79.8%
Phosphate-P	<0.1	1.90	1.91	99.5%
Sulfate	0.297	4.49	4.00	105%

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET **010051**

Sample ID
ANC-7B-4

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216295

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.364	0.1
Chloride	756	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.219	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.298	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010052

Sample ID
ANC-7B-5

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216296

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.340	0.1
Chloride	746	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.171	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.306	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010053

Sample ID
ANC-7B-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216297

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.344	0.1
Chloride	873	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.231	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.344	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010054

Sample ID
ANC-7B-7

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216298

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.304	0.1
Chloride	805	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.206	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.396	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010055

Sample ID
ANC-7B-8

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216299

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.350	0.1
Chloride	797	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.197	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.382	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010056

Sample ID
ANC-7B-9

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216300

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.380	0.1
Chloride	905	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.224	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.363	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010057

Sample ID
UMC-0C

Lab Name: Southwest Research Institute

Lab Code: SwRI

Matrix: Water

Lab System ID: 216301

Client: Division 20

Date Received: 11/18/02

Project No.: 20.06002.01.071

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.128	0.1
Chloride	706	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.220	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.199	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010058

Sample ID
UMC-0D

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216302

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.103	0.1
Chloride	706	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.211	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.117	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010059

Sample ID
UMC-7C

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 216303

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.107	0.1
Chloride	705	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.125	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.174	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010060

Sample ID
UMC-7D

Lab Name: Southwest Research Institute

Lab Code: SwRI

Matrix: Water

Lab System ID: 216304

Client: Division 20

Date Received: 11/18/02

Project No.: 20.06002.01.071

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	0.116	0.1
Chloride	733	5.0
Nitrite-N	<5	5.0
Bromide	<0.1	0.1
Nitrate-N	0.106	0.1
Phosphate-P	<0.1	0.1
Sulfate	0.164	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

LABORATORY CONTROL SAMPLE 010061

Sample ID
LCSW - 12/18/02

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: NA

Work Order: 23452

Analysis	Sample Result (mg/L)	True Value (mg/L)	Recovery
Fluoride	98.1	100	98.1%
Chloride	206	200	103%
Nitrite	98.9	100	98.9%
Bromide	397	400	99.3%
Nitrate	87.0	90.4	96.2%
Phosphate-P	192	191	101%
Sulfate	401	400	100%

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

BLANK SUMMARY

010062

Sample ID
PBW - 12/18/02

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: NA

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	<0.1	0.1
Chloride	<0.1	0.1
Nitrite	<0.1	0.1
Bromide	<0.1	0.1
Nitrate	<0.1	0.1
Phosphate-P	<0.1	0.1
Sulfate	<0.1	0.1

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

LABORATORY CONTROL SAMPLE 010063

Sample ID
LCSW - 12/19/02

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: NA

Work Order: 23452

Analysis	Sample Result (mg/L)	True Value (mg/L)	Recovery
Fluoride	97.5	100	97.5%
Chloride	204	200	102%
Nitrite	94.5	100	94.5%
Bromide	393	400	98.3%
Nitrate	86.3	90.4	95.5%
Phosphate-P	192	191	101%
Sulfate	420	400	105%

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

BLANK SUMMARY

010064

Sample ID
PBW - 12/19/02

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: NA

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	<0.1	0.1
Chloride	<0.1	0.1
Nitrite	<0.1	0.1
Bromide	<0.1	0.1
Nitrate	<0.1	0.1
Phosphate-P	<0.1	0.1
Sulfate	<0.1	0.1

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

LABORATORY CONTROL SAMPLE

010065
Sample ID
LCSW - 01/03/03

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: NA

Work Order: 23452

Analysis	Sample Result (mg/L)	True Value (mg/L)	Recovery
Fluoride	98.9	100	98.9%
Chloride	208	200	104%
Nitrite	103	100	103%
Bromide	408	400	102%
Nitrate	89.3	90.4	98.8%
Phosphate-P	198	191	104%
Sulfate	401	400	100%

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

BLANK SUMMARY

010066

Sample ID
PBW - 01/03/03

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: NA

Work Order: 23452

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Fluoride	<0.1	0.1
Chloride	<0.1	0.1
Nitrite	<0.1	0.1
Bromide	<0.1	0.1
Nitrate	<0.1	0.1
Phosphate-P	<0.1	0.1
Sulfate	<0.1	0.1

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
NUCLEAR PROJECT
CLIENT: Division 20
WORK ORDER: 23451
SDG: 216201 (CATC-OA-1)
VTSR: November 18, 2002
PROJECT#: 06002.01.071

FINAL REPORT

ORIGINAL

MEMORANDUM

TO: Jim Prikryl
Division 20 Bldg. 57

FROM: Mike Dammann

RE: Project No.: 06002.01.071
Work Order: #23451
Samples Received: November 18, 2002

Analysis of liquid samples by ICP.
Raw data and nuclear safety documentation for this project are archived in Division 01.

DATE: January 16, 2003

Enclosed, please find the sample results for the analyses referenced above.

The analyses performed comply with the SwRI Program Quality Plan, Document No. PQP-Nuclear Rev. 1, 10CFR 50 Appendix B, 10CFR 21, and 01-QPP-015 Revision 4.

If there are any questions, please feel free to contact me by voice mail at 522-5428 or by fax at 522-3649. I look forward to our continued analytical support of your projects.

Mike Dammann

Manager, Inorganic Group

for Jo Ann Boyd

Manager, Div. 01 Quality Assurance

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010001

Sample ID
CATC-0A-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216201

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	1.23	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	381	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	30.6	0.25
Silver	<0.05	0.05
Sodium	8.41	0.333
Strontium	0.252	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0004	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.057	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY

010002

Sample ID
CATC-0A-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216201

Work Order: 23451

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Aluminum	<0.5	<0.5	0.00%
Antimony	<0.1	<0.1	0.00%
Arsenic	<0.1	<0.1	0.00%
Barium	1.23	1.22	0.90%
Beryllium	<0.025	<0.025	0.00%
Bismuth	<0.1	<0.1	0.00%
Boron	<0.5	<0.5	0.00%
Cadmium	<0.025	<0.025	0.00%
Calcium	381	377	1.07%
Chromium	<0.05	<0.05	0.00%
Cobalt	<0.025	<0.025	0.00%
Copper	<0.05	<0.05	0.00%
Iron	<0.5	<0.5	0.00%
Lanthanum	<0.05	<0.05	0.00%
Lead	<0.1	<0.1	0.00%
Lithium	<0.025	<0.025	0.00%
Magnesium	<0.5	<0.5	0.00%
Manganese	<0.025	<0.025	0.00%
Molybdenum	<0.05	<0.05	0.00%
Nickel	<0.05	<0.05	0.00%
Palladium	<0.1	<0.1	0.00%
Phosphorus	<0.25	<0.25	0.00%
Potassium	- - - -	- - - -	- - - -
Selenium	<0.1	<0.1	0.00%
Silicon	30.6	30.3	0.89%
Silver	<0.05	<0.05	0.00%
Sodium	- - - -	- - - -	- - - -
Strontium	0.252	0.250	0.60%
Sulfur	<0.25	<0.25	0.00%
Thallium	<0.1	<0.1	0.00%
Thorium	<0.1	<0.1	0.00%
Tin	<0.05	<0.05	0.00%
Titanium	<0.05	<0.05	0.00%
Tungsten	<0.1	<0.1	0.00%
Uranium	- - - -	- - - -	- - - -
Vanadium	<0.05	<0.05	0.00%
Yttrium	<0.05	<0.05	0.00%
Zinc	0.057	0.057	0.17%
Zirconium	<0.05	<0.05	0.00%

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010003
Sample ID
CATC-0A-10

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216202

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.500	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	432	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	1.43	0.667
Selenium	<0.1	0.1
Silicon	33.8	0.25
Silver	<0.05	0.05
Sodium	2.54	0.333
Strontium	0.287	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.224	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.119	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY

010004

Sample ID
CATC-0A-10

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216202

Work Order: 23451

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Aluminum	- - - -	- - - -	- - - -
Antimony	- - - -	- - - -	- - - -
Arsenic	- - - -	- - - -	- - - -
Barium	- - - -	- - - -	- - - -
Beryllium	- - - -	- - - -	- - - -
Bismuth	- - - -	- - - -	- - - -
Boron	- - - -	- - - -	- - - -
Cadmium	- - - -	- - - -	- - - -
Calcium	- - - -	- - - -	- - - -
Chromium	- - - -	- - - -	- - - -
Cobalt	- - - -	- - - -	- - - -
Copper	- - - -	- - - -	- - - -
Iron	- - - -	- - - -	- - - -
Lanthanum	- - - -	- - - -	- - - -
Lead	- - - -	- - - -	- - - -
Lithium	- - - -	- - - -	- - - -
Magnesium	- - - -	- - - -	- - - -
Manganese	- - - -	- - - -	- - - -
Molybdenum	- - - -	- - - -	- - - -
Nickel	- - - -	- - - -	- - - -
Palladium	- - - -	- - - -	- - - -
Phosphorus	- - - -	- - - -	- - - -
Potassium	1.43	1.10	26.1%
Selenium	- - - -	- - - -	- - - -
Silicon	- - - -	- - - -	- - - -
Silver	- - - -	- - - -	- - - -
Sodium	2.54	2.67	4.99%
Strontium	- - - -	- - - -	- - - -
Sulfur	- - - -	- - - -	- - - -
Thallium	- - - -	- - - -	- - - -
Thorium	- - - -	- - - -	- - - -
Tin	- - - -	- - - -	- - - -
Titanium	- - - -	- - - -	- - - -
Tungsten	- - - -	- - - -	- - - -
Uranium	- - - -	- - - -	- - - -
Vanadium	- - - -	- - - -	- - - -
Yttrium	- - - -	- - - -	- - - -
Zinc	- - - -	- - - -	- - - -
Zirconium	- - - -	- - - -	- - - -

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY

010005

Sample ID
CATC-0A-10

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216202

Work Order: 23451

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Aluminum	<0.5	18.7	20.0	93.5%
Antimony	<0.1	4.91	5.00	98.1%
Arsenic	<0.1	19.9	20.0	99.4%
Barium	0.500	20.2	20.0	98.3%
Beryllium	<0.025	0.489	0.500	97.8%
Bismuth	NA	NA	NA	NA
Boron	NA	NA	NA	NA
Cadmium	<0.025	0.489	0.500	97.7%
Calcium	432	627	200	97.7%
Chromium	<0.05	1.92	2.00	95.9%
Cobalt	<0.025	4.93	5.00	98.7%
Copper	<0.05	2.53	2.50	101.0%
Iron	<0.5	8.79	10.0	87.9%
Lanthanum	NA	NA	NA	NA
Lead	<0.1	4.98	5.00	99.5%
Lithium	NA	NA	NA	NA
Magnesium	<0.5	198	200	98.8%
Manganese	<0.025	4.97	5.00	99.5%
Molybdenum	NA	NA	NA	NA
Nickel	<0.05	4.78	5.00	95.6%
Palladium	NA	NA	NA	NA
Phosphorus	NA	NA	NA	NA
Potassium	- - - -	- - - -	- - - -	- - - -
Selenium	<0.1	20.6	20.0	103.1%
Silicon	33.8	73.4	40.0	98.9%
Silver	<0.05	0.504	0.500	100.8%
Sodium	- - - -	- - - -	- - - -	- - - -
Strontium	NA	NA	NA	NA
Sulfur	NA	NA	NA	NA
Thallium	<0.1	20.6	20.0	102.8%
Thorium	NA	NA	NA	NA
Tin	NA	NA	NA	NA
Titanium	NA	NA	NA	NA
Tungsten	NA	NA	NA	NA
Uranium	- - - -	- - - -	- - - -	- - - -
Vanadium	<0.05	4.90	5.00	98.0%
Yttrium	NA	NA	NA	NA
Zinc	0.119	5.02	5.00	98.0%
Zirconium	NA	NA	NA	NA

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010006

Sample ID
CATC-0A-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216203

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.485	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	391	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	31.1	0.25
Silver	<0.05	0.05
Sodium	1.98	0.333
Strontium	0.258	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0016	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.173	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY

010007
Sample ID
CATC-0A-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216203

Work Order: 23451

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Aluminum	- - - -	- - - -	- - - -
Antimony	- - - -	- - - -	- - - -
Arsenic	- - - -	- - - -	- - - -
Barium	- - - -	- - - -	- - - -
Beryllium	- - - -	- - - -	- - - -
Bismuth	- - - -	- - - -	- - - -
Boron	- - - -	- - - -	- - - -
Cadmium	- - - -	- - - -	- - - -
Calcium	- - - -	- - - -	- - - -
Chromium	- - - -	- - - -	- - - -
Cobalt	- - - -	- - - -	- - - -
Copper	- - - -	- - - -	- - - -
Iron	- - - -	- - - -	- - - -
Lanthanum	- - - -	- - - -	- - - -
Lead	- - - -	- - - -	- - - -
Lithium	- - - -	- - - -	- - - -
Magnesium	- - - -	- - - -	- - - -
Manganese	- - - -	- - - -	- - - -
Molybdenum	- - - -	- - - -	- - - -
Nickel	- - - -	- - - -	- - - -
Palladium	- - - -	- - - -	- - - -
Phosphorus	- - - -	- - - -	- - - -
Potassium	- - - -	- - - -	- - - -
Selenium	- - - -	- - - -	- - - -
Silicon	- - - -	- - - -	- - - -
Silver	- - - -	- - - -	- - - -
Sodium	- - - -	- - - -	- - - -
Strontium	- - - -	- - - -	- - - -
Sulfur	- - - -	- - - -	- - - -
Thallium	- - - -	- - - -	- - - -
Thorium	- - - -	- - - -	- - - -
Tin	- - - -	- - - -	- - - -
Titanium	- - - -	- - - -	- - - -
Tungsten	- - - -	- - - -	- - - -
Uranium	0.0016	0.0016	0.00%
Vanadium	- - - -	- - - -	- - - -
Yttrium	- - - -	- - - -	- - - -
Zinc	- - - -	- - - -	- - - -
Zirconium	- - - -	- - - -	- - - -

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010008

Sample ID
CATC-0A-3

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216204

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	1.36	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	393	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	31.3	0.25
Silver	<0.05	0.05
Sodium	8.92	0.333
Strontium	0.263	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0008	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.053	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY

010009

Sample ID
CATC-0A-3

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216204

Work Order: 23451

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Aluminum	----	----	----	----
Antimony	----	----	----	----
Arsenic	----	----	----	----
Barium	----	----	----	----
Beryllium	----	----	----	----
Bismuth	----	----	----	----
Boron	----	----	----	----
Cadmium	----	----	----	----
Calcium	----	----	----	----
Chromium	----	----	----	----
Cobalt	----	----	----	----
Copper	----	----	----	----
Iron	----	----	----	----
Lanthanum	----	----	----	----
Lead	----	----	----	----
Lithium	----	----	----	----
Magnesium	----	----	----	----
Manganese	----	----	----	----
Molybdenum	----	----	----	----
Nickel	----	----	----	----
Palladium	----	----	----	----
Phosphorus	----	----	----	----
Potassium	----	----	----	----
Selenium	----	----	----	----
Silicon	----	----	----	----
Silver	----	----	----	----
Sodium	----	----	----	----
Strontium	----	----	----	----
Sulfur	----	----	----	----
Thallium	----	----	----	----
Thorium	----	----	----	----
Tin	----	----	----	----
Titanium	----	----	----	----
Tungsten	----	----	----	----
Uranium	0.0008	0.114	0.100	113.2%
Vanadium	----	----	----	----
Yttrium	----	----	----	----
Zinc	----	----	----	----
Zirconium	----	----	----	----

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010010

Sample ID
CATC-0A-4

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216205

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.451	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	395	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	31.2	0.25
Silver	<0.05	0.05
Sodium	2.05	0.333
Strontium	0.262	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0023	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.126	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010011

Sample ID
CATC-0A-5

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216206

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.465	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	396	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	31.1	0.25
Silver	<0.05	0.05
Sodium	1.78	0.333
Strontium	0.264	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0020	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.077	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010012

Sample ID
CATC-0A-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216207

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	1.25	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	396	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	31.6	0.25
Silver	<0.05	0.05
Sodium	8.45	0.333
Strontium	0.267	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0020	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	<0.05	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010013

Sample ID
CATC-0A-7

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216208

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.488	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	412	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	32.3	0.25
Silver	<0.05	0.05
Sodium	2.22	0.333
Strontium	0.276	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0125	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.098	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY

010014

Sample ID
CATC-0A-7

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216208

Work Order: 23451

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Aluminum	----	----	----	----
Antimony	----	----	----	----
Arsenic	----	----	----	----
Barium	----	----	----	----
Beryllium	----	----	----	----
Bismuth	----	----	----	----
Boron	----	----	----	----
Cadmium	----	----	----	----
Calcium	----	----	----	----
Chromium	----	----	----	----
Cobalt	----	----	----	----
Copper	----	----	----	----
Iron	----	----	----	----
Lanthanum	----	----	----	----
Lead	----	----	----	----
Lithium	----	----	----	----
Magnesium	----	----	----	----
Manganese	----	----	----	----
Molybdenum	----	----	----	----
Nickel	----	----	----	----
Palladium	----	----	----	----
Phosphorus	----	----	----	----
Potassium	<0.667	134	133	100.8%
Selenium	----	----	----	----
Silicon	----	----	----	----
Silver	----	----	----	----
Sodium	2.22	136	133	100.6%
Strontium	----	----	----	----
Sulfur	----	----	----	----
Thallium	----	----	----	----
Thorium	----	----	----	----
Tin	----	----	----	----
Titanium	----	----	----	----
Tungsten	----	----	----	----
Uranium	----	----	----	----
Vanadium	----	----	----	----
Yttrium	----	----	----	----
Zinc	----	----	----	----
Zirconium	----	----	----	----

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010015
Sample ID
CATC-0A-8

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216209

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.459	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	406	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	32.0	0.25
Silver	<0.05	0.05
Sodium	2.23	0.333
Strontium	0.272	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0104	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.076	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010016

Sample ID
CATC-0A-9

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216210

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.439	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	413	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	1.13	0.667
Selenium	<0.1	0.1
Silicon	32.5	0.25
Silver	<0.05	0.05
Sodium	2.40	0.333
Strontium	0.276	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.136	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.090	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010017

Sample ID
CATC-0B-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216211

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.324	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	379	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	30.5	0.25
Silver	<0.05	0.05
Sodium	1.71	0.333
Strontium	0.250	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0181	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.086	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010018

Sample ID
CATC-0B-10

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216212

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.518	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	430	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	16.1	0.667
Selenium	<0.1	0.1
Silicon	33.6	0.25
Silver	<0.05	0.05
Sodium	1.76	0.333
Strontium	0.287	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0174	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.106	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010019

Sample ID

CATC-0B-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216213

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.490	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	383	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	30.8	0.25
Silver	<0.05	0.05
Sodium	1.69	0.333
Strontium	0.256	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0311	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.208	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010020

Sample ID
CATC-0B-3

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216214

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	1.31	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	381	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	0.750	0.667
Selenium	<0.1	0.1
Silicon	30.5	0.25
Silver	<0.05	0.05
Sodium	8.56	0.333
Strontium	0.257	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0089	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.076	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010021

Sample ID
CATC-0B-4

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216215

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	1.23	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	390	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	1.01	0.667
Selenium	<0.1	0.1
Silicon	31.0	0.25
Silver	<0.05	0.05
Sodium	8.88	0.333
Strontium	0.262	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0138	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.143	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010022

Sample ID
CATC-0B-5

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216216

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	1.37	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	389	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	30.9	0.25
Silver	<0.05	0.05
Sodium	9.51	0.333
Strontium	0.263	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0007	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	<0.05	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010023

Sample ID
CATC-0B-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216217

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.432	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	397	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	31.5	0.25
Silver	<0.05	0.05
Sodium	1.88	0.333
Strontium	0.268	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0336	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.095	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010024

Sample ID
CATC-0B-7

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216218

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.480	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	404	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	31.8	0.25
Silver	<0.05	0.05
Sodium	2.01	0.333
Strontium	0.271	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0164	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.094	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010025

Sample ID
CATC-0B-8

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216219

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.560	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	403	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	14.9	0.667
Selenium	<0.1	0.1
Silicon	31.8	0.25
Silver	<0.05	0.05
Sodium	1.78	0.333
Strontium	0.271	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0266	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.143	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010026

Sample ID
CATC-0B-9

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216220

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	1.63	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	408	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	7.22	0.667
Selenium	<0.1	0.1
Silicon	32.3	0.25
Silver	<0.05	0.05
Sodium	13.1	0.333
Strontium	0.277	0.05
Sulfur	0.327	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0002	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.056	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010027
Sample ID
CATC-1A-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216221

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	361	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	1.47	0.667
Selenium	<0.1	0.1
Silicon	29.5	0.25
Silver	<0.05	0.05
Sodium	0.863	0.333
Strontium	<0.05	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	1.97	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	<0.05	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY

010028
Sample ID
CATC-1A-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216221

Work Order: 23451

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Aluminum	<0.5	<0.5	0.00%
Antimony	<0.1	<0.1	0.00%
Arsenic	<0.1	<0.1	0.00%
Barium	<0.025	<0.025	0.00%
Beryllium	<0.025	<0.025	0.00%
Bismuth	<0.1	<0.1	0.00%
Boron	<0.5	<0.5	0.00%
Cadmium	<0.025	<0.025	0.00%
Calcium	361	357	1.08%
Chromium	<0.05	<0.05	0.00%
Cobalt	<0.025	<0.025	0.00%
Copper	<0.05	<0.05	0.00%
Iron	<0.5	<0.5	0.00%
Lanthanum	<0.05	<0.05	0.00%
Lead	<0.1	<0.1	0.00%
Lithium	<0.025	<0.025	0.00%
Magnesium	<0.5	<0.5	0.00%
Manganese	<0.025	<0.025	0.00%
Molybdenum	<0.05	<0.05	0.00%
Nickel	<0.05	<0.05	0.00%
Palladium	<0.1	<0.1	0.00%
Phosphorus	<0.25	<0.25	0.00%
Potassium	- - - -	- - - -	- - - -
Selenium	<0.1	<0.1	0.00%
Silicon	29.5	29.2	1.14%
Silver	<0.05	<0.05	0.00%
Sodium	0.863	0.661	26.5%
Strontium	<0.05	<0.05	0.00%
Sulfur	<0.25	<0.25	0.00%
Thallium	<0.1	<0.1	0.00%
Thorium	<0.1	<0.1	0.00%
Tin	<0.05	<0.05	0.00%
Titanium	<0.05	<0.05	0.00%
Tungsten	<0.1	<0.1	0.00%
Uranium	- - - -	- - - -	- - - -
Vanadium	<0.05	<0.05	0.00%
Yttrium	<0.05	<0.05	0.00%
Zinc	<0.05	<0.05	0.00%
Zirconium	<0.05	<0.05	0.00%

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010029

Sample ID
CATC-1A-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216222

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	471	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	2.29	0.667
Selenium	<0.1	0.1
Silicon	27.3	0.25
Silver	<0.05	0.05
Sodium	0.705	0.333
Strontium	<0.05	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.233	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	<0.05	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY

010030

Sample ID
CATC-1A-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216222

Work Order: 23451

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Aluminum	<0.5	18.9	20.0	94.6%
Antimony	<0.1	4.94	5.00	98.8%
Arsenic	<0.1	20.2	20.0	100.8%
Barium	<0.025	20.1	20.0	100.6%
Beryllium	<0.025	0.493	0.500	98.6%
Bismuth	NA	NA	NA	NA
Boron	NA	NA	NA	NA
Cadmium	<0.025	0.496	0.500	99.2%
Calcium	471	664	200	96.5%
Chromium	<0.05	1.93	2.00	96.3%
Cobalt	<0.025	4.97	5.00	99.4%
Copper	<0.05	2.57	2.50	102.6%
Iron	<0.5	8.83	10.0	88.3%
Lanthanum	NA	NA	NA	NA
Lead	<0.1	5.02	5.00	100.4%
Lithium	NA	NA	NA	NA
Magnesium	<0.5	201	200	100.3%
Manganese	<0.025	5.05	5.00	100.9%
Molybdenum	NA	NA	NA	NA
Nickel	<0.05	4.83	5.00	96.7%
Palladium	NA	NA	NA	NA
Phosphorus	NA	NA	NA	NA
Potassium	- - - -	- - - -	- - - -	- - - -
Selenium	<0.1	20.7	20.0	103.6%
Silicon	27.3	67.2	40.0	99.6%
Silver	<0.05	0.481	0.500	96.2%
Sodium	- - - -	- - - -	- - - -	- - - -
Strontium	NA	NA	NA	NA
Sulfur	NA	NA	NA	NA
Thallium	<0.1	20.8	20.0	104.1%
Thorium	NA	NA	NA	NA
Tin	NA	NA	NA	NA
Titanium	NA	NA	NA	NA
Tungsten	NA	NA	NA	NA
Uranium	- - - -	- - - -	- - - -	- - - -
Vanadium	<0.05	4.95	5.00	99.1%
Yttrium	NA	NA	NA	NA
Zinc	<0.05	4.94	5.00	98.9%
Zirconium	NA	NA	NA	NA

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010031

Sample ID
CATC-1A-3

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216223

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	450	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	1.39	0.667
Selenium	<0.1	0.1
Silicon	38.5	0.25
Silver	<0.05	0.05
Sodium	1.17	0.333
Strontium	<0.05	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.130	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	<0.05	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY

010032

Sample ID
CATC-1A-3

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216223

Work Order: 23451

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Aluminum	- - - -	- - - -	- - - -
Antimony	- - - -	- - - -	- - - -
Arsenic	- - - -	- - - -	- - - -
Barium	- - - -	- - - -	- - - -
Beryllium	- - - -	- - - -	- - - -
Bismuth	- - - -	- - - -	- - - -
Boron	- - - -	- - - -	- - - -
Cadmium	- - - -	- - - -	- - - -
Calcium	- - - -	- - - -	- - - -
Chromium	- - - -	- - - -	- - - -
Cobalt	- - - -	- - - -	- - - -
Copper	- - - -	- - - -	- - - -
Iron	- - - -	- - - -	- - - -
Lanthanum	- - - -	- - - -	- - - -
Lead	- - - -	- - - -	- - - -
Lithium	- - - -	- - - -	- - - -
Magnesium	- - - -	- - - -	- - - -
Manganese	- - - -	- - - -	- - - -
Molybdenum	- - - -	- - - -	- - - -
Nickel	- - - -	- - - -	- - - -
Palladium	- - - -	- - - -	- - - -
Phosphorus	- - - -	- - - -	- - - -
Potassium	- - - -	- - - -	- - - -
Selenium	- - - -	- - - -	- - - -
Silicon	- - - -	- - - -	- - - -
Silver	- - - -	- - - -	- - - -
Sodium	- - - -	- - - -	- - - -
Strontium	- - - -	- - - -	- - - -
Sulfur	- - - -	- - - -	- - - -
Thallium	- - - -	- - - -	- - - -
Thorium	- - - -	- - - -	- - - -
Tin	- - - -	- - - -	- - - -
Titanium	- - - -	- - - -	- - - -
Tungsten	- - - -	- - - -	- - - -
Uranium	0.130	0.131	0.77%
Vanadium	- - - -	- - - -	- - - -
Yttrium	- - - -	- - - -	- - - -
Zinc	- - - -	- - - -	- - - -
Zirconium	- - - -	- - - -	- - - -

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010033

Sample ID
CATC-1A-4

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216224

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	1.22	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	410	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	3.57	0.667
Selenium	<0.1	0.1
Silicon	40.1	0.25
Silver	<0.05	0.05
Sodium	0.872	0.333
Strontium	<0.05	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0670	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	<0.05	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY

010034

Sample ID
CATC-1A-4

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216224

Work Order: 23451

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Aluminum	----	----	----	----
Antimony	----	----	----	----
Arsenic	----	----	----	----
Barium	----	----	----	----
Beryllium	----	----	----	----
Bismuth	----	----	----	----
Boron	----	----	----	----
Cadmium	----	----	----	----
Calcium	----	----	----	----
Chromium	----	----	----	----
Cobalt	----	----	----	----
Copper	----	----	----	----
Iron	----	----	----	----
Lanthanum	----	----	----	----
Lead	----	----	----	----
Lithium	----	----	----	----
Magnesium	----	----	----	----
Manganese	----	----	----	----
Molybdenum	----	----	----	----
Nickel	----	----	----	----
Palladium	----	----	----	----
Phosphorus	----	----	----	----
Potassium	----	----	----	----
Selenium	----	----	----	----
Silicon	----	----	----	----
Silver	----	----	----	----
Sodium	----	----	----	----
Strontium	----	----	----	----
Sulfur	----	----	----	----
Thallium	----	----	----	----
Thorium	----	----	----	----
Tin	----	----	----	----
Titanium	----	----	----	----
Tungsten	----	----	----	----
Uranium	0.0670	0.181	0.100	114.0%
Vanadium	----	----	----	----
Yttrium	----	----	----	----
Zinc	----	----	----	----
Zirconium	----	----	----	----

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010035

Sample ID
CATC-1A-5

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216225

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	433	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	1.25	0.667
Selenium	<0.1	0.1
Silicon	34.9	0.25
Silver	<0.05	0.05
Sodium	1.65	0.333
Strontium	<0.05	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0338	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	<0.05	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY

010036

Sample ID
CATC-1A-5

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216225

Work Order: 23451

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Aluminum	- - - -	- - - -	- - - -
Antimony	- - - -	- - - -	- - - -
Arsenic	- - - -	- - - -	- - - -
Barium	- - - -	- - - -	- - - -
Beryllium	- - - -	- - - -	- - - -
Bismuth	- - - -	- - - -	- - - -
Boron	- - - -	- - - -	- - - -
Cadmium	- - - -	- - - -	- - - -
Calcium	- - - -	- - - -	- - - -
Chromium	- - - -	- - - -	- - - -
Cobalt	- - - -	- - - -	- - - -
Copper	- - - -	- - - -	- - - -
Iron	- - - -	- - - -	- - - -
Lanthanum	- - - -	- - - -	- - - -
Lead	- - - -	- - - -	- - - -
Lithium	- - - -	- - - -	- - - -
Magnesium	- - - -	- - - -	- - - -
Manganese	- - - -	- - - -	- - - -
Molybdenum	- - - -	- - - -	- - - -
Nickel	- - - -	- - - -	- - - -
Palladium	- - - -	- - - -	- - - -
Phosphorus	- - - -	- - - -	- - - -
Potassium	1.25	0.708	55.4%
Selenium	- - - -	- - - -	- - - -
Silicon	- - - -	- - - -	- - - -
Silver	- - - -	- - - -	- - - -
Sodium	- - - -	- - - -	- - - -
Strontium	- - - -	- - - -	- - - -
Sulfur	- - - -	- - - -	- - - -
Thallium	- - - -	- - - -	- - - -
Thorium	- - - -	- - - -	- - - -
Tin	- - - -	- - - -	- - - -
Titanium	- - - -	- - - -	- - - -
Tungsten	- - - -	- - - -	- - - -
Uranium	- - - -	- - - -	- - - -
Vanadium	- - - -	- - - -	- - - -
Yttrium	- - - -	- - - -	- - - -
Zinc	- - - -	- - - -	- - - -
Zirconium	- - - -	- - - -	- - - -

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010037

Sample ID
CATC-1A-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216226

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	376	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	1.63	0.667
Selenium	<0.1	0.1
Silicon	36.8	0.25
Silver	<0.05	0.05
Sodium	0.736	0.333
Strontium	<0.05	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.443	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	<0.05	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY

010038

Sample ID
CATC-1A-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216226

Work Order: 23451

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Aluminum	----	----	----	----
Antimony	----	----	----	----
Arsenic	----	----	----	----
Barium	----	----	----	----
Beryllium	----	----	----	----
Bismuth	----	----	----	----
Boron	----	----	----	----
Cadmium	----	----	----	----
Calcium	----	----	----	----
Chromium	----	----	----	----
Cobalt	----	----	----	----
Copper	----	----	----	----
Iron	----	----	----	----
Lanthanum	----	----	----	----
Lead	----	----	----	----
Lithium	----	----	----	----
Magnesium	----	----	----	----
Manganese	----	----	----	----
Molybdenum	----	----	----	----
Nickel	----	----	----	----
Palladium	----	----	----	----
Phosphorus	----	----	----	----
Potassium	1.63	135	133	100.3%
Selenium	----	----	----	----
Silicon	----	----	----	----
Silver	----	----	----	----
Sodium	0.736	134	133	100.2%
Strontium	----	----	----	----
Sulfur	----	----	----	----
Thallium	----	----	----	----
Thorium	----	----	----	----
Tin	----	----	----	----
Titanium	----	----	----	----
Tungsten	----	----	----	----
Uranium	----	----	----	----
Vanadium	----	----	----	----
Yttrium	----	----	----	----
Zinc	----	----	----	----
Zirconium	----	----	----	----

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010039

Sample ID
CATC-1A-7

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216227

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	392	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	30.8	0.25
Silver	<0.05	0.05
Sodium	0.386	0.333
Strontium	<0.05	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	1.06	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	<0.05	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010640

Sample ID
CATC-1A-8

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216228

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	399	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	1.34	0.667
Selenium	<0.1	0.1
Silicon	34.2	0.25
Silver	<0.05	0.05
Sodium	2.09	0.333
Strontium	<0.05	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.683	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	<0.05	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010041

Sample ID
CATC-7A-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216229

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.419	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	387	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	30.7	0.25
Silver	<0.05	0.05
Sodium	2.03	0.333
Strontium	0.260	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0285	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.099	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010042

Sample ID
CATC-7A-10

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216230

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.452	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	438	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	34.1	0.25
Silver	<0.05	0.05
Sodium	2.35	0.333
Strontium	0.297	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0144	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.091	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010043

Sample ID
CATC-7A-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216231

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.460	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	380	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	30.1	0.25
Silver	<0.05	0.05
Sodium	1.68	0.333
Strontium	0.256	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0019	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.069	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010044

Sample ID

CATC-7A-3

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216232

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	1.21	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	382	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	30.4	0.25
Silver	<0.05	0.05
Sodium	8.34	0.333
Strontium	0.260	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0077	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.075	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010045

Sample ID
CATC-7A-4

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216233

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	1.27	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	386	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	30.7	0.25
Silver	<0.05	0.05
Sodium	9.11	0.333
Strontium	0.263	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0003	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.058	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010046

Sample ID
CATC-7A-5

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216234

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	1.41	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	390	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	30.8	0.25
Silver	<0.05	0.05
Sodium	8.97	0.333
Strontium	0.265	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0006	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.062	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010047

Sample ID
CATC-7A-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216235

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	1.31	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	394	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	31.2	0.25
Silver	<0.05	0.05
Sodium	8.71	0.333
Strontium	0.269	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0169	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	<0.05	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010043

Sample ID
CATC-7A-7

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216236

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	1.27	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	408	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	32.1	0.25
Silver	<0.05	0.05
Sodium	8.53	0.333
Strontium	0.279	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0073	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.094	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010049

Sample ID
CATC-7A-8

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216237

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	1.19	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	409	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	32.1	0.25
Silver	<0.05	0.05
Sodium	8.47	0.333
Strontium	0.277	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0035	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.059	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010050

Sample ID
CATC-7A-9

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216238

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	1.34	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	414	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	32.4	0.25
Silver	<0.05	0.05
Sodium	8.98	0.333
Strontium	0.281	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0003	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	<0.05	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010051

Sample ID
CATC-7B-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216239

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.359	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	376	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	29.8	0.25
Silver	<0.05	0.05
Sodium	2.42	0.333
Strontium	0.252	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0006	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.086	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010052

Sample ID
CATC-7B-10

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216240

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.486	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	422	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	1.27	0.667
Selenium	<0.1	0.1
Silicon	32.7	0.25
Silver	<0.05	0.05
Sodium	2.83	0.333
Strontium	0.286	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0020	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	<0.05	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010053

Sample ID
CATC-7B-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216241

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	1.21	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	376	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	30.0	0.25
Silver	<0.05	0.05
Sodium	8.93	0.333
Strontium	0.256	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0022	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.070	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY

010054

Sample ID
CATC-7B-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216241

Work Order: 23451

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Aluminum	<0.5	<0.5	0.00%
Antimony	<0.1	<0.1	0.00%
Arsenic	<0.1	<0.1	0.00%
Barium	1.21	1.21	0.32%
Beryllium	<0.025	<0.025	0.00%
Bismuth	<0.1	<0.1	0.00%
Boron	<0.5	<0.5	0.00%
Cadmium	<0.025	<0.025	0.00%
Calcium	376	377	0.20%
Chromium	<0.05	<0.05	0.00%
Cobalt	<0.025	<0.025	0.00%
Copper	<0.05	<0.05	0.00%
Iron	<0.5	<0.5	0.00%
Lanthanum	<0.05	<0.05	0.00%
Lead	<0.1	<0.1	0.00%
Lithium	<0.025	<0.025	0.00%
Magnesium	<0.5	<0.5	0.00%
Manganese	<0.025	<0.025	0.00%
Molybdenum	<0.05	<0.05	0.00%
Nickel	<0.05	<0.05	0.00%
Palladium	<0.1	<0.1	0.00%
Phosphorus	<0.25	<0.25	0.00%
Potassium	- - - -	- - - -	- - - -
Selenium	<0.1	<0.1	0.00%
Silicon	30.0	30.1	0.32%
Silver	<0.05	<0.05	0.00%
Sodium	- - - -	- - - -	- - - -
Strontium	0.256	0.257	0.31%
Sulfur	<0.25	<0.25	0.00%
Thallium	<0.1	<0.1	0.00%
Thorium	<0.1	<0.1	0.00%
Tin	<0.05	<0.05	0.00%
Titanium	<0.05	<0.05	0.00%
Tungsten	<0.1	<0.1	0.00%
Uranium	- - - -	- - - -	- - - -
Vanadium	<0.05	<0.05	0.00%
Yttrium	<0.05	<0.05	0.00%
Zinc	0.070	0.068	3.63%
Zirconium	<0.05	<0.05	0.00%

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010055

Sample ID
CATC-7B-3

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216242

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	1.31	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	383	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	30.3	0.25
Silver	<0.05	0.05
Sodium	8.87	0.333
Strontium	0.260	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0037	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.068	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY

010056

Sample ID
CATC-7B-3

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216242

Work Order: 23451

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Aluminum	<0.5	18.5	20.0	92.5%
Antimony	<0.1	4.83	5.00	96.6%
Arsenic	<0.1	19.9	20.0	99.3%
Barium	1.31	21.0	20.0	98.4%
Beryllium	<0.025	0.488	0.500	97.6%
Bismuth	NA	NA	NA	NA
Boron	NA	NA	NA	NA
Cadmium	<0.025	0.492	0.500	98.5%
Calcium	383	574	200	95.5%
Chromium	<0.05	1.91	2.00	95.7%
Cobalt	<0.025	4.90	5.00	97.9%
Copper	<0.05	2.51	2.50	100.4%
Iron	<0.5	8.78	10	87.8%
Lanthanum	NA	NA	NA	NA
Lead	<0.1	4.91	5.00	98.1%
Lithium	NA	NA	NA	NA
Magnesium	<0.5	198	200	99.1%
Manganese	<0.025	4.97	5.00	99.3%
Molybdenum	NA	NA	NA	NA
Nickel	<0.05	4.78	5.00	95.6%
Palladium	NA	NA	NA	NA
Phosphorus	NA	NA	NA	NA
Potassium	- - - -	- - - -	- - - -	- - - -
Selenium	<0.1	20.4	20.0	102.2%
Silicon	30.3	70.3	40.0	100.0%
Silver	<0.05	0.480	0.500	96.1%
Sodium	- - - -	- - - -	- - - -	- - - -
Strontium	NA	NA	NA	NA
Sulfur	NA	NA	NA	NA
Thallium	<0.1	20.4	20.0	102.1%
Thorium	NA	NA	NA	NA
Tin	NA	NA	NA	NA
Titanium	NA	NA	NA	NA
Tungsten	NA	NA	NA	NA
Uranium	- - - -	- - - -	- - - -	- - - -
Vanadium	<0.05	4.86	5.00	97.1%
Yttrium	NA	NA	NA	NA
Zinc	0.068	4.94	5.00	97.5%
Zirconium	NA	NA	NA	NA

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010057

Sample ID
CATC-7B-4

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216243

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	1.33	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	389	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	30.6	0.25
Silver	<0.05	0.05
Sodium	9.39	0.333
Strontium	0.264	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0025	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.060	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY

010058

Sample ID
CATC-7B-4

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216243

Work Order: 23451

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Aluminum	- - - -	- - - -	- - - -
Antimony	- - - -	- - - -	- - - -
Arsenic	- - - -	- - - -	- - - -
Barium	- - - -	- - - -	- - - -
Beryllium	- - - -	- - - -	- - - -
Bismuth	- - - -	- - - -	- - - -
Boron	- - - -	- - - -	- - - -
Cadmium	- - - -	- - - -	- - - -
Calcium	- - - -	- - - -	- - - -
Chromium	- - - -	- - - -	- - - -
Cobalt	- - - -	- - - -	- - - -
Copper	- - - -	- - - -	- - - -
Iron	- - - -	- - - -	- - - -
Lanthanum	- - - -	- - - -	- - - -
Lead	- - - -	- - - -	- - - -
Lithium	- - - -	- - - -	- - - -
Magnesium	- - - -	- - - -	- - - -
Manganese	- - - -	- - - -	- - - -
Molybdenum	- - - -	- - - -	- - - -
Nickel	- - - -	- - - -	- - - -
Palladium	- - - -	- - - -	- - - -
Phosphorus	- - - -	- - - -	- - - -
Potassium	- - - -	- - - -	- - - -
Selenium	- - - -	- - - -	- - - -
Silicon	- - - -	- - - -	- - - -
Silver	- - - -	- - - -	- - - -
Sodium	- - - -	- - - -	- - - -
Strontium	- - - -	- - - -	- - - -
Sulfur	- - - -	- - - -	- - - -
Thallium	- - - -	- - - -	- - - -
Thorium	- - - -	- - - -	- - - -
Tin	- - - -	- - - -	- - - -
Titanium	- - - -	- - - -	- - - -
Tungsten	- - - -	- - - -	- - - -
Uranium	0.0025	0.0026	3.92%
Vanadium	- - - -	- - - -	- - - -
Yttrium	- - - -	- - - -	- - - -
Zinc	- - - -	- - - -	- - - -
Zirconium	- - - -	- - - -	- - - -

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010059
Sample ID
CATC-7B-5

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216244

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	1.24	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	390	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	30.8	0.25
Silver	<0.05	0.05
Sodium	8.94	0.333
Strontium	0.267	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0007	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.062	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY 010060

Sample ID
CATC-7B-5

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216244

Work Order: 23451

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Aluminum	----	----	----	----
Antimony	----	----	----	----
Arsenic	----	----	----	----
Barium	----	----	----	----
Beryllium	----	----	----	----
Bismuth	----	----	----	----
Boron	----	----	----	----
Cadmium	----	----	----	----
Calcium	----	----	----	----
Chromium	----	----	----	----
Cobalt	----	----	----	----
Copper	----	----	----	----
Iron	----	----	----	----
Lanthanum	----	----	----	----
Lead	----	----	----	----
Lithium	----	----	----	----
Magnesium	----	----	----	----
Manganese	----	----	----	----
Molybdenum	----	----	----	----
Nickel	----	----	----	----
Palladium	----	----	----	----
Phosphorus	----	----	----	----
Potassium	----	----	----	----
Selenium	----	----	----	----
Silicon	----	----	----	----
Silver	----	----	----	----
Sodium	----	----	----	----
Strontium	----	----	----	----
Sulfur	----	----	----	----
Thallium	----	----	----	----
Thorium	----	----	----	----
Tin	----	----	----	----
Titanium	----	----	----	----
Tungsten	----	----	----	----
Uranium	0.0007	0.116	0.100	115.3%
Vanadium	----	----	----	----
Yttrium	----	----	----	----
Zinc	----	----	----	----
Zirconium	----	----	----	----

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010061

Sample ID
CATC-7B-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216245

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.494	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	396	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	30.9	0.25
Silver	<0.05	0.05
Sodium	2.71	0.333
Strontium	0.268	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0012	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.075	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY

010062

Sample ID
CATC-7B-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216245

Work Order: 23451

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Aluminum	- - - -	- - - -	- - - -
Antimony	- - - -	- - - -	- - - -
Arsenic	- - - -	- - - -	- - - -
Barium	- - - -	- - - -	- - - -
Beryllium	- - - -	- - - -	- - - -
Bismuth	- - - -	- - - -	- - - -
Boron	- - - -	- - - -	- - - -
Cadmium	- - - -	- - - -	- - - -
Calcium	- - - -	- - - -	- - - -
Chromium	- - - -	- - - -	- - - -
Cobalt	- - - -	- - - -	- - - -
Copper	- - - -	- - - -	- - - -
Iron	- - - -	- - - -	- - - -
Lanthanum	- - - -	- - - -	- - - -
Lead	- - - -	- - - -	- - - -
Lithium	- - - -	- - - -	- - - -
Magnesium	- - - -	- - - -	- - - -
Manganese	- - - -	- - - -	- - - -
Molybdenum	- - - -	- - - -	- - - -
Nickel	- - - -	- - - -	- - - -
Palladium	- - - -	- - - -	- - - -
Phosphorus	- - - -	- - - -	- - - -
Potassium	<0.667	<0.667	0.00%
Selenium	- - - -	- - - -	- - - -
Silicon	- - - -	- - - -	- - - -
Silver	- - - -	- - - -	- - - -
Sodium	- - - -	- - - -	- - - -
Strontium	- - - -	- - - -	- - - -
Sulfur	- - - -	- - - -	- - - -
Thallium	- - - -	- - - -	- - - -
Thorium	- - - -	- - - -	- - - -
Tin	- - - -	- - - -	- - - -
Titanium	- - - -	- - - -	- - - -
Tungsten	- - - -	- - - -	- - - -
Uranium	- - - -	- - - -	- - - -
Vanadium	- - - -	- - - -	- - - -
Yttrium	- - - -	- - - -	- - - -
Zinc	- - - -	- - - -	- - - -
Zirconium	- - - -	- - - -	- - - -

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010063

Sample ID
CATC-7B-7

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216246

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.502	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	401	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	31.3	0.25
Silver	<0.05	0.05
Sodium	2.55	0.333
Strontium	0.271	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0245	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.087	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY 010064

Sample ID
CATC-7B-7

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216246

Work Order: 23451

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Aluminum	- - - -	- - - -	- - - -
Antimony	- - - -	- - - -	- - - -
Arsenic	- - - -	- - - -	- - - -
Barium	- - - -	- - - -	- - - -
Beryllium	- - - -	- - - -	- - - -
Bismuth	- - - -	- - - -	- - - -
Boron	- - - -	- - - -	- - - -
Cadmium	- - - -	- - - -	- - - -
Calcium	- - - -	- - - -	- - - -
Chromium	- - - -	- - - -	- - - -
Cobalt	- - - -	- - - -	- - - -
Copper	- - - -	- - - -	- - - -
Iron	- - - -	- - - -	- - - -
Lanthanum	- - - -	- - - -	- - - -
Lead	- - - -	- - - -	- - - -
Lithium	- - - -	- - - -	- - - -
Magnesium	- - - -	- - - -	- - - -
Manganese	- - - -	- - - -	- - - -
Molybdenum	- - - -	- - - -	- - - -
Nickel	- - - -	- - - -	- - - -
Palladium	- - - -	- - - -	- - - -
Phosphorus	- - - -	- - - -	- - - -
Potassium	- - - -	- - - -	- - - -
Selenium	- - - -	- - - -	- - - -
Silicon	- - - -	- - - -	- - - -
Silver	- - - -	- - - -	- - - -
Sodium	2.55	2.49	2.38%
Strontium	- - - -	- - - -	- - - -
Sulfur	- - - -	- - - -	- - - -
Thallium	- - - -	- - - -	- - - -
Thorium	- - - -	- - - -	- - - -
Tin	- - - -	- - - -	- - - -
Titanium	- - - -	- - - -	- - - -
Tungsten	- - - -	- - - -	- - - -
Uranium	- - - -	- - - -	- - - -
Vanadium	- - - -	- - - -	- - - -
Yttrium	- - - -	- - - -	- - - -
Zinc	- - - -	- - - -	- - - -
Zirconium	- - - -	- - - -	- - - -

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY 010065

Sample ID
CATC-7B-7

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216246

Work Order: 23451

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Aluminum	- - - -	- - - -	- - - -	- - - -
Antimony	- - - -	- - - -	- - - -	- - - -
Arsenic	- - - -	- - - -	- - - -	- - - -
Barium	- - - -	- - - -	- - - -	- - - -
Beryllium	- - - -	- - - -	- - - -	- - - -
Bismuth	- - - -	- - - -	- - - -	- - - -
Boron	- - - -	- - - -	- - - -	- - - -
Cadmium	- - - -	- - - -	- - - -	- - - -
Calcium	- - - -	- - - -	- - - -	- - - -
Chromium	- - - -	- - - -	- - - -	- - - -
Cobalt	- - - -	- - - -	- - - -	- - - -
Copper	- - - -	- - - -	- - - -	- - - -
Iron	- - - -	- - - -	- - - -	- - - -
Lanthanum	- - - -	- - - -	- - - -	- - - -
Lead	- - - -	- - - -	- - - -	- - - -
Lithium	- - - -	- - - -	- - - -	- - - -
Magnesium	- - - -	- - - -	- - - -	- - - -
Manganese	- - - -	- - - -	- - - -	- - - -
Molybdenum	- - - -	- - - -	- - - -	- - - -
Nickel	- - - -	- - - -	- - - -	- - - -
Palladium	- - - -	- - - -	- - - -	- - - -
Phosphorus	- - - -	- - - -	- - - -	- - - -
Potassium	<0.667	132	133	99.2%
Selenium	- - - -	- - - -	- - - -	- - - -
Silicon	- - - -	- - - -	- - - -	- - - -
Silver	- - - -	- - - -	- - - -	- - - -
Sodium	2.55	134	133	98.8%
Strontium	- - - -	- - - -	- - - -	- - - -
Sulfur	- - - -	- - - -	- - - -	- - - -
Thallium	- - - -	- - - -	- - - -	- - - -
Thorium	- - - -	- - - -	- - - -	- - - -
Tin	- - - -	- - - -	- - - -	- - - -
Titanium	- - - -	- - - -	- - - -	- - - -
Tungsten	- - - -	- - - -	- - - -	- - - -
Uranium	- - - -	- - - -	- - - -	- - - -
Vanadium	- - - -	- - - -	- - - -	- - - -
Yttrium	- - - -	- - - -	- - - -	- - - -
Zinc	- - - -	- - - -	- - - -	- - - -
Zirconium	- - - -	- - - -	- - - -	- - - -

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010066

Sample ID
CATC-7B-8

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216247

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	1.23	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	404	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	31.6	0.25
Silver	<0.05	0.05
Sodium	8.53	0.333
Strontium	0.276	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0229	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.056	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010067

Sample ID
CATC-7B-9

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216248

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.482	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	415	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	0.798	0.667
Selenium	<0.1	0.1
Silicon	32.3	0.25
Silver	<0.05	0.05
Sodium	2.76	0.333
Strontium	0.280	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0389	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	0.121	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010068

Sample ID
UMC-0A

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216249

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	375	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	30.5	0.25
Silver	<0.05	0.05
Sodium	<0.333	0.333
Strontium	0.246	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0781	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	<0.05	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010669

Sample ID
UMC-0B

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216250

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	373	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	30.4	0.25
Silver	<0.05	0.05
Sodium	<0.333	0.333
Strontium	0.245	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0793	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	<0.05	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010070

Sample ID
UMC-7A

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216251

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	373	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	30.1	0.25
Silver	<0.05	0.05
Sodium	<0.333	0.333
Strontium	0.248	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0235	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	<0.05	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010071

Sample ID
UMC-7B

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 11/18/02

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: 216252

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	378	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	30.5	0.25
Silver	<0.05	0.05
Sodium	<0.333	0.333
Strontium	0.250	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	0.0231	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	<0.05	0.05
Zirconium	<0.05	0.05

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

LABORATORY CONTROL SAMPLE 010672

Sample ID
LCSW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: NA

Work Order: 23451

Analysis	Sample Result (mg/L)	True Value (mg/L)	Recovery
Aluminum	18.4	20.0	92.0%
Antimony	4.87	5.00	97.4%
Arsenic	19.9	20.0	99.3%
Barium	19.7	20.0	98.7%
Beryllium	0.491	0.500	98.3%
Bismuth	NA	NA	NA
Boron	NA	NA	NA
Cadmium	0.496	0.500	99.2%
Calcium	199	200	99.5%
Chromium	1.93	2.00	96.3%
Cobalt	4.95	5.00	99.0%
Copper	2.49	2.50	99.4%
Iron	8.82	10.0	88.2%
Lanthanum	NA	NA	NA
Lead	4.98	5.00	99.7%
Lithium	NA	NA	NA
Magnesium	198	200	99.1%
Manganese	4.99	5.00	99.8%
Molybdenum	NA	NA	NA
Nickel	4.84	5.00	96.7%
Palladium	NA	NA	NA
Phosphorus	NA	NA	NA
Potassium	131	133	98.5%
Selenium	20.4	20.0	102.2%
Silicon	39.1	40.0	97.7%
Silver	0.495	0.500	99.1%
Sodium	137	133	103.0%
Strontium	NA	NA	NA
Sulfur	NA	NA	NA
Thallium	20.5	20.0	102.5%
Thorium	NA	NA	NA
Tin	NA	NA	NA
Titanium	NA	NA	NA
Tungsten	NA	NA	NA
Uranium	0.0976	0.100	97.6%
Vanadium	4.90	5.00	97.9%
Yttrium	NA	NA	NA
Zinc	4.96	5.00	99.2%
Zirconium	NA	NA	NA

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

LABORATORY CONTROL SAMPLE

010073
Sample ID
LCSW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: NA

Work Order: 23451

Analysis	Sample Result (mg/L)	True Value (mg/L)	Recovery
Aluminum	18.5	20.0	92.4%
Antimony	4.89	5.00	97.8%
Arsenic	19.9	20.0	99.6%
Barium	19.9	20.0	99.3%
Beryllium	0.491	0.500	98.3%
Bismuth	NA	NA	NA
Boron	NA	NA	NA
Cadmium	0.498	0.500	99.5%
Calcium	199	200	99.4%
Chromium	1.92	2.00	95.9%
Cobalt	4.96	5.00	99.3%
Copper	2.52	2.50	100.9%
Iron	8.95	10.0	89.5%
Lanthanum	NA	NA	NA
Lead	4.98	5.00	99.6%
Lithium	NA	NA	NA
Magnesium	201	200	100.3%
Manganese	5.02	5.00	100.3%
Molybdenum	NA	NA	NA
Nickel	4.81	5.00	96.3%
Palladium	NA	NA	NA
Phosphorus	NA	NA	NA
Potassium	132	133	99.2%
Selenium	20.6	20.0	103.0%
Silicon	39.7	40.0	99.3%
Silver	0.506	0.500	101.2%
Sodium	137	133	103.0%
Strontium	NA	NA	NA
Sulfur	NA	NA	NA
Thallium	20.6	20.0	103.2%
Thorium	NA	NA	NA
Tin	NA	NA	NA
Titanium	NA	NA	NA
Tungsten	NA	NA	NA
Uranium	0.111	0.100	111.0%
Vanadium	4.92	5.00	98.5%
Yttrium	NA	NA	NA
Zinc	4.95	5.00	98.9%
Zirconium	NA	NA	NA

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

LABORATORY CONTROL SAMPLE 010674

Sample ID
LCSW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: NA

Work Order: 23451

Analysis	Sample Result (mg/L)	True Value (mg/L)	Recovery
Aluminum	18.6	20.0	93.0%
Antimony	4.88	5.00	97.6%
Arsenic	19.9	20.0	99.5%
Barium	19.9	20.0	99.7%
Beryllium	0.495	0.500	99.0%
Bismuth	NA	NA	NA
Boron	NA	NA	NA
Cadmium	0.504	0.500	100.8%
Calcium	197	200	98.6%
Chromium	1.94	2.00	97.1%
Cobalt	4.97	5.00	99.3%
Copper	2.52	2.50	100.9%
Iron	8.87	10.0	88.7%
Lanthanum	NA	NA	NA
Lead	5.00	5.00	100.0%
Lithium	NA	NA	NA
Magnesium	199	200	99.3%
Manganese	5.04	5.00	100.7%
Molybdenum	NA	NA	NA
Nickel	4.83	5.00	96.6%
Palladium	NA	NA	NA
Phosphorus	NA	NA	NA
Potassium	132	133	99.2%
Selenium	20.5	20.0	102.7%
Silicon	39.3	40.0	98.3%
Silver	0.494	0.500	98.8%
Sodium	138	133	103.8%
Strontium	NA	NA	NA
Sulfur	NA	NA	NA
Thallium	20.7	20.0	103.6%
Thorium	NA	NA	NA
Tin	NA	NA	NA
Titanium	NA	NA	NA
Tungsten	NA	NA	NA
Uranium	0.108	0.100	108.0%
Vanadium	4.91	5.00	98.2%
Yttrium	NA	NA	NA
Zinc	4.99	5.00	99.8%
Zirconium	NA	NA	NA

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

BLANK SUMMARY

010075

Sample ID
PBW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: NA

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	<0.5	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	<0.25	0.25
Silver	<0.05	0.05
Sodium	<0.333	0.333
Strontium	<0.05	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	<0.0002	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	<0.05	0.05
Zirconium	<0.05	0.05

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

BLANK SUMMARY

010676

Sample ID
PBW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: NA

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	<0.5	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	<0.25	0.25
Silver	<0.05	0.05
Sodium	<0.333	0.333
Strontium	<0.05	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	<0.0002	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	<0.05	0.05
Zirconium	<0.05	0.05

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

BLANK SUMMARY

010077

Sample ID
PBW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.06002.01.071

Lab System ID: NA

Work Order: 23451

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.5	0.5
Cadmium	<0.025	0.025
Calcium	<0.5	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.05	0.05
Iron	<0.5	0.5
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<0.5	0.5
Manganese	<0.025	0.025
Molybdenum	<0.05	0.05
Nickel	<0.05	0.05
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<0.667	0.667
Selenium	<0.1	0.1
Silicon	<0.25	0.25
Silver	<0.05	0.05
Sodium	<0.333	0.333
Strontium	<0.05	0.05
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.1	0.1
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	<0.0002	0.0002
Vanadium	<0.05	0.05
Yttrium	<0.05	0.05
Zinc	<0.05	0.05
Zirconium	<0.05	0.05

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

Southwest Research Institute

Distribution List

Work Order Number: 23451

Division 1

BOYD, JOANN
DAMMANN, MIKE
SAUCEDA, CYNTHIA
Hageman, John 63
Prikryl, Jim 57

Distribution WO: 23451 Client: DIV 20

Page Printed: 18 Nov 2002 12:56:19

Number of Copies: 3

ver (07/17/2002)

Laboratory Work Order

Southwest Research Institute

Work Order Number: 23451

VTSR: 11/18/02

Time: 09:30:00

Project: 06002.01.071
Case #: CNWRA
SDG: 216201
Client: DIV 20

Manager: DAMMANN, MIKE
Logged in by: kedrisi
Creation Date: 11/18/02

Notes

Samples were received at ambient temperature @ 22.0° C.

Qc Note: As per method.

Parameters: Analysis for Cations including Si by ICP and U by ICP-MS as per COC.

Note: See chain of custody as part of the work order system for more information. Contact Project Manager for questions.

Note: Turnaround time is 28 days from.

Note: Samples were received intact.

Note: Project is Nuclear Safety Related, 10 CFR 50, Part 21, Appendix B.

Note: Contact Joann Boyd @ 2169 or Pager 351-1617. For Institute QA contact before starting any work on this project.

Note: Have SPQP (Latest Revision) on the bench at the time of prep or analysis of samples.

Note: All personnel must be QA Nuclear Certified.

Note: Outside of the sample containers were screened for radioactivity, all samples were above login background (60 CPM).
*** kedrisi Nov 18 2002 10:09AM ***

System ID	Customer ID	CED	Matrix	Container	Required Analyses
216201	CATC-0A-1	11/15/02	Liquid	1	Metals: ICP, SI, U
216202	CATC-0A-10	11/15/02	Liquid	1	Metals: ICP, SI, U
216203	CATC-0A-2	11/15/02	Liquid	1	Metals: ICP, SI, U
216204	CATC-0A-3	11/15/02	Liquid	1	Metals: ICP, SI, U
216205	CATC-0A-4	11/15/02	Liquid	1	Metals: ICP, SI, U
216206	CATC-0A-5	11/15/02	Liquid	1	Metals: ICP, SI, U
216207	CATC-0A-6	11/15/02	Liquid	1	Metals: ICP, SI, U
216208	CATC-0A-7	11/15/02	Liquid	1	Metals: ICP, SI, U
216209	CATC-0A-8	11/15/02	Liquid	1	Metals: ICP, SI, U
216210	CATC-0A-9	11/15/02	Liquid	1	Metals: ICP, SI, U
216211	CATC-0B-1	11/15/02	Liquid	1	Metals: ICP, SI, U
216212	CATC-0B-10	11/15/02	Liquid	1	Metals: ICP, SI, U
216213	CATC-0B-2	11/15/02	Liquid	1	Metals: ICP, SI, U
216214	CATC-0B-3	11/15/02	Liquid	1	Metals: ICP, SI, U
216215	CATC-0B-4	11/15/02	Liquid	1	Metals: ICP, SI, U
216216	CATC-0B-5	11/15/02	Liquid	1	Metals: ICP, SI, U
216217	CATC-0B-6	11/15/02	Liquid	1	Metals: ICP, SI, U
216218	CATC-0B-7	11/15/02	Liquid	1	Metals: ICP, SI, U
216219	CATC-0B-8	11/15/02	Liquid	1	Metals: ICP, SI, U
216220	CATC-0B-9	11/15/02	Liquid	1	Metals: ICP, SI, U
216221	CATC-1A-1	11/15/02	Liquid	1	Metals: ICP, SI, U
216222	CATC-1A-2	11/15/02	Liquid	1	Metals: ICP, SI, U
216223	CATC-1A-3	11/15/02	Liquid	1	Metals: ICP, SI, U
216224	CATC-1A-4	11/15/02	Liquid	1	Metals: ICP, SI, U
216225	CATC-1A-5	11/15/02	Liquid	1	Metals: ICP, SI, U

Preliminary Data Due: N/A
EDD Due: N/A
Data Must be to QA: 12/13/02
Absolute Latest Date: 12/15/02

Turnaround is 28 Days from VTSR

Page Printed: 18 Nov 2002 11:25:41
ver (07/17/2002)

Client: DIV 20
WO: 23451
FRM-002

Southwest Research Institute

Laboratory Work Order

Work Order Number: 23451

VTSR: 11/18/02

Time: 09:30:00

Project: 06002.01.071
Case #: CNWRA
SDG: 216201
Client: DIV 20

Manager: DAMMANN, MIKE
Logged in by: kedrisi
Creation Date: 11/18/02

System ID	Customer ID	CED	Matrix	Container	Required Analyses
216226	CATC-1A-6	11/15/02	Liquid	1	Metals: ICP, SI, U
216227	CATC-1A-7	11/15/02	Liquid	1	Metals: ICP, SI, U
216228	CATC-1A-8	11/15/02	Liquid	1	Metals: ICP, SI, U
216229	CATC-7A-1	11/15/02	Liquid	1	Metals: ICP, SI, U
216230	CATC-7A-10	11/15/02	Liquid	1	Metals: ICP, SI, U
216231	CATC-7A-2	11/15/02	Liquid	1	Metals: ICP, SI, U
216232	CATC-7A-3	11/15/02	Liquid	1	Metals: ICP, SI, U
216233	CATC-7A-4	11/15/02	Liquid	1	Metals: ICP, SI, U
216234	CATC-7A-5	11/15/02	Liquid	1	Metals: ICP, SI, U
216235	CATC-7A-6	11/15/02	Liquid	1	Metals: ICP, SI, U
216236	CATC-7A-7	11/15/02	Liquid	1	Metals: ICP, SI, U
216237	CATC-7A-8	11/15/02	Liquid	1	Metals: ICP, SI, U
216238	CATC-7A-9	11/15/02	Liquid	1	Metals: ICP, SI, U
216239	CATC-7B-1	11/15/02	Liquid	1	Metals: ICP, SI, U
216240	CATC-7B-10	11/15/02	Liquid	1	Metals: ICP, SI, U
216241	CATC-7B-2	11/15/02	Liquid	1	Metals: ICP, SI, U
216242	CATC-7B-3	11/15/02	Liquid	1	Metals: ICP, SI, U
216243	CATC-7B-4	11/15/02	Liquid	1	Metals: ICP, SI, U
216244	CATC-7B-5	11/15/02	Liquid	1	Metals: ICP, SI, U
216245	CATC-7B-6	11/15/02	Liquid	1	Metals: ICP, SI, U
216246	CATC-7B-7	11/15/02	Liquid	1	Metals: ICP, SI, U
216247	CATC-7B-8	11/15/02	Liquid	1	Metals: ICP, SI, U
216248	CATC-7B-9	11/15/02	Liquid	1	Metals: ICP, SI, U
216249	UMC-0A	11/15/02	Liquid	1	Metals: ICP, SI, U
216250	UMC-0B	11/15/02	Liquid	1	Metals: ICP, SI, U
216251	UMC-7A	11/15/02	Liquid	1	Metals: ICP, SI, U
216252	UMC-7B	11/15/02	Liquid	1	Metals: ICP, SI, U

Containers: 52 **Samples: 52**

Group	Test	Start	Method Date	Deadline	Number	Description	Fridge	Shelf
METALS	ICP	ced	*14 May 2003*	13 Dec 2002	52	ANALYSIS BY ICP	Ref-64	2D
METALS	SI	ced	*14 May 2003*	13 Dec 2002	52	SILICON ANALYSIS	Ref-64	2D
METALS	U	ced	*14 May 2003*	13 Dec 2002	52	URANIUM ANALYSIS	Ref-64	2D

Work Orders in this SDG

23451

Thermometer: 027
Temperature: 22.0

Preliminary Data Due: N/A
EDD Due: N/A
Data Must be to QA: 12/13/02
Absolute Latest Date: 12/15/02

Turnaround is 28 Days from VTSR

Page Printed: 18 Nov 2002 11:25:41
ver (07/17/2002)

Client: DIV 20
WO: 23451
FRM-002

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Shipper Name/Address: Jim Frikryl
CNWRA, Div 20, Bldg 57

Client:

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 weeks

SwRI Contact: Mike Damann

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Cations by ICP, include S.	Uranium by ICP/MS
CATC-0A-1	11/15/02	11:00	W		1	✓	✓
CATC-0A-2					1	✓	✓
CATC-0A-3					1	✓	✓
CATC-0A-4					1	✓	✓
CATC-0A-5					1	✓	✓
CATC-0A-6					1	✓	✓
CATC-0A-7					1	✓	✓
CATC-0A-8					1	✓	✓
CATC-0A-9					1	✓	✓
CATC-0A-10	—	—	—		1	✓	✓

*Note - cations of particular interest and their range of expected concentrations are listed below to assist in ICP calibration -

Li - 0.001 to 5.0 ppm
Si - 25.0 to 45.0 ppm
Ca - 350 - 550 ppm
Na - 0.2 to 5.0 ppm
K - 0.2 to 5.0 ppm

For K and Na, reporting limit is requested to be 0.2 ppm or lower if possible.

REMARKS
Preservation
- a = HCl to pH <2
- b = HNO_3 to pH <2
- c = H_2SO_4 to pH <2
- d = NaOH to pH >12
- e = Cool (4°C±2°C)
- f = Other (specify)

POC - Jim Frikryl x5667

Nuclear safety related - use appropriate QA procedures.

20.06002.01.071

SwRI Project#:

Matrix Types:
- **A** – Air
- **B** – Biota
- **D** - Dust
- **E** – Emission/Stack
- **P** – Product
- **S** – Soil
- **SED** – Sediment
- **T** - Tissue
- **W** - Water
- **WP** - Wipe

Sample Types:
- **D** - Duplicate
- **ER** – Equipment Rinsate
- **FB** – Field Blank
- **FD** – Field Duplicate
- **MS** – Matrix Spike
- **MSD** – Matrix Spike Dup
- **TB** – Trip Blank

Temp: 22.0C
Therm #: 021

Comments:
325/222

	Date	Time
Relinquished by (Print/Signature): Jim Frikryl	11/18/02	0930
Received by (Print/Signature):		
Relinquished by (Print/Signature):		
Received by (Print/Signature):		
Relinquished by (Print/Signature):		

Received by SwRI Lab: (Signature)

Date: 11/18/02 Time: 0930

Samples Disposed: Date / Time

Samples Disposed by:

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Shipper Name/Address: Jim Prikryl
CNWRA, Div 20, Bldg 57

Client:

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 weeks

SwRI Contact: Mike Damanv

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Cations by ICP, include Si	Uranium by ICP/MS							
CATC-OB-1	11/15/02	11:00	W		1	✓	✓	* See Note on page 1						
CATC-OB-2					1	✓	✓							
CATC-OB-3					1	✓	✓							
CATC-OB-4					1	✓	✓							
CATC-OB-5					1	✓	✓							
CATC-OB-6					1	✓	✓							
CATC-OB-7					1	✓	✓							
CATC-OB-8					1	✓	✓							
CATC-OB-9					1	✓	✓							
CATC-OB-10					1	✓	✓							

REMARKS
Preservation
- **a** = HCl to pH <2
- **b** = HNO_3 to pH <2
- **c** = H_2SO_4 to pH <2
- **d** = NaOH to pH >12
- **e** = Cool (4°C±2°C)
- **f** = Other (specify)

POC - Jim Prikryl x5607

Nuclear safety related - use appropriate QA procedures.

20.00002.01.071

Matrix Types:
- **A** – Air
- **B** – Biota
- **D** - Dust
- **E** – Emission/Stack
- **P** – Product
- **S** – Soil
- **SED** – Sediment
- **T** - Tissue
- **W** - Water
- **WP** - Wipe

Sample Types:
- **D** - Duplicate
- **ER** – Equipment Rinsate
- **FB** – Field Blank
- **FD** – Field Duplicate
- **MS** – Matrix Spike
- **MSD** – Matrix Spike Dup
- **TB** – Trip Blank

Temp: 22.0°C Therm #: 027

Comments:
325/222

	Date	Time
Relinquished by (Print/Signature): James D. Prikryl	11/18/02	0930
Received by (Print/Signature):		
Relinquished by (Print/Signature):		
Received by (Print/Signature):		
Relinquished by (Print/Signature):		

SwRI Project#:

Received by SwRI Lab: (Signature)

Date: 11/18/02 Time: 0950

Samples Disposed: Date: Time:

Samples Disposed by:

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Shipper Name/ Address: Jim Prikryl
CNWRA, Div 20, Bldg 57

Client:

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 weeks

SwRI Contact: Mike Darnell

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Cations by ICP, including Si	Uranium by ICP/MS	* See note on page 1
CATC-7A-1	11/15/02	1102	W		1	✓	✓	
CATC-7A-2					1	✓	✓	
CATC-7A-3					1	✓	✓	
CATC-7A-4					1	✓	✓	
CATC-7A-5					1	✓	✓	
CATC-7A-6					1	✓	✓	
CATC-7A-7					1	✓	✓	
CATC-7A-8					1	✓	✓	
CATC-7A-9					1	✓	✓	
CATC-7A-10					1	✓	✓	

REMARKS
Preservation
- **a** = HCl to pH <2
- **b** = HNO_3 to pH <2
- **c** = H_2SO_4 to pH <2
- **d** = NaOH to pH >12
- **e** = Cool (4°C±2°C)
- **f** = Other (specify)

POC Jim Prikryl
A5667

Nuclear Safety related - use appropriate QA procedure

20.06002.01.071

Matrix Types:
- **A** – Air
- **B** – Biota
- **D** - Dust
- **E** – Emission/Stack
- **P** – Product
- **S** – Soil
- **SED** – Sediment
- **T** - Tissue
- **W** - Water
- **WP** - Wipe

Sample Types:
- **D** - Duplicate
- **ER** – Equipment Rinsate
- **FB** – Field Blank
- **FD** – Field Duplicate
- **MS** – Matrix Spike
- **MSD** – Matrix Spike Dup
- **TB** – Trip Blank

Temp: 22.0°C
Therm #: 027

Comments:
325/222

	Date	Time
Relinquished by (Print/Signature): James D. Prikryl	11/18/02	0930
Received by (Print/Signature):		
Relinquished by (Print/Signature):		
Received by (Print/Signature):		
Relinquished by (Print/Signature):		

SwRI Project#:
Received by SwRI Lab: (Signature)
Date: 11/18/02 Time: 0930
Samples Disposed: Date / Time
Samples Disposed by:

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Shipper Name Address: Jim Prikryl
CNWRA, Div 2C, B10, S7

Client:

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
☐ 2 Weeks
☐ 3 Weeks
☒ Other: 4 weeks

SwRI Contact: Mike Darnell

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Cations by ICP, includes S.	Uranium by ICP/MS							
CATC-7B-1	11/15/02	1102	W		1	✓	✓		* See note on page 1					
CATC-7B-2					1	✓	✓							
CATC-7B-3					1	✓	✓							
CATC-7B-4					1	✓	✓							
CATC-7B-5					1	✓	✓							
CATC-7B-6					1	✓	✓							
CATC-7B 7					1	✓	✓							
CATC-7B-8					1	✓	✓							
CATC-7B-9					1	✓	✓							
CATC-7B-10					1	✓	✓							

REMARKS
Preservation
a = HCl to pH <2
b = HNO_3 to pH <2
c = H_2SO_4 to pH <2
d = NaOH to pH >12
e = Cool (4°C±2°C)
f = Other (specify)

acc - Jim Prikryl
x5267

Nuclear safety related - use appropriate QA procedures.

20.06002.01.071

Matrix Types:
A – Air
B – Biota
D - Dust
E – Emission/Stack
P – Product
S – Soil
SED – Sediment
T - Tissue
W - Water
WP - Wipe

Sample Types:
D - Duplicate
ER – Equipment Rinsate
FB – Field Blank
FD – Field Duplicate
MS – Matrix Spike
MSD – Matrix Spike Dup
TB – Trip Blank

Temp: 22.0°C
Therm #: GL7

Comments:
325/222

	Date	Time
Relinquished by (Print/Signature): James D. Prikryl	11/18/02	0930
Received by (Print/Signature):		
Relinquished by (Print/Signature):		
Received by (Print/Signature):		
Relinquished by (Print/Signature):		

SwRI Project#:

Received by SwRI Lab: (Signature)

Date	Time
11/18/02	0938

Samples Disposed: Date / Time

Samples Disposed by:

FINAL

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Shipper Name: Jim Pribyl
Address: CNWRA, Div 20, Bldg 57

Client:

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 weeks

SwRI Contact: Mike Damann

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Cations by ICP, include Si	Uranium by ICP/MS	# See note on page 1
CATC-1A-1	11/15/02	1100	W		1	✓	✓	
CATC-1A-2					1	✓	✓	
CATC-1A-3					1	✓	✓	
CATC-1A-4					1	✓	✓	
CATC-1A-5					1	✓	✓	
CATC-1A-6					1	✓	✓	
CATC-1A-7					1	✓	✓	
CATC-1A-8					1	✓	✓	
UMC-0A					1	✓	✓	
UMC-0B					1	✓	✓	

REMARKS

Preservation
- **a** = HCl to pH <2
- **b** = HNO_3 to pH <2
- **c** = H_2SO_4 to pH <2
- **d** = NaOH to pH >12
- **e** = Cool (4°C±2°C)
- **f** = Other (specify)

POC - Jim Pribyl
x5267

Nuclear Safety related - use appropriate QA procedures.

20.06002.01.071

Matrix Types:
- **A** – Air
- **B** – Biota
- **D** - Dust
- **E** – Emission/Stack
- **P** – Product
- **S** – Soil
- **SED** – Sediment
- **T** - Tissue
- **W** - Water
- **WP** - Wipe

Sample Types:
- **D** - Duplicate
- **ER** – Equipment Rinsate
- **FB** – Field Blank
- **FD** – Field Duplicate
- **MS** – Matrix Spike
- **MSD** – Matrix Spike Dup
- **TB** – Trip Blank

Temp: 22.0°C
Therm #: 027

Comments:
325/259

	Date	Time
Relinquished by (Print/Signature): James O. Pribyl	11/18/02	0930
Received by (Print/Signature):	Date	Time
Relinquished by (Print/Signature):	Date	Time
Received by (Print/Signature):	Date	Time
Relinquished by (Print/Signature):	Date	Time

SwRI Project#:

Received by SwRI Lab: (Signature)

Date	Time
11/18/02	0930

Samples Disposed:

Date	Time

Samples Disposed by:

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Shipper Name/Address: Jim Prikryl, CNWRA, Div 20, Bldg 57

Client:

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 weeks

SwRI Contact: Mike Damann

Analyses Requested

*See note on page 1

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Cations by ICP include S	Uranium by ICP/MS									REMARKS
UMC-7A	11/15/02	1100	W		1	✓	✓									Preservation: a = HCl to pH <2; b = HNO_3 to pH <2; c = H_2SO_4 to pH <2; d = NaOH to pH >12; e = Cool (4°C±2°C); f = Other (specify)
UMC-7B	1	1	1		1	✓	✓									POC - Jim Prikryl x5267
																Nuclear Safety related - use appropriate QA procedure

Matrix Types:
- **A** – Air
- **B** – Biota
- **D** - Dust
- **E** – Emission/Stack
- **P** – Product
- **S** – Soil
- **SED** – Sediment
- **T** - Tissue
- **W** - Water
- **WP** - Wipe

Sample Types:
- **D** - Duplicate
- **ER** – Equipment Rinsate
- **FB** – Field Blank
- **FD** – Field Duplicate
- **MS** – Matrix Spike
- **MSD** – Matrix Spike Dup
- **TB** – Trip Blank

Temp: 22.0°C Therm #: 027

Comments: 325/217

Relinquished by (Print/Signature)	Date	Time
James O. Prikryl	11/18/02	0930
Received by (Print/Signature)	Date	Time
Relinquished by (Print/Signature)	Date	Time
Received by (Print/Signature)	Date	Time
Relinquished by (Print/Signature)	Date	Time

SwRI Project#: 20.06002.01.071

Received by SwRI Lab: (Signature) [signature]

Date: 11/18/02 Time: 0930

Samples Disposed: Date: Time:

Samples Disposed by:

Div 01 COC Form 01-01-001, Rev 4/02

01-QPP-015
Division 01
Revision 4
November 2002

Document No. 3

CONTROLLED COPY
IF STAMP IS NOT RED, THIS DOCUMENT IS UNCONTROLLED

Chemistry and Chemical
Engineering Division

QUALITY PROJECT PLAN FOR

PERFORMANCE OF CHEMICAL ANALYSES FOR COMMERCIAL NUCLEAR POWER PLANTS WITHIN THE DEPARTMENT OF ANALYTICAL AND ENVIRONMENTAL CHEMISTRY

SOUTHWEST RESEARCH INSTITUTE
Chemistry and Chemical Engineering Division
6220 CULEBRA ROAD, SAN ANTONIO, TEXAS 78238

QUALITY PROJECT PLAN FOR PERFORMANCE OF CHEMICAL ANALYSES FOR COMMERCIAL NUCLEAR POWER PLANTS WITHIN THE DEPARTMENT OF ANALYTICAL AND ENVIONMENTAL CHEMISTRY

SwRI AUTHORIZATION SIGNATORIES

This is to certify that this Quality Project Plan of Southwest Research Institute (SwRI) has been reviewed and approved by the following personnel:

JoAnn Boyd — 10/30/02

JOANN BOYD (210) 522-2169 **DATE**
Quality Assurance Manager

R Karimi — 10/30/02

REZA KARIMI (210) 522-2412 **DATE**
Director, Department of Analytical and Environmental Chemistry

for — 10/30/02

MICHAEL G. MACNAUGHTON (210) 522-5162 **DATE**
Vice President, Chemistry and Chemical Engineering Division

Christopher Hobson — 10/30/02

CHRISTOPHER HOBSON (210) 522-5838 **DATE**
Quality Assurance Engineer

TABLE OF CONTENTS

Page

1.0 INTRODUCTION 1

2.0 SCOPE 1

3.0 REFERENCES 1

4.0 APPLICABLE SECTIONS OF SwRI PROGRAM QUALITY PLAN (PQP-NUCLEAR) 1

4.1 Indoctrination and Training 1
4.2 Qualification of Personnel 2
4.3 Design Control 2
4.4 Right of Access 2
4.5 Control of Supplier-Generated Documents 2
4.6 Acceptance of Services Only 2
4.7 Commercial Grade Items 3
4.8 Inspection 4
4.9 Inspection and Testing 5
4.10 Handling, Storage, Packaging, Preservation, and Delivery 5
4.11 Quality Assurance Records 5
4.12 10 CFR, Part 21 6
4.13 Certified Test Report 6
4.14 Valid Documents List 6

5.0 HISTORY OF REVISIONS 6

PERFORMANCE OF CHEMICAL ANALYSES FOR COMMERCIAL NUCLEAR POWER PLANTS WITHIN THE DEPARTMENT OF ANALYTICAL AND ENVIRONMENTAL CHEMISTRY

1.0 INTRODUCTION

This Quality Project Plan (QPP) defines the Quality Assurance (QA) program requirements for personnel providing the chemical analyses for commercial nuclear power plants. Southwest Research Institute (SwRI) ***Program Quality Plan (PQP-Nuclear)***, *Nuclear Services* shall implement the QA requirements. Project activities controlled by the PQP-Nuclear shall be accomplished as specified by the appropriate sections of **01-QAP-004**, *Quality Assurance Plan for Analytical and Environmental Services* and/or nationally recognized testing methods as specified on individual purchase orders. This QPP shall be applied to all projects initiated for nuclear utilities in the Department of Analytical and Environmental Chemistry. If, as a result of complexity, duration, or other factors, it is determined that a unique, project-specific quality plan is required, the project QAE shall notify the Project Manager and a project-specific quality plan shall be generated in accordance with **SOP-01-5.2**, *Preparation and Revision of Plans*.

2.0 SCOPE

This Quality Project Plan shall be applied to the chemical analyses performed for commercial nuclear power plants by the Department of Analytical and Environmental Chemistry within the Chemistry and Chemical Engineering Division. Although the majority of the work performed for nuclear facilities resides within the Department of Analytical and Environmental Chemistry, other departments within the division may utilize this Quality Project Plan as deemed necessary when nuclear projects are conducted.

3.0 REFERENCES

3.1 *SwRI Quality System Manual – 2000*

3.2 *10 CFR 50, Appendix B, ASME NQA-1*

3.3 *SwRI Program Quality Plan (PQP-Nuclear), Nuclear Services*

3.4 01-QAP-004, *Quality Assurance Plan for Analytical and Environmental Services*

4.0 APPLICABLE SECTIONS OF SwRI PROGRAM QUALITY PLAN (PQP-NUCLEAR)

4.1 Indoctrination and Training

4.1.1 Personnel performing duties affecting quality shall receive quality training to the *SwRI Program Quality Plan (PQP-Nuclear), Nuclear Services* prior to performing any work on projects for nuclear utilities. Institute Quality Systems (IQS) personnel shall perform this training and documentation shall be evident in the personnel training files maintained in Division Quality Assurance.

4.1.2 Indoctrination and training of personnel shall be conducted in accordance with **SOP-01-18.1**, *Qualification and Training*.

4.2 Qualification of Personnel

4.2.1 Testing personnel shall be designated as qualified to perform applicable project activities as specified in **SOP-01-18.1**, *Qualification and Training*.

4.2.2 During the performance of each testing process, testing personnel shall have access to the necessary documented procedures, i.e., QPP, QAP, Work Order, Division Quality System Standard Operating Procedures (SOPs), and applicable test/analytical procedures (TAPs) available for ready reference.

4.2.3 Any person who has not performed testing activities associated with any particular method being used for nuclear utilities projects for a period of one year shall be reevaluated prior to the conduct of the test.

4.2.4 Quality Assurance personnel witnessing the testing process for nuclear utilities shall have documented evidence of qualifications maintained by Institute Quality Systems.

4.3 Design Control

Not applicable to activities conducted within the Department of Analytical and Environmental Chemistry.

4.4 Right of Access

4.4.1 Procurement documents shall provide for access to the suppliers' facilities and records for surveillance, inspection, or audit by SwRI and clients.

4.4.2 Where appropriate, quality clause **Q32** shall be noted on the procurement documents to indicate that right of access for inspection and surveillance of activities associated with the order shall be afforded to SwRI and clients.

4.5 Control of Supplier-Generated Documents

4.5.1 Client documents shall be controlled in accordance with procedures under **SOP-01-5.0**, *Document and Data Control*, depending on the type of document supplied. These procedures provide the requirements for the preparation, review, approval, issue, distribution, and revision of documents controlled by the Chemistry and Chemical Engineering Division.

4.5.2 Documents may be controlled as Plans or Work Instructions and shall be accessible through the Division Intranet link, ***Contract Requirements*** as PDF files.

4.5.3 Nationally recognized test methods shall be of the most current issue or as specified in the purchase order. Work orders shall identify the applicable test methods to be used on the nuclear project.

4.6 Acceptance of Services Only

Not applicable to activities conducted within the Department of Analytical and Environmental Chemistry.

4.7 Commercial Grade Items

4.7.1 Where an item is to be incorporated into a test or deliverable to a client, and that item is not subject to design or specification requirements that are unique to nuclear facilities, used in applications other then nuclear facilities, and procured from the supplier on the specifications set forth in the manufacturers' published product and description, the item shall be considered "commercial grade".

4.7.2 Chemical reagents and standards used for testing purposes shall be ordered to specific chemical grades and certificates of analysis shall be required with each lot.

4.7.3 Controls for procurement planning, supplier selection, supplier performance evaluation, and acceptance of procured items and services other than chemical reagents and standards shall be as identified in **SOP-01-6.1**, *Purchasing*, and any referenced document within that procedure.

4.7.4 Receipt inspection of chemical reagents, standards, and test items for use on nuclear safety-related projects shall be performed by department personnel and documented on the *SwRI Receipt Traveler* or **FRM-109**, *Item Receipt Report*, as specified in **SOP-01-10.1**, *Inspection and Test Conduct*. Any discrepancy such as a damaged container or container label shall be documented on the form and the client shall be contacted for disposition.

4.7.5 Prior or acceptance of a commercial grade item, the receipt inspection shall determine the following:

(a) Damage was not sustained during shipment;

(b) The item has satisfied the specified acceptance criteria; and

(c) Specified documentation, as applicable to the item, was received and is acceptable.

4.7.6 Receipt inspection of chemical reagents and standards shall also consist of verification of chemical type, grade, container integrity, certificate of analysis, and shelf life, where applicable. Upon acceptance of chemical reagents and standards, the containers shall be labeled with the following:

(a) Chemical name;

(b) Chemical grade;

(c) Lot code;

(d) Date received; and

(e) Shelf life, when applicable.

4.7.7 Expired shelf life items shall not be used for testing purposes.

4.7.8 Lot codes of chemical reagents and standards used during equipment standardization and testing shall be recorded on the individual testing data sheets to provide traceability.

4.7.9 Samples supplied to SwRI for testing shall be received by the Sample Custodian and logged into the laboratory logbook. Sample documentation and sample custody shall be maintained in accordance with **TAP-01-0407-001**, *Sample Receipt and Login*, and **TAP-01-0407-035**, *Sample/Extract Storage and Custody*.

4.7.10 Samples supplied to SwRI for testing shall be labeled with the following:

(a) Sample control number;

(b) Purchase order number;

(c) Purchase order line item number, as applicable;

(d) Work order number;

(e) Nuclear QA label; and

(f) Sample retention date, when applicable.

4.7.11 In the event that samples are damaged upon receipt, a ***Sample Discrepancy Record*** shall be generated from the Division Intranet.

4.7.12 The testing work order shall list the project number, tests required, test methods required, and shall be labeled *Nuclear Quality*.

4.7.13 Identification and traceability shall be maintained in accordance with **SOP-01-8.1**, *Item Identification and Traceability*.

4.8 Inspection

4.8.1 Inspection for acceptance shall be performed by qualified persons other than those who conduct or directly supervise the work being inspected.

4.8.2 Institute Quality System (IQS) personnel shall perform surveillance activities as required to ensure compliance with the contract and this Quality Project Plan. Specific areas in which IQS may perform surveillance activities include, but are not limited to, the following:

(a) Receiving inspection and labeling of chemical reagents, standards, and testing samples;

(b) Testing processes;

(c) Calibration and major equipment;

(d) Sample and record retention; and

(e) Test records.

4.9 Inspection and Testing

4.9.1 Required tests for acceptance shall be conducted under appropriate environmental conditions using the tools and equipment necessary to conduct the test in a manner to fulfill test requirements and acceptance criteria.

4.9.2 Tests shall be conducted, controlled, and verified in accordance with **SOP-01-10.1**, *Inspection and Test Conduct*.

4.9.3 Controls for measuring and test equipment shall be as specified in **SOP-01-11.1**, *Control of Measuring and Test Equipment*.

4.9.4 Controls for identification, segregation, reporting, and resolution of nonconforming items and conditions shall be as specified in **SOP-01-13.1**, *Nonconformance Reporting*.

4.10 Handling, Storage, Packaging, Preservation, and Delivery

4.10.1 Controls for handling, storage, packaging, preservation, and delivery of items are identified in **SOP-01-15.1**, *Handling, Storage, Packaging, Preservation, and Delivery of Items*.

4.10.2 Samples specified on the purchase order to be returned to the client shall be prepared and packaged as specified on the purchase order. Each package shall be marked legibly and indelibly with the purchase order/release number and line item number(s) relevant to the package.

4.11 Quality Assurance Records

4.11.1 Quality assurance records shall furnish documentary evidence that items or activities meet specified quality requirements. Documents that ensure this evidence include **TAP-01-0407-014**, *Inventory of Case File Purges*, and **SOP-01-16.1**, *Storage and Maintenance of Quality Records*. These documents and this QPP ensure that QA records shall be legible, identifiable, retrievable, and maintained in dual storage.

4.11.2 Records shall be traceable to associated items and activities and shall accurately reflect the work accomplished or information required.

4.11.3 Documents shall be considered valid records only if stamped, initialed or signed and dated by authorized personnel or otherwise authenticated.

4.11.4 Records of test analyses performed by the Department of Analytical and Environmental Chemistry are classified as *nonpermanent* and shall be retained for a minimum of five years. Nonpermanent records are those required to show evidence that an activity was performed in accordance with the applicable requirements, but need not be retained for the life of the item. Based on tne use of the final data, the client shall be responsible for determining and implementing permanent storage requirements.

4.11.5 In order to satisfy duplicate storage requirements, one copy of the QA record shall maintained by the Project Manager in Building 70 and a separate copy shall be maintained in the Division Quality Assurance Archives in Building 201. Storage requirements shall be as stated in **SOP-01-16.1**, *Storage and Maintenance of Quality Records*, to ensure protection against the risk of damage or destruction.

4.12 10 CFR, Part 21

4.12.1 SwRI procurement documents shall include requirements for reporting and approving disposition of supplier nonconformances and, when required, compliance to 10 CFR, Part 21.

4.12.2 The Manager of Institute Quality Assurance or Director of Institute Quality Systems shall determine if a nonconforming condition is reportable under 10 CFR, Part 21, and initiate reporting and condition in accordance with the SwRI Operating Policies and Procedures (OPP). Safety hazards or defects that could create a substantial safety hazard shall be reported. Substantial safety hazard means a loss of safety function to the extent that there is a major reduction in the degree of protection provided to public health and safety.

4.13 Certified Test Report

The Project Manager and Institute Quality Assurance Manager as complying with all contractual requirements shall certify test reports. The certified test report shall reference the purchase order/release number, the test methods performed, and the purchase order/release line item number.

4.14 Valid Documents List

The Department of Analytical and Environmental Chemistry work order shall specify all applicable documents and appropriate document revision level for each document. The work order shall then serve as the Valid Documents List (VDL) for each individual project.

5.0 HISTORY OF REVISIONS

Revision 4
Title of document changed from the Standard Project Quality Plan *SPQP-CH/AN* to Quality Project Plan, *QPP-015*
Extensive revision to comply with Project Quality Plan PQP-Nuclear, *Nuclear Services*, which replaces SwRI NQAPM, *Nuclear Quality Assurance Program Manual*.

SOUTHWEST RESEARCH INSTITUTE

6220 CULEBRA ROAD · POST OFFICE DRAWER 28510 · SAN ANTONIO, TEXAS, USA 78228-0510 (210)684-5111

RADIOACTIVE MATERIAL RECEIVING FORM

Type of Shipment, Mark the Applicable Items

1. Excepted or Limited Quantity ☑ : Nat. U, Th, or DU ☐, Article/Inst. ☐, LQ ☐, Empty ☐
2. Surface Contamination Only ☐: SCO-I ☐,SCO-II ☐
3. Low Specific Activity ☐: LSA-I ☐, LSA-II ☐, LSA-III☐
4. Industrial Package ☐: IP-1 ☐, IP-2 ☐, IP-3 ☐
5. Type A Package/Material ☐: White-I ☐, Yellow-II ☐, Yellow-III ☐
6. Type B Package/Material ☐: B ☐, B (U) ☐, B (M) ☐, Hwy. Rt. Cont. ☐
7. Exclusive Use Vehicle ☐

Receiving Check List

	Yes	No
Shipping Papers Were Provided	☐	☑
Visible Damage to or crushing of Package	☐	☑
Leakage Observed or Wet Package	☐	☑
Loose Contamination Levels* on the Exterior of the Package:		
Beta and gamma less than 22 dpm/cm^2 (6600dpm/300 cm^2)	☐	☑
Alpha less than 2.2 dpm/cm^2 (660 dpm/300 cm^2)	☐	☑
Radiation Dose Rate Within Limits and as Described by Shipper	☐	☑
Contact Dose Rate _____mR/h, TI _____, Survey Meter S/N 124238		
Shipment Checked Within 3 Working Hours of Receipt	☑	☐

Radioactive Material Inventory Data

Source Serial or ID No. on Shipping Papers ☐, or fill-in as needed: _____

Description: _____

Standard: P ☐ S ☐ T ☐ Sealed Source: ☐ Leak Check: Certificate ☐ @ SwRI ☐ Date Wiped: _____ Alpha Sources ☐ Beta Sources ☐ Not Required ☐

User: _____ Location: _____

Since: _____

Received Date: 11/18/02 0930

Received From: Jim Prikryl Div-20 ext. 5667

(Address) _____

Comments: Hand Delivered.

License Code	Nuclide	Assay uCi	Assay Date

For License Codes U and V see back

Receiver's/Checker's Signature

Received by: _____ Date Received: 11/18/02 0930

*Using a 300 cm^2, dry, absorbent-material, moderate-pressure, thoroughly-representive, wipe for non-fixed (loose) contamination. Note: 6600 dpm = 110 Bq and 660 dpm = 11 Bq

Southwest Research Institute

Traffic Report

Sample Custodian Signature: 11/18/02

Project: 06002.01-071

Case: CNWRA / SDG: 216201

Airbill: HAND DELIVERED

Work Order: 23451

1. Custody Seal — Not Present or Damaged
2. Chain of Custody — Present
3. Sample Tags — Not Present
   Sample Tag Numbers — Not on COC
4. SMO Forms — Not Present

Date Received	Time Received	COC Record	SMO Sample #	Corresponding		Traffic Rpt, Tags, COC Agree	Sample Condition
				Sample Tag #	SwRI #		
11/18/02	09:30:00	None	CATC-0A-4	None	216205	YES	Intact
11/18/02	09:30:00	None	CATC-0A-5	None	216206	YES	Intact
11/18/02	09:30:00	None	CATC-0A-6	None	216207	YES	Intact
11/18/02	09:30:00	None	CATC-0A-7	None	216208	YES	Intact
11/18/02	09:30:00	None	CATC-0A-8	None	216209	YES	Intact
11/18/02	09:30:00	None	CATC-0A-1	None	216201	YES	Intact
11/18/02	09:30:00	None	CATC-0A-10	None	216202	YES	Intact
11/18/02	09:30:00	None	CATC-0A-2	None	216203	YES	Intact
11/18/02	09:30:00	None	CATC-0A-3	None	216204	YES	Intact
11/18/02	09:30:00	None	CATC-0B-8	None	216219	YES	Intact
11/18/02	09:30:00	None	CATC-0B-9	None	216220	YES	Intact
11/18/02	09:30:00	None	CATC-1A-1	None	216221	YES	Intact
11/18/02	09:30:00	None	CATC-0A-9	None	216210	YES	Intact
11/18/02	09:30:00	None	CATC-0B-1	None	216211	YES	Intact
11/18/02	09:30:00	None	CATC-0B-10	None	216212	YES	Intact
11/18/02	09:30:00	None	CATC-0B-2	None	216213	YES	Intact
11/18/02	09:30:00	None	CATC-0B-3	None	216214	YES	Intact
11/18/02	09:30:00	None	CATC-0B-4	None	216215	YES	Intact
11/18/02	09:30:00	None	CATC-0B-5	None	216216	YES	Intact
11/18/02	09:30:00	None	CATC-0B-6	None	216217	YES	Intact
11/18/02	09:30:00	None	CATC-0B-7	None	216218	YES	Intact
11/18/02	09:30:00	None	CATC-7A-4	None	216233	YES	Intact
11/18/02	09:30:00	None	CATC-7A-5	None	216234	YES	Intact
11/18/02	09:30:00	None	CATC-1A-2	None	216222	YES	Intact
11/18/02	09:30:00	None	CATC-1A-3	None	216223	YES	Intact
11/18/02	09:30:00	None	CATC-1A-4	None	216224	YES	Intact
11/18/02	09:30:00	None	CATC-1A-5	None	216225	YES	Intact
11/18/02	09:30:00	None	CATC-1A-6	None	216226	YES	Intact
11/18/02	09:30:00	None	CATC-1A-7	None	216227	YES	Intact
11/18/02	09:30:00	None	CATC-1A-8	None	216228	YES	Intact
11/18/02	09:30:00	None	CATC-7A-1	None	216229	YES	Intact
11/18/02	09:30:00	None	CATC-7A-10	None	216230	YES	Intact
11/18/02	09:30:00	None	CATC-7A-2	None	216231	YES	Intact
11/18/02	09:30:00	None	CATC-7A-3	None	216232	YES	Intact
11/18/02	09:30:00	None	CATC-7B-7	None	216246	YES	Intact
11/18/02	09:30:00	None	CATC-7B-8	None	216247	YES	Intact
11/18/02	09:30:00	None	CATC-7A-6	None	216235	YES	Intact
11/18/02	09:30:00	None	CATC-7B-9	None	216248	YES	Intact
11/18/02	09:30:00	None	UMC-0A	None	216249	YES	Intact
11/18/02	09:30:00	None	CATC-7A-7	None	216236	YES	Intact
11/18/02	09:30:00	None	CATC-7A-8	None	216237	YES	Intact
11/18/02	09:30:00	None	CATC-7A-9	None	216238	YES	Intact
11/18/02	09:30:00	None	CATC-7B-1	None	216239	YES	Intact
11/18/02	09:30:00	None	CATC-7B-10	None	216240	YES	Intact
11/18/02	09:30:00	None	UMC-0B	None	216250	YES	Intact
11/18/02	09:30:00	None	UMC-7A	None	216251	YES	Intact
11/18/02	09:30:00	None	UMC-7B	None	216252	YES	Intact

Client: DIV 20

WO: 23451

FRM-217

Southwest Research Institute

Traffic Report

Sample Custodian Signature: _____ 11/18/02

Project: 06002.01-071

Case: CNWRA / SDG: 216201

Airbill: HAND DELIVERED

Work Order: 23451

Date Received	Time Received	COC Record	SMO Sample #	Corresponding		Traffic Rpt, Tags, COC Agree	Sample Condition
				Sample Tag #	SwRI #		
11/18/02	09:30:00	None	CATC-7B-2	None	216241	YES	Intact
11/18/02	09:30:00	None	CATC-7B-3	None	216242	YES	Intact
11/18/02	09:30:00	None	CATC-7B-4	None	216243	YES	Intact
11/18/02	09:30:00	None	CATC-7B-5	None	216244	YES	Intact
11/18/02	09:30:00	None	CATC-7B-6	None	216245	YES	Intact

Client: DIV 20

WO: 23451

FRM-217

Southwest Research Institute

Distribution List

Work Order Number: 23452

Division 1

BOYD, JOANN

DAMMANN, MIKE

SAUCEDA, CYNTHIA

Hageman, John Bld 63

Prikryl, Jim bld. 57

Distribution WO: 23452 Client: DIV 20

Page Printed: 18 Nov 2002 12:55:51

Number of Copies: 3

ver (07/17/2002)

Laboratory Work Order

Southwest Research Institute

Work Order Number: 23452

VTSR: 11/18/02

Time: 09:30:00

Project: 06002.01.071
Case #: CNWRA
SDG: 216253
Client: DIV 20

Manager: DAMMANN, MIKE
Logged in by: kedrisi
Creation Date: 11/18/02

Notes

Samples were received at ambient temperature @ 22.0° C.

Qc Note: As per method.

Parameters: Analysis for Anions by IC as per COC.

Note: See chain of custody as part of the work order system for more information. Contact Project Manager for questions.

Note: Anions of particular interest and their expanded range of concentration are listed below to assist in calibration: Cl- 650 to 850ppm, NO3- 0.05 to 2.0ppm as per COC.

Note: Turnaround time is 28 days from.

Note: Samples were received intact.

Note: Project is Nuclear Safety Related, 10 CFR 50, Part 21, Appendix B.

Note: Contact Joann Boyd @ 2169 or Pager 351-1617. For Institute QA contact before starting any work on this project.

Note: Have SPQP (Latest Revision) on the bench at the time of prep or analysis of samples.

Note: All personnel must be QA Nuclear Certified.

Note: Outside of the sample containers were screened for radioactivity, all samples were above login background (60 CPM).
*** kedrisi Nov 18 2002 11:55AM ***

System ID	Customer ID	CED	Matrix	Container	Required Analyses
216253	ANC-0A-1	11/15/02	Liquid	1	Wetchem: IC
216254	ANC-0A-10	11/15/02	Liquid	1	Wetchem: IC
216255	ANC-0A-2	11/15/02	Liquid	1	Wetchem: IC
216256	ANC-0A-3	11/15/02	Liquid	1	Wetchem: IC
216257	ANC-0A-4	11/15/02	Liquid	1	Wetchem: IC
216258	ANC-0A-5	11/15/02	Liquid	1	Wetchem: IC
216259	ANC-0A-6	11/15/02	Liquid	1	Wetchem: IC
216260	ANC-0A-7	11/15/02	Liquid	1	Wetchem: IC
216261	ANC-0A-8	11/15/02	Liquid	1	Wetchem: IC
216262	ANC-0A-9	11/15/02	Liquid	1	Wetchem: IC
216263	ANC-0B-1	11/15/02	Liquid	1	Wetchem: IC
216264	ANC-0B-10	11/15/02	Liquid	1	Wetchem: IC
216265	ANC-0B-2	11/15/02	Liquid	1	Wetchem: IC
216266	ANC-0B-3	11/15/02	Liquid	1	Wetchem: IC
216267	ANC-0B-4	11/15/02	Liquid	1	Wetchem: IC
216268	ANC-0B-5	11/15/02	Liquid	1	Wetchem: IC
216269	ANC-0B-6	11/15/02	Liquid	1	Wetchem: IC
216270	ANC-0B-7	11/15/02	Liquid	1	Wetchem: IC
216271	ANC-0B-8	11/15/02	Liquid	1	Wetchem: IC
216272	ANC-0B-9	11/15/02	Liquid	1	Wetchem: IC
216273	ANC-1A-1	11/15/02	Liquid	1	Wetchem: IC
216274	ANC-1A-2	11/15/02	Liquid	1	Wetchem: IC
216275	ANC-1A-3	11/15/02	Liquid	1	Wetchem: IC

Preliminary Data Due: N/A
EDD Due: N/A
Data Must be to QA: 12/13/02
Absolute Latest Date: 12/15/02

Turnaround is 28 Days from VTSR

Page Printed: 18 Nov 2002 12:55:53
ver (07/17/2002)

Client: DIV 20
WO: 23452
FRM-002

Laboratory Work Order

Southwest Research Institute

Work Order Number: 23452

VTSR: 11/18/02

Time: 09:30:00

Project: 06002.01.071
Case #: CNWRA
SDG: 216253
Client: DIV 20

Manager: DAMMANN, MIKE
Logged in by: kedrisi
Creation Date: 11/18/02

System ID	Customer ID	CED	Matrix	Container	Required Analyses
216276	ANC-1A-4	11/15/02	Liquid	1	Wetchem: IC
216277	ANC-1A-5	11/15/02	Liquid	1	Wetchem: IC
216278	ANC-1A-6	11/15/02	Liquid	1	Wetchem: IC
216279	ANC-1A-7	11/15/02	Liquid	1	Wetchem: IC
216280	ANC-1A-8	11/15/02	Liquid	1	Wetchem: IC
216281	ANC-7A-1	11/15/02	Liquid	1	Wetchem: IC
216282	ANC-7A-10	11/15/02	Liquid	1	Wetchem: IC
216283	ANC-7A-2	11/15/02	Liquid	1	Wetchem: IC
216284	ANC-7A-3	11/15/02	Liquid	1	Wetchem: IC
216285	ANC-7A-4	11/15/02	Liquid	1	Wetchem: IC
216286	ANC-7A-5	11/15/02	Liquid	1	Wetchem: IC
216287	ANC-7A-6	11/15/02	Liquid	1	Wetchem: IC
216288	ANC-7A-7	11/15/02	Liquid	1	Wetchem: IC
216289	ANC-7A-8	11/15/02	Liquid	1	Wetchem: IC
216290	ANC-7A-9	11/15/02	Liquid	1	Wetchem: IC
216291	ANC-7B-1	11/15/02	Liquid	1	Wetchem: IC
216292	ANC-7B-10	11/15/02	Liquid	1	Wetchem: IC
216293	ANC-7B-2	11/15/02	Liquid	1	Wetchem: IC
216294	ANC-7B-3	11/15/02	Liquid	1	Wetchem: IC
216295	ANC-7B-4	11/15/02	Liquid	1	Wetchem: IC
216296	ANC-7B-5	11/15/02	Liquid	1	Wetchem: IC
216297	ANC-7B-6	11/15/02	Liquid	1	Wetchem: IC
216298	ANC-7B-7	11/15/02	Liquid	1	Wetchem: IC
216299	ANC-7B-8	11/15/02	Liquid	1	Wetchem: IC
216300	ANC-7B-9	11/15/02	Liquid	1	Wetchem: IC
216301	UMC-0C	11/15/02	Liquid	1	Wetchem: IC
216302	UMC-0D	11/15/02	Liquid	1	Wetchem: IC
216303	UMC-7C	11/15/02	Liquid	1	Wetchem: IC
216304	UMC-7D	11/15/02	Liquid	1	Wetchem: IC

Containers: 52 **Samples: 52**

Group	Test	Start	Method Date	Deadline	Number	Description	Fridge	Shelf
WETCHEM	IC	ced	13 Dec 2002	13 Dec 2002	52	ANALYSIS BY ION CHRMOATOGRAPHY	Ref-64	2D

Work Orders in this SDG

23452

Thermometer: 027
Temperature: 22.0

Preliminary Data Due: N/A
EDD Due: N/A
Data Must be to QA: 12/13/02
Absolute Latest Date: 12/15/02

Turnaround is 28 Days from VTSR

Page Printed: 18 Nov 2002 12:55:53
ver (07/17/2002)

Client: DIV 20 WO: 23452 FRM-002

ORIGINAL

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Shipper Name/Address: Jim Pikryl
CNWRA, Div 20, B 162, 57

Client:

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 weeks

SwRI Contact: Mike Damann

Analyses Requested

*Note - anions of particular interest and their expected ranges of concentrations are listed below to assist in calibration.

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Anions by IC	
ANC-OA-1	11/15/02	1100	W		1	✓	Cl - 650 TO 850 ppm
ANC-OA-2					1	✓	NO_3 - 0.05 TO 2.0 ppm
ANC-OA-3					1	✓	
ANC-OA-4					1	✓	
ANC-OA-5					1	✓	
ANC-OA-6					1	✓	
ANC-OA-7					1	✓	
ANC-OA-8					1	✓	
ANC-OA-9					1	✓	
ANC-OA-10					1	✓	

REMARKS

Preservation
- **a** = HCl to pH <2
- **b** = HNO_3 to pH <2
- **c** = H_2SO_4 to pH <2
- **d** = NaOH to pH >12
- **e** = Cool (4°C±2°C)
- **f** = Other (specify)

POC - Jim Pikryl x5667

Nuclear safety related - use appropriate QA procedures

20.06002.01.071

Matrix Types:
- **A** – Air
- **B** – Biota
- **D** - Dust
- **E** – Emission/Stack
- **P** – Product
- **S** – Soil
- **SED** – Sediment
- **T** - Tissue
- **W** - Water
- **WP** - Wipe

Sample Types:
- **D** - Duplicate
- **ER** – Equipment Rinsate
- **FB** – Field Blank
- **FD** – Field Duplicate
- **MS** – Matrix Spike
- **MSD** – Matrix Spike Dup
- **TB** – Trip Blank

Temp: 22.0°C Therm #: 027

Comments:

325/222

	Date	Time
Relinquished by (Print/Signature): James D. Pikryl	11/18/02	0930
Received by (Print/Signature):		
Relinquished by (Print/Signature):		
Received by (Print/Signature):		
Relinquished by (Print/Signature):		

SwRI Project#:

Received by SwRI Lab: (Signature) Khaled

Date: 11/18/02 Time: 0930

Samples Disposed: Date / Time

Samples Disposed by:

ORIGINAL

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Shipper Name/Address: Jim Pickyl CNWRA, Div 20, Bldg 57

Client:

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 weeks

SwRI Contact: Mike Dunmire

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Anions by IC			* See note on page 1					
ANC-OB-1	11/15/02	1100	W		1	✓								
ANC-OB-2					1	✓								
ANC-OB-3					1	✓								
ANC-OB-4					1	✓								
ANC-OB-5					1	✓								
ANC-OB-6					1	✓								
ANC-OB-7					1	✓								
ANC-OB-8					1	✓								
ANC-OB-9					1	✓								
ANC-OB-10	—	—	—		1	✓								

REMARKS

Preservation
- **a** = HCl to pH <2
- **b** = HNO_3 to pH <2
- **c** = H_2SO_4 to pH <2
- **d** = NaOH to pH >12
- **e** = Cool (4°C±2°C)
- **f** = Other (specify)

POC - Jim Pickyl x5267

Nuclear Safety related - use appropriate QA procedure

20.06002.01.071

Matrix Types:
- **A** – Air
- **B** – Biota
- **D** - Dust
- **E** – Emission/Stack
- **P** – Product
- **S** – Soil
- **SED** – Sediment
- **T** - Tissue
- **W** - Water
- **WP** - Wipe

Sample Types:
- **D** - Duplicate
- **ER** – Equipment Rinsate
- **FB** – Field Blank
- **FD** – Field Duplicate
- **MS** – Matrix Spike
- **MSD** – Matrix Spike Dup
- **TB** – Trip Blank

Temp: 22.0°C

Therm #: 07 02 RE 11/18/02

Comments:

325/222

	Date	Time
Relinquished by (Print/Signature): James O. Pickyl	11/18/02	0930
Received by (Print/Signature):		
Relinquished by (Print/Signature)		
Received by (Print/Signature)		
Relinquished by (Print/Signature)		

SwRI Project#:

Received by SwRI Lab: (Signature)

Date: 11/18/02 Time: 0930

Samples Disposed: Date / Time

Samples Disposed by:

ORIGINAL

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Shipper Name/ Address: -Jim Pickyl CNWRA, Div 20, Bldg 57

Client:

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 weeks

SwRI Contact: Mike Dunann

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Anions by IC		*See note on page 1					
ANC-7A-1	11/15/02	1100	W		1	✓							
ANC-7A-2					1	✓							
ANC-7A-3					1	✓							
ANC-7A-4					1	✓							
ANC-7A-5					1	✓							
ANC-7A-6					1	✓							
ANC-7A-7					1	✓							
ANC-7A-8					1	✓							
ANC-7A-9					1	✓							
ANC-7A-10	↓	↓	↓		1	✓							

REMARKS

Preservation
- **a** = HCl to pH <2
- **b** = HNO_3 to pH <2
- **c** = H_2SO_4 to pH <2
- **d** = NaOH to pH >12
- **e** = Cool (4°C±2°C)
- **f** = Other (specify)

POC Jim Pickyl x5667

Nuclear Safety related - use appropriate QA procedures

ZU06002.01.071

Matrix Types:
- **A** – Air
- **B** – Biota
- **D** - Dust
- **E** – Emission/Stack
- **P** – Product
- **S** – Soil
- **SED** – Sediment
- **T** - Tissue
- **W** - Water
- **WP** - Wipe

Sample Types:
- **D** - Duplicate
- **ER** – Equipment Rinsate
- **FB** – Field Blank
- **FD** – Field Duplicate
- **MS** – Matrix Spike
- **MSD** – Matrix Spike Dup
- **TB** – Trip Blank

Temp: 22°C

Therm #: 027

Comments:

325/222

	Date	Time
Relinquished by (Print/Signature): James D. Pickyl	11/18/02	0930
Received by (Print/Signature):		
Relinquished by (Print/Signature):		
Received by (Print/Signature):		
Relinquished by (Print/Signature):		

SwRI Project#:

Received by SwRI Lab: (Signature)

Date: 11/18/02 Time: 0930

Samples Disposed: Date / Time

Samples Disposed by:

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Shipper Name/Address: Jim Prikryl, CNWRA, Div 20, Bldg 57

Client:

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 weeks

SwRI Contact: Mike Damann

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Anions by IC										REMARKS
ANC-7B-1	11/15/02	1100	W		1	✓										POC Jim Prikryl
ANC-7B-2					1	✓										x5667
ANC-7B-3					1	✓										
ANC-7B-4					1	✓										Nuclear safety
ANC-7B-5					1	✓										related - use
ANC-7B-6					1	✓										appropriate QA
ANC-7B-7					1	✓										procedures
ANC-7B-8					1	✓										
ANC-7B-9					1	✓										
ANC-7B-10					1	✓										20.06002.01.071

* See note on page 1

Matrix Types:
- **A** – Air
- **B** – Biota
- **D** - Dust
- **E** – Emission/Stack
- **P** – Product
- **S** – Soil
- **SED** – Sediment
- **T** - Tissue
- **W** - Water
- **WP** - Wipe

Sample Types:
- **D** - Duplicate
- **ER** – Equipment Rinsate
- **FB** – Field Blank
- **FD** – Field Duplicate
- **MS** – Matrix Spike
- **MSD** – Matrix Spike Dup
- **TB** – Trip Blank

Temp: 22.0°C

Therm #: 027

Comments: 325/222

Relinquished by (Print/Signature)	Date	Time
James O. Prikryl	11/18/02	0930
Received by (Print/Signature)	Date	Time
Relinquished by (Print/Signature)	Date	Time
Received by (Print/Signature)	Date	Time
Relinquished by (Print/Signature)	Date	Time

SwRI Project#:

Received by SwRI Lab: (Signature) [signature]

Date	Time
11/18/02	0930

Samples Disposed: Date | Time

Samples Disposed by:

Div 01 COC Form 01-01-001, Rev 4/02

ORIGINAL

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Shipper Name/Address: Jim Prikyl CNWRA, Div 20, Bldg 57

Client:

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 weeks

SwRI Contact: Mike Damann

Analyses Requested

* See note on page 1

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Anions by IC										REMARKS
ANC-1A-1	11/15/02	1100	W		1	✓										POC Jim Prikyl
ANC-1A-2					1	✓										+5667
ANC-1A-3					1	✓										
ANC-1A-4					1	✓										Nuclear safety
ANC-1A-5					1	✓										related - use
ANC-1A-6					1	✓										appropriate QA
ANC-1A-7					1	✓										procedures
ANC-1A-8					1	✓										
UMC-OC					1	✓										
UMC-OD					1	✓										20.06002.01.071

Matrix Types:
- **A** – Air
- **B** – Biota
- **D** - Dust
- **E** – Emission/Stack
- **P** – Product
- **S** – Soil
- **SED** – Sediment
- **T** - Tissue
- **W** - Water
- **WP** - Wipe

Sample Types:
- **D** - Duplicate
- **ER** – Equipment Rinsate
- **FB** – Field Blank
- **FD** – Field Duplicate
- **MS** – Matrix Spike
- **MSD** – Matrix Spike Dup
- **TB** – Trip Blank

Temp: 22.0°C

Therm #: 027

Comments: 325/260

Relinquished by (Print/Signature)	Date	Time
James Prikyl	11/18/02	0930
Received by (Print/Signature)	Date	Time
Relinquished by (Print/Signature)	Date	Time
Received by (Print/Signature)	Date	Time
Relinquished by (Print/Signature)	Date	Time

SwRI Project#:

Received by SwRI Lab: (Signature) [signature]

Date	Time
11/18/02	0930

Samples Disposed: Date | Time

Samples Disposed by:

Div 01 COC Form 01-01-001, Rev 4/02

ORIGINAL

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Shipper Name/Address: Jim Prikryl CNWRA, Div 20, Bldg 57

Client:

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 weeks

SwRI Contact: Mike Dunmann

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Anions by IC			*See note on page 1				
UMC-7C	11/15/02	1100		W	1	✓							
UMC-7D	1	1		1	1	✓							

REMARKS

Preservation
- **a** = HCl to pH <2
- **b** = HNO_3 to pH <2
- **c** = H_2SO_4 to pH <2
- **d** = NaOH to pH >12
- **e** = Cool (4°C±2°C)
- **f** = Other (specify)

POC Jim Prikryl x5667

Nuclear Safety related - use appropriate QA procedure

20.06002.01.071

SwRI Project#:

Matrix Types:
- **A** – Air
- **B** – Biota
- **D** - Dust
- **E** – Emission/Stack
- **P** – Product
- **S** – Soil
- **SED** – Sediment
- **T** - Tissue
- **W** - Water
- **WP** - Wipe

Sample Types:
- **D** - Duplicate
- **ER** – Equipment Rinsate
- **FB** – Field Blank
- **FD** – Field Duplicate
- **MS** – Matrix Spike
- **MSD** – Matrix Spike Dup
- **TB** – Trip Blank

Temp: 22.0°C

Therm #: 027

Comments:

325/217

	Date	Time
Relinquished by (Print/Signature): James D. Prikryl	11/18/02	0930
Received by (Print/Signature):	Date	Time
Relinquished by (Print/Signature)	Date	Time
Received by (Print/Signature)	Date	Time
Relinquished by (Print/Signature)	Date	Time

Received by SwRI Lab: (Signature)

Date: 11/18/02 Time: 0930

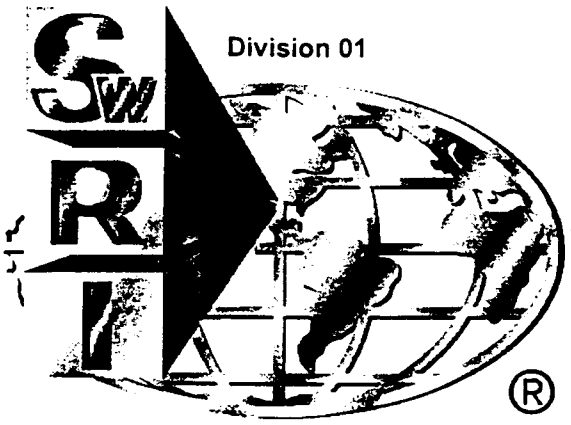
Samples Disposed: Date / Time

Samples Disposed by:

01-QPP-015
Division 01
Revision 4
November 2002

Document No. 3

CONTROLLED COPY
IF STAMP IS NOT RED, THIS DOCUMENT IS UNCONTROLLED



Chemistry and Chemical
Engineering Division

QUALITY PROJECT PLAN FOR

PERFORMANCE OF CHEMICAL ANALYSES FOR COMMERCIAL NUCLEAR POWER PLANTS WITHIN THE DEPARTMENT OF ANALYTICAL AND ENVIRONMENTAL CHEMISTRY

SOUTHWEST RESEARCH INSTITUTE
Chemistry and Chemical Engineering Division
6220 CULEBRA ROAD, SAN ANTONIO, TEXAS 78238

QUALITY PROJECT PLAN FOR PERFORMANCE OF CHEMICAL ANALYSES FOR COMMERCIAL NUCLEAR POWER PLANTS WITHIN THE DEPARTMENT OF ANALYTICAL AND ENVIONMENTAL CHEMISTRY

SwRI AUTHORIZATION SIGNATORIES

This is to certify that this Quality Project Plan of Southwest Research Institute (SwRI) has been reviewed and approved by the following personnel:

JOANN BOYD (210) 522-2169 — **DATE** 10/30/02
Quality Assurance Manager

REZA KARIMI (210) 522-2412 — **DATE** 10/30/02
Director, Department of Analytical and Environmental Chemistry

for **MICHAEL G. MACNAUGHTON** (210) 522-5162 — **DATE** 10/30/02
Vice President, Chemistry and Chemical Engineering Division

CHRISTOPHER HOBSON (210) 522-5838 — **DATE** 10/30/02
Quality Assurance Engineer

TABLE OF CONTENTS

Page

1.0 INTRODUCTION 1

2.0 SCOPE 1

3.0 REFERENCES 1

4.0 APPLICABLE SECTIONS OF SwRI PROGRAM QUALITY PLAN (PQP-NUCLEAR) 1

4.1 Indoctrination and Training 1
4.2 Qualification of Personnel 2
4.3 Design Control 2
4.4 Right of Access 2
4.5 Control of Supplier-Generated Documents 2
4.6 Acceptance of Services Only 2
4.7 Commercial Grade Items 3
4.8 Inspection 4
4.9 Inspection and Testing 5
4.10 Handling, Storage, Packaging, Preservation, and Delivery 5
4.11 Quality Assurance Records 5
4.12 10 CFR, Part 21 6
4.13 Certified Test Report 6
4.14 Valid Documents List 6

5.0 HISTORY OF REVISIONS 6

PERFORMANCE OF CHEMICAL ANALYSES FOR COMMERCIAL NUCLEAR POWER PLANTS WITHIN THE DEPARTMENT OF ANALYTICAL AND ENVIRONMENTAL CHEMISTRY

1.0 INTRODUCTION

This Quality Project Plan (QPP) defines the Quality Assurance (QA) program requirements for personnel providing the chemical analyses for commercial nuclear power plants. Southwest Research Institute (SwRI) ***Program Quality Plan (PQP-Nuclear)***, *Nuclear Services* shall implement the QA requirements. Project activities controlled by the PQP-Nuclear shall be accomplished as specified by the appropriate sections of **01-QAP-004**, *Quality Assurance Plan for Analytical and Environmental Services* and/or nationally recognized testing methods as specified on individual purchase orders. This QPP shall be applied to all projects initiated for nuclear utilities in the Department of Analytical and Environmental Chemistry. If, as a result of complexity, duration, or other factors, it is determined that a unique, project-specific quality plan is required, the project QAE shall notify the Project Manager and a project-specific quality plan shall be generated in accordance with **SOP-01-5.2**, *Preparation and Revision of Plans*.

2.0 SCOPE

This Quality Project Plan shall be applied to the chemical analyses performed for commercial nuclear power plants by the Department of Analytical and Environmental Chemistry within the Chemistry and Chemical Engineering Division. Although the majority of the work performed for nuclear facilities resides within the Department of Analytical and Environmental Chemistry, other departments within the division may utilize this Quality Project Plan as deemed necessary when nuclear projects are conducted.

3.0 REFERENCES

3.1 *SwRI Quality System Manual – 2000*

3.2 *10 CFR 50, Appendix B, ASME NQA-1*

3.3 *SwRI Program Quality Plan (PQP-Nuclear), Nuclear Services*

3.4 01-QAP-004, *Quality Assurance Plan for Analytical and Environmental Services*

4.0 APPLICABLE SECTIONS OF SwRI PROGRAM QUALITY PLAN (PQP-NUCLEAR)

4.1 Indoctrination and Training

4.1.1 Personnel performing duties affecting quality shall receive quality training to the *SwRI Program Quality Plan (PQP-Nuclear), Nuclear Services* prior to performing any work on projects for nuclear utilities. Institute Quality Systems (IQS) personnel shall perform this training and documentation shall be evident in the personnel training files maintained in Division Quality Assurance.

4.1.2 Indoctrination and training of personnel shall be conducted in accordance with **SOP-01-18.1**, *Qualification and Training.*

4.2 Qualification of Personnel

4.2.1 Testing personnel shall be designated as qualified to perform applicable project activities as specified in **SOP-01-18.1**, *Qualification and Training*.

4.2.2 During the performance of each testing process, testing personnel shall have access to the necessary documented procedures, i.e., QPP, QAP, Work Order, Division Quality System Standard Operating Procedures (SOPs), and applicable test/analytical procedures (TAPs) available for ready reference.

4.2.3 Any person who has not performed testing activities associated with any particular method being used for nuclear utilities projects for a period of one year shall be reevaluated prior to the conduct of the test.

4.2.4 Quality Assurance personnel witnessing the testing process for nuclear utilities shall have documented evidence of qualifications maintained by Institute Quality Systems.

4.3 Design Control

Not applicable to activities conducted within the Department of Analytical and Environmental Chemistry.

4.4 Right of Access

4.4.1 Procurement documents shall provide for access to the suppliers' facilities and records for surveillance, inspection, or audit by SwRI and clients.

4.4.2 Where appropriate, quality clause **Q32** shall be noted on the procurement documents to indicate that right of access for inspection and surveillance of activities associated with the order shall be afforded to SwRI and clients.

4.5 Control of Supplier-Generated Documents

4.5.1 Client documents shall be controlled in accordance with procedures under **SOP-01-5.0**, *Document and Data Control*, depending on the type of document supplied. These procedures provide the requirements for the preparation, review, approval, issue, distribution, and revision of documents controlled by the Chemistry and Chemical Engineering Division.

4.5.2 Documents may be controlled as Plans or Work Instructions and shall be accessible through the Division Intranet link, ***Contract Requirements*** as PDF files.

4.5.3 Nationally recognized test methods shall be of the most current issue or as specified in the purchase order. Work orders shall identify the applicable test methods to be used on the nuclear project.

4.6 Acceptance of Services Only

Not applicable to activities conducted within the Department of Analytical and Environmental Chemistry.

4.7 Commercial Grade Items

4.7.1 Where an item is to be incorporated into a test or deliverable to a client, and that item is not subject to design or specification requirements that are unique to nuclear facilities, used in applications other then nuclear facilities, and procured from the supplier on the specifications set forth in the manufacturers' published product and description, the item shall be considered "commercial grade".

4.7.2 Chemical reagents and standards used for testing purposes shall be ordered to specific chemical grades and certificates of analysis shall be required with each lot.

4.7.3 Controls for procurement planning, supplier selection, supplier performance evaluation, and acceptance of procured items and services other than chemical reagents and standards shall be as identified in **SOP-01-6.1**, *Purchasing*, and any referenced document within that procedure.

4.7.4 Receipt inspection of chemical reagents, standards, and test items for use on nuclear safety-related projects shall be performed by department personnel and documented on the *SwRI Receipt Traveler* or **FRM-109**, *Item Receipt Report*, as specified in **SOP-01-10.1**, *Inspection and Test Conduct*. Any discrepancy such as a damaged container or container label shall be documented on the form and the client shall be contacted for disposition.

4.7.5 Prior or acceptance of a commercial grade item, the receipt inspection shall determine the following:

(a) Damage was not sustained during shipment;

(b) The item has satisfied the specified acceptance criteria; and

(c) Specified documentation, as applicable to the item, was received and is acceptable.

4.7.6 Receipt inspection of chemical reagents and standards shall also consist of verification of chemical type, grade, container integrity, certificate of analysis, and shelf life, where applicable. Upon acceptance of chemical reagents and standards, the containers shall be labeled with the following:

(a) Chemical name;

(b) Chemical grade;

(c) Lot code;

(d) Date received; and

(e) Shelf life, when applicable.

4.7.7 Expired shelf life items shall not be used for testing purposes.

4.7.8 Lot codes of chemical reagents and standards used during equipment standardization and testing shall be recorded on the individual testing data sheets to provide traceability.

4.7.9 Samples supplied to SwRI for testing shall be received by the Sample Custodian and logged into the laboratory logbook. Sample documentation and sample custody shall be maintained in accordance with **TAP-01-0407-001**, *Sample Receipt and Login*, and **TAP-01-0407-035**, *Sample/Extract Storage and Custody*.

4.7.10 Samples supplied to SwRI for testing shall be labeled with the following:

(a) Sample control number;

(b) Purchase order number;

(c) Purchase order line item number, as applicable;

(d) Work order number;

(e) Nuclear QA label; and

(f) Sample retention date, when applicable.

4.7.11 In the event that samples are damaged upon receipt, a ***Sample Discrepancy Record*** shall be generated from the Division Intranet.

4.7.12 The testing work order shall list the project number, tests required, test methods required, and shall be labeled *Nuclear Quality*.

4.7.13 Identification and traceability shall be maintained in accordance with **SOP-01-8.1**, *Item Identification and Traceability*.

4.8 Inspection

4.8.1 Inspection for acceptance shall be performed by qualified persons other than those who conduct or directly supervise the work being inspected.

4.8.2 Institute Quality System (IQS) personnel shall perform surveillance activities as required to ensure compliance with the contract and this Quality Project Plan. Specific areas in which IQS may perform surveillance activities include, but are not limited to, the following:

(a) Receiving inspection and labeling of chemical reagents, standards, and testing samples;

(b) Testing processes;

(c) Calibration and major equipment;

(d) Sample and record retention; and

(e) Test records.

4.9 Inspection and Testing

4.9.1 Required tests for acceptance shall be conducted under appropriate environmental conditions using the tools and equipment necessary to conduct the test in a manner to fulfill test requirements and acceptance criteria.

4.9.2 Tests shall be conducted, controlled, and verified in accordance with **SOP-01-10.1**, *Inspection and Test Conduct.*

4.9.3 Controls for measuring and test equipment shall be as specified in **SOP-01-11.1**, *Control of Measuring and Test Equipment.*

4.9.4 Controls for identification, segregation, reporting, and resolution of nonconforming items and conditions shall be as specified in **SOP-01-13.1**, *Nonconformance Reporting.*

4.10 Handling, Storage, Packaging, Preservation, and Delivery

4.10.1 Controls for handling, storage, packaging, preservation, and delivery of items are identified in **SOP-01-15.1**, *Handling, Storage, Packaging, Preservation, and Delivery of Items.*

4.10.2 Samples specified on the purchase order to be returned to the client shall be prepared and packaged as specified on the purchase order. Each package shall be marked legibly and indelibly with the purchase order/release number and line item number(s) relevant to the package.

4.11 Quality Assurance Records

4.11.1 Quality assurance records shall furnish documentary evidence that items or activities meet specified quality requirements. Documents that ensure this evidence include **TAP-01-0407-014**, *Inventory of Case File Purges*, and **SOP-01-16.1**, *Storage and Maintenance of Quality Records.* These documents and this QPP ensure that QA records shall be legible, identifiable, retrievable, and maintained in dual storage.

4.11.2 Records shall be traceable to associated items and activities and shall accurately reflect the work accomplished or information required.

4.11.3 Documents shall be considered valid records only if stamped, initialed or signed and dated by authorized personnel or otherwise authenticated.

4.11.4 Records of test analyses performed by the Department of Analytical and Environmental Chemistry are classified as *nonpermanent* and shall be retained for a minimum of five years. Nonpermanent records are those required to show evidence that an activity was performed in accordance with the applicable requirements, but need not be retained for the life of the item. Based on the use of the final data, the client shall be responsible for determining and implementing permanent storage requirements.

4.11.5 In order to satisfy duplicate storage requirements, one copy of the QA record shall maintained by the Project Manager in Building 70 and a separate copy shall be maintained in the Division Quality Assurance Archives in Building 201. Storage requirements shall be as stated in **SOP-01-16.1**, *Storage and Maintenance of Quality Records*, to ensure protection against the risk of damage or destruction.

4.12 10 CFR, Part 21

4.12.1 SwRI procurement documents shall include requirements for reporting and approving disposition of supplier nonconformances and, when required, compliance to 10 CFR, Part 21.

4.12.2 The Manager of Institute Quality Assurance or Director of Institute Quality Systems shall determine if a nonconforming condition is reportable under 10 CFR, Part 21, and initiate reporting and condition in accordance with the SwRI Operating Policies and Procedures (OPP). Safety hazards or defects that could create a substantial safety hazard shall be reported. Substantial safety hazard means a loss of safety function to the extent that there is a major reduction in the degree of protection provided to public health and safety.

4.13 Certified Test Report

The Project Manager and Institute Quality Assurance Manager as complying with all contractual requirements shall certify test reports. The certified test report shall reference the purchase order/release number, the test methods performed, and the purchase order/release line item number.

4.14 Valid Documents List

The Department of Analytical and Environmental Chemistry work order shall specify all applicable documents and appropriate document revision level for each document. The work order shall then serve as the Valid Documents List (VDL) for each individual project.

5.0 HISTORY OF REVISIONS

Revision 4
Title of document changed from the Standard Project Quality Plan *SPQP-CH/AN* to Quality Project Plan, *QPP-015*
Extensive revision to comply with Project Quality Plan PQP-Nuclear, *Nuclear Services*, which replaces SwRI NQAPM, *Nuclear Quality Assurance Program Manual.*

SOUTHWEST RESEARCH INSTITUTE
6220 CULEBRA ROAD · POST OFFICE DRAWER 28510 SAN ANTONIO, TEXAS, USA 78228-0510 (210)684-5111

RADIOACTIVE MATERIAL RECEIVING FORM

Type of Shipment, Mark the Applicable Items

1. Excepted or Limited Quantity ☐ : Nat. U, Th, or DU ☐, Article/Inst. ☐, LQ ☐, Empty ☐
2. Surface Contamination Only ☐: SCO-I ☐,SCO-II ☐
3. Low Specific Activity ☐: LSA-I ☐, LSA-II ☐, LSA-III☐
4. Industrial Package ☐: IP-1 ☐, IP-2 ☐, IP-3 ☐
5. Type A Package/Material ☐: White-I ☐, Yellow-II ☐, Yellow-III ☐
6. Type B Package/Material ☐: B ☐, B (U) ☐, B (M) ☐, Hwy. Rt. Cont. ☐
7. Exclusive Use Vehicle ☐

Receiving Check List

	Yes	No
Shipping Papers Were Provided	☐	☒
Visible Damage to or crushing of Package	☐	☒
Leakage Observed or Wet Package	☐	☒
Loose Contamination Levels* on the Exterior of the Package:		
Beta and gamma less than 22 dpm/cm^2 (6600dpm/300 cm^2)	☐	☒
Alpha less than 2.2 dpm/cm^2 (660 dpm/300 cm^2)	☐	☒
Radiation Dose Rate Within Limits and as Described by Shipper KE	☐	☒
Contact Dose Rate -0- mR/h, TI 124238, 11/18/02 Survey Meter S/N 124238		
Shipment Checked Within 3 Working Hours of Receipt	☒	☐

Radioactive Material Inventory Data

Source Serial or ID No. on Shipping Papers ☐, or fill-in as needed: _____

Description: _____

Standard: P ☐ S ☐ T ☐

Sealed Source: ☐

Leak Check: Certificate ☐ @ SwRI ☐ Date Wiped: _____

Alpha Sources ☐ Beta Sources ☐ Not Required ☐

User: _____ Location: _____

Since: _____

Received Date: 11/18/02 0930

Received From: Jim Prikryl of Div. 20 ext. 5667

(Address)

Comments: Hand Delivered.

License Code	Nuclide	Assay uCi	Assay Date

For License Codes U and V see back

Receiver's/Checker's Signature

Received by: [signature] Date Received: 11/18/02 0930

*Using a 300 cm^2, dry, absorbent-material, moderate-pressure, thoroughly-representive, wipe for non-fixed (loose) contamination. Note: 6600 dpm = 110 Bq and 660 dpm = 11 Bq

Southwest Research Institute

Traffic Report

Sample Custodian Signature: 11/18/02

Project: 06002.01-071

Case: CNWRA / SDG: 216253

Airbill: HAND DELIVERED

Work Order: 23452

1. Custody Seal — Not Present or Damaged
2. Chain of Custody — Present
3. Sample Tags — Not Present
   Sample Tag Numbers — Not on COC
4. SMO Forms — Not Present

Date Received	Time Received	COC Record	SMO Sample #	Corresponding		Traffic Rpt, Tags, COC Agree	Sample Condition
				Sample Tag #	SwRI #		
11/18/02	09:30:00	None	ANC-1A-1	None	216273	YES	Intact
11/18/02	09:30:00	None	ANC-1A-2	None	216274	YES	Intact
11/18/02	09:30:00	None	ANC-1A-3	None	216275	YES	Intact
11/18/02	09:30:00	None	ANC-1A-4	None	216276	YES	Intact
11/18/02	09:30:00	None	ANC-1A-5	None	216277	YES	Intact
11/18/02	09:30:00	None	ANC-1A-6	None	216278	YES	Intact
11/18/02	09:30:00	None	ANC-1A-7	None	216279	YES	Intact
11/18/02	09:30:00	None	ANC-0A-7	None	216260	YES	Intact
11/18/02	09:30:00	None	ANC-0A-8	None	216261	YES	Intact
11/18/02	09:30:00	None	ANC-0A-9	None	216262	YES	Intact
11/18/02	09:30:00	None	ANC-0B-1	None	216263	YES	Intact
11/18/02	09:30:00	None	ANC-0B-10	None	216264	YES	Intact
11/18/02	09:30:00	None	ANC-0B-2	None	216265	YES	Intact
11/18/02	09:30:00	None	ANC-0B-3	None	216266	YES	Intact
11/18/02	09:30:00	None	ANC-0B-4	None	216267	YES	Intact
11/18/02	09:30:00	None	ANC-0B-5	None	216268	YES	Intact
11/18/02	09:30:00	None	ANC-0B-6	None	216269	YES	Intact
11/18/02	09:30:00	None	ANC-0B-7	None	216270	YES	Intact
11/18/02	09:30:00	None	ANC-0B-8	None	216271	YES	Intact
11/18/02	09:30:00	None	ANC-0B-9	None	216272	YES	Intact
11/18/02	09:30:00	None	ANC-0A-1	None	216253	YES	Intact
11/18/02	09:30:00	None	ANC-0A-10	None	216254	YES	Intact
11/18/02	09:30:00	None	ANC-0A-2	None	216255	YES	Intact
11/18/02	09:30:00	None	ANC-0A-3	None	216256	YES	Intact
11/18/02	09:30:00	None	ANC-0A-4	None	216257	YES	Intact
11/18/02	09:30:00	None	ANC-0A-5	None	216258	YES	Intact
11/18/02	09:30:00	None	ANC-0A-6	None	216259	YES	Intact
11/18/02	09:30:00	None	ANC-1A-8	None	216280	YES	Intact
11/18/02	09:30:00	None	ANC-7A-1	None	216281	YES	Intact
11/18/02	09:30:00	None	ANC-7A-10	None	216282	YES	Intact
11/18/02	09:30:00	None	ANC-7A-2	None	216283	YES	Intact
11/18/02	09:30:00	None	ANC-7A-3	None	216284	YES	Intact
11/18/02	09:30:00	None	ANC-7A-4	None	216285	YES	Intact
11/18/02	09:30:00	None	ANC-7A-5	None	216286	YES	Intact
11/18/02	09:30:00	None	ANC-7A-6	None	216287	YES	Intact
11/18/02	09:30:00	None	ANC-7A-7	None	216288	YES	Intact
11/18/02	09:30:00	None	ANC-7A-8	None	216289	YES	Intact
11/18/02	09:30:00	None	ANC-7A-9	None	216290	YES	Intact
11/18/02	09:30:00	None	ANC-7B-1	None	216291	YES	Intact
11/18/02	09:30:00	None	ANC-7B-10	None	216292	YES	Intact
11/18/02	09:30:00	None	ANC-7B-4	None	216295	YES	Intact
11/18/02	09:30:00	None	ANC-7B-5	None	216296	YES	Intact
11/18/02	09:30:00	None	ANC-7B-6	None	216297	YES	Intact
11/18/02	09:30:00	None	ANC-7B-7	None	216298	YES	Intact
11/18/02	09:30:00	None	ANC-7B-8	None	216299	YES	Intact
11/18/02	09:30:00	None	ANC-7B-9	None	216300	YES	Intact
11/18/02	09:30:00	None	UMC-0C	None	216301	YES	Intact

Client: DIV 20

WO: 23452

FRM-217

Southwest Research Institute

Traffic Report

Sample Custodian Signature: 11/18/02

Project: 06002.01-071

Case: CNWRA / SDG: 216253

Airbill: HAND DELIVERED

Work Order: 23452

Date Received	Time Received	COC Record	SMO Sample #	Corresponding		Traffic Rpt, Tags, COC Agree	Sample Condition
				Sample Tag #	SwRI #		
11/18/02	09:30:00	None	UMC-0D	None	216302	YES	Intact
11/18/02	09:30:00	None	UMC-7C	None	216303	YES	Intact
11/18/02	09:30:00	None	UMC-7D	None	216304	YES	Intact
11/18/02	09:30:00	None	ANC-7B-2	None	216293	YES	Intact
11/18/02	09:30:00	None	ANC-7B-3	None	216294	YES	Intact

Client: DIV 20

WO: 23452

FRM-217

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Shipper Name/Address: Jim Pikul
CNWRA, Div 20, B 10g 57

Client:

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 weeks

SwRI Contact: Mike Damann

Analyses Requested

* Note - anions of particular interest and their expected range of concentration are listed below to assist in calibration.

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Anions by IC	
ANC-OA-1	11/13/02	1100	W		1	✓	Cl - 650 to 850 ppm
ANC-OA-2					1	✓	NO_3 - 0.05 to 2.0 ppm
ANC-OA-3					1	✓	
ANC-OA-4					1	✓	
ANC-OA-5					1	✓	
ANC-OA-6					1	✓	
ANC-OA-7					1	✓	
ANC-OA-8					1	✓	
ANC-OA-9					1	✓	
ANC-OA-10					1	✓	

REMARKS

Preservation
- **a** = HCl to pH <2
- **b** = HNO_3 to pH <2
- **c** = H_2SO_4 to pH <2
- **d** = NaOH to pH >12
- **e** = Cool (4°C±2°C)
- **f** = Other (specify)

POC Jim Pikul x5667

Nuclear safety related - use appropriate QA procedures

20.0602.01.071

Matrix Types:
- **A** – Air
- **B** – Biota
- **D** - Dust
- **E** – Emission/Stack
- **P** – Product
- **S** – Soil
- **SED** – Sediment
- **T** - Tissue
- **W** - Water
- **WP** - Wipe

Sample Types:
- **D** - Duplicate
- **ER** – Equipment Rinsate
- **FB** – Field Blank
- **FD** – Field Duplicate
- **MS** – Matrix Spike
- **MSD** – Matrix Spike Dup
- **TB** – Trip Blank

Temp: 22.0C Therm #: 027

Comments:

325/222

	Date	Time
Relinquished by (Print/Signature): James D. Pikul	11/18/02	0930
Received by (Print/Signature):		
Relinquished by (Print/Signature):		
Received by (Print/Signature):		
Relinquished by (Print/Signature):		

SwRI Project#:

Received by SwRI Lab: (Signature)

Date: 11/18/02 Time: 0930

Samples Disposed: Date / Time

Samples Disposed by:

Shipper Name/ Address: Jim Pikul
CNWRA, Div 20, Bldg 57

Client:

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 week.

Client Purchase Order/Other ID:

Site/Zone ID:

SwRI Contact: Mike Darnell

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Anions by IC			* See Note on page 1					
ANC-OB-1	11/15/02	1100	W		1	✓								
ANC-OB-2					1	✓								
ANC-OB-3					1	✓								
ANC-OB-4					1	✓								
ANC-OB-5					1	✓								
ANC-OB-6					1	✓								
ANC-OB-7					1	✓								
ANC-OB-8					1	✓								
ANC-OB-9					1	✓								
ANC-OB-10					1	✓								

REMARKS

Preservation
- **a** = HCl to pH <2
- **b** = HNO_3 to pH <2
- **c** = H_2SO_4 to pH <2
- **d** = NaOH to pH >12
- **e** = Cool (4°C±2°C)
- **f** = Other (specify)

POC Jim Pikul x5667

Nuclear Safety related - use appropriate QA procedure

20.06002.01.071

Matrix Types:
- **A** – Air
- **B** – Biota
- **D** - Dust
- **E** – Emission/Stack
- **P** – Product
- **S** – Soil
- **SED** – Sediment
- **T** - Tissue
- **W** - Water
- **WP** - Wipe

Sample Types:
- **D** - Duplicate
- **ER** – Equipment Rinsate
- **FB** – Field Blank
- **FD** – Field Duplicate
- **MS** – Matrix Spike
- **MSD** – Matrix Spike Dup
- **TB** – Trip Blank

Temp: 22.0°C

Therm #: 07 KE 11/18/02

Comments:

325/222

	Date	Time
Relinquished by (Print/Signature): James O. Pikul	11/18/02	0930
Received by (Print/Signature):	Date	Time
Relinquished by (Print/Signature)	Date	Time
Received by (Print/Signature)	Date	Time
Relinquished by (Print/Signature)	Date	Time

SwRI Project#:

Received by SwRI Lab: (Signature)

Date: 11/18/02 Time: 0930

Samples Disposed: Date / Time

Samples Disposed by:

Shipper Name/ Address: Jim Prikryl
CNWRA, Div 20, Bldg 57

Client:

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 weeks

SwRI Contact: M. K. Damann

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Anions by IC		*See note on page 1						
ANC-7A-1	11/15/02	1100	W		1	✓								
ANC-7A-2					1	✓								
ANC-7A-3					1	✓								
ANC-7A-4					1	✓								
ANC-7A-5					1	✓								
ANC-7A-6					1	✓								
ANC-7A-7					1	✓								
ANC-7A-8					1	✓								
ANC-7A-9					1	✓								
ANC-7A-10					1	✓								

REMARKS

Preservation
- **a** = HCl to pH <2
- **b** = HNO_3 to pH <2
- **c** = H_2SO_4 to pH <2
- **d** = NaOH to pH >12
- **e** = Cool (4°C±2°C)
- **f** = Other (specify)

POC Jim Prikryl x5667

Nuclear Safety related - use appropriate QA procedures

20.06002.01.071

Matrix Types:
- **A** – Air
- **B** – Biota
- **D** - Dust
- **E** – Emission/Stack
- **P** – Product
- **S** – Soil
- **SED** – Sediment
- **T** - Tissue
- **W** - Water
- **WP** - Wipe

Sample Types:
- **D** - Duplicate
- **ER** – Equipment Rinsate
- **FB** – Field Blank
- **FD** – Field Duplicate
- **MS** – Matrix Spike
- **MSD** – Matrix Spike Dup
- **TB** – Trip Blank

Temp: 22°C Therm #: 027

Comments:
325/222

	Date	Time
Relinquished by (Print/Signature): James D. Prikryl	11/18/02	0930
Received by (Print/Signature):		
Relinquished by (Print/Signature):		
Received by (Print/Signature):		
Relinquished by (Print/Signature):		

SwRI Project#:

Received by SwRI Lab: (Signature)

Date: 11/18/02 Time: 0930

Samples Disposed: Date / Time

Samples Disposed by:

Shipper Name/ Address: Jim Pikyl
CNWRA, DJ 20, BIDG 57

Client:

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 weeks

SwRI Contact: Mike Damann

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Anions by IC									
~~ANC-7B-1~~	11/1/02	1100	W		1	✓		* See note on Page 1							
~~ANC-7B-2~~					1	✓									
~~ANC-7B-3~~					1	✓									
~~ANC-7B-4~~					1	✓									
~~ANC-7B-5~~					1	✓									
~~ANC-7B-6~~					1	✓									
~~ANC-7B-7~~					1	✓									
~~ANC-7B-8~~					1	✓									
ANC-7B-9					1	✓									
ANC-7B-10					1	✓									

REMARKS
Preservation
- **a** = HCl to pH <2
- **b** = HNO_3 to pH <2
- **c** = H_2SO_4 to pH <2
- **d** = NaOH to pH >12
- **e** = Cool (4°C±2°C)
- **f** = Other (specify)

POC Jim Pikyl x5667

Nuclear Safety related - use appropriate QA procedures

20.016002.01.071

Matrix Types:
- **A** – Air
- **B** – Biota
- **D** - Dust
- **E** – Emission/Stack
- **P** – Product
- **S** – Soil
- **SED** – Sediment
- **T** - Tissue
- **W** - Water
- **WP** - Wipe

Sample Types:
- **D** - Duplicate
- **ER** – Equipment Rinsate
- **FB** – Field Blank
- **FD** – Field Duplicate
- **MS** – Matrix Spike
- **MSD** – Matrix Spike Dup
- **TB** – Trip Blank

Temp: 22.0°C
Therm #: 027

Comments:
325/222

	Date	Time
Relinquished by (Print/Signature): James O. Pikyl	11/18/02	0930
Received by (Print/Signature):	Date	Time
Relinquished by (Print/Signature)	Date	Time
Received by (Print/Signature)	Date	Time
Relinquished by (Print/Signature)	Date	Time

SwRI Project#:
Received by SwRI Lab: (Signature)
Date: 11/18/02 Time: 0930
Samples Disposed: Date / Time
Samples Disposed by:

Shipper Name/ Address: Jim Pickyl CNWRA, Div 20, Bldg 57.

Client:

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 week

SwRI Contact: Mike Damm

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Anions by IC		* See note on page 1					
ANC-1A-1	11/15/02	1100	W		1	✓							
ANC-1A-2					1	✓							
ANC-1A-3					1	✓							
ANC-1A-4					1	✓							
ANC-1A-5					1	✓							
ANC-1A-6					1	✓							
ANC-1A-7					1	✓							
ANC-1A-8					1	✓							
UMC-0C					1	✓							
UMC-0D					1	✓							

REMARKS

Preservation
- **a** = HCl to pH <2
- **b** = HNO_3 to pH <2
- **c** = H_2SO_4 to pH <2
- **d** = NaOH to pH >12
- **e** = Cool (4°C±2°C)
- **f** = Other (specify)

POC Jim Pickyl x5667

Nuclear safety related - use appropriate QA procedure

20.06002.01.071

Matrix Types:
- **A** – Air
- **B** – Biota
- **D** - Dust
- **E** – Emission/Stack
- **P** – Product
- **S** – Soil
- **SED** – Sediment
- **T** - Tissue
- **W** - Water
- **WP** - Wipe

Sample Types:
- **D** - Duplicate
- **ER** – Equipment Rinsate
- **FB** – Field Blank
- **FD** – Field Duplicate
- **MS** – Matrix Spike
- **MSD** – Matrix Spike Dup
- **TB** – Trip Blank

Temp: 22.0°C

Therm #: 027

Comments:

325/260

	Date	Time
Relinquished by (Print/Signature): Jim Pickyl	11/18/02	0930
Received by (Print/Signature):		
Relinquished by (Print/Signature):		
Received by (Print/Signature):		
Relinquished by (Print/Signature):		

SwRI Project#:

Received by SwRI Lab: (Signature)

Date: 11/18/02 Time: 0930

Samples Disposed: Date / Time

Samples Disposed by:

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Shipper Name/ Address: Jim Prikryl CNWRA, Div 20, Bldg 57

Client:

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 weeks

SwRI Contact: Mike Dunmann

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Anions by IC								
UMC-7C	11/15/02	1100		W	1	✓								
UMC-7D	1	1		1	1	✓								

* See note on page 1

REMARKS

Preservation
- **a** = HCl to pH <2
- **b** = HNO_3 to pH <2
- **c** = H_2SO_4 to pH <2
- **d** = NaOH to pH >12
- **e** = Cool (4°C±2°C)
- **f** = Other (specify)

POC Jim Prikryl x5667

Nuclear Safety related. Use appropriate QA procedures

20.06002.01.071

Matrix Types:
- **A** – Air
- **B** – Biota
- **D** - Dust
- **E** – Emission/Stack
- **P** – Product
- **S** – Soil
- **SED** – Sediment
- **T** - Tissue
- **W** - Water
- **WP** - Wipe

Sample Types:
- **D** - Duplicate
- **ER** – Equipment Rinsate
- **FB** – Field Blank
- **FD** – Field Duplicate
- **MS** – Matrix Spike
- **MSD** – Matrix Spike Dup
- **TB** – Trip Blank

Temp: 22.0°C

Therm #: 027

Comments:

325/217

	Date	Time
Relinquished by (Print/Signature): James D. Prikryl	11/18/02	0930
Received by (Print/Signature):	Date	Time
Relinquished by (Print/Signature)	Date	Time
Received by (Print/Signature)	Date	Time
Relinquished by (Print/Signature)	Date	Time

SwRI Project#:

Received by SwRI Lab: (Signature)

Date: 11/18/02 Time: 0930

Samples Disposed: Date / Time

Samples Disposed by:

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Shipper Name/Address: Jim Prikryl, CNWRA, Div 20, Bldg 57

Client:

Client Purchase Order/Other ID:

Site/Zone ID: /

Requested Turnaround: ☐ 2 Weeks ☐ 3 Weeks ☒ Other: 4 weeks

SwRI Contact: Mike Damann

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Cations by ICP, include Si	Uranium by ICP/MS								REMARKS
CATC-OA-1	11/15/02	11:00	W		1	✓	✓			U	- 0.001 to	5.0 ppm			POC Jim Prikryl
CATC-OA-2	|	|	|		1	✓	✓			Si	- 25.0 to	45.0 ppm			x5667
CATC-OA-3	|	|	|		1	✓	✓			Ca	- 350-550 ppm				
CATC-OA-4	|	|	|		1	✓	✓			Na	- 0.2 To 5.0 ppm				Nuclear safety
CATC-OA-5	|	|	|		1	✓	✓			K	- 0.2 to 5.0 ppm				related - use
CATC-OA-6	|	|	|		1	✓	✓								appropriate QA
CATC-OA-7	|	|	|		1	✓	✓								procedures.
CATC-OA-8	|	|	|		1	✓	✓								
CATC-OA-9	|	|	|		1	✓	✓								
CATC-OA-10	—	—	—		1	✓	✓								20.06002.01.071

* Note - cations of particular interest and their range of expected concentrations are listed below to assist in ICP calibration -

For K and Na, reporting limit is requested to be 0.2 ppm or lower if possible.

REMARKS — Preservation
- ~~a = HCl to pH <2~~
- (b = HNO_3 to pH <2) [circled]
- c = H_2SO_4 to pH <2
- d = NaOH to pH >12
- e = Cool (4°C±2°C)
- f = Other (specify)

Matrix Types:
A – Air
B – Biota
D - Dust
E – Emission/Stack
P – Product
S – Soil
SED – Sediment
T - Tissue
W - Water
WP - Wipe

Sample Types:
D - Duplicate
ER – Equipment Rinsate
FB – Field Blank
FD – Field Duplicate
MS – Matrix Spike
MSD – Matrix Spike Dup
TB – Trip Blank

Temp: 22.0C Therm #: 027

Comments: 325/222

Relinquished by (Print/Signature)	Date	Time
James D. Prikryl [signature]	11/18/02	0930
Received by (Print/Signature)	Date	Time
Relinquished by (Print/Signature)	Date	Time
Received by (Print/Signature)	Date	Time
Relinquished by (Print/Signature)	Date	Time

SwRI Project#: 20.06002.01.071

Received by SwRI Lab: (Signature) [signature]

Date: 11/18/02 Time: 0930

Samples Disposed: Date Time

Samples Disposed by:

Div 01 COC Form 01-01-001, Rev 4/02

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Shipper Name/Address: Jim Prikryl
CNWRA, Div 20, Bldg 57

Client:

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 weeks

SwRI Contact: Mike Damann

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Cations by ICP, include Si	Uranium by ICP/MS		* See Note on page 1					
CATC-OB-1	11/15/02	11:00	W		1	✓	✓							
CATC-OB-2					1	✓	✓							
CATC-OB-3					1	✓	✓							
CATC-OB-4					1	✓	✓							
CATC-OB-5					1	✓	✓							
CATC-OB-6					1	✓	✓							
CATC-OB-7					1	✓	✓							
CATC-OB-8					1	✓	✓							
CATC-OB-9					1	✓	✓							
CATC-OB-10					1	✓	✓							

REMARKS
Preservation
- ~~a = HCl to pH <2~~
- b = HNO_3 to pH <2
- c = H_2SO_4 to pH <2
- d = NaOH to pH >12
- e = Cool (4°C±2°C)
- f = Other (specify)

POC Jim Prikryl x5667

Nuclear safety related-use appropriate QA procedures.

20.06002.01.071

Matrix Types:
- **A** – Air
- **B** – Biota
- **D** - Dust
- **E** – Emission/Stack
- **P** – Product
- **S** – Soil
- **SED** – Sediment
- **T** - Tissue
- **W** - Water
- **WP** - Wipe

Sample Types:
- **D** - Duplicate
- **ER** – Equipment Rinsate
- **FB** – Field Blank
- **FD** – Field Duplicate
- **MS** – Matrix Spike
- **MSD** – Matrix Spike Dup
- **TB** – Trip Blank

Temp: 22.0°C Therm #: 627

Comments:
325/222

	Date	Time
Relinquished by (Print/Signature): James D. Prikryl	11/18/02	0930
Received by (Print/Signature):		
Relinquished by (Print/Signature):		
Received by (Print/Signature):		
Relinquished by (Print/Signature):		

SwRI Project#:

Received by SwRI Lab: (Signature)

Date: 11/18/02 Time: 0958

Samples Disposed: Date / Time

Samples Disposed by:

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Shipper Name/ Address: Jim Prikryl
CNWRA, Div 20, Bldg 57

Client:

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 weeks

SwRI Contact: Mike Damann

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Cations by ICP, include Si	Uranium by ICP/MS							
CATC-7A-1	11/15/02	1100	W		1	✓	✓							
CATC-7A-2					1	✓	✓							
CATC-7A-3					1	✓	✓							
CATC-7A-4					1	✓	✓							
CATC-7A-5					1	✓	✓							
CATC-7A-6					1	✓	✓							
CATC-7A-7					1	✓	✓							
CATC-7A-8					1	✓	✓							
CATC-7A-9					1	✓	✓							
CATC-7A-10					1	✓	✓							

* See note on page 1

REMARKS
Preservation
~~a = HCl to pH <2~~
~~b = HNO_3 to pH <2~~
c = H_2SO_4 to pH <2
d = NaOH to pH >12
e = Cool (4°C±2°C)
f = Other (specify)

POC Jim Prikryl
15667

Nuclear Safety related - use appropriate QA procedure

20.06002.01.071

Matrix Types:
- **A** – Air
- **B** – Biota
- **D** - Dust
- **E** – Emission/Stack
- **P** – Product
- **S** – Soil
- **SED** – Sediment
- **T** - Tissue
- **W** - Water
- **WP** - Wipe

Sample Types:
- **D** - Duplicate
- **ER** – Equipment Rinsate
- **FB** – Field Blank
- **FD** – Field Duplicate
- **MS** – Matrix Spike
- **MSD** – Matrix Spike Dup
- **TB** – Trip Blank

Temp: 22.0°C
Therm #: 027

Comments:
325/222

	Date	Time
Relinquished by (Print/Signature): James D. Prikryl	11/18/02	0930
Received by (Print/Signature):		
Relinquished by (Print/Signature):		
Received by (Print/Signature):		
Relinquished by (Print/Signature):		

SwRI Project#:
Received by SwRI Lab: (Signature)
Date: 11/18/02 Time: 0930
Samples Disposed: Date / Time
Samples Disposed by:

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Shipper Name/Address: Jim Pikul
CNWRA, Div 20, Bldg 57

Client:

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 weeks

SwRI Contact: Mike Damann

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Cations by ICP, include Si	Uranium by ICP/MS						
CATC-7B-1	11/15/02	1100	W		1	✓	✓						
CATC-7B-2					1	✓	✓						
CATC-7B-3					1	✓	✓						
CATC-7B-4					1	✓	✓						
CATC-7B-5					1	✓	✓						
CATC-7B-6					1	✓	✓						
CATC-7B-7					1	✓	✓						
CATC-7B-8					1	✓	✓						
CATC-7B-9					1	✓	✓						
CATC-7B-10					1	✓	✓						

* See note on page 1

REMARKS

Preservation
- a = HCl to pH <2
- b = HNO_3 to pH <2
- c = H_2SO_4 to pH <2
- d = NaOH to pH >12
- e = Cool (4°C±2°C)
- f = Other (specify)

For Jim Pikul x5667

Nuclear safety related - use appropriate QA procedures.

20.06002.01.071

Matrix Types:
- **A** – Air
- **B** – Biota
- **D** - Dust
- **E** – Emission/Stack
- **P** – Product
- **S** – Soil
- **SED** – Sediment
- **T** - Tissue
- **W** - Water
- **WP** - Wipe

Sample Types:
- **D** - Duplicate
- **ER** – Equipment Rinsate
- **FB** – Field Blank
- **FD** – Field Duplicate
- **MS** – Matrix Spike
- **MSD** – Matrix Spike Dup
- **TB** – Trip Blank

Temp: 22.0°C

Therm #: 017

Comments:

325/222

	Date	Time
Relinquished by (Print/Signature): James D. Pikul	11/18/02	0930
Received by (Print/Signature):		
Relinquished by (Print/Signature):		
Received by (Print/Signature):		
Relinquished by (Print/Signature):		

SwRI Project#:

Received by SwRI Lab: (Signature)

Date: 11/18/02 Time: 0938

Samples Disposed: Date / Time

Samples Disposed by:

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Shipper Name/ Address: Jim Prikryl
CNWRA, Div 20, Bldg 57

Client:

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 weeks

SwRI Contact: Mike Dunning

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Cations by ICP, include Si	Uranium by ICP/MS							
CATC-1A-1	11/15/02	1100	W		1	✓	✓	# See note on page 1						
CATC-1A-2					1	✓	✓							
CATC-1A-3					1	✓	✓							
CATC-1A-4					1	✓	✓							
CATC-1A-5					1	✓	✓							
CATC-1A-6					1	✓	✓							
CATC-1A-7					1	✓	✓							
CATC-1A-8					1	✓	✓							
UMC-0A					1	✓	✓							
UMC-0B					1	✓	✓							

REMARKS

Preservation
- a = HCl to pH <2
- b = HNO_3 to pH <2
- c = H_2SO_4 to pH <2
- d = NaOH to pH >12
- e = Cool (4°C±2°C)
- f = Other (specify)

POC Jim Prikryl x5267

Nuclear safety related - use appropriate QA procedures.

20.06002.01.071

Matrix Types:
- **A** – Air
- **B** – Biota
- **D** - Dust
- **E** – Emission/Stack
- **P** – Product
- **S** – Soil
- **SED** – Sediment
- **T** - Tissue
- **W** - Water
- **WP** - Wipe

Sample Types:
- **D** - Duplicate
- **ER** – Equipment Rinsate
- **FB** – Field Blank
- **FD** – Field Duplicate
- **MS** – Matrix Spike
- **MSD** – Matrix Spike Dup
- **TB** – Trip Blank

Temp: 22.0°C

Therm #: 027

Comments:
325/259

	Date	Time
Relinquished by (Print/Signature): James O Ryl	11/18/02	0530
Received by (Print/Signature):		
Relinquished by (Print/Signature):		
Received by (Print/Signature):		
Relinquished by (Print/Signature):		

SwRI Project#:

Received by SwRI Lab: (Signature)

Date: 11/18/02 Time: 0938

Samples Disposed: Date / Time

Samples Disposed by:

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Shipper Name/Address: Jim Prikryl
CNWRA, Div 20, BIDG 57

Client:

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 weeks

SwRI Contact: Mike Damaww

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Cations by ICP, include Si	Uranium by ICP/MS							
UMC-7A	11/15/02	1100	W		1	✓	✓							
UMC-7B	1	1	1		1	✓	✓							

*See note on page 1

REMARKS

Preservation
- ~~a = HCl to pH <2~~
- ~~b = HNO_3 to pH <2~~
- c = H_2SO_4 to pH <2
- d = NaOH to pH >12
- e = Cool (4°C±2°C)
- f = Other (specify)

POC Jim Prikryl x5267

Nuclear Safety related - use appropriate QA procedure

20.06.002.01.071

Matrix Types:
- A – Air
- B – Biota
- D - Dust
- E – Emission/Stack
- P – Product
- S – Soil
- SED – Sediment
- T - Tissue
- W - Water
- WP - Wipe

Sample Types:
- D - Duplicate
- ER – Equipment Rinsate
- FB – Field Blank
- FD – Field Duplicate
- MS – Matrix Spike
- MSD – Matrix Spike Dup
- TB – Trip Blank

Temp: 22.0°C Therm #: 027

Comments:
325/217

	Date	Time
Relinquished by (Print/Signature): James O. Prikryl	11/18/02	0930
Received by (Print/Signature):	Date	Time
Relinquished by (Print/Signature)	Date	Time
Received by (Print/Signature)	Date	Time
Relinquished by (Print/Signature)	Date	Time

SwRI Project#:

Received by SwRI Lab: (Signature)

Date: 11/19/02 Time: 0930

Samples Disposed: Date / Time

Samples Disposed by:

MEMORANDUM

TO: Jim Prikyl
Division 20 Bldg. 57

FROM: Mike Dammann

RE: Project No.: 20.06002.01.071
Work Order: #23188
Samples Received: September 24, 2002

Analysis of water samples by ICP. Also analysis for SI and U. Raw data and nuclear safety documentation for this project are archived in Division 01.

DATE: November 19, 2002

Enclosed, please find the sample results for the analyses referenced above.

The analyses performed comply with the SwRI Program Quality Plan, Document No. PQP-Nuclear Rev. 1, 10CFR 50 Appendix B, 10CFR 21, and SPQP CH/AN Revision 3.

If there are any questions, please feel free to contact me by voice mail at 522-5428 or by fax at 522-3649. I look forward to our continued analytical support of your projects.

Mike Dammann

Manager, Inorganic Group

Jo Ann Boyd
for Royal Person

Manager, Div. 01 Quality Assurance

SOUTHWEST RESEARCH INSTITUTE
NUCLEAR PROJECT
CLIENT: Division 20
WORK ORDER: 23188
SDG: 213278
VTSR: September 24, 2002
PROJECT#: 06002.01.071

FINAL REPORT

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010001

Sample ID
UR7A-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 09/24/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 213278

Work Order: 23188

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.128	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	46.9	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	2.39	1
Selenium	<0.1	0.1
Silicon	65.5	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	547	1
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.5	0.5

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY

010002

Sample ID
UR7A-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 09/24/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 213278

Work Order: 23188

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Aluminum	<1.5	<1.5	0.00%
Antimony	<0.1	<0.1	0.00%
Arsenic	<0.1	<0.1	0.00%
Barium	0.128	0.128	0.23%
Beryllium	<0.025	<0.025	0.00%
Bismuth	<0.1	<0.1	0.00%
Boron	<0.2	<0.2	0.00%
Cadmium	<0.025	<0.025	0.00%
Calcium	46.9	46.7	0.34%
Chromium	<0.2	<0.2	0.00%
Cobalt	<0.025	<0.025	0.00%
Copper	<0.1	<0.1	0.00%
Iron	<2	<2	0.00%
Lanthanum	<0.05	<0.05	0.00%
Lead	<0.1	<0.1	0.00%
Lithium	<0.025	<0.025	0.00%
Magnesium	<4	<4	0.00%
Manganese	<0.025	<0.025	0.00%
Molybdenum	<0.025	<0.025	0.00%
Nickel	<0.15	<0.15	0.00%
Palladium	<0.1	<0.1	0.00%
Phosphorus	<0.25	<0.25	0.00%
Potassium	2.39	2.51	4.87%
Selenium	<0.1	<0.1	0.00%
Silicon	65.5	65.5	0.08%
Silver	<0.075	<0.075	0.00%
Sodium	<1	<1	0.00%
Strontium	<0.05	<0.05	0.00%
Sulfur	<0.2	<0.2	0.00%
Thallium	<0.15	<0.15	0.00%
Thorium	<2.5	<2.5	0.00%
Tin	<0.05	<0.05	0.00%
Titanium	<0.1	<0.1	0.00%
Tungsten	<0.15	<0.15	0.00%
Uranium	547	547	0.00%
Vanadium	<0.1	<0.1	0.00%
Yttrium	<0.1	<0.1	0.00%
Zinc	<0.1	<0.1	0.00%
Zirconium	<0.5	<0.5	0.00%

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010003

Sample ID
UR7A-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 09/24/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 213279

Work Order: 23188

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.128	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	46.6	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	2.39	1
Selenium	<0.1	0.1
Silicon	65.5	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	559	1
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.5	0.5

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY 010004

Sample ID
UR7A-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 09/24/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 213279

Work Order: 23188

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Aluminum	<1.5	19.0	20.0	95.2%
Antimony	<0.1	4.97	5.00	99.4%
Arsenic	<0.1	20.4	20.0	102.0%
Barium	0.128	21.4	20.0	106.3%
Beryllium	<0.025	0.516	0.500	103.3%
Bismuth	NA	NA	NA	NA
Boron	NA	NA	NA	NA
Cadmium	<0.025	0.511	0.500	102.2%
Calcium	46.6	254	200	103.9%
Chromium	<0.2	1.91	2.00	95.3%
Cobalt	<0.025	5.13	5.00	102.5%
Copper	<0.1	2.68	2.50	107.3%
Iron	<2	11.7	10.0	117.5%
Lanthanum	NA	NA	NA	NA
Lead	<0.1	4.96	5.00	99.2%
Lithium	NA	NA	NA	NA
Magnesium	<4	208	200	104.0%
Manganese	<0.025	5.21	5.00	104.2%
Molybdenum	NA	NA	NA	NA
Nickel	<0.15	4.95	5.00	99.1%
Palladium	NA	NA	NA	NA
Phosphorus	NA	NA	NA	NA
Potassium	2.39	183	200	90.1%
Selenium	<0.1	20.7	20.0	103.3%
Silicon	65.5	106	40.0	102.0%
Silver	<0.075	0.514	0.500	102.7%
Sodium	<1	196	200	98.0%
Strontium	NA	NA	NA	NA
Sulfur	NA	NA	NA	NA
Thallium	<0.15	20.8	20.0	104.2%
Thorium	NA	NA	NA	NA
Tin	NA	NA	NA	NA
Titanium	NA	NA	NA	NA
Tungsten	NA	NA	NA	NA
Uranium	559	1044	500	97.0%
Vanadium	<0.1	5.09	5.00	101.7%
Yttrium	NA	NA	NA	NA
Zinc	<0.1	5.18	5.00	103.7%
Zirconium	NA	NA	NA	NA

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010005

Sample ID
UR7B-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 09/24/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 213280

Work Order: 23188

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.122	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	46.2	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	2.24	1
Selenium	<0.1	0.1
Silicon	64.8	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	513	1
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.5	0.5

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010006

Sample ID
UR7B-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 09/24/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 213281

Work Order: 23188

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.122	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	46.3	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	2.30	1
Selenium	<0.1	0.1
Silicon	64.4	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	534	1
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.5	0.5

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010007

Sample ID
UR7C-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 09/24/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 213282

Work Order: 23188

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.125	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	46.3	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	2.36	1
Selenium	<0.1	0.1
Silicon	64.8	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	514	1
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.5	0.5

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010008

Sample ID
UR7C-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 09/24/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 213283

Work Order: 23188

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.126	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	46.7	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	2.42	1
Selenium	<0.1	0.1
Silicon	65.3	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	543	1
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.5	0.5

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010009

Sample ID
UR7D-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 09/24/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 213284

Work Order: 23188

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.197	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	47.8	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	1.79	1
Selenium	<0.1	0.1
Silicon	66.1	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	551	1
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.5	0.5

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010010

Sample ID
UR7D-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 09/24/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 213285

Work Order: 23188

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.197	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	47.7	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	3.55	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	1.76	1
Selenium	<0.1	0.1
Silicon	65.9	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	0.359	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	553	1
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	0.710	0.1
Zirconium	<0.5	0.5

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010011

Sample ID
UR7E-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 09/24/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 213286

Work Order: 23188

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.186	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	47.1	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	1.77	1
Selenium	<0.1	0.1
Silicon	65.3	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	549	1
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.5	0.5

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010012
Sample ID
UR7E-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 09/24/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 213287

Work Order: 23188

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.186	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	47.3	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	1.75	1
Selenium	<0.1	0.1
Silicon	65.1	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	548	1
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.5	0.5

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010013

Sample ID
UR7F-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 09/24/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 213288

Work Order: 23188

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.186	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	47.0	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	1.69	1
Selenium	<0.1	0.1
Silicon	65.0	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	590	1
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.5	0.5

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010014
Sample ID
UR7F-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 09/24/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 213289

Work Order: 23188

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	0.187	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	47.1	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	1.74	1
Selenium	<0.1	0.1
Silicon	65.4	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	551	1
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.5	0.5

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010015

Sample ID
UR7G-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 09/24/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 213290

Work Order: 23188

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	42.2	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<1	1
Selenium	<0.1	0.1
Silicon	59.6	0.25
Silver	<0.075	0.075
Sodium	1.59	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	547	1
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.5	0.5

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010016

Sample ID
UR7G-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 09/24/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 213291

Work Order: 23188

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	42.2	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<1	1
Selenium	<0.1	0.1
Silicon	59.4	0.25
Silver	<0.075	0.075
Sodium	1.59	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	545	1
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.5	0.5

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010017

Sample ID
UR7H-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 09/24/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 213292

Work Order: 23188

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	44.0	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<1	1
Selenium	<0.1	0.1
Silicon	63.2	0.25
Silver	<0.075	0.075
Sodium	1.03	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	554	1
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.5	0.5

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010018

Sample ID
UR7I-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 09/24/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 213293

Work Order: 23188

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	46.1	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<1	1
Selenium	<0.1	0.1
Silicon	67.0	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	536	1
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.5	0.5

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010019
Sample ID
UR7I-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 09/24/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 213294

Work Order: 23188

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	46.1	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<1	1
Selenium	<0.1	0.1
Silicon	67.1	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	533	1
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.5	0.5

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010020

Sample ID
UR7J-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 09/24/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 213295

Work Order: 23188

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	48.1	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	1.88	1
Selenium	<0.1	0.1
Silicon	61.3	0.25
Silver	<0.075	0.075
Sodium	2.55	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	520	1
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.5	0.5

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010021

Sample ID
UR7K-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 09/24/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 213296

Work Order: 23188

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	50.3	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	1.07	1
Selenium	<0.1	0.1
Silicon	65.2	0.25
Silver	<0.075	0.075
Sodium	1.54	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	601	1
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.5	0.5

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010022

Sample ID
UR7K-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 09/24/02

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: 213297

Work Order: 23188

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	50.0	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	1.11	1
Selenium	<0.1	0.1
Silicon	65.0	0.25
Silver	<0.075	0.075
Sodium	1.55	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	533	1
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.5	0.5

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

LABORATORY CONTROL SAMPLE 010023

Sample ID
LCSW-K30W1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: NA

Work Order: 23188

Analysis	Sample Result (mg/L)	True Value (mg/L)	Recovery
Aluminum	20.2	20.0	100.9%
Antimony	4.98	5.00	99.6%
Arsenic	20.2	20.0	101.1%
Barium	20.9	20.0	104.5%
Beryllium	0.513	0.500	102.5%
Bismuth	NA	NA	NA
Boron	NA	NA	NA
Cadmium	0.513	0.500	102.7%
Calcium	208	200	104.0%
Chromium	1.97	2.00	98.5%
Cobalt	5.13	5.00	102.6%
Copper	2.61	2.50	104.2%
Iron	9.90	10.0	99.0%
Lanthanum	NA	NA	NA
Lead	4.93	5.00	98.7%
Lithium	NA	NA	NA
Magnesium	205	200	102.6%
Manganese	5.18	5.00	103.5%
Molybdenum	NA	NA	NA
Nickel	5.02	5.00	100.3%
Palladium	NA	NA	NA
Phosphorus	NA	NA	NA
Potassium	174	200	86.8%
Selenium	20.6	20.0	102.8%
Silicon	40.2	40.0	100.6%
Silver	0.507	0.500	101.3%
Sodium	180	200	90.2%
Strontium	NA	NA	NA
Sulfur	NA	NA	NA
Thallium	20.7	20.0	103.3%
Thorium	NA	NA	NA
Tin	NA	NA	NA
Titanium	NA	NA	NA
Tungsten	NA	NA	NA
Uranium	99.8	500	20.0%
Vanadium	5.07	5.00	101.3%
Yttrium	NA	NA	NA
Zinc	5.18	5.00	103.6%
Zirconium	NA	NA	NA

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

BLANK SUMMARY

010024

Sample ID
PBW-K30W1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Water

Project No.: 20.06002.01.071

Lab System ID: NA

Work Order: 23188

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.1	0.1
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	<0.5	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<1	1
Selenium	<0.1	0.1
Silicon	<0.25	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	<1	1
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.5	0.5

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Shipper Name/ Address: Jim Prikryl
CNWRA - Div 20
Bldg 57

Client:

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 weeks

SwRI Contact: Mike Damann

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Cations by ICP	Include Si, U
UR7F-1	9/17/02	11:00	W		1	✓	
UR7F-2					1	✓	
UR7G-1					1	✓	
UR7G-2					1	✓	
UR7H-1					1	✓	
UR7I-1					1	✓	
UR7I-2					1	✓	
UR7J-1					1	✓	
UR7K-1					1	✓	
UR7K-2					1	✓	

REMARKS

Preservation
- **a** = HCl to pH <2
- **b** = HNO_3 to pH <2
- **c** = H_2SO_4 to pH <2
- **d** = NaOH to pH >12
- **e** = Cool (4°C±2°C)
- **f** = Other (specify)

Per - Jim Prikryl
phone 5667
fax 5184

Nuclear safety related - use appropriate QA procedures.

20.01402.561

Matrix Types:
- **A** – Air
- **B** – Biota
- **D** - Dust
- **E** – Emission/Stack
- **P** – Product
- **S** – Soil
- **SED** – Sediment
- **T** - Tissue
- **W** - Water
- **WP** - Wipe

Sample Types:
- **D** - Duplicate
- **ER** – Equipment Rinsate
- **FB** – Field Blank
- **FD** – Field Duplicate
- **MS** – Matrix Spike
- **MSD** – Matrix Spike Dup
- **TB** – Trip Blank

Temp: 22.0°C

Therm #: 026

Comments: Rec'd. intact

325/228+230

	Date	Time
Relinquished by (Print/Signature): Brad Werling / Brad Werling	92402	0928
Received by (Print/Signature):		
Relinquished by (Print/Signature):		
Received by (Print/Signature):		
Relinquished by (Print/Signature):		

SwRI Project#:

Received by SwRI Lab: (Signature)

Date: 09/24/02 Time: 0928

Samples Disposed: Date / Time

Samples Disposed by:

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Shipper Name/ Address: Jim Prikryl
CNWRA - Div 20
Bldg 57

Client:

Client Purchase Order/Other ID:

Site/Zone ID:

Requested Turnaround:
- ☐ 2 Weeks
- ☐ 3 Weeks
- ☒ Other: 4 weeks

SwRI Contact: Mike Dumann

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time	Matrix Type	Sample Type	# of Containers	Cations by ICP	Texture U.S.								
UR7A-1	9/17/02	11:00	W		1	✓									
UR7A-2					1	✓									
UR7B-1					1	✓									
UR7B-2					1	✓									
UR7C-1					1	✓									
UR7C-2					1	✓									
UR7D-1					1	✓									
UR7D-2					1	✓									
UR7E-1					1	✓									
UR7E-2					1	✓									

REMARKS

Preservation
- **a** = HCl to pH <2
- **b** = HNO_3 to pH <2
- **c** = H_2SO_4 to pH <2
- **d** = NaOH to pH >12
- **e** = Cool (4°C±2°C)
- **f** = Other (specify)

FAX - Jim Prikryl
phone x5667
fax x5184

Nuclear safety related-use appropriate QA procedures

20.01402.561

Matrix Types:
- **A** – Air
- **B** – Biota
- **D** - Dust
- **E** – Emission/Stack
- **P** – Product
- **S** – Soil
- **SED** – Sediment
- **T** - Tissue
- **W** - Water
- **WP** - Wipe

Sample Types:
- **D** - Duplicate
- **ER** – Equipment Rinsate
- **FB** – Field Blank
- **FD** – Field Duplicate
- **MS** – Matrix Spike
- **MSD** – Matrix Spike Dup
- **TB** – Trip Blank

Temp: 22.0°C Therm #: 026

Comments: Rec'd. intact

325/228

	Date	Time
Relinquished by (Print/Signature): Brad Watling Brad Watling	9-24-02	0928
Received by (Print/Signature):		
Relinquished by (Print/Signature):		
Received by (Print/Signature):		
Relinquished by (Print/Signature):		

SwRI Project#:

Received by SwRI Lab: (Signature)

Date: 9/24/02 Time: 0928

Samples Disposed: Date / Time

Samples Disposed by:

MEMORANDUM

TO: Bob Cherrington
Division 20

FROM: Jo Ann Boyd, Manager QAU, Division 01

RE: Project No.: 20.01402.561
Work Order #: 18001
Samples Received June 1, 2000

Analysis of liquid samples for metals by ICP and ICP/MS.
Raw data and nuclear safety documentation for this project are archived in Division 01.

DATE: September 22, 2000

Enclosed please find the sample results for the analysis referenced above.

If there are any questions, please feel free to contact me by voice mail at 522-2169 or by fax at 522-2021. I look forward to our continued analytical support of your projects.

Jo Ann Boyd

Manager QAU

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 06/01/00

Matrix: Liquid

Project No.: 20.01402.561

Work Order: 18001

Sample ID	Lab System ID	Calcium Result (mg/L)	Sodium Result (mg/L)	Silicon Result (mg/L)	Uranium Result (mg/L)
UM-4A	144397	502	12.6	29.0	22.9
Duplicate result	144397	501	12.5	28.9	----
RPD	144397	0.19%	0.27%	0.26%	----
UM-4B	144398	498	12.4	28.8	23.1
Spike result	144398	694	187	78.1	----
Spike added	144398	200	200	50.0	----
Recovery	144398	98.3%	87.2%	98.7%	----
UM-5A	144399	455	1.22	28.6	2.30
UM-5B	144400	455	1.18	28.8	2.28
UM-6A	144401	882	0.606	29.1	0.197
UM-6B	144402	878	0.537	28.9	0.194
UM-7A	144403	422	0.477	28.8	0.0254
UM-7B	144404	422	0.495	28.8	0.0232
URS-2	144405	489	58.1	95.8	9.55
URS-3	144406	393	11.6	49.7	473
URS-4	144407	584	35.4	10.1	101
URS-4A1	144408	491	15.2	27.4	2.38
Duplicate result	144408	----	----	----	2.44
RPD	144408	----	----	----	2.36%
URS-4A3	144409	497	15.2	29.2	2.15
Spike result	144409	----	----	----	51.4
Spike added	144409	----	----	----	50.0
Recovery	144409	----	----	----	98.4%
URS-4A5	144410	498	15.4	30.1	2.11
URS-4A7	144411	504	15.6	31.0	1.95
URS-4B1	144412	498	15.2	28.0	2.42
URS-4B3	144413	496	15.3	29.4	2.25
URS-4B5	144414	500	15.3	30.4	2.08
URS-4B7	144415	496	15.2	31.2	1.97
URS-5	144416	439	6.15	67.4	50.4
URS-5A1	144417	459	3.87	30.7	0.0792
Duplicate result	144417	463	3.77	30.9	----
RPD	144417	0.71%	2.38%	0.55%	----
URS-5A3	144418	464	3.68	32.6	0.0074
Spike result	144418	659	182	82.8	----
Spike added	144418	200	200	50.0	----
Recovery	144418	97.4%	89.2%	100.4%	----

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 06/01/00

Matrix: Liquid

Project No.: 20.01402.561

Work Order: 18001

Sample ID	Lab System ID	Calcium Result (mg/L)	Sodium Result (mg/L)	Silicon Result (mg/L)	Uranium Result (mg/L)
URS-5A5	144419	458	3.71	32.9	0.0048
Duplicate result	144419	----	----	----	0.0049
RPD	144419	----	----	----	2.19%
URS-5A7	144420	458	3.80	33.3	0.0051
Spike result	144420	----	----	----	9.99
Spike added	144420	----	----	----	10.0
Recovery	144420	----	----	----	99.9%
URS-5B1	144421	461	3.78	31.0	0.0829
URS-5B3	144422	460	3.66	32.4	0.0078
URS-5B5	144423	454	3.73	32.7	0.0036
URS-5B7	144424	457	3.68	33.2	0.0032
URS-6	144425	420	22.6	29.4	19.5
URS-6A1	144426	889	3.50	32.3	0.0030
URS-6A3	144427	874	3.47	32.9	0.0026
URS-6A5	144428	863	3.49	32.7	0.0026
URS-6A7	144429	872	3.57	33.1	0.0034
URS-6B1	144430	869	3.60	31.6	0.0028
URS-6B3	144431	866	3.80	32.6	0.471
URS-6B5	144432	852	3.53	32.4	0.0018
URS-6B7	144433	859	3.62	32.3	0.0030
URS-7	144434	48.1	0.314	4.91	0.952
URS-7A1	144435	423	3.09	32.0	0.0028
URS-7A3	144436	421	3.17	33.3	0.0022
URS-7A5	144437	417	3.06	33.3	0.0016
Duplicate result	144437	418	3.07	33.3	----
RPD	144437	0.10%	0.29%	0.04%	----
URS-7A7	144438	422	3.09	33.4	0.0054
Spike result	144438	612	180	82.4	----
Spike added	144438	200	200	50.0	----
Recovery	144438	95.4%	88.2%	98.1%	----

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 06/01/00

Matrix: Liquid

Project No.: 20.01402.561

Work Order: 18001

Sample ID	Lab System ID	Calcium Result (mg/L)	Sodium Result (mg/L)	Silicon Result (mg/L)	Uranium Result (mg/L)
URS-7B1	144439	425	3.15	31.8	0.0035
Duplicate result	144439	----	----	----	0.0035
RPD	144439	----	----	----	1.32%
URS-7B3	144440	422	3.07	33.2	0.0062
Spike result	144440	----	----	----	0.484
Spike added	144440	----	----	----	0.500
Recovery	144440	----	----	----	95.5%
URS-7B5	144441	420	3.13	33.4	0.0034
URS-7B7	144442	424	3.21	33.6	0.0033
URS-8	144443	48.7	<0.25	19.2	0.491
LCSW1	----	19.8	17.5	4.98	0.0971
True Value	----	20.0	20.0	5.00	0.100
Recovery	----	99.0%	87.3%	99.5%	97.1%
LCSW2	----	19.9	17.5	4.92	0.0993
True Value	----	20.0	20.0	5.00	0.100
Recovery	----	99.5%	87.4%	98.3%	99.3%
LCSW3	----	19.7	17.5	4.92	0.0992
True Value	----	20.0	20.0	5.00	0.100
Recovery	----	98.6%	87.7%	98.4%	99.2%
PBW1	----	<0.05	<0.025	<0.025	<0.0001
PBW2	----	<0.05	<0.025	<0.025	<0.0001
PBW3	----	<0.05	<0.025	<0.025	<0.0001

Uranophane solubility experiments							
Matrix solutions							
						Adjusted pH	
Label	Reagents	Volume	element	conc (m)	pH	with HCl	
USE Matrix 10^{-6} m U	1.47 g CaCl2-H2O	1 L	Ca	1.0X10-2	9.15	3.97	
	6 ml 1000 ppm SiO2 std		Cl	2.0X10-2			
	0.238 ml 1000 ppm U std		SiO2	1.0X10-4			
	in 2% nitric acid		U	1.0X10-6			
USE Matrix 10^{-5} m U	1.47 g CaCl2-H2O	1 L	Ca	1.0X10-2	3.23	no	
	6 ml 1000 ppm SiO2 std		Cl	2.0X10-2			
	2.38 ml 1000 ppm U std		SiO2	1.0X10-4			
	in 2% nitric acid		U	1.0X10-5			
USE Matrix 10^{-4} m U	1.47 g CaCl2-H2O	1 L	Ca	1.0X10-2	2.12	no	
	6 ml 1000 ppm SiO2 std		Cl	2.0X10-2			
	23.8 ml 1000 ppm U std		SiO2	1.0X10-4			
	in 2% niric acid		U	1.0X10-4			
Samples							
		Wt of matrix	Wt of uranophane	Total wt (g)			
Label	Matrix solution used	solution (g)	added (g)	soln+ur+bottle			
USE1	USE Matrix 10^{-4} m U	100.02	0.5008	192.03			
USE2	USE Matrix 10^{-4} m U	100.02	0.4998	192.34			
USE3	USE Matrix 10^{-5} m U	100.03	0.5002	192.94			
USE4	USE Matrix 10^{-5} m U	100.03	0.5004	192.55			
USE5	USE Matrix 10^{-6} m U	100.02	0.5011	192.02			
USE6	USE Matrix 10^{-6} m U	100.03	0.5002	192.02			

Sampling data							
Label	Date and time	Wt of bottle before sampling (g)	Wt of bottle after sampling (g)	Wt of solution removed (g)	pH	Adjusted pH	Volume of 6M HCl added (µl)
USE1-1	7/18 0850	191.98	186.42	5.56	3.85	2.01	10
USE1-2	7/25 0815	186.33	180.77	5.56	3.88	1.98	10
USE1-3	8/1 0810	180.7	174.59	6.11	3.91	2.03	10
USE1-4	8/8 1247	174.53	168.93	5.6	3.89	2.25	10
USE1-5	8/15 0910	168.93	163.36	5.57	3.88	2	10
USE1-6	8/22 1310	163.31	156.59	6.72	3.91	2.11	10
USE2-1	7/18 0900	192.29	186.16	6.13	3.87	2.04	10
USE2-2	7.25 0820	186.11	180.56	5.55	3.88	1.99	10
USE2-3	8/1 0814	180.54	174.81	5.73	3.9	2.01	10
USE2-4	8/8 1250	174.79	169.15	5.64	3.65	1.98	10
USE2-5	8/15 0915	169.15	163.57	5.58	3.88	2.01	10
USE2-6	8/22 1315	163.6	156.98	6.62	3.91	2.06	10
USE3-1	7/18 0905	192.91	187.22	5.69	4.58	1.98	10
USE3-2	7/25 0825	187.15	181.74	5.41	4.58	2	10
USE3-3	8/1 0816	181.68	175.99	5.69	4.58	2	10
USE3-4	8/8 1252	175.99	169.79	6.2	4.55	2.03	10
USE3-5	8/15 0917	169.78	164.25	5.53	4.58	1.99	10
USE3-6	8/22 1317	164.24	158.64	5.6	4.54	2	10
USE4-1	7/18 0905	192.51	186.69	5.82	4.57	2.03	10
USE4-2	7/25 0825	186.66	181.13	5.53	4.43	2.04	10
USE4-3	8/1 0820	181.09	174.85	6.24	4.58	2	10
USE4-4	8/8 1255	174.85	169.29	5.56	4.74	1.9	10
USE4-5	8/15 0920	169.28	163.67	5.61	4.55	2.01	10
USE4-6	8/22 1320	163.66	158.19	5.47	4.54	1.99	10
USE5-1	7/18 0910	191.95	186.07	5.88	4.93	2.03	10
USE5-2	7/25 0830	186.01	180.5	5.51	4.91	1.96	10
USE5-3	8/1 0823	180.42	174.31	6.11	4.53	2	10
USE5-4	8/8 1257	174.3	168.67	5.63	4.77	1.98	10
USE5-5	8/15 0921	168.67	163.05	5.62	4.85	1.99	10

USE5-6	8/22 1322	163.05	157.45	5.6	4.84	2	10
USE6-1	7/18 0915	191.97	186.38	5.59	4.92	1.97	10
USE6-2	7/25 0835	186.31	180.64	5.67	4.92	2.02	10
USE6-3	8/1 0825	180.58	174.48	6.1	4.89	2.02	10
USE6-4	8/8 1300	174.48	168.64	5.84	4.85	1.96	10
USE6-5	8/15 0924	168.64	163.03	5.61	4.82	1.96	10
USE6-6	8/22 1325	163.03	157.42	5.61	4.82	1.99	10

Standards							
	Expected values						
Label		U (ppm)	SiO2 (ppm)		Ca (ppm)		
USES1		25	2.57	5.5	350		
USES2		2.5	2.80	6	541.5		
USES3		1	3.035	6.5	400.4		
USES4		15	2.80	6	424.7		
USES5		10	2.335	5	375.7		
USES6		5	3.269	7	400.3		

Results							
Matrix solutions							
Label	Matrix solution used	U (ppm)	Si (ppm)	Ca (ppm)			
USEM1	USE Matrix 10^{-4} m U	26.35	3.11	452			
USEM2	USE Matrix 10^{-4} m U	28.1	3.92	559			
USEM3	USE Matrix 10^{-5} m U	2.65	3.25	440			
USEM4	USE Matrix 10^{-5} m U	2.68	3.32	447			
USEM5	USE Matrix 10^{-6} m U	0.249	3.21	440			
USEM6	USE Matrix 10^{-6} m U	0.254	3.36	461			
Standards							
Label		U (ppm)	Si (ppm)	Ca (ppm)			
USES1-1		27	2.78	392			
USES2-1		2.8	2.96	498			
USES3-1		1.12	3.19	435			
USES4-1		16.8	2.99	467			
USES5-1		11.2	2.68	438			
USES6-1		5.38	3.59	454			
USES1-2		26.6	2.79	377			
USES2-2		2.6	2.99	485			
USES3-2		1.05	3.21	432			
USES4-2		16.2	3.01	460			
USES5-2		10.9	2.43	407			
USES6-2		5.8	3.5	438			
USES1-3		25.8	2.42	364			
USES2-3		2.53	2.6	472			
USES3-3		1.08	2.73	412			
USES4-3		15.5	2.53	442			
USES5-3		10.3	2.03	390			
USES6-3		5.03	2.91	414			

Samples						
Label		U (ppm)	Si (ppm)	Ca (ppm)		
USE1-1		810	88.7	499		
USE2-1		796	88.3	497		
USE3-1		68.8	12.7	470		
USE4-1		70.2	13.4	490		
USE5-1		13.5	7.39	475		
USE6-1		12.9	7.72	487		
USE1-2		796	98.5	552		
USE2-2		755	108	600		
USE3-2		67.6	14.1	479		
USE4-2		64.4	13.6	454		
USE5-2		11.7	8.66	459		
USE6-2		11.8	8.61	458		
USE1-3		788.5	90.05	506		
USE2-3		788	90.3	504		
USE3-3		64.7	14.4	450		
USE4-3		63.4	14.3	446		
USE5-3		11.9	9.59	445		
USE6-3		11.8	9.72	449		
USE1-4		772	89.8	502		
USE2-4		760	89.4	496		
USE3-4		63.4	14.9	446		
USE4-4		65.1	15.3	450		
USE5-4		11.9	10.2	448		
USE6-4		12.6	10.3	447		
USE1-5		740	88.6	491		
USE2-5		755	90.7	496		
USE3-5		61.9	15.3	440		
USE4-5		62.7	15.4	444		
USE5-5		11.8	10.4	438		
USE6-5		11.7	10.5	443		

USE1-6		732	87.4	485		
USE2-6		737	88.2	482		
USE3-6		60.3	15.3	430		
USE4-6		61.5	15.4	439		
USE5-6		12.2	11.2	466		
USE6-6		11.2	10.5	432		

SOUTHWEST RESEARCH INSTITUTE

6220 CULEBRA RD •P.O. DRAWER 28510 •SAN ANTONIO, TX 78228-0510 •(210) 684-5111 •TELEX 244846
FAX NUMBER (210) 522-5938 OR (210) 522-3649

CHEMISTRY AND CHEMICAL ENGINEERING DIVISION
BUILDING 199, 113 AVENUE C
TRANSMITTAL SHEET

DATE: July 19, 1999 NUMBER OF PAGES: 16

TO: Jim Prikryl

Division 20

OFFICE TELEPHONE: x5667

FAX NUMBER: x5184

FROM: Mike Dammann/Daniel Ramirez

TELEPHONE: x5428/x3867

NOTE: Attached are the results for the twelve samples received 05/26/99. A hard copy of the report will follow shortly.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
UR1

Lab Name: Southwest Research Institute

Lab Code: SwRI

Matrix: Solid

Lab System ID: 123619

Client: Division 20

Date Received: 05/26/99

Project No.: 20-1402-561

Work Order: 15783

Analysis	Concentration Oxides (mg/Kg)	% Concentration Oxides
Al_2O_3	<1000	----
BaO	<60	----
CaO	----	6.45%
CoO	<65	----
Cr_2O_3	278	----
CuO	<250	----
Fe_2O_3	<2000	----
K_2O	<300	----
MgO	<400	----
MnO	<65	----
Na_2O	537	----
NiO	66	----
P_2O_5	<600	----
SiO_2	----	15.8%
SrO	<60	----
TiO_2	<85	----
U_3O_8	----	53.9%
V_2O_5	<90	----
ZnO	<65	----

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
UR2

Lab Name: Southwest Research Institute

Lab Code: SwRI

Matrix: Solid

Lab System ID: 123620

Client: Division 20

Date Received: 05/26/99

Project No.: 20-1402-561

Work Order: 15783

Analysis	Concentration Oxides (mg/Kg)	% Concentration Oxides
Al_2O_3	<1000	----
BaO	<60	----
CaO	----	6.42%
CoO	<65	----
Cr_2O_3	133	----
CuO	<250	----
Fe_2O_3	<2000	----
K_2O	<300	----
MgO	<400	----
MnO	<65	----
Na_2O	<150	----
NiO	<65	----
P_2O_5	<600	----
SiO_2	----	15.5%
SrO	<60	----
TiO_2	<85	----
U_3O_8	----	54.7%
V_2O_5	<90	----
ZnO	<65	----

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
UR3

Lab Name: Southwest Research Institute

Lab Code: SwRI

Matrix: Solid

Lab System ID: 123621

Client: Division 20

Date Received: 05/26/99

Project No.: 20-1402-561

Work Order: 15783

Analysis	Concentration Oxides (mg/Kg)	% Concentration Oxides
Al_2O_3	<1000	----
BaO	<60	----
CaO	----	13.1%
CoO	<65	----
Cr_2O_3	<75	----
CuO	<250	----
Fe_2O_3	<2000	----
K_2O	<300	----
MgO	<400	----
MnO	<65	----
Na_2O	----	6.82%
NiO	<65	----
P_2O_5	<600	----
SiO_2	----	7.00%
SrO	<60	----
TiO_2	<85	----
U_3O_8	----	26.3%
V_2O_5	<90	----
ZnO	<65	----

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
UR4

Lab Name: Southwest Research Institute

Lab Code: SwRI

Matrix: Solid

Lab System ID: 123622

Client: Division 20

Date Received: 05/26/99

Project No.: 20-1402-561

Work Order: 15783

Analysis	Concentration Oxides (mg/Kg)	% Concentration Oxides
Al_2O_3	<1000	----
BaO	<60	----
CaO	----	6.81%
CoO	<65	----
Cr_2O_3	309	----
CuO	<250	----
Fe_2O_3	<2000	----
K_2O	<300	----
MgO	<400	----
MnO	<65	----
Na_2O	614	----
NiO	84	----
P_2O_5	<600	----
SiO_2	----	17.0%
SrO	<60	----
TiO_2	<85	----
U_3O_8	----	57.7%
V_2O_5	<90	----
ZnO	<65	----

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
UR5

Lab Name: Southwest Research Institute

Lab Code: SwRI

Matrix: Solid

Lab System ID: 123623

Client: Division 20

Date Received: 05/26/99

Project No.: 20-1402-561

Work Order: 15783

Analysis	Concentration Oxides (mg/Kg)	% Concentration Oxides
Al_2O_3	<1000	----
BaO	<60	----
CaO	----	10.9%
CoO	85	----
Cr_2O_3	<75	----
CuO	<250	----
Fe_2O_3	<2000	----
K_2O	<300	----
MgO	<400	----
MnO	<65	----
Na_2O	----	11.5%
NiO	<65	----
P_2O_5	<600	----
SiO_2	----	11.4%
SrO	<60	----
TiO_2	<85	----
U_3O_8	----	21.3%
V_2O_5	<90	----
ZnO	<65	----

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
UR6

Lab Name: Southwest Research Institute

Lab Code: SwRI

Matrix: Solid

Lab System ID: 123624

Client: Division 20

Date Received: 05/26/99

Project No.: 20-1402-561

Work Order: 15783

Analysis	Concentration Oxides (mg/Kg)	% Concentration Oxides
Al_2O_3	<1000	----
BaO	<60	----
CaO	----	6.42%
CoO	<65	----
Cr_2O_3	101	----
CuO	<250	----
Fe_2O_3	<2000	----
K_2O	<300	----
MgO	<400	----
MnO	<65	----
Na_2O	<150	----
NiO	<65	----
P_2O_5	<600	----
SiO_2	----	14.9%
SrO	<60	----
TiO_2	<85	----
U_3O_8	----	54.8%
V_2O_5	<90	----
ZnO	<65	----

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
UR7

Lab Name: Southwest Research Institute

Lab Code: SwRI

Matrix: Solid

Lab System ID: 123625

Client: Division 20

Date Received: 05/26/99

Project No.: 20-1402-561

Work Order: 15783

Analysis	Concentration Oxides (mg/Kg)	% Concentration Oxides
Al_2O_3	<1000	----
BaO	<60	----
CaO	----	13.1%
CoO	<65	----
Cr_2O_3	<75	----
CuO	<250	----
Fe_2O_3	<2000	----
K_2O	<300	----
MgO	<400	----
MnO	<65	----
Na_2O	----	6.78%
NiO	<65	----
P_2O_5	<600	----
SiO_2	----	6.96%
SrO	<60	----
TiO_2	<85	----
U_3O_8	----	26.2%
V_2O_5	<90	----
ZnO	<65	----

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
UR8

Lab Name: Southwest Research Institute

Lab Code: SwRI

Matrix: Solid

Lab System ID: 123626

Client: Division 20

Date Received: 05/26/99

Project No.: 20-1402-561

Work Order: 15783

Analysis	Concentration Oxides (mg/Kg)	% Concentration Oxides
Al_2O_3	<1000	----
BaO	<60	----
CaO	----	6.52%
CoO	<65	----
Cr_2O_3	273	----
CuO	<250	----
Fe_2O_3	<2000	----
K_2O	<300	----
MgO	<400	----
MnO	<65	----
Na_2O	591	----
NiO	107	----
P_2O_5	<600	----
SiO_2	----	16.2%
SrO	<60	----
TiO_2	<85	----
U_3O_8	----	54.5%
V_2O_5	<90	----
ZnO	<65	----

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
UR9

Lab Name: Southwest Research Institute

Lab Code: SwRI

Matrix: Solid

Lab System ID: 123627

Client: Division 20

Date Received: 05/26/99

Project No.: 20-1402-561

Work Order: 15783

Analysis	Concentration Oxides (mg/Kg)	% Concentration Oxides
Al_2O_3	<1000	---
BaO	<60	---
CaO	---	11.3%
CoO	91	---
Cr_2O_3	<75	---
CuO	<250	---
Fe_2O_3	<2000	---
K_2O	<300	---
MgO	<400	---
MnO	<65	---
Na_2O	---	11.9%
NiO	<65	---
P_2O_5	<600	---
SiO_2	---	11.8%
SrO	<60	---
TiO_2	<85	---
U_3O_8	---	21.6%
V_2O_5	<90	---
ZnO	525	---

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
UR10

Lab Name: Southwest Research Institute

Lab Code: SwRI

Matrix: Solid

Lab System ID: 123628

Client: Division 20

Date Received: 05/26/99

Project No.: 20-1402-561

Work Order: 15783

Analysis	Concentration Oxides (mg/Kg)	% Concentration Oxides
Al_2O_3	<1000	----
BaO	<60	----
CaO	----	6.43%
CoO	<65	----
Cr_2O_3	376	----
CuO	<250	----
Fe_2O_3	<2000	----
K_2O	<300	----
MgO	<400	----
MnO	<65	----
Na_2O	436	----
NiO	<65	----
P_2O_5	<600	----
SiO_2	----	16.1%
SrO	<60	----
TiO_2	<85	----
U_3O_8	----	54.2%
V_2O_5	<90	----
ZnO	<65	----

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
UR11

Lab Name: Southwest Research Institute

Lab Code: SwRI

Matrix: Solid

Lab System ID: 123629

Client: Division 20

Date Received: 05/26/99

Project No.: 20-1402-561

Work Order: 15783

Analysis	Concentration Oxides (mg/Kg)	% Concentration Oxides
Al_2O_3	<1000	---
BaO	<60	---
CaO	---	9.28%
CoO	<65	---
Cr_2O_3	<75	---
CuO	<250	---
Fe_2O_3	<2000	---
K_2O	<300	---
MgO	<400	---
MnO	<65	---
Na_2O	---	4.67%
NiO	<65	---
P_2O_5	<600	---
SiO_2	---	4.90%
SrO	<60	---
TiO_2	<85	---
U_3O_8	---	37.6%
V_2O_5	<90	---
ZnO	<65	---

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
UR12

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 05/26/99

Matrix: Solid

Project No.: 20-1402-561

Lab System ID: 123630

Work Order: 15783

Analysis	Concentration Oxides (mg/Kg)	% Concentration Oxides
Al_2O_3	<1000	----
BaO	<60	----
CaO	----	8.93%
CoO	<65	----
Cr_2O_3	<75	----
CuO	<250	----
Fe_2O_3	<2000	----
K_2O	<300	----
MgO	<400	----
MnO	<65	----
Na_2O	----	4.55%
NiO	<65	----
P_2O_5	<600	----
SiO_2	----	4.70%
SrO	<60	----
TiO_2	<85	----
U_3O_8	----	36.3%
V_2O_5	<90	----
ZnO	<65	----

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY

Sample ID
UR3

Lab Name: Southwest Research Institute

Lab Code: SwRI

Matrix: Solid

Lab System ID: 123621

Client: Division 20

Date Received: 05/26/99

Project No.: 20-1402-561

Work Order: 15783

Analysis	Concentration Oxides	Duplicate Concentration Oxides	RPD
Al_2O_3	<1000	<1000	0.0%
BaO	<60	<60	0.0%
CaO	13.1%	14.1%	7.4%
CoO	<65	<65	0.0%
Cr_2O_3	<75	<75	0.0%
CuO	<250	<250	0.0%
Fe_2O_3	<2000	<2000	0.0%
K_2O	<300	<300	0.0%
MgO	<400	<400	0.0%
MnO	<65	<65	0.0%
Na_2O	6.82%	7.31%	6.9%
NiO	<65	<65	0.0%
P_2O_5	<600	<600	0.0%
SiO_2	7.00%	7.53%	7.3%
SrO	<60	<60	0.0%
TiO_2	<85	<85	0.0%
U_3O_8	26.3%	28.3%	7.3%
V_2O_5	<90	<90	0.0%
ZnO	<65	<65	0.0%

SOUTHWEST RESEARCH INSTITUTE

LABORATORY CONTROL SAMPLE

Sample ID: NBS278

Lab Name: Southwest Research Institute

Lab Code: SwRI

Matrix: Solid

Lab System ID: NA

Client: Division 20

Date Received: NA

Project No.: 20-1402-561

Work Order: 15783

Analysis	Concentration Oxides	True Value	Recovery
Al_2O_3	13.6%	14.15%	96.1%
BaO	1040	1230	84.6%
CaO	9960	9830	101.3%
CoO	NA	NA	NA
Cr_2O_3	NA	NA	NA
CuO	NA	NA	NA
Fe_2O_3	2.03%	2.04%	99.5%
K_2O	4.11%	4.16%	98.8%
MgO	2350	2300	102.2%
MnO	518	520	99.7%
Na_2O	4.81%	4.84%	99.4%
NiO	NA	NA	NA
P_2O_5	NA	NA	NA
SiO_2	72.7%	73.1%	99.5%
SrO	79	75	105.5%
TiO_2	2300	2450	93.9%
V_2O_5	NA	NA	NA
ZnO	NA	NA	NA

NA- Not Applicable.

SOUTHWEST RESEARCH INSTITUTE

LABORATORY CONTROL SAMPLE

Sample ID
NBS688

Lab Name: Southwest Research Institute

Lab Code: SwRI

Matrix: Solid

Lab System ID: NA

Client: Division 20

Date Received: NA

Project No.: 20-1402-561

Work Order: 15783

Analysis	Concentration Oxides	True Value	Recovery
Al_2O_3	17.5%	17.36%	100.8%
BaO	203	223	91.0%
CaO	12.3%	12.17%	101.1%
CoO	73	62	117.2%
Cr_2O_3	490	485	101.1%
CuO	NA	NA	NA
Fe_2O_3	10.4%	10.35%	100.5%
K_2O	1930	1870	103.2%
MgO	8.48%	8.40%	101.0%
MnO	1720	1670	103.0%
Na_2O	2.16%	2.15%	100.5%
NiO	205	201	102.1%
P_2O_5	1500	1340	111.9%
SiO_2	49.9%	48.4%	103.1%
SrO	214	200	107.2%
TiO_2	1.16%	1.17%	99.1%
V_2O_5	462	430	107.4%
ZnO	99	105	94.7%

NA- Not Applicable.

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Client Name/Address: James D. Pickett
CNWRA / DIV 20
Bldg 57

Requested Turnaround:
- ☐ 1 Week
- ☒ 2 Weeks (Normal)
- ☐ 3 Weeks
- ☐ Other: _____

Client Purchase Order/Other ID:

Site/Zone ID:

Analyses Requested

SwRI Contact:

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time (mm/dd/yy)	Matrix Type	Sample Type	# of Containers	Whole rock analysis by ICP for major species										
UR1	5/26/99		Mineral solid		1	X										
UR2	"		"	"	1	x										
UR3					1	x										
UR4					1	x										
UR5					1	x										
UR6					1	x										
UR7					1	x										
UR8					1	x										
UR9					1	X										
UR10					1	X										

REMARKS

Preservation
- **a** = HCl to pH <2
- **b** = HNO_3 to pH <2
- **c** = H_2SO_4 to pH <2
- **d** = NaOH to pH >12
- **e** = Other (Specify)

Project is Nuclear safety related 10 CFR 50 Part 21 Appendix B

Please call J. Pickett at x5067 if questions.

Matrix Types: **A** - Air; **P** - Product; **S** - Soil; **T** - Tissue; **W** - Water

Sample Types: **DM** - Dissolved Metals; **ER** - Equipment Rinsate; **FB** - Field Blank; **MSD** - Matrix Spike Duplicate; **MS** - Matrix Spike; **TB** - Trip Blank; **TM** - Total Metals; **ES** - Environmental Samples; **FD** - Field Duplicate

Relinquished by Sampler (Signature): James D. Pickett

Received by (Signature):

Relinquished by (Signature):

Received by (Signature)

Relinquished by (Signature)

Comments:

SwRI Project No: 20-1402-561

Received by SwRI Lab (Signature):

Samples Disposed by:

Date/Time: 5/26/99 1500

Client Name/Address		SAMPLE LIST/CHAIN OF CUSTODY	Requested Turnaround:
James D. Pukral CNWRA/Div 20 Bldg 57		**Southwest Research Institute** Chemistry and Chemical Engineering Division 6220 Culebra Road San Antonio, Texas 78238-5166	☐ 1 Week ☒ 2 Weeks (Normal) ☐ 3 Weeks ☐ Other:_____
Client Purchase Order/Other ID	Site/Zone ID	Analyses Requested	SwRI Contact:

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time (mm/dd/yy)	Matrix Type	Sample Type	# of Containers	whole rock analysis by	ICP for major species										REMARKS Preservation a = HCl to pH <2 b = HNO_3 to pH <2 c = H_2SO_4 to pH <2 d = NaOH to pH >12 e = Other (Specify)
UR11	5/26/99		Mineral solid		1	X											Project is nuclear
UR12	1		1	1	1	X											safety related
																	10 CFR 50 Part 21
																	Appendix B

Matrix Types: **A** - Air; **P** - Product; **S** - Soil; **T** - Tissue; **W** - Water

Sample Types: **DM** - Dissolved Metals; **ER** - Equipment Rinsate; **FB** - Field Blank; **MSD** - Matrix Spike Duplicate; **MS** - Matrix Spike; **TB** - Trip Blank; **TM** - Total Metals; **ES** - Environmental Samples; **FD** - Field Duplicate

Relinquished by (Signature):		SwRI Project No: 26-1402-561
Received by (Signature)		Received by SwRI Lab (Signature): [signature]
Relinquished by Sampler (Signature): James D. Pukral	Relinquished by (Signature)	Samples Disposed by:
Received by (Signature):	Comments:	Date/Time: 5/26/99 15:00

Div 01 COC Form 01-01-001, Rev 1/97

Southwest Research Institute
MEMORANDUM

TO: James Prikryl
Division 20

FROM: Jo Ann Boyd JB
Division 01

RE: Project No.: 20-5708-573
Work order #: 9808
Analysis for Calcium, Silicon, and Uranium by ICP and ICP-MS

DATE: September 16, 1996

Enclosed please find the sample results for the analysis referenced above.

If there are any questions, please feel free to contact me by voice mail 522-2169, fax at 522-2021, or e-mail at JBoyd@Smpl_mgr@SwRI01. I look forward to our continued analytical support of your projects.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 08/30/96

Matrix: Liquid

Date Analyzed: 09/13/96

Project No.: 20-5708-573

Sample ID	Lab System ID	Calcium Result (ug/mL)	Silicon Result (ug/mL)	Uranium Result (ug/mL)
20U43	77520	491	88.6	740
Duplicate	77520	473	84.8	714
RPD	77520	3.7%	4.4%	3.6%
20U44	77521	496	90.7	755
Spike	77521	882	170	1550
Spike Added	77521	444	88.9	889
Recovery	77521	86.9%	89.2%	89.4%
20U45	77522	440	15.3	61.9
20U46	77523	444	15.4	62.7
20U47	77524	438	10.4	11.8
20U48	77525	443	10.5	11.7
20U49	77526	485	87.4	732
20U50	77527	482	88.2	737
20U51	77528	430	15.3	60.3
20U52	77529	439	15.4	61.5
20U53	77530	466	11.2	12.2
20U54	77531	432	10.5	11.2
20U55	77532	364	2.42	25.8
20U56	77533	472	2.60	2.53
20U57	77534	412	2.73	1.08
20U58	77535	442	2.53	15.5
20U59	77536	390	2.03	10.3
20U60	77537	414	2.91	5.03
Detection Limit:		0.1 ug/mL	0.1 ug/mL	0.1 ug/mL

Distribution List

Serial Number 9808

SwRI
Division 1

BOYD, JOANN
CUMMINS, WAYNE
DAMMANN, MIKE
LOGIN AREA
LOZANO, VICKI
METALS PREP LAB
PRIKRYL, JAMES
SATTLER, ANDY
SPIES, RADONNA

Number of Copies: 9

Number of Work Orders: 9

Date Printed: 08/30/96

Southwest Research Institute

Laboratory Work Order

Work Order Number 9808

VTSR: 30 August 96 Time: 10:15

Project: 20-5708-573
Case #: DIV 20
SDG : 77520
Client: DIV 20

Manager: PRIKRYL, JAMES
Logged in by: RPRESAS
Creation Date: 30 August 96

Checked by: QAu 8/30/96

Notes

SAMPLES RECEIVED AT ROOM TEMP.

QC NOTE: AS PER QAPP.

PARAMETERS: CA, U, SI BY ICP.

NOTE: SEE PROJECT MANAGER OR ATTACHED FOR FURTHER INFORMATION.

NOTE: MATRIX OF SAMPLE IS A DILUTE HCL.

NOTE: SAMPLES SCREENED FOR RADIOACTIVITY. ALL ARE BELOW BACKGROUND. BECAUSE SAMPLES ARE MARKED WITH RADIOACTIVE STICKERS, THEY WILL BE STORED IN THE RAD LAB.

System ID	#	QC	Customer ID	CED	Matrix	Required Analyses
77520	1		20U43	/ /	L/DILUTE HCL	CA, RADSCREEN, SI, U-ICP
77521	1		20U44	/ /	L/DILUTE HCL	CA, RADSCREEN, SI, U-ICP
77522	1		20U45	/ /	L/DILUTE HCL	CA, RADSCREEN, SI, U-ICP
77523	1		20U46	/ /	L/DILUTE HCL	CA, RADSCREEN, SI, U-ICP
77524	1		20U47	/ /	L/DILUTE HCL	CA, RADSCREEN, SI, U-ICP
77525	1		20U48	/ /	L/DILUTE HCL	CA, RADSCREEN, SI, U-ICP
77526	1		20U49	/ /	L/DILUTE HCL	CA, RADSCREEN, SI, U-ICP
77527	1		20U50	/ /	L/DILUTE HCL	CA, RADSCREEN, SI, U-ICP
77528	1		20U51	/ /	L/DILUTE HCL	CA, RADSCREEN, SI, U-ICP
77529	1		20U52	/ /	L/DILUTE HCL	CA, RADSCREEN, SI, U-ICP
77530	1		20U53	/ /	L/DILUTE HCL	CA, RADSCREEN, SI, U-ICP
77531	1		20U54	/ /	L/DILUTE HCL	CA, RADSCREEN, SI, U-ICP
77532	1		20U55	/ /	L/DILUTE HCL	CA, RADSCREEN, SI, U-ICP
77533	1		20U56	/ /	L/DILUTE HCL	CA, RADSCREEN, SI, U-ICP
77534	1		20U57	/ /	L/DILUTE HCL	CA, RADSCREEN, SI, U-ICP
77535	1		20U58	/ /	L/DILUTE HCL	CA, RADSCREEN, SI, U-ICP
77536	1		20U59	/ /	L/DILUTE HCL	CA, RADSCREEN, SI, U-ICP
77537	1		20U60	/ /	L/DILUTE HCL	CA, RADSCREEN, SI, U-ICP

Samples: 18

Data must be to QA..... 10 September 96
Absolute Latest Date..... 12 September 96

Samples Received to Date: 018
Turnaround time is 14 Days from VTSR.

Date Printed: 30 August 96 Time Printed: 11:14:00

Work Orders in this SDG:

9808

* - Indicates work group contains an MS/MSD

Thermometer: 6
Temperature: 22

ver (06/16/95)

Southwest Research Institute

Test Code Key

Serial Number 9808

VTSR: 30 August 96 Time: 10:15

Manager: PRIKRYL, JAMES

Project: 20-5708-573
Case #: DIV 20
SDG : 77520
Client: DIV 20

NOTES

SAMPLES RECEIVED AT ROOM TEMP.

QC NOTE: AS PER QAPP.

PARAMETERS: CA, U, SI BY ICP.

NOTE: SEE PROJECT MANAGER OR ATTACHED FOR FURTHER INFORMATION.

NOTE: MATRIX OF SAMPLE IS A DILUTE HCL.

NOTE: SAMPLES SCREENED FOR RADIOACTIVITY. ALL ARE BELOW BACKGROUND. BECAUSE SAMPLES ARE MARKED WITH RADIOACTIVE STICKERS, THEY WILL BE STORED IN THE RAD LAB.

Group	Test	Start	Method Date	Deadline	Number	Description	Fridge	Shelf
METALS	CA	vtsr	*02/26/97*	09/10/96	18	CALCIUM ANALYSIS BY ICP	11	MID
METALS	SI	vtsr	*02/26/97*	09/10/96	18	SILICON BY ICP	11	MID
METALS	U-ICP	vtsr	*02/26/97*	09/10/96	18	URANIUM BY ICP.	11	MID
RADCHEM	RADSCREEN	vtsr	09/01/96	09/01/96	18	RAD SCREENING PRIOR TO EXTRACTION/PREP/AND-OR/ANALYSIS.	11	MID

Data Must be to QA Unit..... 10 September 96

Absolute Latest Date..... 12 September 96

Date Printed: 08/30/96

Time Printed: 11:14:14

Sample List/Chain of Custody

Southwest Research Institute
Chemistry and Chemical Engineering Division
San Antonio, Texas

Page 1 of 2

Installation I.D.		Project No.
Div 20		20-5708-573
Site I.D.	Zone I.D.	Sampling Co.
Airbill No.		Shipping Container No.

Sample I.D.	Sample Collection Date (mm/dd/yy)	Sample Collection Time (24 Hr)	Matrix Type	Sample Type
20U43			Dilute HCl	Aqueous
20U44				
20U45				
20U46				
20U47				
20U48				
20U49				
20U50				
20U51				
20U52				

Parameters ( ) / Preservation [ ]

U, Si, Cu by ICP

Indicate number of sample containers per analytical method

Remarks

Matrix - dilute HCl

Approximate concs. -

U 1-800 ppm

Si 2-100 ppm

Cu 300-500 ppm

2 week Turnaround requested

Jim Prikryl X5667

Preservation: a = HCl to pH <2; b = HNO_3 to pH < 2; c = H_2SO_4 to pH < 2; d= NaOH to pH > 12; e = Other (Specify)

Relinquished by Sampler: (Signature)	Date	Time
Relinquished by: (Signature)	8/30	1015
Relinquished by: (Signature)	Date	Time

Matrix Types: **A** - Air; **P** - Product; **S**- Soil; **T** - Tissue; **W** - Water

Received by: (Signature)	Laboratory:	
Received by: (Signature)	Samples Disposed by:	
Received by Lab: (Signature)	Date	Time
	8/30/94	10.15

Sample Types: **DM** - Dissolved Metals; **ER** - Equipment Rinsate; **FB** - Field Blank; **MD** - Matrix Spike Duplicate; **MS** - Matrix Spike; **TB** - Trip Blank; **TM** - Total Metals; **ES** - Environmental Samples

Sample List/Chain of Custody

Southwest Research Institute
Chemistry and Chemical Engineering Division
San Antonio, Texas

Page 2 of 2

Installation I.D.	Project No.
Div 20	20-5708-573

Site I.D.	Zone I.D.	Sampling Co.

Airbill No.	Shipping Container No.

Parameters ( ) / Preservation [ ]

Sample I.D.	Sample Collection Date (mm/dd/yy)	Sample Collection Time (24 Hr)	Matrix Type	Sample Type	U, Si, Ca by ICP											Indicate number of sample containers per analytical method / Remarks
20U53			Dilute HCl	Aqueous												see page 1
20U54																
20U55																
20U56																
20U57																
20U58																
20U59																
20U60																

Preservation: a = HCl to pH <2; b = HNO_3 to pH < 2; c = H_2SO_4 to pH < 2; d= NaOH to pH > 12; e = Other (Specify)

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory:
Relinquished by: (Signature) James D. Finch	Date 8/30	Time 1015	Received by: (Signature)	Samples Disposed by:
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature) R. P	Date 8/30/96 / Time 10:15

Matrix Types: **A** - Air; **P** - Product; **S**- Soil; **T** - Tissue; **W** - Water

Sample Types: **DM** - Dissolved Metals; **ER** - Equipment Rinsate; **FB** - Field Blank; **MD** - Matrix Spike Duplicate; **MS** - Matrix Spike; **TB** - Trip Blank; **TM** - Total Metals; **ES** - Environmental Samples

Southwest Research Institute
Traffic Report
Sample Custodian Signature: R. Pierson

Date: 08/30/96
Project: 20-5708-573
CASE #: DIV 20 / SDG: 77520
Airbill: DELIVERED
Work Order #: 0000009808

1. Custody Seal — Not Present or Damaged
2. Chain of Custody — Present
3. Sample Tags — Not Present
   Sample Tag Numbers — Not on COC
4. SMO Forms — Not Present

Date RecD	Time RecD	COC Record #	SMO Sample #	Corresponding		TFIC RPT, TAGS, COC AGREE Y/N	Cond of Sample
				Sample Tag #	SwRI Lab #		
08/30/96	10:15	NONE	20U43	NONE	77520		INTACT
08/30/96	10:15	NONE	20U44	NONE	77521		INTACT
08/30/96	10:15	NONE	20U45	NONE	77522		INTACT
08/30/96	10:15	NONE	20U46	NONE	77523		INTACT
08/30/96	10:15	NONE	20U47	NONE	77524		INTACT
08/30/96	10:15	NONE	20U48	NONE	77525		INTACT
08/30/96	10:15	NONE	20U49	NONE	77526		INTACT
08/30/96	10:15	NONE	20U50	NONE	77527		INTACT
08/30/96	10:15	NONE	20U51	NONE	77528		INTACT
08/30/96	10:15	NONE	20U52	NONE	77529		INTACT
08/30/96	10:15	NONE	20U53	NONE	77530		INTACT
08/30/96	10:15	NONE	20U54	NONE	77531		INTACT
08/30/96	10:15	NONE	20U55	NONE	77532		INTACT
08/30/96	10:15	NONE	20U56	NONE	77533		INTACT
08/30/96	10:15	NONE	20U57	NONE	77534		INTACT
08/30/96	10:15	NONE	20U58	NONE	77535		INTACT
08/30/96	10:15	NONE	20U59	NONE	77536		INTACT
08/30/96	10:15	NONE	20U60	NONE	77537		INTACT

SOUTHWEST RESEARCH INSTITUTE

6220 CULEBRA RD•P.O. DRAWER 28510•SAN ANTONIO, TX 78228-0510•(210) 684-5111•TELEX 244846
FAX NUMBER (210) 522-3649 OR (210) 522-5938

CHEMISTRY AND CHEMICAL ENGINEERING DIVISION
BUILDING 70, 140 AVENUE C

TRANSMITTAL SHEET

DATE: September 13, 1996 NUMBER OF PAGES: 2

TO: James Prikryl
Division 20

OFFICE TELEPHONE:

FAX NUMBER: 5184

FROM: Mike Dammann

TELEPHONE: 5428

NOTE: Attached are results for calcium, silicon and uranium for your samples sent to us on August 30. Thank you.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Lab Name: Southwest Research Institute

Lab Code: SwRI

Matrix: Liquid

Project No.: 20-5708-573

Client: Division 20

Date Received: 08/30/96

Date Analyzed: 07/18/96

Sample ID	Lab System ID	Calcium Result (ug/mL)	Silicon Result (ug/mL)	Uranium Result (ug/mL)
20U43	77520	491	88.6	740
Duplicate	77520	473	84.8	714
RPD	77520	3.7%	4.4%	3.6%
20U44	77521	496	90.7	755
Spike	77521	882	170	1550
Spike Added	77521	444	88.9	889
Recovery	77521	86.9%	89.2%	89.4%
20U45	77522	440	15.3	61.9
20U46	77523	444	15.4	62.7
20U47	77524	438	10.4	11.8
20U48	77525	443	10.5	11.7
20U49	77526	485	87.4	732
20U50	77527	482	88.2	737
20U51	77528	430	15.3	60.3
20U52	77529	439	15.4	61.5
20U53	77530	466	11.2	12.2
20U54	77531	432	10.5	11.2
20U55	77532	364	2.42	25.8
20U56	77533	472	2.60	2.53
20U57	77534	412	2.73	1.08
20U58	77535	442	2.53	15.5
20U59	77536	390	2.03	10.3
20U60	77537	414	2.91	5.03
Detection Limit:		0.1 ug/mL	0.1 ug/mL	0.1 ug/mL

MEMORANDUM

TO: James Prikryl
Division 20

FROM: Jo Ann Boyd
Division 01

RE: Project No.: 20-5708-573
Work order #'s: 9562 and 9654
Analysis for Calcium, Silicon, and Uranium by ICP and ICP-MS

DATE: August 22, 1996

Enclosed please find the sample results for the analysis referenced above.

If there are any questions, please feel free to contact me by voice mail 522-2169, fax at 522-2021, or e-mail at JBoyd@Smpl_mgr@SwRI01. I look forward to our continued analytical support of your projects.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 07/25/96
08/09/96

Matrix: Liquid

Date Analyzed: 08/18/96
08/20/96

Project No.: 20-5708-573

Sample ID	Lab System ID	Calcium Result (ug/mL)	Silicon Result (ug/mL)	Uranium Result (ug/mL)
PB	---	<0.1	<0.05	<0.001
20U1	75397	453	3.12	26.4
Duplicate	75397	451	3.11	26.3
RPD	75397	0.4%	0.3%	0.4%
20U2	75398	559	3.92	28.1
20U3	75399	440	3.25	2.65
20U4	75400	447	3.32	2.68
20U5	75401	440	3.21	0.249
20U6	75402	461	3.36	0.254
20U7	75403	499	88.7	810
20U8	75404	497	88.3	796
20U9	75405	470	12.7	68.8
20U10	75406	490	13.4	70.2
20U11	75407	475	7.39	13.5
20U12	75408	487	7.72	12.9
20U13	75409	552	98.5	796
20U12	75410	600	108	755
20U14	75411	479	14.1	67.6
20U15	75412	454	13.6	64.4
20U16	75413	459	8.66	11.7
20U17	75414	458	8.61	11.8
20U19	75415	392	2.78	27.0
20U20	75416	498	2.96	2.80
20U21	75417	435	3.19	1.12
20U22	75418	467	2.99	16.8
20U23	75419	438	2.68	11.2
20U24	75420	451	3.56	5.37
Duplicate	75420	457	3.63	5.39
RPD	75420	1.3%	1.9%	0.4%
20U25	76145	505	89.8	781
Duplicate	76145	507	90.3	796
RPD	76145	0.4%	0.6%	1.9%
20U26	76146	504	90.3	788
20U27	76147	450	14.4	64.7
20U28	76148	446	14.3	63.4
20U29	76149	445	9.59	11.9
20U30	76150	449	9.72	11.8
20U31	76151	502	89.8	772
20U32	76152	496	89.4	760
20U33	76153	446	14.9	63.4
20U34	76154	450	15.3	65.1
20U35	76155	448	10.2	11.9
20U36	76156	447	10.3	12.6
20U37	76157	377	2.79	26.6
20U38	76158	485	2.99	2.6
20U39	76159	432	3.21	1.05
20U40	76160	460	3.01	16.2
20U41	76161	407	2.43	10.9
20U42	76162	438	3.50	5.80

Detection Limit: 0.1 ug/mL 0.05 ug/mL 0.001 ug/mL

Sample List/Chain of Custody

Southwest Research Institute
Chemistry and Chemical Engineering Division
San Antonio, Texas

Page 1 of 2

Installation I.D.	Project No.
Div 20	20-5708-573
Site I.D. / Zone I.D.	Sampling Co.
Airbill No.	Shipping Container No.

Parameters ( ) / Preservation [ ]

Sample I.D.	Sample Collection Date (mm/dd/yy)	Sample Collection Time (24 Hr)	Matrix Type	Sample Type	U, Si, Ca by ICP	Indicate number of sample containers per analytical method / Remarks
20u43			Dilute HCl	Aqueous		Matrix - Dilute HCl
20u44						Approximate concs.-
20u45						U 1-800 ppm
20u46						Si 2-100ppm
20u47						Ca 300-500 ppm
20u48						
20u49						2 week Turnaround
20u50						requested
20u51						Jim Prikryl
20u52						x5667

Preservation: a = HCl to pH <2; b = HNO_3 to pH < 2; c = H_2SO_4 to pH < 2; d= NaOH to pH > 12; e = Other (Specify)

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory:
Relinquished by: (Signature) James D. Prikryl	8/30	1015	Received by: (Signature)	Samples Disposed by:
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature) R. P.	Date 8/30/16 / Time 10:15

Matrix Types: **A** - Air; **P** - Product; **S**- Soil; **T** - Tissue; **W** - Water

Sample Types: **DM** - Dissolved Metals; **ER** - Equipment Rinsate; **FB** - Field Blank; **MD** - Matrix Spike Duplicate; **MS** - Matrix Spike; **TB** - Trip Blank; **TM** - Total Metals; **ES** - Environmental Samples

Sample List/Chain of Custody

Southwest Research Institute
Chemistry and Chemical Engineering Division
San Antonio, Texas

Page 2 of 2

Installation I.D.	Project No.
DIV 20	20-5708-573

Site I.D.	Zone I.D.	Sampling Co.

Airbill No.	Shipping Container No.

Parameters ( ) / Preservation [ ]

Sample I.D.	Sample Collection Date (mm/dd/yy)	Sample Collection Time (24 Hr)	Matrix Type	Sample Type	U, Si, Ca by ICP											Indicate number of sample containers per analytical method / Remarks
20U53			Dilute HCl	Aqueous												see page 1
20U54																
20U55																
20U56																
20U57																
20U58																
20U59																
20U60																

Preservation: a = HCl to pH <2; b = HNO_3 to pH < 2; c = H_2SO_4 to pH < 2; d= NaOH to pH > 12; e = Other (Specify)

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory:	
Relinquished by: (Signature) James D. Pugh	Date 8/30	Time 1015	Received by: (Signature)	Samples Disposed by:	
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature) R. P	Date 8/30/96	Time 16:15

Matrix Types: **A** - Air; **P** - Product; **S**- Soil; **T** - Tissue; **W** - Water

Sample Types: **DM** - Dissolved Metals; **ER** - Equipment Rinsate; **FB** - Field Blank; **MD** - Matrix Spike Duplicate; **MS** - Matrix Spike; **TB** - Trip Blank; **TM** - Total Metals; **ES** - Environmental Samples

Sample List/Chain of Custody

Southwest Research Institute
Chemistry and Chemical Engineering Division
San Antonio, Texas

Page 1 of 2

Installation I.D.	Project No.
Div 20	20-5708-573

Site I.D.	Zone I.D.	Sampling Co.

Airbill No.	Shipping Container No.

Parameters ( ) / Preservation [ ]

Ca, U, SiO_2 by ICP

Sample I.D.	Sample Collection Date (mm/dd/yy)	Sample Collection Time (24 Hr)	Matrix Type	Sample Type	Indicate number of sample containers per analytical method	Remarks
20U25			Dilute Nitric	Aqueous	✓	Matrix - Dilute Nitric
20U26			↓	↓	✓	Approximate Conc.
20U27			↓	↓	✓	Ca - 400 ppm
20U28			↓	↓	✓	SiO_2 - 3 ppm
20U29			↓	↓	✓	U 0.2 - 25 ppm
20U30			↓	↓	✓	
20U31			↓	↓	✓	Please notify,
20U32			↓	↓	✓	Jim Pickup x5667
20U33			↓	↓	✓	when complete
20U34			↓	↓	✓	

Preservation: **a** = HCl to pH <2; **b** = HNO_3 to pH < 2; **c** = H_2SO_4 to pH < 2; **d**= NaOH to pH > 12; **e** = Other (Specify)

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory:
James D. Pickup	8/9	1330		
Relinquished by: (Signature)	**Date**	**Time**	**Received by: (Signature)**	**Samples Disposed by:**
Relinquished by: (Signature)	**Date**	**Time**	**Received by Lab: (Signature)**	**Date** / **Time**
			R. P	8-9-96 / 13:25

Matrix Types: **A** - Air; **P** - Product; **S**- Soil; **T** - Tissue; **W** - Water

Sample Types: **DM** - Dissolved Metals; **ER** - Equipment Rinsate; **FB** - Field Blank; **MD** - Matrix Spike Duplicate; **MS** - Matrix Spike; **TB** - Trip Blank; **TM** - Total Metals; **ES** - Environmental Samples

Sample List/Chain of Custody

Southwest Research Institute
Chemistry and Chemical Engineering Division
San Antonio, Texas

Page 2 of 2

Installation I.D.	Project No.
DU 20	20-5708-573

Site I.D.	Zone I.D.	Sampling Co.

Airbill No.	Shipping Container No.

Sample I.D.	Sample Collection Date (mm/dd/yy)	Sample Collection Time (24 Hr)	Matrix Type	Sample Type	Parameters ( ) / Preservation [ ]: Ca, U, S, O2 by ICP	Indicate number of sample containers per analytical method: Remarks
20U35			W	Agueous	✓	
20U36					✓	
20U37					✓	
20U38					✓	
20U39					✓	
20U40					✓	
20U41					✓	
20U42					✓	

Preservation: **a** = HCl to pH <2; **b** = HNO_3 to pH < 2; **c** = H_2SO_4 to pH < 2; **d**= NaOH to pH > 12; **e** = Other (Specify)

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory:	
James D. Fry	8/9	1330			
Relinquished by: (Signature)	**Date**	**Time**	**Received by: (Signature)**	**Samples Disposed by:**	
Relinquished by: (Signature)	**Date**	**Time**	**Received by Lab: (Signature)**	**Date**	**Time**
			R. J	8/9/21	13:20

Matrix Types: **A** - Air; **P** - Product; **S**- Soil; **T** - Tissue; **W** - Water

Sample Types: **DM** - Dissolved Metals; **ER** - Equipment Rinsate; **FB** - Field Blank; **MD** - Matrix Spike Duplicate; **MS** - Matrix Spike; **TB** - Trip Blank; **TM** - Total Metals; **ES** - Environmental Samples

MEMORANDUM

TO: Jim Prikryl
Division 20

FROM: Jo Ann Boyd, Manager QAU, Division 01

RE: Project No.: 20.01402.561/871
Work Order: #19926, 19948
Samples Received: April 11/16, 2001

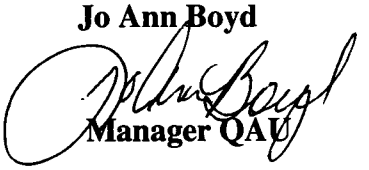
Analysis of liquid samples for metals by ICP, IC.
Raw data and nuclear safety documentation for this project are archived in Division 01.

DATE: May 04, 2001

Enclosed please find the sample results for the analysis referenced above.

If there are any questions, please feel free to contact me by voice mail at 522-2169 or by fax at 522-2021. I look forward to our continued analytical support of your projects.

Jo Ann Boyd



Manager QAU

SOUTHWEST RESEARCH INSTITUTE
NUCLEAR PROJECT
CLIENT: DIVISION 20
WORK ORDER: 19926, 19948
SDG: 159344, 159535
VTSR: April 11,16, 2001
PROJECT#: 20.01402.561/871

FINAL REPORT

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010001

Sample ID
U56-1A

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/11/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159344

Work Order: 19926

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.05	0.05
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.25	0.25
Cadmium	<0.025	0.025
Calcium	47.9	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<1.25	1.25
Lanthanum	<0.05	0.05
Lead	<0.05	0.05
Lithium	<0.025	0.025
Magnesium	<1	1
Manganese	<0.025	0.025
Molybdenum	0.092	0.025
Nickel	<0.05	0.05
Palladium	<0.05	0.05
Phosphorus	<0.25	0.25
Potassium	<0.5	0.5
Selenium	<0.05	0.05
Silicon	70.8	0.25
Silver	<0.05	0.05
Sodium	<0.5	0.5
Strontium	<0.025	0.025
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.25	0.25
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	537	0.5
Vanadium	<0.05	0.05
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.125	0.125

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY 010092

Sample ID
U56-1A

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/11/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159344

Work Order: 19926

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Aluminum	<0.5	<0.5	0.00%
Antimony	<0.1	<0.1	0.00%
Arsenic	<0.05	<0.05	0.00%
Barium	<0.025	<0.025	0.00%
Beryllium	<0.025	<0.025	0.00%
Bismuth	<0.05	<0.05	0.00%
Boron	<0.25	<0.25	0.00%
Cadmium	<0.025	<0.025	0.00%
Calcium	47.9	48.0	0.25%
Chromium	<0.05	<0.05	0.00%
Cobalt	<0.025	<0.025	0.00%
Copper	<0.1	<0.1	0.00%
Iron	<1.25	<1.25	0.00%
Lanthanum	<0.05	<0.05	0.00%
Lead	<0.05	<0.05	0.00%
Lithium	<0.025	<0.025	0.00%
Magnesium	<1	<1	0.00%
Manganese	<0.025	<0.025	0.00%
Molybdenum	0.092	0.099	7.52%
Nickel	<0.05	<0.05	0.00%
Palladium	<0.05	<0.05	0.00%
Phosphorus	<0.25	<0.25	0.00%
Potassium	<0.5	<0.5	0.00%
Selenium	<0.05	<0.05	0.00%
Silicon	70.8	71.2	0.49%
Silver	<0.05	<0.05	0.00%
Sodium	<0.5	<0.5	0.00%
Strontium	<0.025	<0.025	0.00%
Sulfur	<0.25	<0.25	0.00%
Thallium	<0.1	<0.1	0.00%
Thorium	<0.25	<0.25	0.00%
Tin	<0.05	<0.05	0.00%
Titanium	<0.05	<0.05	0.00%
Tungsten	<0.1	<0.1	0.00%
Uranium	537	542	0.93%
Vanadium	<0.05	<0.05	0.00%
Yttrium	<0.025	<0.025	0.00%
Zinc	<0.025	<0.025	0.00%
Zirconium	<0.125	<0.125	0.00%

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010093

Sample ID
U56-1B

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/11/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159345

Work Order: 19926

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.05	0.05
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.25	0.25
Cadmium	<0.025	0.025
Calcium	48.0	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<1.25	1.25
Lanthanum	<0.05	0.05
Lead	<0.05	0.05
Lithium	<0.025	0.025
Magnesium	<1	1
Manganese	<0.025	0.025
Molybdenum	0.092	0.025
Nickel	<0.05	0.05
Palladium	<0.05	0.05
Phosphorus	<0.25	0.25
Potassium	<0.5	0.5
Selenium	<0.05	0.05
Silicon	71.2	0.25
Silver	<0.05	0.05
Sodium	<0.5	0.5
Strontium	<0.025	0.025
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.25	0.25
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	542	0.5
Vanadium	<0.05	0.05
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.125	0.125

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY

010004

Sample ID
U56-1B

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/11/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159345

Work Order: 19926

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Aluminum	<0.5	10.2	10	102.4%
Antimony	<0.1	2.58	2.5	103.1%
Arsenic	<0.05	10.5	10	104.6%
Barium	<0.025	10.4	10	103.6%
Beryllium	<0.025	0.251	0.25	100.4%
Bismuth	NA	NA	NA	NA
Boron	NA	NA	NA	NA
Cadmium	<0.025	0.255	0.25	101.9%
Calcium	48.0	151	100	102.9%
Chromium	<0.05	1.01	1	101.5%
Cobalt	<0.025	2.54	2.5	101.5%
Copper	<0.1	1.30	1.25	104.1%
Iron	<1.25	4.95	5	99.0%
Lanthanum	NA	NA	NA	NA
Lead	<0.05	2.62	2.5	104.7%
Lithium	NA	NA	NA	NA
Magnesium	<1	104	100	103.8%
Manganese	<0.025	2.53	2.5	101.3%
Molybdenum	NA	NA	NA	NA
Nickel	<0.05	2.54	2.5	101.7%
Palladium	NA	NA	NA	NA
Phosphorus	NA	NA	NA	NA
Potassium	<0.5	91.5	100	91.5%
Selenium	<0.05	10.9	10	108.6%
Silicon	71.2	173	100	101.5%
Silver	<0.05	0.244	0.25	97.4%
Sodium	<0.5	107	100	107.2%
Strontium	NA	NA	NA	NA
Sulfur	NA	NA	NA	NA
Thallium	<0.1	10.8	10	108.3%
Thorium	NA	NA	NA	NA
Tin	NA	NA	NA	NA
Titanium	NA	NA	NA	NA
Tungsten	NA	NA	NA	NA
Uranium	542	633	100	91.1%
Vanadium	<0.05	2.56	2.5	102.4%
Yttrium	NA	NA	NA	NA
Zinc	<0.025	2.60	2.5	104.0%
Zirconium	NA	NA	NA	NA

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010005

Sample ID
U56-2A

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/11/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159346

Work Order: 19926

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.05	0.05
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.25	0.25
Cadmium	<0.025	0.025
Calcium	48.0	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<1.25	1.25
Lanthanum	<0.05	0.05
Lead	<0.05	0.05
Lithium	<0.025	0.025
Magnesium	<1	1
Manganese	<0.025	0.025
Molybdenum	0.094	0.025
Nickel	<0.05	0.05
Palladium	<0.05	0.05
Phosphorus	<0.25	0.25
Potassium	<0.5	0.5
Selenium	<0.05	0.05
Silicon	70.8	0.25
Silver	<0.05	0.05
Sodium	<0.5	0.5
Strontium	<0.025	0.025
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.25	0.25
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	540	0.5
Vanadium	<0.05	0.05
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.125	0.125

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010006

Sample ID
U56-2B

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/11/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159347

Work Order: 19926

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.05	0.05
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.25	0.25
Cadmium	<0.025	0.025
Calcium	48.7	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<1.25	1.25
Lanthanum	<0.05	0.05
Lead	<0.05	0.05
Lithium	<0.025	0.025
Magnesium	<1	1
Manganese	<0.025	0.025
Molybdenum	0.095	0.025
Nickel	<0.05	0.05
Palladium	<0.05	0.05
Phosphorus	<0.25	0.25
Potassium	<0.5	0.5
Selenium	<0.05	0.05
Silicon	71.0	0.25
Silver	<0.05	0.05
Sodium	<0.5	0.5
Strontium	<0.025	0.025
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.25	0.25
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	541	0.5
Vanadium	<0.05	0.05
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.125	0.125

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010007

Sample ID
U56-3A

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/11/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159348

Work Order: 19926

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.05	0.05
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.25	0.25
Cadmium	<0.025	0.025
Calcium	47.0	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<1.25	1.25
Lanthanum	<0.05	0.05
Lead	<0.05	0.05
Lithium	<0.025	0.025
Magnesium	<1	1
Manganese	<0.025	0.025
Molybdenum	0.099	0.025
Nickel	<0.05	0.05
Palladium	<0.05	0.05
Phosphorus	<0.25	0.25
Potassium	<0.5	0.5
Selenium	<0.05	0.05
Silicon	69.5	0.25
Silver	<0.05	0.05
Sodium	<0.5	0.5
Strontium	<0.025	0.025
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.25	0.25
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	528	0.5
Vanadium	<0.05	0.05
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.125	0.125

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010008

Sample ID
U56-3B

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/11/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159349

Work Order: 19926

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.05	0.05
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.25	0.25
Cadmium	<0.025	0.025
Calcium	47.6	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<1.25	1.25
Lanthanum	<0.05	0.05
Lead	<0.05	0.05
Lithium	<0.025	0.025
Magnesium	<1	1
Manganese	<0.025	0.025
Molybdenum	0.094	0.025
Nickel	<0.05	0.05
Palladium	<0.05	0.05
Phosphorus	<0.25	0.25
Potassium	<0.5	0.5
Selenium	<0.05	0.05
Silicon	69.5	0.25
Silver	<0.05	0.05
Sodium	<0.5	0.5
Strontium	<0.025	0.025
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.25	0.25
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	528	0.5
Vanadium	<0.05	0.05
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.125	0.125

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010009
Sample ID
U56-4

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/11/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159350

Work Order: 19926

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.05	0.05
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.25	0.25
Cadmium	<0.025	0.025
Calcium	51.2	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<1.25	1.25
Lanthanum	<0.05	0.05
Lead	<0.05	0.05
Lithium	<0.025	0.025
Magnesium	<1	1
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.05	0.05
Palladium	<0.05	0.05
Phosphorus	<0.25	0.25
Potassium	<0.5	0.5
Selenium	<0.05	0.05
Silicon	66.7	0.25
Silver	<0.05	0.05
Sodium	<0.5	0.5
Strontium	<0.025	0.025
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.25	0.25
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	471	0.5
Vanadium	<0.05	0.05
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.125	0.125

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010010

Sample ID
U56-5

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/11/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159351

Work Order: 19926

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.05	0.05
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.25	0.25
Cadmium	<0.025	0.025
Calcium	45.6	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<1.25	1.25
Lanthanum	<0.05	0.05
Lead	<0.05	0.05
Lithium	<0.025	0.025
Magnesium	<1	1
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.05	0.05
Palladium	<0.05	0.05
Phosphorus	<0.25	0.25
Potassium	<0.5	0.5
Selenium	<0.05	0.05
Silicon	62.7	0.25
Silver	<0.05	0.05
Sodium	0.637	0.5
Strontium	<0.025	0.025
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.25	0.25
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	519	0.5
Vanadium	<0.05	0.05
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.125	0.125

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010011

Sample ID
U56-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/11/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159352

Work Order: 19926

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.5	0.5
Antimony	<0.1	0.1
Arsenic	<0.05	0.05
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.25	0.25
Cadmium	<0.025	0.025
Calcium	40.7	0.5
Chromium	<0.05	0.05
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<1.25	1.25
Lanthanum	<0.05	0.05
Lead	<0.05	0.05
Lithium	<0.025	0.025
Magnesium	<1	1
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.05	0.05
Palladium	<0.05	0.05
Phosphorus	<0.25	0.25
Potassium	<0.5	0.5
Selenium	<0.05	0.05
Silicon	72.2	0.25
Silver	<0.05	0.05
Sodium	1.26	0.5
Strontium	<0.025	0.025
Sulfur	<0.25	0.25
Thallium	<0.1	0.1
Thorium	<0.25	0.25
Tin	<0.05	0.05
Titanium	<0.05	0.05
Tungsten	<0.1	0.1
Uranium	567	0.5
Vanadium	<0.05	0.05
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.125	0.125

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

LABORATORY CONTROL SAMPLE 010012

Sample ID
LCSW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: NA

Work Order: 19926

Analysis	Sample Result (mg/L)	True Value (mg/L)	Recovery
Aluminum	2.01	2.00	100.3%
Antimony	0.506	0.500	101.2%
Arsenic	2.05	2.00	102.7%
Barium	2.02	2.00	101.2%
Beryllium	0.049	0.050	99.0%
Bismuth	NA	NA	NA
Boron	NA	NA	NA
Cadmium	0.050	0.050	100.9%
Calcium	20.1	20	100.7%
Chromium	0.200	0.200	100.1%
Cobalt	0.503	0.500	100.5%
Copper	0.252	0.250	100.9%
Iron	0.975	1.00	97.5%
Lanthanum	NA	NA	NA
Lead	0.512	0.500	102.4%
Lithium	NA	NA	NA
Magnesium	20.3	20	101.3%
Manganese	0.500	0.500	99.9%
Molybdenum	NA	NA	NA
Nickel	0.499	0.500	99.7%
Palladium	NA	NA	NA
Phosphorus	NA	NA	NA
Potassium	17.5	20	87.3%
Selenium	2.13	2.00	106.6%
Silicon	2.00	2.00	100.0%
Silver	0.049	0.05	98.3%
Sodium	18.6	20	93.1%
Strontium	NA	NA	NA
Sulfur	NA	NA	NA
Thallium	2.13	2.00	106.6%
Thorium	NA	NA	NA
Tin	NA	NA	NA
Titanium	NA	NA	NA
Tungsten	NA	NA	NA
Uranium	1.82	2.00	90.8%
Vanadium	0.505	0.500	100.9%
Yttrium	NA	NA	NA
Zinc	0.510	0.500	102.1%
Zirconium	NA	NA	NA

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

BLANK SUMMARY

010013

Sample ID
PBW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: NA

Work Order: 19926

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.1	0.1
Antimony	<0.02	0.02
Arsenic	<0.01	0.01
Barium	<0.005	0.005
Beryllium	<0.005	0.005
Bismuth	<0.01	0.01
Boron	<0.05	0.05
Cadmium	<0.005	0.005
Calcium	<0.1	0.1
Chromium	<0.01	0.01
Cobalt	<0.005	0.005
Copper	<0.02	0.02
Iron	<0.25	0.25
Lanthanum	<0.01	0.01
Lead	<0.01	0.01
Lithium	<0.005	0.005
Magnesium	<0.2	0.2
Manganese	<0.005	0.005
Molybdenum	<0.005	0.005
Nickel	<0.01	0.01
Palladium	<0.01	0.01
Phosphorus	<0.05	0.05
Potassium	<0.1	0.1
Selenium	<0.01	0.01
Silicon	<0.05	0.05
Silver	<0.01	0.01
Sodium	<0.1	0.1
Strontium	<0.005	0.005
Sulfur	<0.05	0.05
Thallium	<0.02	0.02
Thorium	<0.05	0.05
Tin	<0.01	0.01
Titanium	<0.01	0.01
Tungsten	<0.02	0.02
Uranium	<0.1	0.1
Vanadium	<0.01	0.01
Yttrium	<0.005	0.005
Zinc	<0.005	0.005
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010014

Sample ID
UMA-5E

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/11/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159353

Work Order: 19926

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Bromide	<0.1	0.1
Chloride	690	0.1
Fluoride	<0.1	0.1
Nitrate-N	0.497	0.1
Nitrite-N	<0.2	0.2
Phosphate-P	<0.1	0.1
Sulfate	0.126	0.1

NO2 reported out of 1:2 dilution due to high Cl peak interference.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY

010015

Sample ID
UMA-5E

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/11/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159353

Work Order: 19926

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Bromide	<0.1	<0.1	0.00%
Chloride	690	694	0.58%
Fluoride	<0.1	<0.1	0.00%
Nitrate-N	0.497	0.503	1.20%
Nitrite-N	<0.2	<0.2	0.00%
Phosphate-P	<0.1	<0.1	0.00%
Sulfate	0.126	0.117	7.41%

NO2 reported out of 1:2 dilution due to high Cl peak interference.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY

010016

Sample ID
UMA-5E

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/11/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159353

Work Order: 19926

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Bromide	<0.1	3.52	4.00	88.0%
Chloride	690	898	200	104.0%
Fluoride	<0.1	1.00	1.00	100.2%
Nitrate-N	0.497	1.29	0.904	87.7%
Nitrite-N	<0.2	0.934	1.00	93.4%
Phosphate-P	<0.1	1.38	1.91	72.3%
Sulfate	0.126	3.88	4.00	93.9%

NO2 reported out of 1:2 dilution due to high Cl peak interference.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010017

Sample ID
UMA-5F

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/11/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159354

Work Order: 19926

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Bromide	<0.1	0.1
Chloride	692	0.1
Fluoride	<0.1	0.1
Nitrate-N	0.367	0.1
Nitrite-N	<0.2	0.2
Phosphate-P	<0.1	0.1
Sulfate	<0.1	0.1

NO2 reported out of 1:2 dilution due to high Cl peak interference.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

010018

SAMPLE ANALYSIS DATA SHEET

Sample ID
UMA-6E

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/11/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159355

Work Order: 19926

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Bromide	<0.1	0.1
Chloride	684	0.1
Fluoride	<0.1	0.1
Nitrate-N	0.186	0.1
Nitrite-N	<0.2	0.2
Phosphate-P	<0.1	0.1
Sulfate	<0.1	0.1

NO2 reported out of 1:2 dilution due to high Cl peak interference.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010019

Sample ID
UMA-6F

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/11/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159356

Work Order: 19926

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Bromide	<0.1	0.1
Chloride	704	0.1
Fluoride	<0.1	0.1
Nitrate-N	0.166	0.1
Nitrite-N	<0.2	0.2
Phosphate-P	<0.1	0.1
Sulfate	0.489	0.1

NO2 reported out of 1:2 dilution due to high Cl peak interference.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

010020

Sample ID
UMA-7E

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/11/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159357

Work Order: 19926

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Bromide	<0.1	0.1
Chloride	713	0.1
Fluoride	<0.1	0.1
Nitrate-N	0.118	0.1
Nitrite-N	<0.2	0.2
Phosphate-P	<0.1	0.1
Sulfate	0.118	0.1

NO2 reported out of 1:2 dilution due to high Cl peak interference.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET 010021

Sample ID
UMA-7F

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/11/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159358

Work Order: 19926

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Bromide	<0.1	0.1
Chloride	692	0.1
Fluoride	<0.1	0.1
Nitrate-N	0.146	0.1
Nitrite-N	<0.2	0.2
Phosphate-P	<0.1	0.1
Sulfate	<0.1	0.1

NO2 reported out of 1:2 dilution due to high Cl peak interference.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

LABORATORY CONTROL SAMPLE

010022

Sample ID
LCSW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: NA

Work Order: 19926

Analysis	Sample Result (mg/L)	True Value (mg/L)	Recovery
Bromide	388	400	96.9%
Chloride	196	200	98.1%
Fluoride	94.6	100	94.6%
Nitrate-N	88.1	90.4	97.4%
Nitrite-N	97.2	100	97.2%
Phosphate-P	192	191	100.7%
Sulfate	389	400	97.3%

NO2 reported out of 1:2 dilution due to high Cl peak interference.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

BLANK SUMMARY

010023

Sample ID
PBW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: NA

Work Order: 19926

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Bromide	<0.1	0.1
Chloride	<0.1	0.1
Fluoride	<0.1	0.1
Nitrate-N	<0.1	0.1
Nitrite-N	<0.2	0.2
Phosphate-P	<0.1	0.1
Sulfate	<0.1	0.1

NO2 reported out of 1:2 dilution due to high Cl peak interference.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
NUCLEAR PROJECT
CLIENT: DIV. 20
WORK ORDER: 19992
SDG: 159905
VTSR: APRIL 24, 2001
PROJECT#: 20.01402.561

FINAL REPORT

MEMORANDUM

TO: Jim Prikryl
Division 20

FROM: Jo Ann Boyd, Manager QAU, Division 01

RE: Project No.: 20.01402.561
Work Order #: 19992
Samples Received: April 24, 2001

Analysis of liquid samples for metals by ICP.
Raw data and nuclear safety documentation for this project are archived in Division 01.

DATE: June 28, 2001

Enclosed please find the sample results for the analysis referenced above.

If there are any questions, please feel free to contact me by voice mail at 522-2169 or by fax at 522-2021. I look forward to our continued analytical support of your projects.

Jo Ann Boyd

Manager QAU

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
UMA-5D

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159905

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	398	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	<0.5	0.5
Selenium	<0.025	0.025
Silicon	31.4	0.25
Silver	<0.025	0.025
Sodium	<0.25	0.25
Strontium	0.217	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	2.49	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY

Sample ID
UMA-5D

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159905

Work Order: 19992

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Aluminum	<0.25	<0.25	0.00%
Antimony	<0.05	<0.05	0.00%
Arsenic	<0.025	<0.025	0.00%
Barium	<0.025	<0.025	0.00%
Beryllium	<0.025	<0.025	0.00%
Bismuth	<0.05	<0.05	0.00%
Boron	<0.1	<0.1	0.00%
Cadmium	<0.025	<0.025	0.00%
Calcium	398	397	0.38%
Chromium	<0.025	<0.025	0.00%
Cobalt	<0.025	<0.025	0.00%
Copper	<0.025	<0.025	0.00%
Iron	<0.15	<0.15	0.00%
Lanthanum	<0.025	<0.025	0.00%
Lead	<0.025	<0.025	0.00%
Lithium	<0.025	<0.025	0.00%
Magnesium	<0.25	<0.25	0.00%
Manganese	<0.025	<0.025	0.00%
Molybdenum	<0.025	<0.025	0.00%
Nickel	<0.025	<0.025	0.00%
Palladium	<0.05	<0.05	0.00%
Phosphorus	<0.1	<0.1	0.00%
Potassium	<0.5	<0.5	0.00%
Selenium	<0.025	<0.025	0.00%
Silicon	31.4	31.0	1.08%
Silver	<0.025	<0.025	0.00%
Sodium	<0.25	<0.25	0.00%
Strontium	0.217	0.216	0.55%
Sulfur	<0.1	<0.1	0.00%
Thallium	<0.05	<0.05	0.00%
Thorium	<0.05	<0.05	0.00%
Tin	<0.025	<0.025	0.00%
Titanium	<0.025	<0.025	0.00%
Tungsten	<0.05	<0.05	0.00%
Uranium	2.49	2.41	3.27%
Vanadium	<0.025	<0.025	0.00%
Yttrium	<0.025	<0.025	0.00%
Zinc	<0.025	<0.025	0.00%
Zirconium	<0.025	<0.025	0.00%

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
UMA-6A

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159906

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	396	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	<0.5	0.5
Selenium	<0.025	0.025
Silicon	31.2	0.25
Silver	<0.025	0.025
Sodium	<0.25	0.25
Strontium	0.218	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.762	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY

Sample ID: UMA-6A

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159906

Work Order: 19992

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Aluminum	<0.25	10.1	10	100.8%
Antimony	<0.05	2.55	2.50	102.2%
Arsenic	<0.025	10.4	10	103.5%
Barium	<0.025	10.3	10	102.9%
Beryllium	<0.025	0.250	0.250	99.9%
Bismuth	NA	NA	NA	NA
Boron	NA	NA	NA	NA
Cadmium	<0.025	0.250	0.250	100.2%
Calcium	396	503	100	106.4%
Chromium	<0.025	1.00	1.00	100.4%
Cobalt	<0.025	2.51	2.50	100.4%
Copper	<0.025	1.29	1.25	103.6%
Iron	<0.15	4.93	5.00	98.7%
Lanthanum	NA	NA	NA	NA
Lead	<0.025	2.54	2.50	101.7%
Lithium	NA	NA	NA	NA
Magnesium	<0.25	108	100	108.2%
Manganese	<0.025	2.50	2.50	100.2%
Molybdenum	NA	NA	NA	NA
Nickel	<0.025	2.47	2.50	98.7%
Palladium	NA	NA	NA	NA
Phosphorus	NA	NA	NA	NA
Potassium	<0.5	103	100	102.6%
Selenium	<0.025	10.0	10	100.3%
Silicon	31.2	41.9	10	107.5%
Silver	<0.025	0.251	0.250	100.5%
Sodium	<0.25	104	100	103.9%
Strontium	NA	NA	NA	NA
Sulfur	NA	NA	NA	NA
Thallium	<0.05	10.8	10	107.7%
Thorium	NA	NA	NA	NA
Tin	NA	NA	NA	NA
Titanium	NA	NA	NA	NA
Tungsten	NA	NA	NA	NA
Vanadium	<0.025	2.51	2.50	100.6%
Yttrium	NA	NA	NA	NA
Zinc	<0.025	2.53	2.50	101.1%
Zirconium	NA	NA	NA	NA
Uranium	0.762	1.84	1.00	107.8%

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
UMA-6B

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159907

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	399	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	<0.5	0.5
Selenium	<0.025	0.025
Silicon	31.4	0.25
Silver	<0.025	0.025
Sodium	<0.25	0.25
Strontium	0.218	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.778	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
UMA-6C

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159908

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	401	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	<0.5	0.5
Selenium	<0.025	0.025
Silicon	31.1	0.25
Silver	<0.025	0.025
Sodium	<0.25	0.25
Strontium	0.220	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.250	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
UMA-6D

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159909

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	404	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	<0.5	0.5
Selenium	<0.025	0.025
Silicon	31.4	0.25
Silver	<0.025	0.025
Sodium	<0.25	0.25
Strontium	0.222	0.025
Sulfur	0.142	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.265	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	0.175	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
UMA-7A

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159910

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	403	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	<0.5	0.5
Selenium	<0.025	0.025
Silicon	31.5	0.25
Silver	<0.025	0.025
Sodium	<0.25	0.25
Strontium	0.221	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.0760	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	0.040	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
UMA-7B

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159911

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	402	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	<0.5	0.5
Selenium	<0.025	0.025
Silicon	31.3	0.25
Silver	<0.025	0.025
Sodium	0.280	0.25
Strontium	0.221	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.0778	0.0001
Vanadium	<0.025	0.025
Yttrium	0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
UMA-7C

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159912

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	400	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	<0.5	0.5
Selenium	<0.025	0.025
Silicon	31.3	0.25
Silver	<0.025	0.025
Sodium	<0.25	0.25
Strontium	0.220	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.0246	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
UMA-7D

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159913

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	404	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	<0.5	0.5
Selenium	<0.025	0.025
Silicon	31.5	0.25
Silver	<0.025	0.025
Sodium	<0.25	0.25
Strontium	0.221	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.0244	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	0.214	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
UMA-5C

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159914

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	401	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	<0.5	0.5
Selenium	<0.025	0.025
Silicon	31.3	0.25
Silver	<0.025	0.025
Sodium	<0.25	0.25
Strontium	0.217	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	2.33	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	0.129	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-4A-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159915

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	404	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	0.064	0.025
Lead	0.040	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	<0.5	0.5
Selenium	<0.025	0.025
Silicon	30.4	0.25
Silver	<0.025	0.025
Sodium	2.51	0.25
Strontium	<0.025	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	1.12	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	0.034	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-4A-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159916

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	469	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	0.080	0.025
Lead	0.043	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	<0.5	0.5
Selenium	<0.025	0.025
Silicon	30.2	0.25
Silver	<0.025	0.025
Sodium	0.300	0.25
Strontium	0.027	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.126	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	0.038	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-4A-3

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159917

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	384	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	0.060	0.025
Lead	0.036	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	<0.5	0.5
Selenium	<0.025	0.025
Silicon	32.6	0.25
Silver	<0.025	0.025
Sodium	0.718	0.25
Strontium	<0.025	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.558	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	0.076	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-4A-4

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159918

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	421	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	0.070	0.025
Lead	0.037	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	<0.5	0.5
Selenium	<0.025	0.025
Silicon	34.5	0.25
Silver	<0.025	0.025
Sodium	<0.25	0.25
Strontium	<0.025	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.234	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	0.032	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-4A-5

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159919

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	455	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	0.077	0.025
Lead	0.047	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	<0.5	0.5
Selenium	<0.025	0.025
Silicon	29.4	0.25
Silver	<0.025	0.025
Sodium	1.85	0.25
Strontium	0.026	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	2.40	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-4B-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159920

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	404	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	0.067	0.025
Lead	0.037	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	<0.5	0.5
Selenium	<0.025	0.025
Silicon	33.0	0.25
Silver	<0.025	0.025
Sodium	6.22	0.25
Strontium	<0.025	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.0127	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-4B-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159921

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	415	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	0.067	0.025
Lead	0.045	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	<0.5	0.5
Selenium	<0.025	0.025
Silicon	30.6	0.25
Silver	<0.025	0.025
Sodium	0.439	0.25
Strontium	<0.025	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.0039	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-4B-3

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159922

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	395	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	0.068	0.025
Lead	0.044	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	<0.5	0.5
Selenium	<0.025	0.025
Silicon	28.4	0.25
Silver	<0.025	0.025
Sodium	0.342	0.25
Strontium	<0.025	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.0605	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	0.027	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-4B-4

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159923

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	439	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	0.076	0.025
Lead	0.039	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	<0.5	0.5
Selenium	<0.025	0.025
Silicon	31.5	0.25
Silver	<0.025	0.025
Sodium	0.724	0.25
Strontium	0.026	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.0080	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-4B-5

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159924

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	461	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	0.080	0.025
Lead	0.048	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	<0.5	0.5
Selenium	<0.025	0.025
Silicon	35.1	0.25
Silver	<0.025	0.025
Sodium	1.26	0.25
Strontium	0.027	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.0243	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

LABORATORY CONTROL SAMPLE

Sample ID: LCSW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: NA

Work Order: 19992

Analysis	Sample Result (mg/L)	True Value (mg/L)	Recovery
Aluminum	2.00	2.00	100.1%
Antimony	0.510	0.500	102.0%
Arsenic	2.06	2.00	103.2%
Barium	2.07	2.00	103.3%
Beryllium	0.050	0.050	100.4%
Bismuth	NA	NA	NA
Boron	NA	NA	NA
Cadmium	0.051	0.050	102.0%
Calcium	22.0	20	109.8%
Chromium	0.203	0.200	101.7%
Cobalt	0.510	0.500	102.0%
Copper	0.256	0.250	102.4%
Iron	1.00	1.00	100.4%
Lanthanum	NA	NA	NA
Lead	0.516	0.500	103.3%
Lithium	NA	NA	NA
Magnesium	21.7	20	108.4%
Manganese	0.507	0.500	101.3%
Molybdenum	NA	NA	NA
Nickel	0.503	0.500	100.5%
Palladium	NA	NA	NA
Phosphorus	NA	NA	NA
Potassium	18.6	20	92.9%
Selenium	2.00	2.00	100.2%
Silicon	2.15	2.00	107.5%
Silver	0.050	0.050	100.9%
Sodium	19.6	20	98.0%
Strontium	NA	NA	NA
Sulfur	NA	NA	NA
Thallium	2.16	2.00	107.8%
Thorium	NA	NA	NA
Tin	NA	NA	NA
Titanium	NA	NA	NA
Tungsten	NA	NA	NA
Uranium	0.0109	0.010	109.0%
Vanadium	0.511	0.500	102.1%
Yttrium	NA	NA	NA
Zinc	0.519	0.500	103.8%
Zirconium	NA	NA	NA

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

BLANK SUMMARY

Sample ID
PBW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: NA

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.05	0.05
Antimony	<0.01	0.01
Arsenic	<0.005	0.005
Barium	<0.005	0.005
Beryllium	<0.005	0.005
Bismuth	<0.01	0.01
Boron	<0.02	0.02
Cadmium	<0.005	0.005
Calcium	<0.05	0.05
Chromium	<0.005	0.005
Cobalt	<0.005	0.005
Copper	<0.005	0.005
Iron	<0.03	0.03
Lanthanum	<0.005	0.005
Lead	<0.005	0.005
Lithium	<0.005	0.005
Magnesium	<0.05	0.05
Manganese	<0.005	0.005
Molybdenum	<0.005	0.005
Nickel	<0.005	0.005
Palladium	<0.01	0.01
Phosphorus	<0.02	0.02
Potassium	<0.1	0.1
Selenium	<0.005	0.005
Silicon	<0.05	0.05
Silver	<0.005	0.005
Sodium	<0.05	0.05
Strontium	<0.005	0.005
Sulfur	<0.02	0.02
Thallium	<0.01	0.01
Thorium	<0.01	0.01
Tin	<0.005	0.005
Titanium	<0.005	0.005
Tungsten	<0.01	0.01
Uranium	<0.0001	0.0001
Vanadium	<0.005	0.005
Yttrium	<0.005	0.005
Zinc	<0.005	0.005
Zirconium	<0.005	0.005

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-5C-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159925

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	389	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	6.65	0.5
Selenium	<0.025	0.025
Silicon	31.4	0.25
Silver	<0.025	0.025
Sodium	2.76	0.25
Strontium	0.210	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.158	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY

Sample ID
URSA-5C-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159925

Work Order: 19992

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Aluminum	<0.25	<0.25	0.00%
Antimony	<0.05	<0.05	0.00%
Arsenic	<0.025	<0.025	0.00%
Barium	<0.025	<0.025	0.00%
Beryllium	<0.025	<0.025	0.00%
Bismuth	<0.05	<0.05	0.00%
Boron	<0.1	<0.1	0.00%
Cadmium	<0.025	<0.025	0.00%
Calcium	389	387	0.36%
Chromium	<0.025	<0.025	0.00%
Cobalt	<0.025	<0.025	0.00%
Copper	<0.025	<0.025	0.00%
Iron	<0.15	<0.15	0.00%
Lanthanum	<0.025	<0.025	0.00%
Lead	<0.025	<0.025	0.00%
Lithium	<0.025	<0.025	0.00%
Magnesium	<0.25	<0.25	0.00%
Manganese	<0.025	<0.025	0.00%
Molybdenum	<0.025	<0.025	0.00%
Nickel	<0.025	<0.025	0.00%
Palladium	<0.05	<0.05	0.00%
Phosphorus	<0.1	<0.1	0.00%
Potassium	6.65	6.55	1.59%
Selenium	<0.025	<0.025	0.00%
Silicon	31.4	31.4	0.15%
Silver	<0.025	<0.025	0.00%
Sodium	2.76	2.75	0.58%
Strontium	0.210	0.210	0.31%
Sulfur	<0.1	<0.1	0.00%
Thallium	<0.05	<0.05	0.00%
Thorium	<0.05	<0.05	0.00%
Tin	<0.025	<0.025	0.00%
Titanium	<0.025	<0.025	0.00%
Tungsten	<0.05	<0.05	0.00%
Uranium	0.158	0.159	0.63%
Vanadium	<0.025	<0.025	0.00%
Yttrium	<0.025	<0.025	0.00%
Zinc	<0.025	<0.025	0.00%
Zirconium	<0.025	<0.025	0.00%

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-5C-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159926

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	391	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	4.51	0.5
Selenium	<0.025	0.025
Silicon	32.1	0.25
Silver	<0.025	0.025
Sodium	2.86	0.25
Strontium	0.213	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.249	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY

Sample ID
URSA-5C-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159926

Work Order: 19992

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Aluminum	<0.25	10.1	10	100.5%
Antimony	<0.05	2.53	2.50	101.3%
Arsenic	<0.025	10.4	10	103.9%
Barium	<0.025	10.3	10	102.6%
Beryllium	<0.025	0.248	0.250	99.1%
Bismuth	NA	NA	NA	NA
Boron	NA	NA	NA	NA
Cadmium	<0.025	0.251	0.250	100.4%
Calcium	391	486	100	94.5%
Chromium	<0.025	0.996	1.00	99.6%
Cobalt	<0.025	2.53	2.50	101.3%
Copper	<0.025	1.28	1.25	102.3%
Iron	<0.15	4.93	5.00	98.5%
Lanthanum	NA	NA	NA	NA
Lead	<0.025	2.54	2.50	101.5%
Lithium	NA	NA	NA	NA
Magnesium	<0.25	97.5	100	97.5%
Manganese	<0.025	2.51	2.50	100.4%
Molybdenum	NA	NA	NA	NA
Nickel	<0.025	2.51	2.50	100.4%
Palladium	NA	NA	NA	NA
Phosphorus	NA	NA	NA	NA
Potassium	4.51	94.3	100	89.8%
Selenium	<0.025	9.92	10	99.2%
Silicon	32.1	42.6	10	104.7%
Silver	<0.025	0.253	0.250	101.0%
Sodium	2.86	92.8	100	90.0%
Strontium	NA	NA	NA	NA
Sulfur	NA	NA	NA	NA
Thallium	<0.05	10.7	10	107.3%
Thorium	NA	NA	NA	NA
Tin	NA	NA	NA	NA
Titanium	NA	NA	NA	NA
Tungsten	NA	NA	NA	NA
Uranium	0.249	0.360	0.100	111.0%
Vanadium	<0.025	2.59	2.50	103.6%
Yttrium	NA	NA	NA	NA
Zinc	<0.025	2.56	2.50	102.6%
Zirconium	NA	NA	NA	NA

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-5C-3

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159927

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	403	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	4.10	0.5
Selenium	<0.025	0.025
Silicon	33.5	0.25
Silver	<0.025	0.025
Sodium	2.96	0.25
Strontium	0.219	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	1.44	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-5C-4

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159928

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	409	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	3.81	0.5
Selenium	<0.025	0.025
Silicon	34.3	0.25
Silver	<0.025	0.025
Sodium	2.96	0.25
Strontium	0.222	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.0698	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-5C-5

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159929

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	410	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	5.46	0.5
Selenium	<0.025	0.025
Silicon	34.8	0.25
Silver	<0.025	0.025
Sodium	3.05	0.25
Strontium	0.223	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.773	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-5C-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159930

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	422	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	0.028	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	4.99	0.5
Selenium	<0.025	0.025
Silicon	36.1	0.25
Silver	<0.025	0.025
Sodium	3.12	0.25
Strontium	0.229	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.455	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-5C-7

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159931

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	429	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	2.06	0.5
Selenium	<0.025	0.025
Silicon	37.0	0.25
Silver	<0.025	0.025
Sodium	3.13	0.25
Strontium	0.233	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.516	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-5D-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159932

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	424	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	2.37	0.5
Selenium	<0.025	0.025
Silicon	36.5	0.25
Silver	<0.025	0.025
Sodium	3.01	0.25
Strontium	0.231	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.410	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-5D-7

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159933

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	431	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	3.58	0.5
Selenium	<0.025	0.025
Silicon	37.4	0.25
Silver	<0.025	0.025
Sodium	3.07	0.25
Strontium	0.235	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.501	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-6A-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159934

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	388	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	4.73	0.5
Selenium	<0.025	0.025
Silicon	31.5	0.25
Silver	<0.025	0.025
Sodium	2.70	0.25
Strontium	0.213	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.210	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-6A-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159935

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	393	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	4.24	0.5
Selenium	<0.025	0.025
Silicon	32.5	0.25
Silver	<0.025	0.025
Sodium	2.77	0.25
Strontium	0.215	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.600	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-6A-3

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159936

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	400	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	6.43	0.5
Selenium	<0.025	0.025
Silicon	33.3	0.25
Silver	<0.025	0.025
Sodium	2.78	0.25
Strontium	0.219	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.278	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-6A-4

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159937

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	411	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	5.74	0.5
Selenium	<0.025	0.025
Silicon	34.8	0.25
Silver	<0.025	0.025
Sodium	3.02	0.25
Strontium	0.227	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.586	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-6A-5

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159938

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	417	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	5.29	0.5
Selenium	<0.025	0.025
Silicon	35.6	0.25
Silver	<0.025	0.025
Sodium	3.00	0.25
Strontium	0.228	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.524	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-6A-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159939

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	424	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.030	0.025
Nickel	0.026	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	4.04	0.5
Selenium	<0.025	0.025
Silicon	36.5	0.25
Silver	<0.025	0.025
Sodium	3.03	0.25
Strontium	0.232	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.201	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-6A-7

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159940

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	468	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.041	0.025
Nickel	0.028	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	14.8	0.5
Selenium	<0.025	0.025
Silicon	40.7	0.25
Silver	<0.025	0.025
Sodium	3.42	0.25
Strontium	0.256	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.402	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-6B-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159941

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	458	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.031	0.025
Nickel	0.026	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	3.15	0.5
Selenium	<0.025	0.025
Silicon	38.9	0.25
Silver	<0.025	0.025
Sodium	3.77	0.25
Strontium	0.251	0.025
Sulfur	0.135	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.197	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-6B-7

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159942

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	468	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	0.041	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.039	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	7.45	0.5
Selenium	<0.025	0.025
Silicon	39.7	0.25
Silver	<0.025	0.025
Sodium	3.42	0.25
Strontium	0.256	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.218	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-6C-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159943

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	395	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	7.11	0.5
Selenium	<0.025	0.025
Silicon	31.8	0.25
Silver	<0.025	0.025
Sodium	2.73	0.25
Strontium	0.215	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.120	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-6C-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159944

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	408	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.025	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	6.89	0.5
Selenium	<0.025	0.025
Silicon	33.1	0.25
Silver	<0.025	0.025
Sodium	2.83	0.25
Strontium	0.222	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.0800	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

LABORATORY CONTROL SAMPLE

Sample ID: LCSW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: NA

Work Order: 19992

Analysis	Sample Result (mg/L)	True Value (mg/L)	Recovery
Aluminum	2.02	2.00	100.8%
Antimony	0.510	0.500	102.0%
Arsenic	2.09	2.00	104.5%
Barium	2.06	2.00	103.0%
Beryllium	0.051	0.050	101.4%
Bismuth	NA	NA	NA
Boron	NA	NA	NA
Cadmium	0.052	0.050	104.2%
Calcium	22.0	20	110.2%
Chromium	0.205	0.200	102.3%
Cobalt	0.516	0.500	103.2%
Copper	0.254	0.250	101.8%
Iron	1.00	1.00	100.3%
Lanthanum	NA	NA	NA
Lead	0.514	0.500	102.9%
Lithium	NA	NA	NA
Magnesium	21.8	20	109.0%
Manganese	0.511	0.500	102.2%
Molybdenum	NA	NA	NA
Nickel	0.508	0.500	101.5%
Palladium	NA	NA	NA
Phosphorus	NA	NA	NA
Potassium	18.6	20	92.8%
Selenium	1.99	2.00	99.3%
Silicon	2.14	2.00	107.2%
Silver	0.051	0.050	101.6%
Sodium	19.7	20	98.3%
Strontium	NA	NA	NA
Sulfur	NA	NA	NA
Thallium	2.17	2.00	108.7%
Thorium	NA	NA	NA
Tin	NA	NA	NA
Titanium	NA	NA	NA
Tungsten	NA	NA	NA
Uranium	0.0103	0.010	103.0%
Vanadium	0.518	0.500	103.5%
Yttrium	NA	NA	NA
Zinc	0.530	0.500	105.9%
Zirconium	NA	NA	NA

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

BLANK SUMMARY

Sample ID: PBW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: NA

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.05	0.05
Antimony	<0.01	0.01
Arsenic	<0.005	0.005
Barium	<0.005	0.005
Beryllium	<0.005	0.005
Bismuth	<0.01	0.01
Boron	<0.02	0.02
Cadmium	<0.005	0.005
Calcium	<0.05	0.05
Chromium	<0.005	0.005
Cobalt	<0.005	0.005
Copper	<0.005	0.005
Iron	<0.03	0.03
Lanthanum	<0.005	0.005
Lead	<0.005	0.005
Lithium	<0.005	0.005
Magnesium	<0.05	0.05
Manganese	<0.005	0.005
Molybdenum	<0.005	0.005
Nickel	<0.005	0.005
Palladium	<0.01	0.01
Phosphorus	<0.02	0.02
Potassium	<0.1	0.1
Selenium	<0.005	0.005
Silicon	<0.05	0.05
Silver	<0.005	0.005
Sodium	<0.05	0.05
Strontium	<0.005	0.005
Sulfur	<0.02	0.02
Thallium	<0.01	0.01
Thorium	<0.01	0.01
Tin	<0.005	0.005
Titanium	<0.005	0.005
Tungsten	<0.01	0.01
Uranium	<0.0001	0.0001
Vanadium	<0.005	0.005
Yttrium	<0.005	0.005
Zinc	<0.005	0.005
Zirconium	<0.005	0.005

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-6C-3

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159945

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	427	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.067	0.025
Nickel	0.028	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	8.04	0.5
Selenium	<0.025	0.025
Silicon	34.4	0.25
Silver	<0.025	0.025
Sodium	3.33	0.25
Strontium	0.231	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.183	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY

Sample ID: URSA-6C-3

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159945

Work Order: 19992

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Aluminum	<0.25	<0.25	0.00%
Antimony	<0.05	<0.05	0.00%
Arsenic	<0.025	<0.025	0.00%
Barium	<0.025	<0.025	0.00%
Beryllium	<0.025	<0.025	0.00%
Bismuth	<0.05	<0.05	0.00%
Boron	<0.1	<0.1	0.00%
Cadmium	<0.025	<0.025	0.00%
Calcium	427	429	0.41%
Chromium	<0.025	<0.025	0.00%
Cobalt	<0.025	<0.025	0.00%
Copper	<0.025	<0.025	0.00%
Iron	<0.15	<0.15	0.00%
Lanthanum	<0.025	<0.025	0.00%
Lead	<0.025	<0.025	0.00%
Lithium	<0.025	<0.025	0.00%
Magnesium	<0.25	<0.25	0.00%
Manganese	<0.025	<0.025	0.00%
Molybdenum	0.067	0.063	6.00%
Nickel	0.028	0.026	6.42%
Palladium	<0.05	<0.05	0.00%
Phosphorus	<0.1	<0.1	0.00%
Potassium	8.04	8.08	0.44%
Selenium	<0.025	<0.025	0.00%
Silicon	34.4	34.5	0.20%
Silver	<0.025	<0.025	0.00%
Sodium	3.33	3.32	0.18%
Strontium	0.231	0.231	0.15%
Sulfur	<0.1	<0.1	0.00%
Thallium	<0.05	<0.05	0.00%
Thorium	<0.05	<0.05	0.00%
Tin	<0.025	<0.025	0.00%
Titanium	<0.025	<0.025	0.00%
Tungsten	<0.05	<0.05	0.00%
Uranium	0.183	0.183	0.00%
Vanadium	<0.025	<0.025	0.00%
Yttrium	<0.025	<0.025	0.00%
Zinc	<0.025	<0.025	0.00%
Zirconium	<0.025	<0.025	0.00%

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-6C-4

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159946

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	439	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.146	0.025
Nickel	0.028	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	13.7	0.5
Selenium	<0.025	0.025
Silicon	36.0	0.25
Silver	<0.025	0.025
Sodium	3.44	0.25
Strontium	0.237	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.320	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY

Sample ID: URSA-6C-4

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159946

Work Order: 19992

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Aluminum	<0.25	10.2	10	102.5%
Antimony	<0.05	2.59	2.50	103.7%
Arsenic	<0.025	10.5	10	105.1%
Barium	<0.025	10.2	10	102.3%
Beryllium	<0.025	0.256	0.25	102.5%
Bismuth	NA	NA	NA	NA
Boron	NA	NA	NA	NA
Cadmium	<0.025	0.256	0.25	102.4%
Calcium	439	538	100	99.6%
Chromium	<0.025	1.02	1.00	101.9%
Cobalt	<0.025	2.53	2.50	101.2%
Copper	<0.025	1.29	1.25	103.3%
Iron	<0.15	5.01	5.00	100.1%
Lanthanum	NA	NA	NA	NA
Lead	<0.025	2.64	2.5	105.4%
Lithium	NA	NA	NA	NA
Magnesium	<0.25	99.3	100	99.3%
Manganese	<0.025	2.53	2.5	101.0%
Molybdenum	NA	NA	NA	NA
Nickel	0.028	2.51	2.5	99.2%
Palladium	NA	NA	NA	NA
Phosphorus	NA	NA	NA	NA
Potassium	13.7	110	100	96.1%
Selenium	<0.025	10.4	10	104.0%
Silicon	36.0	46.1	10	101.1%
Silver	<0.025	0.259	0.25	103.6%
Sodium	3.44	97.3	100	93.8%
Strontium	NA	NA	NA	NA
Sulfur	NA	NA	NA	NA
Thallium	<0.05	10.9	10	109.5%
Thorium	NA	NA	NA	NA
Tin	NA	NA	NA	NA
Titanium	NA	NA	NA	NA
Tungsten	NA	NA	NA	NA
Uranium	0.320	1.26	1.00	94.0%
Vanadium	<0.025	2.52	2.50	100.6%
Yttrium	NA	NA	NA	NA
Zinc	<0.025	2.61	2.50	104.2%
Zirconium	NA	NA	NA	NA

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-6C-5

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159947

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	449	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	0.040	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.185	0.025
Nickel	0.027	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	19.9	0.5
Selenium	<0.025	0.025
Silicon	37.6	0.25
Silver	<0.025	0.025
Sodium	3.57	0.25
Strontium	0.241	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.329	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-6C-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159948

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	455	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.201	0.025
Nickel	0.028	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	23.9	0.5
Selenium	<0.025	0.025
Silicon	38.5	0.25
Silver	<0.025	0.025
Sodium	3.60	0.25
Strontium	0.243	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.705	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-6C-7

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159949

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	473	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	0.134	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.219	0.025
Nickel	0.035	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	26.7	0.5
Selenium	<0.025	0.025
Silicon	41.1	0.25
Silver	<0.025	0.025
Sodium	3.89	0.25
Strontium	0.254	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	4.85	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-6D-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159950

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	445	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.196	0.025
Nickel	0.027	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	9.33	0.5
Selenium	<0.025	0.025
Silicon	38.7	0.25
Silver	<0.025	0.025
Sodium	3.50	0.25
Strontium	0.239	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	1.85	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-6D-7

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159951

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	451	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.205	0.025
Nickel	0.030	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	10.9	0.5
Selenium	<0.025	0.025
Silicon	39.1	0.25
Silver	<0.025	0.025
Sodium	3.46	0.25
Strontium	0.240	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.322	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-7A-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159952

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	431	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	0.026	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	5.7	0.5
Selenium	<0.025	0.025
Silicon	35.1	0.25
Silver	<0.025	0.025
Sodium	3.01	0.25
Strontium	0.239	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.264	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-7A-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159953

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	410	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	0.027	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	7.01	0.5
Selenium	<0.025	0.025
Silicon	32.8	0.25
Silver	<0.025	0.025
Sodium	3.23	0.25
Strontium	0.222	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.777	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-7A-3

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159954

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	419	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.054	0.025
Nickel	0.027	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	5.61	0.5
Selenium	<0.025	0.025
Silicon	33.8	0.25
Silver	<0.025	0.025
Sodium	3.32	0.25
Strontium	0.225	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.212	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	0.180	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-7A-4

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159955

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	423	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.136	0.025
Nickel	0.028	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	13.4	0.5
Selenium	<0.025	0.025
Silicon	35.2	0.25
Silver	<0.025	0.025
Sodium	3.43	0.25
Strontium	0.228	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.210	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-7A-5

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159956

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	435	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.184	0.025
Nickel	0.032	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	12.6	0.5
Selenium	<0.025	0.025
Silicon	37.0	0.25
Silver	<0.025	0.025
Sodium	3.44	0.25
Strontium	0.233	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.279	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-7A-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159957

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	441	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	0.029	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.208	0.025
Nickel	0.030	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	11.0	0.5
Selenium	<0.025	0.025
Silicon	38.1	0.25
Silver	<0.025	0.025
Sodium	3.41	0.25
Strontium	0.234	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	2.11	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-7A-7

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159958

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	446	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.220	0.025
Nickel	0.026	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	10.9	0.5
Selenium	<0.025	0.025
Silicon	38.7	0.25
Silver	<0.025	0.025
Sodium	3.58	0.25
Strontium	0.239	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.207	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-7B-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159959

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	442	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.209	0.025
Nickel	0.029	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	12.1	0.5
Selenium	<0.025	0.025
Silicon	37.9	0.25
Silver	<0.025	0.025
Sodium	3.49	0.25
Strontium	0.238	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.245	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-7B-7

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159960

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	453	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.224	0.025
Nickel	0.031	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	9.85	0.5
Selenium	<0.025	0.025
Silicon	38.8	0.25
Silver	<0.025	0.025
Sodium	3.53	0.25
Strontium	0.243	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.220	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-7C-1

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159961

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	407	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	0.027	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	4.24	0.5
Selenium	<0.025	0.025
Silicon	31.8	0.25
Silver	<0.025	0.025
Sodium	3.20	0.25
Strontium	0.220	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.0667	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-7C-2

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159962

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	409	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	0.028	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	9.05	0.5
Selenium	<0.025	0.025
Silicon	32.4	0.25
Silver	<0.025	0.025
Sodium	3.26	0.25
Strontium	0.220	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.113	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-7C-3

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159963

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	429	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.063	0.025
Nickel	0.029	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	6.76	0.5
Selenium	<0.025	0.025
Silicon	34.1	0.25
Silver	<0.025	0.025
Sodium	3.30	0.25
Strontium	0.229	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.557	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-7C-4

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159964

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	438	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.128	0.025
Nickel	0.027	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	9.24	0.5
Selenium	<0.025	0.025
Silicon	35.4	0.25
Silver	<0.025	0.025
Sodium	3.46	0.25
Strontium	0.234	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.184	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

LABORATORY CONTROL SAMPLE

Sample ID
LCSW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: NA

Work Order: 19992

Analysis	Sample Result (mg/L)	True Value (mg/L)	Recovery
Aluminum	1.98	2.00	99.0%
Antimony	0.507	0.500	101.4%
Arsenic	2.06	2.00	103.0%
Barium	2.03	2.00	101.5%
Beryllium	0.050	0.050	100.6%
Bismuth	NA	NA	NA
Boron	NA	NA	NA
Cadmium	0.051	0.050	101.8%
Calcium	20.3	20	101.5%
Chromium	0.203	0.200	101.3%
Cobalt	0.505	0.500	100.9%
Copper	0.251	0.250	100.5%
Iron	1.00	1.00	100.0%
Lanthanum	NA	NA	NA
Lead	0.515	0.500	103.1%
Lithium	NA	NA	NA
Magnesium	19.9	20	99.7%
Manganese	0.502	0.500	100.5%
Molybdenum	NA	NA	NA
Nickel	0.502	0.500	100.3%
Palladium	NA	NA	NA
Phosphorus	NA	NA	NA
Potassium	16.7	20	83.7%
Selenium	1.99	2.00	99.5%
Silicon	2.05	2.00	102.7%
Silver	0.050	0.050	99.9%
Sodium	17.5	20	87.6%
Strontium	NA	NA	NA
Sulfur	NA	NA	NA
Thallium	2.15	2.00	107.5%
Thorium	NA	NA	NA
Tin	NA	NA	NA
Titanium	NA	NA	NA
Tungsten	NA	NA	NA
Uranium	0.0098	0.010	98.0%
Vanadium	0.506	0.500	101.2%
Yttrium	NA	NA	NA
Zinc	0.521	0.500	104.3%
Zirconium	NA	NA	NA

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

BLANK SUMMARY

Sample ID
PBW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: NA

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.05	0.05
Antimony	<0.01	0.01
Arsenic	<0.005	0.005
Barium	<0.005	0.005
Beryllium	<0.005	0.005
Bismuth	<0.01	0.01
Boron	<0.02	0.02
Cadmium	<0.005	0.005
Calcium	<0.05	0.05
Chromium	<0.005	0.005
Cobalt	<0.005	0.005
Copper	<0.005	0.005
Iron	<0.03	0.03
Lanthanum	<0.005	0.005
Lead	<0.005	0.005
Lithium	<0.005	0.005
Magnesium	<0.05	0.05
Manganese	<0.005	0.005
Molybdenum	<0.005	0.005
Nickel	<0.005	0.005
Palladium	<0.01	0.01
Phosphorus	<0.02	0.02
Potassium	<0.1	0.1
Selenium	<0.005	0.005
Silicon	<0.05	0.05
Silver	<0.005	0.005
Sodium	<0.05	0.05
Strontium	<0.005	0.005
Sulfur	<0.02	0.02
Thallium	<0.01	0.01
Thorium	<0.01	0.01
Tin	<0.005	0.005
Titanium	<0.005	0.005
Tungsten	<0.01	0.01
Uranium	<0.0001	0.0001
Vanadium	<0.005	0.005
Yttrium	<0.005	0.005
Zinc	<0.005	0.005
Zirconium	<0.005	0.005

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-7C-5

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159965

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	428	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.173	0.025
Nickel	0.029	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	10.6	0.5
Selenium	<0.025	0.025
Silicon	37.2	0.25
Silver	<0.025	0.025
Sodium	3.30	0.25
Strontium	0.235	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.454	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY

Sample ID
URSA-7C-5

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159965

Work Order: 19992

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Aluminum	<0.25	<0.25	0.00%
Antimony	<0.05	<0.05	0.00%
Arsenic	<0.025	<0.025	0.00%
Barium	<0.025	<0.025	0.00%
Beryllium	<0.025	<0.025	0.00%
Bismuth	<0.05	<0.05	0.00%
Boron	<0.1	<0.1	0.00%
Cadmium	<0.025	<0.025	0.00%
Calcium	428	427	0.22%
Chromium	<0.025	<0.025	0.00%
Cobalt	<0.025	<0.025	0.00%
Copper	<0.025	<0.025	0.00%
Iron	<0.15	<0.15	0.00%
Lanthanum	<0.025	<0.025	0.00%
Lead	<0.025	<0.025	0.00%
Lithium	<0.025	<0.025	0.00%
Magnesium	<0.25	<0.25	0.00%
Manganese	<0.025	<0.025	0.00%
Molybdenum	0.173	0.171	1.28%
Nickel	0.029	0.033	12.58%
Palladium	<0.05	<0.05	0.00%
Phosphorus	<0.1	<0.1	0.00%
Potassium	10.6	10.5	0.62%
Selenium	<0.025	<0.025	0.00%
Silicon	37.2	37.1	0.14%
Silver	<0.025	<0.025	0.00%
Sodium	3.30	3.32	0.57%
Strontium	0.235	0.236	0.11%
Sulfur	<0.1	<0.1	0.00%
Thallium	<0.05	<0.05	0.00%
Thorium	<0.05	<0.05	0.00%
Tin	<0.025	<0.025	0.00%
Titanium	<0.025	<0.025	0.00%
Tungsten	<0.05	<0.05	0.00%
Uranium	0.454	0.451	0.66%
Vanadium	<0.025	<0.025	0.00%
Yttrium	<0.025	<0.025	0.00%
Zinc	<0.025	<0.025	0.00%
Zirconium	<0.025	<0.025	0.00%

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-7C-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159966

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	429	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.200	0.025
Nickel	0.026	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	8.24	0.5
Selenium	<0.025	0.025
Silicon	38.0	0.25
Silver	<0.025	0.025
Sodium	3.30	0.25
Strontium	0.236	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.504	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY

Sample ID
URSA-7C-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159966

Work Order: 19992

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Aluminum	<0.25	9.84	10	98.4%
Antimony	<0.05	2.54	2.50	101.5%
Arsenic	<0.025	10.2	10	102.4%
Barium	<0.025	10.1	10	101.5%
Beryllium	<0.025	0.243	0.250	97.2%
Bismuth	NA	NA	NA	NA
Boron	NA	NA	NA	NA
Cadmium	<0.025	0.247	0.250	98.9%
Calcium	429	520	100	91.5%
Chromium	<0.025	0.985	1.00	98.5%
Cobalt	<0.025	2.49	2.50	99.6%
Copper	<0.025	1.25	1.25	100.1%
Iron	<0.15	4.90	5.00	98.0%
Lanthanum	NA	NA	NA	NA
Lead	<0.025	2.53	2.50	101.4%
Lithium	NA	NA	NA	NA
Magnesium	<0.25	97.4	100	97.4%
Manganese	<0.025	2.46	2.50	98.4%
Molybdenum	NA	NA	NA	NA
Nickel	0.026	2.50	2.50	99.1%
Palladium	NA	NA	NA	NA
Phosphorus	NA	NA	NA	NA
Potassium	8.24	97.4	100	89.2%
Selenium	<0.025	9.89	10	98.9%
Silicon	38.0	48.2	10	102.7%
Silver	<0.025	0.250	0.250	100.1%
Sodium	3.30	93.2	100	89.9%
Strontium	NA	NA	NA	NA
Sulfur	NA	NA	NA	NA
Thallium	<0.05	10.6	10	106.5%
Thorium	NA	NA	NA	NA
Tin	NA	NA	NA	NA
Titanium	NA	NA	NA	NA
Tungsten	NA	NA	NA	NA
Uranium	0.504	1.62	1.00	111.6%
Vanadium	<0.025	2.60	2.50	103.8%
Yttrium	NA	NA	NA	NA
Zinc	<0.025	2.51	2.50	100.3%
Zirconium	NA	NA	NA	NA

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-7C-7

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159967

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	436	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.213	0.025
Nickel	0.026	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	9.24	0.5
Selenium	<0.025	0.025
Silicon	39.0	0.25
Silver	<0.025	0.025
Sodium	3.44	0.25
Strontium	0.242	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.646	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-7D-6

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159968

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	420	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.196	0.025
Nickel	0.030	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	9.12	0.5
Selenium	<0.025	0.025
Silicon	37.4	0.25
Silver	<0.025	0.025
Sodium	3.19	0.25
Strontium	0.234	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.384	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
URSA-7D-7

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/24/01

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 159969

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.25	0.25
Antimony	<0.05	0.05
Arsenic	<0.025	0.025
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.05	0.05
Boron	<0.1	0.1
Cadmium	<0.025	0.025
Calcium	428	0.25
Chromium	<0.025	0.025
Cobalt	<0.025	0.025
Copper	<0.025	0.025
Iron	<0.15	0.15
Lanthanum	<0.025	0.025
Lead	<0.025	0.025
Lithium	<0.025	0.025
Magnesium	<0.25	0.25
Manganese	<0.025	0.025
Molybdenum	0.212	0.025
Nickel	0.029	0.025
Palladium	<0.05	0.05
Phosphorus	<0.1	0.1
Potassium	9.57	0.5
Selenium	<0.025	0.025
Silicon	38.3	0.25
Silver	<0.025	0.025
Sodium	3.16	0.25
Strontium	0.237	0.025
Sulfur	<0.1	0.1
Thallium	<0.05	0.05
Thorium	<0.05	0.05
Tin	<0.025	0.025
Titanium	<0.025	0.025
Tungsten	<0.05	0.05
Uranium	0.824	0.0001
Vanadium	<0.025	0.025
Yttrium	<0.025	0.025
Zinc	<0.025	0.025
Zirconium	<0.025	0.025

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

LABORATORY CONTROL SAMPLE

Sample ID
LCSW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: NA

Work Order: 19992

Analysis	Sample Result (mg/L)	True Value (mg/L)	Recovery
Aluminum	1.95	2.00	97.3%
Antimony	0.498	0.500	99.7%
Arsenic	2.04	2.00	101.9%
Barium	2.01	2.00	100.5%
Beryllium	0.049	0.050	98.9%
Bismuth	NA	NA	NA
Boron	NA	NA	NA
Cadmium	0.051	0.050	101.3%
Calcium	19.9	20	99.7%
Chromium	0.200	0.200	100.2%
Cobalt	0.501	0.500	100.2%
Copper	0.248	0.250	99.3%
Iron	0.991	1.00	99.1%
Lanthanum	NA	NA	NA
Lead	0.507	0.500	101.5%
Lithium	NA	NA	NA
Magnesium	19.7	20	98.4%
Manganese	0.497	0.500	99.4%
Molybdenum	NA	NA	NA
Nickel	0.497	0.500	99.4%
Palladium	NA	NA	NA
Phosphorus	NA	NA	NA
Potassium	16.4	20	82.0%
Selenium	1.97	2.00	98.5%
Silicon	2.03	2.00	101.7%
Silver	0.048	0.050	96.1%
Sodium	17.5	20	87.4%
Strontium	NA	NA	NA
Sulfur	NA	NA	NA
Thallium	2.13	2.00	106.4%
Thorium	NA	NA	NA
Tin	NA	NA	NA
Titanium	NA	NA	NA
Tungsten	NA	NA	NA
Uranium	0.0097	0.010	97.0%
Vanadium	0.505	0.500	101.0%
Yttrium	NA	NA	NA
Zinc	0.515	0.500	103.0%
Zirconium	NA	NA	NA

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

BLANK SUMMARY

Sample ID: PBW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: NA

Work Order: 19992

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.05	0.05
Antimony	<0.01	0.01
Arsenic	<0.005	0.005
Barium	<0.005	0.005
Beryllium	<0.005	0.005
Bismuth	<0.01	0.01
Boron	<0.02	0.02
Cadmium	<0.005	0.005
Calcium	<0.05	0.05
Chromium	<0.005	0.005
Cobalt	<0.005	0.005
Copper	<0.005	0.005
Iron	<0.03	0.03
Lanthanum	<0.005	0.005
Lead	<0.005	0.005
Lithium	<0.005	0.005
Magnesium	<0.05	0.05
Manganese	<0.005	0.005
Molybdenum	<0.005	0.005
Nickel	<0.005	0.005
Palladium	<0.01	0.01
Phosphorus	<0.02	0.02
Potassium	<0.1	0.1
Selenium	<0.005	0.005
Silicon	<0.05	0.05
Silver	<0.005	0.005
Sodium	<0.05	0.05
Strontium	<0.005	0.005
Sulfur	<0.02	0.02
Thallium	<0.01	0.01
Thorium	<0.01	0.01
Tin	<0.005	0.005
Titanium	<0.005	0.005
Tungsten	<0.01	0.01
Uranium	<0.0001	0.0001
Vanadium	<0.005	0.005
Yttrium	<0.005	0.005
Zinc	<0.005	0.005
Zirconium	<0.005	0.005

This report may not be reproduced except in its entirety without the written approval of SwRI.

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Client Name/Address: Jim Pikryl
CNWRA / Div 20
Bldg 57

Requested Turnaround:
- ☐ 1 Week
- ☒ 2 Weeks (Normal)
- ☐ 3 Weeks
- ☐ Other: _____

Client Purchase Order/Other ID:

Site/Zone ID:

SwRI Contact:

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time (mm/dd/yy)	Matrix Type	Sample Type	# of Containers	ICP - major and minor actinides, Uranium isotopes
U0A	4/18/02		W	DM	1	✓
U0B	"		"	"	1	✓
U1168A	"		"	"	1	✓
U336A	"		"	"	1	✓
U144B	"		"	"	1	✓
U312B	"		"	"	1	✓

REMARKS

Preservation
- **a** = HCl to pH <2
- **b** = HNO_3 to pH <2
- **c** = H_2SO_4 to pH <2
- **d** = NaOH to pH >12
- **e** = Other (Specify)

Project is nuclear safety related
10 CFR 50 Part 21
Appendix B

Quality Assurance
Jim Pikryl x5607
jpikryl@swri.edu

Matrix Types: **A** - Air; **P** - Product; **S** - Soil; **T** - Tissue; **W** - Water

Sample Types: **DM** - Dissolved Metals; **ER** - Equipment Rinsate; **FB** - Field Blank; **MSD** - Matrix Spike Duplicate; **MS** - Matrix Spike; **TB** - Trip Blank; **TM** - Total Metals; **ES** - Environmental Samples; **FD** - Field Duplicate

Relinquished by Sampler (Signature): James D. Pikryl 4/18/02

Received by (Signature):

Relinquished by (Signature):

Received by (Signature)

Relinquished by (Signature)

Comments:

SwRI Project No. 20.01402.[illegible]561

Received by SwRI Lab (Signature):

Samples Disposed by:

Date/Time: 4/18/02 1342

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Client Name/Address: Jim Prikryl
CNWRA / Div 20
Bldg 57

Requested Turnaround:
- ☐ 1 Week
- ☒ 2 Weeks (Normal)
- ☐ 3 Weeks
- ☐ Other: _____

Client Purchase Order/Other ID:

Site/Zone ID:

SwRI Contact:

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time (mm/dd/yy)	Matrix Type	Sample Type	# of Containers	ICP - major and minor cations including Uranium	Cl⁻ by IC								
U0	3/21/02		W	DM	1	✓		✓							
U24	"		"	"	1	✓		✓							
U48	"		"	"	1	✓		✓							
U72	"		"	"	1	✓		✓							
U96	"		"	"	1	✓		✓							

REMARKS

Preservation
- **a** = HCl to pH <2
- **b** = HNO_3 to pH <2
- **c** = H_2SO_4 to pH <2
- **d** = NaOH to pH >12
- **e** = Other (Specify)

Project is nuclear safety related
10 CFR 50 Part 21
Appendix B

Question Per:
Jim Prikryl x 56067
jprikryl@swri.edu

Matrix Types: **A** - Air; **P** - Product; **S** - Soil; **T** - Tissue; **W** - Water

Sample Types: **DM** - Dissolved Metals; **ER** - Equipment Rinsate; **FB** - Field Blank; **MSD** - Matrix Spike Duplicate; **MS** - Matrix Spike; **TB** - Trip Blank; **TM** - Total Metals; **ES** - Environmental Samples; **FD** - Field Duplicate

Relinquished by Sampler (Signature): 3/26/02

Received by (Signature):

Relinquished by (Signature):

Received by (Signature)

Relinquished by (Signature)

Comments:

SwRI Project No: 20.22000.561

Sampler (Printed):

Date/Time: 3/26/02 12:15

SOUTHWEST RESEARCH INSTITUTE
NUCLEAR PROJECT
CLIENT: Division 20
WORK ORDER: 22106
SDG: 200677
VTSR: March 26, 2002
PROJECT#: 20.01402.561

FINAL REPORT

MEMORANDUM

TO: Jim Prikryl
Division 20 Bldg. 57

FROM: Jo Ann Boyd, Manager QAU, Division 01

RE: Project No.: 20.01402.561
Work Order: #22106
Samples Received: March 26, 2002

Analysis of liquid samples for Cl, U, ICP.
Raw data and nuclear safety documentation for this project are archived in Division 01.

DATE: August 01, 2002

Enclosed please find the sample results for the analysis referenced above.

If there are any questions, please feel free to contact me by voice mail at 522-2169 or by fax at 522-2021. I look forward to our continued analytical support of your projects.

Jo Ann Boyd

Manager QAU

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
U0

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 03/26/02

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 200677

Work Order: 22106

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.05	0.05
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	<0.5	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	75.2	0.1
Selenium	<0.1	0.1
Silicon	69.5	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	591	10
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.3	0.3
Chloride	<1.0	1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
DUPLICATE SUMMARY

Sample ID
U0

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 03/26/02

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 200677

Work Order: 22106

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Chloride	<1	<1	0.00%

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
U24

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 03/26/02

Matrix: Liquid

Project No.: 20.01402.571

Lab System ID: 200678

Work Order: 22106

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.05	0.05
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	48.1	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	1.75	0.1
Selenium	<0.1	0.1
Silicon	68.0	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	577	10
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.3	0.3
Chloride	1.86	1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY

Sample ID
U24

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 03/26/02

Matrix: Liquid

Project No.: 20.01402.571

Lab System ID: 200678

Work Order: 22106

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Aluminum	<1.5	<1.5	0.00%
Antimony	<0.1	<0.1	0.00%
Arsenic	<0.05	<0.05	0.00%
Barium	<0.025	<0.025	0.00%
Beryllium	<0.025	<0.025	0.00%
Bismuth	<0.1	<0.1	0.00%
Boron	<0.2	<0.2	0.00%
Cadmium	<0.025	<0.025	0.00%
Calcium	48.1	47.6	1.04%
Chromium	<0.2	<0.2	0.00%
Cobalt	<0.025	<0.025	0.00%
Copper	<0.1	<0.1	0.00%
Iron	<2	<2	0.00%
Lanthanum	<0.05	<0.05	0.00%
Lead	<0.1	<0.1	0.00%
Lithium	<0.025	<0.025	0.00%
Magnesium	<4	<4	0.00%
Manganese	<0.025	<0.025	0.00%
Molybdenum	<0.025	<0.025	0.00%
Nickel	<0.15	<0.15	0.00%
Palladium	<0.1	<0.1	0.00%
Phosphorus	<0.25	<0.25	0.00%
Potassium	1.75	1.76	0.63%
Selenium	<0.1	<0.1	0.00%
Silicon	68.0	67.5	0.72%
Silver	<0.075	<0.075	0.00%
Sodium	<1	<1	0.00%
Strontium	<0.05	<0.05	0.00%
Sulfur	<0.2	<0.2	0.00%
Thallium	<0.15	<0.15	0.00%
Thorium	<2.5	<2.5	0.00%
Tin	<0.05	<0.05	0.00%
Titanium	<0.1	<0.1	0.00%
Tungsten	<0.15	<0.15	0.00%
Uranium	577	575	0.35%
Vanadium	<0.1	<0.1	0.00%
Yttrium	<0.1	<0.1	0.00%
Zinc	<0.1	<0.1	0.00%
Zirconium	<0.3	<0.3	0.00%

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
U48

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 03/26/02

Matrix: Liquid

Project No.: 20.01402.571

Lab System ID: 200679

Work Order: 22106

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.05	0.05
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	50.4	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<1	1
Selenium	<0.1	0.1
Silicon	60.1	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	558	10
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.3	0.3
Chloride	4.12	1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
U72

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 03/26/02

Matrix: Liquid

Project No.: 20.01402.571

Lab System ID: 200680

Work Order: 22106

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.05	0.05
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	48.6	0.05
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<1	1
Selenium	<0.1	0.1
Silicon	55.2	0.025
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	586	10
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.3	0.3
Chloride	1.55	1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID: U96

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 03/26/02

Matrix: Liquid

Project No.: 20.01402.571

Lab System ID: 200681

Work Order: 22106

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1.5	1.5
Antimony	<0.1	0.1
Arsenic	<0.05	0.05
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	64.9	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<1	1
Selenium	<0.1	0.1
Silicon	46.5	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	602	10
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.3	0.3
Chloride	2.05	1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
MATRIX SPIKE SUMMARY

Sample ID: U96

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 03/26/02

Matrix: Liquid

Project No.: 20.01402.571

Lab System ID: 200681

Work Order: 22106

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Aluminum	<1.5	19.7	20	98.6%
Antimony	<0.1	4.93	5.00	98.5%
Arsenic	<0.05	20.1	20	100.4%
Barium	<0.025	20.3	20	101.3%
Beryllium	<0.025	0.481	0.500	96.2%
Bismuth	NA	NA	NA	NA
Boron	NA	NA	NA	NA
Cadmium	<0.025	0.513	0.500	102.5%
Calcium	64.9	265	200	99.8%
Chromium	<0.2	2.08	2.00	104.0%
Cobalt	<0.025	4.97	5.00	99.4%
Copper	<0.1	2.31	2.50	92.5%
Iron	<2	9.69	10	96.9%
Lanthanum	NA	NA	NA	NA
Lead	<0.1	5.38	5.00	107.7%
Lithium	NA	NA	NA	NA
Magnesium	<4	202	200	100.9%
Manganese	<0.025	5.03	5.00	100.7%
Molybdenum	NA	NA	NA	NA
Nickel	<0.15	4.94	5.00	98.7%
Palladium	NA	NA	NA	NA
Phosphorus	NA	NA	NA	NA
Potassium	<1	179	200	89.5%
Selenium	<0.1	21.6	20	108.1%
Silicon	NA	NA	NA	NA
Silver	<0.075	0.510	0.500	101.9%
Sodium	<1	196	200	97.8%
Strontium	NA	NA	NA	NA
Sulfur	NA	NA	NA	NA
Thallium	<0.15	20.9	20	104.6%
Thorium	NA	NA	NA	NA
Tin	NA	NA	NA	NA
Titanium	NA	NA	NA	NA
Tungsten	NA	NA	NA	NA
Uranium	602	1108	500	101.1%
Vanadium	<0.1	5.04	5.00	100.9%
Yttrium	NA	NA	NA	NA
Zinc	<0.1	5.10	5.00	102.1%
Zirconium	NA	NA	NA	NA

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

LABORATORY CONTROL SAMPLE

Sample ID
LCSW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.01402.571

Lab System ID: NA

Work Order: 22106

Analysis	Sample Result (mg/L)	True Value (mg/L)	Recovery
Aluminum	1.96	2.00	97.8%
Antimony	0.494	0.500	98.9%
Arsenic	2.02	2.00	101.2%
Barium	2.05	2.00	102.4%
Beryllium	0.049	0.050	98.2%
Bismuth	NA	NA	NA
Boron	NA	NA	NA
Cadmium	0.052	0.050	103.4%
Calcium	20.4	20	102.0%
Chromium	0.198	0.200	98.9%
Cobalt	0.502	0.500	100.3%
Copper	0.245	0.250	98.1%
Iron	0.922	1.00	92.2%
Lanthanum	NA	NA	NA
Lead	0.516	0.500	103.2%
Lithium	NA	NA	NA
Magnesium	20.3	20	101.5%
Manganese	0.507	0.500	101.4%
Molybdenum	NA	NA	NA
Nickel	0.502	0.500	100.3%
Palladium	NA	NA	NA
Phosphorus	NA	NA	NA
Potassium	18.1	20	90.6%
Selenium	2.11	2.00	105.4%
Silicon	NA	NA	NA
Silver	0.050	0.050	100.0%
Sodium	18.0	20	90.2%
Strontium	NA	NA	NA
Sulfur	NA	NA	NA
Thallium	2.12	2.00	105.9%
Thorium	NA	NA	NA
Tin	NA	NA	NA
Titanium	NA	NA	NA
Tungsten	NA	NA	NA
Uranium	5.11	5.00	102.2%
Vanadium	0.510	0.500	101.9%
Yttrium	NA	NA	NA
Zinc	0.516	0.500	103.1%
Zirconium	NA	NA	NA
Chloride	207	200	103.3%

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

BLANK SUMMARY

Sample ID: PBW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.01402.571

Lab System ID: NA

Work Order: 22106

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.15	0.15
Antimony	<0.01	0.01
Arsenic	<0.005	0.005
Barium	<0.0025	0.0025
Beryllium	<0.0025	0.0025
Bismuth	<0.01	0.01
Boron	<0.02	0.02
Cadmium	<0.0025	0.0025
Calcium	<0.05	0.05
Chromium	<0.02	0.02
Cobalt	<0.0025	0.0025
Copper	<0.01	0.01
Iron	<0.2	0.2
Lanthanum	<0.005	0.005
Lead	<0.01	0.01
Lithium	<0.0025	0.0025
Magnesium	<0.4	0.4
Manganese	<0.0025	0.0025
Molybdenum	<0.0025	0.0025
Nickel	<0.015	0.015
Palladium	<0.01	0.01
Phosphorus	<0.025	0.025
Potassium	<0.1	0.1
Selenium	<0.01	0.01
Silicon	<0.025	0.025
Silver	<0.0075	0.0075
Sodium	<0.1	0.1
Strontium	<0.005	0.005
Sulfur	<0.02	0.02
Thallium	<0.015	0.015
Thorium	<0.25	0.25
Tin	<0.005	0.005
Titanium	<0.01	0.01
Tungsten	<0.015	0.015
Uranium	<0.1	0.1
Vanadium	<0.01	0.01
Yttrium	<0.01	0.01
Zinc	<0.01	0.01
Zirconium	<0.03	0.03
Chloride	<0.1	0.1

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
NUCLEAR PROJECT
CLIENT: Division 20
WORK ORDER: 22287
SDG: 203975
VTSR: April 18, 2002
PROJECT#: 20.01402.561

FINAL REPORT

MEMORANDUM

TO: **Jim Prikryl**
Division 20 Bldg. 57

FROM: **Jo Ann Boyd, Manager QAU, Division 01**

RE: **Project No.: 20.01402.561**
Work Order: #22287
Samples Received: April 18, 2002

Analysis of liquid samples for U, ICP.
Raw data and nuclear safety documentation for this project are archived in Division 01.

DATE: **August 02, 2002**

Enclosed please find the sample results for the analysis referenced above.

If there are any questions, please feel free to contact me by voice mail at 522-2169 or by fax at 522-2021. I look forward to our continued analytical support of your projects.

Jo Ann Boyd
Manager QAU

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
U144B

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/18/02

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 203975

Work Order: 22287

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1	1
Antimony	<0.1	0.1
Arsenic	<0.05	0.05
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	44.7	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<1	1
Selenium	<0.1	0.1
Silicon	63.6	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	543	10
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.3	0.3

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY

Sample ID
U144B

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/18/02

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 203975

Work Order: 22287

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Aluminum	<1	<1	0.00%
Antimony	<0.1	<0.1	0.00%
Arsenic	<0.05	<0.05	0.00%
Barium	<0.025	<0.025	0.00%
Beryllium	<0.025	<0.025	0.00%
Bismuth	<0.1	<0.1	0.00%
Boron	<0.2	<0.2	0.00%
Cadmium	<0.025	<0.025	0.00%
Calcium	44.7	44.4	0.75%
Chromium	<0.2	<0.2	0.00%
Cobalt	<0.025	<0.025	0.00%
Copper	<0.1	<0.1	0.00%
Iron	<2	<2	0.00%
Lanthanum	<0.05	<0.05	0.00%
Lead	<0.1	<0.1	0.00%
Lithium	<0.025	<0.025	0.00%
Magnesium	<4	<4	0.00%
Manganese	<0.025	<0.025	0.00%
Molybdenum	<0.025	<0.025	0.00%
Nickel	<0.15	<0.15	0.00%
Palladium	<0.1	<0.1	0.00%
Phosphorus	<0.25	<0.25	0.00%
Potassium	<1	<1	0.00%
Selenium	<0.1	<0.1	0.00%
Silicon	63.6	63.4	0.41%
Silver	<0.075	<0.075	0.00%
Sodium	<1	<1	0.00%
Strontium	<0.05	<0.05	0.00%
Sulfur	<0.2	<0.2	0.00%
Thallium	<0.15	<0.15	0.00%
Thorium	<2.5	<2.5	0.00%
Tin	<0.05	<0.05	0.00%
Titanium	<0.1	<0.1	0.00%
Tungsten	<0.15	<0.15	0.00%
Uranium	543	536	1.32%
Vanadium	<0.1	<0.1	0.00%
Yttrium	<0.1	<0.1	0.00%
Zinc	<0.1	<0.1	0.00%
Zirconium	<0.3	<0.3	0.00%

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
U168A

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/18/02

Matrix: Liquid

Project No.: 20.01402.571

Lab System ID: 203976

Work Order: 22287

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1	1
Antimony	<0.1	0.1
Arsenic	<0.05	0.05
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	44.6	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	2.80	0.1
Selenium	<0.1	0.1
Silicon	65.7	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	557	10
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.3	0.3

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY

Sample ID
U168A

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/18/02

Matrix: Liquid

Project No.: 20.01402.571

Lab System ID: 203976

Work Order: 22287

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Aluminum	<1	38.8	40	97.0%
Antimony	<0.1	9.92	10	99.2%
Arsenic	<0.05	40.9	40	102.1%
Barium	<0.025	41.1	40	102.7%
Beryllium	<0.025	0.986	1	98.6%
Bismuth	NA	NA	NA	NA
Boron	NA	NA	NA	NA
Cadmium	<0.025	1.04	1	103.6%
Calcium	44.6	251	200	103.4%
Chromium	<0.2	4.01	4	100.2%
Cobalt	<0.025	10.0	10	100.3%
Copper	<0.1	5.01	5	100.1%
Iron	<2	18.4	20	92.1%
Lanthanum	NA	NA	NA	NA
Lead	<0.1	10.6	10	105.9%
Lithium	NA	NA	NA	NA
Magnesium	<4	203	200	101.3%
Manganese	<0.025	10.1	10	100.7%
Molybdenum	NA	NA	NA	NA
Nickel	<0.15	9.96	10	99.6%
Palladium	NA	NA	NA	NA
Phosphorus	NA	NA	NA	NA
Potassium	2.80	23.9	20	105.5%
Selenium	<0.1	42.4	40	106.0%
Silicon	NA	NA	NA	NA
Silver	<0.075	1.06	1	106.0%
Sodium	<1	199	200	99.5%
Strontium	NA	NA	NA	NA
Sulfur	NA	NA	NA	NA
Thallium	<0.15	43.1	40	107.6%
Thorium	NA	NA	NA	NA
Tin	NA	NA	NA	NA
Titanium	NA	NA	NA	NA
Tungsten	NA	NA	NA	NA
Uranium	557	850	300	97.6%
Vanadium	<0.1	10.1	10	100.9%
Yttrium	NA	NA	NA	NA
Zinc	<0.1	10.2	10	101.6%
Zirconium	NA	NA	NA	NA

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
U312B

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/18/02

Matrix: Liquid

Project No.: 20.01402.571

Lab System ID: 203977

Work Order: 22287

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1	1
Antimony	<0.1	0.1
Arsenic	<0.05	0.05
Barium	0.036	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	45.9	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	<1	1
Selenium	<0.1	0.1
Silicon	65.1	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	548	10
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.3	0.3

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
U336A

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/18/02

Matrix: Liquid

Project No.: 20.01402.571

Lab System ID: 203978

Work Order: 22287

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1	1
Antimony	<0.1	0.1
Arsenic	<0.05	0.05
Barium	0.201	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	46.4	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	<0.025	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	1.23	0.1
Selenium	<0.1	0.1
Silicon	65.9	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	561	10
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.3	0.3

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
UOA

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/18/02

Matrix: Liquid

Project No.: 20.01402.571

Lab System ID: 203979

Work Order: 22287

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1	1
Antimony	<0.1	0.1
Arsenic	<0.05	0.05
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	<0.5	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	0.054	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	73.9	0.1
Selenium	<0.1	0.1
Silicon	67.6	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	572	10
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.3	0.3

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
UOB

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 04/18/02

Matrix: Liquid

Project No.: 20.01402.571

Lab System ID: 203980

Work Order: 22287

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<1	1
Antimony	<0.1	0.1
Arsenic	<0.05	0.05
Barium	<0.025	0.025
Beryllium	<0.025	0.025
Bismuth	<0.1	0.1
Boron	<0.2	0.2
Cadmium	<0.025	0.025
Calcium	<0.5	0.5
Chromium	<0.2	0.2
Cobalt	<0.025	0.025
Copper	<0.1	0.1
Iron	<2	2
Lanthanum	<0.05	0.05
Lead	<0.1	0.1
Lithium	<0.025	0.025
Magnesium	<4	4
Manganese	0.039	0.025
Molybdenum	<0.025	0.025
Nickel	<0.15	0.15
Palladium	<0.1	0.1
Phosphorus	<0.25	0.25
Potassium	72.9	0.1
Selenium	<0.1	0.1
Silicon	65.3	0.25
Silver	<0.075	0.075
Sodium	<1	1
Strontium	<0.05	0.05
Sulfur	<0.2	0.2
Thallium	<0.15	0.15
Thorium	<2.5	2.5
Tin	<0.05	0.05
Titanium	<0.1	0.1
Tungsten	<0.15	0.15
Uranium	564	10
Vanadium	<0.1	0.1
Yttrium	<0.1	0.1
Zinc	<0.1	0.1
Zirconium	<0.3	0.3

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
LABORATORY CONTROL SAMPLE

Sample ID
LCSW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.01402.571

Lab System ID: NA

Work Order: 22287

Analysis	Sample Result (mg/L)	True Value (mg/L)	Recovery
Aluminum	3.96	4.00	98.9%
Antimony	1.00	1.00	100.1%
Arsenic	4.07	4.00	101.7%
Barium	4.11	4.00	102.8%
Beryllium	0.099	0.100	99.2%
Bismuth	NA	NA	NA
Boron	NA	NA	NA
Cadmium	0.104	0.100	103.6%
Calcium	20.7	20	103.4%
Chromium	0.398	0.400	99.6%
Cobalt	1.01	1.00	100.7%
Copper	0.506	0.500	101.2%
Iron	1.96	2.00	97.8%
Lanthanum	NA	NA	NA
Lead	1.05	1.00	104.7%
Lithium	NA	NA	NA
Magnesium	20.2	20	101.2%
Manganese	1.01	1.00	101.1%
Molybdenum	NA	NA	NA
Nickel	0.992	1.00	99.2%
Palladium	NA	NA	NA
Phosphorus	NA	NA	NA
Potassium	17.2	20	86.2%
Selenium	4.23	4.00	105.7%
Silicon	NA	NA	NA
Silver	0.103	0.100	102.9%
Sodium	18.0	20	90.0%
Strontium	NA	NA	NA
Sulfur	NA	NA	NA
Thallium	4.32	4.00	108.1%
Thorium	NA	NA	NA
Tin	NA	NA	NA
Titanium	NA	NA	NA
Tungsten	NA	NA	NA
Uranium	2.89	3.00	96.3%
Vanadium	1.02	1.00	101.9%
Yttrium	NA	NA	NA
Zinc	1.02	1.00	101.7%
Zirconium	NA	NA	NA

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

BLANK SUMMARY

Sample ID: PBW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.01402.571

Lab System ID: NA

Work Order: 22287

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.1	0.1
Antimony	<0.01	0.01
Arsenic	<0.005	0.005
Barium	<0.0025	0.0025
Beryllium	<0.0025	0.0025
Bismuth	<0.01	0.01
Boron	<0.02	0.02
Cadmium	<0.0025	0.0025
Calcium	<0.05	0.05
Chromium	<0.02	0.02
Cobalt	<0.0025	0.0025
Copper	<0.01	0.01
Iron	<0.2	0.2
Lanthanum	<0.005	0.005
Lead	<0.01	0.01
Lithium	<0.0025	0.0025
Magnesium	<0.4	0.4
Manganese	<0.0025	0.0025
Molybdenum	<0.0025	0.0025
Nickel	<0.015	0.015
Palladium	<0.01	0.01
Phosphorus	<0.025	0.025
Potassium	<0.1	0.1
Selenium	<0.01	0.01
Silicon	<0.025	0.025
Silver	<0.0075	0.0075
Sodium	<0.1	0.1
Strontium	<0.005	0.005
Sulfur	<0.02	0.02
Thallium	<0.015	0.015
Thorium	<0.25	0.25
Tin	<0.005	0.005
Titanium	<0.01	0.01
Tungsten	<0.015	0.015
Uranium	<0.1	0.1
Vanadium	<0.01	0.01
Yttrium	<0.01	0.01
Zinc	<0.01	0.01
Zirconium	<0.03	0.03

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
NUCLEAR PROJECT
CLIENT: Division 20
WORK ORDER: 22287
SDG: 203975
VTSR: April 18, 2002
PROJECT#: 20.01402.561

Work Orders/SPQP

Laboratory Work Order

Work Order Number: 22287

Southwest Research Institute

VTSR: 04/18/02

Time: 13:42:00

Project: 20.01402.561
Case #: CNWRA
SDG: 203975
Client: DIV 20

Manager: DAMMANN, MIKE
Logged in by: kedrisi
Creation Date: 04/18/02

Map 4/22/02.

Notes

Samples were received at ambient temperature.

Qc Note: As per method.

Parameters: Analysis by ICP major and mineor cations including uranium. As per chain of custody.

Note: See chain of custody as part of the work order system for more information. Contact Project Manager for questions.

Note: Turnaround time is 14 days from VTSR.

Note: Samples were received intact.

Note: Project is Nuclear Safety Related, 10 CFR 50, Part 21, Appendix B.

Note: Contact Joann Boyd @ 2169 or Pager 351-1617. For Institute QA contact before starting any work on this project.

Note: Have SPQP (Latest Revision) on the bench at the time of prep or analysis of samples.

Note: All personnel must be QA Nuclear Certified.

Note: Outside of the containers were screened for radioactivity, all samples were above login backgroun level. (50- 150 CPM).
*** kedrisi Apr 18 2002 5:06PM ***

System ID	Customer ID	CED	Matrix	Container	Required Analyses
203975	U144B	04/18/02	Water	1	Metals: CATEX-MET, ICP, U
203976	U168A	04/18/02	Water	1	Metals: CATEX-MET, ICP, U
203977	U312B	04/18/02	Water	1	Metals: CATEX-MET, ICP, U
203978	U336A	04/18/02	Water	1	Metals: CATEX-MET, ICP, U
203979	UOA	04/18/02	Water	1	Metals: CATEX-MET, ICP, U
203980	UOB	04/18/02	Water	1	Metals: CATEX-MET, ICP, U

Containers: 6 **Samples: 6**

Group	Test	Start	Method Date	Deadline	Number	Description	Fridge	Shelf
METALS	CATEX-MET	ced	*16 May 2002*	30 Apr 2002	6	ANALYSIS FOR CATION EXCHANGE CAPACITY BY METALS GROUP	Ref 64	Rt. C
METALS	ICP	ced	*15 Oct 2002*	30 Apr 2002	6	ANALYSIS BY ICP	Ref 64	Rt. C
METALS	U	ced	*15 Oct 2002*	30 Apr 2002	6	URANIUM ANALYSIS	Ref 64	Rt. C

Work Orders in this SDG

22287

These documents are associated with this work order: 1824

Thermometer: 026
Temperature: 23

Preliminary Data Due: N/A
EDD Due: N/A
Data Must be to QA: 04/30/02
Absolute Latest Date: 05/01/02

Turnaround is 14 Days from VTSR

Page Printed: 18 Apr 2002 17:33:49
ver (03/30/2002)

Client: DIV 20
WO: 22287
FRM-002

STANDARD PROJECT QUALITY PLAN

Document No. SPQP-CH/AN

Revision 3
Change 0

PERFORMANCE OF CHEMICAL ANALYSES FOR COMMERCIAL NUCLEAR POWER PLANTS BY THE DEPARTMENT OF ANALYTICAL AND ENVIRONMENTAL CHEMISTRY

Prepared by

Southwest Research Institute Quality Assurance

January 2001

CONTROLLED DOCUMENT
COPY NO: 0 1

Southwest Research Institute
P. O. Drawer 28510
6220 Culebra Road
San Antonio, Texas 78228-0510

STANDARD PROJECT QUALITY PLAN

Document No. SPQP-CH/AN

Revision 3
Change 0

Prepared by: Christopher Johnson Date: 02/01/01

Approved by: _____ Date: 2/5/01
Manager, Institute Quality Assurance

Approved by: _____ Date: 2/9/01
Division Vice President

TABLE OF CONTENTS

Page

1. INTRODUCTION 1

2. SCOPE 1

3. APPLICABLE SECTIONS OF THE NQAPM 1
   - 3.1 Procedures, Instructions, and Drawings 1
   - 3.2 Qualification of Personnel 2
   - 3.3 Document Control 2
   - 3.4 Control of Purchased Materials, Equipment, Items, and Services 2
   - 3.5 Identification and Control of Materials, Parts, and Items 3
   - 3.6 Handling, Storage, and Shipping 4
   - 3.7 Measuring and Test Equipment Control 5
   - 3.8 Nonconforming Materials, Parts, or Components 5
   - 3.9 Corrective Action 5
   - 3.10 Quality Assurance Records 5

4. CERTIFIED TEST REPORT 6

5. INSTITUTE QUALITY ASSURANCE (IQA) SURVEILLANCE ACTIVITIES 6

6. VALID DOCUMENTS LIST 6

PERFORMANCE OF CHEMICAL ANALYSES FOR COMMERCIAL NUCLEAR POWER PLANTS BY THE DEPARTMENT OF ANALYTICAL AND ENVIRONMENTAL CHEMISTRY

1. INTRODUCTION

This Standard Project Quality Plan (SPQP) defines the Quality Assurance (QA) program requirements for personnel providing the chemical analyses for commercial nuclear power plants. Southwest Research Institute (SwRI) *Nuclear Quality Assurance Program Manual* (NQAPM), Revision 3, shall implement the QA requirements. Project activities controlled by the NQAPM shall be accomplished as specified by the appropriate sections of the San Antonio Department of Analytical and Environmental Chemistry (DAEC) Laboratory Quality Assurance Program Plan (QAPP) and/or nationally recognized testing methods as specified on individual purchase orders. Upon notification of the initiation of project activities, Institute Quality Assurance (IQA) shall determine if, due to the scope of work, schedule restraints, or other considerations, this SPQP shall be applied. If appropriate, the use of this SPQP shall be documented by a memo from the project Quality Assurance Engineer (QAE). In the event the client specifies the use of the SPQP, no memo is required. If, due to complexity, duration, or other factors, it is determined that a unique, project-specific quality plan is required, the project QAE shall notify the Project Manager and a quality plan shall be generated in accordance with OP-2.3/3.0-30-1, "Contract Review and Initial Quality Planning".

2. SCOPE

This SPQP shall be applied to the chemical analyses performed for commercial nuclear power plants by the DAEC.

3. APPLICABLE SECTIONS OF THE NQAPM

3.1 Procedures, Instructions, and Drawings

Procedures, instructions, and drawings shall meet the requirements of NQAPM Section 5.0, "Procedures, Instructions, and Drawings". Nationally recognized test procedures shall be used for testing as specified in individual purchase orders.

3.2 Qualification of Personnel

3.2.1 Testing personnel shall be designated as qualified to perform applicable project activities as specified in DAEC QAPP Section 5, "Personnel Qualifications" and Division SOP-01-18.1, "Qualification and Training".

3.2.2 Personnel performing duties affecting quality shall have received quality training as specified in NQAPM Section 2.0, "Quality Assurance Program".

3.2.3 During the performance of each testing process, testing personnel shall have access to the DAEC QAPP, DAEC Work Order, SPQP, Division Quality System SOPs, and applicable test procedures available for ready reference.

3.3 Document Control

3.3.1 SwRI-issued documents shall be controlled as described in the Laboratory Quality Assurance Program Plan (QAPP), OP-5.0-30-1, "Document Control", and Division procedures SOP-01-5.1, "Preparation and Revision of Standard Operating Procedures"; SOP-01-5.2, "Preparation and Revision of Plans"; SOP-01-5.3, "Preparation and Revision of Test/Analytical Procedures"; SOP-01-5.4, "Revision of Forms"; SOP-01-5.5, "Data Control and Reporting"; and SOP-01-5.6, "Laboratory Notebook Requirements". These procedures provide the requirements for the preparation, review, approval, issue, distribution, and revision of documents controlled by the Chemistry and Chemical Engineering Division.

3.3.2 Test methods used shall be of latest issue or as specified on the purchase order. Work orders shall list the applicable test method to be used.

3.4 Control of Purchased Materials, Equipment, Items, and Services

3.4.1 Chemical reagents and standards used for testing purposes shall be ordered to specific chemical grades and certificates of analysis shall be required with each lot.

3.4.2 Controls for procurement planning, supplier selection, supplier performance evaluation, and acceptance of procured items and services other than chemical

reagents and standards shall be as identified in NQAPM Section 4.0, "Procurement Document Control", NQAPM Section 7.0, "Control of Purchased Materials, Equipment, Items, and Services", and Division SOP-01-6.1, "Purchasing".

3.4.3 Receiving inspection of chemical reagents, standards, and test items shall be performed by DAEC personnel and documented on the *SwRI Receipt Traveler* or Division FRM-109, "Item Receipt Report", as specified in the Division SOP-01-10.1, "Inspection and Test Conduct". Receiving inspection of chemical reagents and standards shall consist of verification of chemical type, grade, container integrity, certificate of analysis, and shelf-life, where applicable.

3.4.4 Receiving of nuclear safety-related materials, parts, or items other than chemical reagents and standards shall be controlled by OP-10.2-30-1, "Receiving Inspection and Testing"

3.5 Identification and Control of Materials, Parts, and Items

3.5.1 Upon acceptance of chemical reagents and standards, the containers shall be labeled with the following:

1) Chemical name;
2) Chemical grade;
3) Lot code;
4) Date received; and
5) Shelf-life (when applicable).

3.5.2 Containers for transferred chemicals shall also be labeled with the above information. Expired shelf-life items shall not be used for testing purposes.

3.5.3 Lot codes of chemical reagents and standards used during equipment standardization and testing shall be recorded on the individual testing data sheets to provide traceability.

3.5.4 Samples supplied to SwRI for testing shall be received by the DAEC Sample Custodian and logged in the laboratory logbook. Sample documentation and sample custody shall be maintained in accordance with DAEC QAPP Section 7.4.3, "Laboratory Custody Procedures" and Division Test/Analytical Procedure TAP-01-0407-001, "Sample Log-In and Sample Custody". Identification and traceability shall be maintained in accordance with Division SOP-01-8.1, "Item Identification and Traceability".

3.5.5 In the event a damaged container or container label is received, that information shall be recorded on Division FRM-109, "Item Receipt Report" or *SwRI Receipt Traveler* and the customer shall be contacted for disposition.

3.5.6 Samples supplied to SwRI for testing shall be labeled with the following:

1) Sample control number;
2) Purchase order number;
3) Purchase order line item number, as applicable;
4) DAEC Work Order number;
5) Nuclear QA label; and
6) Sample retention date (when applicable).

3.5.7 The testing work order shall list the project number, tests required, test methods required, and shall be labeled *Nuclear Quality*.

3.6 Handling, Storage, and Shipping

3.6.1 Controls for handling, storage, and shipping are identified in DAEC QAPP Section 7.5, "Sample and Extract Storage"; NQAPM Section 13.0, "Handling, Storage, and Shipping"; and Division SOP-01-15.1, "Handling, Storage, Packaging, Preservation, and Delivery of Items".

3.6.2 Samples specified on the purchase order to be returned to the client shall be prepared and packaged as specified on the purchase order. Each package shall be marked legibly and indelibly with the purchase order/release number and purchase order/release line item number(s) relevant to the package.

3.7 Measuring and Test Equipment Control

3.7.1 Controls for measuring and test equipment are identified in NQAPM Section 12.0, "Measuring and Test Equipment Control" and Division SOP-01-11.1, "Control of Measuring and Test Equipment".

3.7.2 Major equipment calibration shall be as specified in DAEC QAPP Section 6.2, "Instrument Calibration".

3.8 Nonconforming Materials, Parts, or Components

Controls for identification, segregation, reporting, disposition, and control of nonconforming items and activities to specified requirements are contained in OP-13.0-30-1, "Nonconformance Control" or Division SOP-01-13.1, "Nonconformance Reporting". Other Project or IQA personnel may initiate nonconformance reports.

3.9 Corrective Action

Methods for identifying conditions adverse to quality and for initiating and verifying corrective actions are contained in OP-14.0-30-1, "Corrective and Preventive Action" or Division SOP-01-14.1, "Corrective Action". Institute or Division Quality Assurance and the Division Quality Council may initiate Corrective Action Requests.

3.10 Quality Assurance Records

3.10.1 Records documenting evidence of quality shall be maintained in accordance with NQAPM Section 17.0, "Quality Assurance Records", TAP-01-0407-014, "Inventory of Case File Purges", and Division SOP-01-16.1, "Storage and Maintenance of Quality Records". These documents and this SPQP ensure that QA records shall be legible, identifiable, retrievable, and maintained in dual storage.

3.10.2 In order to satisfy duplicate storage requirements, one copy of the QA records shall be maintained by the Project Manager in Building 70 and a separate copy shall be maintained in the DAEC Quality Control Archives in Building 201.

3.10.3 Records of test analyses performed by the DAEC are classified as "non-permanent" as defined in the NQAPM Section 17.0 and shall be retained for a minimum of five years. Based on the use of the final data, the client shall be responsible for determining and implementing permanent storage requirements.

4. CERTIFIED TEST REPORT

The Project Manager and IQA Manager shall certify test reports as complying with all contractual requirements. The certified test report shall reference the purchase order/release number, the test methods performed, and the purchase order/release line item number.

5. IQA SURVEILLANCE ACTIVITIES

IQA shall perform surveillance activities as required to ensure compliance with the contract and this SPQP. Specific areas in which IQA may perform surveillance activities include, but are not limited to, the following:

1) Receiving inspection and labeling of chemical reagents, chemical standards, and testing samples;

2) Testing processes;

3) Calibration of major equipment;

4) Sample and record retention; and

5) Test records.

6. VALID DOCUMENTS LIST

The DAEC work order shall specify all applicable documents and appropriate document revision level for each document. The DAEC work order shall then serve as the Valid Documents List (VDL) for each individual project.

CONTROLLED DOCUMENT
COPY NO 1

Distribution Date: 21 February 2001

STANDARD PROJECT QUALITY PLAN
DISTRIBUTION LIST
SPQP-CH/AN, Revision 3, Change 0

PERFORMANCE OF CHEMICAL ANALYSES FOR COMMERCIAL NUCLEAR POWER PLANTS BY THE DEPARTMENT OF ANALYTICAL AND ENVIRONMENTAL CHEMISTRY

CHEMISTRY AND CHEMICAL ENGINEERING DIVISION

C. Hobson	CC30	Copy No. 1
R. Weber	CC30	Copy No. 2
B. Gahagan	CC30	Copy No. 3
C. Butcher	CC30	Copy No. 4
M. MacNaughton	Div. 01	Copy No. 5
J. Boyd	Div. 01	Copy No. 6
H. Schattenberg	Div. 01	Copy No. 7
M. Dammann	Div. 01	Copy No. 8
J. Morin	Div. 01	Copy No. 9
K. Villalobos	Div. 01	Copy No. 10

TU ELECTRIC
Procurement Quality Assurance
P.O. Box 1002
Glen Rose, TX 76043

Copy No. 11

HOUSTON LIGHTING &
POWER COMPANY
Project Document Control Center, Building 8
South Texas Project
P.O. Box 289
Bay City, TX 77483

Copy No. 12

Note: A return receipt to Institute QA will not be required, as it is the responsibility of the holder of a controlled document to maintain that document and to ensure the most recent revision/change to that document has been retained.

SOUTHWEST RESEARCH INSTITUTE
NUCLEAR PROJECT
CLIENT: Division 20
WORK ORDER: 22287
SDG: 203975
VTSR: April 18, 2002
PROJECT#: 20.01402.561

Chain of Custody/Login Paperwork

1824

SAMPLE LIST/CHAIN OF CUSTODY

Southwest Research Institute
Chemistry and Chemical Engineering Division
6220 Culebra Road
San Antonio, Texas 78238-5166

Client Name/Address: Jim Prikryl, CNWRA / Div 20, Bldg 57

Requested Turnaround:
- ☐ 1 Week
- ☒ 2 Weeks (Normal)
- ☐ 3 Weeks
- ☐ Other: _____

Client Purchase Order/Other ID:

Site/Zone ID:

SwRI Contact:

Analyses Requested

Sample ID	Sample Collection Date (mm/dd/yy)	Sample Collection Time (mm/dd/yy)	Matrix Type	Sample Type	# of Containers	ICP - major and minor cations including Uranium										
✓ U0A	4/18/02		W	DM	1	✓										
✓ U0B					1	✓										
✓ U168A					1	✓										
✓ U336A					1	✓										
✓ U144B					1	✓										
✓ U312B					1	✓										

Ambient Temp. 23°C #026

REMARKS

Preservation
- **a** = HCl to pH <2
- **b** = HNO_3 to pH <2
- **c** = H_2SO_4 to pH <2
- **d** = NaOH to pH >12
- **e** = Other (Specify)

Project is nuclear safety related
10 CFR 50 Part 21
Appendix B

Quetion POC
Jim Prikryl x5667
jprikryl@swri.edu

Matrix Types: **A** - Air; **P** - Product; **S** - Soil; **T** - Tissue; **W** - Water

Sample Types: **DM** - Dissolved Metals; **ER** - Equipment Rinsate; **FB** - Field Blank; **MSD** - Matrix Spike Duplicate; **MS** - Matrix Spike; **TB** - Trip Blank; **TM** - Total Metals; **ES** - Environmental Samples; **FD** - Field Duplicate

Relinquished by Sampler (Signature): James D. Prikryl 4/18/02

Received by (Signature):

Relinquished by (Signature):

Received by (Signature)

Relinquished by (Signature)

Comments:

SwRI Project No. 20.01402.561

Received by SwRI Lab (Signature):

Samples Disposed by:

Date/Time: 4/18/02 1342

Div 01 COC Form 01-01-001, Rev 1/97

Page _____ of _____

SAMPLE LOG-IN SHEET

Lab Name: Southwest Research Institute	Page 1 of 1
Received By (Print Name): Khaled Edrisi	Log-in Date: 04/18/2002
Received By (Signature): Khaled El	
Case Number: CNWRA	Sample Delivery Group No.: 203975
	SAS Number: N/A

Remarks: 20.01402.561

1. Custody Seal(s)	N/A	Present/Absent* Intact/Broken
2. Custody Seal Nos.	N/A	
3. Chain-of Custody Records		Present/Absent*
4. Traffic Reports or Packing Lists		Present/Absent
5. Airbill		Airbill/Sticker Present/Absent*
6. Airbill No.		HAND DELIVERED
7. Sample Tags		Present/Absent
Sample Tag Numbers		Listed/Not listed on Chain of Custody
8. Sample Condition		Intact/Broken*/ Leaking
9. Cooler Temperature		23C
10. Does Information on custody records, traffic reports, and sample tags agree?		Yes/No*
11. Date Received at Lab		04/18/2002
12. Time Received		13:42:00

EPA Sample #	Corresponding: Sample Tag #	Corresponding: Assigned Lab #	Remarks: Condition of Sample Shipment, etc
U144B	None	203975	Intact
U168A	None	203976	Intact
U312B	None	203977	Intact
U336A	None	203978	Intact
UOA	None	203979	Intact
UOB	None	203980	Intact

Sample Transfer

Fraction: see attached	Fraction:
Area #: Ref. 64 Rtc	Area #:
By: KE	By:
On: 4/18/02	On: 18 April, 02

* Contact SMO and attach record of resolution

Reviewed By: KE	Logbook No.: Work Order (22287)
Date: 4/18/02	Logbook Page No.: 4315 (4 of 4)

SOUTHWEST RESEARCH INSTITUTE
NUCLEAR PROJECT
CLIENT: Division 20
WORK ORDER: 22287
SDG: 203975
VTSR: April 18, 2002
PROJECT#: 20.01402.561

Copies of Login Book

Sample Login Book

Apr 18, 2002

SwRI Login Area
Division 1

Work Order: 22286	Project: 05004.05.101	Client: DIV 08 (FANICK)
VTSR Date: Apr 18, 2002	VTSR Time: 14:56:00	Manager: PAN, JOE

System ID	Customer Sample ID	Matrix	Assay
203972	C2NRU8E-6	Trap	BN-PAH, BPAH, EPAH
203973	C2NRU8E-7	Trap	BN-PAH, BPAH, EPAH
203974	C2NRU8E-8	Trap	BN-PAH, BPAH, EPAH

Work Order: 22287	Project: 20.01402.561	Client: DIV 20
VTSR Date: Apr 18, 2002	VTSR Time: 13:42:00	Manager: DAMMANN, MIKE

System ID	Customer Sample ID	Matrix	Assay
203975	U144B	Water	ICP, U
203976	U168A	Water	ICP, U
203977	U312B	Water	ICP, U
203978	U336A	Water	ICP, U
203979	UOA	Water	ICP, U
203980	UOB	Water	ICP, U

Work Order: 22288	Project: 01.01608.20X	Client: ALLIED SIGNAL
VTSR Date: Apr 18, 2002	VTSR Time: 13:35:00	Manager: SUN, GANG

System ID	Customer Sample ID	Matrix	Assay
203981	0204151012	Water	C607W, E607W
203982	0204151030	Water	C607W, E607W
203983MS	0204151110	Water	C607W, CHROM-GC/MS, E607W
203984	0204151309	Water	C607W, CHROM-GC/MS, E607W
203985	0204151413	Water	C607W, CHROM-GC/MS, E607W
203986	0204161006	Water	C607W, E607W
203987	0204170840	Water	C607W, E607W
203988	0204170845	Water	C607W, E607W

Work Order: 22289	Project: 01.01608.20X	Client: ALLIED SIGNAL
VTSR Date: Apr 18, 2002	VTSR Time: 13:35:00	Manager: SUN, GANG

System ID	Customer Sample ID	Matrix	Assay
203989	0204160820	Water	NDMA-EXT, NDMA-HR

SOUTHWEST RESEARCH INSTITUTE
NUCLEAR PROJECT
CLIENT: Division 20
WORK ORDER: 22803
SDG: 209036
VTSR: July 11, 2002
PROJECT#: 20.01402.561

FINAL REPORT

MEMORANDUM

TO: **Bradley Werling**
Division 20 Bldg. 57

FROM: **Jo Ann Boyd, Manager QAU, Division 01**

RE: **Project No.: 20.01402.561**
Work Order: #22803
Samples Received: July 11, 2002

Analysis of liquid samples by ICP.
Raw data and nuclear safety documentation for this project are archived in Division 01.

DATE: **July 16, 2002**

Enclosed, please find the sample results for the analysis referenced above.

If there are any questions, please feel free to contact me by voice mail at 522-2169 or by fax at 522-2021. I look forward to our continued analytical support of your projects.

Jo Ann Boyd
Manager QAU

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
Si A

Lab Name: Southwest Research Institute

Lab Code: SwRI

Matrix: Liquid

Lab System ID: 209036

Client: Division 20

Date Received: 07/11/02

Project No.: 20.01402.561

Work Order: 22803

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.050	0.050
Antimony	<0.010	0.010
Arsenic	<0.005	0.005
Barium	<0.005	0.005
Beryllium	<0.005	0.005
Bismuth	<0.010	0.010
Boron	<0.050	0.050
Cadmium	<0.005	0.005
Calcium	0.050	0.040
Chromium	<0.005	0.005
Cobalt	<0.005	0.005
Copper	<0.005	0.005
Iron	<0.025	0.025
Lanthanum	<0.005	0.005
Lead	<0.005	0.005
Lithium	<0.005	0.005
Magnesium	<0.050	0.050
Manganese	<0.005	0.005
Molybdenum	<0.005	0.005
Nickel	<0.005	0.005
Palladium	<0.005	0.005
Phosphorus	<0.020	0.020
Potassium	<0.100	0.100
Selenium	<0.005	0.005
Silicon	34.1	0.020
Silver	<0.005	0.005
Sodium	0.109	0.050
Strontium	<0.005	0.005
Sulfur	0.033	0.020
Thallium	<0.010	0.010
Thorium	<0.010	0.010
Tin	<0.005	0.005
Titanium	<0.005	0.005
Tungsten	<0.010	0.010
Uranium	<0.100	0.100
Vanadium	<0.005	0.005
Yttrium	<0.005	0.005
Zinc	<0.005	0.005
Zirconium	<0.005	0.005

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

DUPLICATE SUMMARY

Sample ID
Si AD

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 07/11/02

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 209036D

Work Order: 22803

Analysis	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD
Aluminum	<0.050	<0.050	0.00%
Antimony	<0.010	<0.010	0.00%
Arsenic	<0.005	<0.005	0.00%
Barium	<0.005	<0.005	0.00%
Beryllium	<0.005	<0.005	0.00%
Bismuth	<0.010	<0.010	0.00%
Boron	<0.050	<0.050	0.00%
Cadmium	<0.005	<0.005	0.00%
Calcium	0.050	0.043	14.7%
Chromium	<0.005	<0.005	0.00%
Cobalt	<0.005	<0.005	0.00%
Copper	<0.005	<0.005	0.00%
Iron	<0.025	<0.025	0.00%
Lanthanum	<0.005	<0.005	0.00%
Lead	<0.005	<0.005	0.00%
Lithium	<0.005	<0.005	0.00%
Magnesium	<0.050	<0.050	0.00%
Manganese	<0.005	<0.005	0.00%
Molybdenum	<0.005	<0.005	0.00%
Nickel	<0.005	<0.005	0.00%
Palladium	<0.005	<0.005	0.00%
Phosphorus	<0.020	<0.020	0.00%
Potassium	<0.100	<0.100	0.00%
Selenium	<0.005	<0.005	0.00%
Silicon	34.1	34.0	0.25%
Silver	<0.005	<0.005	0.00%
Sodium	0.109	0.096	12.0%
Strontium	<0.005	<0.005	0.00%
Sulfur	0.033	0.033	1.03%
Thallium	<0.010	<0.010	0.00%
Thorium	<0.010	<0.010	0.00%
Tin	<0.005	<0.005	0.00%
Titanium	<0.005	<0.005	0.00%
Tungsten	<0.010	<0.010	0.00%
Uranium	<0.100	<0.100	0.00%
Vanadium	<0.005	<0.005	0.00%
Yttrium	<0.005	<0.005	0.00%
Zinc	<0.005	<0.005	0.00%
Zirconium	<0.005	<0.005	0.00%

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

SAMPLE ANALYSIS DATA SHEET

Sample ID
Si B

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 07/11/02

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 209037

Work Order: 22803

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.050	0.050
Antimony	<0.010	0.010
Arsenic	<0.005	0.005
Barium	<0.005	0.005
Beryllium	<0.005	0.005
Bismuth	<0.010	0.010
Boron	<0.050	0.050
Cadmium	<0.005	0.005
Calcium	0.047	0.040
Chromium	<0.005	0.005
Cobalt	<0.005	0.005
Copper	<0.005	0.005
Iron	<0.025	0.025
Lanthanum	<0.005	0.005
Lead	<0.005	0.005
Lithium	<0.005	0.005
Magnesium	<0.050	0.050
Manganese	<0.005	0.005
Molybdenum	<0.005	0.005
Nickel	<0.005	0.005
Palladium	<0.005	0.005
Phosphorus	<0.020	0.020
Potassium	<0.100	0.100
Selenium	<0.005	0.005
Silicon	33.8	0.020
Silver	<0.005	0.005
Sodium	0.092	0.050
Strontium	<0.005	0.005
Sulfur	0.140	0.020
Thallium	<0.010	0.010
Thorium	<0.010	0.010
Tin	<0.005	0.005
Titanium	<0.005	0.005
Tungsten	<0.010	0.010
Uranium	<0.100	0.100
Vanadium	<0.005	0.005
Yttrium	<0.005	0.005
Zinc	<0.005	0.005
Zirconium	<0.005	0.005

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

MATRIX SPIKE SUMMARY

Sample ID
Si BS

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 07/11/02

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 209037S

Work Order: 22803

Analysis	Sample Result (mg/L)	Spike Result (mg/L)	Spike Added (mg/L)	Recovery
Aluminum	<0.050	2.19	2.00	110%
Antimony	<0.010	0.543	0.500	109%
Arsenic	<0.005	2.28	2.00	114%
Barium	<0.005	2.26	2.00	113%
Beryllium	<0.005	0.054	0.050	108%
Bismuth	NA	NA	NA	NA
Boron	NA	NA	NA	NA
Cadmium	<0.005	0.054	0.050	108%
Calcium	0.047	21.5	20.0	107%
Chromium	<0.005	0.211	0.200	105%
Cobalt	<0.005	0.525	0.500	105%
Copper	<0.005	0.278	0.250	111%
Iron	<0.025	1.04	1.00	104%
Lanthanum	NA	NA	NA	NA
Lead	<0.005	0.567	0.500	113%
Lithium	NA	NA	NA	NA
Magnesium	<0.050	22.1	20.0	111%
Manganese	<0.005	0.546	0.500	109%
Molybdenum	NA	NA	NA	NA
Nickel	<0.005	0.527	0.500	105%
Palladium	NA	NA	NA	NA
Phosphorus	NA	NA	NA	NA
Potassium	<0.100	20.9	20.0	105%
Selenium	<0.005	2.36	2.00	118%
Silicon	33.8	37.7	4.00	98.8%
Silver	<0.005	0.055	0.050	110%
Sodium	0.092	19.9	20.0	99.2%
Strontium	NA	NA	NA	NA
Sulfur	NA	NA	NA	NA
Thallium	<0.010	2.35	2.00	117%
Thorium	NA	NA	NA	NA
Tin	NA	NA	NA	NA
Titanium	NA	NA	NA	NA
Tungsten	NA	NA	NA	NA
Uranium	NA	NA	NA	NA
Vanadium	<0.005	0.531	0.500	106%
Yttrium	NA	NA	NA	NA
Zinc	<0.005	0.534	0.500	107%
Zirconium	NA	NA	NA	NA

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
SAMPLE ANALYSIS DATA SHEET

Sample ID
Si C

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: 07/11/02

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: 209038

Work Order: 22803

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.050	0.050
Antimony	<0.010	0.010
Arsenic	<0.005	0.005
Barium	<0.005	0.005
Beryllium	<0.005	0.005
Bismuth	<0.010	0.010
Boron	<0.050	0.050
Cadmium	<0.005	0.005
Calcium	0.059	0.040
Chromium	<0.005	0.005
Cobalt	<0.005	0.005
Copper	<0.005	0.005
Iron	<0.025	0.025
Lanthanum	<0.005	0.005
Lead	<0.005	0.005
Lithium	<0.005	0.005
Magnesium	<0.050	0.050
Manganese	<0.005	0.005
Molybdenum	<0.005	0.005
Nickel	<0.005	0.005
Palladium	<0.005	0.005
Phosphorus	<0.020	0.020
Potassium	<0.100	0.100
Selenium	<0.005	0.005
Silicon	33.9	0.020
Silver	<0.005	0.005
Sodium	0.099	0.050
Strontium	<0.005	0.005
Sulfur	0.034	0.020
Thallium	<0.010	0.010
Thorium	<0.010	0.010
Tin	<0.005	0.005
Titanium	<0.005	0.005
Tungsten	<0.010	0.010
Uranium	<0.100	0.100
Vanadium	<0.005	0.005
Yttrium	<0.005	0.005
Zinc	<0.005	0.005
Zirconium	<0.005	0.005

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE
LABORATORY CONTROL SAMPLE

Sample ID
LCSW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: NA

Work Order: 22803

Analysis	Sample Result (mg/L)	True Value (mg/L)	Recovery
Aluminum	2.19	2.00	110%
Antimony	0.543	0.500	109%
Arsenic	2.25	2.00	113%
Barium	2.26	2.00	113%
Beryllium	0.056	0.050	111%
Bismuth	NA	NA	NA
Boron	NA	NA	NA
Cadmium	0.054	0.050	108%
Calcium	21.4	20	107%
Chromium	0.209	0.200	104%
Cobalt	0.521	0.500	104%
Copper	0.278	0.250	111%
Iron	1.02	1.00	102%
Lanthanum	NA	NA	NA
Lead	0.565	0.500	113%
Lithium	NA	NA	NA
Magnesium	21.9	20	109.4%
Manganese	0.542	0.500	108.4%
Molybdenum	NA	NA	NA
Nickel	0.524	0.500	105%
Palladium	NA	NA	NA
Phosphorus	NA	NA	NA
Potassium	19.2	20	96.2%
Selenium	2.27	2.00	113%
Silicon	4.32	4.00	108%
Silver	0.055	0.050	109%
Sodium	19.5	20	97.5%
Strontium	NA	NA	NA
Sulfur	NA	NA	NA
Thallium	2.33	2.00	116%
Thorium	NA	NA	NA
Tin	NA	NA	NA
Titanium	NA	NA	NA
Tungsten	NA	NA	NA
Uranium	NA	NA	NA
Vanadium	0.531	0.500	106%
Yttrium	NA	NA	NA
Zinc	0.521	0.500	104%
Zirconium	NA	NA	NA

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.

SOUTHWEST RESEARCH INSTITUTE

BLANK SUMMARY

Sample ID
PBW

Lab Name: Southwest Research Institute

Client: Division 20

Lab Code: SwRI

Date Received: NA

Matrix: Liquid

Project No.: 20.01402.561

Lab System ID: NA

Work Order: 22803

Analysis	Sample Result (mg/L)	Reporting Limit (mg/L)
Aluminum	<0.050	0.050
Antimony	<0.010	0.010
Arsenic	<0.005	0.005
Barium	<0.005	0.005
Beryllium	<0.005	0.005
Bismuth	<0.010	0.010
Boron	<0.050	0.050
Cadmium	<0.005	0.005
Calcium	<0.040	0.040
Chromium	<0.005	0.005
Cobalt	<0.005	0.005
Copper	<0.005	0.005
Iron	<0.025	0.025
Lanthanum	<0.005	0.005
Lead	<0.005	0.005
Lithium	<0.005	0.005
Magnesium	<0.050	0.050
Manganese	<0.005	0.005
Molybdenum	<0.005	0.005
Nickel	<0.005	0.005
Palladium	<0.005	0.005
Phosphorus	<0.020	0.020
Potassium	<0.100	0.100
Selenium	<0.005	0.005
Silicon	<0.020	0.020
Silver	<0.005	0.005
Sodium	<0.050	0.050
Strontium	<0.005	0.005
Sulfur	<0.020	0.020
Thallium	<0.010	0.010
Thorium	<0.010	0.010
Tin	<0.005	0.005
Titanium	<0.005	0.005
Tungsten	<0.010	0.010
Uranium	<0.100	0.100
Vanadium	<0.005	0.005
Yttrium	<0.005	0.005
Zinc	<0.005	0.005
Zirconium	<0.005	0.005

NA- Not Applicable.

This report may not be reproduced except in its entirety without the written approval of SwRI.