This document was too large to scan as a whole document, therefore it required breaking into smaller sections.

Document number: SD-WM-DP-178

Section 3 **of** 6

Title: Final Report for Tank 241AY101 Grab Samples 1AY-96-1 Thru 1AY-96-10 & 1AY-96-FB [Pgs 388 Thru 587]

Date: 07/22/1996 **Revision:** R001

Originator: Esch, RA
Co: WHC

Recipient:
Co:

References: ECN-633305

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-178, REV. 1

Sample: STD Date: 05/08/96 Time: 07:32:14

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = BLK
Blank Value = .8191001 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.80	0.00
2	1.01	28.40	97.18
3	1.51	49.70	42.86
4	2.01	55.70	10.77
5	2.51	57.80	3.63
6	3.01	58.80	1.70
7	3.51	59.30	0.84
8	4.01	59.80	0.84
9	4.51	60.20	0.66
10	5.01	60.60	0.66

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 349 TO 393.

BLANK VALUE = 4.1 micrograms carbon
BLANK FACTOR = 4.1 / 5.005493 = +8.2E-01 ug/min Carbon

SAMPLE RESULTS:
(60.6 - 4.1)(11)/(200) = +3.11E+00 g/L Carbon
(60.6 - 4.1)(11)/(200)(12) = +2.59E-01 Molar Carbon

Sample Run By: R. WENDLAND 05/08/96
RA WENDLAND 00000

E EEEEE

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-178, REV. 1

Sample: BASE Date: 05/08/96 Time: 06:54:28

Sample Size = 200 uL
Dil Factor = 1
Blank ID # =
Blank Value = 0 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	0.90	55.56
3	1.51	1.30	30.77
4	2.01	1.80	27.78
5	2.51	2.10	14.29
6	3.01	2.60	19.23
7	3.51	3.00	13.33
8	4.00	3.50	14.29
9	4.50	3.90	10.26
10	5.00	4.30	9.30

USER INPUT BLANK VALUE
BLANK VALUE = 0 micrograms carbon
BLANK FACTOR = 0 / 0 = +0.0E+00 ug/min Carbon

SAMPLE RESULTS:
(4.3 - 0)(1)/(200) = +2.2E-02 g/L Carbon
(4.3 - 0)(1)/(200)(12) = +1.8E-03 Molar Carbon

Sample Run By: R. Wendland
RA WENDLAND 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: BLK Date: 05/08/96 Time: 07:13:46

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = N/A

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.80	75.00
3	1.51	1.30	38.46
4	2.01	1.60	18.75
5	2.51	2.00	20.00
6	3.01	2.50	20.00
7	3.51	2.80	10.71
8	4.01	3.20	12.50
9	4.51	3.60	11.11
10	5.01	4.10	12.20

BLANK VALUE = 4.1 micrograms carbon
BLANK FACTOR = 4.1 / 5.005493 = +8.2E-01 ug/min Carbon

Sample Run By: RA WENDLAND 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 20 Date: 05/08/96 Time: 11:38:47

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = BLK
Blank Value = .8191001 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.30	0.00
2	1.01	41.70	96.88
3	1.51	56.80	26.58
4	2.01	60.30	5.80
5	2.51	61.50	1.95
6	3.01	62.20	1.13
7	3.51	62.70	0.80
8	4.01	63.20	0.79
9	4.51	63.70	0.78
10	5.00	64.10	0.62

BLANK VALUE = 4.1 micrograms carbon
BLANK FACTOR = 4.1 / 5.005493 = +8.2E-01 ug/min Carbon

SAMPLE RESULTS:
(64.1 - 4.09935)(11)/(200) = +3.30E+00 g/L Carbon
(64.1 - 4.09935)(11)/(200)(12) = +2.75E-01 Molar Carbon

Sample Run By: R. Wendland
RA WENDLAND 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 20DUP Date: 05/08/96 Time: 11:46:00

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = BLK
Blank Value = .8191001 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.90	0.00
2	1.01	39.60	97.73
3	1.51	55.60	28.78
4	2.01	60.20	7.64
5	2.51	62.00	2.90
6	3.01	63.30	2.05
7	3.51	63.70	0.63
8	4.01	64.40	1.09
9	4.51	64.90	0.77
10	5.01	65.40	0.76

BLANK VALUE = 4.1 micrograms carbon
BLANK FACTOR = 4.1 / 5.005493 = +8.2E-01 ug/min Carbon

SAMPLE RESULTS:
(65.4 - 4.1)(11)/(200) = +3.37E+00 g/L Carbon
(65.4 - 4.1)(11)/(200)(12) = +2.81E-01 Molar Carbon

Sample Run By: R. WENDLAND
RA WENDLAND 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 20SPK Date: 05/08/96 Time: 11:51:56

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .8191001 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.50	0.00
2	1.01	53.30	97.19
3	1.51	89.00	40.11
4	2.01	99.80	10.82
5	2.51	103.50	3.57
6	3.01	105.40	1.80
7	3.51	106.30	0.85
8	4.01	107.00	0.65
9	4.51	107.60	0.56
10	5.01	108.10	0.46

BLANK VALUE = 4.1 micrograms carbon
BLANK FACTOR = 4.1 / 5.005493 = +8.2E-01 ug/min Carbon

SAMPLE RESULTS:
(108.1 - 4.10015)(1)/(200) = +5.200E-01 g/L Carbon
(108.1 - 4.10015)(1)/(200)(12) = +4.333E-02 Molar Carbon

Sample Run By: R. Wendland
RA WENDLAND 00000

LABCORE Data Entry Template for Worklist# 8281

Analyst: DBS **Instrument:** TOC01 **Book #** 16N12-E

Method: LA-344-105 Rev/Mod C-0 SPK# 11N12-H

Worklist Comment: TOC-01, AY-101. new

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				TOC-01	LIQUID	1	0.3	N/A	ug/mL
		2	STD				TOC-01	LIQUID	2.99e3	2.93e3	N/A	ug/mL
96000210	AY-101 GRAB	3	SAMPLE	S96T001208	0		TOC-01	LIQUID	N/A	<5.50	5.50	ug/mL
96000210	AY-101 GRAB	4	DUP	S96T001208	0		TOC-01	LIQUID	<5.50	7.15	N/A	ug/mL
96000210	AY-101 GRAB	5	SPK	S96T001208	0		TOC-01	LIQUID	100	99.4	N/A	ug/mL
96000459	A-101 GRAB	6	SAMPLE	S96T002014	0		TOC-01	LIQUID	N/A	4.58e3	5.50e1	ug/mL
96000459	A-101 GRAB	7	DUP	S96T002014	0		TOC-01	LIQUID	4.58e3	4.96e3	N/A	ug/mL

Final page for worklist # 8281

D.S. Griffin 5-3-96
Analyst Signature **Date**

Rob Schroeder for Gary Hammitt 5/10/96
Analyst Signature **Date**

5-13-96
Approved RW Schroeder 5/13/96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

WORKBOOK PAGE: SAM3

TOC : LA-344-105 (C-0) LIQUIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	2.000
SAMPLE	H2SO4 Volume in mL	(VR)	0.200
Work List	Volume Injected in mL	(VI)	0.200
8281	Dilution Factor (calculated)	(DF)	1.100
Test Code	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Sample	(C1)	5
Matrix	µg of Carbon from Baseline	(C2)	4.3
LIQUID			
Sample Number			
96004170			
Replicate	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)		
0			
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI		
N/A			
Sample #			
S96T001208			
Instrument Code			
TOC01			
Prepared By			
GJH			
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
05/05/96			
Analysis Date	NOTE: Reported Result is Below Detection Level.		
05/03/96			
Analysis Time	Method Detection Limit in µg/mL		5.50E+00
08:28 PM			
Sample Point	µg of Carbon/mL	<	5.50E+00
AY-101			

Data Entered By:	GJH	Date:	05/05/96
Signature of Chemist:	RW Schroeder	Date:	5/10/96

SAMPLE.WB1 REV 2.0 344105ML

WORKBOOK PAGE: STD2

TOC : LA-344-105 (C-0) LIQUIDS

			STD
Type	Sample Volume in mL	(SS)	0.200
STD	H2SO4 Volume in mL	(VR)	2.000
Method Test	Volume Injected in mL	(VI)	0.200
8281	Dilution Factor (calculated)	(DF)	11.000
Test Code	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon Found	(C1)	57.6
Matrix	µg of Carbon from Baseline	(C2)	4.3
LIQUID	Standard Book Number		16N12E
Batch Number	Standard Value (µg/ml)		2990
96004170			
Rerun			
0	µg of Carbon/mL = (C1-C2) * DF * DDF / VI		
Sample Prep			
N/A	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
Sample #			
Instrument Code			
TOC01			
Prepared By			
GJH			
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
05/05/96			
Analysis Date			
05/03/96			
Analysis Time	Method Detection Limit in µg/mL		5.50E+01
08:28 PM	QC Actual in µg/mL		2.99E+03
Sample Point	QC Found in µg/mL		2.93E+03
AY-101	Percent Standard Recovery		98.0

Data Entered By:	GJH	Date:	05/05/96
Signature of Chemist:		Date:	5/10/96

STANDARD.WB1 REV 2.0 344105ML

WORKBOOK PAGE: BLANK1

TOC : LA-344-105 (C-0) LIQUIDS

			BLNK
Sample Volume in mL	(SS)	0.200
H2SO4 Volume in mL	(VR)	0.000
Volume Injected in mL	(VI)	0.200
Dilution Factor (calculated)	(DF)	1.000
Digest Dilution Factor	(DDF)	1
µg of Carbon in Blank	(C1)	4
µg of Carbon from Baseline	(C2)	4.3

Type	BLNK
Work List	8281
Test Code	TOC-01
Matrix	LIQUID
Batch Number	96004170
Batch	0
Sample Prep	N/A
Sample #	BLNK
Instrument Code	TOC01
Prepared By	GJH
Chemist	RWS
Analyst	DGG
Date Complete	05/05/96
Analysis Date	05/03/96
Analysis Time	08:28 PM
Sample Point	AY-101

µg of Carbon = |C1-C2|

Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI

Method Detection Limit in µg/mL	5.00E+00
µg of Carbon	3.00E-01

Data Entered By:	GJH	Date:	05/05/96
Signature of Chemist:		Date:	5/10/96

BLANK.WB1 REV 2.0 344105ML

I:\344105\OUT\TOC8281.WB1 05/05/96 15:04:10

TOC : LA-344-105 (C-0) LIQUIDS

			DUP
Type	Sample Volume in mL	(SS)	2.000
DUP	H2SO4 Volume in mL	(VR)	0.200
Method List	Volume Injected in mL	(VI)	0.200
8281	Dilution Factor (calculated)	(DF)	1.100
Instrument Code	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Sample	(C1)	5.6
Matrix	µg of Carbon from Baseline	(C2)	4.3
LIQUID	Result from Sample Page		<5.50E+0
Batch Number			
96004170			
Rerun	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)		
0			
Sample Prep	Method Detection Limit = 1 µg C * DF * DDF / VI		
N/A			
Sample #	RPD (of Sample and Dup Results) = | Difference | / Average		
S96T001208			
Instrument Code			
TOC01			
Prepared By			
GJH			
Chemist			
RWS			
Analyst			
DGG			
Date Complete			
05/05/96			
Analysis Date			
05/03/96			
Analysis Time	Method Detection Limit in µg/mL		5.50E+00
08:28 PM			
Sample Point	µg of Carbon/mL		7.15E+00
AY-101	RPD (of Sam and Dup Results)		0.0%

Data Entered By:	GJH	Date:	05/05/96
Signature of Chemist:	RW Schwab	Date:	5/10/96

SAMPLE.WB1 REV 2.0 344105ML

WORKBOOK PAGE: SPIKE5

WHC-SD-WM-DP-178, REV. 1

TOC : LA-344-105 (C-0) LIQUIDS

SPIKE

	Sample Vial Data		Spiked Vial Data	
Sample Type: SPK	Sample Volume in mL (SS)	2.000	Was the sample dilution used? (yes/no)	YES
Work Set: 8281	H2SO4 Volume in mL (VR)	0.200	Sample Volume in mL (SPK SS)	0.400
	Volume Injected in mL (VI)	0.200	H2SO4 Volume in mL (SPK VR)	0.200
Test Code: TOC-01	µg of Carbon in Sample (C1)	5	Amount of Spike Std. in mL (SPK VOL)	0.400
	µg of Carbon from Baseline (C2)	4.3	Volume Injected in mL (SPK VI)	0.200
Matrix: LIQUID			µg C in Sample + Spike (C3)	63.8
			Pre-Spike Dilution Factor (PDF)	1.10
Batch Number: 96004170			Spike Book Number	11N12H
			Spike Value in µg/ml	748

Dilution: 0

Spike Correction Factor (SPK CF) = (SPK SS + SPK VOL + SPK VR) / SPK VI

Sample Prep: N/A

Sample Correction Factor (SAM CF) = (SS + VR) / (VI)

Sample Size Correction Factor (SS CF) = (SPK SS) / (SS)

Sample #: S96T001208

QC Actual in µg/mL = Spike Value (µg/mL)

Instrument Code: TOC01

QC Found in µg/mL = [(C3 - C2)(SPK CF) - (C1-C2)(SAM CF)(SS CF)/(PDF)] / (SPK VOL)

Percent Spike Recovery = (QC Found) / (QC Actual) * 100

Prepared By: GJH

Chemist: RWS

Analyst: DGG

Date Complete: 05/05/96

Analysis Date: 05/03/96

Analysis Time: 08:28 PM

Sample Point: AY-101

QC Actual in µg/mL	7.48E+02
QC Found in µg/mL	7.44E+02
Percent Spike Recovery	99.4

Data Entered By: GJH Date: 05/05/96

Signature of Chemist: RW Schroeder Date: 5/10/96

SPIKE.WB1 REV 2.0 344105ML

I:\344105\OUT\TOC8281.WB1 05/05/96 16:26:12

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK Date: 05/03/96 Time: 18:12:43

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLANK
Blank Value = .6138576 ug/minute C

Analyst : DG GRIFFIN
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.70	71.43
3	1.51	0.90	22.22
4	2.01	1.20	25.00
5	2.51	1.50	20.00
6	3.01	1.70	11.76
7	3.51	2.00	15.00
8	4.01	2.30	13.04
9	4.51	2.50	8.00
10	5.01	2.80	10.71
11	5.51	3.10	9.68
12	6.01	3.30	6.06
13	6.51	3.60	8.33
14	7.01	4.00	10.00

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 400 TO 406.

BLANK VALUE = 4.3 micrograms carbon
BLANK FACTOR = 4.3 / 7.004883 = +6.1E-01 ug/min Carbon

SAMPLE RESULTS:
(4 - 4.300525)(1)/(200) = < 5.00 E-3 g/L Carbon
(4 - 4.300525)(1)/(200)(12) = < 4.17 E-4 Molar Carbon
<<<< WARNING- PERCENT DIFFERENCE EXCEEDS 10 PERCENT >>>>

Sample Run By: DG Griffin 5/03/96
DG GRIFFIN 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: BLANK Date: 05/03/96 Time: 17:53:13

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLANK
Blank Value = N/A

Analyst : DG GRIFFIN
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	0.70	57.14
3	1.51	1.10	36.36
4	2.00	1.40	21.43
5	2.51	1.70	17.65
6	3.01	2.00	15.00
7	3.51	2.30	13.04
8	4.01	2.60	11.54
9	4.50	2.90	10.34
10	5.00	3.20	9.37
11	5.50	3.50	8.57
12	6.00	3.70	5.41
13	6.50	4.20	11.90
14	7.00	4.30	2.33

BLANK VALUE = 4.3 micrograms carbon
BLANK FACTOR = 4.3 / 7.004883 = +6.1E-01 ug/min Carbon

Sample Run By: _____
DG GRIFFIN 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: LMCS STD. Date: 05/03/96 Time: 18:04:16

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = BLANK
Blank Value = .6138576 ug/minute C

Analyst : DG GRIFFIN
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.00	0.00
2	1.01	31.20	96.79
3	1.51	46.00	32.17
4	2.01	51.00	9.80
5	2.51	53.30	4.32
6	3.01	54.50	2.20
7	3.51	55.20	1.27
8	4.01	55.70	0.90
9	4.50	56.10	0.71
10	5.00	56.50	0.71
11	5.51	56.90	0.70
12	6.01	57.10	0.35
13	6.51	57.40	0.52
14	7.00	57.60	0.35

BLANK VALUE = 4.3 micrograms carbon
BLANK FACTOR = 4.3 / 7.004883 = +6.1E-01 ug/min Carbon

SAMPLE RESULTS:
(57.6 - 4.299476)(11)/(200) = +2.93E+00 g/L Carbon
(57.6 - 4.299476)(11)/(200)(12) = +2.44E-01 Molar Carbon

Sample Run By: _____
DG GRIFFIN 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T001208 Date: 05/03/96 Time: 19:42:06

Sample Size = 200 uL
Dil Factor = 1.1
Blank ID # = BLANK
Blank Value = .6138576 ug/minute C

Analyst : DG GRIFFIN
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	1.10	63.64
3	1.51	1.50	26.67
4	2.01	1.80	16.67
5	2.51	2.20	18.18
6	3.01	2.60	15.38
7	3.51	2.80	7.14
8	4.01	3.10	9.68
9	4.51	3.40	8.82
10	5.01	3.70	8.11
11	5.51	4.00	7.50
12	6.01	4.30	6.98
13	6.51	4.70	8.51
14	7.00	5.00	6.00

BLANK VALUE = 4.3 micrograms carbon
BLANK FACTOR = 4.3 / 7.004883 = +6.1E-01 ug/min Carbon

SAMPLE RESULTS:
(5 - 4.299925)(1.1)/(200) = < 5.00 E-3 g/L Carbon
(5 - 4.299925)(1.1)/(200)(12) = < 4.17 E-4 Molar Carbon

Sample Run By: _____
DG GRIFFIN 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T001208DUP Date: 05/03/96 Time: 19:55:20

Sample Size = 200 uL
Dil Factor = 1.1
Blank ID # = BLANK
Blank Value = .6138576 ug/minute C

Analyst : DG GRIFFIN
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	1.30	76.92
3	1.51	1.70	23.53
4	2.00	2.20	22.73
5	2.50	2.60	15.38
6	3.00	3.00	13.33
7	3.50	3.30	9.09
8	4.00	3.60	8.33
9	4.50	4.10	12.20
10	5.00	4.30	4.65
11	5.50	4.60	6.52
12	6.00	5.00	8.00
13	6.50	5.30	5.66
14	7.00	5.60	5.36

BLANK VALUE = 4.3 micrograms carbon
BLANK FACTOR = 4.3 / 7.004883 = +6.1E-01 ug/min Carbon

SAMPLE RESULTS:
(5.6 - 4.298876)(1.1)/(200) = +7.2E-03 g/L Carbon
(5.6 - 4.298876)(1.1)/(200)(12) = +6.0E-04 Molar Carbon

Sample Run By: _____
DG GRIFFIN 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T001208SPK Date: 05/03/96 Time: 20:07:14

Sample Size = 200 uL
Dil Factor = 2.5
Blank ID # = BLANK
Blank Value = .6138576 ug/minute C

Analyst : DG GRIFFIN
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.90	0.00
2	1.01	42.50	97.88
3	1.51	52.30	18.74
4	2.00	56.20	6.94
5	2.50	58.50	3.93
6	3.00	59.90	2.34
7	3.50	60.90	1.64
8	4.00	61.40	0.81
9	4.50	62.00	0.97
10	5.00	62.30	0.48
11	5.50	62.80	0.80
12	6.00	63.10	0.48
13	6.50	63.40	0.47
14	7.00	63.80	0.63

BLANK VALUE = 4.3 micrograms carbon
BLANK FACTOR = 4.3 / 7.004883 = +6.1E-01 ug/min Carbon

SAMPLE RESULTS:
(63.8 - 4.299476)(2.5)/(200) = +7.44E-01 g/L Carbon
(63.8 - 4.299476)(2.5)/(200)(12) = +6.20E-02 Molar Carbon

Sample Run By: _____
DG GRIFFIN 00000

LABCORE Data Entry Template for Worklist# 8282

Analyst: JLS2 **Instrument:** CARB2 _____ **Book #** 116N2E

Method: LA-342-100 Rev/Mod D-D

Worklist Comment: AY-101, TOC-02. new

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK				TOC-02	LIQUID	1	8.1	N/A	ug/mL
		2 STD				TOC-02	LIQUID	3.00E3	2.78E3	N/A	ug/mL
96000210	AY-101 GRAB	3 SAMPLE	S96T001317	0		TOC-02	LIQUID	N/A	3.89E3	40.0	ug/mL
96000210	AY-101 GRAB	4 DUP	S96T001317	0		TOC-02	LIQUID	3.89E3	3.57E3	N/A	ug/mL
96000210	AY-101 GRAB	5 SPK	S96T001317	0		TOC-02	LIQUID	100	94	N/A	ug/mL

Final page for worklist # 8282

Jackie Steele 5/7/96
Analyst Signature Date

[illegible] 5-8-96
Analyst Signature Date

Approved RW Schneider 5/8/96

TIC data is included as additional information.
[illegible] 6/4/96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0 WHC-SD-WM-DP-178, REV. 1
<<< BLANK ANALYSIS >>>

Sample: BASELINE Date: 05/07/96 Time: 08:51:19

Sample Size = 1 uL
Dil Factor = 1
Blank ID # = BASELINE
Blank Value = N/A

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	1.30	69.23
3	1.50	1.90	31.58
4	2.00	2.60	26.92
5	2.50	3.10	16.13
6	3.00	3.40	8.82
7	3.50	3.60	5.56
8	4.00	3.90	7.69
9	4.50	4.20	7.14
10	5.00	4.40	4.55
11	5.50	4.60	4.35
12	6.00	5.00	8.00
13	6.50	5.20	3.85
14	7.00	5.50	5.45
15	7.50	5.70	3.51
16	8.00	5.90	3.39
17	8.50	6.20	4.84
18	9.00	6.50	4.62
19	9.50	6.80	4.41
20	10.00	6.90	1.45
21	10.50	7.30	5.48
22	11.00	7.40	1.35

BLANK VALUE = 7.4 micrograms carbon
BLANK FACTOR = 7.4 / 11.00067 = +6.7E-01 ug/min Carbon

Sample Run By: Jackie Steele 5/17/96
JL STEELE 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

WHC-SD-WM-DP-178, REV 1

Sample: BASELINE Date: 05/07/96 Time: 09:16:20

Sample Size = 1 uL
Dil Factor = 1
Blank ID # = BASELINE
Blank Value = N/A

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	2.00	100.00
3	1.50	8.30	75.90
4	2.00	17.60	52.84
5	2.50	23.10	23.81
6	3.00	25.30	8.70
7	3.50	26.60	4.89
8	4.00	27.20	2.21
9	4.50	27.90	2.51
10	5.00	28.20	1.06
11	5.50	28.70	1.74
12	6.00	29.10	1.37
13	6.50	29.80	2.35
14	7.00	30.10	1.00
15	7.50	30.60	1.63
16	8.00	31.00	1.29
17	8.50	31.30	0.96
18	9.00	31.60	0.95
19	9.50	32.00	1.25
20	10.00	32.40	1.23
21	10.50	32.60	0.61
22	11.00	32.90	0.91

BLANK VALUE = 32.9 micrograms carbon
BLANK FACTOR = 32.9 / 11.00067 = +2.99E+00 ug/min Carbon

<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: Jackie Steele 5/07/96
JL STEELE 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
WHC-SD-WM-DP-178, REV. 1

Sample: STD 22N12A Date: 05/07/96 Time: 09:29:25

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .67 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.00	0.00
2	1.01	56.50	100.00
3	1.50	229.90	75.42
4	2.00	387.30	40.64
5	2.50	490.90	21.10
6	3.00	551.20	10.94
7	3.50	578.50	4.72
8	4.00	589.50	1.87
9	4.50	594.10	0.77
10	5.00	595.60	0.25
11	5.50	596.50	0.15
12	6.00	596.90	0.07
13	6.50	597.40	0.08
14	7.00	597.80	0.07
15	7.50	598.20	0.07
16	8.00	598.40	0.03
17	8.50	598.70	0.05
18	9.00	599.00	0.05
19	9.50	599.20	0.03
20	10.00	599.50	0.05
21	10.50	599.70	0.03
22	11.00	600.00	0.05

USER INPUT BLANK VALUE
BLANK VALUE = 7.37045 micrograms carbon
BLANK FACTOR = 7.37045 / 11.00067 = +6.7E-01 ug/min Carbon

SAMPLE RESULTS:
(600 - 7.369755)(1)/(1) = +5.926E+02 g/L Carbon
(600 - 7.369755)(1)/(1)(12) = +4.939E+01 Molar Carbon

Sample Run By: Jackie Steele 5/07/96
JL STEELE 00000

$\frac{592.6}{602} = 98.44\%$

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-178, REV. 1

Sample: 16N12E Date: 05/07/96 Time: 09:41:37

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = 2.99 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	30.10	99.67
3	1.51	163.40	81.58
4	2.00	393.40	58.46
5	2.50	525.50	25.14
6	3.00	565.70	7.11
7	3.50	577.60	2.06
8	4.00	581.20	0.62
9	4.50	582.90	0.29
10	5.00	583.70	0.14
11	5.50	584.30	0.10
12	6.00	585.00	0.12
13	6.50	585.50	0.09
14	7.00	586.00	0.09
15	7.50	586.40	0.07
16	8.00	586.80	0.07
17	8.50	587.20	0.07
18	9.00	587.50	0.05
19	9.50	587.90	0.07
20	10.00	588.20	0.05
21	10.50	588.50	0.05
22	11.00	588.70	0.03

USER INPUT BLANK VALUE
BLANK VALUE = 32.89201 micrograms carbon
BLANK FACTOR = 32.89201 / 11.00067 = +3.0E+00 ug/min Carbon

SAMPLE RESULTS:
(588.7 - 32.88964)(1)/(1) = +5.558E+02 g/L Carbon
(588.7 - 32.88964)(1)/(1)(12) = +4.632E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: Jackie Steele 5/07/96
JL STEELE 00000

$\frac{5558.}{.200ml} = 2779/3000 = 92.63\%$

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-178, REV. 1

Sample: BLANK Date: 05/07/96 Time: 09:53:32

Sample Size = 1 uL
Dil Factor = 1
Blank ID # =
Blank Value = .67 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	1.60	87.50
3	1.51	2.40	33.33
4	2.01	2.90	17.24
5	2.51	3.40	14.71
6	3.01	3.60	5.56
7	3.51	3.80	5.26
8	4.00	4.00	5.00
9	4.50	4.20	4.76
10	5.00	4.40	4.55
11	5.50	4.60	4.35
12	6.00	4.70	2.13
13	6.50	4.90	4.08
14	7.00	5.00	2.00
15	7.50	5.20	3.85
16	8.00	5.40	3.70
17	8.50	5.60	3.57
18	9.00	5.70	1.75
19	9.50	5.90	3.39
20	10.00	6.00	1.67
21	10.50	6.20	3.23
22	11.00	6.50	4.62

USER INPUT BLANK VALUE
BLANK VALUE = 7.37045 micrograms carbon
BLANK FACTOR = 7.37045 / 11.00067 = +6.7E-01 ug/min Carbon

SAMPLE RESULTS:
(6.5 - 7.370491)(1)/(1) = < 5.00 E-3 g/L Carbon
(6.5 - 7.370491)(1)/(1)(12) = < 4.17 E-4 Molar Carbon

Sample Run By: Jackie Steele 5/07/96
JL STEELE 00000

|6.50 - 7.40| = .9

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-178, REV. 1

Sample: S96T001317 Date: 05/07/96 Time: 13:48:04

Sample Size = 1 uL .100ml
Dil Factor = 1
Blank ID # =
Blank Value = .67 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.00	0.00
2	1.00	26.20	96.18
3	1.50	195.00	86.56
4	2.00	399.50	51.19
5	2.50	548.50	27.16
6	3.00	640.60	14.38
7	3.50	692.10	7.44
8	4.00	718.00	3.61
9	4.50	731.10	1.79
10	5.00	737.50	0.87
11	5.50	741.60	0.55
12	6.00	745.10	0.47
13	6.50	748.30	0.43
14	7.00	751.10	0.37
15	7.50	753.50	0.32
16	8.00	755.90	0.32
17	8.50	757.80	0.25
18	9.00	759.90	0.28
19	9.50	761.70	0.24
20	10.00	763.50	0.24
21	10.50	764.90	0.18
22	11.00	766.70	0.23

USER INPUT BLANK VALUE
BLANK VALUE = 7.37045 micrograms carbon
BLANK FACTOR = 7.37045 / 11.00067 = +6.7E-01 ug/min Carbon

SAMPLE RESULTS:
(766.7 - 7.369755)(1)/(1) = +7.593E+02 g/L Carbon
(766.7 - 7.369755)(1)/(1)(12) = +6.328E+01 Molar Carbon

Sample Run By: Jacque Steele 05/07/96
JL STEELE 00000

$\frac{759.3}{.100ml} = 7.593^{E3}$

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-178, REV 1

Sample: S96T001317 Date: 05/07/96 Time: 14:00:01

Sample Size = 1 uL .100ml
Dil Factor = 1
Blank ID # =
Blank Value = 2.99 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.60	0.00
2	1.01	32.60	95.09
3	1.50	121.90	73.26
4	2.00	240.10	49.23
5	2.50	320.90	25.18
6	3.00	359.80	10.81
7	3.50	379.40	5.17
8	4.00	390.90	2.94
9	4.50	397.10	1.56
10	5.00	401.60	1.12
11	5.50	404.90	0.82
12	6.00	407.50	0.64
13	6.50	409.50	0.49
14	7.00	411.50	0.49
15	7.50	413.20	0.41
16	8.00	414.90	0.41
17	8.50	416.10	0.29
18	9.00	417.40	0.31
19	9.50	418.50	0.26
20	10.00	419.60	0.26
21	10.50	420.60	0.24
22	11.00	421.70	0.26

USER INPUT BLANK VALUE
BLANK VALUE = 32.89201 micrograms carbon
BLANK FACTOR = 32.89201 / 11.00067 = +3.0E+00 ug/min Carbon

SAMPLE RESULTS:
(421.7 - 32.88653)(1)/(1) = +3.888E+02 g/L Carbon
(421.7 - 32.88653)(1)/(1)(12) = +3.240E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: Jacque Steele 05-07-96
JL STEELE 00000

$\frac{388.8}{.100ml} = 3.888E3$

E

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-178, REV. 1

Sample: 1317 DUP Date: 05/07/96 Time: 14:12:44

Sample Size = 1 uL .100ml
Dil Factor = 1
Blank ID # =
Blank Value = .67 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.70	0.00
2	1.01	28.90	97.58
3	1.51	220.50	86.89
4	2.01	423.40	47.92
5	2.51	570.20	25.75
6	3.01	655.10	12.96
7	3.51	700.10	6.43
8	4.01	722.50	3.10
9	4.50	734.40	1.62
10	5.00	740.00	0.76
11	5.50	744.10	0.55
12	6.00	747.40	0.44
13	6.50	750.30	0.39
14	7.00	753.20	0.39
15	7.50	755.50	0.30
16	8.00	757.40	0.25
17	8.50	759.60	0.29
18	9.00	761.40	0.24
19	9.50	763.10	0.22
20	10.00	765.00	0.25
21	10.50	766.30	0.17
22	11.00	767.80	0.20

USER INPUT BLANK VALUE
BLANK VALUE = 7.37045 micrograms carbon
BLANK FACTOR = 7.37045 / 11.00067 = +6.7E-01 ug/min Carbon

SAMPLE RESULTS:
(767.8 - 7.371636)(1)/(1) = +7.604E+02 g/L Carbon
(767.8 - 7.371636)(1)/(1)(12) = +6.337E+01 Molar Carbon

Sample Run By: Jackie Steele 5/27/96
JL STEELE 00000

760.4 / .100ml = 7.604E3

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-178, REV. 1

Sample: 1317 DUP Date: 05/07/96 Time: 14:25:08

Sample Size = 1 uL .100ml
Dil Factor = 1
Blank ID # =
Blank Value = 2.99 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.70	0.00
2	1.01	21.00	91.90
3	1.51	100.30	79.06
4	2.00	217.20	53.82
5	2.50	299.90	27.58
6	3.00	340.20	11.85
7	3.51	358.30	5.05
8	4.01	366.10	2.13
9	4.50	370.00	1.05
10	5.00	372.90	0.78
11	5.50	375.10	0.59
12	6.00	377.10	0.53
13	6.50	379.10	0.53
14	7.00	380.80	0.45
15	7.50	382.30	0.39
16	8.00	383.70	0.36
17	8.50	384.90	0.31
18	9.00	386.50	0.41
19	9.50	387.30	0.21
20	10.00	388.20	0.23
21	10.50	389.10	0.23
22	11.00	390.10	0.26

USER INPUT BLANK VALUE
BLANK VALUE = 32.89201 micrograms carbon
BLANK FACTOR = 32.89201 / 11.00067 = +3.0E+00 ug/min Carbon

SAMPLE RESULTS:
(390.1 - 32.89219)(1)/(1) = +3.572E+02 g/L Carbon
(390.1 - 32.89219)(1)/(1)(12) = +2.977E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: Jackie Steele 5/07/96
JL STEELE 00000

$\frac{357.2}{.100ml} = 3.572E3$

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
WHC-SD-WM-DP-178, REV. 1

Sample: 1317 SPIKE Date: 05/07/96 Time: 14:37:26

Sample Size = 1 uL .100ml + .500ml 22N12A
Dil Factor = 1
Blank ID # =
Blank Value = .67 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.90	0.00
2	1.01	25.50	96.47
3	1.51	231.10	88.97
4	2.00	521.70	55.70
5	2.50	751.70	30.60
6	3.00	894.60	15.97
7	3.50	973.00	8.06
8	4.00	1011.60	3.82
9	4.50	1031.40	1.92
10	5.00	1040.30	0.86
11	5.50	1045.80	0.53
12	6.00	1049.90	0.39
13	6.50	1053.50	0.34
14	7.00	1056.60	0.29
15	7.50	1059.60	0.28
16	8.00	1062.40	0.26
17	8.50	1064.80	0.23
18	9.00	1067.20	0.22
19	9.50	1069.10	0.18
20	10.00	1071.00	0.18
21	10.50	1072.90	0.18
22	11.00	1074.60	0.16

USER INPUT BLANK VALUE
BLANK VALUE = 7.37045 micrograms carbon
BLANK FACTOR = 7.37045 / 11.00067 = +6.7E-01 ug/min Carbon

SAMPLE RESULTS:
(1074.6 - 7.369877)(1)/(1) = +1.0672E+03 g/L Carbon
(1074.6 - 7.369877)(1)/(1)(12) = +8.8936E+01 Molar Carbon

Sample Run By: Jackie Steele 5/17/96
JL STEELE 00000

416

$$\frac{1074.60}{\frac{1066.70}{.100ml} \times .100ml + .300} = \frac{1074.60}{1066.70} = 100.74\%$$

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-178, REV. 1

Sample: 1317 SPIKE Date: 05/07/96 Time: 14:49:25

Sample Size = 1 uL .100ml + .100ml 1 6N12E
Dil Factor = 1
Blank ID # =
Blank Value = 2.99 ug/minute C

Analyst : JL STEELE
Min Readings = 22
Max Readings = 22
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	2.00	0.00
2	1.01	33.90	94.10
3	1.50	161.20	78.97
4	2.00	412.20	60.89
5	2.50	556.20	25.89
6	3.00	613.00	9.27
7	3.50	636.70	3.72
8	4.00	647.70	1.70
9	4.50	652.70	0.77
10	5.00	656.10	0.52
11	5.50	659.00	0.44
12	6.00	661.20	0.33
13	6.50	663.00	0.27
14	7.00	664.70	0.26
15	7.50	666.40	0.26
16	8.00	667.90	0.22
17	8.50	669.30	0.21
18	9.00	670.60	0.19
19	9.50	671.70	0.16
20	10.00	672.80	0.16
21	10.50	674.00	0.18
22	11.00	674.90	0.13

USER INPUT BLANK VALUE
BLANK VALUE = 32.89201 micrograms carbon
BLANK FACTOR = 32.89201 / 11.00067 = +3.0E+00 ug/min Carbon

SAMPLE RESULTS:
(674.9 - 32.89164)(1)/(1) = +6.420E+02 g/L Carbon
(674.9 - 32.89164)(1)/(1)(12) = +5.350E+01 Molar Carbon
<<<< WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!!>>>>

Sample Run By: Jackie Steele 5/07/96
JL STEELE

$$\frac{674.90}{\frac{421.70}{100} \times .100 + 300} = \frac{674.90}{721.70} = 93.52\%$$

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-178, REV. 1

Sample: BLANK *Date: 05/07/96* *Time: 10:06:28*

Sample Size = 1 uL *Analyst : JL STEELE*
Dil Factor = 1 *Min Readings = 22*
Blank ID # = *Max Readings = 22*
Blank Value = 2.99 ug/minute C *% Difference = 10*

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	1.30	92.31
3	1.51	5.30	75.47
4	2.00	12.10	56.20
5	2.50	17.10	29.24
6	3.00	19.50	12.31
7	3.50	20.60	5.34
8	4.00	21.20	2.83
9	4.50	21.60	1.85
10	5.00	22.10	2.26
11	5.50	22.40	1.34
12	6.00	22.70	1.32
13	6.50	22.90	0.87
14	7.00	23.10	0.87
15	7.50	23.40	1.28
16	8.00	23.60	0.85
17	8.50	23.80	0.84
18	9.00	24.00	0.83
19	9.50	24.20	0.83
20	10.00	24.40	0.82
21	10.50	24.60	0.81
22	11.00	24.80	0.81

USER INPUT BLANK VALUE
BLANK VALUE = 32.89201 micrograms carbon
BLANK FACTOR = 32.89201 / 11.00067 = +3.0E+00 ug/min Carbon

SAMPLE RESULTS:
(24.8 - 32.88361)(1)/(1) = < 5.00 E-3 g/L Carbon
(24.8 - 32.88361)(1)/(1)(12) = < 4.17 E-4 Molar Carbon
< < < < WARNING - BLANK VALUE EXCEEDS 1.5 ug/min Carbon!!!!! > > > >

Sample Run By: Jackie Steele 5/07/96
JL STEELE *00000*

418

|24.80 - 32.90| = 8.1

LABCORE Data Entry Template for Worklist# 8842

Analyst: KRM **Instrument:** TIC01 **Book#** ~~12N12A~~ 24N12 9 RHH

Method: LA-344-105 Rev/Mod ~~00~~ D0 RWS 6/12/96

Worklist Comment: AY-101 GRAB FOR TOC-01 RTS!

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	BLNK				TOC-01	LIQUID		
2	STD				TOC-01	LIQUID		
3	SAMPLE	S96T001521	0		TOC-01	LIQUID	96000257	AY-101 GRAB
		Analytes Requested: TOC-01						
4	DUP	S96T001521	0		TOC-01	LIQUID		
5	SPK	S96T001521	0		TOC-01	LIQUID		

Final page for worklist # 8842

6-4-96

Analyst Signature **Date** **Analyst Signature** **Date**

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 8842

Analyst: krm **Instrument:** TIC01 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: AY-101 GRAB FOR TOC-01 RTS!

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	BLNK			0	TOC-01	LIQUID	1	2.00E-1	0.200	ug/mL
2	STD			0	TOC-01	LIQUID	3.00E+03	3.09E+3	103.000	% Recovery
3	SAMPLE	S96T001521		0	TOC-01	LIQUID	N/A	3.03E+03	55.000	ug/mL
4	DUP	S96T001521		0	TOC-01	LIQUID	3.03E+3	3.15E+3	3.883	RPD
5	SPK	S96T001521		0	TOC-01	LIQUID	1.00E+02	1.02E+02	102.000	% Recovery

Final page for worklist# 8842

6-5-96

Analyst Signature **Date**

Analyst Signature **Date**

6/5/96

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: BASELINE Date: 06/04/96 Time: 21:49:57

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BASELINE
Blank Value = N/A

Analyst : KR MONTEITH
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.10	0.00
2	1.01	0.70	85.71
3	1.50	1.20	41.67
4	2.01	1.50	20.00
5	2.51	1.90	21.05
6	3.01	2.20	13.64
7	3.51	2.70	18.52
8	4.00	2.90	6.90
9	4.50	3.30	12.12
10	5.00	3.70	10.81
11	5.50	4.00	7.50
12	6.00	4.40	9.09
13	6.50	4.70	6.38
14	7.00	5.10	7.84

BLANK VALUE = 5.1 micrograms carbon
BLANK FACTOR = 5.1 / 7.003052 = +7.3E-01 ug/min Carbon

Sample Run By: 6-4-96
KR MONTEITH 00000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 421 TO 426.

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BLK Date: 06/04/96 Time: 23:31:30

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BASELINE
Blank Value = .7282539 ug/minute C

Analyst : KR MONTEITH
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	0.90	55.56
3	1.51	1.20	25.00
4	2.00	1.70	29.41
5	2.50	2.00	15.00
6	3.00	2.30	13.04
7	3.50	2.70	14.81
8	4.00	3.20	15.63
9	4.50	3.50	8.57
10	5.00	3.80	7.89
11	5.50	4.20	9.52
12	6.00	4.60	8.70
13	6.50	4.90	6.12
14	7.00	5.30	7.55

BLANK VALUE = 5.1 micrograms carbon
BLANK FACTOR = 5.1 / 7.003052 = +7.3E-01 ug/min Carbon

SAMPLE RESULTS:
(5.3 - 5.100711)(1)/(200) = < 5.00 E-3 g/L Carbon
(5.3 - 5.100711)(1)/(200)(12) = < 4.17 E-4 Molar Carbon

Sample Run By: _____
KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD Date: 06/04/96 Time: 23:22:32

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = BASELINE
Blank Value = .7282539 ug/minute C

Analyst : KR MONTEITH
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.80	0.00
2	1.01	20.30	91.13
3	1.51	46.70	56.53
4	2.01	53.90	13.36
5	2.51	56.50	4.60
6	3.01	57.40	1.57
7	3.51	58.20	1.37
8	4.01	58.80	1.02
9	4.50	59.30	0.84
10	5.00	59.80	0.84
11	5.50	60.10	0.50
12	6.00	60.50	0.66
13	6.50	60.80	0.49
14	7.00	61.20	0.65

BLANK VALUE = 5.1 micrograms carbon
BLANK FACTOR = 5.1 / 7.003052 = +7.3E-01 ug/min Carbon

SAMPLE RESULTS:
(61.2 - 5.100622)(11)/(200) = +3.09E+00 g/L Carbon
(61.2 - 5.100622)(11)/(200)(12) = +2.57E-01 Molar Carbon

Sample Run By: _____
KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T001521 Date: 06/04/96 Time: 23:50:18

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = BASELINE
Blank Value = .7282539 ug/minute C

Analyst : KR MONTEITH
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	2.40	0.00
2	1.01	23.20	89.66
3	1.51	44.50	47.87
4	2.01	50.00	11.00
5	2.51	53.00	5.66
6	3.01	54.90	3.46
7	3.51	56.10	2.14
8	4.00	56.90	1.41
9	4.50	57.60	1.22
10	5.00	58.30	1.20
11	5.50	58.70	0.68
12	6.00	59.20	0.84
13	6.50	59.70	0.84
14	7.00	60.10	0.67

BLANK VALUE = 5.1 micrograms carbon
BLANK FACTOR = 5.1 / 7.003052 = +7.3E-01 ug/min Carbon

SAMPLE RESULTS:
(60.1 - 5.100711)(11)/(200) = +3.02E+00 g/L Carbon
(60.1 - 5.100711)(11)/(200)(12) = +2.52E-01 Molar Carbon

Sample Run By: _____
KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T001521 DU Date: 06/05/96 Time: 00:08:18

Sample Size = 200 uL
Dil Factor = 11
Blank ID # = BASELINE
Blank Value = .7282539 ug/minute C

Analyst : KR MONTEITH
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	%-1439.49	1.70	0.00
2	%-1438.99	28.20	93.97
3	%-1438.49	46.90	39.87
4	%-1437.99	52.30	10.33
5	%-1437.49	55.10	5.08
6	%-1436.99	56.80	2.99
7	%-1436.49	58.30	2.57
8	%-1435.99	59.10	1.35
9	%-1435.50	59.80	1.17
10	%-1435.00	60.40	0.99
11	%-1434.50	60.90	0.82
12	%-1434.00	61.60	1.14
13	%-1433.50	61.90	0.48
14	%-1433.00	62.40	0.80

BLANK VALUE = 5.1 micrograms carbon
BLANK FACTOR = 5.1 / 7.003052 = +7.3E-01 ug/min Carbon

SAMPLE RESULTS:
(62.4 --1043.585)(11)/(200) = +6.08E+01 g/L Carbon
(62.4 --1043.585)(11)/(200)(12) = +5.07E+00 Molar Carbon

Sample Run By: _____
KR MONTEITH 00000

TOC- TOTAL ORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: S96T001521 SP Date: 06/04/96 Time: 23:58:51

Sample Size = 200 uL
Dil Factor = 22
Blank ID # = BASELINE
Blank Value = .7282539 ug/minute C

Analyst : KR MONTEITH
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.40	0.00
2	1.01	29.60	95.27
3	1.50	80.90	63.41
4	2.00	92.30	12.35
5	2.50	98.40	6.20
6	3.00	101.70	3.24
7	3.50	103.70	1.93
8	4.00	105.10	1.33
9	4.50	106.10	0.94
10	5.00	106.80	0.66
11	5.50	107.30	0.47
12	6.00	108.00	0.65
13	6.50	108.40	0.37
14	7.00	108.90	0.46

BLANK VALUE = 5.1 micrograms carbon
BLANK FACTOR = 5.1 / 7.003052 = +7.3E-01 ug/min Carbon

SAMPLE RESULTS:
(108.9 - 5.1)(22)/(200) = +1.142E+01 g/L Carbon
(108.9 - 5.1)(22)/(200)(12) = +9.515E-01 Molar Carbon

Sample Run By: _____
KR MONTEITH 00000

WORKBOOK PAGE: BLANK1

TOC : LA-344-105 (~~C=0~~) D-0 RWS 6/12/96 LIQUIDS

			BLNK
	Sample Volume in mL	(SS)	0.200
BLNK	H2SO4 Volume in mL	(VR)	0.000
	Volume Injected in mL	(VI)	0.200
8842	Dilution Factor (calculated)	(DF)	1.000
	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Blank	(C1)	5.3
	µg of Carbon from Baseline	(C2)	5.1

LIQUID

Sample Number

96004857

µg of Carbon = |C1-C2|

Spike

0

Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI

Sample Type

N/A

Standard

BLNK

Instrument Method

TIC01

Prep Method

RTS

Chemist

RWS

Analyst

KRM

Date Complete

06/05/96

Analysis Date

06/04/96

Analysis Time	Method Detection Limit in µg/mL	5.00E+00
Sample Volume	µg of Carbon	2.00E-01

AY-101

Data Entered By:	RTS	Date:	06/05/96
Signature of Chemist:	RWSchroeder	Date:	6/5/96

BLANK.WB1 REV 2.0 344105ML

WORKBOOK PAGE: STD2

TOC : LA-344-105 (~~C-0~~) D-0 RWS 6/12/96 LIQUIDS

			STD
	Sample Volume in mL	(SS)	0.200
STD	H2SO4 Volume in mL	(VR)	2.000
	Volume Injected in mL	(VI)	0.200
8842	Dilution Factor (calculated)	(DF)	11.000
	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon Found	(C1)	61.2
	µg of Carbon from Baseline	(C2)	5.1
LIQUID	Standard Book Number		24N12A
	Standard Value (µg/ml)		3000
96004857			
0	µg of Carbon/mL = (C1-C2) * DF * DDF / VI		
N/A	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
STD			
TIC01			
RTS			
RWS			
KRM			
06/05/96			
06/04/96			
	Method Detection Limit in µg/mL		5.50E+01
	QC Actual in µg/mL		3.00E+03
	QC Found in µg/mL		3.09E+03
AY-101	Percent Standard Recovery		102.9

Data Entered By:	RTS	Date:	06/05/96
Signature of Chemist:	Ru Schwee	Date:	6/5/96

STANDARD.WB1 REV 2.0 344105ML

WORKBOOK PAGE: SAM3 D-0 RWS 6/12/96

TOC : LA-344-105 (~~C-0~~) LIQUIDS

			SAMPLE
Sample Type	Sample Volume in mL	(SS)	0.200
SAMPLE	H2SO4 Volume in mL	(VR)	2.000
Workbook	Volume Injected in mL	(VI)	0.200
8842	Dilution Factor (calculated)	(DF)	11.000
Method	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Sample	(C1)	60.1
Matrix	µg of Carbon from Baseline	(C2)	5.1
LIQUID			
Batch Number			
96004857			
Dilution	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)		
0			
Detection Limit	Method Detection Limit = 1 µg C * DF * DDF / VI		
N/A			
Sample #			
S96T001521			
Instrument Id			
TIC01			
Prepared By			
RTS			
Chemist			
RWS			
Analyst			
KRM			
Data Complete			
06/05/96			
Analysis Date			
06/04/96			
Analysis Time	Method Detection Limit in µg/mL		5.50E+01
Sample Point	µg of Carbon/mL		3.03E+03
AY-101			

Data Entered By:	RTS	Date:	06/05/96
Signature of Chemist:	RW Schroeder	Date:	6/5/96

SAMPLE.WB1 REV 2.0 344105ML

TOC : LA-344-105 ~~(C-0)~~ D-0 RWS 6/12/96 LIQUIDS

			DUP
Type	Sample Volume in mL	(SS)	0.200
DUP	H2SO4 Volume in mL	(VR)	2.000
Volume	Volume Injected in mL	(VI)	0.200
8842	Dilution Factor (calculated)	(DF)	11.000
Digested	Digest Dilution Factor	(DDF)	1
TOC-01	µg of Carbon in Sample	(C1)	62.4
Matrix	µg of Carbon from Baseline	(C2)	5.1
LIQUID	Result from Sample Page		3.03E+3
Crucible Number			
96004857			
Blank	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)		
0			
Sample Weight	Method Detection Limit = 1 µg C * DF * DDF / VI		
N/A			
Sample	RPD (of Sample and Dup Results) = | Difference | / Average		
S96T001521			
Instrument Code			
TIC01			
Transferred By			
RTS			
Chemist			
RWS			
Analyst			
KRM			
Date Complete			
06/05/96			
Analysis Date			
06/04/96			
Analysis Time	Method Detection Limit in µg/mL		5.50E+01
Sample Point	µg of Carbon/mL		3.15E+03
AY-101	RPD (of Sam and Dup Results)		3.9%

Data Entered By:	RTS	Date:	06/05/96
Signature of Chemist:	Rw Schroeder	Date:	6/5/96

SAMPLE.WB1 REV 2.0 344105ML

WORKBOOK PAGE: SPIKE5 D-0

TOC : LA-344-105 ~~(G-0)~~ RWS 6/12/96 **LIQUIDS** | **SPIKE**

	Sample Vial Data		Spiked Vial Data	
SPK	Sample Volume in mL (SS)	0.200	Was the sample dilution used? (yes/no)	YES
	H2SO4 Volume in mL (VR)	2.000	Sample Volume in mL (SPK SS)	0.400
8842	Volume Injected in mL (VI)	0.200	H2SO4 Volume in mL (SPK VR)	0.000
	µg of Carbon in Sample (C1)	60.1	Amount of Spike Std. in mL (SPK VOL)	0.400
TOC-01	µg of Carbon from Baseline (C2)	5.1	Volume Injected in mL (SPK VI)	0.200
			µg C in Sample + Spike (C3)	108.9
LIQUID			Pre-Spike Dilution Factor (PDF)	11.00
			Spike Book Number	23N12A
96004857			Spike Value in µg/ml	748

0

N/A

S96T001521

TIC01

RTS

RWS

KRM

06/05/96

06/04/96

AY-101

Spike Correction Factor (SPK CF) = (SPK SS + SPK VOL + SPK VR) / SPK VI

Sample Correction Factor (SAM CF) = (SS + VR) / (VI)

Sample Size Correction Factor (SS CF) = (SPK SS) / (SS)

QC Actual in µg/mL = Spike Value (µg/mL)

QC Found in µg/mL = [(C3 - C2)(SPK CF) - (C1-C2)(SAM CF)(SS CF)/(PDF)] / (SPK VOL)

Percent Spike Recovery = (QC Found) / (QC Actual) * 100

QC Actual in µg/mL	7.48E+02
QC Found in µg/mL	7.63E+02
Percent Spike Recovery	102.0

Robert W Schroeder 6/5/96

worklistrpt Version 2.1 05/15/95
03/20/96 12:58

LABCORE Data Entry Template for Worklist# 6781

Analyst: RAN **Instrument:** TIC01 WB39937 **Book #** 17N12-F

Method: LA-622-102 Rev/Mod C-0

Worklist Comment: AY-101 TIC. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK				TIC-01	LIQUID	1	0.2 ~~5.00~~	RWS 4/2/96 N/A	ug/mL
		2 STD				TIC-01	LIQUID	601	584	N/A	ug/mL
96000210	AY-101 GRAB	3 SAMPLE	S96T001201	0		TIC-01	LIQUID	N/A	7.67^{E3}	40	ug/mL
96000210	AY-101 GRAB	4 DUP	S96T001201	0		TIC-01	LIQUID	7.67^{E3}	7.62^{E3}	N/A	ug/mL
96000210	AY-101 GRAB	5 SPK	S96T001201	0		TIC-01	LIQUID	100	116.9	N/A	ug/mL
96000210	AY-101 GRAB	6 SAMPLE	S96T001202	0		TIC-01	LIQUID	N/A	7.77^{E3}	40	ug/mL
96000210	AY-101 GRAB	7 DUP	S96T001202	0		TIC-01	LIQUID	7.77^{E3}	7.40^{E3}	N/A	ug/mL

Final page for worklist # 6781

R. Wendlandt 3-27-96
Analyst Signature **Date**

[illegible] 3-29-96
Analyst Signature **Date**

Reviewed & edited RW Schroeder 4/2/96

Data Entry Comments: SAM - (.025) DIRECT

SPK - .200 (SAM) - .200 (17N12-F) - .025 (INJ)

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

WHC-SD-WM-DP-178, Rev 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

TIC : LA-622-102 (C-0) LIQUIDS

			STANDARD
Type	Sample Volume in mL	(SS)	0.200
STANDARD	Dilution Factor	(DF)	1.000
Work Unit	Digest Dilution Factor	(DDF)	1.000
6781	µg of Carbon in Sample	(C1)	118.9
Test Code	µg of Carbon in Blank	(C2)	2.1
TIC-01			
Matrix			
LIQUID	g of Carbon/L	=	5.84E-01
Sample			
17N12F			
Instrument Code			
WB39937			
Analyst			
RAW			
Date			
03/27/96			
Time			
07:36 AM			

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \mu g\ C * DF * DDF}{SS}$

µg Carbon/mL =	5.84E+02	DETECTION LEVEL in µg/mL
		5.00E+00

Data Entry by:	LJ	Date:	03/29/96
Approved by:	RWS	Date:	4/2/96

WHC-SD-WM DP-178, Rev1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

TIC : LA-622-102 (C-0) LIQUIDS

			BLANK
Type	Sample Volume in mL	(SS)	0.200
BLANK	Dilution Factor	(DF)	1.000
Work Order	Digest Dilution Factor	(DDF)	1.000
6781	µg of Carbon in Sample	(C1)	1.9
Sample Code	µg of Carbon in Blank	(C2)	2.1
TIC-01			0.2 RWS 3/29/96
Matrix			
LIQUID	g of Carbon/L	= <	~~5.00E-03~~

Sample Type		
BLNK	g of Carbon/L =	$\frac{(C1-C2) * DF * DDF}{SS * 1000}$ $\lvert 1.9-2.1 \rvert = 0.2$
Instrument Code		
WB39937		
Analyst	µg of Carbon/mL =	g of Carbon/L * 1000000 µg/g / 1000 m
RAW		
Date		
03/27/96	Detection Level (µg/mL) =	$\frac{1 \mu g C * DF * DDF}{SS}$
Time		
07:36 AM		

NOTE: Reported Result is Below Detection Level.

µg Carbon/mL =	0.2 ~~< 5.00E+00~~ RWS 3/29/96	DETECTION LEVEL in µg/mL
		5.00E+00

Data Entry by:	KJ	Date:	03/29/96
Approved by:	RWS	Date:	4/2/96

WHC-SD-WM-DP-178, Rev1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

TIC : LA-622-102 (C-0) LIQUIDS

			SAMPLE
[illegible]	Sample Volume in mL	(SS)	0.025
SAMPLE	Dilution Factor	(DF)	1.000
[illegible]	Digest Dilution Factor	(DDF)	1.000
6781	µg of Carbon in Sample	(C1)	193.9
[illegible]	µg of Carbon in Blank	(C2)	2.1
TIC-01			
[illegible]			
LIQUID	g of Carbon/L	=	7.67E+00
[illegible]			
S96T001201			
[illegible]			
WB39937			
[illegible]			
RAW			
[illegible]			
03/27/96			
[illegible]			
07:36 AM			

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{SS}$

µg Carbon/mL =	7.67E+03	DETECTION LEVEL in µg/mL
		4.00E+01

Data Entry by:	EJ	Date:	03/29/96
Approved by:	RWS	Date:	4/2/96

Form 622102_C Rev. 1.1

Page 1 of 1

WHC-SD-WM-DP-178, Rev 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

TIC : LA-622-102 (C-0) LIQUIDS

				DUPLICATE
[redacted]	Sample Volume in mL	(SS)		0.025
DUPLICATE	Dilution Factor	(DF)		1.000
[redacted]	Digest Dilution Factor	(DDF)		1.000
6781	µg of Carbon in Sample	(C1)		192.7
[redacted]	µg of Carbon in Blank	(C2)		2.1
TIC-01				
[redacted]				
LIQUID	g of Carbon/L	=		7.62E+00
[redacted]				
S96T001201DUP	g of Carbon/L =		(C1-C2) * DF * DDF / SS * 1000	
[redacted]				
WB39937				
[redacted]	µg of Carbon/mL =		g of Carbon/L * 1000000 µg/g / 1000 m	
RAW				
[redacted]				
03/27/96	Detection Level (µg/mL) =		1 µg C * DF * DDF / SS	
[redacted]				
07:36 AM				

µg Carbon/mL =	7.62E+03	DETECTION LEVEL in µg/mL
		4.00E+01

Data Entry by:	[illegible]	Date:	03/29/96
Approved by:	RWS	Date:	4/2/96

WHC-SD-WM-DP-178 Rev 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

TIC : LA-622-102 (C-0) SPIKED SAMPLE

SPIKE

[illegible]	>>>>>> Sample Vial Data <<<<<<		>>>>> Spiked Vial Data <<<<<	
SPIKE	Sample Volume in mL	0.025	Sample Volume in mL	0.200
Worksheet	µg of Carbon in Sample	193.9	Spike Volume in mL	0.200
6781	µg of Carbon in Blank	2.1	Volume Injected in mL	0.025
[illegible]			Spike Value (µg/mL)	602
TIC-01			µg C in Sample + Spike	106.8
Matrix			µg C in Blank	2.1
LIQUID				
Sample				
S96T001201SPK				
Instrument				
WB39937				
Analyst				
RAW				
Date				
03/27/96				
Time				
07:30 AM				

PERCENT SPIKE RECOVERY = $\frac{\text{µg Carbon Recovered from Spike} * 100}{\text{µg Carbon in Spike}}$

WHERE : µg Carbon Recovered from Spike =
[(µgC in sample + spike - µgC in blank) * (Spike Correction Factor)]
- [(µgC sample - µgC blank) * (Sample Size Correction Factor)]

Spike Correction Factor = $\frac{\text{Total volume in spiked sample vial (mL)}}{\text{Volume injected (mL)}}$

Sample Size Correction Factor = $\frac{\text{Sample size in (mL) in spiked vial}}{\text{Sample size (mL) in sample}}$

WHERE : µg Carbon in Spike =
[Spike Value (µg/mL) * Spike Volume (mL)]

Percent Spike Recovery = 116.9%

Data Entry by:	[illegible]	Date:	03/29/96
Approved by:	RWS	Date:	4/2/96

Form 622102X2 Rev. 1.2

WHC-SD-WM-DP-178, Rev 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

TIC : LA-622-102 (C-0) LIQUIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.025
SAMPLE	Dilution Factor	(DF)	1.000
Work Order	Digest Dilution Factor	(DDF)	1.000
6781	µg of Carbon in Sample	(C1)	196.4
Lab Code	µg of Carbon in Blank	(C2)	2.1
TIC-01			
Matrix			
LIQUID	g of Carbon/L.	=	7.77E+00
Sample No.			
S96T001202			
Instrument Code			
WB39937			
Analyst			
RAW			
Date			
03/27/96			
Time			
07:36 AM			

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{SS}$

µg Carbon/mL =	7.77E+03	DETECTION LEVEL in µg/mL
		4.00E+01

Data Entry by:	[illegible]	Date:	03/29/96
Approved by:	RWS	Date:	4/2/96

WHC-SD-WM-DP-178, Rev 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

TIC : LA-622-102 (C-0) LIQUIDS

			DUPLICATE
[redacted]	Sample Volume in mL	(SS)	0.025
DUPLICATE	Dilution Factor	(DF)	1.000
[redacted]	Digest Dilution Factor	(DDF)	1.000
6781	µg of Carbon in Sample	(C1)	187
[redacted]	µg of Carbon in Blank	(C2)	2.1
TIC-01			
[redacted]			
LIQUID	g of Carbon/L	=	7.40E+00

[redacted]
S96T001202DUP

[redacted]
WB39937

[redacted]
RAW

[redacted]
03/27/96

[redacted]
07:36 AM

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{SS}$

µg Carbon/mL =	7.40E+03	DETECTION LEVEL in µg/mL
		4.00E+01

Data Entry by:	RJ	Date:	03/29/96
Approved by:	RWS	Date:	4/2/96

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: BLK Date: 03/27/96 Time: 07:19:10

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = N/A

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	0.40	0.00
3	1.51	0.70	42.86
4	2.01	1.10	36.36
5	2.51	1.10	0.00
6	3.01	1.30	15.38
7	3.51	1.60	18.75
8	4.01	1.70	5.88
9	4.51	1.90	10.53
10	5.01	2.10	9.52

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

Sample Run By: Ruth W Schwalb 6/12/96
RA WENDLAND 00000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 440 TO

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD Date: 03/27/96 Time: 07:35:51

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .4195391 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	20.70	99.03
3	1.51	55.00	62.36
4	2.01	82.20	33.09
5	2.51	98.90	16.89
6	3.01	108.90	9.18
7	3.51	114.20	4.64
8	4.01	116.90	2.31
9	4.51	118.50	1.35
10	5.01	118.90	0.34

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

SAMPLE RESULTS:
(118.9 - 2.100013)(1)/(200) = +5.840E-01 g/L Carbon
(118.9 - 2.100013)(1)/(200)(12) = +4.867E-02 Molar Carbon

Sample Run By: R. WENDLAND 3-27-96
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BASE Date: 03/27/96 Time: 07:25:06

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .4195391 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.50	60.00
3	1.51	0.50	0.00
4	2.01	0.80	37.50
5	2.51	0.90	11.11
6	3.01	1.10	18.18
7	3.51	1.20	8.33
8	4.01	1.50	20.00
9	4.51	1.60	6.25
10	5.01	1.90	15.79

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

SAMPLE RESULTS:
(1.9 - 2.1)(1)/(200) = < 5.00 E-3 g/L Carbon
(1.9 - 2.1)(1)/(200)(12) = < 4.17 E-4 Molar Carbon
<<<< WARNING- PERCENT DIFFERENCE EXCEEDS 10 PERCENT >>>>

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1201 Date: 03/27/96 Time: 12:33:39

Sample Size = 25 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .4195391 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	2.40	0.00
2	1.01	39.50	93.92
3	1.51	101.60	61.12
4	2.01	143.30	29.10
5	2.51	167.20	14.29
6	3.01	180.30	7.27
7	3.50	187.10	3.63
8	4.00	190.40	1.73
9	4.50	192.90	1.30
10	5.00	193.90	0.52

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

SAMPLE RESULTS:
(193.9 - 2.099232)(1)/(25) = +7.672E+00 g/L Carbon
(193.9 - 2.099232)(1)/(25)(12) = +6.393E-01 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1201D Date: 03/27/96 Time: 12:43:15

Sample Size = 25 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .4195391 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.00	0.00
2	1.01	41.50	97.59
3	1.51	108.40	61.72
4	2.01	150.20	27.83
5	2.51	172.40	12.88
6	3.01	183.10	5.84
7	3.51	188.30	2.76
8	4.01	190.80	1.31
9	4.50	192.30	0.78
10	5.01	192.70	0.21

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

SAMPLE RESULTS:
(192.7 - 2.1)(1)/(25) = +7.624E+00 g/L Carbon
(192.7 - 2.1)(1)/(25)(12) = +6.353E-01 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1201SPK Date: 03/27/96 Time: 13:00:19

Sample Size = 25 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .4195391 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	20.40	97.06
3	1.50	61.70	66.94
4	2.00	85.60	27.92
5	2.51	97.00	11.75
6	3.01	102.00	4.90
7	3.51	104.40	2.30
8	4.00	105.40	0.95
9	4.50	106.30	0.85
10	5.00	106.80	0.47

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

SAMPLE RESULTS:
(106.8 - 2.099641)(1)/(25) = +4.188E+00 g/L Carbon
(106.8 - 2.099641)(1)/(25)(12) = +3.490E-01 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1202 Date: 03/27/96 Time: 12:49:29

Sample Size = 25 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .4195391 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	36.20	99.17
3	1.51	107.80	66.42
4	2.01	151.80	28.99
5	2.51	175.00	13.26
6	3.01	185.50	5.66
7	3.51	191.40	3.08
8	4.01	194.00	1.34
9	4.50	195.60	0.82
10	5.01	196.40	0.41

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

SAMPLE RESULTS:
(196.4 - 2.1)(1)/(25) = +7.772E+00 g/L Carbon
(196.4 - 2.1)(1)/(25)(12) = +6.477E-01 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1202D Date: 03/27/96 Time: 12:54:48

Sample Size = 25 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .4195391 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	39.80	98.74
3	1.51	111.40	64.27
4	2.01	152.50	26.95
5	2.51	171.90	11.29
6	3.01	180.10	4.55
7	3.51	183.30	1.75
8	4.01	185.50	1.19
9	4.50	186.20	0.38
10	5.00	187.00	0.43

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

SAMPLE RESULTS:
(187 - 2.099667)(1)/(25) = +7.396E+00 g/L Carbon
(187 - 2.099667)(1)/(25)(12) = +6.163E-01 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

LABCORE Data Entry Template for Worklist# 7109

Analyst: RAW **Instrument:** TIC01 WB34937 **Book #** 2ZN12-A

Method: LA-622-102 Rev/Mod C-0

Worklist Comment: TIC Rerun #1 AY-101

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				TIC-01	LIQUID	1	4.00 E-1	N/A	ug/mL
		2	STD				TIC-01	LIQUID	6.02 E2	5.69 E2	N/A	ug/mL
96000210	AY-101 GRAB	3	SAMPLE	S96T001208	0		TIC-01	LIQUID	N/A	1.25 E1	5.00	ug/mL
96000210	AY-101 GRAB	4	DUP	S96T001208	0		TIC-01	LIQUID	1.25 E1	1.10 E1	N/A	ug/mL
96000210	AY-101 GRAB	5	SAMPLE	S96T001203	0		TIC-01	LIQUID	N/A	6.58 E3	1.50 E2	ug/mL
96000210	AY-101 GRAB	6	DUP	S96T001203	0		TIC-01	LIQUID	6.58 E3	6.50 E3	N/A	ug/mL
96000210	AY-101 GRAB	7	SPK	S96T001203	0		TIC-01	LIQUID	100	103.2	N/A	ug/mL
96000257	AY-101 GRAB	8	SAMPLE	S96T001356	0		TIC-01	LIQUID	N/A	6.35 E3	1.05 E2	ug/mL
96000257	AY-101 GRAB	9	DUP	S96T001356	0		TIC-01	LIQUID	6.35 E3	6.94 E3	N/A	ug/mL

Final page for worklist # (T1 7109)

R. Wendland 4-8-96
Analyst Signature **Date**

RHSteele 4-11-96
Analyst Signature **Date**

Recommended sample sizes:

S96T001208 – 0.200 direct

S96T001203 – 0.200 sample + 4 ml H_2O – ~~Sponge~~ mix well by shaking – 0.200 inject (~~DF=26~~) (DF=21) RHSteele

S96T001203 spike – .400 of above mixture + .400 spike – .200 inject

S96T001356 – 0.200 sample + 4ml H_2O - mix well – 0.200 inject (~~D.F.=26~~) (DF=21) RHSteele

RWS 3/29/96

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 7109

Analyst: raw **Instrument:** TIC01 **Book#** 22N12A

Method: LA622-102 Rev/Mod C-0

Worklist Comment: TIC Rerun #1 AY-101

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	BLNK			0	TIC-01	LIQUID	1	4.00E-1	0.400	ug/mL
2	STD			0	TIC-01	LIQUID	6.02E+02	5.69E+2	94.520	% Recovery
3	SAMPLE	S96T001208		0	TIC-01	LIQUID	N/A	1.25E+01	5.000	ug/mL
4	DUP	S96T001208		0	TIC-01	LIQUID	1.25E+1	1.10E+1	12.770	RPD
5	SAMPLE	S96T001203		0	TIC-01	LIQUID	N/A	6.58E+03	105.000	ug/mL
6	DUP	S96T001203		0	TIC-01	LIQUID	6.58E+3	6.50E+3	1.220	RPD
7	SPK	S96T001203		0	TIC-01	LIQUID	6.02E+02	6.22E+02	103.320	% Recovery
8	SAMPLE	S96T001356		0	TIC-01	LIQUID	N/A	6.35E+03	105.000	ug/mL
9	DUP	S96T001356		0	TIC-01	LIQUID	6.35E+3	6.94E+3	8.880	RPD

Final page for worklist# 7109

Analyst Signature **Date** **Analyst Signature** **Date**

Robert W Schroeder 4/11/96
Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: BLANK1

TIC : LA-622-102 (C-0) LIQUIDS

			BLNK
	Sample Volume in mL	(SS)	0.200
BLNK	H2O Volume in mL	(VR)	0.000
	Volume Injected in mL	(VI)	0.200
7109	Dilution Factor (calculated)	(DF)	1.000
	Digest Dilution Factor	(DDF)	1
	µg of Carbon in Blank	(C1)	2.3
	µg of Carbon from Baseline	(C2)	2.7

LIQUID

96002828

µg of Carbon = |C1-C2|

0

Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI

N/A

BLNK

WB39[illegible]37

R. STEELE

H. ANASTOS

RAW

04/11/96

04/08/96

Method Detection Limit in µg/mL	5.00E+00
µg of Carbon	4.00E-01

AY-[illegible]1

Data Entered By:	R. STEEL	Date:	04/11/96
Signature of Chemist:	RW Schneider	Date:	4/11/96

BLANK.WB1 REV 1.0 622102ML

WORKBOOK PAGE: STD2

TIC : LA-622-102 (C-0) LIQUIDS

			STD
Sample Volume in mL	(SS)	0.200
H2O Volume in mL	(VR)	0.000
Volume Injected in mL	(VI)	0.200
Dilution Factor (calculated)	(DF)	1.000
Digest Dilution Factor	(DDF)	1
µg of Carbon Found	(C1)	116.5
µg of Carbon from Baseline	(C2)	2.7
Standard Book Number		22N12A
Standard Value (µg/ml)		602

Data	STD
Workbook	7109
Test Code	
Matrix	LIQUID
Batch Number	96002828
Rerun	0
Sample Prep	N/A
Sample #	STD/22N12A
Instrument Code	WB39937
Prepared By	R. STEELE
Chemist	H. ANASTOS
Analyst	RAW
Date Complete	04/11/96
Analysis Date	04/08/96
Analysis Time	
Sample Point	AY-101

µg of Carbon/mL = (C1-C2) * DF * DDF / VI

Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI

Method Detection Limit in µg/mL	5.00E+00
QC Actual in µg/mL	6.02E+02
QC Found in µg/mL	5.69E+02
Percent Standard Recovery	94.5

Data Entered By:	R. STEELE	Date:	04/11/96
Signature of Chemist:	RW Schroeder	Date:	4/11/96

BLANK.WB1 REV 1.0 622102ML

WORKBOOK PAGE: SAM3

TIC : LA-622-102 (C-0) LIQUIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.200
SAMPLE	H2O Volume in mL	(VR)	0.000
Work List	Volume Injected in mL	(VI)	0.200
7109	Dilution Factor (calculated)	(DF)	1.000
Test Code	Digest Dilution Factor	(DDF)	1
	µg of Carbon in Sample	(C1)	5.2
Matrix	µg of Carbon from Baseline	(C2)	2.7
LIQUID			
Batch Number			
96002828			
Report	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)		
0			
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
N/A			
Sample #			
S96T001208			
Instrument Code			
WB39937			
Prepared By			
R. STEELE			
Chemist			
H. ANASTOS			
Analyst			
RAW			
Date Complete			
04/11/96			
Analysis Date			
04/08/96			
Analysis Time	Method Detection Limit in µg/mL		5.00E+00
Sample Point	µg of Carbon/mL		1.25E+01
AY-101			

Data Entered By:	R. STEELE	Date:	04/11/96
Signature of Chemist:	R. Steele	Date:	4/11/96

SAMPLE.WB1 REV 1.0 622102ML

WORKBOOK PAGE: DUP4

TIC : LA-622-102 (C-0) LIQUIDS

			DUP
Type	Sample Volume in mL	(SS)	0.200
DUP	H2O Volume in mL	(VR)	0.000
Workbook	Volume Injected in mL	(VI)	0.200
7109	Dilution Factor (calculated)	(DF)	1.000
Test Code	Digest Dilution Factor	(DDF)	1
	µg of Carbon in Sample	(C1)	4.9
Matrix	µg of Carbon from Baseline	(C2)	2.7
LIQUID	Sample Result		1.25E+01
Batch Number			
96002828			
Rerun	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)		
0			
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
N/A			
Sample	RPD (of Sample and Dup Results) = | Difference | / Average		
S96T001208			
Instrument Code			
WB39937			
Prepared By			
R. STEELE			
Chemist			
H. ANASTOS			
Analyst			
RAW			
Date Complete			
04/11/96			
Analysis Date			
04/08/96			
Analysis Time	Method Detection Limit in µg/mL		5.00E+00
Sample Point	µg of Carbon/mL		1.10E+01
AY-101	RPD (of Sam and Dup Results)		0.1277

Data Entered By:	R. STEELE	Date:	04/11/96
Signature of Chemist:	RW Schroeder	Date:	4/11/96

SAMPLE.WB1 REV 1.0 622102ML

WORKBOOK PAGE: SAM5

TIC : LA-622-102 (C-0) LIQUIDS

			SAMPLE
[redacted]	Sample Volume in mL	(SS)	0.200
SAMPLE	H2O Volume in mL	(VR)	4.000
[redacted]	Volume Injected in mL	(VI)	0.200
7109	Dilution Factor (calculated)	(DF)	21.000
[redacted]	Digest Dilution Factor	(DDF)	1
	µg of Carbon in Sample	(C1)	65.4
[redacted]	µg of Carbon from Baseline	(C2)	2.7
LIQUID			
[redacted]			
96002828			
[redacted]	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)		
0			
[redacted]	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
N/A			
[redacted]			
S96T001203			
Instrument Code			
WB39937			
Prepared By			
R. STEELE			
Chemist			
H. ANASTOS			
Analyst			
RAW			
Date Complete			
04/11/96			
Analysis Date			
04/08/96			
Analysis Time	Method Detection Limit in µg/mL		1.05E+02
Sample Point	µg of Carbon/mL		6.58E+03
AY-101			

Data Entered By:	R. STEELE	Date:	04/11/96
Signature of Chemist:	RW Schroeder	Date:	4/11/96

SAMPLE.WB1 REV 1.0 622102ML

WORKBOOK PAGE: DUP6

TIC : LA-622-102 (C-0) LIQUIDS

			DUP
Type	Sample Volume in mL	(SS)	0.200
DUP	H2O Volume in mL	(VR)	4.000
Worksheet	Volume Injected in mL	(VI)	0.200
7109	Dilution Factor (calculated)	(DF)	21.000
Test Code	Digest Dilution Factor	(DDF)	1
	µg of Carbon in Sample	(C1)	64.6
Matrix	µg of Carbon from Baseline	(C2)	2.7
LIQUID	Sample Result		6.58E+03
Batch Number			
96002828			
Rerun	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)		
0			
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
N/A			
Sample #	RPD (of Sample and Dup Results) = | Difference | / Average		
S96T001203			
Instrument Code			
WB39937			
Prepared By			
R. STEELE			
Chemist			
H. ANASTOS			
Analyst			
RAW			
Date Complete			
04/11/96			
Analysis Date			
04/08/96			
Analysis Time	Method Detection Limit in µg/mL		1.05E+02
Sample Point	µg of Carbon/mL		6.50E+03
AY-101	RPD (of Sam and Dup Results)		0.0128

Data Entered By:	R. STEELE	Date:	04/11/96
Signature of Chemist:	R. W. Schroeder	Date:	4/11/96

SAMPLE.WB1 REV 1.0 622102ML

WORKBOOK PAGE: SPIKE7

TIC : LA-622-102 (C-0) LIQUIDS

SPIKE

	Sample Vial Data		Spiked Vial Data	
Analyte				
SPK	Sample Volume in mL (SS)	0.200	Was the sample dilution used? (yes/no)	YES
Work Order	H2O Volume in mL (VR)	4.000	Sample Volume in mL (SPK SS)	0.400
7109	Volume Injected in mL (VI)	0.200	H2O Volume in mL (SPK VR)	0.000
Test Code	µg of Carbon in Sample (C1)	66.4	Amount of Spike Std. in mL (SPK VOL)	0.400
	µg of Carbon from Baseline (C2)	2.7	Volume Injected in mL (SPK VI)	0.200
Matrix			µg C in Sample + Spike (C3)	96.2
LIQUID			Pre-Spike Dilution Factor (PDF)	21
Batch Number			Spike Book Number	22N12A
96002828			Spike Value in µg/ml	602
Replicate				
0				
Sample Step				
N/A				
Sample #				
S96T001203				
Instrument Code				
WB39937				
Prepared By				
R. STEELE				
Chemist				
H. ANASTOS				
Analyst				
RAW				
Date Complete				
04/11/96				
Analysis Date				
04/08/96				
Analysis Time				
Sample Point				
AY-101				

Spike Correction Factor (SPK CF) = (SPK SS + SPK VOL + SPK VR) / SPK VI

Sample Correction Factor (SAM CF) = (SS + VR) / (VI)

Sample Size Correction Factor (SS CF) = (SPK SS) / (SS)

QC Actual in µg/mL = Spike Value (µg/mL)

QC Found in µg/mL = [(C3 - C2)(SPK CF) - (C1-C2)(SAM CF)(SS CF)/(PDF)] / (SPK VOL)

Percent Spike Recovery = (QC Found) / (QC Actual) * 100

QC Actual in µg/mL	**6.02E+02**
QC Found in µg/mL	**6.22E+02**
Percent Spike Recovery	**103.2**

Data Entered By:	R. STEELE	Date:	04/11/96
Signature of Chemist:	R W Schneider	Date:	4/11/96

SPIKE.WB1 REV 1.0 622102ML

WORKBOOK PAGE: SAM8

TIC : LA-622-102 (C-0) LIQUIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.200
SAMPLE	H2O Volume in mL	(VR)	4.000
Workbook	Volume Injected in mL	(VI)	0.200
7109	Dilution Factor (calculated)	(DF)	21.000
Test Code	Digest Dilution Factor	(DDF)	1
	µg of Carbon in Sample	(C1)	63.2
Matrix	µg of Carbon from Baseline	(C2)	2.7
LIQUID			
Batch Number			
96002828			
Results	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)		
0			
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
N/A			
Sample #			
S96T001356			
Instrument Code			
WB39937			
Prepared By			
R. STEELE			
Chemist			
H. ANASTOS			
Analyst			
RAW			
Date Complete			
04/11/96			
Analysis Date			
04/08/96			
Analysis Time	Method Detection Limit in µg/mL		1.05E+02
Sample Point	µg of Carbon/mL		6.35E+03
AY-101			

Data Entered By:	R. STEELE	Date:	04/11/96
Signature of Chemist:	R.W. Schroeder	Date:	4/11/96

SAMPLE.WB1 REV 1.0 622102ML

WORKBOOK PAGE: DUP9

TIC : LA-622-102 (C-0) LIQUIDS

			DUP
	Sample Volume in mL	(SS)	0.200
DUP	H2O Volume in mL	(VR)	4.000
	Volume Injected in mL	(VI)	0.200
7109	Dilution Factor (calculated)	(DF)	21.000
	Digest Dilution Factor	(DDF)	1
	µg of Carbon in Sample	(C1)	68.8
	µg of Carbon from Baseline	(C2)	2.7
LIQUID	Sample Result		6.35E+03

Batch Number	
96002828	
Percent Solids	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)
0	
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI
N/A	
Sample No.	RPD (of Sample and Dup Results) = | Difference | / Average
S96T001356	
Instrument Code	
WB39937	
Prepared By	
R. STEELE	
Checked	
H. ANASTOS	
Analyst	
RAW	
Date Complete	
04/11/96	
Analysis Date	
04/08/96	
Analysis Time	
Sample Point	
AY-101	

Method Detection Limit in µg/mL		1.05E+02
µg of Carbon/mL		6.94E+03
RPD (of Sam and Dup Results)		0.0885

Data Entered By:	R. STEELE	Date:	04/11/96
Signature of Chemist:	RW Schroeder	Date:	4/11/96

SAMPLE.WB1 REV 1.0 622102ML

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Base RLL 4-10-96

Sample: ~~BLK~~ Date: 04/08/96 Time: 06:28:43

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = N/A

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.40	50.00
3	1.51	0.70	42.86
4	2.01	1.10	36.36
5	2.51	1.30	15.38
6	3.01	1.60	18.75
7	3.51	1.90	15.79
8	4.01	2.10	9.52
9	4.51	2.40	12.50
10	5.01	2.70	11.11

BLANK VALUE = 2.7 micrograms carbon
BLANK FACTOR = 2.7 / 5.005676 = +5.4E-01 ug/min Carbon

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 459 TO 468.

Sample Run By: RA Wendland 6/12/96
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: ~~BASE~~ Blank Date: 04/08/96 Time: 06:37:48

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .5393876 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.40	50.00
3	1.51	0.60	33.33
4	2.01	0.90	33.33
5	2.51	1.10	18.18
6	3.01	1.40	21.43
7	3.51	1.60	12.50
8	4.00	1.90	15.79
9	4.50	2.10	9.52
10	5.00	2.30	8.70

BLANK VALUE = 2.7 micrograms carbon
BLANK FACTOR = 2.7 / 5.005676 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(2.3 - 2.699457)(1)/(200) = < 5.00 E-3 g/L Carbon
(2.3 - 2.699457)(1)/(200)(12) = < 4.17 E-4 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD Date: 04/08/96 Time: 06:53:47

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .5393876 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.60	0.00
2	1.01	6.60	75.76
3	1.51	26.70	75.28
4	2.01	50.20	46.81
5	2.51	71.20	29.49
6	3.01	86.70	17.88
7	3.51	98.20	11.71
8	4.00	106.40	7.71
9	4.50	112.40	5.34
10	5.00	116.50	3.52

BLANK VALUE = 2.7 micrograms carbon
BLANK FACTOR = 2.7 / 5.005676 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(116.5 - 2.69944)(1)/(200) = +5.690E-01 g/L Carbon
(116.5 - 2.69944)(1)/(200)(12) = +4.742E-02 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1208 Date: 04/08/96 Time: 07:16:51

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .5393876 ug/minute C

Analyst : RA WENDLAND
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	0.70	57.14
3	1.51	1.20	41.67
4	2.01	1.70	29.41
5	2.51	2.00	15.00
6	3.01	2.50	20.00
7	3.51	3.00	16.67
8	4.01	3.20	6.25
9	4.50	3.60	11.11
10	5.00	3.90	7.69
11	5.50	4.30	9.30
12	6.00	4.60	6.52
13	6.50	5.00	8.00
14	7.00	5.20	3.85

BLANK VALUE = 2.7 micrograms carbon
BLANK FACTOR = 2.7 / 5.005676 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(5.2 - 3.777771)(1)/(200) = +7.1E-03 g/L Carbon
(5.2 - 3.777771)(1)/(200)(12) = +5.9E-04 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1208D Date: 04/08/96 Time: 07:25:31

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .5393876 ug/minute C

Analyst : RA WENDLAND
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	0.70	57.14
3	1.51	1.10	36.36
4	2.01	1.40	21.43
5	2.51	1.90	26.32
6	3.01	2.20	13.64
7	3.51	2.60	15.38
8	4.00	2.90	10.34
9	4.50	3.30	12.12
10	5.00	3.60	8.33
11	5.50	4.00	10.00
12	6.00	4.20	4.76
13	6.50	4.60	8.70
14	7.00	4.90	6.12

BLANK VALUE = 2.7 micrograms carbon
BLANK FACTOR = 2.7 / 5.005676 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(4.9 - 3.778314)(1)/(200) = +5.6E-03 g/L Carbon
(4.9 - 3.778314)(1)/(200)(12) = +4.7E-04 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1203 Date: 04/08/96 Time: 07:39:36

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .5393876 ug/minute C

Analyst : RA WENDLAND
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	9.20	97.83
3	1.51	24.50	62.45
4	2.01	35.70	31.37
5	2.51	43.90	18.68
6	3.01	49.70	11.67
7	3.51	54.10	8.13
8	4.01	57.30	5.58
9	4.50	59.70	4.02
10	5.01	61.40	2.77
11	5.51	62.80	2.23
12	6.01	64.00	1.88
13	6.51	64.70	1.08
14	7.00	65.40	1.07

BLANK VALUE = 2.7 micrograms carbon
BLANK FACTOR = 2.7 / 5.005676 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(65.4 - 3.778298)(1)/(200) = +3.08E-01 g/L Carbon
(65.4 - 3.778298)(1)/(200)(12) = +2.57E-02 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1203D Date: 04/08/96 Time: 07:47:09

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .5393876 ug/minute C

Analyst : RA WENDLAND
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	4.50	95.56
3	1.50	16.90	73.37
4	2.00	28.30	40.28
5	2.50	36.70	22.89
6	3.01	43.60	15.83
7	3.51	49.70	12.27
8	4.00	54.00	7.96
9	4.50	57.20	5.59
10	5.00	59.60	4.03
11	5.51	61.20	2.61
12	6.01	62.70	2.39
13	6.51	63.70	1.57
14	7.00	64.60	1.39

BLANK VALUE = 2.7 micrograms carbon
BLANK FACTOR = 2.7 / 5.005676 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(64.6 - 3.778331)(1)/(200) = +3.04E-01 g/L Carbon
(64.6 - 3.778331)(1)/(200)(12) = +2.53E-02 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1203SPK Date: 04/08/96 Time: 07:54:26

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .5393876 ug/minute C

Analyst : RA WENDLAND
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.70	0.00
2	1.01	12.70	94.49
3	1.51	36.30	65.01
4	2.01	51.80	29.92
5	2.51	63.70	18.68
6	3.01	72.30	11.89
7	3.51	78.80	8.25
8	4.01	83.40	5.52
9	4.50	87.20	4.36
10	5.00	89.90	3.00
11	5.50	92.10	2.39
12	6.00	93.80	1.81
13	6.50	95.10	1.37
14	7.00	96.20	1.14

BLANK VALUE = 2.7 micrograms carbon
BLANK FACTOR = 2.7 / 5.005676 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(96.2 - 3.777787)(1)/(200) = +4.62E-01 g/L Carbon
(96.2 - 3.777787)(1)/(200)(12) = +3.85E-02 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1356 Date: 04/08/96 Time: 07:00:26

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .5393876 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	9.90	94.95
3	1.51	24.40	59.43
4	2.01	36.20	32.60
5	2.51	44.80	19.20
6	3.01	51.20	12.50
7	3.51	55.80	8.24
8	4.01	59.10	5.58
9	4.51	61.50	3.90
10	5.01	63.20	2.69

BLANK VALUE = 2.7 micrograms carbon
BLANK FACTOR = 2.7 / 5.005676 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(63.2 - 2.699983)(1)/(200) = +3.03E-01 g/L Carbon
(63.2 - 2.699983)(1)/(200)(12) = +2.52E-02 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1356D Date: 04/08/96 Time: 07:08:30

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .5393876 ug/minute C

Analyst : RA WENDLAND
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.90	0.00
2	1.01	1.60	43.75
3	1.51	9.40	82.98
4	2.01	25.80	63.57
5	2.51	38.80	33.51
6	3.01	48.00	19.17
7	3.51	54.40	11.76
8	4.01	58.90	7.64
9	4.51	62.00	5.00
10	5.01	64.30	3.58
11	5.51	65.90	2.43
12	6.01	67.10	1.79
13	6.51	68.10	1.47
14	7.01	68.80	1.02

BLANK VALUE = 2.7 micrograms carbon
BLANK FACTOR = 2.7 / 5.005676 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(68.8 - 3.778759)(1)/(200) = +3.25E-01 g/L Carbon
(68.8 - 3.778759)(1)/(200)(12) = +2.71E-02 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

LABCORE Data Entry Template for Worklist# 7244

Analyst: RAW **Instrument:** TIC01 WB39937 **Book #** 22N12-A

Method: LA-622-102 Rev/Mod C-0

Worklist Comment: AY-101 TIC. RCJ

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				TIC-01	LIQUID	1	4.0E-1	N/A	ug/mL
		2	STD				TIC-01	LIQUID	6.02E+2	~~6.02E+2~~	5.69E+2 N/A	ug/mL
96000257	AY-101 GRAB	3	SAMPLE	S96T001519	0		TIC-01	LIQUID	N/A	6.69E+3	1.05E+2	ug/mL
96000257	AY-101 GRAB	4	DUP	S96T001519	0		TIC-01	LIQUID	6.69E+3	6.36E+3	N/A	ug/mL
96000257	AY-101 GRAB	5	SPK	S96T001519	0		TIC-01	LIQUID	6.02E+2	7.42E+2	N/A	ug/mL
96000257	AY-101 GRAB	6	SAMPLE	S96T001520	0		TIC-01	LIQUID	N/A	6.77E+3	1.05E+2	ug/mL
96000257	AY-101 GRAB	7	DUP	S96T001520	0		TIC-01	LIQUID	6.77E+3	6.54E+3	N/A	ug/mL

Final page for worklist # 7244

R. WENDLAND 4-8-96
Analyst Signature **Date**

[illegible] 4-12-96
Analyst Signature **Date**

Data Entry Comments: .1 ml ~~.50~~ sample (2 ml H2O) inject .200 ml
.400 (dilution) + .400 spk/std inject .200 ml

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 7244

Analyst: raw **Instrument:** TIC01 **Book#** 22N12A

Method: LA 622-102 Rev/Mod CO

Worklist Comment: AY-101 TIC. RCJ

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	BLNK			0	TIC-01	LIQUID	1	4.00E-1	0.400	ug/mL
2	STD			0	TIC-01	LIQUID	6.02E+02	5.69E+2	94.520	% Recovery
3	SAMPLE	S96T001519		0	TIC-01	LIQUID	N/A	6.69E+03	105.000	ug/mL
4	DUP	S96T001519		0	TIC-01	LIQUID	6.69E+3	6.36E+3	5.060	RPD
5	SPK	S96T001519		0	TIC-01	LIQUID	6.02E+02	7.42E+02	123.260	% Recovery
6	SAMPLE	S96T001520		0	TIC-01	LIQUID	N/A	6.77E+03	105.000	ug/mL
7	DUP	S96T001520		0	TIC-01	LIQUID	6.77E+3	6.54E+3	3.460	RPD

Final page for worklist# 7244

Analyst Signature **Date** **Analyst Signature** **Date**

RW Schaeffer 4/15/96
Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

^^^^

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: ~~BLK~~ BASE SL.P Date: 04/08/96 Time: 06:28:38

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = N/A

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.40	50.00
3	1.51	0.70	42.86
4	2.01	1.10	36.36
5	2.51	1.30	15.38
6	3.01	1.60	18.75
7	3.51	1.90	15.79
8	4.01	2.10	9.52
9	4.51	2.40	12.50
10	5.01	2.70	11.11

SIGNATURE BELOW REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 471 TO 478.

BLANK VALUE = 2.7 micrograms carbon
BLANK FACTOR = 2.7 / 5.005676 = +5.4E-01 ug/min Carbon

Sample Run By: Robert W Schroeder 5/29/96
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
WHC-SD-WM-DP-178, REV. 1

Sample: ~~BASE~~ BLANK SLP. Date: 04/08/96 Time: 06:37:43

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .5393876 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.40	50.00
3	1.51	0.60	33.33
4	2.01	0.90	33.33
5	2.51	1.10	18.18
6	3.01	1.40	21.43
7	3.51	1.60	12.50
8	4.00	1.90	15.79
9	4.50	2.10	9.52
10	5.00	2.30	8.70

BLANK VALUE = 2.7 micrograms carbon
BLANK FACTOR = 2.7 / 5.005676 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(2.3 - 2.699457)(1)/(200) = < 5.00 E-3 g/L Carbon
(2.3 - 2.699457)(1)/(200)(12) = < 4.17 E-4 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-178, REV. 1

Sample: STD Date: 04/08/96 Time: 06:53:56

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .5393876 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.60	0.00
2	1.01	6.60	75.76
3	1.51	26.70	75.28
4	2.01	50.20	46.81
5	2.51	71.20	29.49
6	3.01	86.70	17.88
7	3.51	98.20	11.71
8	4.00	106.40	7.71
9	4.50	112.40	5.34
10	5.00	116.50	3.52

BLANK VALUE = 2.7 micrograms carbon
BLANK FACTOR = 2.7 / 5.005676 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(116.5 - 2.69944)(1)/(200) = +5.690E-01 g/L Carbon
(116.5 - 2.69944)(1)/(200)(12) = +4.742E-02 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-178, REV. 1

Sample: 1519 Date: 04/08/96 Time: 08:17:36

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .5393876 ug/minute C

Analyst : RA WENDLAND
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.10	0.00
2	1.01	12.80	91.41
3	1.51	24.40	47.54
4	2.01	33.30	26.73
5	2.51	40.50	17.78
6	3.01	46.00	11.96
7	3.51	50.60	9.09
8	4.01	54.40	6.99
9	4.51	57.30	5.06
10	5.01	59.80	4.18
11	5.51	61.90	3.39
12	6.00	63.60	2.67
13	6.50	65.20	2.45
14	7.00	66.40	1.81

BLANK VALUE = 2.7 micrograms carbon
BLANK FACTOR = 2.7 / 5.005676 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(66.4 - 3.77787)(1)/(200) = +3.13E-01 g/L Carbon
(66.4 - 3.77787)(1)/(200)(12) = +2.61E-02 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-178, REV. 1

Sample: 1519D Date: 04/08/96 Time: 08:25:33

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .5393876 ug/minute C

Analyst : RA WENDLAND
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	9.70	93.81
3	1.50	20.70	53.14
4	2.00	29.00	28.62
5	2.51	35.80	18.99
6	3.01	41.20	13.11
7	3.51	45.90	10.24
8	4.01	49.60	7.46
9	4.51	52.90	6.24
10	5.01	55.60	4.86
11	5.51	57.90	3.97
12	6.01	60.00	3.50
13	6.50	61.70	2.76
14	7.01	63.30	2.53

BLANK VALUE = 2.7 micrograms carbon
BLANK FACTOR = 2.7 / 5.005676 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(63.3 - 3.778775)(1)/(200) = +2.98E-01 g/L Carbon
(63.3 - 3.778775)(1)/(200)(12) = +2.48E-02 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-178, REV 1

Sample: ~~1520SPK~~ 1519SPK Run Date: 04/08/96 Time: 10:23:51

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .5393876 ug/minute C

Analyst : RA WENDLAND
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	7.00	0.00
2	1.01	19.30	63.73
3	1.51	42.80	54.91
4	2.01	62.60	31.63
5	2.51	76.70	18.38
6	3.01	86.60	11.43
7	3.51	93.60	7.48
8	4.01	98.50	4.97
9	4.50	101.70	3.15
10	5.00	104.00	2.21
11	5.50	105.80	1.70
12	6.00	107.00	1.12
13	6.50	107.90	0.83
14	7.00	108.80	0.83

BLANK VALUE = 2.7 micrograms carbon
BLANK FACTOR = 2.7 / 5.005676 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(108.8 - 3.777886)(1)/(200) = +5.251E-01 g/L Carbon
(108.8 - 3.777886)(1)/(200)(12) = +4.376E-02 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

WHC-SD-WM-DP-178, REV. 1

Sample: 1520 Date: 04/08/96 Time: 08:01:42

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .5393876 ug/minute C

Analyst : RA WENDLAND
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.80	0.00
2	1.01	12.10	93.39
3	1.51	26.60	54.51
4	2.00	36.90	27.91
5	2.50	44.40	16.89
6	3.00	50.00	11.20
7	3.50	54.50	8.26
8	4.00	57.60	5.38
9	4.50	60.30	4.48
10	5.00	62.20	3.05
11	5.50	64.00	2.81
12	6.00	65.40	2.14
13	6.50	66.40	1.51
14	7.00	67.20	1.19

BLANK VALUE = 2.7 micrograms carbon
BLANK FACTOR = 2.7 / 5.005676 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(67.2 - 3.777327)(1)/(200) = +3.17E-01 g/L Carbon
(67.2 - 3.777327)(1)/(200)(12) = +2.64E-02 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
WHC-SD-WM-DP-178, REV. 1

Sample: 1520D Date: 04/08/96 Time: 08:09:06

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .5393876 ug/minute C

Analyst : RA WENDLAND
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	7.10	92.96
3	1.51	19.70	63.96
4	2.00	29.60	33.45
5	2.50	37.50	21.07
6	3.00	43.80	14.38
7	3.50	48.90	10.43
8	4.00	52.80	7.39
9	4.50	55.90	5.55
10	5.00	58.50	4.44
11	5.50	60.60	3.47
12	6.01	62.40	2.88
13	6.51	63.80	2.19
14	7.00	65.00	1.85

BLANK VALUE = 2.7 micrograms carbon
BLANK FACTOR = 2.7 / 5.005676 = +5.4E-01 ug/min Carbon

SAMPLE RESULTS:
(65 - 3.778331)(1)/(200) = +3.06E-01 g/L Carbon
(65 - 3.778331)(1)/(200)(12) = +2.55E-02 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

WORKBOOK PAGE: BLANK1

WHC-SD-WM-DP-178, REV. 1

TIC : LA-622-102 (C-0) LIQUIDS

			BLNK
Sample Volume in mL	(SS)	0.200
H2O Volume in mL	(VR)	0.000
Volume Injected in mL	(VI)	0.200
Dilution Factor (calculated)	(DF)	1.000
Digest Dilution Factor	(DDF)	1
µg of Carbon in Blank	(C1)	2.3
µg of Carbon from Baseline	(C2)	2.7

Sample Type	BLNK
Instrument Code	7244
Sample Code	
Matrix	LIQUID
Extract Number	96002920
Dilution	0
Sample Prep	N/A
Sample #	BLANK
Instrument Code	WB39937
Prepared By	SLP
Chemist	R.SCHROEDER
Analyst	RAW
Date Complete	04/12/96
Analysis Date	04/08/96
Analysis Time	
Sample Point	AY-101 GRAB

µg of Carbon = |C1-C2|

Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI

Method Detection Limit in µg/mL	5.00E+00
µg of Carbon	4.00E-01

Data Entered By:	SLP	Date:	04/12/96
Signature of Chemist:		Date:	4/15/96

BLANK.WB1 REV 1.0 622102ML

WORKBOOK PAGE: STD2

TIC : LA-622-102 (C-0) LIQUIDS

			STD
	Sample Volume in mL	(SS)	0.200
STD	H2O Volume in mL	(VR)	0.000
	Volume Injected in mL	(VI)	0.200
7244	Dilution Factor (calculated)	(DF)	1.000
	Digest Dilution Factor	(DDF)	1
	µg of Carbon Found	(C1)	116.5
	µg of Carbon from Baseline	(C2)	2.7
LIQUID	Standard Book Number		22N12A
	Standard Value (µg/ml)		602
96002920			
0	µg of Carbon/mL = (C1-C2) * DF * DDF / VI		
N/A	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
WB39937			
SLP			
R.SCHROEDER			
RAW			
04/12/96			
04/08/96			
	Method Detection Limit in µg/mL		5.00E+00
	QC Actual in µg/mL		6.02E+02
	QC Found in µg/mL		5.69E+02
AY-101 GRAB	Percent Standard Recovery		94.5

Data Entered By:	SLP	Date:	04/12/96
Signature of Chemist:	R.W. Schroeder	Date:	4/15/96

BLANK.WB1 REV 1.0 622102ML

WORKBOOK PAGE: SAM3

TIC : LA-622-102 (C-0) LIQUIDS

			SAMPLE
	Sample Volume in mL	(SS)	0.100
SAMPLE	H2O Volume in mL	(VR)	2.000
	Volume Injected in mL	(VI)	0.200
7244	Dilution Factor (calculated)	(DF)	21.000
	Digest Dilution Factor	(DDF)	1
	µg of Carbon in Sample	(C1)	66.4
	µg of Carbon from Baseline	(C2)	2.7
LIQUID			

Batch Number: 96002920

Formula: 0

µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)

Sample Prep: N/A

Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI

Sample #: S96T001519

Instrument Code: WB39937

Prepared By: SLP

Chemist: R.SCHROEDER

Analyst: RAW

Date Complete: 04/12/96

Analysis Date: 04/08/96

Analysis Time:

Method Detection Limit in µg/mL	1.05E+02
µg of Carbon/mL	6.69E+03

Sample Point: AY-101 GRAB

Data Entered By: Stu Peter	SLP	Date:	04/12/96
Signature of Chemist: R.W. Schroeder		Date:	4/15/96

SAMPLE.WB1 REV 1.0 622102ML

TIC : LA-622-102 (C-0) LIQUIDS

			DUP
Type	Sample Volume in mL	(SS)	0.100
DUP	H2O Volume in mL	(VR)	2.000
Worksheet #	Volume Injected in mL	(VI)	0.200
7244	Dilution Factor (calculated)	(DF)	21.000
Leachate Code	Digest Dilution Factor	(DDF)	1
	µg of Carbon in Sample	(C1)	63.3
Matrix	µg of Carbon from Baseline	(C2)	2.7
LIQUID	Sample Result		3.19E+02
Batch Number			
96002920			
Aliquot #	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)		
0			
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
N/A			
Sample #	RPD (of Sample and Dup Results) = | Difference | / Average		
S96T001519			
Instrument Code			
WB39937			
Prepared By			
SLP			
Chemist			
R.SCHROEDER			
Analyst			
RAW			
Date Complete			
04/12/96			
Analysis Date			
04/08/96			
Analysis Time	Method Detection Limit in µg/mL		1.05E+02
Sample Point	µg of Carbon/mL		6.36E+03
AY-101 GRAB	RPD (of Sam and Dup Results)		1.8093

Data Entered By: SLP	SLP	Date:	04/12/96
Signature of Chemist: RW Schroeder		Date:	4/15/96

SAMPLE.WB1 REV 1.0 622102ML

WORKBOOK PAGE: SPIKE5

TIC : LA-622-102 (C-0) LIQUIDS

SPIKE

	Sample Vial Data		Spiked Vial Data	
SPK	Sample Volume in mL (SS)	0.100	Was the sample dilution used? (yes/no)	YES
7244	H2O Volume in mL (VR)	2.000	Sample Volume in mL (SPK SS)	0.400
	Volume Injected in mL (VI)	0.200	H2O Volume in mL (SPK VR)	0.000
	µg of Carbon in Sample (C1)	66.4	Amount of Spike Std. in mL (SPK VOL)	0.400
	µg of Carbon from Baseline (C2)	2.7	Volume Injected in mL (SPK VI)	0.200
			µg C in Sample + Spike (C3)	108.8
			Pre-Spike Dilution Factor (PDF)	21
			Spike Book Number	22N12A
			Spike Value in µg/ml	602

Matrix: LIQUID

Book Number: 96002920

Dilution: 0

Sample Prep: N/A

Sample #: S96T001519

Instrument Code: WB39937

Prepared By: SLP

Chemist: R.SCHROEDER

Analyst: RAW

Date Complete: 04/12/96

Analysis Date: 04/08/96

Analysis Time:

Sample Point: AY-101 GRAB

Spike Correction Factor (SPK CF) = (SPK SS + SPK VOL + SPK VR) / SPK VI

Sample Correction Factor (SAM CF) = (SS + VR) / (VI)

Sample Size Correction Factor (SS CF) = (SPK SS) / (SS)

QC Actual in µg/mL = Spike Value (µg/mL)

QC Found in µg/mL = [(C3 - C2)(SPK CF) - (C1-C2)(SAM CF)(SS CF)/(PDF)] / (SPK VOL)

Percent Spike Recovery = (QC Found) / (QC Actual) * 100

QC Actual in µg/mL	6.02E+02
QC Found in µg/mL	7.42E+02
Percent Spike Recovery	123.3

Data Entered By: SLP Date: 04/12/96

Signature of Chemist: R.W. Schroeder Date: 4/15/96

SPIKE.WB1 REV 1.0 622102ML

WORKBOOK PAGE: SAM6

TIC : LA-622-102 (C-0) LIQUIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.100
SAMPLE	H2O Volume in mL	(VR)	2.000
Vial	Volume Injected in mL	(VI)	0.200
7244	Dilution Factor (calculated)	(DF)	21.000
Digest Code	Digest Dilution Factor	(DDF)	1
	µg of Carbon in Sample	(C1)	67.2
Matrix	µg of Carbon from Baseline	(C2)	2.7
LIQUID			
Sample Number			
96002920			
Dilution	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)		
0			
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
N/A			
Sample #			
S96T001520			
Instrument Code			
WB39937			
Prepared By			
SLP			
Chemist			
R.SCHROEDER			
Analyst			
RAW			
Date Complete			
04/12/96			
Analysis Date			
04/08/96			
Analysis Time	Method Detection Limit in µg/mL		1.05E+02
Sample Point	µg of Carbon/mL		6.77E+03
AY-101 GRAB			

Data Entered By: SLPetin	SLP	Date:	04/12/96
Signature of Chemist: RW Schroeder		Date:	4/15/96

SAMPLE.WB1 REV 1.0 622102ML

WORKBOOK PAGE: DUP7

TIC : LA-622-102 (C-0) LIQUIDS

			DUP
	Sample Volume in mL	(SS)	0.100
DUP	H2O Volume in mL	(VR)	2.000
	Volume Injected in mL	(VI)	0.200
7244	Dilution Factor (calculated)	(DF)	21.000
	Digest Dilution Factor	(DDF)	1
	µg of Carbon in Sample	(C1)	65
	µg of Carbon from Baseline	(C2)	2.7
LIQUID	Sample Result		6.77E+03

96002920	
	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)
0	
	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI
N/A	
	RPD (of Sample and Dup Results) = | Difference | / Average
S96T001520	
WB39937	
SLP	
R.SCHROEDER	
RAW	
04/12/96	
04/08/96	

	Method Detection Limit in µg/mL	1.05E+02
	µg of Carbon/mL	6.54E+03
AY-101 GRAB	RPD (of Sam and Dup Results)	0.0347

Data Entered By:	SLP	Date:	04/12/96
Signature of Chemist:	RW Schroeder	Date:	4/12/96

SAMPLE.WB1 REV 1.0 622102ML

LABCORE Data Entry Template for Worklist# 7255

Analyst: RAW **Instrument:** TIC01 WB5987 **Book #** 22N12-A

Method: LA-622-102 Rev/Mod C-0

Worklist Comment: AY-101 TIC-01 Rerun #1 (recommended sample sizes below)

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK				TIC-01	LIQUID	1	8.00e-1	N/A	ug/mL
		2	STD				TIC-01	LIQUID	6.02e2	5.77e2	N/A	ug/mL
96000257	AY-101 GRAB	3	SAMPLE	S96T001357	0		TIC-01	LIQUID	N/A	6.56e3	1.05e2	ug/mL
96000257	AY-101 GRAB	4	DUP	S96T001357	0		TIC-01	LIQUID	6.56e3	6.60e3	N/A	ug/mL
96000257	AY-101 GRAB	5	SPK	S96T001357	0		TIC-01	LIQUID	100	105	N/A	ug/mL
96000257	AY-101 GRAB	6	SAMPLE	S96T001358	0		TIC-01	LIQUID	N/A	6.67e3	1.05e2	ug/mL
96000257	AY-101 GRAB	7	DUP	S96T001358	0		TIC-01	LIQUID	6.67e3	6.67e3	N/A	ug/mL

Final page for worklist # 7255

D. Wendland 4-5-96
Analyst Signature **Date**

Analyst Signature **Date**

S96T001357 use 0.050ml sample + 1ml H_2O mix → 0.200 inject (D.F=21)

S96T001357 SPK use ~~0.400 ml~~ 0.500 ml sample dilution mixture + .200 spike mix .200 inject
RAW 6/5/96

S96T001358 use 0.050ml sample + 1 ml. H_2O mix → 0.200 inject (D.F.=21)

Data Entry Comments:

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 7255

Analyst: raw **Instrument:** TIC01 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: AY-101 TIC-01 Rerun #1 (recommended sample sizes below)

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	BLNK			0	TIC-01	LIQUID	1	8.00E-1	0.800	ug/mL
2	STD			0	TIC-01	LIQUID	6.02E+02	5.77E+2	95.850	% Recovery
3	SAMPLE	S96T001357		0	TIC-01	LIQUID	N/A	6.56E+03	105.000	ug/mL
4	DUP	S96T001357		0	TIC-01	LIQUID	6.56E+3	6.60E+3	0.610	RPD
5	SPK	S96T001357		0	TIC-01	LIQUID	6.02E+02	5.94E+02	98.670	% Recovery
6	SAMPLE	S96T001358		0	TIC-01	LIQUID	N/A	6.67E+03	105.000	ug/mL
7	DUP	S96T001358		0	TIC-01	LIQUID	6.67E+3	6.67E+3	0.000	RPD

Final page for worklist# 7255

Analyst Signature **Date** **Analyst Signature** **Date**

Reviewed RW Schwab 4/11/96
Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD Date: 04/05/96 Time: 07:50:27

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .399561 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	7.50	97.33
3	1.51	33.80	77.81
4	2.01	61.40	44.95
5	2.51	83.40	26.38
6	3.01	98.20	15.07
7	3.51	107.10	8.31
8	4.01	112.80	5.05
9	4.51	115.90	2.67
10	5.01	117.70	1.53

BLANK VALUE = 2 micrograms carbon
BLANK FACTOR = 2 / 5.005493 = +4.0E-01 ug/min Carbon

SAMPLE RESULTS:
(117.7 - 2)(1)/(200) = +5.785E-01 g/L Carbon
(117.7 - 2)(1)/(200)(12) = +4.821E-02 Molar Carbon

2.3 RWS 4/11/96

Sample Run By: R. WENDLAND 4-5-96
RA WENDLAND 00000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 466 TO 495.

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

~~Blank~~ RtStd 4-8-96

Sample: BASE Date: 04/05/96 Time: 07:36:26

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .399561 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.40	50.00
3	1.51	0.60	33.33
4	2.01	0.90	33.33
5	2.51	1.10	18.18
6	3.01	1.30	15.38
7	3.51	1.60	18.75
8	4.01	1.80	11.11
9	4.50	2.00	10.00
10	5.00	2.30	13.04

BLANK VALUE = 2 micrograms carbon
BLANK FACTOR = 2 / 5.005493 = +4.0E-01 ug/min Carbon

SAMPLE RESULTS:
(2.3 - 1.999671)(1)/(200) = < 5.00 E-3 g/L Carbon
(2.3 - 1.999671)(1)/(200)(12) = < 4.17 E-4 Molar Carbon
<<<< WARNING- PERCENT DIFFERENCE EXCEEDS 10 PERCENT >>>>
This warning is irrelevant to a blank analysis. RWS 4/11/96

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

~~Base~~ Reflad 4-8-96

Sample: BLK Date: 04/05/96 Time: 07:42:50

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .399561 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

Reading	Analysis Time	Coulometer	% Difference
1	0.51	0.10	0.00
2	1.01	0.50	80.00
3	1.51	0.90	44.44
4	2.01	1.30	30.77
5	2.51	1.60	18.75
6	3.01	2.00	20.00
7	3.51	2.30	13.04
8	4.00	2.60	11.54
9	4.50	2.90	10.34
10	5.00	3.10	6.45

BLANK VALUE = 2 micrograms carbon
BLANK FACTOR = 2 / 5.005493 = +4.0E-01 ug/min Carbon

SAMPLE RESULTS:
(3.1 - ~~1.999~~71)(1)/(200) = +5.5E-03 g/L Carbon
(3.1 - ~~1.999~~71)(1)/(200)(12) = +4.6E-04 Molar Carbon
2.3

RWS 4/11/96

Sample Run By: _____
RA WENDLAND 00000

E

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1357 Date: 04/05/96 Time: 08:36:00

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .399561 ug/minute C

Analyst : RA WENDLAND
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	6.20	96.77
3	1.51	25.70	75.88
4	2.01	41.20	37.62
5	2.51	51.00	19.22
6	3.01	56.70	10.05
7	3.51	60.00	5.50
8	4.01	61.60	2.60
9	4.51	62.80	1.91
10	5.00	63.30	0.79
11	5.50	63.80	0.78
12	6.00	64.20	0.62
13	6.50	64.50	0.47
14	7.00	64.80	0.46

BLANK VALUE = 2 micrograms carbon
BLANK FACTOR = 2 / 5.005493 = +4.0E-01 ug/min Carbon

SAMPLE RESULTS:
(64.8 - ~~2.798451~~)(1)/(200) = +3.10E-01 g/L Carbon
(64.8 - 2.798451)(1)/(200)(12) = +2.58E-02 Molar Carbon

2.3 RWS 4/11/96

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1357D Date: 04/05/96 Time: 08:43:23

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .399561 ug/minute C

Analyst : RA WENDLAND
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	8.80	97.73
3	1.50	27.50	68.00
4	2.01	41.90	34.37
5	2.50	51.00	17.84
6	3.00	56.80	10.21
7	3.50	60.00	5.33
8	4.00	61.80	2.91
9	4.50	62.90	1.75
10	5.00	63.70	1.26
11	5.50	64.20	0.78
12	6.00	64.60	0.62
13	6.50	65.00	0.62
14	7.00	65.20	0.31

BLANK VALUE = 2 micrograms carbon
BLANK FACTOR = 2 / 5.005493 = +4.0E-01 ug/min Carbon

SAMPLE RESULTS:
(65.2 - 2.798439)(1)/(200) = +3.12E-01 g/L Carbon
(65.2 - 2.798439)(1)/(200)(12) = +2.60E-02 Molar Carbon

2.3
RWS 4/11/96

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1357SPK Date: 04/05/96 Time: 08:50:46

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .399561 ug/minute C

Analyst : RA WENDLAND
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.00	8.60	97.67
3	1.51	31.20	72.44
4	2.01	49.50	36.97
5	2.51	61.70	19.77
6	3.01	69.30	10.97
7	3.51	73.80	6.10
8	4.00	76.30	3.28
9	4.50	78.20	2.43
10	5.00	79.00	1.01
11	5.50	79.60	0.75
12	6.00	80.20	0.75
13	6.50	80.60	0.50
14	7.00	80.90	0.37

BLANK VALUE = 2 micrograms carbon
BLANK FACTOR = 2 / 5.005493 = +4.0E-01 ug/min Carbon

SAMPLE RESULTS:
(80.9 - ~~2.798439~~ 2.3)(1)/(200) = +3.91E-01 g/L Carbon
(80.9 - ~~2.798439~~ 2.3)(1)/(200)(12) = +3.25E-02 Molar Carbon

RWS 4/11/96

Sample Run By: RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1358 Date: 04/05/96 Time: 08:58:06

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .399561 ug/minute C

Analyst : RA WENDLAND
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	7.20	97.22
3	1.50	24.40	70.49
4	2.00	38.60	36.79
5	2.50	48.50	20.41
6	3.00	54.90	11.66
7	3.50	58.80	6.63
8	4.00	61.20	3.92
9	4.50	62.70	2.39
10	5.00	63.80	1.72
11	5.50	64.40	0.93
12	6.00	65.10	1.08
13	6.50	65.40	0.46
14	7.00	65.80	0.61

BLANK VALUE = 2 micrograms carbon
BLANK FACTOR = 2 / 5.005493 = +4.0E-01 ug/min Carbon

SAMPLE RESULTS:
(65.8 - ~~2.798464~~)(1)/(200) = +3.15E-01 g/L Carbon
(65.8 - ~~2.798464~~)(1)/(200)(12) = +2.63E-02 Molar Carbon
2.3
RWS 4/11/96

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1358D Date: 04/05/96 Time: 09:05:21

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .399561 ug/minute C

Analyst : RA WENDLAND
Min Readings = 14
Max Readings = 14
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	6.30	95.24
3	1.51	21.90	71.23
4	2.00	36.20	39.50
5	2.50	46.30	21.81
6	3.01	53.10	12.81
7	3.51	57.60	7.81
8	4.01	60.30	4.48
9	4.50	62.10	2.90
10	5.00	63.30	1.90
11	5.50	64.20	1.40
12	6.00	64.80	0.93
13	6.50	65.30	0.77
14	7.00	65.80	0.76

BLANK VALUE = 2 micrograms carbon
BLANK FACTOR = 2 / 5.005493 = +4.0E-01 ug/min Carbon

SAMPLE RESULTS:
(65.8 - ~~2.798537~~)(1)/(200) = +3.15E-01 g/L Carbon
(65.8 - ~~2.798537~~)(1)/(200)(12) = +2.63E-02 Molar Carbon
2.3
RWS 4/11/96

Sample Run By: RA WENDLAND 00000

WORKBOOK PAGE: BLANK1

TIC : LA-622-102 (C-0) LIQUIDS

			BLNK
Type	Sample Volume in mL	(SS)	0.200
BLNK	H2O Volume in mL	(VR)	0.000
Work	Volume Injected in mL	(VI)	0.200
7255	Dilution Factor (calculated)	(DF)	1.000
Test	Digest Dilution Factor	(DDF)	1
	µg of Carbon in Blank	(C1)	3.1
Matrix	µg of Carbon from Baseline	(C2)	2.3
LIQUID			

Batch Number	
96002982	µg of Carbon = |C1-C2|
Rerun	
0	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI
Sample Prep	
N/A	
Sample #	
BLNK	
Instrument Code	
WB39937	
Prepared By	
RT STEELE	
Chemist	
H.ANASTOS	
Analyst	
RAW	
Date Complete	
04/08/96	
Analysis Date	
04/04/96	
Analysis Time	Method Detection Limit in µg/mL 5.00E+00
Sample Point	µg of Carbon 8.00E-01
AY-101 GRAB	

Data Entered By:	RT STEEL	Date:	04/08/96
Signature of Chemist:	RW Schneider	Date:	4/11/96

BLANK.WB1 REV 1.0 622102ML

WORKBOOK PAGE: STD2

TIC : LA-622-102 (C-0) LIQUIDS

			STD
Type	Sample Volume in mL	(SS)	0.200
STD	H2O Volume in mL	(VR)	0.000
Work Order	Volume Injected in mL	(VI)	0.200
7255	Dilution Factor (calculated)	(DF)	1.000
Test Code	Digest Dilution Factor	(DDF)	1
	µg of Carbon Found	(C1)	117.7
Matrix	µg of Carbon from Baseline	(C2)	2.3
LIQUID	Standard Book Number		22N12A
Batch Number	Standard Value (µg/ml)		602
96002982			
Reruns			
0	µg of Carbon/mL = (C1-C2) * DF * DDF / VI		
Sample Prep			
N/A	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
Sample #			
Instrument Code			
WB39937			
Prepared By			
RT STEELE			
Chemist			
H.ANASTOS			
Analyst			
RAW			
Date Complete			
04/08/96			
Analysis Date			
04/04/96			
Analysis Time	Method Detection Limit in µg/mL		5.00E+00
	QC Actual in µg/mL		6.02E+02
Sample Point	QC Found in µg/mL		5.77E+02
AY-101 GRAB	Percent Standard Recovery		95.8

Data Entered By:	RT STEEL	Date:	04/08/96
Signature of Chemist:	RW Schroeder	Date:	4/11/96

BLANK.WB1 REV 1.0 622102ML

WORKBOOK PAGE: SAM3

TIC : LA-622-102 (C-0) LIQUIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.050
SAMPLE	H2O Volume in mL	(VR)	1.000
Work Order	Volume Injected in mL	(VI)	0.200
7255	Dilution Factor (calculated)	(DF)	21.000
Test Code	Digest Dilution Factor	(DDF)	1
	µg of Carbon in Sample	(C1)	64.8
Matrix	µg of Carbon from Baseline	(C2)	2.3
LIQUID			
Batch Number			
96002982			
Rerun	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)		
0			
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
N/A			
Sample #			
S96T001357			
Instrument Code			
WB39937			
Prepared By			
RT STEELE			
Chemist			
H.ANASTOS			
Analyst			
RAW			
Date Complete			
04/08/96			
Analysis Date			
04/04/96			
Analysis Time	Method Detection Limit in µg/mL		1.05E+02
Sample Point	µg of Carbon/mL		6.56E+03
AY-101 GRAB			

Data Entered By:	RT STEEL	Date:	04/08/96
Signature of Chemist:	RW Schneider	Date:	4/11/96

SAMPLE.WB1 REV 1.0 622102ML

WORKBOOK PAGE: DUP4

TIC : LA-622-102 (C-0) LIQUIDS

			DUP
Type	Sample Volume in mL	(SS)	0.050
DUP	H2O Volume in mL	(VR)	1.000
Vol. Inj.	Volume Injected in mL	(VI)	0.200
7255	Dilution Factor (calculated)	(DF)	21.000
Test Code	Digest Dilution Factor	(DDF)	1
	µg of Carbon in Sample	(C1)	65.2
Matrix	µg of Carbon from Baseline	(C2)	2.3
LIQUID	Sample Result		6.56E+03
Batch Number			
96002982			
Rerun	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)		
0			
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
N/A			
Sample #	RPD (of Sample and Dup Results) = | Difference | / Average		
S96T001357			
Instrument Code			
WB39937			
Prepared By			
RT STEELE			
Chemist			
H.ANASTOS			
Analyst			
RAW			
Date Complete			
04/08/96			
Analysis Date			
04/04/96			
Analysis Time	Method Detection Limit in µg/mL		1.05E+02
Sample Point	µg of Carbon/mL		6.60E+03
AY-101 GRAB	RPD (of Sam and Dup Results)		0.0064

Data Entered By:	RT STEEL	Date:	04/08/96
Signature of Chemist:	Ruth Schroeder	Date:	4/11/96

SAMPLE.WB1 REV 1.0 622102ML

WORKBOOK PAGE: SPIKE5

TIC : LA-622-102 (C-0) LIQUIDS

SPIKE

Type	Sample Vial Data			Spiked Vial Data		
SPK	Sample Volume in mL	(SS)	0.050	Was the sample dilution used? (yes/no)		YES
Workbook	H2O Volume in mL	(VR)	1.000	Sample Volume in mL	(SPK SS)	0.500
7255	Volume Injected in mL	(VI)	0.200	H2O Volume in mL	(SPK VR)	0.000
Carbon	µg of Carbon in Sample	(C1)	64.8	Amount of Spike Std. in mL	(SPK VOL)	0.200
	µg of Carbon from Baseline	(C2)	2.3	Volume Injected in mL	(SPK VI)	0.200
Matrix				µg C in Sample + Spike	(C3)	80.9
LIQUID				Pre-Spike Dilution Factor	(PDF)	21
Batch Number				Spike Book Number		22N12A
96002982				Spike Value in µg/ml		602

Rerun
0
Sample Prep
N/A
Sample #
S96T001357
Instrument Code
WB39937
Prepared By
RT STEELE
Chemist
H.ANASTOS
Analyst
RAW
Date Complete
04/08/96
Analysis Date
04/04/96
Analysis Time
Sample Point
AY-101 GRAB

Spike Correction Factor (SPK CF) = (SPK SS + SPK VOL + SPK VR) / SPK VI

Sample Correction Factor (SAM CF) = (SS + VR) / (VI)

Sample Size Correction Factor (SS CF) = (SPK SS) / (SS)

QC Actual in µg/mL = Spike Value (µg/mL)

QC Found in µg/mL = [(C3 - C2)(SPK CF) - (C1-C2)(SAM CF)(SS CF)/(PDF)] / (SPK VOL)

Percent Spike Recovery = (QC Found) / (QC Actual) * 100

QC Actual in µg/mL	6.02E+02
QC Found in µg/mL	5.94E+02
Percent Spike Recovery	98.7

Data Entered By:	RT STEELE	Date:	04/08/96
Signature of Chemist:	R.W. Schroeder	Date:	4/11/95

SPIKE.WB1 REV 1.0 622102ML

WORKBOOK PAGE: SAM6

TIC : LA-622-102 (C-0) LIQUIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.050
SAMPLE	H2O Volume in mL	(VR)	1.000
Method	Volume Injected in mL	(VI)	0.200
7255	Dilution Factor (calculated)	(DF)	21.000
Digest Code	Digest Dilution Factor	(DDF)	1
	µg of Carbon in Sample	(C1)	65.8
Matrix	µg of Carbon from Baseline	(C2)	2.3
LIQUID			
Batch Number			
96002982			
Report	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)		
0			
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
N/A			
Sample #			
S96T001358			
Instrument Code			
WB39937			
Prepared By			
RT STEELE			
Chemist			
H.ANASTOS			
Analyst			
RAW			
Date Complete			
04/08/96			
Analysis Date			
04/04/96			
Analysis Time	Method Detection Limit in µg/mL		1.05E+02
Sample Point	µg of Carbon/mL		6.67E+03
AY-101 GRAB			

Data Entered By:	RT STEEL	Date:	04/08/96
Signature of Chemist:	RW Schroeder	Date:	4/11/96

SAMPLE.WB1 REV 1.0 622102ML

WORKBOOK PAGE: DUP7

TIC : LA-622-102 (C-0) LIQUIDS

			DUP
Type	Sample Volume in mL	(SS)	0.050
DUP	H2O Volume in mL	(VR)	1.000
Vial Number	Volume Injected in mL	(VI)	0.200
7255	Dilution Factor (calculated)	(DF)	21.000
Digest Date	Digest Dilution Factor	(DDF)	1
	µg of Carbon in Sample	(C1)	65.8
Matrix	µg of Carbon from Baseline	(C2)	2.3
LIQUID	Sample Result		6.67E+03
Batch Number			
96002982			
Rerun	µg of Carbon/g = (C1-C2) * DF * 1000 / (VI * D g/L)		
0			
Sample Prep	Method Detection Limit (µg/mL) = 1 µg C * DF * DDF / VI		
N/A			
Sample	RPD (of Sample and Dup Results) = | Difference | / Average		
S96T001358			
Instrument Code			
WB39937			
Prepared By			
RT STEELE			
Chemist			
H.ANASTOS			
Analyst			
RAW			
Date Complete			
04/08/96			
Analysis Date			
04/04/96			
Analysis Time	Method Detection Limit in µg/mL		1.05E+02
Sample Point	µg of Carbon/mL		6.67E+03
AY-101 GRAB	RPD (of Sam and Dup Results)		0.0000

Data Entered By:	RT STEEL	Date:	04/08/96
Signature of Chemist:	RW Schroeder	Date:	4/11/96

SAMPLE.WB1 REV 1.0 622102ML

THE FOLLOWING ANALYSES WERE RERUN. THEY ARE INCLUDED IN THE DATA PACKAGE BUT THE RESULTS HAVE NOT BEEN REPORTED IN THE FINAL SUMMARY REPORTS.

worklistrpt Version 2.1 05/15/95
03/20/96 13:00

LABCORE Data Entry Template for Worklist# 6782

Analyst: RAW **Instrument:** TIC01 WB39937 **Book #** 17N12-F

Method: LA-622-102 Rev/Mod _____

Worklist Comment: AY-101 TIC. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK				TIC-01	LIQUID	1	< 5.00	N/A	ug/mL
		2 STD				TIC-01	LIQUID	~~602~~ 601	584	N/A	ug/mL
96000210	AY-101 GRAB	3 SAMPLE	S96T001203	0		TIC-01	LIQUID	N/A	7.64^{E3}	4.00^{E1}	ug/mL
96000210	AY-101 GRAB	4 DUP	S96T001203	0		TIC-01	LIQUID	7.64^{E3}	7.66^{E3}	N/A	ug/mL
96000210	AY-101 GRAB	5 SPK	S96T001203	0		TIC-01	LIQUID	100	134.9	N/A	ug/mL
96000257	AY-101 GRAB	6 SAMPLE	S96T001356	0		TIC-01	LIQUID	N/A	7.14^{E3}	4.00^{E1}	ug/mL
96000257	AY-101 GRAB	7 DUP	S96T001356	0		TIC-01	LIQUID	7.14^{E3}	7.53^{E3}	N/A	ug/mL

Final page for worklist # 6782

R. WENDLAND 3-27-96
Analyst Signature **Date**

[illegible] 3-29-96
Analyst Signature **Date**

Reviewed & rejected
RW Schroeder 3/29/96

DATA NOT USED IN PACKAGE

Data Entry Comments: SAM – (.025) DIRECT
SPK – .200 (SAM) – .200 (17N12-F) – .025 (INJ)

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

TIC : LA-622-102 (C-0) LIQUIDS

			STANDARD
Sample Volume in mL	(SS)		0.200
Dilution Factor	(DF)		1.000
Digest Dilution Factor	(DDF)		1.000
µg of Carbon in Sample	(C1)		118.9
µg of Carbon in Blank	(C2)		2.1
g of Carbon/L		=	5.84E-01

Type	STANDARD
Work List	6782
Test Code	TIC-01
Matrix	LIQUID
Sample #	17N12F
Instrument Code	WB39937
Analyst	RAW
Date	03/27/96
Time	07:36 AM

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{SS}$

DATA NOT USED IN PACKAGE

µg Carbon/mL =	5.84E+02	DETECTION LEVEL in µg/mL
		5.00E+00

Data Entry by:	[illegible]	Date:	03/29/96
Approved by:	RWS	Date:	3/29/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

TIC : LA-622-102 (C-0) LIQUIDS

			BLANK
Sample Volume in mL	(SS)		0.200
Dilution Factor	(DF)		1.000
Digest Dilution Factor	(DDF)		1.000
µg of Carbon in Sample	(C1)		1.9
µg of Carbon in Blank	(C2)		2.1
g of Carbon/L	=	<	5.00E-03

Volume: BLANK
Worklist: 6782
Test Code: TIC-01
Matrix: LIQUID
Sample: BLNK
Instrument Code: WB39937
Analyst: RAW
Date: 03/27/96
Time: 07:36 AM

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{SS}$

DATA NOT USED IN PACKAGE

NOTE: Reported Result is Below Detection Level.

µg Carbon/mL =	< 5.00E+00	DETECTION LEVEL in µg/mL
		5.00E+00

Data Entry by:	[signature]	Date:	03/29/96
Approved by:	RWS	Date:	3/29/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

TIC : LA-622-102 (C-0) LIQUIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.025
SAMPLE	Dilution Factor	(DF)	1.000
Work Log	Digest Dilution Factor	(DDF)	1.000
6782	µg of Carbon in Sample	(C1)	193
Test Code	µg of Carbon in Blank	(C2)	2.1
TIC-01			
Matrix			
LIQUID	g of Carbon/L	=	7.64E+00
Sample			
S96T001203			
Instrument Code			
WB39937			
Analyst			
RAW			
Date			
03/27/96			
Time			
07:36 AM			

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{SS}$

DATA NOT USED IN PACKAGE

µg Carbon/mL =	7.64E+03	DETECTION LEVEL in µg/mL
		4.00E+01

Data Entry by:	[signature]	Date:	03/29/96
Approved by:	RWB	Date:	3/29/96

Form 622102_C Rev. 1.1

Page 1 of 1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

TIC : LA-622-102 (C-0) LIQUIDS

			DUPLICATE
Type	Sample Volume in mL	(SS)	0.025
DUPLICATE	Dilution Factor	(DF)	1.000
Digest Dilution Factor	Digest Dilution Factor	(DDF)	1.000
6782	µg of Carbon in Sample	(C1)	193.6
Instrument Code	µg of Carbon in Blank	(C2)	2.1
TIC-01			
Matrix			
LIQUID	g of Carbon/L	=	7.66E+00

Sample	
S96T001203DUP	
Instrument Code	
WB39937	
Analyst	
RAW	
Date	
03/27/96	
Time	
07:36 AM	

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \mu g\ C * DF * DDF}{SS}$

NOT IN PACKAGE

µg Carbon/mL =	7.66E+03	DETECTION LEVEL in µg/mL
		4.00E+01

Data Entry by:	[illegible]	Date:	03/29/96
Approved by:	RWS	Date:	3/29/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

TIC : LA-622-102 (C-0) LIQUIDS

			SAMPLE
[redacted]	Sample Volume in mL	(SS)	0.025
SAMPLE	Dilution Factor	(DF)	1.000
[redacted]	Digest Dilution Factor	(DDF)	1.000
6782	µg of Carbon in Sample	(C1)	180.5
[redacted]	µg of Carbon in Blank	(C2)	2.1
TIC-01			
[redacted]			
LIQUID	g of Carbon/L	=	7.14E+00
[redacted]			
S96T001356			
[redacted]			
WB39937			
[redacted]			
RAW			
[redacted]			
03/27/96			
[redacted]			
07:36 AM			

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \mu g\ C * DF * DDF}{SS}$

µg Carbon/mL =	7.14E+03	DETECTION LEVEL in µg/mL
		4.00E+01

Data Entry by:	[signature]	Date:	03/29/96
Approved by:	RWS	Date:	3/29/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

TIC : LA-622-102 (C-0) LIQUIDS

			DUPLICATE
Type	Sample Volume in mL	(SS)	0.025
DUPLICATE	Dilution Factor	(DF)	1.000
Work Order	Digest Dilution Factor	(DDF)	1.000
6782	µg of Carbon in Sample	(C1)	190.3
Instrument Code	µg of Carbon in Blank	(C2)	2.1
TIC-01			
Matrix			
LIQUID	g of Carbon/L	=	7.53E+00
Sample			
S96T001356DUP	g of Carbon/L =	$\frac{(C1-C2) * DF * DDF}{SS * 1000}$	
Instrument Code			
WB39937			
Analyst	µg of Carbon/mL =	g of Carbon/L * 1000000 µg/g / 1000 m	
RAW			
Date			
03/27/96	Detection Level (µg/mL) =	$\frac{1 \mu g C * DF * DDF}{SS}$	
Time			
07:36 AM			

DATA NOT USED IN PACKAGE

µg Carbon/mL =	7.53E+03	DETECTION LEVEL in µg/mL
		4.00E+01

Data Entry by:	[illegible]	Date:	03/29/96
Approved by:	[illegible]	Date:	3/29/96

Form 622102_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

TIC : LA-622-102 (C-0) SPIKED SAMPLE

SPIKE

	>>>>>> Sample Vial Data <<<<<<		>>>>> Spiked Vial Data <<<<<	
SPIKE	Sample Volume in mL	0.025	Sample Volume in mL	0.200
Work List	µg of Carbon in Sample	193	Spike Volume in mL	0.200
6782	µg of Carbon in Blank	2.1	Volume Injected in mL	0.025
Test Code			Spike Value (µg/mL)	602
TIC-01			µg C in Sample + Spike	107.7
Matrix			µg C in Blank	2.1
LIQUID				
Sample				
S96T001203SPK				
Instrument Code				
WB39937				
Analyst				
RAW				
Date				
03/27/96				
Time				
07:30 AM				

PERCENT SPIKE RECOVERY = $\frac{\text{µg Carbon Recovered from Spike} * 100}{\text{µg Carbon in Spike}}$

WHERE : µg Carbon Recovered from Spike =
[(µgC in sample + spike - µgC in blank) * (Spike Correction Factor)]
- [(µgC sample - µgC blank) * (Sample Size Correction Factor)]

Spike Correction Factor = $\frac{\text{Total volume in spiked sample vial (mL)}}{\text{Volume injected (mL)}}$

Sample Size Correction Factor = $\frac{\text{Sample size in (mL) in spiked vial}}{\text{Sample size (mL) in sample}}$

WHERE : µg Carbon in Spike =
[Spike Value (µg/mL) * Spike Volume (mL)]

DATA NOT USED IN PACKAGE

Percent Spike Recovery = 134.9%

Data Entry by:	[illegible]	Date:	03/29/96
Approved by:	RWS	Date:	3/29/96

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD Date: 03/27/96 Time: 07:36:08

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .4195391 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	20.70	99.03
3	1.51	55.00	62.36
4	2.01	82.20	33.09
5	2.51	98.90	16.89
6	3.01	108.90	9.18
7	3.51	114.20	4.64
8	4.01	116.90	2.31
9	4.51	118.50	1.35
10	5.01	118.90	0.34

DATA NOT USED IN PACKAGE

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

SAMPLE RESULTS:
(118.9 - 2.100013)(1)/(200) = +5.840E-01 g/L Carbon
(118.9 - 2.100013)(1)/(200)(12) = +4.867E-02 Molar Carbon

Sample Run By: R. WENDLAND 3-27-96
RA WENDLAND 00000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES ____ TO ____.

MLN 6/27/96

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: BLK Date: 03/27/96 Time: 07:19:04

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = N/A

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	0.40	0.00
3	1.51	0.70	42.86
4	2.01	1.10	36.36
5	2.51	1.10	0.00
6	3.01	1.30	15.38
7	3.51	1.60	18.75
8	4.01	1.70	5.88
9	4.51	1.90	10.53
10	5.01	2.10	9.52

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

DATA NOT IN PROC

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BASE Date: 03/27/96 Time: 07:25:11

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .4195391 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.50	60.00
3	1.51	0.50	0.00
4	2.01	0.80	37.50
5	2.51	0.90	11.11
6	3.01	1.10	18.18
7	3.51	1.20	8.33
8	4.01	1.50	20.00
9	4.51	1.60	6.25
10	5.01	1.90	15.79

DATA
NOT USED
IN PACKAGE

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

SAMPLE RESULTS:
(1.9 - 2.1)(1)/(200) = < 5.00 E-3 g/L Carbon
(1.9 - 2.1)(1)/(200)(12) = < 4.17 E-4 Molar Carbon
<<<< WARNING- PERCENT DIFFERENCE EXCEEDS 10 PERCENT >>>>

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1203 Date: 03/27/96 Time: 13:05:40

Sample Size = 25 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .4195391 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.30	0.00
2	1.01	41.00	99.27
3	1.50	115.20	64.41
4	2.00	156.20	26.25
5	2.50	176.40	11.45
6	3.00	185.00	4.65
7	3.50	189.00	2.12
8	4.00	190.90	1.00
9	4.50	192.10	0.62
10	5.00	193.00	0.47

DATA NOT USED IN PACKAGE

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

SAMPLE RESULTS:
(193 - 2.099232)(1)/(25) = +7.636E+00 g/L Carbon
(193 - 2.099232)(1)/(25)(12) = +6.363E-01 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1203D Date: 03/27/96 Time: 13:11:12

Sample Size = 25 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .4195391 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.50	0.00
2	1.01	31.40	98.41
3	1.51	110.10	71.48
4	2.01	155.20	29.06
5	2.51	176.30	11.97
6	3.01	185.60	5.01
7	3.51	189.60	2.11
8	4.01	191.40	0.94
9	4.51	192.50	0.57
10	5.01	193.60	0.57

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

SAMPLE RESULTS:
(193.6 - 2.100358)(1)/(25) = +7.660E+00 g/L Carbon
(193.6 - 2.100358)(1)/(25)(12) = +6.383E-01 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

~~1358 DUP~~

Sample: ~~1356~~ 1356 RW 3-27-96 Date: 03/27/96 Time: 09:02:14

Sample Size = 25 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .4195391 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.10	0.00
2	1.01	22.90	95.20
3	1.51	89.80	74.50
4	2.00	135.10	33.53
5	2.50	157.10	14.00
6	3.00	168.20	6.60
7	3.50	173.70	3.17
8	4.01	176.90	1.81
9	4.50	179.30	1.34
10	5.00	180.50	0.66

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

DATA NOT IN PACKAGE

SAMPLE RESULTS:
(180.5 - 2.099667)(1)/(25) = +7.136E+00 g/L Carbon
(180.5 - 2.099667)(1)/(25)(12) = +5.947E-01 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1356D Date: 03/27/96 Time: 09:17:11

Sample Size = 25 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .4195391 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	13.40	97.01
3	1.51	80.10	83.27
4	2.00	132.70	39.64
5	2.50	160.30	17.22
6	3.00	174.40	8.08
7	3.50	181.80	4.07
8	4.00	185.60	2.05
9	4.50	188.40	1.49
10	5.00	190.30	1.00

DATA NOT USED IN PACKAGE

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

SAMPLE RESULTS:
(190.3 - 2.099667)(1)/(25) = +7.528E+00 g/L Carbon
(190.3 - 2.099667)(1)/(25)(12) = +6.273E-01 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1203SPK Date: 03/27/96 Time: 13:16:31

Sample Size = 25 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .4195391 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.60	0.00
2	1.01	13.10	95.42
3	1.51	48.60	73.05
4	2.01	74.60	34.85
5	2.51	89.60	16.74
6	3.01	97.80	8.38
7	3.51	102.40	4.49
8	4.00	105.00	2.48
9	4.50	106.70	1.59
10	5.00	107.70	0.93

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

SAMPLE RESULTS:
(107.7 - 2.099641)(1)/(25) = +4.224E+00 ug/L Carbon
(107.7 - 2.099641)(1)/(25)(12) = +3.52[illegible]E-01 Molar Carbon

DATA NOT USED IN PAGE 1

Sample Run By: _____
RA WENDLAND 00000

worklistrpt Version 2.1 05/15/95
03/20/96 13:02

LABCORE Data Entry Template for Worklist# 6783

Analyst: RAW **Instrument:** TIC01 WB39937 **Book #** 17N12-F

Method: LA-622-102 Rev/Mod C-0

Worklist Comment: AY-101 TIC. RCJ

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 BLNK				TIC-01	LIQUID	1	0.2 ~~4.500~~	RWS 3/29/96 N/A	ug/mL
		2 STD				TIC-01	LIQUID	601	584	N/A	ug/mL
96000257	AY-101 GRAB	3 SAMPLE	S96T001357	0		TIC-01	LIQUID	N/A	7.10 E03	40	ug/mL
96000257	AY-101 GRAB	4 DUP	S96T001357	0		TIC-01	LIQUID	7.18 E03	6.99 E03	N/A	ug/mL
96000257	AY-101 GRAB	5 SPK	S96T001357	0		TIC-01	LIQUID	100	173.4	N/A	ug/mL
96000257	AY-101 GRAB	6 SAMPLE	S96T001358	0		TIC-01	LIQUID	N/A	7.54 E03	40	ug/mL
96000257	AY-101 GRAB	7 DUP	S96T001358	0		TIC-01	LIQUID	7.54 E03	7.48 E03	N/A	ug/mL

Final page for worklist # 6783

R. Wendland 3-27-96
Analyst Signature **Date**

[illegible] 3-28-96
Analyst Signature **Date**

Reviewed, edited & rejected
RW Schroeder 4/2/96

DATA NOT USED IN PACKAGE

Data Entry Comments: SAMPLE (.025) DIRECT

SPK - .200 (SAM) ~ .200 (17N12-F) - .025 INJ.

Units shown for QC (SPK & STD) may not reflect the actual units. DL = Detection Limit, S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

TIC : LA-622-102 (C-0) LIQUIDS

			STANDARD
Type	Sample Volume in mL	(SS)	0.200
STANDARD	Dilution Factor	(DF)	1.000
Work Unit	Digest Dilution Factor	(DDF)	1.000
6783	µg of Carbon in Sample	(C1)	118.9
Test Code	µg of Carbon in Blank	(C2)	2.1
TIC-01			
Matrix			
LIQUID	g of Carbon/L	=	5.84E-01

Sample	
17N12F	
Instrument Code	
WB39937	
Analyst	
RAW	
Date	
03/27/96	
Time	
07:36 AM	

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \mu g\ C * DF * DDF}{SS}$

DATA NOT USED IN PACKAGE

µg Carbon/mL =	5.84E+02	DETECTION LEVEL in µg/mL
		5.00E+00

Data Entry by:	RJ	Date:	03/29/96
Approved by:	RWS	Date:	3/29/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

TIC : LA-622-102 (C-0) LIQUIDS

			BLANK
Type	Sample Volume in mL	(SS)	0.200
BLANK	Dilution Factor	(DF)	1.000
Work Est.	Digest Dilution Factor	(DDF)	1.000
6783	µg of Carbon in Sample	(C1)	2.1
Test Code	µg of Carbon in Blank	(C2)	1.9
TIC-01			
Matrix			
LIQUID	g of Carbon/L	= <	5.00E-03

RWS 3/29/96

0.2

Sample #	
BLNK	
Instrument Code	
WB39937	
Analyst	
RAW	
Date	
03/27/96	
Time	
07:36 AM	

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

|2.1 − 1.9| = 0.2

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \text{ µg C} * DF * DDF}{SS}$

NOTE: Reported Result is Below Detection Level.

µg Carbon/mL =	RWS 3/29/96 ~~< 5.00E+00~~ 0.2	DETECTION LEVEL in µg/mL 5.00E+00

Data Entry by:		Date:	03/29/96
Approved by:	RWS	Date:	3/29/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

TIC : LA-622-102 (C-0) LIQUIDS

			SAMPLE
Sample Type	Sample Volume in mL	(SS)	0.025
SAMPLE	Dilution Factor	(DF)	1.000
Worklist	Digest Dilution Factor	(DDF)	1.000
6783	µg of Carbon in Sample	(C1)	179.6
Test Code	µg of Carbon in Blank	(C2)	2.1
TIC-01			
Matrix			
LIQUID	g of Carbon/L	=	7.10E+00

Sample #	
S96T001357	
Instrument Code	
WB39937	
Analyst	
RAW	
Date	
03/27/96	
Time	
07:36 AM	

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \text{ µg C} * DF * DDF}{SS}$

µg Carbon/mL =	7.10E+03	DETECTION LEVEL in µg/mL
		4.00E+01

IN PACKAGE

Data Entry by:	RCJ	Date:	03/29/96
Approved by:	RWS	Date:	3/29/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

TIC : LA-622-102 (C-0) LIQUIDS

			DUPLICATE
Type	Sample Volume in mL	(SS)	0.025
DUPLICATE	Dilution Factor	(DF)	1.000
Worksheet	Digest Dilution Factor	(DDF)	1.000
6783	µg of Carbon in Sample	(C1)	176.9
Instrument	µg of Carbon in Blank	(C2)	2.1
TIC-01			
Matrix			
LIQUID	g of Carbon/L	=	6.99E+00
Sample			
S96T001357DUP	g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$		
Instrument Code			
WB39937			
Analyst	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m		
RAW			
Date			
03/27/96	Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{SS}$		
Time			
07:36 AM			

µg Carbon/mL =	6.99E+03	DETECTION LEVEL in µg/mL
		4.00E+01

NOT USED

Data Entry by:	RJ	Date:	03/29/96
Approved by:	RWS	Date:	3/29/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

TIC : LA-622-102 (C-0) SPIKED SAMPLE

Type	SPIKE
Work Order	6783
Test Code	TIC-01
Matrix	LIQUID
Sample Number	S96T001357SPK
Instrument Data	WB39937
Analysis	RAW
Date	03/27/96
Time	07:30 AM

>>>>>> Sample Vial Data <<<<<<	
Sample Volume in mL	0.025
µg of Carbon in Sample	179.6
µg of Carbon in Blank	2.1

>>>>> Spiked Vial Data <<<<<	
Sample Volume in mL	0.200
Spike Volume in mL	0.200
Volume Injected in mL	0.025
Spike Value (µg/mL)	602
µg C in Sample + Spike	103.9
µg C in Blank	2.1

PERCENT SPIKE RECOVERY = $\frac{\text{µg Carbon Recovered from Spike} * 100}{\text{µg Carbon in Spike}}$

WHERE : µg Carbon Recovered from Spike =
[(µgC in sample + spike - µgC in blank) * (Spike Correction Factor)]
- [(µgC sample - µgC blank) * (Sample Size Correction Factor)]

Spike Correction Factor = $\frac{\text{Total volume in spiked sample vial (mL)}}{\text{Volume injected (mL)}}$

Sample Size Correction Factor = $\frac{\text{Sample size in (mL) in spiked vial}}{\text{Sample size (mL) in sample}}$

WHERE : µg Carbon in Spike =
[Spike Value (µg/mL) * Spike Volume (mL)]

Percent Spike Recovery = 173.4%

Data Entry by:	CJ	Date:	03/29/96
Approved by:	RWS	Date:	3/29/96

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

TIC : LA-622-102 (C-0) LIQUIDS

			SAMPLE
Type	Sample Volume in mL	(SS)	0.025
SAMPLE	Dilution Factor	(DF)	1.000
Vial Number	Digest Dilution Factor	(DDF)	1.000
6783	µg of Carbon in Sample	(C1)	190.6
Instrument Blank	µg of Carbon in Blank	(C2)	2.1
TIC-01			
Matrix			
LIQUID	g of Carbon/L	=	7.54E+00

Sample No.
S96T001358

Instrument Code
WB39937

Analyst
RAW

Date
03/27/96

Time
07:36 AM

g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$

µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m

Detection Level (µg/mL) = $\frac{1 \mu g\ C * DF * DDF}{SS}$

µg Carbon/mL =	7.54E+03	DETECTION LEVEL in µg/mL
		4.00E+01

Data Entry by:	[signature]	Date:	03/29/96
Approved by:	RWS	Date:	3/29/96

Form 622102_C Rev. 1.1

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

TIC : LA-622-102 (C-0) LIQUIDS

			DUPLICATE
	Sample Volume in mL	(SS)	0.025
DUPLICATE	Dilution Factor	(DF)	1.000
	Digest Dilution Factor	(DDF)	1.000
6783	µg of Carbon in Sample	(C1)	189.1
	µg of Carbon in Blank	(C2)	2.1
TIC-01			
LIQUID	g of Carbon/L	=	7.48E+00

S96T001358DUP	g of Carbon/L = $\frac{(C1-C2) * DF * DDF}{SS * 1000}$
WB39937	
	µg of Carbon/mL = g of Carbon/L * 1000000 µg/g / 1000 m
RAW	
03/27/96	Detection Level (µg/mL) = $\frac{1 \mu g C * DF * DDF}{SS}$
07:36 AM	

µg Carbon/mL =	7.48E+03	DETECTION LEVEL in µg/mL
		4.00E+01

Data Entry by:	[illegible]	Date:	03/29/96
Approved by:	RWS	Date:	3/29/96

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: STD Date: 03/27/96 Time: 07:36:13

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .4195391 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	20.70	99.03
3	1.51	55.00	62.36
4	2.01	82.20	33.09
5	2.51	98.90	16.89
6	3.01	108.90	9.18
7	3.51	114.20	4.64
8	4.01	116.90	2.31
9	4.51	118.50	1.35
10	5.01	118.90	0.34

DATA NOT USED IN PROJECT

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

SAMPLE RESULTS:
(118.9 - 2.100013)(1)/(200) = +5.840E-01 g/L Carbon
(118.9 - 2.100013)(1)/(200)(12) = +4.867E-02 Molar Carbon

Sample Run By: R. Wendland 3-27-96
RA WENDLAND ~~00~~000

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES ____TO ____.

4/07/96

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0
<<< BLANK ANALYSIS >>>

Sample: BLK Date: 03/27/96 Time: 07:18:58

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = N/A

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.40	0.00
2	1.01	0.40	0.00
3	1.51	0.70	42.86
4	2.01	1.10	36.36
5	2.51	1.10	0.00
6	3.01	1.30	15.38
7	3.51	1.60	18.75
8	4.01	1.70	5.88
9	4.51	1.90	10.53
10	5.01	2.10	9.52

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

DATA NOT USED IN PACKAGE

Sample Run By: RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: BASE Date: 03/27/96 Time: 07:25:17

Sample Size = 200 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .4195391 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.20	0.00
2	1.01	0.50	60.00
3	1.51	0.50	0.00
4	2.01	0.80	37.50
5	2.51	0.90	11.11
6	3.01	1.10	18.18
7	3.51	1.20	8.33
8	4.01	1.50	20.00
9	4.51	1.60	6.25
10	5.01	1.90	15.79

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

SAMPLE RESULTS:
(1.9 - 2.1)(1)/(200) = < 5.00 E-3 g/L Carbon
(1.9 - 2.1)(1)/(200)(12) = < 4.17 E-4 Molar Carbon
<<<< WARNING- PERCENT DIFFERENCE EXCEEDS 10 PERCENT >>>>

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1357 Date: 03/27/96 Time: 08:27:00

Sample Size = 25 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .4195391 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.90	0.00
2	1.01	3.90	76.92
3	1.50	46.10	91.54
4	2.00	99.00	53.43
5	2.51	134.60	26.45
6	3.01	155.20	13.27
7	3.51	167.10	7.12
8	4.00	173.60	3.74
9	4.50	177.40	2.14
10	5.00	179.60	1.22

DATA NOT USED IN PACKAGE

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

SAMPLE RESULTS:
(179.6 - 2.099577)(1)/(25) = +7.100E+00 g/L Carbon
(179.6 - 2.099577)(1)/(25)(12) = +5.917E-01 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1357D Date: 03/27/96 Time: 08:45:10

Sample Size = 25 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .4195391 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	0.70	0.00
2	1.01	2.40	70.83
3	1.50	35.20	93.18
4	2.00	85.80	58.97
5	2.50	123.60	30.58
6	3.01	146.90	15.86
7	3.51	160.50	8.47
8	4.00	168.80	4.92
9	4.50	173.70	2.82
10	5.00	176.90	1.81

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

SAMPLE RESULTS:
(176.9 - 2.099641)(1)/(25) = +6.992E+00 g/L Carbon
(176.9 - 2.099641)(1)/(25)(12) = +5.827E-01 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1357SPK Date: 03/27/96 Time: 08:56:56

Sample Size = 25 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .4195391 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.30	0.00
2	1.01	19.70	93.40
3	1.51	52.60	62.55
4	2.00	73.40	28.34
5	2.50	85.50	14.15
6	3.00	92.80	7.87
7	3.51	97.00	4.33
8	4.00	100.20	3.19
9	4.50	102.20	1.96
10	5.00	103.90	1.64

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

SAMPLE RESULTS:
(103.9 - 2.099283)(1)/(25) = +4.072E+00 g/L Carbon
(103.9 - 2.099283)(1)/(25)(12) = +3.393E-01 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 1358 Date: 03/27/96 Time: 08:38:57

Sample Size = 25 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .4195391 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	3.20	0.00
2	1.01	12.60	74.60
3	1.51	65.90	80.88
4	2.00	118.10	44.20
5	2.50	151.70	22.15
6	3.01	170.00	10.76
7	3.51	179.60	5.35
8	4.01	185.60	3.23
9	4.50	188.50	1.54
10	5.00	190.60	1.10

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

DATA NOT USED IN PACKAGE

SAMPLE RESULTS:
(190.6 - 2.099641)(1)/(25) = +7.540E+00 g/L Carbon
(190.6 - 2.099641)(1)/(25)(12) = +6.283E-01 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

TIC- TOTAL INORGANIC CARBON ANALYSIS REPORT
TICTOC REV 2.0

Sample: 358D Date: 03/27/96 Time: 08:50:45

Sample Size = 25 uL
Dil Factor = 1
Blank ID # = BLK
Blank Value = .4195391 ug/minute C

Analyst : RA WENDLAND
Min Readings = 10
Max Readings = 10
% Difference = 10

== Reading	==== Analysis Time	==== Coulometer	==== % Difference ==
1	0.51	1.20	0.00
2	1.01	6.10	80.33
3	1.51	47.50	87.16
4	2.01	97.80	51.43
5	2.51	135.10	27.61
6	3.01	158.60	14.82
7	3.51	172.30	7.95
8	4.01	180.60	4.60
9	4.51	185.80	2.80
10	5.01	189.10	1.75

BLANK VALUE = 2.1 micrograms carbon
BLANK FACTOR = 2.1 / 5.005493 = +4.2E-01 ug/min Carbon

SAMPLE RESULTS:
(189.1 - 2.100077)(1)/(25) = +7.480E+00 g/L Carbon
(189.1 - 2.100077)(1)/(25)(12) = +6.233E-01 Molar Carbon

Sample Run By: _____
RA WENDLAND 00000

RADIOCHEMICAL ANALYSES

THIS PAGE WAS INTENTIONALLY LEFT BLANK

03/18/96 14:50
A-0004-1

LABCORE Data Entry Template for Worklist# 6596

Analyst: AKL **Instrument:** AB00 15 **Book#** 43856

Method: LA-508-101 Rev/Mod _____

Worklist Comment: Determine sample size using ludlum.For spike use: 0.1ml. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@ALPHA01	LIQUID		
2	BLNK				@ALPHA01	LIQUID		
3	BLNK/BKG				@ALPHA01	LIQUID		
4	SAMPLE	S96T001317	0		@ALPHA01	LIQUID	96000210	AY-101 GRAB
		Analytes Requested:			ALPHA01 , ALPHA01E			
5	DUP	S96T001317	0		@ALPHA01	LIQUID		
6	SPK	S96T001317	0		@ALPHA01	LIQUID		

Final page for worklist # 6596

G Lewis 3/19/96
Analyst Signature **Date**

3-20-96
Analyst Signature **Date**

3/20/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

worklistdata Version 0.0 05/16/95
03/25/96 16:09

LABCORE Completed Worklist Report for Worklist# 6596

Analyst: akl **Instrument:** AB15 **Book#** _____

Method: _____Rev/Mod _____

Worklist Comment: Determine sample size using ludlum.For spike use: 0.1ml. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@ALPHA01	ALPHA01	LIQUID	1.53E-05	1.49E-5	97.390	% Recovery
1	STD		0	@ALPHA01	ALPHA01E	LIQUID	1.00	4.13E+00	4.130	% Ct. Error
2	BLNK		0	@ALPHA01	ALPHA01	LIQUID	1	<3.28E-3		uCi/mL
2	BLNK		0	@ALPHA01	ALPHA01E	LIQUID	1.00	5.00E+02	500.000	% Ct. Error
3	BLNK/BKG		0	@ALPHA01	ALPHA01	LIQUID	1.00E+00	1.47E+00	1.470	uCi/mL
4	SAMPLE	S96T001317	0	@ALPHA01	ALPHA01	LIQUID	N/A	1.38E-01	4.310e-003	uCi/mL
4	SAMPLE	S96T001317	0	@ALPHA01	ALPHA01E	LIQUID	N/A	9.63E+00	0.000	% Ct. Error
5	DUP	S96T001317	0	@ALPHA01	ALPHA01	LIQUID	1.38E-1	1.37E-1	0.730	RPD
5	DUP	S96T001317	0	@ALPHA01	ALPHA01E	LIQUID	1.00	9.79E+00	9.790	% Ct. Error
6	SPK	S96T001317	0	@ALPHA01	ALPHA01	LIQUID	3.92E-02	3.82E-02	97.450	% Recovery

Final page for worklist# 6596

Analyst Signature **Date** **Analyst Signature** **Date**

3/25/96

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

AT : LA-508-101 (D-2) STANDARD

			STANDARD	REPLICATE
Type	DETECTOR NUMBER		15	15
STD	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	2462	2265
6596	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.17	0.17
AT	SAMPLE SIZE in mL	(SS)	10.000	10.000
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	STANDARD BOOK NUMBER	(Std BN)	43B56	43B56
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		81.897	75.330
Batch Number	Standard Value in µCi/mL		1.53E-05	
96002286	Concentration in µCi/L	=	1.55E-02	
Rerun	Replicate Concentration in µCi/L	=	1.43E-02	
0	AVERAGE CONCENTRATION in µCi/L	=	1.4879E-02	

Sample Prep: N/A

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF / (EFF * SS * 2220000dpm/µCi)

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

Sample # WL6596

Instrument Code WB26872

Prepared By SLH

Chemist SLF

Analyst AKL

Date Complete 03/20/96

Analysis Date 03/19/96

Analysis Time 12:30 PM

Sample Point AY-101 GRAB

			DETECTION LEVEL
ALPHA TOTAL CONCENTRATION in µCi/mL		1.49E-05	8.37E-08 µCi/mL
RELATIVE COUNTING ERROR	=	4.1%	

Analyst:		SLH	Date: 20-Mar-96
Signature of Chemist:		SLF	Date: 3/21/96

STANDARD.WB1 Rev. 1.0 508100ML

WORKBOOK PAGE: BLANK2

AT : LA-508-101 (D-2) LIQUIDS

			BLNK	REPLICATE
Type	DETECTOR NUMBER		15	15
BLNK	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	9	6
6596	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.17	0.17
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	5151	5151
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.337	0.213

Batch Number		
96002286	Blank Concentration in µCi/L	< 3.28E+00
Rerun	Replicate Concentration in µCi/L	< 2.08E+00
0	Maximum Concentration in µCi/L	< 3.2808E+00

Sample Prep: N/A

Sample #: WL6596

Instrument Code: WB26872

Prepared By: SLH

Chemist: SLF

Analyst: AKL

Date Complete: 03/20/96

Analysis Date: 03/19/96

Analysis Time: 12:30 PM

Sample Point: AY-101 GRAB

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

ALPHA TOTAL in µCi/mL (Maximum) =	< 3.28E-03	DETECTION LEVEL
LESS THAN Value was Determined from Rmax.		
RELATIVE COUNTING ERROR	500.0%	4.31E-03 µCi/mL

Analyst:		AKL	Date: 20-Mar-96
Signature of Chemist:		SLF	Date: 3/21/96

BLANK.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM4

AT : LA-508-101 (D-2) LIQUIDS

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		15	15
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	430	429
6596	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.17	0.17
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	5151	5151
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		14.163	14.130
Batch Number				
96002286	Blank Concentration in µCi/L		1.38E+02	
Rerun	Replicate Concentration in µCi/L		1.38E+02	
0	Average Concentration in µCi/L		1.3792E+02	
Sample Prep				
N/A				
Sample #				
S96T001317				
Instrument Code				
WB26872				
Prepared By				
SLH				
Chemist				
SLF				
Analyst				
AKL				
Date Complete				
03/20/96				
Analysis Date				
03/19/96				
Analysis Time				
12:30 PM				
Sample Point				
AY-101 GRAB				

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

		DETECTION LEVEL
ALPHA TOTAL in µCi/mL (Average) =	1.38E-01	
RELATIVE COUNTING ERROR	9.6%	4.31E-03 µCi/mL

Analyst:		AKL	Date: 20-Mar-96
Signature of Chemist:		SLF	Date: 3/21/96

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: DUP5

AT : LA-508-101 (D-2) LIQUIDS

			DUP	REPLICATE
Type	DETECTOR NUMBER		15	15
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	416	439
6596	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.17	0.17
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	5151	5151
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2380	0.2380
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		13.697	14.463

Batch Number	
96002286	Blank Concentration in µCi/L 1.34E+02
Rerun	Replicate Concentration in µCi/L 1.41E+02
0	Average Concentration in µCi/L 1.3727E+02
Sample Prep	
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)
S96T001317	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB26872	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
SLH	
Chemist	
SLF	ALPHA TOTAL in µCi/mL (Average) = 1.37E-01
Analyst	
AKL	
Date Complete	
03/20/96	RELATIVE COUNTING ERROR 9.8%
Analysis Date	
03/19/96	
Analysis Time	
12:30 PM	
Sample Point	
AY-101 GRAB	

DETECTION LEVEL
4.31E-03 µCi/mL

Analyst:		AKL	Date: 20-Mar-96
Signature of Chemist:		SLF	Date: 3/25/96

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SPIKE6

AT : LA-508-101 (D-2) SPIKED SAMPLE

			SPIKE	REPLICATE
DETECTOR NUMBER			15	15
DISH SIZE 1 , 2 , or 5		(MS)	2	2
TOTAL COUNTS		(TC)	61299	60787
COUNT TIME in MINUTES		(CT)	30	30
BACKGROUND in cpm		(BKG)	0.17	0.17
SAMPLE VOLUME in mL	(Spiked Vial)	(SS)	1.000	1.000
SAMPLE DILUTION FACTOR	(Spiked Vial)	(DF)	5151	5151
DIGEST DILUTION FACTOR		(DDF)	1	1
SPIKE VOLUME in mL		(SVol)	0.100	0.100
SPIKE DILUTION FACTOR		(SDF)	1	1
SPIKE BOOK NUMBER		(Spk BN)	119B43	119B43
SPIKE VALUE in µCi/mL		(SVal)	3.9200E-02	3.9200E-02
INSTRUMENT EFFICIENCY FACTOR		(EFF)	0.238	0.238
SAMPLE + SPIKE µCi/mL		(S+S)	1.99E+01	1.98E+01
AVERAGE or MAXIMUM µCi/mL in SAMPLE			1.3792E-01	

Type	SPK
Work List	6596
AT or TB ?	AT
Test Code	@ALPHA01
Matrix	LIQUID
Batch Number	96002286
Rerun	0
Sample Prep	N/A
Sample #	S96T001317
Instrument Code	WB26872
Prepared By	SLH
Chemist	SLF
Analyst	AKL
Date Complete	03/20/96
Analysis Date	03/19/96
Analysis Time	12:30 PM
Sample Point	AY-101 GRAB

Rs (Sample Count Rate) = (TC / CT) - BKG

SAMPLE + SPIKE µCi/mL = Rs * DF * DDF / (EFF * SS * 2220000dpm/µCi)

QC ACTUAL = SVal

QC FOUND = (((S+S µCi/mL - SAMPLE µCi/mL) * ((SDF/SVol)/(DF*DDF/SS))))

PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) *100

QC ACTUAL	=	3.92E-02
QC FOUND	=	3.82E-02
AVG. PERCENT SPIKE RECOVERY	=	97.6%

Analyst:		SLH	Date: 20-Mar-96
Signature of Chemist:		SLF	Date: 3/25/96

SPIKE.WB1 Rev. 1.0 508101ML

LABCORE Data Entry Template for Worklist# 6731

Analyst: AKL **Instrument:** AB00 #13 **Book#** 43856

Method: LA-508-101 Rev/Mod D-2

Worklist Comment: Determine sample size using ludlum. For spike use: 0.1ml. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@ALPHA01	LIQUID		
2	BLNK				@ALPHA01	LIQUID		
3	BLNK/BKG				@ALPHA01	LIQUID		
4	SAMPLE	S96T001263	0		@ALPHA01	LIQUID	96000210	AY-101 GRAB
	Analytes Requested:				ALPHA01 , ALPHA01E			
5	DUP	S96T001263	0		@ALPHA01	LIQUID		
6	SPK	S96T001263	0		@ALPHA01	LIQUID		
7	SAMPLE	S96T001264	0		@ALPHA01	LIQUID	96000210	AY-101 GRAB
	Analytes Requested:				ALPHA01 , ALPHA01E			
8	DUP	S96T001264	0		@ALPHA01	LIQUID		
9	SPK	S96T001264	0		@ALPHA01	LIQUID		
10	SAMPLE	S96T001265	0		@ALPHA01	LIQUID	96000210	AY-101 GRAB
	Analytes Requested:				ALPHA01 , ALPHA01E			
11	DUP	S96T001265	0		@ALPHA01	LIQUID		
12	SPK	S96T001265	0		@ALPHA01	LIQUID		

Final page for worklist # 6731

C Lewis 3/26/96
Analyst Signature **Date**

[illegible] 3/27/96
Analyst Signature **Date**

Sharon Hulet 3-28-96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 6731

Analyst: akl **Instrument:** AB13 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: Determine sample size using ludlum.For spike use: 0.1ml. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@ALPHA01	ALPHA01	LIQUID	1.53E-05	1.56E-5	101.960	% Recovery
1	STD		0	@ALPHA01	ALPHA01E	LIQUID	1.00	3.96E+00	3.960	% Ct. Error
2	BLNK		0	@ALPHA01	ALPHA01	LIQUID	1	<2.62E-3		uCi/mL
2	BLNK		0	@ALPHA01	ALPHA01E	LIQUID	1.00	5.00E+02	500.000	% Ct. Error
3	BLNK/BKG		0	@ALPHA01	ALPHA01	LIQUID	1.00E+00	7.21E-01	0.720	uCi/mL
4	SAMPLE	S96T001263	0	@ALPHA01	ALPHA01	LIQUID	N/A	3.72E-02	6.150e-003	uCi/mL
4	SAMPLE	S96T001263	0	@ALPHA01	ALPHA01E	LIQUID	N/A	2.14E+01	0.000	% Ct. Error
5	DUP	S96T001263	0	@ALPHA01	ALPHA01	LIQUID	3.72E-2	3.58E-2	3.840	RPD
5	DUP	S96T001263	0	@ALPHA01	ALPHA01E	LIQUID	1.00	2.28E+01	22.800	% Ct. Error
6	SPK	S96T001263	0	@ALPHA01	ALPHA01	LIQUID	3.59E-02	3.66E-02	101.950	% Recovery
7	SAMPLE	S96T001264	0	@ALPHA01	ALPHA01	LIQUID	N/A	4.27E-02	6.150e-003	uCi/mL
7	SAMPLE	S96T001264	0	@ALPHA01	ALPHA01E	LIQUID	N/A	1.97E+01	0.000	% Ct. Error
8	DUP	S96T001264	0	@ALPHA01	ALPHA01	LIQUID	4.27E-2	4.29E-2	0.470	RPD
8	DUP	S96T001264	0	@ALPHA01	ALPHA01E	LIQUID	1.00	2.00E+01	20.000	% Ct. Error
9	SPK	S96T001264	0	@ALPHA01	ALPHA01	LIQUID	3.59E-02	3.75E-02	104.460	% Recovery
10	SAMPLE	S96T001265	0	@ALPHA01	ALPHA01	LIQUID	N/A	4.00E-02	6.150e-003	uCi/mL
10	SAMPLE	S96T001265	0	@ALPHA01	ALPHA01E	LIQUID	N/A	2.02E+01	0.000	% Ct. Error
11	DUP	S96T001265	0	@ALPHA01	ALPHA01	LIQUID	4.00E-2	4.54E-2	12.650	RPD
11	DUP	S96T001265	0	@ALPHA01	ALPHA01E	LIQUID	1.00	1.85E+01	18.500	% Ct. Error
12	SPK	S96T001265	0	@ALPHA01	ALPHA01	LIQUID	3.59E-02	3.75E-02	104.460	% Recovery

Final page for worklist# 6731

Analyst Signature **Date** **Analyst Signature** **Date**

4/1/96

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

LABCORE Completed Worklist Report for Worklist# 6731

Analyst: akl **Instrument:** AB13 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: Determine sample size using ludlum.For spike use: 0.1ml. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@ALPHA01	ALPHA01	LIQUID	1.53E-05	1.56E-5	101.960	% Recovery
1	STD		0	@ALPHA01	ALPHA01E	LIQUID	1.00	3.96E+00	3.960	% Ct. Error
2	BLNK		0	@ALPHA01	ALPHA01	LIQUID	1	<2.62E-3		uCi/mL
2	BLNK		0	@ALPHA01	ALPHA01E	LIQUID	1.00	5.00E+02	500.000	% Ct. Error
3	BLNK/BKG		0	@ALPHA01	ALPHA01	LIQUID	0.00E+00	7.21E-01	0.000	uCi/mL
4	SAMPLE	S96T001263	0	@ALPHA01	ALPHA01	LIQUID	N/A	3.72E-02	6.150e-003	uCi/mL
4	SAMPLE	S96T001263	0	@ALPHA01	ALPHA01E	LIQUID	N/A	2.14E+01	0.000	% Ct. Error
5	DUP	S96T001263	0	@ALPHA01	ALPHA01	LIQUID	3.72E-2	3.58E-2	3.840	RPD
5	DUP	S96T001263	0	@ALPHA01	ALPHA01E	LIQUID	1.00	2.28E+01	22.800	% Ct. Error
6	SPK	S96T001263	0	@ALPHA01	ALPHA01	LIQUID	3.59E-02	3.66E-02	101.950	% Recovery
7	SAMPLE	S96T001264	0	@ALPHA01	ALPHA01	LIQUID	N/A	4.27E-02	6.150e-003	uCi/mL
7	SAMPLE	S96T001264	0	@ALPHA01	ALPHA01E	LIQUID	N/A	1.97E+01	0.000	% Ct. Error
8	DUP	S96T001264	0	@ALPHA01	ALPHA01	LIQUID	4.27E-2	4.29E-2	0.470	RPD
8	DUP	S96T001264	0	@ALPHA01	ALPHA01E	LIQUID	1.00	2.00E+01	20.000	% Ct. Error
9	SPK	S96T001264	0	@ALPHA01	ALPHA01	LIQUID	3.59E-02	3.75E-02	104.460	% Recovery
10	SAMPLE	S96T001265	0	@ALPHA01	ALPHA01	LIQUID	N/A	4.00E-02	6.150e-003	uCi/mL
10	SAMPLE	S96T001265	0	@ALPHA01	ALPHA01E	LIQUID	N/A	2.02E+01	0.000	% Ct. Error
11	DUP	S96T001265	0	@ALPHA01	ALPHA01	LIQUID	4.00E-2	4.54E-2	12.650	RPD
11	DUP	S96T001265	0	@ALPHA01	ALPHA01E	LIQUID	1.00	1.85E+01	18.500	% Ct. Error
12	SPK	S96T001265	0	@ALPHA01	ALPHA01	LIQUID	3.59E-02	3.75E-02	104.460	% Recovery

Final page for worklist# 6731

Analyst Signature **Date** **Analyst Signature** **Date**

Reviewer Signature **Date**

Corrected QC actual + yield for BLNK/BKG + QC Found + yield for 1st SPK. 4/1/96

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

AT : LA-508-101 (D-2) STANDARD

			STANDARD	REPLICATE
DETECTOR NUMBER			13	13
DISH SIZE (1 , 2 , or 5)		(MS)	2	2
GROSS COUNTS		(GC)	2694	2484
COUNT TIME in MINUTES		(CT)	30	30
BACKGROUND in cpm		(BKG)	0.37	0.37
SAMPLE SIZE in mL		(SS)	10.000	10.000
DILUTION FACTOR		(DF)	1	1
STANDARD BOOK NUMBER		(Std BN)	43B56	43B56
EFFICIENCY FACTOR		(EFF)	0.2477	0.2477
Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE			89.430	82.430
Standard Value in µCi/mL			1.53E-05	
Concentration in µCi/L	=		1.63E-02	
Replicate Concentration in µCi/L	=		1.50E-02	
AVERAGE CONCENTRATION in µCi/L	=		1.5627E-02	

Type	STD
Work List	6731
AT or TB ?	AT
Test Code	@ALPHA01
Matrix	LIQUID
Batch Number	96002418
Rerun	0
Sample Prep	N/A
Sample #	WL6731
Instrument Code	WB27810
Prepared By	MCB
Chemist	SLF
Analyst	AKL
Date Complete	03/28/96
Analysis Date	03/26/96
Analysis Time	03:30 PM
Sample Point	AY-101 GRAB

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF / (EFF * SS * 2220000dpm/µCi)

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

ALPHA TOTAL CONCENTRATION in µCi/mL	=	1.56E-05	DETECTION LEVEL
RELATIVE COUNTING ERROR	=	4.0%	1.11E-07 µCi/mL

Analyst:		MCB	Date: 28-Mar-96
Signature of Chemist:		SLF	Date: 4/1/96

STANDARD.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: BLANK2

AT : LA-508-101 (D-2) LIQUIDS

			BLNK	REPLICATE
Type	DETECTOR NUMBER		13	13
BLNK	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	8	8
6731	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.37	0.37
AT	SAMPLE SIZE in mL	(SS)	0.200	0.200
Test Code	DILUTION FACTOR	(DF)	1111	1111
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2477	0.2477
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.259	0.259

Batch Number			
96002418	Blank Concentration in µCi/L	<	2.62E+00
Rerun	Replicate Concentration in µCi/L	<	2.62E+00
0	Maximum Concentration in µCi/L	<	2.6178E+00

Sample Prep	
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)
WL6731	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB27810	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
MCB	
Chemist	
SLF	
Analyst	
AKL	
Date Complete	
03/28/96	
Analysis Date	
03/26/96	
Analysis Time	
03:30 PM	
Sample Point	
AY-101 GRAB	

			DETECTION LEVEL
ALPHA TOTAL in µCi/mL (Maximum)	=	< 2.62E-03	
LESS Than Value was Determined from Lc.			6.15E-03 µCi/mL
RELATIVE COUNTING ERROR		500.0%	

Analyst:		AKL	Date: 28-Mar-96
Signature of Chemist:		SLF	Date: 4/1/96

BLANK.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM4

AT : LA-508-101 (D-2) LIQUIDS

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		13	13
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	113	130
6731	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.37	0.37
AT	SAMPLE SIZE in mL	(SS)	0.200	0.200
Test Code	DILUTION FACTOR	(DF)	1111	1111
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2477	0.2477
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		3.397	3.963

Batch Number	
96002418	Blank Concentration in µCi/L 3.43E+01
Rerun	Replicate Concentration in µCi/L 4.00E+01
0	Average Concentration in µCi/L 3.7175E+01
Sample Prep	
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)
S96T001263	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB27810	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
MCB	
Chemist	
SLF	ALPHA TOTAL in µCi/mL (Average) = 3.72E-02
Analyst	
AKL	
Date Complete	
03/28/96	RELATIVE COUNTING ERROR 21.4%
Analysis Date	
03/26/96	
Analysis Time	
03:30 PM	
Sample Point	
AY-101 GRAB	

DETECTION LEVEL
6.15E-03 µCi/mL

Analyst:		AKL	Date: 28-Mar-96
Signature of Chemist:		SLF	Date: 4/1/96

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: DUP5

AT : LA-508-101 (D-2) LIQUIDS

			DUP	REPLICATE
Type	DETECTOR NUMBER		13	13
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	132	103
6731	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.37	0.37
AT	SAMPLE SIZE in mL	(SS)	0.200	0.200
Test Code	DILUTION FACTOR	(DF)	1111	1111
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2477	0.2477
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		4.030	3.063

Batch Number	
96002418	Blank Concentration in µCi/L 4.07E+01
Rerun	Replicate Concentration in µCi/L 3.09E+01
0	Average Concentration in µCi/L 3.5828E+01
Sample Prep	
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)
S96T001263	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB27810	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
MCB	
Chemist	
SLF	ALPHA TOTAL in µCi/mL (Average) = 3.58E-02
Analyst	
AKL	
Date Complete	
03/28/96	RELATIVE COUNTING ERROR 22.8%
Analysis Date	
03/26/96	
Analysis Time	
03:30 PM	
Sample Point	
AY-101 GRAB	

DETECTION LEVEL
6.15E-03 µCi/mL

Analyst:		AKL	Date: 28-Mar-96
Signature of Chemist:		SLF	Date: 4/1/96

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SPIKE6

AT : LA-508-101 (D-2) SPIKED SAMPLE

			SPIKE	REPLICATE
	DETECTOR NUMBER		13	13
SPK	DISH SIZE 1 , 2 , or 5	(MS)	2	2
	TOTAL COUNTS	(TC)	61243	59907
6731	COUNT TIME in MINUTES	(CT)	30	30
	BACKGROUND in cpm	(BKG)	0.37	0.37
AT	SAMPLE VOLUME in mL (Spiked Vial)	(SS)	0.200	0.200
	SAMPLE DILUTION FACTOR (Spiked Vial)	(DF)	1111	1111
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
	SPIKE VOLUME in mL	(SVol)	0.100	0.100
LIQUID	SPIKE DILUTION FACTOR	(SDF)	1	1
	SPIKE BOOK NUMBER	(Spk BN)	123B43	123B43
96002418	SPIKE VALUE in µCi/mL	(SVal)	3.5899E-02	3.5899E-02
	INSTRUMENT EFFICIENCY FACTOR	(EFF)	0.2477	0.2477
0	SAMPLE + SPIKE µCi/mL	(S+S)	2.06E+01	2.02E+01
	AVERAGE or MAXIMUM µCi/mL in SAMPLE		3.7175E-02	

N/A

S96T001263

WB27810

MCB

SLF

AKL

03/28/96

Rs (Sample Count Rate) = (TC / CT) - BKG

SAMPLE + SPIKE µCi/mL = Rs * DF * DDF / (EFF * SS * 2220000dpm/µCi)

QC ACTUAL = SVal

QC FOUND = (((S+S µCi/mL - SAMPLE µCi/mL) * ((SDF/SVol)/(DF*DDF/SS))))

PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) *100

QC ACTUAL	=	3.59E-02
QC FOUND	=	3.66E-02
AVG. PERCENT SPIKE RECOVERY	=	102.1%

03/26/96

03:30 PM

AY-101 GRAB

Analyst:	MCB		Date: 28-Mar-96
Signature of Chemist:		SLF	Date: 4/1/96

SPIKE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM7

AT : LA-508-101 (D-2) LIQUIDS

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		13	13
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	129	147
6731	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.37	0.37
AT	SAMPLE SIZE in mL	(SS)	0.200	0.200
Test Code	DILUTION FACTOR	(DF)	1111	1111
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2477	0.2477
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		3.930	4.530

Batch Number	
96002418	Blank Concentration in µCi/L 3.97E+01
Rerun	Replicate Concentration in µCi/L 4.58E+01
0	Average Concentration in µCi/L 4.2731E+01

Sample Prep: N/A

Sample #: S96T001264

Instrument Code: WB27810

Prepared By: MCB

Chemist: SLF

Analyst: AKL

Date Complete: 03/28/96

Analysis Date: 03/26/96

Analysis Time: 03:30 PM

Sample Point: AY-101 GRAB

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

		DETECTION LEVEL
ALPHA TOTAL in µCi/mL (Average) =	4.27E-02	6.15E-03 µCi/mL
RELATIVE COUNTING ERROR	19.7%	

Analyst:		AKL	Date: 28-Mar-96
Signature of Chemist:		SLF	Date: 4/1/96

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: DUP8

WHC-SD-WM-DP-178, REV. 1

AT : LA-508-101 (D-2) LIQUIDS

			DUP	REPLICATE
Type	DETECTOR NUMBER		13	13
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	126	151
6731	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.37	0.37
AT	SAMPLE SIZE in mL	(SS)	0.200	0.200
Test Code	DILUTION FACTOR	(DF)	1111	1111
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2477	0.2477
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		3.830	4.663

Batch Number	
96002418	Blank Concentration in µCi/L 3.87E+01
Rerun	Replicate Concentration in µCi/L 4.71E+01
0	Average Concentration in µCi/L 4.2900E+01
Sample Prep	
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)
S96T001264	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB27810	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
MCB	
Chemist	
SLF	ALPHA TOTAL in µCi/mL (Average) = 4.29E-02
Analyst	
AKL	
Date Complete	
03/28/96	RELATIVE COUNTING ERROR 20.0%
Analysis Date	
03/26/96	
Analysis Time	
03:30 PM	
Sample Point	
AY-101 GRAB	

DETECTION LEVEL
6.15E-03 µCi/mL

Analyst:		AKL	Date: 28-Mar-96
Signature of Chemist:		SLF	Date: 4/1/96

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SPIKE9

WHC-SD-WM-DP-178, REV. 1

AT : LA-508-101 (D-2) SPIKED SAMPLE

			SPIKE	REPLICATE
DETECTOR NUMBER			13	13
DISH SIZE 1 , 2 , or 5		(MS)	2	2
TOTAL COUNTS		(TC)	60593	63515
COUNT TIME in MINUTES		(CT)	30	30
BACKGROUND in cpm		(BKG)	0.37	0.37
SAMPLE VOLUME in mL	(Spiked Vial)	(SS)	0.200	0.200
SAMPLE DILUTION FACTOR	(Spiked Vial)	(DF)	1111	1111
DIGEST DILUTION FACTOR		(DDF)	1	1
SPIKE VOLUME in mL		(SVol)	0.100	0.100
SPIKE DILUTION FACTOR		(SDF)	1	1
SPIKE BOOK NUMBER		(Spk BN)	123B43	123B43
SPIKE VALUE in µCi/mL		(SVal)	3.5899E-02	3.5899E-02
INSTRUMENT EFFICIENCY FACTOR		(EFF)	0.2477	0.2477
SAMPLE + SPIKE µCi/mL		(S+S)	2.04E+01	2.14E+01
AVERAGE or MAXIMUM µCi/mL in SAMPLE			4.2731E-02	

Type	SPK
Work List	6731
AT or TB ?	AT
Test Code	@ALPHA01
Matrix	LIQUID
Batch Number	96002418
Rerun	0
Sample Prep	N/A
Sample #	S96T001264
Instrument Code	WB27810
Prepared By	MCB
Chemist	SLF
Analyst	AKL
Date Complete	03/28/96
Analysis Date	03/26/96
Analysis Time	03:30 PM
Sample Point	AY-101 GRAB

Rs (Sample Count Rate) = (TC / CT) - BKG

SAMPLE + SPIKE µCi/mL = Rs * DF * DDF / (EFF * SS * 2220000dpm/µCi)

QC ACTUAL = SVal

QC FOUND = (((S+S µCi/mL - SAMPLE µCi/mL) * ((SDF/SVol)/(DF*DDF/SS))))

PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) *100

QC ACTUAL	=	3.59E-02
QC FOUND	=	3.75E-02
AVG. PERCENT SPIKE RECOVERY	=	104.5%

Analyst:	MCB	Date: 28-Mar-96
Signature of Chemist:	SLF	Date: 4/1/96

SPIKE.WB1 Rev. 1.0 508101ML

I:\508101\OUT\AT6731.WB1 03/28/96

WORKBOOK PAGE: SAM1

WHC-SD-WM-DP-178, REV. 1

AT : LA-508-101 (D-2) LIQUIDS

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		13	13
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	136	124
6731	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.37	0.37
AT	SAMPLE SIZE in mL	(SS)	0.200	0.200
Test Code	DILUTION FACTOR	(DF)	1111	1111
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2477	0.2477
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		4.163	3.763

Batch Number	
96002418	Blank Concentration in µCi/L 4.21E+01
Rerun	Replicate Concentration in µCi/L 3.80E+01
0	Average Concentration in µCi/L. 4.0037E+01

Sample Prep: N/A

Sample #: S96T001265

Instrument Code: WB27810

Prepared By: MCB

Chemist: SLF

Analyst: AKL

Date Complete: 03/28/96

Analysis Date: 03/26/96

Analysis Time: 03:30 PM

Sample Point: AY-101 GRAB

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

		DETECTION LEVEL
ALPHA TOTAL in µCi/mL (Average) =	4.00E-02	6.15E-03 µCi/mL
RELATIVE COUNTING ERROR	20.2%	

Analyst:		AKL	Date: 28-Mar-96
Signature of Chemist:		SLF	Date: 4/1/96

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: DUP1

WHC-SD-WM-DP-178, REV. 1

AT : LA-508-101 (D-2) LIQUIDS

			DUP	REPLICATE
Type	DETECTOR NUMBER		13	13
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	142	150
6731	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.37	0.37
AT	SAMPLE SIZE in mL	(SS)	0.200	0.200
Test Code	DILUTION FACTOR	(DF)	1111	1111
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2477	0.2477
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		4.363	4.630

Batch Number	
96002418	Blank Concentration in µCi/L 4.41E+01
Rerun	Replicate Concentration in µCi/L 4.68E+01
0	Average Concentration in µCi/L 4.5425E+01
Sample Prep	
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)
S96T001265	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB27810	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
MCB	
Chemist	
SLF	ALPHA TOTAL in µCi/mL (Average) = 4.54E-02
Analyst	
AKL	
Date Complete	
03/28/96	RELATIVE COUNTING ERROR 18.5%
Analysis Date	
03/26/96	
Analysis Time	
03:30 PM	
Sample Point	
AY-101 GRAB	

DETECTION LEVEL
6.15E-03 µCi/mL

Analyst:		AKL	Date: 28-Mar-96
Signature of Chemist:		SLF	Date: 4/1/96

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SPIKE12

AT : LA-508-101 (D-2) SPIKED SAMPLE

			SPIKE	REPLICATE
Type	DETECTOR NUMBER		13	13
SPK	DISH SIZE 1 , 2 , or 5	(MS)	2	2
Work List	TOTAL COUNTS	(TC)	61882	62107
6731	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.37	0.37
AT	SAMPLE VOLUME in mL (Spiked Vial)	(SS)	0.200	0.200
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial)	(DF)	1111	1111
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	SPIKE VOLUME in mL	(SVol)	0.100	0.100
LIQUID	SPIKE DILUTION FACTOR	(SDF)	1	1
Batch Number	SPIKE BOOK NUMBER	(Spk BN)	123B43	123B43
96002418	SPIKE VALUE in µCi/mL	(SVal)	3.5899E-02	3.5899E-02
Rerun	INSTRUMENT EFFICIENCY FACTOR	(EFF)	0.2477	0.2477
0	SAMPLE + SPIKE µCi/mL	(S+S)	2.08E+01	2.09E+01
Sample Prep	AVERAGE or MAXIMUM µCi/mL in SAMPLE		4.0037E-02	
N/A				
Sample #				
S96T001265				
Instrument Code				
WB27810				
Prepared By				
MCB				
Chemist				
SLF				
Analyst				
AKL				
Date Complete				
03/28/96				
Analysis Date				
03/26/96				
Analysis Time				
03:30 PM				
Sample Point				
AY-101 GRAB				

Rs (Sample Count Rate) = (TC / CT) - BKG

SAMPLE + SPIKE µCi/mL = Rs * DF * DDF / (EFF * SS * 2220000dpm/µCi)

QC ACTUAL = SVal

QC FOUND = (((S+S µCi/mL - SAMPLE µCi/mL) * ((SDF/SVol)/(DF*DDF/SS))))

PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) *100

QC ACTUAL	=	3.59E-02
QC FOUND	=	3.75E-02
AVG. PERCENT SPIKE RECOVERY	=	104.5%

Analyst:	MCB	Date: 28-Mar-96
Signature of Chemist:	SLF	Date: 4/1/96

SPIKE.WB1 Rev. 1.0 508101ML

LABCORE Data Entry Template for Worklist# 6732

Analyst: AKL **Instrument:** AB00 #14 **Book#** 43856

Method: LA-508-101 Rev/Mod D-2

Worklist Comment: Determine sample size using ludlum.For spike use: 0.1ml. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@ALPHA01	LIQUID		
2	BLNK				@ALPHA01	LIQUID		
3	BLNK/BKG				@ALPHA01	LIQUID		
4	SAMPLE	S96T001318	0		@ALPHA01	LIQUID	96000210	AY-101 GRAB
	Analytes Requested: ALPHA01 , ALPHA01E							
5	DUP	S96T001318	0		@ALPHA01	LIQUID		
6	SPK	S96T001318	0		@ALPHA01	LIQUID		
7	SAMPLE	S96T001359	0		@ALPHA01	LIQUID	96000257	AY-101 GRAB
	Analytes Requested: ALPHA01 , ALPHA01E							
8	DUP	S96T001359	0		@ALPHA01	LIQUID		
9	SPK	S96T001359	0		@ALPHA01	LIQUID		
10	SAMPLE	S96T001360	0		@ALPHA01	LIQUID	96000257	AY-101 GRAB
	Analytes Requested: ALPHA01 , ALPHA01E							
11	DUP	S96T001360	0		@ALPHA01	LIQUID		
12	SPK	S96T001360	0		@ALPHA01	LIQUID		

Final page for worklist # 6732

C. Lewis 3/26/96
Analyst Signature **Date**

Sylvia L Cothran 3/28/96
Analyst Signature **Date**

Sue Hogan 3/29/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 6732

Analyst: akl **Instrument:** AB14 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: Determine sample size using ludlum.For spike use: 0.1ml. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@ALPHA01	ALPHA01	LIQUID	1.53E-05	1.57E-5	102.610	% Recovery
1	STD		0	@ALPHA01	ALPHA01E	LIQUID	1.00	4.05E+00	4.050	% Ct. Error
2	BLNK		0	@ALPHA01	ALPHA01	LIQUID	1	<3.07E-3		uCi/mL
2	BLNK		0	@ALPHA01	ALPHA01E	LIQUID	1.00	5.00E+02	500.000	% Ct. Error
3	BLNK/BKG		0	@ALPHA01	ALPHA01	LIQUID	1.00E+00	7.75E-01	0.780	uCi/mL
4	SAMPLE	S96T001318	0	@ALPHA01	ALPHA01	LIQUID	N/A	1.97E-01	7.150e-003	uCi/mL
4	SAMPLE	S96T001318	0	@ALPHA01	ALPHA01E	LIQUID	N/A	8.71E+00	0.000	% Ct. Error
5	DUP	S96T001318	0	@ALPHA01	ALPHA01	LIQUID	1.97E-01	2.01E-01	2.010	RPD
5	DUP	S96T001318	0	@ALPHA01	ALPHA01E	LIQUID	1.00	8.57E+00	8.570	% Ct. Error
6	SPK	S96T001318	0	@ALPHA01	ALPHA01	LIQUID	3.59E-02	3.55E-02	98.890	% Recovery
7	SAMPLE	S96T001359	0	@ALPHA01	ALPHA01	LIQUID	N/A	3.85E-02	7.150e-003	uCi/mL
7	SAMPLE	S96T001359	0	@ALPHA01	ALPHA01E	LIQUID	N/A	2.22E+01	0.000	% Ct. Error
8	DUP	S96T001359	0	@ALPHA01	ALPHA01	LIQUID	3.85E-2	4.04E-2	4.820	RPD
8	DUP	S96T001359	0	@ALPHA01	ALPHA01E	LIQUID	1.00	2.25E+01	22.500	% Ct. Error
9	SPK	S96T001359	0	@ALPHA01	ALPHA01	LIQUID	3.59E-02	3.60E-02	100.280	% Recovery
10	SAMPLE	S96T001360	0	@ALPHA01	ALPHA01	LIQUID	N/A	3.71E-02	7.150e-003	uCi/mL
10	SAMPLE	S96T001360	0	@ALPHA01	ALPHA01E	LIQUID	N/A	2.20E+01	0.000	% Ct. Error
11	DUP	S96T001360	0	@ALPHA01	ALPHA01	LIQUID	3.71E-2	4.88E-2	27.240	RPD
11	DUP	S96T001360	0	@ALPHA01	ALPHA01E	LIQUID	1.00	1.95E+01	19.500	% Ct. Error
12	SPK	S96T001360	0	@ALPHA01	ALPHA01	LIQUID	3.59E-02	3.56E-02	99.160	% Recovery

Final page for worklist# 6732

Analyst Signature **Date** **Analyst Signature** **Date**

4/1/96

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

AT : LA-508-101 (D-2) STANDARD

			STANDARD	REPLICATE
Type	DETECTOR NUMBER		14	14
STD	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	2391	2381
6732	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.43	0.43
AT	SAMPLE SIZE in mL	(SS)	10.000	10.000
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	STANDARD BOOK NUMBER	(Std BN)	43B56	43B56
Matrix	EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		79.270	78.937
Batch Number	Standard Value in µCi/mL		1.53E-05	
96002419	Concentration in µCi/L	=	1.57E-02	
Rerun	Replicate Concentration in µCi/L	=	1.56E-02	
0	AVERAGE CONCENTRATION in µCi/L	=	1.5669E-02	
Sample Prep				
N/A				
Sample #				
WL6732				
Instrument Code				
WB27807				
Prepared By				
SZC				
Chemist				
SLF				
Analyst				
AKL				
Date Complete				
03/28/96				
Analysis Date				
03/26/96				
Analysis Time				
03:30 PM				
Sample Point				
AY-101 GRAB				

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF / (EFF * SS * 2220000dpm/µCi)

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

			DETECTION LEVEL
ALPHA TOTAL CONCENTRATION in µCi/mL	=	1.57E-05	
RELATIVE COUNTING ERROR	=	4.0%	1.29E-07 µCi/mL

Analyst:		SZC	Date: 28-Mar-96
Signature of Chemist:		SLF	Date: 4/1/96

STANDARD.WB1 Rev. 1.0 508101ML

AT : LA-508-101 (D-2) LIQUIDS

			BLNK	REPLICATE
	DETECTOR NUMBER		14	14
BLNK	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
	GROSS COUNTS	(GC)	9	11
6732	COUNT TIME in MINUTES	(CT)	30	30
	BACKGROUND in cpm	(BKG)	0.43	0.43
AT	SAMPLE SIZE in mL	(SS)	0.200	0.200
	DILUTION FACTOR	(DF)	1111	1111
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
	EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.279	0.279

96002419	Blank Concentration in µCi/L	<	3.07E+00
	Replicate Concentration in µCi/L	<	3.07E+00
0	Maximum Concentration in µCi/L	<	3.0741E+00

N/A

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)

WL6732

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

WB27807

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

SZC

SLF	ALPHA TOTAL in µCi/mL (Maximum)	=	< 3.07E-03	DETECTION LEVEL
AKL	LESS Than Value was Determined from Lc.			7.15E-03 µCi/mL
03/28/96	RELATIVE COUNTING ERROR		500.0%	

03/26/96

03:30 PM

AY-101 GRAB

Analyst:	AKL	Date: 28-Mar-96	
Signature of Chemist:	SLF	Date: 4/1/96	

BLANK.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM4

AT : LA-508-101 (D-2) LIQUIDS

			SAMPLE	REPLICATE
	DETECTOR NUMBER		14	14
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
	GROSS COUNTS	(GC)	544	558
6732	COUNT TIME in MINUTES	(CT)	30	30
	BACKGROUND in cpm	(BKG)	0.43	0.43
AT	SAMPLE SIZE in mL	(SS)	0.200	0.200
	DILUTION FACTOR	(DF)	1111	1111
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
	EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		17.703	18.170

96002419	Blank Concentration in µCi/L 1.95E+02
	Replicate Concentration in µCi/L 2.00E+02
0	Average Concentration in µCi/L. 1.9737E+02

N/A

S96T001318

WB27807

SZC

SLF

AKL

03/28/96

03/26/96

03:30 PM

AY-101 GRAB

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

			DETECTION LEVEL
ALPHA TOTAL in µCi/mL (Average)	=	1.97E-01	
RELATIVE COUNTING ERROR		8.7%	7.15E-03 µCi/mL

Analyst:	AKL		Date: 28-Mar-96
Signature of Chemist:		SLF	Date: 8/1/96 SLF

SAMPLE.WB1 Rev. 1. 508101ML

WORKBOOK PAGE: DUP5

WHC-SD-WM-DP-178, REV. 1

AT : LA-508-101 (D-2) LIQUIDS

			DUP	REPLICATE
	DETECTOR NUMBER		14	14
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
	GROSS COUNTS	(GC)	560	564
6732	COUNT TIME in MINUTES	(CT)	30	30
	BACKGROUND in cpm	(BKG)	0.43	0.43
AT	SAMPLE SIZE in mL	(SS)	0.200	0.200
	DILUTION FACTOR	(DF)	1111	1111
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
	EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		18.237	18.370

96002419	Blank Concentration in µCi/L 2.01E+02
	Replicate Concentration in µCi/L 2.02E+02
0	Average Concentration in µCi/L 2.0141E+02

N/A

S96T001318

WB27807

SZC

SLF

AKL

03/28/96

03/26/96

03:30 PM

AY-101 GRAB

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

			DETECTION LEVEL
ALPHA TOTAL in µCi/mL (Average)	=	2.01E-01	
RELATIVE COUNTING ERROR		8.6%	7.15E-03 µCi/mL

Analyst:		AKL	Date: 28-Mar-96
Signature of Chemist:		SLF	Date: 4/1/96

SAMPLE.WB1 Rev. 1. 508101M

WORKBOOK PAGE: SPIKE6

AT : LA-508-101 (D-2) SPIKED SAMPLE

			SPIKE	REPLICATE
	DETECTOR NUMBER		14	14
SPK	DISH SIZE 1 , 2 , or 5	(MS)	2	2
	TOTAL COUNTS	(TC)	51021	57723
6732	COUNT TIME in MINUTES	(CT)	30	30
	BACKGROUND in cpm	(BKG)	0.43	0.43
AT	SAMPLE VOLUME in mL (Spiked Vial)	(SS)	0.200	0.200
	SAMPLE DILUTION FACTOR (Spiked Vial)	(DF)	1111	1111
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
	SPIKE VOLUME in mL	(SVol)	0.100	0.100
LIQUID	SPIKE DILUTION FACTOR	(SDF)	1	1
	SPIKE BOOK NUMBER	(Spk BN)	123B43	123B43
96002419	SPIKE VALUE in µCi/mL	(SVal)	3.5899E-02	3.5899E-02
	INSTRUMENT EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
0	SAMPLE + SPIKE µCi/mL	(S+S)	1.87E+01	2.12E+01
	AVERAGE or MAXIMUM µCi/mL in SAMPLE		1.9737E-01	

N/A

S96T001318

WB27807

SZC

SLF

AKL

03/28/96

03/26/96

03:30 PM

AY-101 GRAB

Rs (Sample Count Rate) = (TC / CT) - BKG

SAMPLE + SPIKE µCi/mL = Rs * DF * DDF / (EFF * SS * 2220000dpm/µCi)

QC ACTUAL = SVal

QC FOUND = (((S+S µCi/mL - SAMPLE µCi/mL) * ((SDF/SVol)/(DF*DDF/SS))))

PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) *100

QC ACTUAL	=	3.59E-02
QC FOUND	=	3.55E-02
AVG. PERCENT SPIKE RECOVERY	=	99.0%

Analyst:		SZC	Date: 28-Mar-96
Signature of Chemist:		SLF	Date: 4/1/96

SPIKE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM7

AT : LA-508-101 (D-2) LIQUIDS

			SAMPLE	REPLICATE
	DETECTOR NUMBER		14	14
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
	GROSS COUNTS	(GC)	111	125
6732	COUNT TIME in MINUTES	(CT)	30	30
	BACKGROUND in cpm	(BKG)	0.43	0.43
AT	SAMPLE SIZE in mL	(SS)	0.200	0.200
	DILUTION FACTOR	(DF)	1111	1111
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
	EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		3.270	3.737

96002419	Blank Concentration in µCi/L	3.60E+01
	Replicate Concentration in µCi/L	4.11E+01
0	Average Concentration in µCi/L	3.8550E+01

N/A

S96T001359

WB27807

SZC

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

SLF	ALPHA TOTAL in µCi/mL (Average)	=	3.85E-02	DETECTION LEVEL
AKL				7.15E-03 µCi/mL
03/28/96	RELATIVE COUNTING ERROR		22.2%	

03/26/96

03:30 PM

AY-101 GRAB

Analyst:		AKL	Date: 28-Mar-96
Signature of Chemist:		SLF	Date: 4/1/96

SAMPLE.WB1 Rev. 1. 508101M

WORKBOOK PAGE: DUP8

WHC-SD-WM-DP-178, REV 1

AT : LA-508-101 (D-2) LIQUIDS

			DUP	REPLICATE
	DETECTOR NUMBER		14	14
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
	GROSS COUNTS	(GC)	109	137
6732	COUNT TIME in MINUTES	(CT)	30	30
	BACKGROUND in cpm	(BKG)	0.43	0.43
AT	SAMPLE SIZE in mL	(SS)	0.200	0.200
	DILUTION FACTOR	(DF)	1111	1111
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
	EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		3.203	4.137

96002419	Blank Concentration in µCi/L 3.52E+01
	Replicate Concentration in µCi/L 4.55E+01
0	Average Concentration in µCi/L 4.0384E+01

N/A

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)

S96T001359

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

WB27807

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

SZC

SLF

			DETECTION LEVEL
ALPHA TOTAL in µCi/mL (Average)	=	4.04E-02	
RELATIVE COUNTING ERROR		22.5%	7.15E-03 µCi/mL

AKL

03/28/96

03/26/96

03:30 PM

AY-101 GRAB

Analyst:		AKL	Date: 28-Mar-96
Signature of Chemist:		SLF	Date: 4/1/96

SAMPLE.WB1 Rev. 1. 508101NL

I:\508101\OUT\AT6732.WB1 04/01/96

WORKBOOK PAGE: SPIKE9

AT : LA-508-101 (D-2) SPIKED SAMPLE

			SPIKE	REPLICATE
	DETECTOR NUMBER		14	14
SPK	DISH SIZE 1 , 2 , or 5	(MS)	2	2
	TOTAL COUNTS	(TC)	54676	54705
6732	COUNT TIME in MINUTES	(CT)	30	30
	BACKGROUND in cpm	(BKG)	0.43	0.43
AT	SAMPLE VOLUME in mL (Spiked Vial)	(SS)	0.200	0.200
	SAMPLE DILUTION FACTOR (Spiked Vial)	(DF)	1111	1111
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
	SPIKE VOLUME in mL	(SVol)	0.100	0.100
LIQUID	SPIKE DILUTION FACTOR	(SDF)	1	1
	SPIKE BOOK NUMBER	(Spk BN)	123B43	123B43
96002419	SPIKE VALUE in µCi/mL	(SVal)	3.5899E-02	3.5899E-02
	INSTRUMENT EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
0	SAMPLE + SPIKE µCi/mL	(S+S)	2.00E+01	2.01E+01
	AVERAGE or MAXIMUM µCi/mL in SAMPLE		3.8550E-02	

N/A

S96T001359

WB27807

SZC

SLF

AKL

03/28/96

03/26/96

03:30 PM

AY-101 GRAB

Rs (Sample Count Rate) = (TC / CT) - BKG

SAMPLE + SPIKE µCi/mL = Rs * DF * DDF / (EFF * SS * 2220000dpm/µCi)

QC ACTUAL = SVal

QC FOUND = (((S+S µCi/mL - SAMPLE µCi/mL) * ((SDF/SVol)/(DF*DDF/SS))))

PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) *100

QC ACTUAL	=	3.59E-02
QC FOUND	=	3.60E-02
AVG. PERCENT SPIKE RECOVERY	=	100.4%

Analyst:		SZC	Date: 28-Mar-96
Signature of Chemist:		SLF	Date: 4/1/96

SPIKE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM10

AT : LA-508-101 (D-2) LIQUIDS

			SAMPLE	REPLICATE
	DETECTOR NUMBER		14	14
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
	GROSS COUNTS	(GC)	113	115
6732	COUNT TIME in MINUTES	(CT)	30	30
	BACKGROUND in cpm	(BKG)	0.43	0.43
AT	SAMPLE SIZE in mL	(SS)	0.200	0.200
	DILUTION FACTOR	(DF)	1111	1111
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
	EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		3.337	3.403

96002419	Blank Concentration in µCi/L	3.67E+01
	Replicate Concentration in µCi/L	3.74E+01
0	Average Concentration in µCi/L	3.7083E+01

N/A

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)

S96T001360

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

WB27807

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

SZC

SLF

ALPHA TOTAL in µCi/mL (Average) = 3.71E-02

AKL

03/28/96

RELATIVE COUNTING ERROR 22.0%

DETECTION LEVEL 7.15E-03 µCi/mL

03/26/96

03:30 PM

AY-101 GRAB

Analyst:		AKL	Date: 28-Mar-96
Signature of Chemist:		SLF	Date: 4/1/96

SAMPLE.WB1 Rev. 1. 508101ML

WORKBOOK PAGE: DUP11

AT : LA-508-101 (D-2) LIQUIDS

			DUP	REPLICATE
	DETECTOR NUMBER		14	14
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
	GROSS COUNTS	(GC)	157	135
6732	COUNT TIME in MINUTES	(CT)	30	30
	BACKGROUND in cpm	(BKG)	0.43	0.43
AT	SAMPLE SIZE in mL	(SS)	0.200	0.200
	DILUTION FACTOR	(DF)	1111	1111
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
	EFFICIENCY FACTOR	(EFF)	0.2274	0.2274
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		4.803	4.070

96002419	Blank Concentration in µCi/L	5.29E+01
	Replicate Concentration in µCi/L	4.48E+01
0	Average Concentration in µCi/L	4.8820E+01

N/A

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)

S96T001360

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

WB27807

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

SZC

SLF	ALPHA TOTAL in µCi/mL (Average)	=	4.88E-02	DETECTION LEVEL
AKL				
03/28/96	RELATIVE COUNTING ERROR		19.5%	7.15E-03 µCi/mL

03/26/96

03:30 PM

AY-101 GRAB

Analyst:		AKL	Date: 28-Mar-96
Signature of Chemist:		SLF	Date: 4/1/96

SAMPLE.WB1 Rev. 1. 508101ML

WORKBOOK PAGE: SPIKE12

AT : LA-508-101 (D-2) SPIKED SAMPLE

				SPIKE	REPLICATE
	DETECTOR NUMBER			14	14
SPK	DISH SIZE 1 , 2 , or 5		(MS)	2	2
	TOTAL COUNTS		(TC)	52847	55355
6732	COUNT TIME in MINUTES		(CT)	30	30
	BACKGROUND in cpm		(BKG)	0.43	0.43
AT	SAMPLE VOLUME in mL	(Spiked Vial)	(SS)	0.200	0.200
	SAMPLE DILUTION FACTOR	(Spiked Vial)	(DF)	1111	1111
@ALPHA01	DIGEST DILUTION FACTOR		(DDF)	1	1
	SPIKE VOLUME in mL		(SVol)	0.100	0.100
LIQUID	SPIKE DILUTION FACTOR		(SDF)	1	1
	SPIKE BOOK NUMBER		(Spk BN)	123B43	123B43
96002419	SPIKE VALUE in µCi/mL		(SVal)	3.5899E-02	3.5899E-02
	INSTRUMENT EFFICIENCY FACTOR		(EFF)	0.2274	0.2274
0	SAMPLE + SPIKE µCi/mL		(S+S)	1.94E+01	2.03E+01
	AVERAGE or MAXIMUM µCi/mL in SAMPLE			3.7083E-02	

Sample Prep	N/A
Sample	S96T001360
Instrument Code	WB27807
Prep Tech	SZC
Chemist	SLF
Analyst	AKL
Date Completed	03/28/96
Analysis Date	03/26/96
Analysis Time	03:30 PM
Sample Point	AY-101 GRAB

Rs (Sample Count Rate) = (TC / CT) - BKG

SAMPLE + SPIKE µCi/mL = Rs * DF * DDF / (EFF * SS * 2220000dpm/µCi)

QC ACTUAL = SVal

QC FOUND = (((S+S µCi/mL - SAMPLE µCi/mL) * ((SDF/SVol)/(DF*DDF/SS))))

PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) *100

QC ACTUAL	=	3.59E-02
QC FOUND	=	3.56E-02
AVG. PERCENT SPIKE RECOVERY	=	99.3%

Analyst:		SZC	Date: 28-Mar-96
Signature of Chemist:		SLF	Date: 4/1/96

SPIKE.WB1 Rev. 1.0 508101ML

LABCORE Data Entry Template for Worklist# 7085

Analyst: KL **Instrument:** AB00 18 **Book#** 47B56

Method: LA-508-101 Rev/Mod D-2

Worklist Comment: Determine sample size using ludlum.For spike use: 0.1ml. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@ALPHA01	LIQUID		
2	BLNK				@ALPHA01	LIQUID		
3	BLNK/BKG				@ALPHA01	LIQUID		
4	SAMPLE	S96T001361	0		@ALPHA01	LIQUID	96000257	AY-101 GRAB
		Analytes Requested:			ALPHA01 , ALPHA01E			
5	DUP	S96T001361	0		@ALPHA01	LIQUID		
6	SPK	S96T001361	0		@ALPHA01	LIQUID		

Final page for worklist # 7085

G Lewis 4/1/96
Analyst Signature **Date**

C. Green 4/1/96
Analyst Signature **Date**

Sue Hogan 4/2/96

Data Entry Comments:

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 7085

Analyst: akl **Instrument:** AB18 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: Determine sample size using ludlum.For spike use: 0.1ml. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0		@ALPHA01 ALPHA01	LIQUID	1.28E-04	1.55E-4	121.090	% Recovery
1	STD		0		@ALPHA01 ALPHA01E	LIQUID	1.00	4.26E+00	4.260	% Ct. Error
2	BLNK		0		@ALPHA01 ALPHA01	LIQUID	1	<2.43E-3		uCi/mL
2	BLNK		0		@ALPHA01 ALPHA01E	LIQUID	1.00	5.00E+02	500.000	% Ct. Error
3	BLNK/BKG		0		@ALPHA01 ALPHA01	LIQUID	1.00E+00	1.06E+00	1.060	uCi/mL
4	SAMPLE	S96T001361	0		@ALPHA01 ALPHA01	LIQUID	N/A	4.71E-02	2.660e-003	uCi/mL
4	SAMPLE	S96T001361	0		@ALPHA01 ALPHA01E	LIQUID	N/A	1.19E+01	0.000	% Ct. Error
5	DUP	S96T001361	0		@ALPHA01 ALPHA01	LIQUID	4.71E-2	4.74E-2	0.630	RPD
5	DUP	S96T001361	0		@ALPHA01 ALPHA01E	LIQUID	1.00	1.22E+01	12.200	% Ct. Error
6	SPK	S96T001361	0		@ALPHA01 ALPHA01	LIQUID	3.59E-02	3.91E-02	108.910	% Recovery

Final page for worklist# 7085

Analyst Signature **Date**

Analyst Signature **Date**

4/4/96

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

LABCORE Completed Worklist Report for Worklist# 7085

Analyst: akl **Instrument:** AB18 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: Determine sample size using ludlum.For spike use: 0.1ml. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD			0	@ALPHA01 ALPHA01	LIQUID	1.28E-04	1.55E-4	121.090	% Recovery
1	STD			0	@ALPHA01 ALPHA01E	LIQUID	1.00	4.26E+00	4.260	% Ct. Error
2	BLNK			0	@ALPHA01 ALPHA01	LIQUID	1	<2.43E-3		uCi/mL
2	BLNK			0	@ALPHA01 ALPHA01E	LIQUID	1.00	5.00E+02	500.000	% Ct. Error
3	BLNK/BKG			0	@ALPHA01 ALPHA01	LIQUID	0.00E+00	1.06E+00	0.000	uCi/mL
4	SAMPLE	S96T001361		0	@ALPHA01 ALPHA01	LIQUID	N/A	4.71E-02	2.660e-003	uCi/mL
4	SAMPLE	S96T001361		0	@ALPHA01 ALPHA01E	LIQUID	N/A	1.19E+01	0.000	% Ct. Error
5	DUP	S96T001361		0	@ALPHA01 ALPHA01	LIQUID	4.71E-2	4.74E-2	0.630	RPD
5	DUP	S96T001361		0	@ALPHA01 ALPHA01E	LIQUID	1.00	1.22E+01	12.200	% Ct. Error
6	SPK	S96T001361		0	@ALPHA01 ALPHA01	LIQUID	3.59E-02	3.91E-02	108.910	% Recovery

Final page for worklist# 7085

Analyst Signature **Date** **Analyst Signature** **Date**

Reviewer Signature **Date**

Corrected QC actual + yield for BLNK/BKG.
4/3/96

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

AT : LA-508-101 (D-2) STANDARD

			STANDARD	REPLICATE
Type	DETECTOR NUMBER		18	18
STD	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	2205	2139
7085	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.3	0.3
AT	SAMPLE SIZE in mL	(SS)	1.000	1.000
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	STANDARD BOOK NUMBER	(Std BN)	47B56	47B56
Matrix	EFFICIENCY FACTOR	(EFF)	0.2095	0.2095
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		73.200	71.000
Batch Number	Standard Value in µCi/mL		1.28E-04	
96002797	Concentration in µCi/L	=	1.57E-01	
Rerun	Replicate Concentration in µCi/L	=	1.53E-01	
0	AVERAGE CONCENTRATION in µCi/L	=	1.5502E-01	
Sample Prep				
N/A				
Sample #				
WL#7085				
Instrument Code				
WB27809				
Prepared By				
CJO				
Chemist				
SLF				
Analyst				
AKL				
Date Complete				
04/02/96				
Analysis Date				
04/01/96				
Analysis Time				
12:00 PM				
Sample Point				
AY-101				

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF / (EFF * SS * 2220000dpm/µCi)

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

ALPHA TOTAL CONCENTRATION in µCi/mL	=	1.55E-04	DETECTION LEVEL	
RELATIVE COUNTING ERROR	=	4.3%	1.20E-06 µCi/mL	

Analyst:		CJO	Date: 02-Apr-96
Signature of Chemist:		SLF	Date: 4/3/96

STANDARD.WB1 Rev. 1.0 508101MC

WORKBOOK PAGE: BLANK2

AT : LA-508-101 (D-2) LIQUIDS

			BLNK	REPLICATE
Type	DETECTOR NUMBER		18	18
BLNK	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	16	3
7085	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.3	0.3
AT	SAMPLE SIZE in mL	(SS)	0.500	0.500
Test Code	DILUTION FACTOR	(DF)	1111	1111
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2095	0.2095
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.508	0.233
Batch Number				
96002797	Blank Concentration in µCi/L	<	2.43E+00	
Rerun	Replicate Concentration in µCi/L	<	1.11E+00	
0	Maximum Concentration in µCi/L	<	2.4286E+00	

Sample Prep: N/A

Sample #: WL#7085

Instrument Code: WB27809

Prepared By: CJO

Chemist: SLF

Analyst: AKL

Date Complete: 04/02/96

Analysis Date: 04/01/96

Analysis Time: 12:00 PM

Sample Point: AY-101

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

ALPHA TOTAL in µCi/mL (Maximum) = < 2.43E-03		DETECTION LEVEL
LESS THAN Value was Determined from Rmax.		2.66E-03 µCi/mL
RELATIVE COUNTING ERROR	500.0%	

Analyst:		AKL	Date: 02-Apr-96
Signature of Chemist:		SLF	Date: 4/3/96

BLANK.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM4

AT : LA-508-101 (D-2) LIQUIDS

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		18	18
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	315	295
7085	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.3	0.3
AT	SAMPLE SIZE in mL	(SS)	0.500	0.500
Test Code	DILUTION FACTOR	(DF)	1111	1111
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2095	0.2095
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		10.200	9.533

Batch Number	
96002797	Blank Concentration in µCi/L 4.87E+01
Rerun	Replicate Concentration in µCi/L 4.55E+01
0	Average Concentration in µCi/L 4.7139E+01
Sample Prep	
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)
S96T001361	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB27809	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
CJO	
Chemist	
SLF	ALPHA TOTAL in µCi/mL (Average) = 4.71E-02
Analyst	
AKL	
Date Complete	
04/02/96	RELATIVE COUNTING ERROR 11.9%
Analysis Date	
04/01/96	
Analysis Time	
12:00 PM	
Sample Point	
AY-101	

DETECTION LEVEL
2.66E-03 µCi/mL

Analyst:		AKL	Date: 02-Apr-96
Signature of Chemist:		SLF	Date: 4/3/96

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: DUP5

AT : LA-508-101 (D-2) LIQUIDS

			DUP	REPLICATE
Type	DETECTOR NUMBER		18	18
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	285	328
7085	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.3	0.3
AT	SAMPLE SIZE in mL	(SS)	0.500	0.500
Test Code	DILUTION FACTOR	(DF)	1111	1111
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2095	0.2095
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		9.200	10.633

Blank Concentration in µCi/L	4.40E+01
Replicate Concentration in µCi/L	5.08E+01
Average Concentration in µCi/L	4.7378E+01

Batch Number: 96002797
Rerun: 0
Sample Prep: N/A
Sample #: S96T001361
Instrument Code: WB27809
Prepared By: CJO
Chemist: SLF
Analyst: AKL
Date Complete: 04/02/96
Analysis Date: 04/01/96
Analysis Time: 12:00 PM
Sample Point: AY-101

Rs (Sample Count Rate) = (TC / CT) - BKG
ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)
ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L
Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
Detection Levels and Less Than Values are determined from Procedure LA-508-002.

			DETECTION LEVEL
ALPHA TOTAL in µCi/mL (Average)	=	4.74E-02	
RELATIVE COUNTING ERROR		12.2%	2.66E-03 µCi/mL

Analyst:	AKL		Date: 02-Apr-96
Signature of Chemist:		SLF	Date: 4/3/96

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SPIKE6

AT : LA-508-101 (D-2) SPIKED SAMPLE

			SPIKE	REPLICATE
Type	DETECTOR NUMBER		18	18
SPK	DISH SIZE 1 , 2 , or 5	(MS)	2	2
Work List	TOTAL COUNTS	(TC)	55152	54592
7085	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.3	0.3
AT	SAMPLE VOLUME in mL (Spiked Vial)	(SS)	0.500	0.500
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial)	(DF)	1111	1111
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	SPIKE VOLUME in mL	(SVol)	0.100	0.100
LIQUID	SPIKE DILUTION FACTOR	(SDF)	1	1
Batch Number	SPIKE BOOK NUMBER	(Spk BN)	123B43	123B43
96002797	SPIKE VALUE in µCi/mL	(SVal)	3.5898E-02	3.5898E-02
Rerun	INSTRUMENT EFFICIENCY FACTOR	(EFF)	0.2095	0.2095
0	SAMPLE + SPIKE µCi/mL	(S+S)	8.78E+00	8.69E+00
Sample Prep	AVERAGE or MAXIMUM µCi/mL in SAMPLE		4.7139E-02	
N/A				
Sample #				
S96T001361				
Instrument Code				
WB27809				
Prepared By				
CJO				
Chemist				
SLF				
Analyst				
AKL				
Date Complete				
04/02/96				
Analysis Date				
04/01/96				
Analysis Time				
12:00 PM				
Sample Point				
AY-101				

Rs (Sample Count Rate) = (TC / CT) - BKG

SAMPLE + SPIKE µCi/mL = Rs * DF * DDF / (EFF * SS * 2220000dpm/µCi)

QC ACTUAL = SVal

QC FOUND = (((S+S µCi/mL - SAMPLE µCi/mL) * ((SDF/SVol)/(DF*DDF/SS))))

PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) *100

QC ACTUAL	=	3.59E-02
QC FOUND	=	3.91E-02
AVG. PERCENT SPIKE RECOVERY	=	108.9%

Analyst:		CJO	Date: 02-Apr-96
Signature of Chemist:		SLF	Date: 4/3/96

SPIKE.WB1 Rev. 1.0 508101ML

LABCORE Data Entry Template for Worklist# 7164

Analyst: SHF **Instrument:** AB00 16 **Book#** 13B56

Method: LA-508-101 Rev/Mod D-2

Worklist Comment: Determine sample size using ludlum.For spike use: 0.1ml. new

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	STD				@ALPHA01	LIQUID		
2	BLNK				@ALPHA01	LIQUID		
3	BLNK/BKG				@ALPHA01	LIQUID		
4	SAMPLE	S96T001521	0		@ALPHA01	LIQUID	96000257	AY-101 GRAB
	Analytes Requested:				ALPHA01 , ALPHA01E			
5	DUP	S96T001521	0		@ALPHA01	LIQUID		
6	SPK	S96T001521	0		@ALPHA01	LIQUID		
7	SAMPLE	S96T001522	0		@ALPHA01	LIQUID	96000257	AY-101 GRAB
	Analytes Requested:				ALPHA01 , ALPHA01E			
8	DUP	S96T001522	0		@ALPHA01	LIQUID		

Final page for worklist # 7164

Susie M. Fulton 4-2-96 0200
Analyst Signature **Date**

Sue Hogan 4/2/96
Analyst Signature **Date**

C.J. Quinn 4/2/96

Data Entry Comments: SPK .100ml 123B43

SAM .100ml 10ml - .050ml

S = Worklist Slot Number, R = Replicate Number, A = Aliquot Code.

LABCORE Completed Worklist Report for Worklist# 7164

Analyst: smf **Instrument:** AB16 **Book#** _____

Method: _____Rev/Mod _____

Worklist Comment: Determine sample size using ludlum.For spike use: 0.1ml. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@ALPHA01	ALPHA01	LIQUID	1.53E-05	1.61E-5	105.230	% Recovery
1	STD		0	@ALPHA01	ALPHA01E	LIQUID	1.00	4.33E+00	4.330	% Ct. Error
2	BLNK		0	@ALPHA01	ALPHA01	LIQUID	1	<4.47E-4		uCi/mL
2	BLNK		0	@ALPHA01	ALPHA01E	LIQUID	1.00	5.00E+02	500.000	% Ct. Error
3	BLNK/BKG		0	@ALPHA01	ALPHA01	LIQUID	1.00E+00	2.78E+00	2.780	uCi/mL
4	SAMPLE	S96T001521	0	@ALPHA01	ALPHA01	LIQUID	N/A	4.72E-02	1.030e-003	uCi/mL
4	SAMPLE	S96T001521	0	@ALPHA01	ALPHA01E	LIQUID	N/A	1.13E+01	0.000	% Ct. Error
5	DUP	S96T001521	0	@ALPHA01	ALPHA01	LIQUID	4.72E-2	5.12E-2	8.130	RPD
5	DUP	S96T001521	0	@ALPHA01	ALPHA01E	LIQUID	1.00	1.05E+01	10.500	% Ct. Error
6	SPK	S96T001521	0	@ALPHA01	ALPHA01	LIQUID	3.59E-02	4.03E-02	112.260	% Recovery
7	SAMPLE	S96T001522	0	@ALPHA01	ALPHA01	LIQUID	N/A	5.08E-02	1.030e-003	uCi/mL
7	SAMPLE	S96T001522	0	@ALPHA01	ALPHA01E	LIQUID	N/A	1.08E+01	0.000	% Ct. Error
8	DUP	S96T001522	0	@ALPHA01	ALPHA01	LIQUID	5.08E-2	5.33E-2	4.800	RPD
8	DUP	S96T001522	0	@ALPHA01	ALPHA01E	LIQUID	1.00	1.04E+01	10.400	% Ct. Error

Final page for worklist# 7164

Analyst Signature **Date** **Analyst Signature** **Date**

4/3/96

Reviewer Signature **Date**

Units shown for QC (BLK/BKG) may not reflect the actual units.

LABCORE Completed Worklist Report for Worklist# 7164

Analyst: smf **Instrument:** AB16 **Book#** _____

Method: _____ Rev/Mod _____

Worklist Comment: Determine sample size using ludlum.For spike use: 0.1ml. new

Seq	Type	Sample#	R	A	Test	Matrix	Actual	Found	DL or Yield	Unit
1	STD		0	@ALPHA01	ALPHA01	LIQUID	1.53E-05	1.61E-5	105.230	% Recovery
1	STD		0	@ALPHA01	ALPHA01E	LIQUID	1.00	4.33E+00	4.330	% Ct. Error
2	BLNK		0	@ALPHA01	ALPHA01	LIQUID	1	<4.47E-4		uCi/mL
2	BLNK		0	@ALPHA01	ALPHA01E	LIQUID	1.00	5.00E+02	500.000	% Ct. Error
3	BLNK/BKG		0	@ALPHA01	ALPHA01	LIQUID	0.00E+00	2.78E+00	0.000	uCi/mL
4	SAMPLE	S96T001521	0	@ALPHA01	ALPHA01	LIQUID	N/A	4.72E-02	1.030e-003	uCi/mL
4	SAMPLE	S96T001521	0	@ALPHA01	ALPHA01E	LIQUID	N/A	1.13E+01	0.000	% Ct. Error
5	DUP	S96T001521	0	@ALPHA01	ALPHA01	LIQUID	4.72E-2	5.12E-2	8.130	RPD
5	DUP	S96T001521	0	@ALPHA01	ALPHA01E	LIQUID	1.00	1.05E+01	10.500	% Ct. Error
6	SPK	S96T001521	0	@ALPHA01	ALPHA01	LIQUID	3.59E-02	4.03E-02	112.260	% Recovery
7	SAMPLE	S96T001522	0	@ALPHA01	ALPHA01	LIQUID	N/A	5.08E-02	1.030e-003	uCi/mL
7	SAMPLE	S96T001522	0	@ALPHA01	ALPHA01E	LIQUID	N/A	1.08E+01	0.000	% Ct. Error
8	DUP	S96T001522	0	@ALPHA01	ALPHA01	LIQUID	5.08E-2	5.33E-2	4.800	RPD
8	DUP	S96T001522	0	@ALPHA01	ALPHA01E	LIQUID	1.00	1.04E+01	10.400	% Ct. Error

Final page for worklist# 7164

Analyst Signature **Date** **Analyst Signature** **Date**

Reviewer Signature **Date**

Corrected QC Actual + yield For BLNK /BKG.

4/3/96

Units shown for QC (BLK/BKG) may not reflect the actual units.

WORKBOOK PAGE: STD1

AT : LA-508-101 (D-2) STANDARD

			STANDARD	REPLICATE
Type	DETECTOR NUMBER		16	16
STD	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	2454	2052
7164	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.03	0.03
AT	SAMPLE SIZE in mL	(SS)	10.000	10.000
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	STANDARD BOOK NUMBER	(Std BN)	43B56	43B56
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		81.770	68.370
Batch Number	Standard Value in µCi/mL		1.53E-05	
96002885	Concentration in µCi/L	=	1.75E-02	
Rerun	Replicate Concentration in µCi/L	=	1.46E-02	
0	AVERAGE CONCENTRATION in µCi/L	=	1.6072E-02	

Sample Prep: N/A

Sample #: WL#7164

Instrument Code: WB27806

Prepared By: SEH

Chemist: SLF

Analyst: SMF

Date Complete: 04/02/96

Analysis Date: 04/02/96

Analysis Time: 02:00 AM

Sample Point: AY-101 GRAB

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF / (EFF * SS * 2220000dpm/µCi)

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

			DETECTION LEVEL
ALPHA TOTAL CONCENTRATION in µCi/mL	=	1.61E-05	
RELATIVE COUNTING ERROR	=	4.3%	5.10E-08 µCi/mL

Analyst:		SEH	Date: 02-Apr-96
Signature of Chemist:		SLF	Date: 4/3/96

STANDARD.WB1 Rev. 1.0 508101ML

AT : LA-508-101 (D-2) LIQUIDS

			BLNK	REPLICATE
DETECTOR NUMBER			16	16
DISH SIZE (1 , 2 , or 5)	(MS)		2	2
GROSS COUNTS	(GC)		4	1
COUNT TIME in MINUTES	(CT)		30	30
BACKGROUND in cpm	(BKG)		0.03	0.03
SAMPLE SIZE in mL	(SS)		0.050	0.050
DILUTION FACTOR	(DF)		101	101
DIGEST DILUTION FACTOR	(DDF)		1	1
EFFICIENCY FACTOR	(EFF)		0.2104	0.2104
Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE			0.103	0.079
Blank Concentration in µCi/L			4.47E-01	
Replicate Concentration in µCi/L		<	3.42E-01	
Maximum Concentration in µCi/L		<	4.4688E-01	

Type	BLNK
Work List	7164
AT or TB ?	AT
Test Code	@ALPHA01
Matrix	LIQUID
Batch Number	96002885
Rerun	0
Sample Prep	N/A
Sample #	WL#7164
Instrument Code	WB27806
Prepared By	SEH
Chemist	SLF
Analyst	SMF
Date Complete	04/02/96
Analysis Date	04/02/96
Analysis Time	02:00 AM
Sample Point	AY-101 GRAB

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)

ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L

Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100

Detection Levels and Less Than Values are determined from Procedure LA-508-002.

ALPHA TOTAL in µCi/mL (Maximum)	=	< 4.47E-04	DETECTION LEVEL
LESS THAN Value was Determined from Rs.			
RELATIVE COUNTING ERROR		500.0%	1.03E-03 µCi/mL

Analyst:	SMF		Date: 02-Apr-96
Signature of Chemist:		SLF	Date: 4/3/96

BLANK.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SAM4

AT : LA-508-101 (D-2) LIQUIDS

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		16	16
SAMPLE	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	306	350
7164	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.03	0.03
AT	SAMPLE SIZE in mL	(SS)	0.050	0.050
Test Code	DILUTION FACTOR	(DF)	101	101
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		10.170	11.637

Batch Number	
96002885	Blank Concentration in µCi/L 4.40E+01
Rerun	Replicate Concentration in µCi/L 5.03E+01
0	Average Concentration in µCi/L 4.7153E+01
Sample Prep	
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)
S96T001521	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
SEH	
Chemist	
SLF	ALPHA TOTAL in µCi/mL (Average) = 4.72E-02
Analyst	
SMF	
Date Complete	
04/02/96	RELATIVE COUNTING ERROR 11.3%
Analysis Date	
04/02/96	
Analysis Time	
02:00 AM	
Sample Point	
AY-101 GRAB	

DETECTION LEVEL
1.03E-03 µCi/mL

Analyst:		SMF	Date: 02-Apr-96
Signature of Chemist:		SLF	Date: 4/3/96

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: DUP5

WHC-SD-WM-DP-178, REV. 1

AT : LA-508-101 (D-2) LIQUIDS

			DUP	REPLICATE
Type	DETECTOR NUMBER		16	16
DUP	DISH SIZE (1 , 2 , or 5)	(MS)	2	2
Work List	GROSS COUNTS	(GC)	362	350
7164	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.03	0.03
AT	SAMPLE SIZE in mL	(SS)	0.050	0.050
Test Code	DILUTION FACTOR	(DF)	101	101
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		12.037	11.637

Batch Number	
96002885	Blank Concentration in µCi/L 5.21E+01
Rerun	Replicate Concentration in µCi/L 5.03E+01
0	Average Concentration in µCi/L 5.1190E+01
Sample Prep	
N/A	Rs (Sample Count Rate) = (TC / CT) - BKG
Sample #	ALPHA TOTAL µCi/L = Rs * 1000mL/L * DF * DDF / (EFF * SS * 2220000dpm/µCi)
S96T001521	ALPHA TOTAL µCi/mL = ALPHA TOTAL µCi/L / 1000mL/L
Instrument Code	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100
WB27806	Detection Levels and Less Than Values are determined from Procedure LA-508-002.
Prepared By	
SEH	
Chemist	
SLF	ALPHA TOTAL in µCi/mL (Average) = 5.12E-02
Analyst	
SMF	
Date Complete	
04/02/96	RELATIVE COUNTING ERROR 10.5%
Analysis Date	
04/02/96	
Analysis Time	
02:00 AM	
Sample Point	
AY-101 GRAB	

DETECTION LEVEL
1.03E-03 µCi/mL

Analyst:		SMF	Date: 02-Apr-96
Signature of Chemist:		SLF	Date: 4/3/96

SAMPLE.WB1 Rev. 1.0 508101ML

WORKBOOK PAGE: SPIKE6

AT : LA-508-101 (D-2) SPIKED SAMPLE

			SPIKE	REPLICATE
DETECTOR NUMBER			16	16
DISH SIZE 1 , 2 , or 5		(MS)	2	2
TOTAL COUNTS		(TC)	57639	55934
COUNT TIME in MINUTES		(CT)	30	30
BACKGROUND in cpm		(BKG)	0.03	0.03
SAMPLE VOLUME in mL	(Spiked Vial)	(SS)	0.050	0.050
SAMPLE DILUTION FACTOR	(Spiked Vial)	(DF)	101	101
DIGEST DILUTION FACTOR		(DDF)	1	1
SPIKE VOLUME in mL		(SVol)	0.100	0.100
SPIKE DILUTION FACTOR		(SDF)	1	1
SPIKE BOOK NUMBER		(Spk BN)	123B43	123B43
SPIKE VALUE in µCi/mL		(SVal)	3.5898E-02	3.5898E-02
INSTRUMENT EFFICIENCY FACTOR		(EFF)	0.2104	0.2104
SAMPLE + SPIKE µCi/mL		(S+S)	8.31E+00	8.06E+00
AVERAGE or MAXIMUM µCi/mL in SAMPLE			4.7153E-02	

Type	SPK
Work List	7164
AT or TB ?	AT
Test Code	@ALPHA01
Matrix	LIQUID
Batch Number	96002885
Rerun	0
Sample Prep	N/A
Sample #	S96T001521
Instrument Code	WB27806
Prepared By	SEH
Chemist	SLF
Analyst	SMF
Date Complete	04/02/96
Analysis Date	04/02/96
Analysis Time	02:00 AM
Sample Point	AY-101 GRAB

Rs (Sample Count Rate) = (TC / CT) - BKG

SAMPLE + SPIKE µCi/mL = Rs * DF * DDF / (EFF * SS * 2220000dpm/µCi)

QC ACTUAL = SVal

QC FOUND = (((S+S µCi/mL - SAMPLE µCi/mL) * ((SDF/SVol)/(DF*DDF/SS))))

PERCENT SPIKE RECOVERY = (QC FOUND / QC ACTUAL) *100

QC ACTUAL	=	3.59E-02
QC FOUND	=	4.03E-02
AVG. PERCENT SPIKE RECOVERY	=	112.2%

Analyst:		SEH	Date: 02-Apr-96
Signature of Chemist:		SLF	Date: 4/3/96

SPIKE.WB1 Rev. 1.0 508101ML