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

DOCUMENT NUMBER: WM-DP-144

SECTION 2 **OF** 3

TITLE: Final Report for Tank 241-T-109 Auger Samples 95-Aug-040 & 95-Aug-041

DATE: 12/07/95

ORIGINATOR: Conner JM

CO:

RECIPIENT:

CO:

REFERENCES:

LABCORE Data Entry Template for Worklist# 2668

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-------TEST------		MATRIX	ACTUAL	FOUND	DL	UNIT
		5 CCB			IC-01	OXALATE2	SOLID		<.496	N/A	ug/g
		6 CCV			IC-01	F-02	SOLID		52.5	N/A	ug/g
		6 CCV			IC-01	CL-02	SOLID		82	N/A	ug/g
		6 CCV			IC-01	NO2-02	SOLID		518.7	N/A	ug/g
		6 CCV			IC-01	BR-02	SOLID		570.9 ~~609.~~	N/A	ug/g
		6 CCV			IC-01	NO3-02	SOLID		609.7	N/A	ug/g
		6 CCV			IC-01	PO4-02	SOLID		540.3	N/A	ug/g
		6 CCV			IC-01	SO4-02	SOLID		619.3	N/A	ug/g
		6 CCV			IC-01	OXALATE2	SOLID		487	N/A	ug/g

GMT 10/9/95

Final page for worklist # 2668

Jan Lyn for Ed Colair 10/9/95
Analyst Signature Date

See attached for signatures

Data Entry completed + verified 10/9/95 J. M. Lyn

R+ Steck
Analyst Signature Date

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 Data Entry Template for Worklist# 2668

Analyst: E.C **Instrument:** IC01 IC 02 **Book #** 106N9-D

Method: LA-533-105 Rev/Mod D-1

Worklist Comment: T-109 IC.These hve priority over B-104, and BY-110. JMF

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST		MATRIX	ACTUAL	FOUND	DL	UNIT
		1	BLNK-PREP				@IC-01	F-02	SOLID			N/A	ug/g
		1	BLNK-PREP				@IC-01	CL-02	SOLID			N/A	ug/g
		1	BLNK-PREP				@IC-01	NO2-02	SOLID			N/A	ug/g
		1	BLNK-PREP				@IC-01	BR-02	SOLID			N/A	ug/g
		1	BLNK-PREP				@IC-01	NO3-02	SOLID			N/A	ug/g
		1	BLNK-PREP				@IC-01	PO4-02	SOLID			N/A	ug/g
		1	BLNK-PREP				@IC-01	SO4-02	SOLID			N/A	ug/g
		1	BLNK-PREP				@IC-01	OXALATE2	SOLID			N/A	ug/g
		2	STD				@IC-01	F-02	SOLID			N/A	ug/g
		2	STD				@IC-01	CL-02	SOLID			N/A	ug/g
		2	STD				@IC-01	NO2-02	SOLID			N/A	ug/g
		2	STD				@IC-01	BR-02	SOLID			N/A	ug/g
		2	STD				@IC-01	NO3-02	SOLID			N/A	ug/g
		2	STD				@IC-01	PO4-02	SOLID			N/A	ug/g
		2	STD				@IC-01	SO4-02	SOLID			N/A	ug/g
		2	STD				@IC-01	OXALATE2	SOLID			N/A	ug/g
95000121	T-109	3	SAMPLE	S95T002176	0	W	@IC-01	F-02	SOLID	N/A			ug/g
95000121	T-109	3	SAMPLE	S95T002176	0	W	@IC-01	CL-02	SOLID	N/A			ug/g

Data Entry Comments:

	SAMPLE	DUP
S95T002176	12.3540g/L	12.1060

LMCS 106N9-D .100mL - 10mL

SPIKE 106N9-D .100mL

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 Data Entry Template for Worklist# 2668

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------		MATRIX	ACTUAL	FOUND	DL	UNIT
95000121	T-109	3 SAMPLE	S95T002176	0	W	@IC-01	NO2-02	SOLID	N/A			ug/g
95000121	T-109	3 SAMPLE	S95T002176	0	W	@IC-01	BR-02	SOLID	N/A			ug/g
95000121	T-109	3 SAMPLE	S95T002176	0	W	@IC-01	NO3-02	SOLID	N/A			ug/g
95000121	T-109	3 SAMPLE	S95T002176	0	W	@IC-01	PO4-02	SOLID	N/A			ug/g
95000121	T-109	3 SAMPLE	S95T002176	0	W	@IC-01	SO4-02	SOLID	N/A			ug/g
95000121	T-109	3 SAMPLE	S95T002176	0	W	@IC-01	OXALATE2	SOLID	N/A			ug/g
95000121	T-109	4 DUP	S95T002176	0	W	@IC-01	F-02	SOLID			N/A	ug/g
95000121	T-109	4 DUP	S95T002176	0	W	@IC-01	CL-02	SOLID			N/A	ug/g
95000121	T-109	4 DUP	S95T002176	0	W	@IC-01	NO2-02	SOLID			N/A	ug/g
95000121	T-109	4 DUP	S95T002176	0	W	@IC-01	BR-02	SOLID			N/A	ug/g
95000121	T-109	4 DUP	S95T002176	0	W	@IC-01	NO3-02	SOLID			N/A	ug/g
95000121	T-109	4 DUP	S95T002176	0	W	@IC-01	PO4-02	SOLID			N/A	ug/g
95000121	T-109	4 DUP	S95T002176	0	W	@IC-01	SO4-02	SOLID			N/A	ug/g
95000121	T-109	4 DUP	S95T002176	0	W	@IC-01	OXALATE2	SOLID			N/A	ug/g

Final page for worklist # 2668

Ed. Cohn 10-2-95
Analyst Signature **Date**

Analyst Signature **Date**

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.

WESTINGHOUSE HANFORD COMPANY
222-S LABORATORY
INORGANIC ANALYTICAL BATCH AND SUMMARY SHEET

ANION ANALYSIS ON DIONEX

SAMPLE #:	S95T002176		
TEST CODE:	@ic-01	ANALYST:	Ed Colvin
INSTRUMENT:	IC-02	ANALYSIS DATE:	10/02/95
WORK LIST #:	2668	SAMPLE POINT:	T-109
BATCH ID:		SAMPLE PREP:	water digest

Result Units µg/g	Fluoride	Chloride	Nitrite	Nitrate	Phosphate	Sulfate	Bromide	Oxalate
106N9D	97.5%	103.5%	97.1%	98.3%	99.0%	96.1%	99.3%	92.6%
S95T002176	2.36E+04	8.88E+01	<493.29	3.21E+03	2.37E+05	<603.69	<862.73	<466.35
S95T002176dup	2.46E+04	<76.33	<503.39	2.46E+03	2.39E+05	<616.96	<574.26	<477.94
Duplicate 1 RPD	4.0%	N/A	N/A	26.4%	0.7%	N/A	N/A	N/A
	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
S95T002176spk	105.6%	96.5%	99.3%	89.9%	92.5%	101.9%	97.2%	88.0%

NARRATIVE: **Analyst Comments:**

Chemist Comments:

Form Completed By:	Jean Freye	Date:	10/9/95
Chemist Approval:	Jean Freye	Date:	10/9/95

WHC-SD-WM-DP- 144, REV. 1

77

LAB LEADER INFO	
Method:	LA-535-105 D-1
Matrix:	solid
Test Code:	dilc-01
Work List #:	2008
Batch #:	
Result Units	
(mg/L or ug/mL):	ug/L
Spike Book Number:	100NHD
Spike Sample #:	1
Prepared By:	Jann Frye
Prepared Date:	10/06/95
Chemist:	Jann Frye
Analyst:	Ed Colvin
Analysis Date:	10/06/95
Time Complete:	11:35 AM
Instrument Code:	IC-02
Rerun:	0
Sample Prep:	water digest
Sample Point:	T-109
Sample Type	
STANDARD	100NHD
SAMPLE 1	395T082176
DUPLICATE 1	395T082176dup
SAMPLE 2	
DUPLICATE 2	
SAMPLE 3	
DUPLICATE 3	
SAMPLE 4	
DUPLICATE 4	
SPIKE	395T082176spk
SPIKE DUPLICATE	

PRINT

TECH INFO	Fluoride	Chloride	Nitrite	Nitrate	Phosphate	Sulfate	Bromide	Oxalate
Blank Data (ug/mL)	<.063	<.084	<.064	<.099	<.096	<.078	<.032	<.026
Standard Data (ug/mL)	57.0	82	519.7	999.7	949.3	619.3	579.0	497
Sample 1 Data (ug/mL)	2.06E+03	1.06E+03	<.064	3.07E+01	2.93E+03	<.078	<.032	<.026
Sample 1 Dilution Factor	101	11	11	11	101	11	11	11
Sample 1 Prep DF	12.364	12.364	12.364	12.364	12.364	12.364	12.364	12.364
Duplicate 1 Data (ug/mL)	2.06E+03	<.084	<.064	2.98E+01	2.88E+03	<.078	<.032	<.026
Duplicate 1 Dilution Factor	101	11	11	11	101	11	11	11
Duplicate 1 Prep DF	12.198	12.198	12.198	12.198	12.198	12.198	12.198	12.198
Sample 2 Data (ug/mL)								
Sample 2 Dilution Factor								
Sample 2 Prep DF								
Duplicate 2 Data (ug/mL)								
Duplicate 2 Dilution Factor								
Duplicate 2 Prep DF								
Sample 3 Data (ug/mL)								
Sample 3 Dilution Factor								
Sample 3 Prep DF								
Duplicate 3 Data (ug/mL)								
Duplicate 3 Dilution Factor								
Duplicate 3 Prep DF								
Sample 4 Data (ug/mL)								
Sample 4 Dilution Factor								
Sample 4 Prep DF								
Duplicate 4 Data (ug/mL)								
Duplicate 4 Dilution Factor								
Duplicate 4 Prep DF								
Spike + Sample 1 (ug/mL)	3.63E+03	6.83E+00	5.30E+01	9.49E+01	3.43E+03	6.43E+01	5.59E+01	4.63E+01
Spike + Dup 1 (ug/mL)								
Spike Volume (mL)	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01
Total Volume (mL)	10.10	11.00	11.00	11.00	10.10	11.00	11.00	11.00
Std. Conc. (ug/mL)	50	79	534	614	946	631	575	526
Detection Limit	0.063	0.084	0.064	0.099	0.096	0.078	0.032	0.026
Matrix Detection Limit 1	6.15E+02	7.40E+01	4.93E+02	6.22E+02	4.67E+03	6.94E+02	6.63E+02	4.68E+02
Matrix Detection Limit 2	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
Matrix Detection Limit 3	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
Matrix Detection Limit 4	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR

Spike Recovery = [((Spike+Sample)-(Sample)*(Total Volume))/(Spike Vol.)*(Spike Std.)*(Sample DF)]* 100%
Note: (for spike recovery when the sample conc. is less than detection limit you do NOT subtract sample conc.)
Duplicate Relative % Difference = ((Sample - Duplicate)/ ((Sample + Duplicate) / 2) * 100%)
Less than Values are Calculated from the Detection Limit*Dilution Factor

v RESULTS v	Fluoride	Chloride	Nitrite	Nitrate	Phosphate	Sulfate	Bromide	Oxalate
Standard % Recovery	97.1%	98.8%	97.1%	98.3%	99.9%	98.1%	99.3%	99.8%
Sample 1 Result	2.32E+03	1.19E+01	<4.61E-02	3.21E+03	2.37E+03	<4.61E-02	<4.61E-02	<4.61E-02
Duplicate 1 Result	2.40E+03	<76.33	<4.61E-02	2.40E+03	2.36E+03	<4.61E-02	<4.61E-02	<4.61E-02
Duplicate 1 RPD	4.0%	N/A	N/A	28.4%	0.7%	N/A	N/A	N/A
ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR	ERR
Spike % Recovery	101.9%	98.5%	98.3%	98.9%	92.8%	101.9%	97.2%	98.8%

Date Entry by: Jann Frye Date: 10/06/95
Approved by: Jann Frye Date: 10/9/95
Form DIONEX.WB1 Rev. 1.3

78 WHC-SD-WM-DP-144, REV. 1

Sample Name: S95T002176 DUP Date: 10/02/1995 12:27:52
Data File : C:\DX\DATA\95100271.D12
Method : C:\DX\METHOD\AS12A.MET
ACI Address: 1 System: 1 Inject#: 12 Detector:CDM-1
Analyst : Ed Colvin Column: AG4A-SC,AS4A-SC, SRS

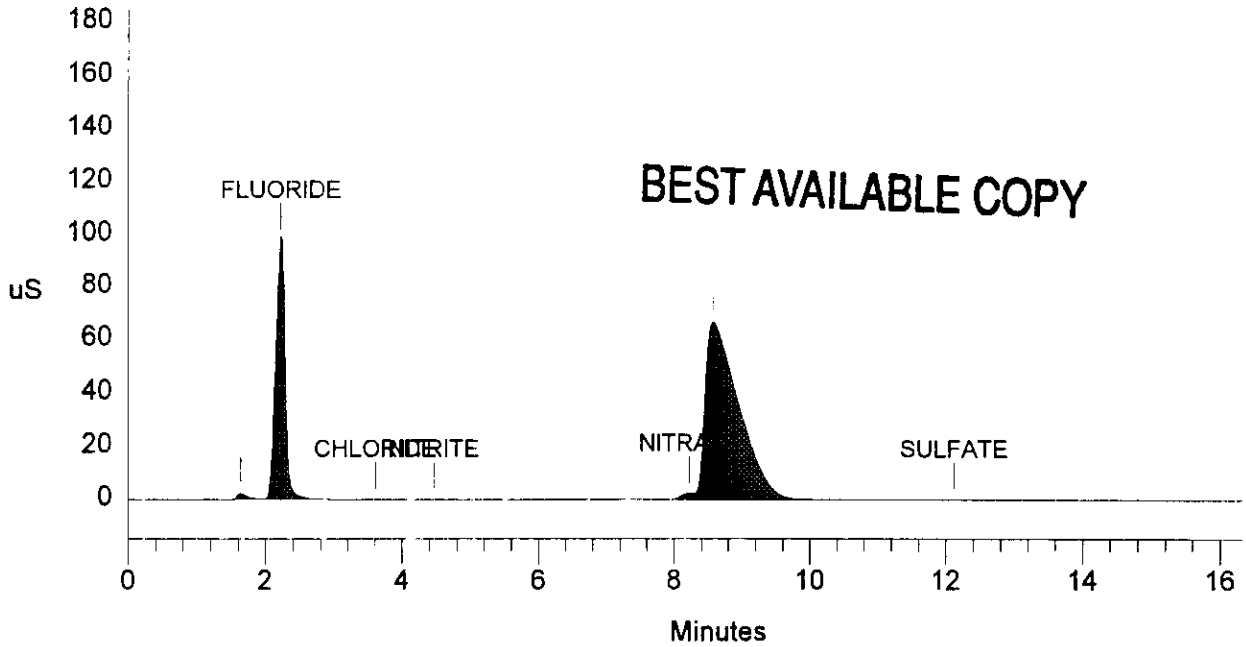
E M. Colvin 10/02/95

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	11	4898	5Hz	0.00	16.32		200

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.64		0.000	2251	21288	2	
2	2.23	FLUORIDE	248.448	97758	891479	2	0.90
3	3.61	CHLORIDE ✓	0.792	122	1013	1	-1.37
4	4.47	NITRITE ✓	5.181	141	1404	1	-0.89
5	8.23	NITRATE ✓	29.825	2459	29649	2	4.57
6	8.58		0.000	66820	2261283	2	
7	12.12	SULFATE ✓	5.591	135	3750	1	0.33
		Totals	289.836	169686	3209867		

File: 95100271.D12 Sample: S95T002176 DUP



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SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 79 TO 87.

WHO-CD-WM-DP-144, REV. 1

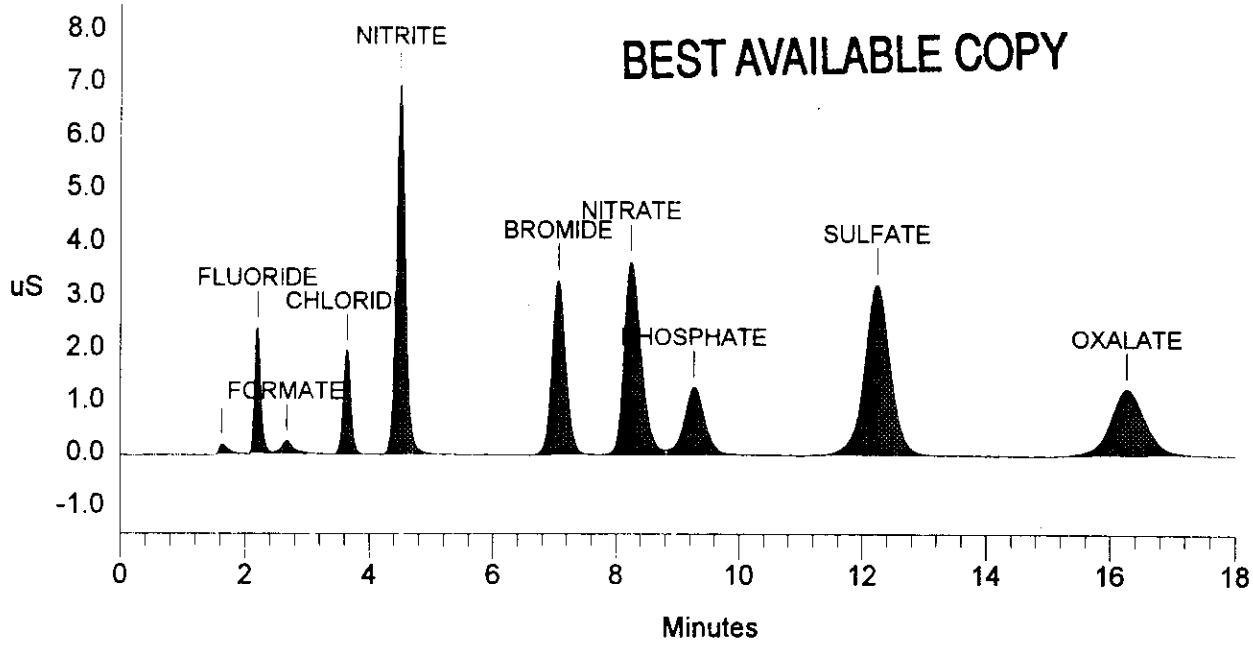
```
==============================================================================
| Sample Name: 106N9-D STD                      Date: 10/02/1995 08:57:49      |
| Data File  : C:\DX\DATA\95100271.D04                                         |
| Method     : C:\DX\METHOD\AS12A.MET                                          |
| ACI Address: 1  System: 1  Inject#: 4                   Detector:CDM-1       |
| Analyst    : Ed Colvin      Column: AG4A-SC,AS4A-SC, SRS                     |
==============================================================================
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	101	5400	5Hz	0.00	18.00	200

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.63		0.000	175	1628	1	
2	2.20	FLUORIDE	57.579	2378	15767	2	-0.45
3	2.67	FORMATE	32.985	240	3062	2	1.91
4	3.64	CHLORIDE	82.025	1977	15963	1	-0.55
5	4.50	NITRITE	518.795	6967	71037	1	-0.22
6	7.06	BROMIDE	570.919	3309	50111	1	2.92
7	8.25	NITRATE	609.702	3669	69149	2	4.83
8	9.27	PHOSPHATE	540.379	1289	29156	2	0.98
9	12.24	SULFATE	619.352	3241	91873	1	1.32
10	16.27	OXALATE	487.048	1259	46765	1	1.81
		Totals	3518.785	24504	394510		

File: 95100271.D04 Sample: 106N9-D STD



WHO-CC-WM-DP-144, REV.1

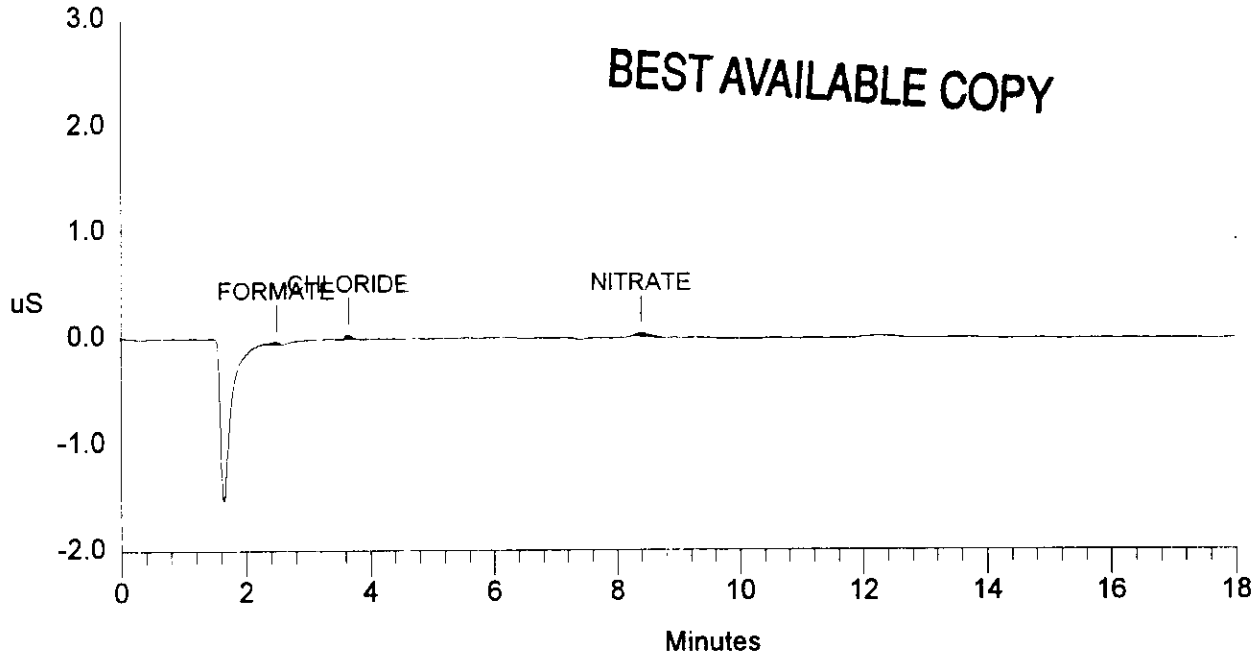
```
==============================================================================
| Sample Name: PREP BLANK                      Date: 10/02/1995 08:13:06      |
| Data File  : C:\DX\DATA\95100271.D02                                        |
| Method     : C:\DX\METHOD\AS12A.MET                                         |
| ACI Address: 1  System: 1  Inject#: 2                   Detector:CDM-1      |
| Analyst    : Ed Colvin      Column: AG4A-SC,AS4A-SC, SRS                    |
==============================================================================
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	1	5400	5Hz	0.00	18.00	200	

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	2.50	FORMATE	0.075	26	269	1	-4.58
2	3.66	CHLORIDE	0.036	43	300	1	0.00
3	8.40	NITRATE	0.228	35	483	1	6.73
		Totals	0.339	104	1052		

File: 95100271.D02 Sample: PREP BLANK



WHC-CD-WM-DP-144, REV. 1

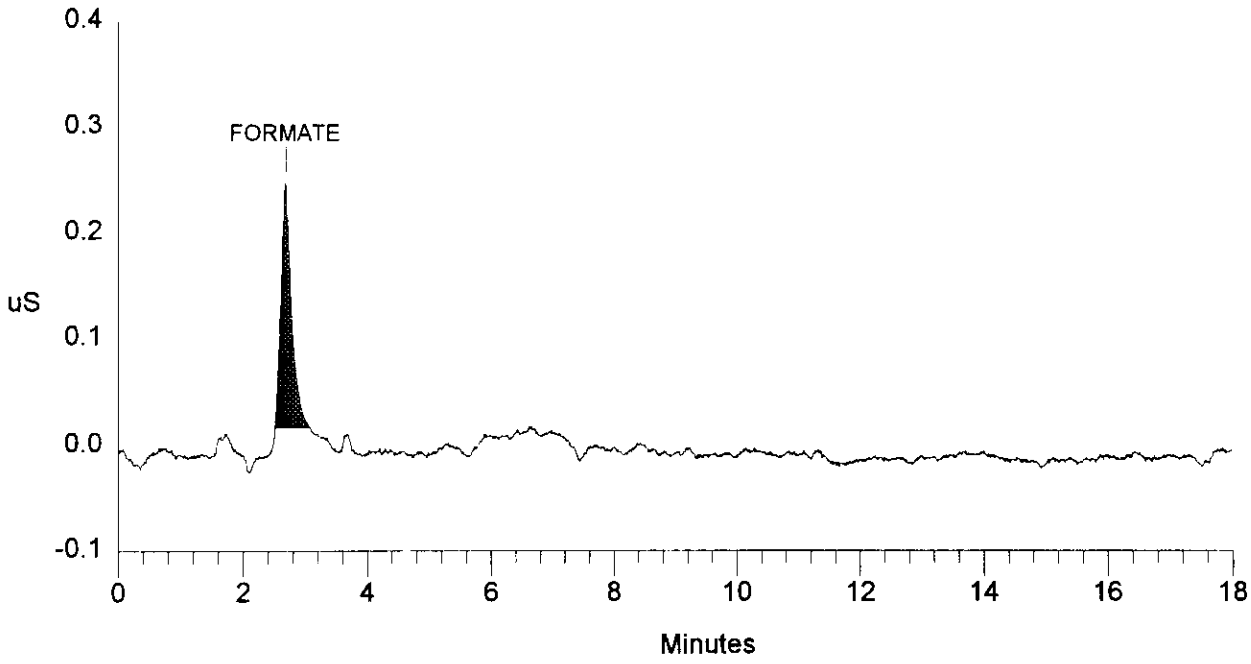
```
==============================================================================
| Sample Name: INSTR BLANK                    Date: 10/02/1995 07:53:45       |
| Data File  : C:\DX\DATA\95100271.D01                                        |
| Method     : C:\DX\METHOD\AS12A.MET                                         |
| ACI Address: 1  System: 1  Inject#: 1                   Detector:CDM-1      |
| Analyst    : Ed Colvin      Column: AG4A-SC,AS4A-SC, SRS                    |
==============================================================================
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	1	5400	5Hz	0.00	18.00	200

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	2.69	FORMATE	0.288	230	2630	1	2.67
		Totals	0.288	230	2630		

File: 95100271.D01 Sample: INSTR BLANK



TRUS-WMDP-144, REV.1

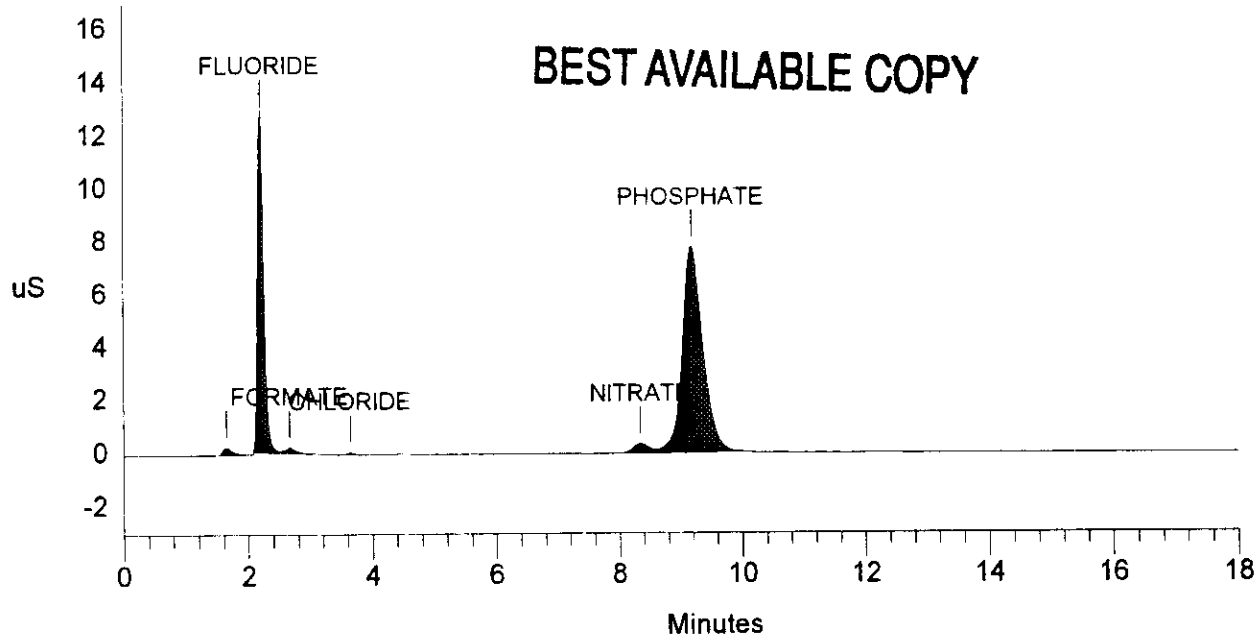
```
==========================================================================
| Sample Name: S95T002176                    Date: 10/02/1995 10:25:09    |
| Data File  : C:\DX\DATA\95100271.D06                                    |
| Method     : C:\DX\METHOD\AS12A.MET                                     |
| ACI Address: 1  System: 1  Inject#: 6                Detector:CDM-1     |
| Analyst    : Ed Colvin      Column: AG4A-SC,AS4A-SC, SRS               |
==========================================================================
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	5400	5Hz	0.00	18.00		200

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.64		0.000	274	2839	1	
2	2.20	FLUORIDE ✓	290.487	12659	85047	2	-0.45
3	2.66	FORMATE	26.416	208	2340	2	1.53
4	3.64	CHLORIDE	4.723	66	510	1	-0.55
5	8.34	NITRATE	72.184	350	6176	2	5.97
6	9.18	PHOSPHATE ✓	2925.064	7773	178544	2	0.00
		Totals	3318.874	21330	275455		

File: 95100271.D06 Sample: S95T002176



WHO-CD-WM-DP-144, REV. 1

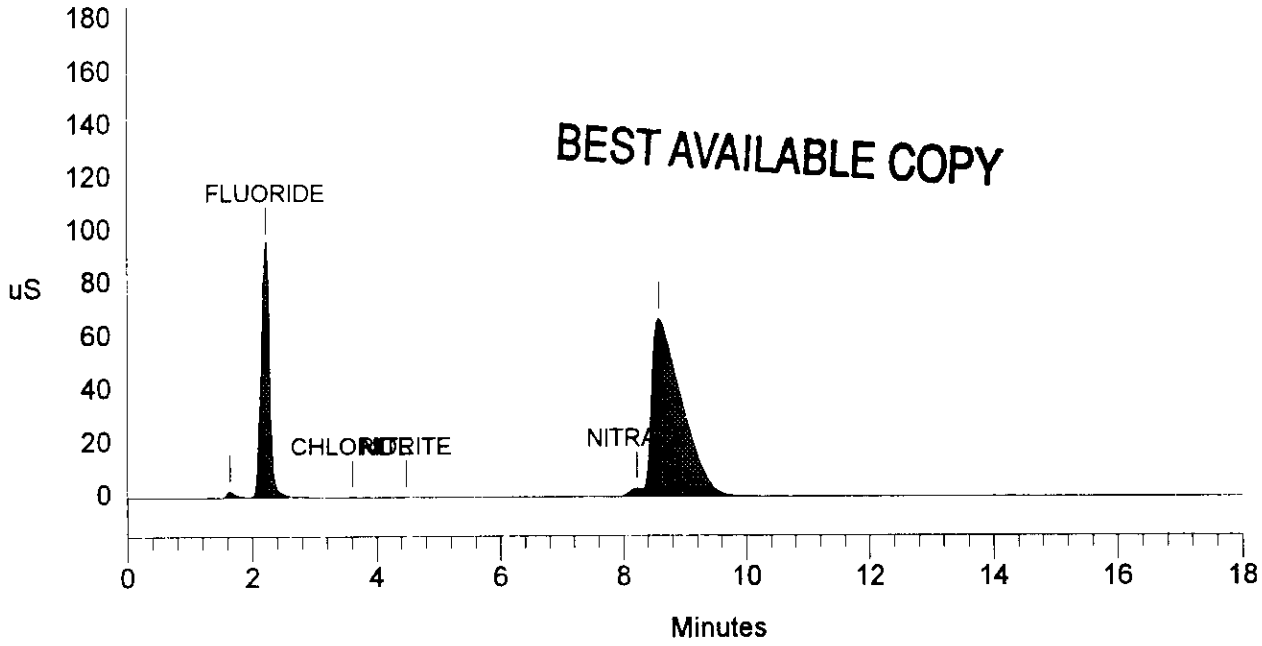
```
==============================================================================
| Sample Name: S95T002176                    Date: 10/02/1995 10:49:43        |
| Data File  : C:\DX\DATA\95100271.D07                                        |
| Method     : C:\DX\METHOD\AS12A.MET                                         |
| ACI Address: 1  System: 1  Inject#: 7                   Detector:CDM-1      |
| Analyst    : Ed Colvin      Column: AG4A-SC,AS4A-SC, SRS                    |
==============================================================================
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1		11	5400 5Hz	0.00	18.00		200

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.64		0.000	2141	19896	2	
2	2.23	FLUORIDE	244.018	95497	867133	2	0.90
3	3.61	CHLORIDE ✓	1.000	161	1393	1	-1.37
4	4.48	NITRITE ✓	5.695	201	2101	1	-0.67
5	8.22	NITRATE ✓	39.709	3154	40272	2	4.45
6	8.58		0.000	66788	2254589	2	
		Totals	290.422	167942	3185382		

File: 95100271.D07 Sample: S95T002176



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V710-CD-KEM-DP-144, REV 1

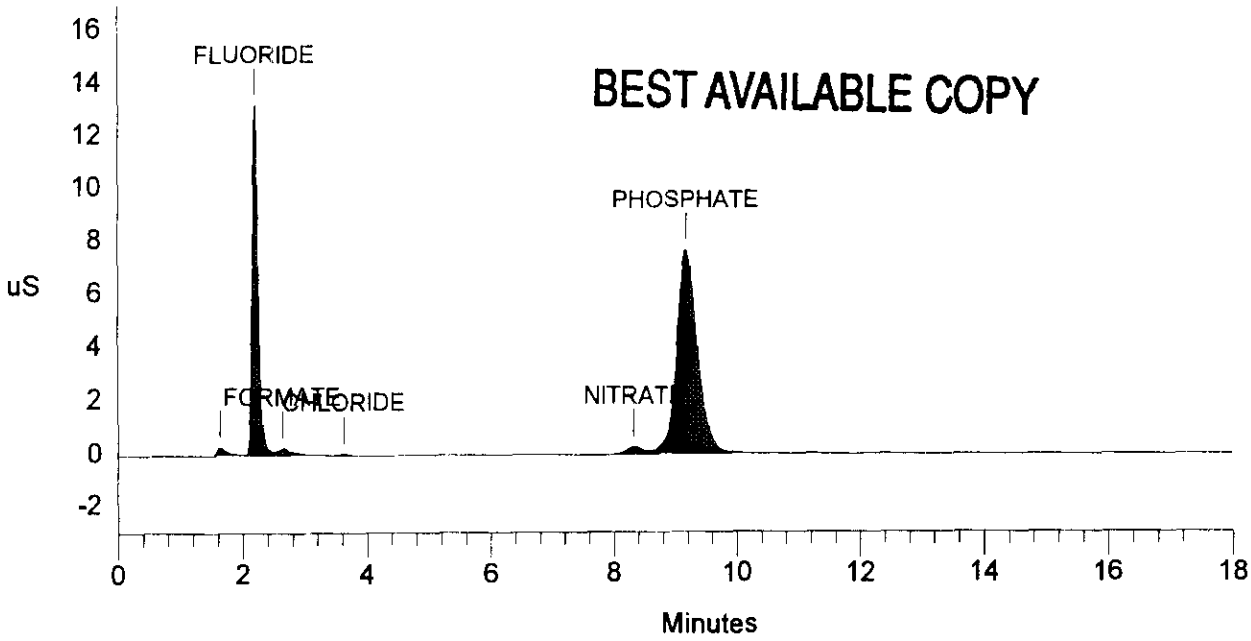
```
==============================================================================
| Sample Name: S95T002176 DUP                    Date: 10/02/1995 11:46:21    |
| Data File  : C:\DX\DATA\95100271.D10                                        |
| Method     : C:\DX\METHOD\AS12A.MET                                         |
| ACI Address: 1  System: 1  Inject#: 10                  Detector:CDM-1      |
| Analyst    : Ed Colvin      Column: AG4A-SC,AS4A-SC, SRS                    |
==============================================================================
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	101	5400	5Hz	0.00	18.00	200

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.64		0.000	279	2831	2	
2	2.20	FLUORIDE ✓	296.380	13195	86838	3	-0.45
3	2.65	FORMATE	35.357	246	3322	4	1.15
4	3.64	CHLORIDE	4.114	52	389	1	-0.55
5	8.34	NITRATE	58.692	272	4612	2	5.97
6	9.18	PHOSPHATE ✓	2886.602	7634	175927	2	0.00
		Totals	3281.145	21680	273920		

File: 95100271.D10 Sample: S95T002176 DUP



BEST AVAILABLE COPY

DP-144, REV. 1

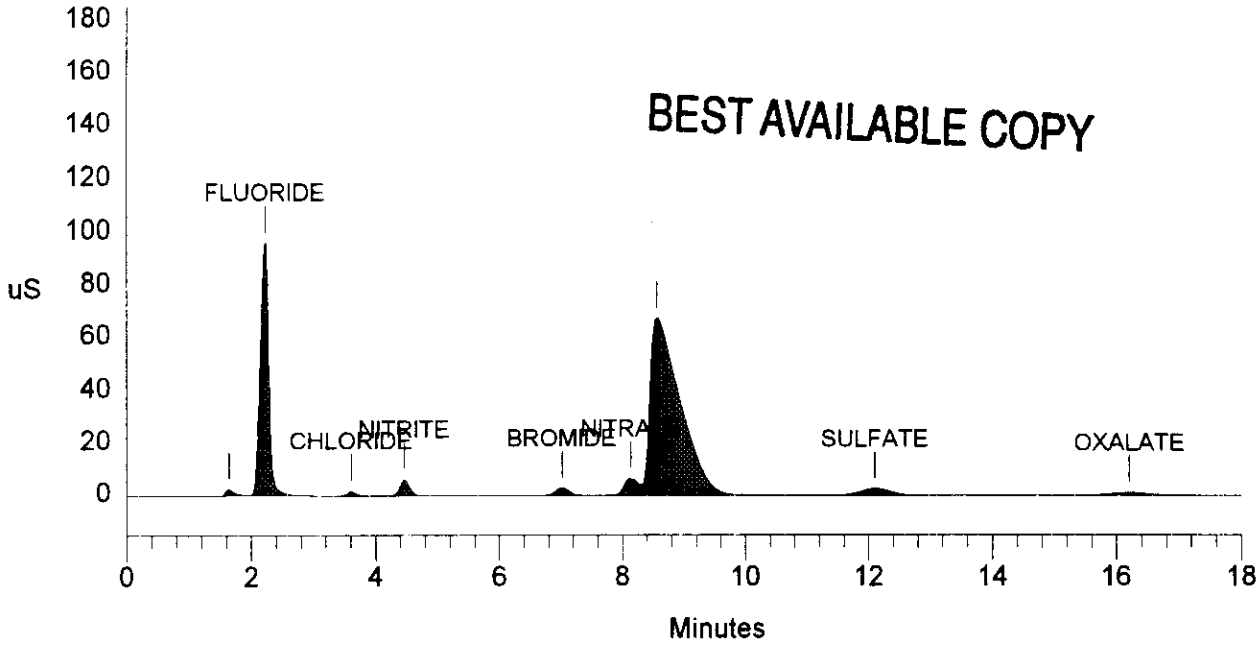
```
==============================================================================
| Sample Name: S95T002176  + SPIKE            Date: 10/02/1995 11:08:47      |
| Data File  : C:\DX\DATA\95100271.D08                                       |
| Method     : C:\DX\METHOD\AS12A.MET                                        |
| ACI Address: 1  System: 1  Inject#: 8                   Detector:CDM-1     |
| Analyst    : Ed Colvin      Column: AG4A-SC,AS4A-SC, SRS                   |
==============================================================================
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area Reject
External	1	11	5400	5Hz	0.00	18.00	200

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.64		0.000	2311	21686	2	
2	2.23	FLUORIDE	245.807	95608	876880	2	0.90
3	3.61	CHLORIDE	8.630✓	1755	15399	1	-1.37
4	4.47	NITRITE	53.027✓	6095	66318	1	-0.89
5	7.02	BROMIDE	55.914✓	2926	44750	1	2.33
6	8.14	NITRATE	94.913✓	6472	100302	2	3.43
7	8.57		0.000	67499	2291168	2	
8	12.10	SULFATE	64.294✓	2634	87318	1	0.17
9	16.21	OXALATE	46.329✓	1059	40411	1	1.44
		Totals	568.914	186360	3544233		

File: 95100271.D08 Sample: S95T002176 + SPIKE



144

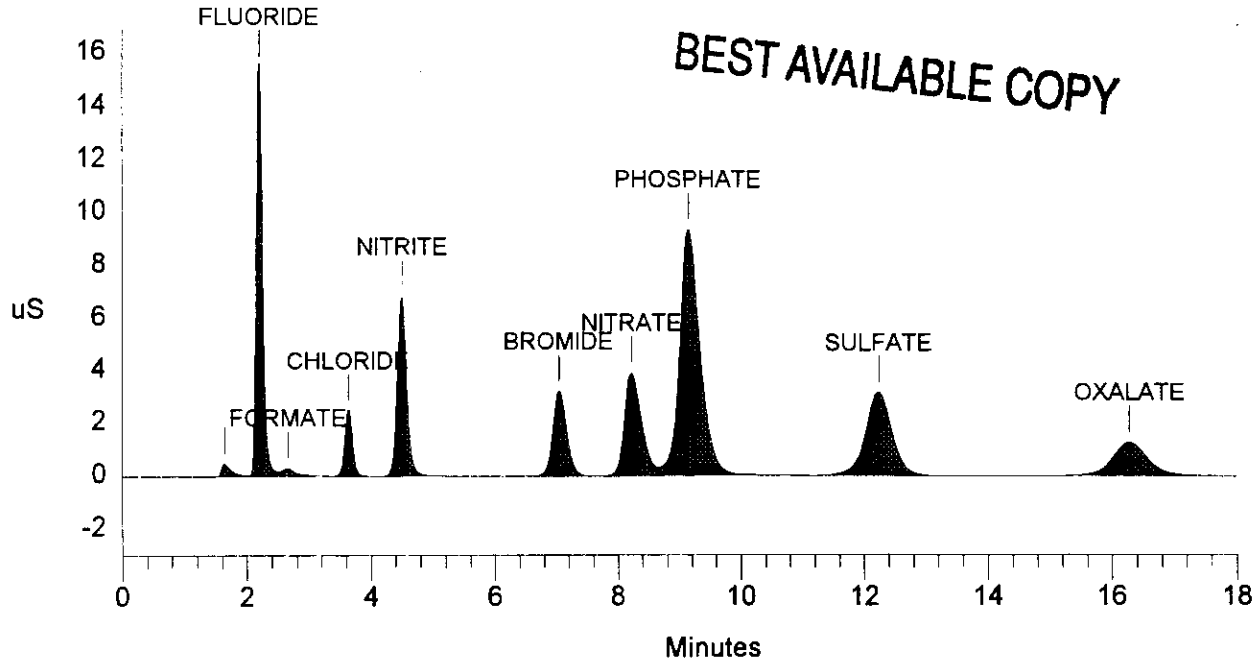
```
==========================================================================
| Sample Name: S95T002176  + SPIKE            Date: 10/02/1995 11:27:29  |
| Data File  : C:\DX\DATA\95100271.D09                                   |
| Method     : C:\DX\METHOD\AS12A.MET                                    |
| ACI Address: 1  System: 1  Inject#: 9                Detector:CDM-1    |
| Analyst    : Ed Colvin      Column: AG4A-SC,AS4A-SC, SRS               |
==========================================================================
```

Calibration	Volume	Dilution	Points	Rate	Start	Stop	Area	Reject
External	1	101	5400	5Hz	0.00	18.00		200

********** Peak Report: All Peaks **********

Pk. Num	Ret Time	Component Name	Concentration ug/ml	Height	Area	Bl. Code	%Delta
1	1.64		0.000	448	4370	2	
2	2.20	FLUORIDE ✓	352.714	15463	104066	3	-0.45
3	2.66	FORMATE	37.157	263	3520	4	1.53
4	3.63	CHLORIDE	105.421	2484	20709	1	-0.82
5	4.50	NITRITE	512.350	6806	70084	1	-0.22
6	7.04	BROMIDE	560.488	3217	49138	1	2.62
7	8.22	NITRATE	645.112	3904	73344	2	4.45
8	9.15	PHOSPHATE ✓	3430.032	9327	213680	2	-0.33
9	12.24	SULFATE	623.112	3171	92464	1	1.32
10	16.28	OXALATE	485.921	1243	46649	1	1.88
		Totals	6752.308	46327	678023		

File: 95100271.D09 Sample: S95T002176 + SPIKE



BEST AVAILABLE COPY

WMDR-144, REV. 1

File # 0950926B

~~WHC-SD-WM-DP-_____, REV.___~~ 10/31/95

LABCORE Data Entry Template for Worklist# 2511

Analyst: B. Goecke **Instrument:** ~~ICP01~~ ICP02 **Book#** 98644A

Method: LA-505-~~151~~ 161 Rev/Mod 8-0

Worklist Comment: ICP T-109 (All metals) WHC-SD-WM-DP-144, REV. 1

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	ICV				@ICP-QC	QC		
2	ICB				@ICP-QC	QC		
3	ICSA				@ICP-QC	QC		
4	ICSAB				@ICP-QC	QC		
5	PREPSTDTJA				@ICP-A01	SOLID		
6	PREPBLKTJA				@ICP-A01	SOLID		
7	SAMPLE	S95T002177	0	A	@ICP-A01	SOLID	95000121	T-109
		Analytes Requested:			AG-A-01 , AL-A-01 , AS-A-01 , B-A-01 , BA-A-01 , BE-A-01 , BI-A-01 , CA-A-01 , CD-A-01 , CE-A-01 , CO-A-01 , CR-A-01 , CU-A-01 , FE-A-01 , K-A-01 , LA-A-01 , LI-A-01 , MG-A-01 , MN-A-01 , MO-A-01 , NA-A-01 , ND-A-01 , NI-A-01 , P-A-01 , PB-A-01 , S-A-01 , SB-A-01 , SE-A-01 , SI-A-01 , SM-A-01 , SR-A-01 , TI-A-01 , TL-A-01 , U-A-01 , V-A-01 , ZN-A-01 , ZR-A-01			
8	DUP	S95T002177	0	A	@ICP-A01	SOLID		
9	SPK-PREDIG	S95T002177	0	A	@ICP-A01	SOLID		
10	ICSA				@ICP-QC	QC		
11	ICSAB				@ICP-QC	QC		
12	CCV				@ICP-QC	QC		
13	CCB				@ICP-QC	QC		

Data Entry Comments:

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

F.LF # 05505266

LABCORE Data Entry Template for Worklist# 2511

S Type	Sample#	R	A	Test	Matrix	Group#	Project

Final page for worklist # 2511

Analyst Signature: [signature] Date: 9-26-95

Reviewed by: Analyst Signature: [signature] Date: 09/27/95

		DF.
PREPSTD TJA	5 mL ea. (WITH 1A+2) in 100 mL	1
PREPBLK TJA	100 mL DI WATER	1
S95T002177-L	1.0003 g in 100 mL - 1 mL - 5 mL - 2 mL - 5 mL	4997
S95TW02177	1.0003 g in 100 mL - 1 mL - 5 mL	1000
S95TW02177-D	1.0002 g in 100 mL - 1 mL - 5 mL	1000
S95TW02177-A	1.0003 g in 100 mL 1 mL - 2 mL - 2 mL	1000

Data Entry Comments:

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

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	950926B	ICP2	09/26/95	10:44	BJG	Q	CONC
2	ICB	950926B	ICP2	09/26/95	10:47	BJG	Q	CONC
3	ICSA	950926B	ICP2	09/26/95	10:50	BJG	Q	CONC
4	ICSAB	950926B	ICP2	09/26/95	10:54	BJG	Q	CONC
5	PREPSTDTJA	950926B	ICP2	09/26/95	10:58	BJG	S	CONC
6	PREPBLKTJA	950926B	ICP2	09/26/95	11:01	BJG	S	CONC
7	S95T002177_L	950926B	ICP2	09/26/95	11:04	BJG	S	CONC
8	S95T002177_	950926B	ICP2	09/26/95	11:08	BJG	S	CONC
9	S95T002177_D	950926B	ICP2	09/26/95	11:11	BJG	S	CONC
10	S95T002177_A	950926B	ICP2	09/26/95	11:14	BJG	S	CONC
11	ICSA	950926B	ICP2	09/26/95	11:18	BJG	Q	CONC
12	ICSAB	950926B	ICP2	09/26/95	11:21	BJG	Q	CONC
13	CCV	950926B	ICP2	09/26/95	11:24	BJG	Q	CONC
14	CCB	950926B	ICP2	09/26/95	11:27	BJG	Q	CONC

WHC-SD-WM-DP-144, REV. 1

B/Cook 9-26-95
T-109
S95T002177
ACID DIGEST
Lot-9-C

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 90 TO 93.

#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	4.911	4.892	5.063	4.970	4.884	5.060
2	ICB	.0012	.0014	.0088	.0069	.0001	.0000
3	ICSA	-.0131	246.8	-.0707	-.0068	.0034	.0001
4	ICSAB	.9299	243.0	-.0703	.0016	.4589	.4695
5	PREPSTDTJA	.8565	4.728	4.764	4.766	4.685	5.219
6	PREPBLKTJA	-.0000	.0154	-.0047	.0081	.0001	-.0001
7	S95T002177_L	19.76	1411.	-1.051	211.7	5.769	-.3303
8	S95T002177_	18.68	1411.	10.45	217.1	6.341	-.1646
9	S95T002177_D	18.43	1421.	4.730	217.0	6.332	-.1649
10	S95T002177_A	948.9	2405.	1032.	1211.	960.0	1009.
11	ICSA	-.0131	247.2	-.0730	-.0026	.0034	.0000
12	ICSAB	.9324	244.3	-.0398	-.0017	.4595	.4719
13	CCV	4.924	4.898	5.064	5.003	4.911	5.088
14	CCB	.0006	-.0023	-.0022	.0021	.0001	.0000

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	4.980	5.057	5.005	5.000	5.001	5.044
2	ICB	.0045	.0030	.0005	.0081	.0000	.0005
3	ICSA	.0058	243.7	.0002	.0043	.0002	-.0077
4	ICSAB	-.0050	244.9	.9306	.0036	.4607	.4615
5	PREPSTDTJA	4.579	4.910	4.647	4.807	4.775	4.758
6	PREPBLKTJA	-.0078	.1632	.0005	.0039	.0013	.0021
7	S95T002177_L	333.6	216.4	2.688	-6.613	-4.391	42.32
8	S95T002177_	180.5	326.0	.5799	-3.262	-.0066	39.74
9	S95T002177_D	158.0	322.8	.5746	-1.902	-.4586	39.48
10	S95T002177_A	1175.	1360.	1000.	997.7	1001.	1049.
11	ICSA	.0171	249.7	-.0000	.0039	.0000	-.0077
12	ICSAB	.0159	247.6	.9310	.0040	.4612	.4626
13	CCV	4.990	5.195	5.002	5.036	5.009	5.058
14	CCB	.0046	.0020	.0011	.0028	-.0012	.0005

#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	5.003	.0077	5.017	4.842	4.933	4.927
2	ICB	.0000	.0004	.0000	-.0171	.0006	.0004
3	ICSA	-.0099	.0045	91.83	-.2093	-.0045	.0027
4	ICSAB	.4664	.0021	91.22	-.1242	-.0046	.9486
5	PREPSTDTJA	4.676	.0058	4.705	4.704	4.776	4.686
6	PREPBLKTJA	.0018	-.0006	.0197	-.0131	-.0004	-.0007
7	S95T002177_L	1.886	4.860	16520.	-1154.	1.945	7.393
8	S95T002177_	3.399	-.1150	15910.	-163.6	.9758	1.874
9	S95T002177_D	4.417	-.8406	15850.	-186.6	1.085	1.085
10	S95T002177_A	996.0	.8345	16980.	885.6	980.0	967.2
11	ICSA	-.0105	-.0074	92.59	-.1431	-.0042	.0029
12	ICSAB	.4679	-.0030	91.69	-.1166	-.0044	.9548
13	CCV	5.030	.0072	5.033	4.867	4.969	4.949
14	CCB	-.0006	.0008	.0004	-.0283	.0008	.0007

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	4.904	4.907	5.068	4.922	5.092	4.973
2	ICB	.0015	.0002	.0000	.0046	.0016	-.0024
3	ICSA	248.0	-.0080	-.0157	191.6	.0158	-.0253
4	ICSAB	245.3	.4387	-.0148	189.1	.0141	.8876
5	PREPSTDTJA	4.616	4.650	4.826	4.865	4.770	4.730
6	PREPBLKTJA	.0213	.0004	-.0002	.0634	.0020	.0028
7	S95T002177_L	58.53	1152.	-14.32	186400.	-7.164	29.22
8	S95T002177_	100.4	1118.	-3.634	181900.	.5875	11.06
9	S95T002177_D	110.6	1113.	-5.171	184300.	1.699	16.40
10	S95T002177_A	1075.	2089.	1014.	184800.	1013.	1007.
11	ICSA	249.0	-.0079	-.0148	190.5	.0136	-.0182
12	ICSAB	246.7	.4391	-.0159	189.9	.0145	.8956
13	CCV	4.895	4.900	5.069	4.908	5.125	4.965
14	CCB	-.0143	.0004	.0020	.0078	-.0021	-.0042

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.089	5.009	5.035	4.741	4.980	4.988
2	ICB	.0036	-.0003	-.0062	.0095	.0183	.0082
3	ICSA	.0085	.0353	.0326	.0011	-.0983	.0121
4	ICSAB	.0300	.9962	.0319	-.0046	-.0747	.0167
5	PREPSTDTJA	4.848	4.630	4.697	4.436	4.733	5.564
6	PREPBLKTJA	.0167	.0019	.0589	.0018	.0095	.0171
7	S95T002177_L	82170.	267.1	136.5	51.13	73.04	2667.
8	S95T002177_	80970.	344.2	173.1	-5.633	-9.412	2584.
9	S95T002177_D	80980.	261.3	171.6	-3.071	-3.180	2580.
10	S95T002177_A	81850.	1292.	1172.	961.5	989.1	3602.
11	ICSA	.0279	.0473	.0309	.0122	-.1023	.0147
12	ICSAB	-.0022	1.001	.0255	.0052	-.0825	.0158
13	CCV	5.139	5.003	5.032	4.772	4.974	4.987
14	CCB	.0080	-.0056	-.0019	.0046	.0241	.0094

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	4.950	4.864	.0433	4.843	4.854	9.887
2	ICB	.0067	.0001	.0012	.0006	.0080	.0117
3	ICSA	-.0083	-.0040	.0001	.0012	.0213	-.2335
4	ICSAB	.0002	-.0039	.0057	.0020	.0045	-.2317
5	PREPSTDTJA	4.777	4.712	.0373	4.678	4.626	9.559
6	PREPBLKTJA	-.0085	.0002	.0036	.0006	-.0021	-.0365
7	S95T002177_L	74.25	7.254	-4.688	10.02	-44.21	228.5
8	S95T002177_	8.887	6.680	-.8382	6.564	4.826	38.47
9	S95T002177_D	2.745	6.603	2.424	6.767	5.392	15.26
10	S95T002177_A	978.9	970.5	13.83	974.1	975.0	1986.
11	ICSA	-.0036	-.0041	.0081	.0016	.0291	-.2657
12	ICSAB	-.0031	-.0040	.0041	.0020	.0213	-.2666
13	CCV	4.987	4.906	.0421	4.877	4.920	9.929
14	CCB	.0103	.0001	.0016	.0000	.0098	.0326

#	Sample Name	V	Y	Zn	Zr
1	ICV	4.944	.0138	5.022	4.947
2	ICB	.0012	.0001	.0005	-.0001
3	ICSA	-.0020	.0193	-.0075	-.0029
4	ICSAB	.4602	.0196	.9507	-.0026
5	PREPSTDTJA	4.694	.0112	4.576	4.744
6	PREPBLKTJA	-.0012	-.0007	.0165	-.0011
7	S95T002177_L	14.75	3.527	27.26	15.95
8	S95T002177_	2.767	.8625	48.14	12.60
9	S95T002177_D	.7932	.5488	55.94	11.82
10	S95T002177_A	987.8	3.372	1066.	990.5
11	ICSA	-.0006	.0198	-.0075	-.0028
12	ICSAB	.4615	.0195	.9573	-.0025
13	CCV	4.968	.0137	5.023	4.971
14	CCB	.0016	.0005	.0001	-.0002

LABCORE Data Entry Template for Worklist# 2211

Analyst: JK Sato **Instrument:** ICP012 (9-1-95) **Book#** 46B48B

Method: LA-505-~~151~~141 (9-1-95) Rev/Mod B-0

Worklist Comment: T-109 (FUSION)

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	ICV				@ICP-QC	QC		
2	ICB				@ICP-QC	QC		
3	ICSA				@ICP-QC	QC		
4	ICSAB				@ICP-QC	QC		
5	PREPBLKTJA				@ICP-F01	SOLID		
6	SAMPLE	S95T001612	0	F	@ICP-F01	SOLID	95000121	T-109
		Analytes Requested:			AG-F-01 , AL-F-01 , AS-F-01 , B-F-01 , BA-F-01 , BE-F-01 , BI-F-01 , CA-F-01 , CD-F-01 , CE-F-01 , CO-F-01 , CR-F-01 , CU-F-01 , FE-F-01 , K-F-01 , LA-F-01 , LI-F-01 , MG-F-01 , MN-F-01 , MO-F-01 , NA-F-01 , ND-F-01 , NI-F-01 , P-F-01 , PB-F-01 , S-F-01 , SB-F-01 , SE-F-01 , SI-F-01 , SM-F-01 , SR-F-01 , TI-F-01 , TL-F-01 , U-F-01 , V-F-01 , ZN-F-01 , ZR-F-01			
7	DUP	S95T001612	0	F	@ICP-F01	SOLID		
8	SPK	S95T001612	0	F	@ICP-F01	SOLID		
9	ICSA				@ICP-QC	QC		
10	ICSAB				@ICP-QC	QC		
11	CCV				@ICP-QC	QC		
12	CCB				@ICP-QC	QC		

Final page for worklist # 2211

J.K. Sato 09-01-95
Analyst Signature **Date**

Reviewed & Validated by:
Samuel M. Pauzy 09/01/95
Analyst Signature **Date**

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 2211

S Type	Sample#	R	A	Test	Matrix	Group#	Project
Prepblk TJG	.4-10 ml						
S95T001612_L	.5305 g → 250 ml			.4-10-2.8 ml	(30 x 250)/.5305 = 61262.9		
S95T001612	.5305 g → 250			.4-10	(26 x 250)/.5305 = 12252.6		
S95T001612_D	.5348 g → 250			.4-10	(26 x 250)/.5348 = 12454.1		
S95T001612_G	.5305 g → 250			.4-10	(26 x 250)/.5305 = 12252.6		.4 ml sample + 2 ml SST5 + 8 ml HNO3

Data Entry Comments:

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

#	Sample Name	File	Method	Date	Time	OpID	Type	Mode
1	ICV	950901A	ICP2	09/01/95	09:22	DKS	Q	CONC
2	ICB	950901A	ICP2	09/01/95	09:26	DKS	Q	CONC
3	ICSA	950901A	ICP2	09/01/95	09:29	DKS	Q	CONC
4	ICSAB	950901A	ICP2	09/01/95	09:33	DKS	Q	CONC
5	PREPBLKTJA	950901A	ICP2	09/01/95	09:40	DKS	S	CONC
6	S95T001612_L	950901A	ICP2	09/01/95	09:44	DKS	S	CONC
7	S95T001612_	950901A	ICP2	09/01/95	09:48	DKS	S	CONC
8	S95T001612_D	950901A	ICP2	09/01/95	09:53	DKS	S	CONC
9	S95T001612_A	950901A	ICP2	09/01/95	09:58	DKS	S	CONC
10	ICSA	950901A	ICP2	09/01/95	10:06	DKS	Q	CONC
11	ICSAB	950901A	ICP2	09/01/95	10:09	DKS	Q	CONC
12	10 ppm std	950901A	ICP2	09/01/95	10:19		X	IR
13	CCV	950901A	ICP2	09/01/95	10:23	DKS	Q	CONC
14	CCB	950901A	ICP2	09/01/95	10:27	DKS	Q	CONC

DK [illegible]

09-01-95

T-109 S95T001612

100-K/15 f# 2211

WHC-SD-WM-DP-144, REV 1

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 96 TO 99.

#	Sample Name	Ag	Al	As	B	Ba	Be
1	ICV	5.011	5.044	5.198	5.071	5.088	5.266
2	ICB	.0007	-.0016	.0033	.0093	.0002	-.0001
3	ICSA	-.0003	250.9	-.0000	.0036	.0019	.0001
4	ICSAB	.9665	248.4	-.0368	-.0019	.4761	.4899
5	PREPBLKTJA	.0003	.0028	.0023	.0051	.0007	-.0001
6	S95T001612_L	68.03	1458.	-654.9	172.2	18.98	-2.101
7	S95T001612	33.55	1366.	-23.10	57.95	16.60	-1.245
8	S95T001612_D	26.83	1461.	-119.6	35.32	16.52	-1.232
9	S95T001612_A	9802.	12920.	12370.	11600.	11360.	12120.
10	ICSA	-.0008	250.4	.0045	.0001	.0019	-.0000
11	ICSAB	.9699	248.6	.0132	.0026	.4742	.4958
12	10 ppm std						
13	CCV	5.072	5.097	5.308	5.140	5.205	5.381
14	CCB	.0005	-.0042	-.0012	.0033	.0001	-.0000

#	Sample Name	Bi	Ca	Cd	Ce	Co	Cr
1	ICV	5.136	5.138	5.203	5.116	5.133	5.227
2	ICB	-.0043	.0056	-.0016	-.0005	-.0001	.0014
3	ICSA	.0000	252.3	.0005	.0179	.0004	.0072
4	ICSAB	.0121	251.9	.9772	.0053	.4758	.4930
5	PREPBLKTJA	-.0062	.0756	.0005	.0027	-.0016	.0009
6	S95T001612_L	-1005.	5030.	-82.99	57.92	-97.29	65.11
7	S95T001612	300.1	1406.	-15.21	7.486	-2.497	51.54
8	S95T001612_D	-144.4	1319.	-20.81	-31.25	12.81	61.90
9	S95T001612_A	12240.	13660.	12340.	11780.	12110.	12400.
10	ICSA	.0190	257.5	-.0005	.0132	-.0011	.0053
11	ICSAB	-.0036	257.0	.9826	.0129	.4799	.4986
12	10 ppm std						
13	CCV	5.159	5.420	5.334	5.203	5.255	5.360
14	CCB	.0063	.0062	-.0010	-.0005	-.0013	.0010

#	Sample Name	Cu	Eu	Fe	K	La	Li
1	ICV	5.141	.0055	5.206	4.993	5.116	4.971
2	ICB	.0008	.0011	.0000	.0428	.0005	.0006
3	ICSA	-.0099	-.0252	95.91	.2119	-.0037	.0029
4	ICSAB	.4777	-.0250	94.95	.2006	-.0048	.9771
5	PREPBLKTJA	.0011	.0014	.0009	414.8	.0000	.0015
6	S95T001612_L	25.40	63.52	3529.	5403e3	7.313	36.34
7	S95T001612	26.67	16.29	3398.	5220e3	4.621	14.53
8	S95T001612_D	21.12	21.08	4336.	4998e3	-4.058	14.42
9	S95T001612_A	11710.	41.87	15600.	5173e3	11620.	10980.
10	ICSA	-.0099	-.0361	96.53	.0109	-.0045	.0037
11	ICSAB	.4763	-.0334	95.82	.1743	-.0044	.9689
12	10 ppm std						
13	CCV	5.209	.0056	5.342	5.075	5.196	4.989
14	CCB	.0008	.0007	.0007	.0588	.0001	.0008

#	Sample Name	Mg	Mn	Mo	Na	Nd	Ni
1	ICV	5.001	5.077	5.176	4.968	5.250	5.203
2	ICB	.0029	.0005	.0032	.0076	.0015	-.0002
3	ICSA	253.2	-.0061	-.0064	193.0	.0058	-.0190
4	ICSAB	250.5	.4601	-.0102	191.6	.0033	.9377
5	PREPBLKTJA	.0046	.0009	.0020	.1352	.0020	.0034
6	S95T001612_L	252.6	1442.	41.71	174300.	59.07	3058.
7	S95T001612_	196.9	1379.	11.87	168600.	16.02	2858.
8	S95T001612_D	153.8	1626.	5.766	164300.	31.84	1673.
9	S95T001612_A	11790.	13100.	12250.	178300.	11870.	14930.
10	ICSA	253.4	-.0059	-.0051	191.6	.0034	-.0185
11	ICSAB	251.3	.4639	-.0065	190.3	.0032	.9713
12	10 ppm std						
13	CCV	5.074	5.223	5.293	5.000	5.298	5.309
14	CCB	.0083	.0004	.0012	.0054	.0018	.0007

#	Sample Name	P	Pb	S	Sb	Se	Si
1	ICV	5.380	5.174	5.133	4.839	5.059	4.870
2	ICB	.0316	-.0066	-.0042	.0040	.0352	.0084
3	ICSA	.1395	.0257	-.0217	.0018	-.0592	.0155
4	ICSAB	.0746	1.017	-.0250	.0139	-.0571	.0117
5	PREPBLKTJA	.0481	-.0133	.0129	.0020	.0534	.0252
6	S95T001612_L	86540.	-164.7	478.3	-1.510	2307.	1802.
7	S95T001612_	83830.	86.28	358.5	-84.13	450.1	1050.
8	S95T001612_D	82820.	-40.18	157.1	-13.23	352.5	1239.
9	S95T001612_A	95920.	12530.	12460.	11500.	12480.	12700.
10	ICSA	.1582	.0217	-.0152	.0089	-.0636	.0145
11	ICSAB	.1086	1.011	-.0191	-.0080	-.0317	.0160
12	10 ppm std	2.71519					
13	CCV	5.200	5.314	5.242	4.936	5.231	4.977
14	CCB	.0484	-.0068	-.0017	-.0034	.0264	.0075

#	Sample Name	Sm	Sr	Th	Ti	Tl	U
1	ICV	5.117	5.044	-.0563	4.951	5.060	10.10
2	ICB	.0138	.0000	-.0019	.0000	-.0224	.0541
3	ICSA	.0052	.0017	-.0140	.0013	.0509	-.0467
4	ICSAB	.0056	.0018	-.0193	.0006	.0392	-.0510
5	PREPBLKTJA	.0172	.0004	.0023	.0000	-.0062	-.0469
6	S95T001612_L	934.6	20.18	36.34	1.371	-172.8	1478.
7	S95T001612_	214.9	8.205	91.20	23.48	-320.2	-667.7
8	S95T001612_D	250.0	6.087	47.99	33.56	-238.1	-407.1
9	S95T001612_A	11810.	11430.	3.525	11480.	12050.	22630.
10	ICSA	.0112	.0015	-.0116	.0006	-.0117	-.0744
11	ICSAB	.0105	.0015	-.0076	.0009	.0530	-.0826
12	10 ppm std						
13	CCV	5.200	5.114	-.0466	5.039	5.184	10.21
14	CCB	.0077	.0000	.0014	-.0004	-.0267	.0355

#	Sample Name	V	Y	Zn	Zr
1	ICV	5.124	.0137	5.138	5.057
2	ICB	.0029	.0009	.0004	.0013
3	ICSA	.0020	.0083	-.0041	.0002
4	ICSAB	.4760	.0082	.9835	.0006
5	PREPBLKTJA	.0034	.0011	.0199	.0016
6	S95T001612_L	223.3	52.83	1327.	66.35
7	S95T001612_	49.71	14.41	295.3	28.92
8	S95T001612_D	63.08	14.29	293.2	31.75
9	S95T001612_A	12050.	53.79	12520.	11670.
10	ICSA	.0033	.0087	-.0047	-.0000
11	ICSAB	.4826	.0085	.9907	-.0004
12	10 ppm std				
13	CCV	5.231	.0143	5.240	5.150
14	CCB	.0026	.0007	.0001	.0010

JK Lo

09-01-95

WHC-SD-WM-DP-144, REV. 1

LABCORE Data Entry Template for Worklist# 2213

Analyst: DK Soto **Instrument:** ICP01 **Book#** 46848B

Method: LA-505-151 Rev/Mod D-3

Worklist Comment: ICP T-109 (FUSION)

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
1	ICV				@ICP-QC	QC		
2	ICB				@ICP-QC	QC		
3	ICSA				@ICP-QC	QC		
4	ICSAB				@ICP-QC	QC		
5	PREPBLKARL				@ICP-F01	SOLID		
6	SAMPLE	S95T001619	0	F	@ICP-F01	SOLID	95000121	T-109
		Analytes Requested:			AG-F-01 , AL-F-01 , AS-F-01 , B-F-01 , BA-F-01 , BE-F-01 , BI-F-01 , CA-F-01 , CD-F-01 , CE-F-01 , CO-F-01 , CR-F-01 , CU-F-01 , FE-F-01 , K-F-01 , LA-F-01 , LI-F-01 , MG-F-01 , MN-F-01 , MO-F-01 , NA-F-01 , ND-F-01 , NI-F-01 , P-F-01 , PB-F-01 , S-F-01 , SB-F-01 , SE-F-01 , SI-F-01 , SM-F-01 , SR-F-01 , TI-F-01 , TL-F-01 , U-F-01 , V-F-01 , ZN-F-01 , ZR-F-01			
7	DUP	S95T001619	0	F	@ICP-F01	SOLID		
8	SPK	S95T001619	0	F	@ICP-F01	SOLID		
9	CCV				@ICP-QC	QC		
10	CCB				@ICP-QC	QC		
11	SAMPLE	S95T001630	0	F	@ICP-F01	SOLID	95000121	T-109
		Analytes Requested:			AG-F-01 , AL-F-01 , AS-F-01 , B-F-01 , BA-F-01 , BE-F-01 , BI-F-01 , CA-F-01 , CD-F-01 , CE-F-01 , CO-F-01 , CR-F-01 , CU-F-01 , FE-F-01 , K-F-01 , LA-F-01 , LI-F-01 , MG-F-01 , MN-F-01 , MO-F-01 , NA-F-01 , ND-F-01 , NI-F-01 , P-F-01 , PB-F-01 , S-F-01 , SB-F-01 , SE-F-01 , SI-F-01 , SM-F-01 , SR-F-01 , TI-F-01 , TL-F-01 , U-F-01 , V-F-01 , ZN-F-01 , ZR-F-01			
12	DUP	S95T001630	0	F	@ICP-F01	SOLID		

Data Entry Comments:

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

LABCORE Data Entry Template for Worklist# 2213

S	Type	Sample#	R	A	Test	Matrix	Group#	Project
13	SPK	S95T001630	0	F	@ICP-F01	SOLID		
14	ICSA				@ICP-QC	QC		
15	ICSAB				@ICP-QC	QC		
16	CCV				@ICP-QC	QC		
17	CCB				@ICP-QC	QC		

Final page for worklist # 2213

JK [illegible] 09-05-95
Analyst Signature Date

Reviewed + Validated by:
Samuel M. Parry 09/06/95
Analyst Signature Date

Prepblk 1 , 4-10 ml

S95T001619_L, .5752g → 250 ml, 4-10-2-8, (250 x 130)/.5752 = 56502.1
S95T001619 .5752g → 250 4-10 (250 x 26)/.5752 = 11300.4
S95T001619_D .5473g → 250 4-10 (250 x 26)/.5473 = 11457.8
S95T001619_Q .5752g → 250 4-10 (250 x 26)/.5752 = 11300.4

S95T001630_L, .5171g → 250 ml, 4-10-2-8, (250 x 130)/.5171 = 62850.5
S95T001630 .5171g → 250 4-10 (250 x 26)/.5171 = 12570.1
S95T001630_D .5248g → 250 4-10 (250 x 26)/.5248 = 12456.9
S95T001630_Q .5171g → 250 4-10 (250 x 26)/.5171 = 12570.1

Data Entry Comments:

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

File: 950905a

Identity 1: ICV Identity 2: Quality Control 12:08 PM September 5, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	4.944	5.036	5.050	4.698	5.024	4.968	5.097	5.105
S.D.	0.011	0.015	0.027	0.006	0.009	0.019	0.011	0.039
% R.S.D.	0.220	0.302	0.535	0.138	0.187	0.380	0.213	0.756

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	5.003	5.085	5.148	5.183	4.970	5.077	5.432	9.458
S.D.	0.008	0.024	0.009	0.020	0.012	0.017	0.032	0.019
% R.S.D.	0.166	0.471	0.181	0.379	0.251	0.328	0.581	0.199

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	5.088	5.083	5.055	5.111	4.931	4.967	5.127	5.048
S.D.	0.016	0.008	0.016	0.159	0.056	0.015	0.043	0.039
% R.S.D.	0.313	0.161	0.307	3.116	1.128	0.293	0.842	0.764

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	5.002	5.120	4.933	5.088	4.823	5.106	5.085	5.100
S.D.	0.012	0.043	0.009	0.055	0.013	0.018	0.017	0.037
% R.S.D.	0.243	0.840	0.192	1.088	0.262	0.358	0.334	0.718

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	5.072	4.656	4.979	5.244	4.850
S.D.	0.011	0.028	0.012	0.011	0.005
% R.S.D.	0.220	0.593	0.236	0.211	0.101

JK [illegible] LMU ✓ JK

09-05-95

T-109 595T001619
595T001630

Worklist # 2213

SIGNATURE ABOVE REPRESENTS CHEMICAL TECHNOLOGIST/CHEMIST THAT COMPLETED/VERIFIED THE CALIBRATION/ANALYSIS ON PAGES 102 TO 120.

Identity 1: ICB Identity 2: Quality Control 12:12 PM September 5, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.000	-0.000	0.026	0.009	0.013	-0.003	0.000	0.000
S.D.	0.001	0.000	0.007	0.004	0.001	0.002	0.000	0.000
% R.S.D.	426.600	300.000	25.566	41.416	5.452	57.736	72.282	75.751

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.000	0.001	-0.000	0.003	0.001	0.002	0.003	0.049
S.D.	0.000	0.001	0.003	0.002	0.000	0.001	0.011	0.016
% R.S.D.	52.075	124.923	664.160	47.214	14.070	45.564	330.946	32.965

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-0.009	-0.001	0.000	0.016	-0.002	0.000	-0.006	-0.010
S.D.	0.007	0.003	0.000	0.003	0.003	0.000	0.003	0.003
% R.S.D.	75.380	291.723	169.236	21.897	147.646	173.205	53.071	30.547

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.003	-0.036	0.001	-0.018	0.001	0.001	0.003	-0.073
S.D.	0.001	0.020	0.000	0.001	0.000	0.000	0.001	0.007
% R.S.D.	57.468	55.996	23.876	5.792	32.852	50.929	33.845	9.841

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	-0.000	-0.014	-0.000	0.000	-0.054
S.D.	0.000	0.036	0.000	0.000	0.008
% R.S.D.	0.181	254.055	142.370	1.541	14.383

Identity 1: ICSA Identity 2: Quality Control 12:15 PM September 5, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-144, REV. 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.008	0.001	-0.022	0.019	201.605	0.002	0.003	-0.000
S.D.	0.001	0.000	0.010	0.004	0.364	0.002	0.000	0.000
% R.S.D.	8.309	2.406	44.858	21.615	0.181	86.998	12.102	49.251

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	-0.005	0.007	0.003	100.381	101.225	-0.002	0.036	0.046
S.D.	0.001	0.002	0.001	0.138	0.073	0.003	0.007	0.009
% R.S.D.	12.147	29.440	23.231	0.137	0.072	140.017	20.181	19.660

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-0.005	0.027	0.004	0.062	-0.007	98.897	-0.000	188.534
S.D.	0.002	0.001	0.000	0.005	0.010	0.059	0.002	1.151
% R.S.D.	36.972	2.649	1.051	8.738	146.186	0.060	1130.213	0.610

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.000	-0.007	0.001	-0.041	0.001	-0.000	0.014	-0.097
S.D.	0.001	0.006	0.000	0.010	0.000	0.000	0.001	0.003
% R.S.D.	420.166	97.264	35.290	23.195	44.191	114.411	3.731	3.498

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.008	-0.009	-0.002	0.003	-0.002
S.D.	0.000	0.048	0.000	0.000	0.009
% R.S.D.	6.289	528.910	17.859	10.654	359.611

Identity 1: ICSAB Identity 2: Quality Control 12:18 PM September 5, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-144, REV. 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.003	0.001	-0.022	0.006	206.195	0.481	0.519	1.005
S.D.	0.001	0.000	0.015	0.001	0.136	0.004	0.001	0.003
% R.S.D.	29.883	6.030	69.181	16.122	0.066	0.865	0.221	0.289

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.975	0.983	0.002	101.048	102.644	0.498	0.034	-0.032
S.D.	0.000	0.002	0.001	0.175	0.087	0.002	0.006	0.032
% R.S.D.	0.035	0.177	34.856	0.174	0.084	0.392	16.722	100.629

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.002	0.028	0.521	0.056	-0.005	99.745	-0.012	196.740
S.D.	0.011	0.006	0.002	0.010	0.002	0.154	0.004	0.391
% R.S.D.	460.229	20.452	0.289	17.234	38.680	0.154	34.765	0.199

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.000	-0.033	1.018	0.995	-0.000	1.008	0.013	-0.097
S.D.	0.001	0.014	0.001	0.023	0.000	0.002	0.001	0.007
% R.S.D.	217.168	43.062	0.137	2.319	3100.909	0.226	8.490	7.338

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.508	0.010	0.487	0.509	0.030
S.D.	0.001	0.023	0.001	0.001	0.007
% R.S.D.	0.211	228.543	0.167	0.142	22.206

Identity 1: PREPBLK Identity 2: Quality Control 12:23 PM September 5, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-144, REV. 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.000	0.000	-0.003	-0.003	0.007	0.000	0.002	-0.000
S.D.	0.001	0.000	0.002	0.001	0.004	0.003	0.000	0.000
% R.S.D.	1823.350	13.323	73.516	30.004	60.311	59082403.838	19.527	165.939

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.019	0.366	-0.000	0.015	-0.195	0.003	0.010	0.039
S.D.	0.000	0.002	0.003	0.002	0.002	0.002	0.003	0.034
% R.S.D.	0.633	0.419	687.143	16.777	1.210	52.043	25.037	85.822

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-0.000	0.006	0.001	0.007	0.019	0.002	-0.005	0.196
S.D.	0.010	0.006	0.000	0.010	0.005	0.000	0.001	0.003
% R.S.D.	56466.934	106.484	22.427	136.863	28.257	7.873	17.638	1.773

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.003	0.022	-0.000	-0.024	0.001	0.001	0.001	631.784
S.D.	0.001	0.006	0.001	0.007	0.000	0.000	0.001	2.486
% R.S.D.	24.999	27.298	1045.389	30.574	21.392	30.676	53.401	0.394

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.002	0.007	-0.002	0.000	-0.012
S.D.	0.000	0.003	0.000	0.000	0.016
% R.S.D.	13.752	36.227	16.794	60.283	127.471

Identity 1: S95T001619_L Identity 2: .5752gin250.4-10-2-8 12:31 PM September 5, 1995
Task name : OPTIMA
Sample Weight : 0.5752 Solution Volume : 32500.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-144, REV. 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-146.920	11.917	656.382	1141.524	2341.393	153.916	96.342	20.508
S.D.	84.061	3.250	325.609	150.516	331.915	88.863	18.110	15.607
% R.S.D.	57.216	27.273	49.607	13.185	14.176	57.735	18.798	76.099

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	991.358	5154.207	-118.974	5340.318	3361.763	281.480	820.726	-5604.573
S.D.	27.017	147.646	39.716	25.092	2.770	24.649	222.235	2756.397
% R.S.D.	2.725	2.865	33.382	0.470	0.082	8.757	27.078	49.181

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	843.486	-843.998	29.510	80135.141	1459.012	140.399	86.621	210806.042
S.D.	648.708	639.886	13.836	791.857	220.496	5.287	180.060	1980.426
% R.S.D.	76.908	75.816	46.886	0.988	15.113	3.765	207.871	0.939

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	38.989	1090.970	139.687	-510.671	28.173	81.413	-179.027	7681626.333
S.D.	36.841	687.150	47.566	787.259	18.039	21.036	56.198	67509.070
% R.S.D.	94.491	62.985	34.051	154.162	64.031	25.839	31.391	0.879

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	556.868	860.646	57.060	10.084	116.324
S.D.	8.980	1048.818	25.579	6.036	2093.321
% R.S.D.	1.613	121.864	44.829	59.857	1799.554

Identity 1: S95T001619 Identity 2: .5752gin250.4-10ml 12:36 PM September 5, 1995
Task name : OPTIMA
Sample Weight : 0.5752 Solution Volume : 6500.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-144, REV. 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-26.000	6.067	-4.147	377.959	1088.047	20.522	22.011	-2.637
S.D.	9.022	0.375	74.354	7.445	23.326	30.783	2.826	0.415
% R.S.D.	34.700	6.186	1792.958	1.970	2.144	150.003	12.840	15.757

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	247.120	5240.541	-3.751	5454.690	-2052.399	39.413	38.439	-79.342
S.D.	3.589	36.476	8.082	39.667	27.318	5.645	32.082	21.114
% R.S.D.	1.453	0.696	215.458	0.727	1.331	14.322	83.464	26.611

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-74.729	-100.561	11.225	81412.710	456.069	79.967	-26.329	202630.765
S.D.	48.874	22.429	1.398	765.413	38.351	1.057	39.223	1135.252
% R.S.D.	65.401	22.304	12.452	0.940	8.409	1.322	148.973	0.560

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-24.425	25.249	4.129	-107.445	33.995	2.435	10.671	7200090.351
S.D.	9.526	119.278	3.036	114.174	1.968	4.203	4.985	27684.283
% R.S.D.	39.003	472.415	73.533	106.263	5.790	172.629	46.720	0.384

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	555.139	198.094	-11.350	0.710	88.452
S.D.	4.771	136.421	5.461	1.245	32.632
% R.S.D.	0.859	68.867	48.110	175.482	36.892

Identity 1: S95T001619_D Identity 2: .5673gin250.4-10ml 12:40 PM September 5, 1995
Task name : OPTIMA
Sample Weight : 0.5673 Solution Volume : 6500.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-144, REV. 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-8.896	5.273	-28.280	362.411	1008.580	-20.808	19.563	-4.145
S.D.	7.633	1.007	38.116	3.404	23.684	36.040	4.656	3.359
% R.S.D.	85.803	19.094	134.780	0.939	2.348	173.204	23.802	81.047

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	247.660	5765.363	5.846	4797.765	-2369.661	53.199	-100.043	462.939
S.D.	1.387	14.498	16.559	131.126	34.414	19.381	47.603	398.307
% R.S.D.	0.560	0.251	283.235	2.733	1.452	36.432	47.583	86.039

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-189.709	231.235	11.574	79377.322	419.828	68.083	-106.231	203897.337
S.D.	126.449	94.187	2.020	892.165	32.255	1.072	13.262	1242.997
% R.S.D.	66.655	40.732	17.454	1.124	7.683	1.575	12.484	0.610

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	3.164	-86.095	5.773	-145.509	29.686	10.082	5.724	7518911.596
S.D.	13.444	67.097	9.780	185.404	0.678	8.981	2.206	39281.071
% R.S.D.	424.947	77.933	169.407	127.417	2.284	89.087	38.535	0.522

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	423.333	-441.876	-25.890	3.708	-135.862
S.D.	3.178	330.136	4.158	2.139	314.478
% R.S.D.	0.751	74.712	16.059	57.678	231.469

Identity 1: S95T001619_A Identity 2: .5752gin250,.4-10 ml 12:46 PM September 5, 1995
Task name : OPTIMA
Sample Weight : 0.5752 Solution Volume : 6500.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-144, REV. 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	10958.923	11170.696	10822.986	10652.686	12172.244	10784.286	11368.900	10463.257
S.D.	24.426	41.215	100.978	15.503	67.000	71.090	54.757	80.616
% R.S.D.	0.223	0.369	0.933	0.146	0.550	0.659	0.482	0.770

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	10928.117	16290.757	11526.450	16911.458	8652.972	11186.192	12475.307	21331.840
S.D.	23.362	61.247	21.393	148.755	12.448	16.427	12.897	300.467
% R.S.D.	0.214	0.376	0.186	0.880	0.144	0.147	0.103	1.409

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	11395.940	11165.916	11192.637	89644.639	10631.444	10731.935	11269.206	213364.225
S.D.	67.508	8.229	49.475	4126.623	354.407	24.023	88.988	1555.038
% R.S.D.	0.592	0.074	0.442	4.603	3.334	0.224	0.790	0.729

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	10806.723	11243.488	7066.799	11097.816	10660.443	11120.222	10886.242	7242412.685
S.D.	36.774	190.494	77.563	19.847	27.829	34.441	30.818	42622.884
% R.S.D.	0.340	1.694	1.098	0.179	0.261	0.310	0.283	0.589

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	11715.873	10516.354	10980.176	11145.129	11142.193
S.D.	21.774	167.647	12.596	45.330	143.527
% R.S.D.	0.186	1.594	0.115	0.407	1.288

Identity 1: CCV Identity 2: Quality Control 12:58 PM September 5, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00 WHC-SD-WM-DP-144, REV. 1
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	4.974	5.112	5.044	4.667	5.049	4.914	5.183	5.203
S.D.	0.021	0.028	0.020	0.017	0.017	0.018	0.022	0.003
% R.S.D.	0.419	0.548	0.402	0.374	0.338	0.361	0.427	0.052

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	4.923	5.037	5.214	5.177	5.029	5.012	5.576	9.722
S.D.	0.009	0.006	0.018	0.020	0.025	0.014	0.043	0.020
% R.S.D.	0.191	0.124	0.351	0.383	0.500	0.278	0.770	0.209

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	5.156	5.197	5.150	4.897	4.789	4.916	5.137	5.134
S.D.	0.030	0.022	0.029	0.269	0.124	0.015	0.009	0.003
% R.S.D.	0.574	0.417	0.571	5.500	2.592	0.301	0.176	0.060

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	4.971	5.163	4.879	5.076	4.843	5.073	5.107	5.120
S.D.	0.016	0.034	0.013	0.010	0.021	0.005	0.019	0.051
% R.S.D.	0.326	0.661	0.268	0.195	0.427	0.101	0.367	1.001

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	5.039	4.696	4.966	5.282	4.848
S.D.	0.007	0.025	0.016	0.020	0.015
% R.S.D.	0.133	0.538	0.315	0.373	0.319

Identity 1: CCB Identity 2: Quality Control 1:03 PM September 5, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-144, REV. 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.001	-0.000	0.030	0.008	0.014	0.005	-0.000	-0.000
S.D.	0.000	0.000	0.009	0.002	0.005	0.003	0.000	0.000
% R.S.D.	23.945	28.868	30.792	25.998	31.550	60.000	247.430	258.917

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.001	0.002	-0.002	0.002	0.001	0.003	-0.011	0.006
S.D.	0.000	0.003	0.000	0.001	0.000	0.001	0.007	0.016
% R.S.D.	30.097	195.199	0.296	59.865	10.940	44.048	61.548	243.384

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-0.004	-0.015	-0.000	0.001	-0.003	0.000	0.002	-0.002
S.D.	0.002	0.004	0.000	0.005	0.003	0.000	0.006	0.001
% R.S.D.	58.069	23.593	58.820	354.914	122.330	202914397.370	380.416	57.695

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.001	-0.019	0.001	-0.019	0.001	0.001	0.001	-0.022
S.D.	0.001	0.001	0.000	0.008	0.000	0.000	0.001	0.014
% R.S.D.	142.716	4.394	60.618	41.049	39.417	45.863	109.672	61.104

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.000	0.022	-0.001	0.000	-0.003
S.D.	0.000	0.010	0.001	0.000	0.015
% R.S.D.	57.894	45.741	77.429	28.309	550.505

Identity 1: S95T001630_L Identity 2: .5171gin250.4-10-2-8 1:07 PM September 5, 1995
Task name : OPTIMA
Sample Weight : 0.5171 Solution Volume : 32500.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-144, REV. 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-156.405	6.025	623.105	1493.102	1858.050	114.139	42.536	-23.961
S.D.	38.511	3.615	483.669	204.244	590.887	171.209	15.159	10.043
% R.S.D.	24.622	60.000	77.622	13.679	31.801	149.999	35.637	41.914

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	1200.398	4572.427	-76.873	14715.098	3945.208	276.709	1082.706	-1627.147
S.D.	29.633	177.253	0.722	147.926	15.933	50.334	65.313	1525.659
% R.S.D.	2.469	3.877	0.940	1.005	0.404	18.190	6.032	93.763

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-207.210	-719.102	14.646	83851.343	597.315	203.706	157.013	193392.576
S.D.	179.500	256.000	3.191	1994.237	68.428	10.185	137.564	1171.383
% R.S.D.	86.627	35.600	21.785	2.378	11.456	5.000	87.613	0.606

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-130.062	-1549.142	55.976	-1393.385	66.682	63.040	6.947	7912012.005
S.D.	47.761	788.921	30.902	673.946	9.078	17.696	10.474	24980.851
% R.S.D.	36.722	50.926	55.206	48.368	13.615	28.071	150.759	0.316

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	740.126	-564.701	-79.385	19.811	321.500
S.D.	9.976	653.809	51.228	0.194	903.424
% R.S.D.	1.348	115.780	64.531	0.981	281.003

Identity 1: S95T001630 Identity 2: .5171gin250.4-10 ml 1:12 PM September 5, 1995
Task name : OPTIMA
Sample Weight : 0.5171 Solution Volume : 6500.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-144, REV. 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	3.751	7.954	10.362	774.187	1430.169	-11.414	30.273	0.234
S.D.	6.936	0.417	33.620	57.563	29.781	34.241	5.389	2.813
% R.S.D.	184.943	5.249	324.457	7.435	2.082	299.982	17.802	1201.142

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	270.798	4730.251	44.386	14276.807	-1388.888	69.681	203.059	1219.207
S.D.	6.039	22.520	8.953	122.765	20.619	21.993	129.614	155.227
% R.S.D.	2.230	0.476	20.170	0.860	1.485	31.563	63.831	12.732

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	11.952	129.838	17.170	80206.535	517.297	133.769	-46.327	183701.992
S.D.	80.134	50.966	0.890	2391.128	27.178	2.352	81.744	1164.505
% R.S.D.	670.479	39.253	5.182	2.981	5.254	1.758	176.449	0.634

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-22.543	294.027	35.402	-250.514	98.011	11.058	2.435	7223458.559
S.D.	9.551	45.239	5.152	105.432	2.651	8.133	9.434	29610.322
% R.S.D.	42.369	15.386	14.552	42.086	2.705	73.554	387.376	0.410

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	753.789	218.377	-15.173	0.956	-361.926
S.D.	3.444	391.713	9.725	1.391	115.545
% R.S.D.	0.457	179.375	64.090	145.478	31.925

Identity 1: S95T001630_D Identity 2: .5218gin250.4-10 ml 1:16 PM September 5, 1995
Task name : OPTIMA
Sample Weight : 0.5218 Solution Volume : 6500.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-144, REV. 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-42.976	4.538	-43.942	242.068	833.168	-22.623	85.922	-6.338
S.D.	13.066	0.827	162.899	22.838	44.543	19.591	7.625	3.193
% R.S.D.	30.403	18.232	370.711	9.434	5.346	86.600	8.874	50.378

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	266.175	8446.231	-14.795	3904.668	-2412.282	35.100	-30.149	-201.565
S.D.	5.086	69.423	15.576	27.066	47.208	10.520	49.803	445.521
% R.S.D.	1.911	0.822	105.283	0.693	1.957	29.972	165.188	221.031

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-148.259	-223.685	13.719	82034.347	304.402	95.553	-67.425	193799.591
S.D.	148.843	60.948	2.826	1054.804	28.257	1.166	25.313	1486.750
% R.S.D.	100.394	27.247	20.596	1.286	9.283	1.220	37.542	0.767

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-13.175	197.953	13.634	-344.389	12.428	-0.886	-12.466	8064663.086
S.D.	5.525	30.181	5.447	125.746	2.301	4.634	9.648	55142.786
% R.S.D.	41.931	15.246	39.948	36.513	18.512	523.087	77.397	0.684

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	493.283	-266.860	-21.457	-0.819	-457.263
S.D.	3.925	477.399	4.294	2.437	261.897
% R.S.D.	0.796	178.895	20.011	297.488	57.275

Identity 1: ICSAB Identity 2: Quality Control 1:36 PM September 5, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-144, REV. 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.003	0.002	-0.013	0.005	205.252	0.489	0.509	0.985
S.D.	0.001	0.000	0.004	0.002	0.339	0.002	0.001	0.003
% R.S.D.	20.860	2.192	32.748	51.671	0.165	0.320	0.156	0.330

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.985	1.000	0.000	101.281	102.024	0.506	0.032	-0.042
S.D.	0.000	0.000	0.001	0.150	0.178	0.003	0.006	0.023
% R.S.D.	0.027	0.045	366.283	0.148	0.175	0.655	19.799	53.938

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.017	0.010	0.514	0.090	0.015	101.663	-0.011	193.903
S.D.	0.002	0.005	0.001	0.004	0.013	0.205	0.006	0.749
% R.S.D.	8.925	45.426	0.109	4.302	83.850	0.202	57.553	0.386

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.003	-0.022	1.021	1.026	0.000	1.009	0.014	0.084
S.D.	0.002	0.026	0.000	0.013	0.000	0.001	0.001	0.013
% R.S.D.	47.683	119.962	0.038	1.257	56.520	0.104	6.067	15.381

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.512	0.009	0.490	0.506	-0.002
S.D.	0.001	0.019	0.001	0.001	0.007
% R.S.D.	0.255	201.565	0.165	0.175	459.234

Identity 1: S95T001630_A Identity 2: .5171gin250.4-10 ml 1:21 PM September 5, 1995
Task name : OPTIMA
Sample Weight : 0.5171 Solution Volume : 6500.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-144, REV. 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	12199.328	12427.976	12394.261	12206.045	13598.166	12224.257	12570.211	11691.169
S.D.	9.683	19.325	255.691	18.720	65.077	71.280	20.886	85.186
% R.S.D.	0.079	0.155	2.063	0.153	0.479	0.583	0.166	0.729

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	12378.863	17157.681	12707.799	27071.296	10278.673	12637.662	13411.183	22609.954
S.D.	25.055	61.214	56.104	55.762	24.172	101.312	266.027	275.628
% R.S.D.	0.202	0.357	0.441	0.206	0.235	0.802	1.984	1.219

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	12643.572	12160.814	12400.718	97460.103	12428.441	12190.972	12629.562	198406.539
S.D.	54.273	27.022	16.417	1657.582	94.689	6.143	120.501	1458.603
% R.S.D.	0.429	0.222	0.132	1.701	0.762	0.050	0.954	0.735

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	12241.781	12318.912	7435.028	12552.480	11949.483	12461.738	12135.213	7348209.968
S.D.	24.791	338.700	56.732	218.656	3.965	41.214	31.308	50128.509
% R.S.D.	0.203	2.749	0.763	1.742	0.033	0.331	0.258	0.682

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	13255.196	10984.559	12315.471	12468.488	12195.375
S.D.	13.987	378.753	12.251	20.173	182.926
% R.S.D.	0.106	3.448	0.099	0.162	1.500

Identity 1: ICSA Identity 2: Quality Control 1:32 PM September 5, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00 WHC-SD-WM-DP-144, REV. 1
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	0.008	0.002	-0.012	0.014	205.451	0.007	0.004	-0.000
S.D.	0.000	0.000	0.009	0.003	0.215	0.004	0.000	0.000
% R.S.D.	5.877	4.277	73.571	20.322	0.104	57.694	10.049	80.148

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	-0.005	0.008	0.002	100.540	101.469	0.000	0.038	0.055
S.D.	0.000	0.001	0.002	0.197	0.053	0.001	0.002	0.038
% R.S.D.	3.382	11.092	116.108	0.196	0.052	548.434	4.331	69.503

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	0.017	0.016	0.004	0.085	-0.003	100.756	-0.001	195.691
S.D.	0.011	0.004	0.000	0.017	0.008	0.214	0.009	0.364
% R.S.D.	65.593	23.345	4.151	20.221	322.035	0.213	716.518	0.186

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	-0.003	0.009	0.003	0.017	0.001	0.001	0.012	0.036
S.D.	0.001	0.015	0.000	0.013	0.000	0.001	0.001	0.005
% R.S.D.	28.133	178.574	18.564	75.377	13.119	107.282	9.658	14.431

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.008	-0.008	0.001	0.003	-0.028
S.D.	0.000	0.030	0.001	0.000	0.017
% R.S.D.	3.321	388.826	50.444	0.173	61.114

Identity 1: CCV Identity 2: Quality Control 1:41 PM September 5, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00 WHC-SD-WM-DP-144, REV. 1
On-Peak Integrations : 3 Off-Peak Integrations : 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	4.990	5.114	5.066	4.692	5.057	4.967	5.175	5.181
S.D.	0.008	0.011	0.028	0.002	0.007	0.010	0.012	0.027
% R.S.D.	0.157	0.206	0.559	0.050	0.142	0.208	0.226	0.528

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	4.974	5.094	5.220	5.213	5.029	5.077	5.578	9.623
S.D.	0.002	0.016	0.003	0.010	0.006	0.005	0.015	0.008
% R.S.D.	0.042	0.312	0.060	0.188	0.118	0.106	0.262	0.086

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	5.140	5.172	5.143	5.282	4.980	4.955	5.155	5.130
S.D.	0.009	0.010	0.011	0.059	0.033	0.007	0.008	0.026
% R.S.D.	0.179	0.185	0.220	1.108	0.659	0.134	0.150	0.510

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	4.998	5.168	4.915	5.087	4.859	5.120	5.129	5.195
S.D.	0.012	0.026	0.005	0.036	0.009	0.008	0.008	0.022
% R.S.D.	0.246	0.497	0.100	0.704	0.191	0.159	0.154	0.431

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	5.076	4.716	4.996	5.296	4.839
S.D.	0.005	0.054	0.006	0.010	0.016
% R.S.D.	0.098	1.146	0.114	0.190	0.329

Identity 1: CCB Identity 2: Quality Control 1:45 PM September 5, 1995
Task name : OPTIMA
Sample Weight : 1.0000 Solution Volume : 1.00
On-Peak Integrations : 3 Off-Peak Integrations : 1

WHC-SD-WM-DP-144, REV. 1

	Zr (ppm)	Sr (ppm)	Bi (ppm)	Si (ppm)	Al (ppm)	Co (ppm)	Cu (ppm)	Li (ppm)
Mean	-0.001	-0.000	0.016	0.005	0.017	0.001	0.000	0.000
S.D.	0.000	0.000	0.004	0.001	0.004	0.002	0.000	0.000
% R.S.D.	25.650	86.603	27.266	26.772	23.341	173.206	74.933	60.161

	Zn (ppm)	Ni (ppm)	La (ppm)	Fe (ppm)	Ca (ppm)	Cr (ppm)	Nd (ppm)	U (ppm)
Mean	0.000	-0.001	-0.001	0.004	0.001	0.001	0.006	0.022
S.D.	0.000	0.001	0.001	0.002	0.000	0.002	0.004	0.015
% R.S.D.	754.103	75.352	100.295	40.401	4.167	391.362	73.983	69.522

	Ce (ppm)	Sm (ppm)	Ba (ppm)	P (ppm)	S (ppm)	Mg (ppm)	As (ppm)	Na (ppm)
Mean	-0.000	-0.012	0.000	0.025	-0.003	0.000	-0.002	-0.000
S.D.	0.006	0.004	0.000	0.012	0.005	0.000	0.002	0.001
% R.S.D.	1873.567	34.953	60.706	47.477	153.294	173.205	83.331	718051.262

	Mo (ppm)	Se (ppm)	Ag (ppm)	Pb (ppm)	Ti (ppm)	Cd (ppm)	B (ppm)	K (ppm)
Mean	0.000	-0.016	0.002	-0.007	0.000	0.000	0.000	-0.066
S.D.	0.000	0.011	0.000	0.005	0.000	0.001	0.001	0.005
% R.S.D.	119.979	64.861	22.183	67.581	182.534	153.146	566.891	7.785

	Mn (ppm)	Sb (ppm)	V (ppm)	Be (ppm)	Tl (ppm)
Mean	0.001	0.016	-0.000	0.000	0.009
S.D.	0.000	0.014	0.000	0.000	0.010
% R.S.D.	28.943	92.274	80.264	24.205	110.773

9-5-95

RADIOCHEMICAL ANALYSES

LABCORE Data Entry Template for Worklist# 2235

Analyst: AKL **Instrument:** AB00 16 **Book #** 140B52

WO 27805

Method: LA-508-101 Rev/Mod D-2

Worklist Comment: Determine sample size using Ludlum. Use .100 mL A-SPK. SLF

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
		1	STD				@ALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
		2	BLNK-PREP				@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
		2	BLNK-PREP				@ALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
		3	BLNK/BKG	0.33			@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000121	T-109	4	SAMPLE	S95T001612	0	F	@ALPHA01 ALPHA01	SOLID	N/A			uCi/g
95000121	T-109	4	SAMPLE	S95T001612	0	F	@ALPHA01 ALPHA01E	SOLID	N/A			% Ct. Error
95000121	T-109	5	DUP	S95T001612	0	F	@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000121	T-109	5	DUP	S95T001612	0	F	@ALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
95000121	T-109	6	SPK	S95T001612	0	F	@ALPHA01 ALPHA01	SOLID			N/A	uCi/g

Final page for worklist # 2235

A Jones
Analyst Signature **Date**

Shawn L Holder 9-7-95
Analyst Signature **Date**

Data Entry Comments:

Low SPK recovery is due to sample matrix interference (dissolve solids content). No rerun requested. 9/7/95

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

WHC-SD-WM-DP-144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3) LIQUIDS

			STANDARD	REPLICATE
Type	DETECTOR NUMBER		16	16
STANDARD	DISH SIZE 1 , 2 , or 5	(MS)	2	2
Work List	TOTAL COUNTS	(TC)	4509	4340
2235	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.2	0.2
AT	SAMPLE SIZE in mL	(SS)	10.000	10.000
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		150.100	144.467
Sample #	Sample Concentration in µCi/L		3.21E-02	BOOK#
WORKLIST#2235	Replicate Concentration in µCi/L		3.09E-02	140B52
Instrument Code				
WB27806	Average Concentration in µCi/L		3.1532E-02	
Analyst				
AKL				
Date				
09/05/95				
Time				
02:00 PM				

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.

v RESULTS v

ALPHA TOTAL	in µCi/mL	(Average) =	3.15E-05	DETECTION LEVEL
				1.01E-07 µCi/mL
RELATIVE COUNTING ERROR		=	3.0%	

Data Entry by:	[signature]	Date:	09/06/95
Approved by:	[signature]	Date:	9/7/95

Form 508101_C Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3) SOLIDS

			BLANK	REPLICATE
Type	DETECTOR NUMBER		16	16
BLANK	DISH SIZE 1 , 2 , or 5	(MS)	2	2
Work List	TOTAL COUNTS	(TC)	3	1
2235	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.2	0.2
AT	SAMPLE SIZE in mL	(SS)	0.200	0.200
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L	(Dg/L)	2.122	2.122
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.191	0.191
Sample #	Sample Concentration in µCi/g	<	9.61E-04	BOOK#
S95T1612	Replicate Concentration in µCi/g	<	9.61E-04	
Instrument Code				
WB27806	Maximum Concentration in µCi/g	<	9.6112E-04	
Analyst				
AKL				
Date				
09/05/95				
Time				
02:00 PM				

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

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.

v RESULTS v

ALPHA TOTAL	in µCi/g	(Maximum) =	< 9.61E-04	DETECTION LEVEL
LESS Than Value was Determined from Lc.				2.38E-03 µCi/g
RELATIVE COUNTING ERROR		=	196.0%	

Data Entry by:	[signature]	Date:	09/06/95
Approved by:	[signature]	Date:	9/7/95

Form 508101_C Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3) SOLIDS

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		16	16
SAMPLE	DISH SIZE 1, 2, or 5	(MS)	2	2
Work List	TOTAL COUNTS	(TC)	128	111
2235	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.2	0.2
AT	SAMPLE SIZE in mL	(SS)	0.200	0.200
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L	(Dg/L)	2.122	2.122
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		4.067	3.500
Sample #	Sample Concentration in µCi/g		2.05E-02	BOOK#
S95T1612	Replicate Concentration in µCi/g		1.77E-02	
Instrument Code				
WB27806	Average Concentration in µCi/g		1.9085E-02	
Analyst				
AKL				
Date				
09/05/95				
Time				
02:00 PM				

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

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.

v RESULTS v

ALPHA TOTAL	in µCi/g	(Average) =	1.91E-02	DETECTION LEVEL
RELATIVE COUNTING ERROR		=	20.2%	2.38E-03 µCi/g

Data Entry by:	[signature]	Date:	09/06/95
Approved by:	[signature]	Date:	9/7/95

Form 508101_C Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3) SOLIDS

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		16	16
DUPLICATE	DISH SIZE 1 , 2 , or 5	(MS)	2	2
Work List	TOTAL COUNTS	(TC)	149	126
2235	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.2	0.2
AT	SAMPLE SIZE in mL	(SS)	0.200	0.200
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L	(Dg/L)	2.1392	2.1392
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		4.767	4.000
Sample #	Sample Concentration in µCi/g		2.39E-02	BOOK#
S95T1612	Replicate Concentration in µCi/g		2.00E-02	
Instrument Code				
WB27806	Average Concentration in µCi/g		2.1934E-02	
Analyst				
AKL				
Date				
09/05/95				
Time				
02:00 PM				

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

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.

v RESULTS v

ALPHA TOTAL	in µCi/g	(Average) =	2.19E-02	DETECTION LEVEL
RELATIVE COUNTING ERROR		=	18.8%	2.36E-03 µCi/g

Data Entry by: Sherry L. Hagen Date: 09/06/95

Approved by: [signature] Date: 9/7/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3) SOLIDS

			SPIKE	REPLICATE
Type	DETECTOR NUMBER		16	16
SPIKE	DISH SIZE 1 , 2 , or 5	(MS)	2	2
Work List	TOTAL COUNTS	(TC)	49319	50390
2235	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.2	0.2
AT	SAMPLE VOLUME in mL (Spiked Vial)	(SS)	0.200	0.200
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial)	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L	(Dg/L)	2.122	2.122
Matrix	SPIKE VOLUME in mL	(SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR	(SDF)	1	1
Sample #	SPIKE VALUE in µCi/L	(SVal)	44.777	44.777
S95T1612	INSTRUMENT EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
Instrument Code	SAMPLE + SPIKE µCi/g	(S+S)	8.29E+00	8.47E+00
WB27806	AVERAGE or MAXIMUM µCi/g from FORM C		1.9085E-02	
Analyst	BOOK#		112B43	
AKL				
Date				
09/05/95				
Time				
02:00 PM				

Rs (Sample Count Rate) = (TC / CT) - BKG

SAMPLE + SPIKE µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L *2220000dpm/µCi)

PERCENT SPIKE RECOVERY = (((S+S µCi/g - SAMPLE µCi/g) * ((SDF/SVol)/(DF/SS/Dg/L)))/SVal)*100

RESULT **AVG. PERCENT SPIKE RECOVERY = 79.3%**

Data Entry by:	Sharon L Hale	Date:	06-Sep-95
Approved by:	[illegible]	Date:	9/7/95

Form 508101_X Rev. 1.3

worklistrpt Version 2.1 05/15/95
09/05/95 07:43

LABCORE Data Entry Template for Worklist# 2236

Analyst: AKL **Instrument:** AB00 16 W027806 **Book #** 140B52

Method: LA-508-101 Rev/Mod D-2

Worklist Comment: Determine sample size using Ludlum. Use .100 mL A-SPK. SLF

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
		1	STD				@ALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
		2	BLNK-PREP				@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
		2	BLNK-PREP				@ALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
		3	BLNK/BKG	1.74			@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000121	T-109	4	SAMPLE	S95T001619	0	F	@ALPHA01 ALPHA01	SOLID	N/A			uCi/g
95000121	T-109	4	SAMPLE	S95T001619	0	F	@ALPHA01 ALPHA01E	SOLID	N/A			% Ct. Error
95000121	T-109	5	DUP	S95T001619	0	F	@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000121	T-109	5	DUP	S95T001619	0	F	@ALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
95000121	T-109	6	SPK	S95T001619	0	F	@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000121	T-109	7	SAMPLE	S95T001630	0	F	@ALPHA01 ALPHA01	SOLID	N/A			uCi/g
95000121	T-109	7	SAMPLE	S95T001630	0	F	@ALPHA01 ALPHA01E	SOLID	N/A			% Ct. Error
95000121	T-109	8	DUP	S95T001630	0	F	@ALPHA01 ALPHA01	SOLID			N/A	uCi/g
95000121	T-109	8	DUP	S95T001630	0	F	@ALPHA01 ALPHA01E	SOLID			N/A	% Ct. Error
95000121	T-109	9	SPK	S95T001630	0	F	@ALPHA01 ALPHA01	SOLID			N/A	uCi/g

Final page for worklist # 2236

A Lewis

Sharon L Uehl 9-7-95

Data Entry Comments:

High RPD for 1630 is acceptable due to low sample alpha activity. Low SPK recoveries are the result of dissolved solids in sample. No recun requested. AKL 9-7-95

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 Data Entry Template for Worklist# 2236

GROUP	PROJECT	S TYPE	SAMPLE#	R A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
Analyst Signature		Date				Analyst Signature			Date	

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.

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3) LIQUIDS

			STANDARD	REPLICATE
Type	DETECTOR NUMBER		16	16
STANDARD	DISH SIZE 1, 2, or 5	(MS)	2	2
Work List	TOTAL COUNTS	(TC)	4644	4344
2236	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.24	0.24
AT	SAMPLE SIZE in mL	(SS)	10.000	10.000
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST DILUTION FACTOR	(DDF)	1	1
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
LIQUID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		154.560	144.560
Sample #	Sample Concentration in µCi/L		3.31E-02	BOOK#
WORKLIST#2236	Replicate Concentration in µCi/L		3.09E-02	140B52
Instrument Code				
WB27806	Average Concentration in µCi/L		3.2020E-02	
Analyst				
AKL				
Date				
09/06/95				
Time				
12:00 PM				

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.

v RESULTS v

ALPHA TOTAL	in µCi/mL	(Average) =	3.20E-05	DETECTION LEVEL
RELATIVE COUNTING ERROR		=	3.0%	1.09E-07 µCi/mL

Data Entry by:	[signature]	Date:	09/07/95
Approved by:	[signature]	Date:	9/7/95

Form 508101_C Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3) SOLIDS

Type			BLANK	REPLICATE
BLANK	DETECTOR NUMBER		16	16
Work List	DISH SIZE 1 , 2 , or 5	(MS)	2	2
2236	TOTAL COUNTS	(TC)	5	20
AT or TB ?	COUNT TIME in MINUTES	(CT)	30	30
AT	BACKGROUND in cpm	(BKG)	0.24	0.24
Test Code	SAMPLE SIZE in mL	(SS)	0.300	0.300
@ALPHA01	DILUTION FACTOR	(DF)	1	1
Matrix	DIGEST GRAMS of SOLIDS/L	(Dg/L)	2.3008	2.3008
SOLID	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
Sample #	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		0.209	0.427
S95T1619	Sample Concentration in µCi/g	<	6.47E-04	BOOK#
Instrument Code	Replicate Concentration in µCi/g		1.32E-03	
WB27806	Maximum Concentration in µCi/g	<	1.3234E-03	
Analyst				
AKL				
Date				
09/06/95				
Time				
12:00 PM				

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

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.

v RESULTS v

ALPHA TOTAL	in µCi/g	(Maximum) =	< 1.32E-03	DETECTION LEVEL
LESS THAN Value was Determined from Rs.				1.58E-03 µCi/g
RELATIVE COUNTING ERROR		=	500.0%	

Data Entry by:	Sharon Hulden	Date:	09/07/95
Approved by:	[illegible]	Date:	9/7/95

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PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3) SOLIDS

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		16	16
SAMPLE	DISH SIZE 1 , 2 , or 5	(MS)	2	2
Work List	TOTAL COUNTS	(TC)	78	57
2236	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.24	0.24
AT	SAMPLE SIZE in mL	(SS)	0.300	0.300
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L	(Dg/L)	2.3008	2.3008
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		2.360	1.660
Sample #	Sample Concentration in µCi/g		7.32E-03	BOOK#
S95T1619	Replicate Concentration in µCi/g		5.15E-03	
Instrument Code				
WB27806	Average Concentration in µCi/g		6.2344E-03	
Analyst				
AKL				
Date				
09/06/95				
Time				
12:00 PM				

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

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.

v RESULTS v

ALPHA TOTAL	in µCi/g	(Average) =	6.23E-03	DETECTION LEVEL
RELATIVE COUNTING ERROR		=	31.5%	1.58E-03 µCi/g

Data Entry by:	Sharon L. Fields	Date:	09/07/95
Approved by:	[illegible]	Date:	9/7/95

Form 508101_C Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3) SOLIDS

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		16	16
DUPLICATE	DISH SIZE 1 , 2 , or 5	(MS)	2	2
Work List	TOTAL COUNTS	(TC)	76	63
2236	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.24	0.24
AT	SAMPLE SIZE in mL	(SS)	0.300	0.300
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L	(Dg/L)	2.2692	2.2692
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		2.293	1.860
Sample #	Sample Concentration in µCi/g		7.21E-03	BOOK#
S95T1619	Replicate Concentration in µCi/g		5.85E-03	
Instrument Code				
WB27806	Average Concentration in µCi/g		6.5309E-03	
Analyst				
AKL	Rs (Sample Count Rate) = (TC / CT) - BKG			
Date	ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)			
09/06/95				
Time	Relative Counting Error = [|(The Square Root of TC + BKG * CT) / (TC - BKG * CT)|] * 1.96 * 100			
12:00 PM	Detection Levels and Less Than Values are determined from Procedure LA-508-002.			

v RESULTS v

ALPHA TOTAL	in µCi/g	(Average) =	6.53E-03	DETECTION LEVEL
				1.60E-03 µCi/g
RELATIVE COUNTING ERROR		=	29.4%	

Data Entry by:	Shyron L. Walker	Date:	09/07/95
Approved by:	[illegible]	Date:	9/7/95

Form 508101_C Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3) SOLIDS

			SPIKE	REPLICATE
Type	DETECTOR NUMBER		16	16
SPIKE	DISH SIZE 1 , 2 , or 5	(MS)	2	2
Work List	TOTAL COUNTS	(TC)	52637	52031
2236	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.24	0.24
AT	SAMPLE VOLUME in mL (Spiked Vial)	(SS)	0.300	0.300
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial)	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L	(Dg/L)	2.3008	2.3008
Matrix	SPIKE VOLUME in mL	(SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR	(SDF)	1	1
Sample #	SPIKE VALUE in µCi/L	(SVal)	44.777	44.777
S95T1619	INSTRUMENT EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
Instrument Code	SAMPLE + SPIKE µCi/g	(S+S)	5.44E+00	5.38E+00
WB27806	AVERAGE or MAXIMUM µCi/g from FORM C		6.2344E-03	
Analyst	BOOK#		112B52	
AKL				
Date				
09/06/95				
Time				
12:00 PM				

Rs (Sample Count Rate) = (TC / CT) - BKG

SAMPLE + SPIKE µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L *2220000dpm/µCi)

PERCENT SPIKE RECOVERY = (((S+S µCi/g - SAMPLE µCi/g) * ((SDF/SVol)/(DF/SS/Dg/L)))/SVal)*100

RESULT **AVG. PERCENT SPIKE RECOVERY = 83.3%**

Data Entry by:	Shyron L Hylton	Date:	07-Sep-95
Approved by:	[illegible]	Date:	9/7/95

Form 508101_X Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3) SOLIDS

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		16	16
SAMPLE	DISH SIZE 1, 2, or 5	(MS)	2	2
Work List	TOTAL COUNTS	(TC)	77	102
2236	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.24	0.24
AT	SAMPLE SIZE in mL	(SS)	0.300	0.300
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L	(Dg/L)	2.0684	2.0684
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		2.327	3.160
Sample #	Sample Concentration in µCi/g		8.03E-03	BOOK#
S95T1630	Replicate Concentration in µCi/g		1.09E-02	
Instrument Code				
WB27806	Average Concentration in µCi/g		9.4651E-03	
Analyst				
AKL				
Date				
09/06/95				
Time				
12:00 PM				

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

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.

v RESULTS v

ALPHA TOTAL	in µCi/g	(Average) =	9.47E-03	DETECTION LEVEL
RELATIVE COUNTING ERROR		=	25.8%	1.75E-03 µCi/g

Data Entry by:	Shawn Fields	Date:	09/07/95
Approved by:	[signature]	Date:	9/7/95

Form 508101_C Rev. 1.3

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-CD-VIM-DP-144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3) SOLIDS

			SAMPLE	REPLICATE
Type	DETECTOR NUMBER		16	16
DUPLICATE	DISH SIZE 1 , 2 , or 5	(MS)	2	2
Work List	TOTAL COUNTS	(TC)	57	48
2236	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.24	0.24
AT	SAMPLE SIZE in mL	(SS)	0.300	0.300
Test Code	DILUTION FACTOR	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L	(Dg/L)	2.0872	2.0872
Matrix	EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
SOLID	Lc, Rmax, or Rs,(SAMPLE RATE) as APPROPRIATE		1.660	1.360
Sample #	Sample Concentration in µCi/g		5.68E-03	BOOK#
S95T1630	Replicate Concentration in µCi/g		4.65E-03	
Instrument Code				
WB27806	Average Concentration in µCi/g		5.1629E-03	
Analyst				
AKL				
Date				
09/06/95				
Time				
12:00 PM				

Rs (Sample Count Rate) = (TC / CT) - BKG

ALPHA TOTAL µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L * 2220000dpm/µCi)

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.

v RESULTS v

				DETECTION LEVEL
ALPHA TOTAL	in µCi/g	(Average) =	5.16E-03	1.74E-03 µCi/g
RELATIVE COUNTING ERROR		=	35.7%	

Data Entry by: Sherman [illegible] Date: 09/07/95

Approved by: [illegible] Date: 9/7/95

PLACE ANALYTICAL CARD IN BOX BELOW OR ATTACH TRAVELER

WHC-SD-WM-DP-144, REV. 1

AT : LA-508-101 (D-2)

LA-548-101 (A-3) SOLIDS

			SPIKE	REPLICATE
Type	DETECTOR NUMBER		16	16
SPIKE	DISH SIZE 1 , 2 , or 5	(MS)	2	2
Work List	TOTAL COUNTS	(TC)	52543	50446
2236	COUNT TIME in MINUTES	(CT)	30	30
AT or TB ?	BACKGROUND in cpm	(BKG)	0.24	0.24
AT	SAMPLE VOLUME in mL (Spiked Vial)	(SS)	0.300	0.300
Test Code	SAMPLE DILUTION FACTOR (Spiked Vial)	(DF)	1	1
@ALPHA01	DIGEST GRAMS of SOLIDS/L	(Dg/L)	2.0684	2.0684
Matrix	SPIKE VOLUME in mL	(SVol)	0.100	0.100
SOLID	SPIKE DILUTION FACTOR	(SDF)	1	1
Sample #	SPIKE VALUE in µCi/L	(SVal)	44.777	44.777
S95T1630	INSTRUMENT EFFICIENCY FACTOR	(EFF)	0.2104	0.2104
Instrument Code	SAMPLE + SPIKE µCi/g	(S+S)	6.04E+00	5.80E+00
WB27806	AVERAGE or MAXIMUM µCi/g from FORM C		9.4651E-03	
Analyst	BOOK#		112B52	
AKL				
Date				
09/06/95				
Time				
12:00 PM				

Rs (Sample Count Rate) = (TC / CT) - BKG

SAMPLE + SPIKE µCi/g = Rs * 1000mL/L * DF / (EFF * SS * Dg/L *2220000dpm/µCi)

PERCENT SPIKE RECOVERY = (((S+S µCi/g - SAMPLE µCi/g) * ((SDF/SVol)/(DF/SS/Dg/L)))/SVal)*100

RESULT | AVG. PERCENT SPIKE RECOVERY = 81.9%

Data Entry by:	Sharon J. Uebele	Date:	07-Sep-95
Approved by:	[illegible]	Date:	9/7/95

Form 508101_X Rev. 1.3

Westinghouse
Hanford Company

P.O. Box 1970 Richland, WA 99352

WHC-SD-WM-DP-144, REV. 1

PART II

WHC-SD-WM-DP-144, REV. 0

ANALYTICAL SERVICES

45-DAY SAFETY SCREENING RESULTS FOR TANK 241-T-109, AUGER SAMPLES 95-AUG-040 AND 95-AUG-041

Date Printed: SEPTEMBER 29, 1995

54-7600-075

Hanford Operations and Engineering Contractor for the US Department of Energy

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This Document consists of pages 1 through 41.

WHC-SD-WM-DP-144, REV. 0

NARRATIVE

45-DAY SAFETY SCREENING REPORT FOR TANK 241-T-109, AUGER SAMPLES 95-AUG-040 AND 95-AUG-041

ANALYTICAL SUMMARY

Two auger samples were taken from tank 241-T-109 (T-109). The samples were received at the 222-S Laboratories and underwent safety screening analyses, consisting of differential scanning calorimetry (DSC), thermogravimetric analysis (TGA), and determination of total alpha activity. The results were compared to the safety screening limits at a confidence level of 95%. Two of the samples submitted for moisture content determination by thermogravimetric analysis (TGA) did not meet the minimum criterion of 17 weight percent water stated in the Sampling and Analysis Plan (SAP) [1]. Written notification was provided to all appropriate parties as required in the SAP. All analytical results for the other safety screening analyses (DSC and total alpha analysis) were within the action limits stated in the SAP. The low moisture content of the samples is not a cause concern, as moisture is necessary only as a mitigating factor in the case of an energetic event. The lack of exothermic activity (no exotherms detected by DSC for any sample) precludes an exothermic event.

Based on the results of combustible gas monitoring prior to auger sampling, the T-109 vapor space is at zero percent of the Lower Explosive Limit (LEL). Per the criteria (energetics, criticality, and flammability) in the newly revised *Safety Screening Data Quality Objective* (DQO) [2], the results of the auger sampling event indicate that the tank is "safe."

SCOPE

This document serves as the 45-day report deliverable for the tank T-109 auger samples collected on August 18 and 21, 1995 (samples 95-AUG-040 and 95-AUG-041). The 222-S Laboratories received, extruded, and analyzed each sample in accordance with the SAP [1]. Included in this report are the primary safety screening results obtained from the analyses, and copies of all DSC and TGA raw data scans as requested in the SAP.

No additional testing to support safety screening analyses is required. Any additional analyses conducted by the 222-S Laboratories on these auger samples will be included in a revision to this report. The T-109 samples are being further analyzed for certain chemical constituents in accordance with the SAP.

FLAMMABILITY SCREENING

Prior to intrusion into a tank, the working zone above the tank and the vapor space of the tank are screened for flammability issues. The results of combustible gas monitoring of the vapor space of tank T-109 are presented in Table 1. This measurement is conducted in the field and recorded in the work package (work package for T-109 auger sampling is #WS-95-00109). These results demonstrate that there were no flammability concerns in the vapor space of tank T-109 at the time of the sampling event.

Table 1. Characteristics of T-109 Vapor Space as Determined by Combustible Gas Monitoring Through Riser 6.

Measurement	Result
Total Organic Carbon (TOC)	< 1 ppm
Lower Explosive Limit (LEL)	0% of LEL
Oxygen (O_2)	21.0%
Ammonia (NH_3)	0 ppm

SAMPLE RECEIPT, EXTRUSION, AND SUBSAMPLING

95-AUG-040

Auger sample 95-AUG-040 was collected from riser 6 of tank T-109 on August 18, 1995 and extruded on August 24, 1995. Most of the sample fell onto the extrusion tray. The bulk of the sample appeared to come from flutes 1-6 at the top of the auger, with only a thin coating on the remaining flutes. A total of 67.5 g of dirty, white, crystalline solids were recovered. A subsample was taken for an immediate, unhomogenized TGA analysis as required by the SAP. The remainder of the sample was homogenized and subsampled for further laboratory analyses and archiving. Due to the relatively low recovery, the sample was not divided into subsegments, but was analyzed on a whole-segment basis.

95-AUG-041

Auger sample 95-AUG-041 was collected from riser 2 of Tank T-109 on August 21, 1995, and extruded on August 25, 1995. Most of the sample fell onto the extrusion tray. A total of 232.5 g of solids was recovered. The sample was divided into upper and lower half-segments, with the upper half appearing to be gray-black crystals and the lower half appearing to be dirty white crystals. Subsamples were taken from each half-segment for unhomogenized TGA analyses as required in the SAP. The remaining material was subsampled into upper and lower half-segments, homogenized, and subsampled further for laboratory analyses and archiving.

Subsamples of each half-segment were then recombined and subsampled for additional (non-safety screening) laboratory analyses and for shipment to Pacific Northwest Laboratory for use in sludge washing studies.

ANALYTICAL RESULTS

THERMOGRAVIMETRIC ANALYSIS (TGA)

Three unhomogenized and three homogenized samples were submitted for moisture content determination by TGA. Samples S95T001616 and S95T001626 were performed using procedure LA-514-114, Rev C-0. The remaining four TGA samples were performed using procedure LA-560-112, Rev. B-0. The samples were analyzed in duplicate. The results are presented in the summary tables, and the raw data scans are attached. Per the revised safety screening DQO [2], the sample results were compared to the action limit at a 95% confidence level. This is more stringent than the requirements of the SAP, which required comparison at a 90% confidence level. These comparisons are presented in Attachment 1.

The lower 95% confidence level for two of the samples fell below the limit of 17 weight percent water stated in the SAP. These two samples were the immediate, unhomogenized sample, and the homogenized sample from auger 95-AUG-040 (samples S95T001597 and S95T001600). Since all DSC results on these auger samples were zero J/g (no exotherms detected), the low moisture content of the samples is not a cause for concern. In fact, inspection of the thermograms (attached) reveals that the weight loss curves for these two samples were integrated conservatively (integrated only up to a slight inflection of the curves at about 105 °C). Had these thermograms been integrated out to approximately 170 °C as was done for samples S95T001616 and S95T001626 from auger 950AUG-041, the moisture results would have been between 40% and 50%.

Three standards were run with these samples. The percent recovery for each standard analyzed was within the 90-110% range specified in the SAP. The results are presented in the summary tables.

DIFFERENTIAL SCANNING CALORIMETRY (DSC)

Three samples were submitted for determination of energetics by DSC. Sample S95T001600 was performed using procedure LA-514-114, Rev. C-0 (any exotherms from this sample would be evident as decreases from the baseline of the thermogram). Samples S95T001618 and S95T001629 were performed using procedure LA-514-113, Rev. C-0 (any exotherms from these samples would be evident as increases from the baseline of the thermogram). The samples were analyzed in duplicate. The results are presented in the summary tables, and the raw data scans are attached. None of the samples exhibited exotherms. Since none of the samples exhibited any exotherms, the statistical calculation of an upper 95% confidence level for each sample is unnecessary.

Two standards were run with these samples. The percent recovery for each standard analyzed was within the 90-110% range specified in the SAP. The results are presented in the summary tables.

TOTAL ALPHA

Three solids samples were submitted for total alpha analysis per procedure LA-508-101, Rev. D-2. The samples were fused per procedure LA-549-141, Rev. D-0 prior to analysis. Two fusions were prepared per sample (for duplicate results). Each fused dilution was analyzed twice; the results were averaged and reported as one value. The highest result returned was 0.0219 μCi/g, over three orders of magnitude below the action limit of 41 μCi/g. The upper 95% confidence level for each sample has been calculated and is presented in Attachment 1. Comparison to the limit at a 95% confidence level is more stringent than the requirements of the SAP, which required comparison at a 90% confidence level. All of the adjusted results are far below the action limit.

Results for the two blanks run with these samples were below detection limits. The two standards run with these samples exhibited recoveries within the 90-110% range specified in the SAP. A spike was run with each of the three samples. Spike recoveries ranged from 79.30% to 83.30%, which, although somewhat low, are within the laboratory control range of 75-125%. Reruns to improve spike recovery were deemed unnecessary as the sample results were far below the action limit. These quality control results are presented in the summary tables.

Project Coordinator: John M. Conner

REFERENCES

[1] J. M. Conner, *Tank 241-T-109 Auger Sampling and Analysis Plan*, WHC-SD-WM-TSAP-014, Rev. 0, Westinghouse Hanford Company, Richland, Washington, June 15, 1995.

[2] G. T. Dukelow, et al., *Tank Safety Screening Data Quality Objective*, WHC-SD-WM-SP-004, Rev. 2, Westinghouse Hanford Company, Richland, Washington, August 31, 1995.

Westinghouse Hanford Company

ATTACHMENT 1 (page 1 of 2)

Internal Memo

From: Process Chemistry and Statistics 75764-PCS95-083
Phone: 373-4034 T6-07
Date: September 27, 1995
Subject: 95% CONFIDENCE INTERVALS FOR TANK T-109

WHC-SD-WM-DP-144, REV. 1

To: J. M. Conner R2-12

cc: L. Jensen R2-12
J. R. Jewett T6-06
J. G. Kristofzski R2-12
T. L. Welsh T6-07
RDC File/LB

Confidence intervals were computed for each sample number from tank T-109 analytical data per your request. The sample numbers and confidence intervals are provided in Tables 1 and 2.

The lower limit (LL) of a one-sided 95% Confidence Interval for the mean is

$$\hat{\mu} - t_{(n-1,0.95)} * \sqrt{\frac{\hat{\sigma}^2}{n}}$$

and the upper limit (UL) of a one-sided 95% Confidence Interval for the mean is

$$\hat{\mu} + t_{(n-1,0.95)} * \sqrt{\frac{\hat{\sigma}^2}{n}}.$$

For these two equations, $\hat{\mu}$ is the arithmetic mean of the data, n is the number of observations, $\hat{\sigma}^2$ is the variance of the data and $t_{(n-1,0.95)}$ is a quantile from Student's t distribution with $n-1$ degrees of freedom and 0.95 confidence level.

For the tank T-109 data (per sample number), n is two and $t_{(1,0.95)}$ is 6.314 for a one-sided 95% confidence interval.

For the thermogravimetric analysis (TGA) data, the lower limit will be used to test the null hypothesis that the mean percent water is less than or equal to 17 percent. For the Total Alpha data, the upper limit will be used to test the null hypothesis that the mean concentration is greater than or equal to 41 μCi/g.

The lower limit of the 95% confidence interval for each sample number based on the TGA data is listed in Table 1. Each confidence interval can be used to make the following statement. If the lower limit is greater than 17%,

J. M. Conner
Page 2
September 27, 1995

then one would reject the null hypothesis that the percent water is less than or equal to 17% at the 0.05 level of significance.

Table 1. 95% Confidence Interval Lower Limits for TGA for T-109.

Sample Number and Description	$\bar{p}$ (wt%)	$\hat{\sigma}^2/n$	LL (wt%)
S95T001597 - AUG-040, Riser 6, WS (Mettler)	16.22	0.42	12.12
S95T001600 - AUG-040, Riser 6, WS (Mettler)	12.46	0.06	10.91
S95T001616 - AUG-041, Riser 2, LH (Perkin)	45.43	1.16	38.64
S95T001618 - AUG-041, Riser 2, LH (Mettler)	42.57	10.21	22.39
S95T001626 - AUG-041, Riser 2, UH (Perkin)	50.53	2.02	41.56
S95T001629 - AUG-041, Riser 2, UH (Mettler)	49.09	0.05	47.73

AUG Auger
WS Whole Segment
UH Upper Half of Segment
LH Lower Half of Segment
LL Lower Limit

The upper limit of the 95% confidence interval for each sample number based on the Total Alpha data is listed in Table 2. Each confidence interval can be used to make the following statement. If the upper limit is less than 41 μCi/g, then one would reject the null hypothesis that the Total Alpha is greater than or equal to 41 μCi/g at the 0.05 level of significance.

Table 2. 95% Confidence Interval Upper Limits for Total Alpha for T-109.

Sample Number and Description	$\bar{p}$ (μCi/g)	$\hat{\sigma}^2/n$	UL (μCi/g)
S95T001612 - AUG-040, Riser 6, WS	2.05E-02	1.96E-06	2.93E-02
S95T001619 - AUG-041, Riser 2, LH	7.32E-03	4.64E-06	2.09E-02
S95T001630 - AUG-041, Riser 2, UH	6.38E-03	2.25E-08	7.33E-03

AUG Auger
WS Whole Segment
UH Upper Half of Segment
LH Lower Half of Segment
UL Upper Limit

Confidence intervals could not be performed on the differential scanning calorimetry (DSC) data, since all of the results were zero.

If you have any questions, please call me at 373-4034.

RD Cromar

R. D. Cromar, Statistician
Process Chemistry and Statistics

WHC-SD-WM-DP- 144, REV. 1

rdc

WHC-SD-WM-DP-144, REV. 0

SAMPLE DATA SUMMARY

INTERIM

45-Day Safety Screening Report
T-109

CORE NUMBER: n/a
SEGMENT #: 95-AUG-040

SEGMENT PORTION: Immediate Sampling (to check moisture loss)

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T001597			% Water by TGA using Mettler	%	17.00	115.0	101.1	n/a	15.57	16.87	16.22	8.01	n/a	n/a	n/a

W Whole Segment: W Whole Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T001600			% Water by TGA using Mettler	%	17.00	115.0	101.1	n/a	12.70	12.21	12.46	3.93	n/a	n/a	n/a
S95T001600			DSC Exotherm on Perkin Elmer	Joules/g	-9.9e+01	480.0	95.85	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S95T001612		F	Alpha of Digested Solid	uCi/g	-9.9e+01	41.00	106.4	<9.61e-04	1.91e-02	2.19e-02	2.05e-02	13.7	79.30	2.38e-03	20.2

=> Limit violated
=> Selected Limit

INTERIM

INTERIM

45-Day Safety Screening Report
T-109

CORE NUMBER: n/a
SEGMENT #: 95-AUG-041

SEGMENT PORTION: Immediate Sampling (to check moisture loss)

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T001616			% Water by TGA on Perkin Elmer	%	17.00	115.0	100.5	n/a	44.35	46.50	45.42	4.73	n/a	n/a	n/a
S95T001626			% Water by TGA on Perkin Elmer	%	17.00	115.0	100.5	n/a	49.11	51.95	50.53	5.62	n/a	n/a	n/a

U Upper Half of Segment: U Upper Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T001629			% Water by TGA using Mettler	%	17.00	115.0	100.9	n/a	48.87	49.30	49.08	0.88	n/a	n/a	n/a
S95T001629			DSC Exotherm using Mettler	Joules/g	-9.9e+01	480.0	103.3	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S95T001630		F	Alpha of Digested Solid	uCi/g	-9.9e+01	41.00	108.1	<1.32e-03	9.47e-03	5.16e-03	7.31e-03	58.9	81.90	1.75e-03	25.8

L Lower Half of Segment: L Lower Half of Segment

Sample#	R	A#	Analyte	Unit	Action Limits Lower	Action Limits Upper	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
S95T001618			% Water by TGA using Mettler	%	17.00	115.0	100.9	n/a	39.37	45.76	42.56	15.0	n/a	n/a	n/a
S95T001618			DSC Exotherm using Mettler	Joules/g	-9.9e+01	480.0	103.3	n/a	0.00e+00	0.00e+00	0.00e+00	0.00	n/a	n/a	n/a
S95T001619		F	Alpha of Digested Solid	uCi/g	-9.9e+01	41.00	108.1	<1.32e-03	6.23e-03	6.53e-03	6.38e-03	4.70	83.30	1.58e-03	31.5

=> Limit violated
=> Selected Limit

INTERIM

WHC-SD-WM-DP-144, REV. 0

INORGANIC ANALYSES

LABCORE Data Entry Template for Worklist# 2118

Analyst: PJM **Instrument:** DSC0 3 **Book #** 12N14A

Method: LA-514-114 Rev/Mod C-0

Worklist Comment: Please run T-109 DSCs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD				DSC-03	SOLID	28.45	27.27	N/A	Joules/g
95000121	T-109	2 SAMPLE	S95T001600	0		DSC-03	SOLID	N/A	Ø		Joules/g
95000121	T-109	3 DUP	S95T001600	0		DSC-03	SOLID	Ø	Ø	N/A	Joules/g

Final page for worklist # 2118

See attached for signature
Analyst Signature Date
JMF 9/6/95

Analyst Signature Date 9-7-95

Verified 9/7/95. Jerry M. Fuge

Data Entry Comments:
S95T001600 has endotherm of 1266 J/g at 125°C; duplicate has endotherm of 1572 J/g at 126°C. JM Fuge

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 Data Entry Template for Worklist# 2118

Analyst: RJ McCown **Instrument:** DSC0 **Book #** 12014A

Method: LA-514-~~113~~ 114 Rev/Mod C-0 RJM 9/3/95

Worklist Comment: Please run T-109 DSCs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-01	SOLID	28.45	27.27	N/A	Joules/g
95000121	T-109	2	SAMPLE	S95T001600	0		DSC-01	SOLID	N/A	Ø		Joules/g
95000121	T-109	3	DUP	S95T001600	0		DSC-01	SOLID	Ø	Ø	N/A	Joules/g

Final page for worklist # 2118

RJ McCown 9/3/95
Analyst Signature **Date**

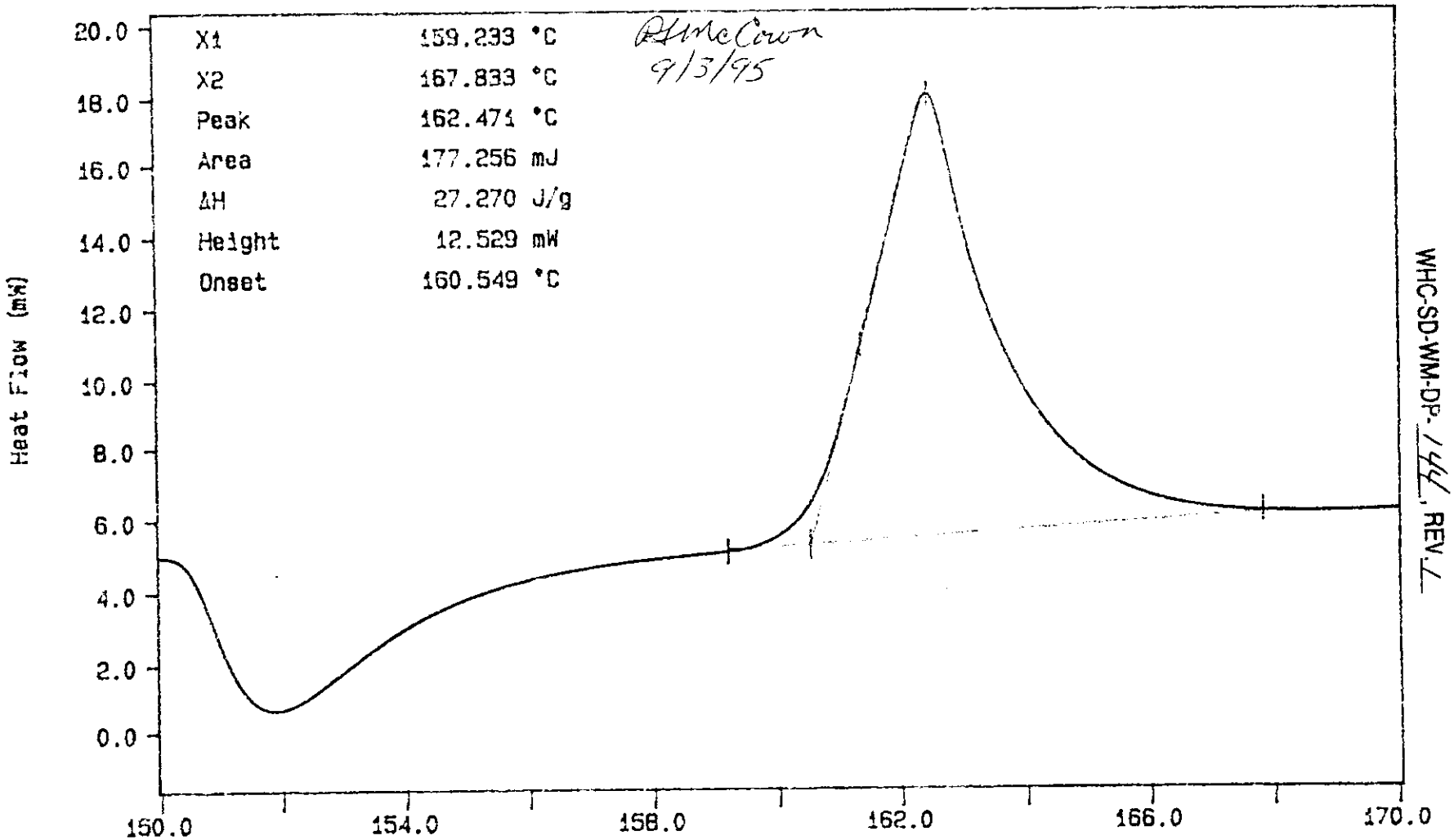
Analyst Signature **Date**

Data Entry Comments:
S95T001600 has endotherm of 1.266 J/g at 125°C; duplicate has endotherm of 1.372 J/g at 126°C. J M Faye

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.

Curve 1: DSC
File info: IND090303 Sun Sep 3 09:32:02 1995
Sample Weight: 6.500 mg
12N14A Indium at 10C/min

BEST AVAILABLE COPY



N2, EXOTHERM DOWN
TEMP1: 150.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 170.0 C

PJ MCCOWN
PERKIN ELMER
222-S Lab
Sun Sep 3 09:34:00 1995

WHC-SD-WM-DP-144, REV. 1

Curve 1: DSC
File info: qsav2 Sun Sep 3 12:09:59 1995
Sample Weight: 16.740 mg
S95T001600 SAMPLE

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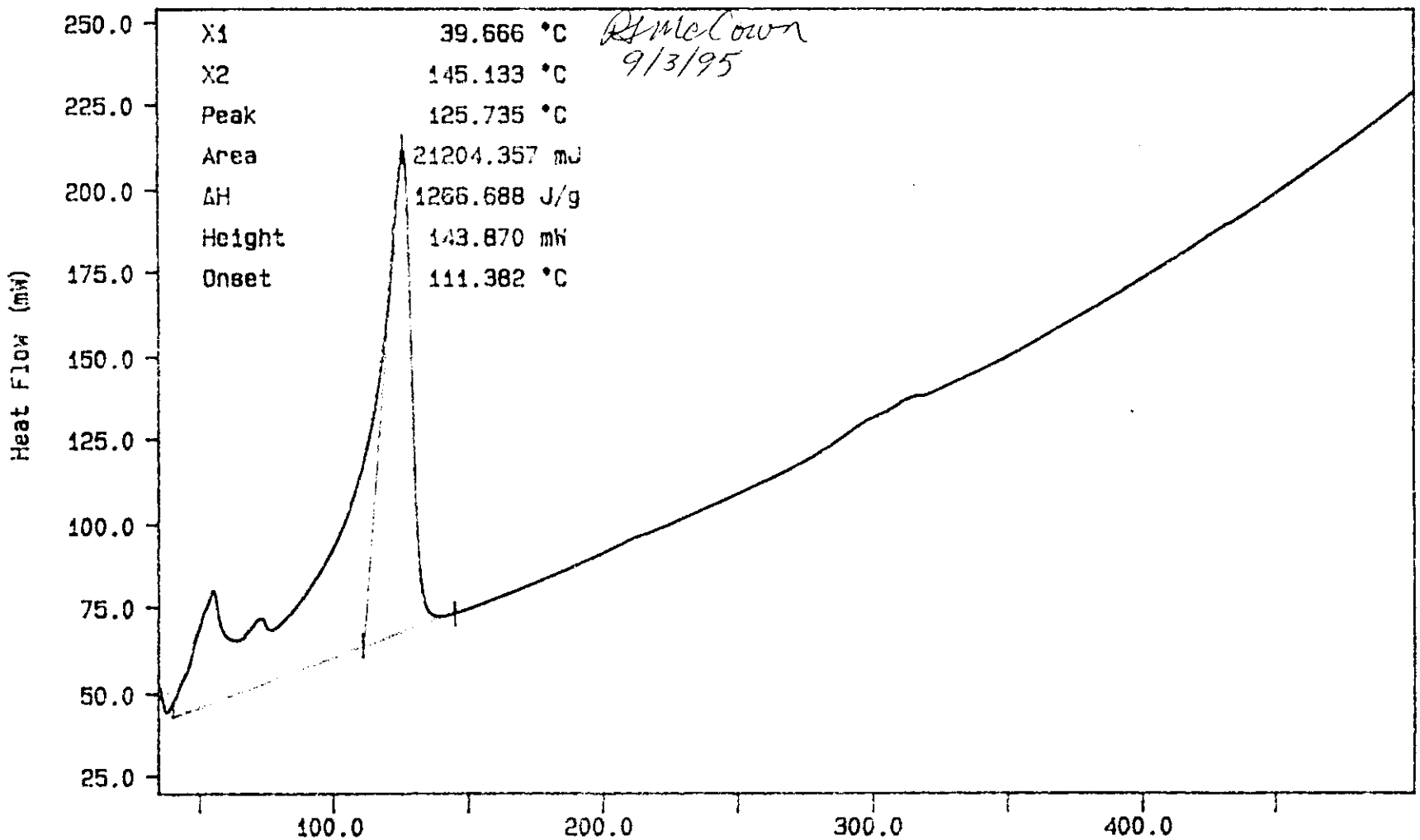

exotherm down, N2 purge gas
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 500.0 C

PJ MCCOWN
PERKIN ELMER
222-S Lab
Sun Sep 3 12:12:30 1995

WHC-SD-WM-DP-144, REV. 1

Curve 1: DSC
File info: SAM090302 Sun Sep 3 13:19:54 1995
Sample Weight: 19.040 mg
S95T001600 DUPLICATE

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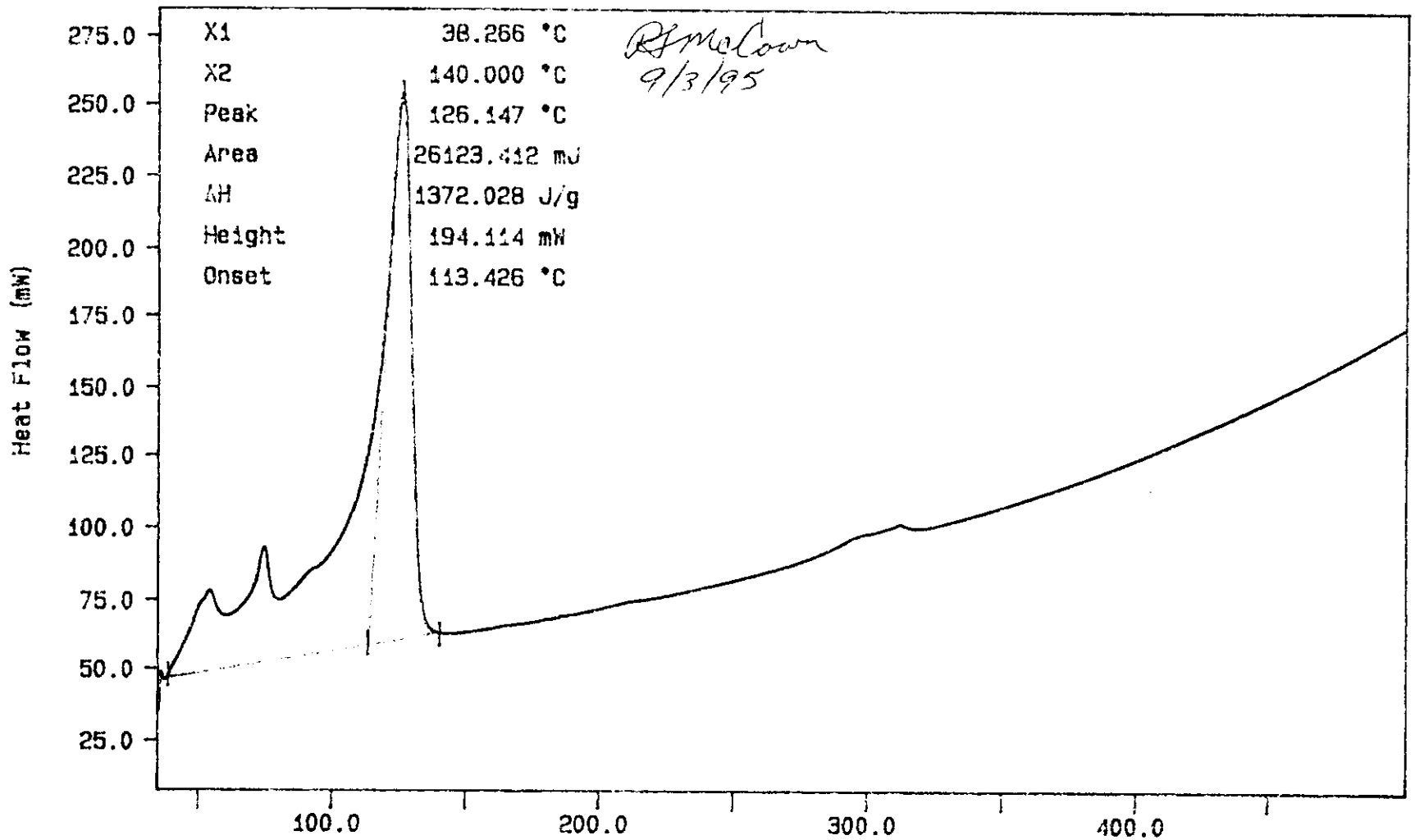

exotherm down, N2 purge gas
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 500.0 C

PJ MCCOWN
PERKIN ELMER
222-S Lab
Sun Sep 3 14:09:56 1995

WHC-SD-WM-DP-144, REV. 1

155

LABCORE Data Entry Template for Worklist# 2138

Analyst: RMcCown **Instrument:** DSC0 1 **Book #** 12N14A

Method: LA-514-113 Rev/Mod C-0

Worklist Comment: Please run T-109 DSCs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	-------TEST------	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				DSC-01	SOLID	28.45	29.4	N/A	Joules/g
95000121	T-109	2	SAMPLE	S95T001618	0		DSC-01	SOLID	N/A	Ø		Joules/g
95000121	T-109	3	DUP	S95T001618	0		DSC-01	SOLID	Ø	Ø	N/A	Joules/g
95000121	T-109	4	SAMPLE	S95T001629	0		DSC-01	SOLID	N/A	Ø		Joules/g
95000121	T-109	5	DUP	S95T001629	0		DSC-01	SOLID	Ø	Ø	N/A	Joules/g

Final page for worklist # 2138

RMcCown 9/3/95
Analyst Signature Date

[illegible] 9-5-95
Analyst Signature Date

Verified J. M. Luye 9/7/95

Data Entry Comments:
S95T001618 SAM has endotherm 1552.7J/g at 121.8°C; DUP endotherm 1146.3J/g at 113.3°C and endotherm of 50.0J/g at 276.9°C. JMF

S95T001629 SAM has endotherms 1228.7J/g at 111.3°C and 52.0J/g at 286.9°C; DUP has endotherms of 1141.0J/g at 115.3°C and 45.2J/g at 285°C JMF

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.

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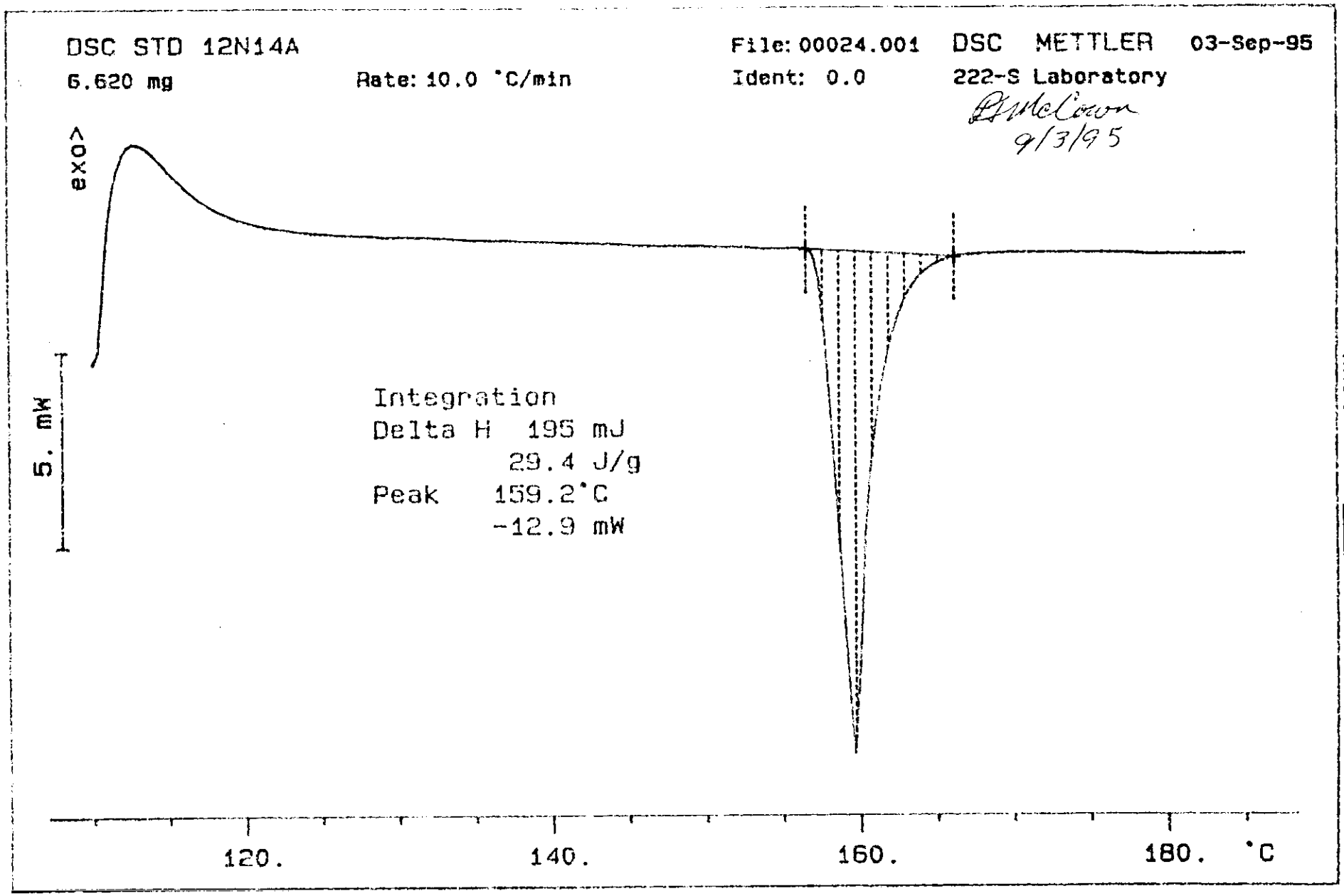

WHC-SD-WM-DP-144, REV 1

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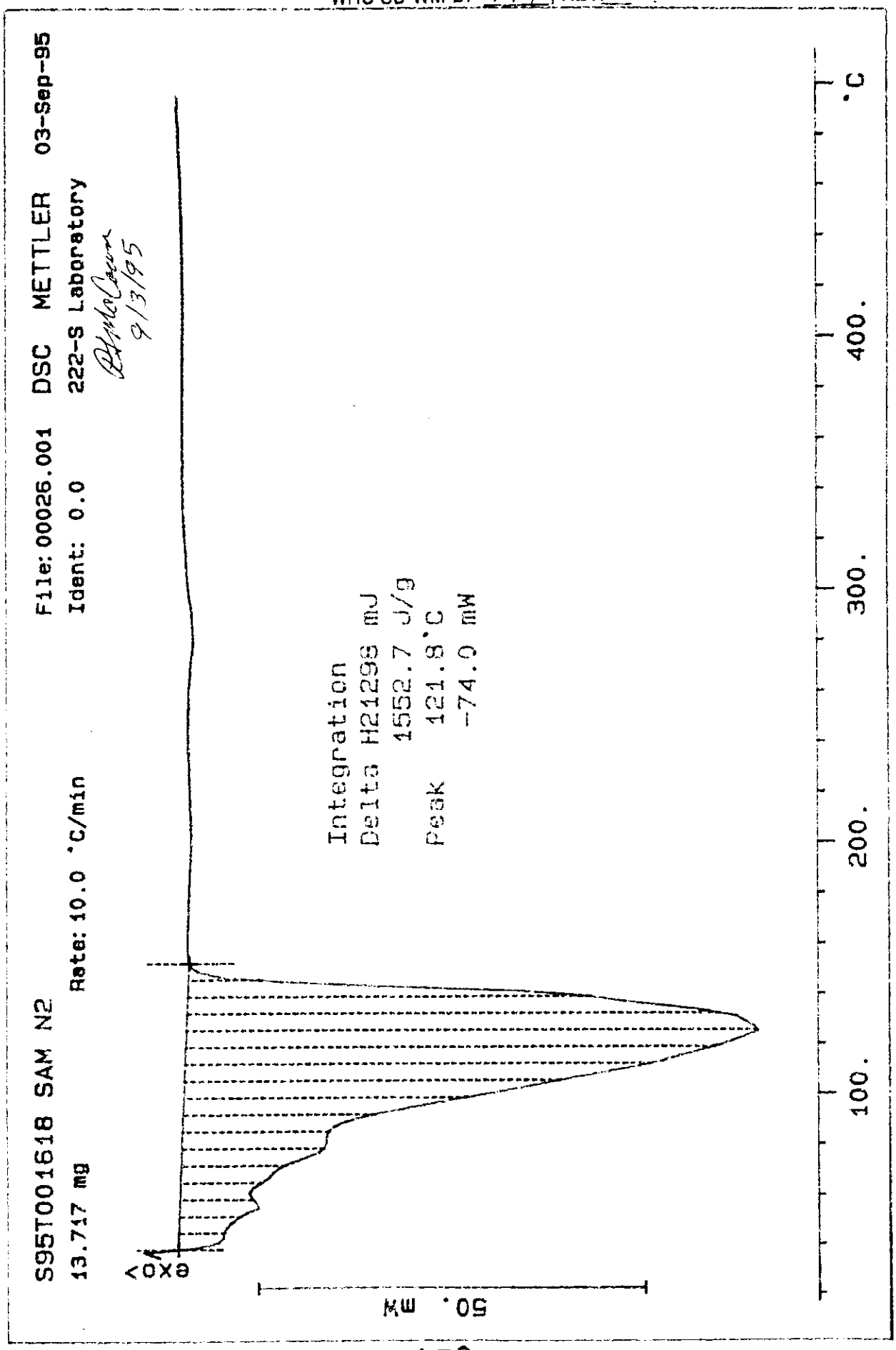

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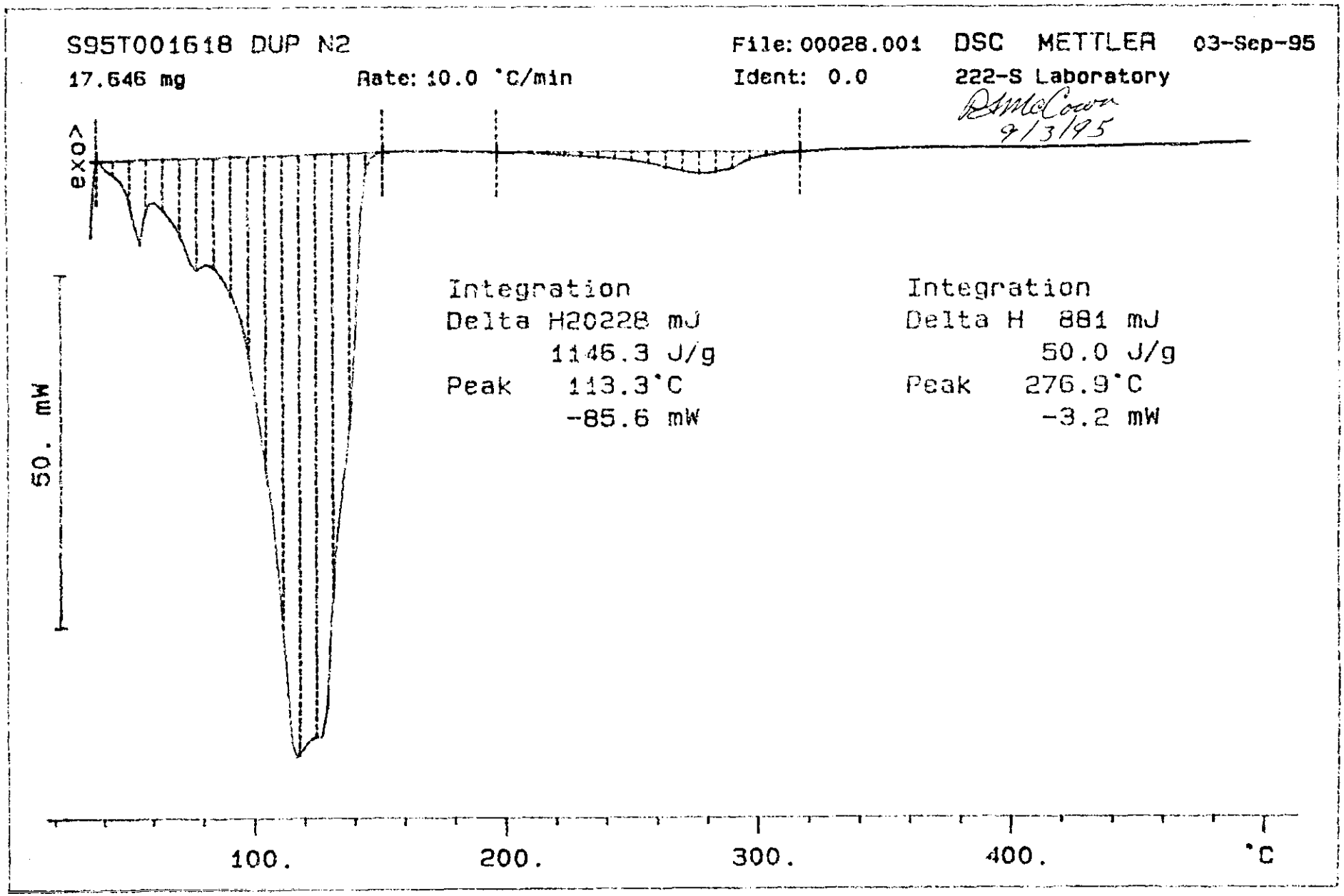

WHC-SD-WM-DP-144, REV 1

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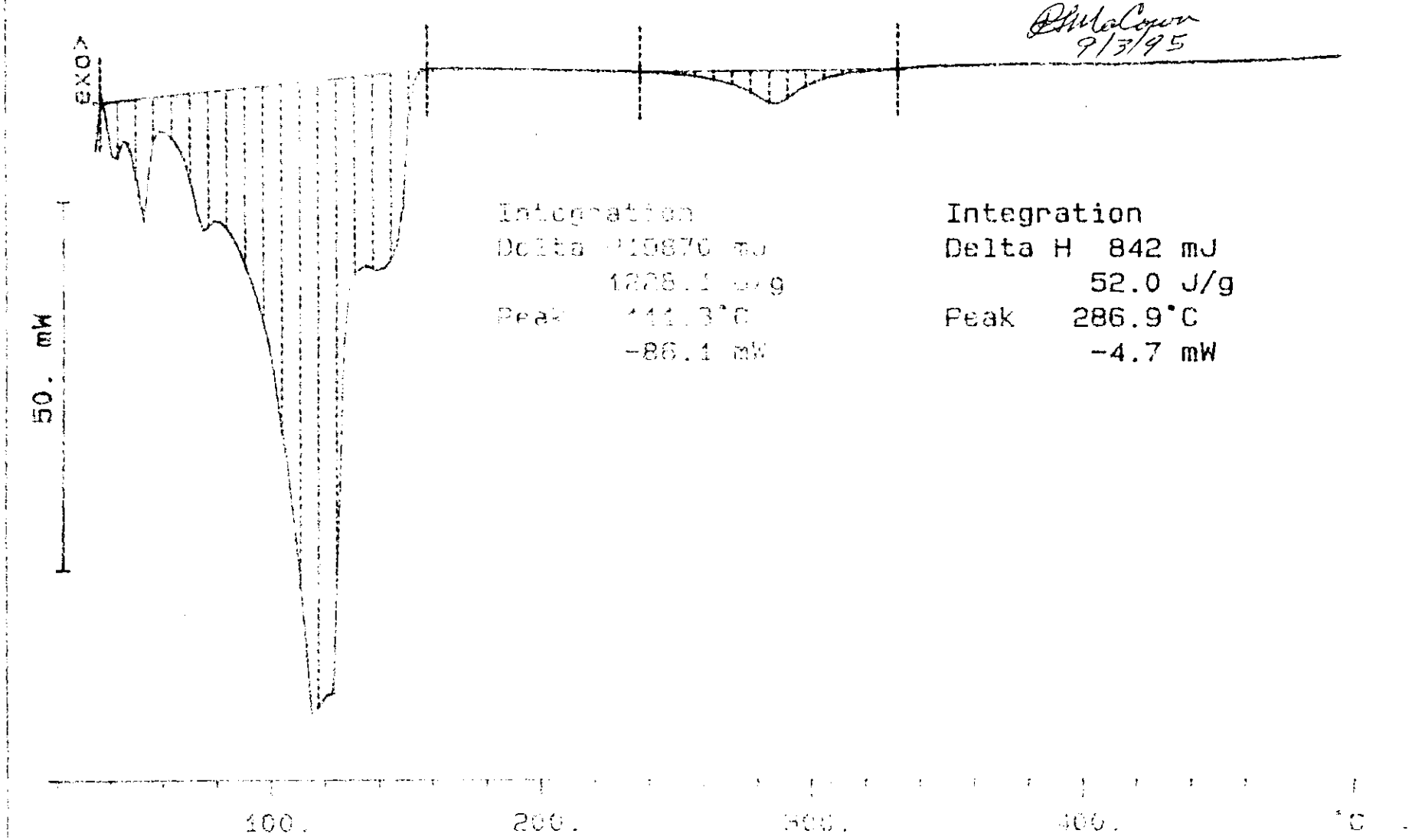
S95T001629 SAM N2 File: 00030.001 DSC METTLER 03-Sep-95

16.180 mg Rate: 10.0 °C/min Ident: 0.0 222-S Laboratory

9/5/95



WHC-SD-WM-DP-144, REV. 1

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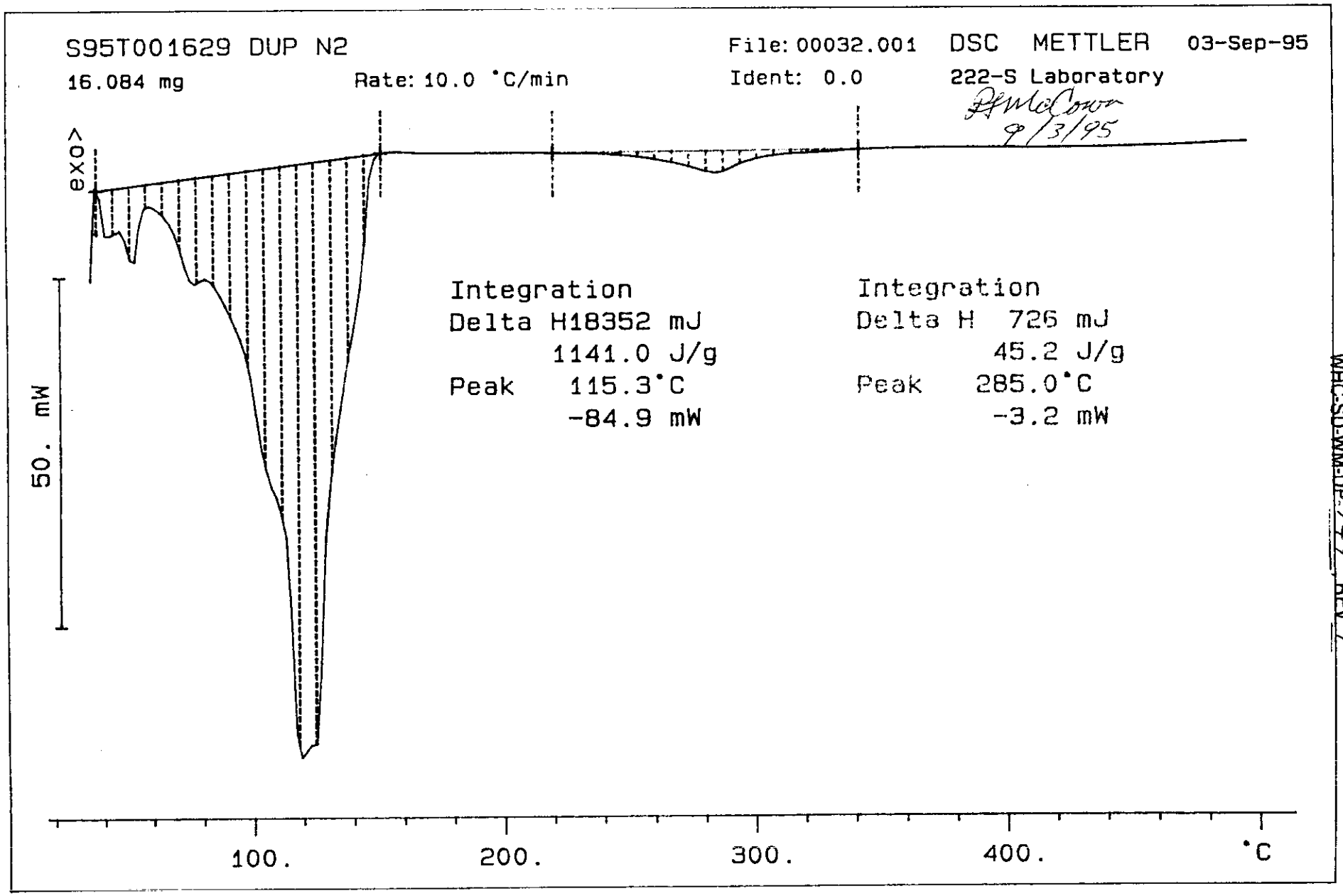

WHC-SD-WM-DP-144, REV 1

LABCORE Data Entry Template for Worklist# 2184

Analyst: R McCown **Instrument:** TGA0 1 **Book #** 65N8A

Method: LA-560-112 Rev/Mod B-0

Worklist Comment: Please run BY-110 TGAs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-01	SOLID	59.74	60.27	N/A	%
95000121	T-109	2	SAMPLE	S95T001618	0		TGA-01	SOLID	N/A	39.37		%
95000121	T-109	3	DUP	S95T001618	0		TGA-01	SOLID	39.37	45.76	N/A	%
95000121	T-109	4	SAMPLE	S95T001629	0		TGA-01	SOLID	N/A	48.87		%
95000121	T-109	5	DUP	S95T001629	0		TGA-01	SOLID	48.87	49.30	N/A	%

Final page for worklist # 2184

R McCown 9/3/95
Analyst Signature **Date**

[illegible] 9-5-95
Analyst Signature **Date**

Verified 9/5/95. J. M. [illegible]

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.

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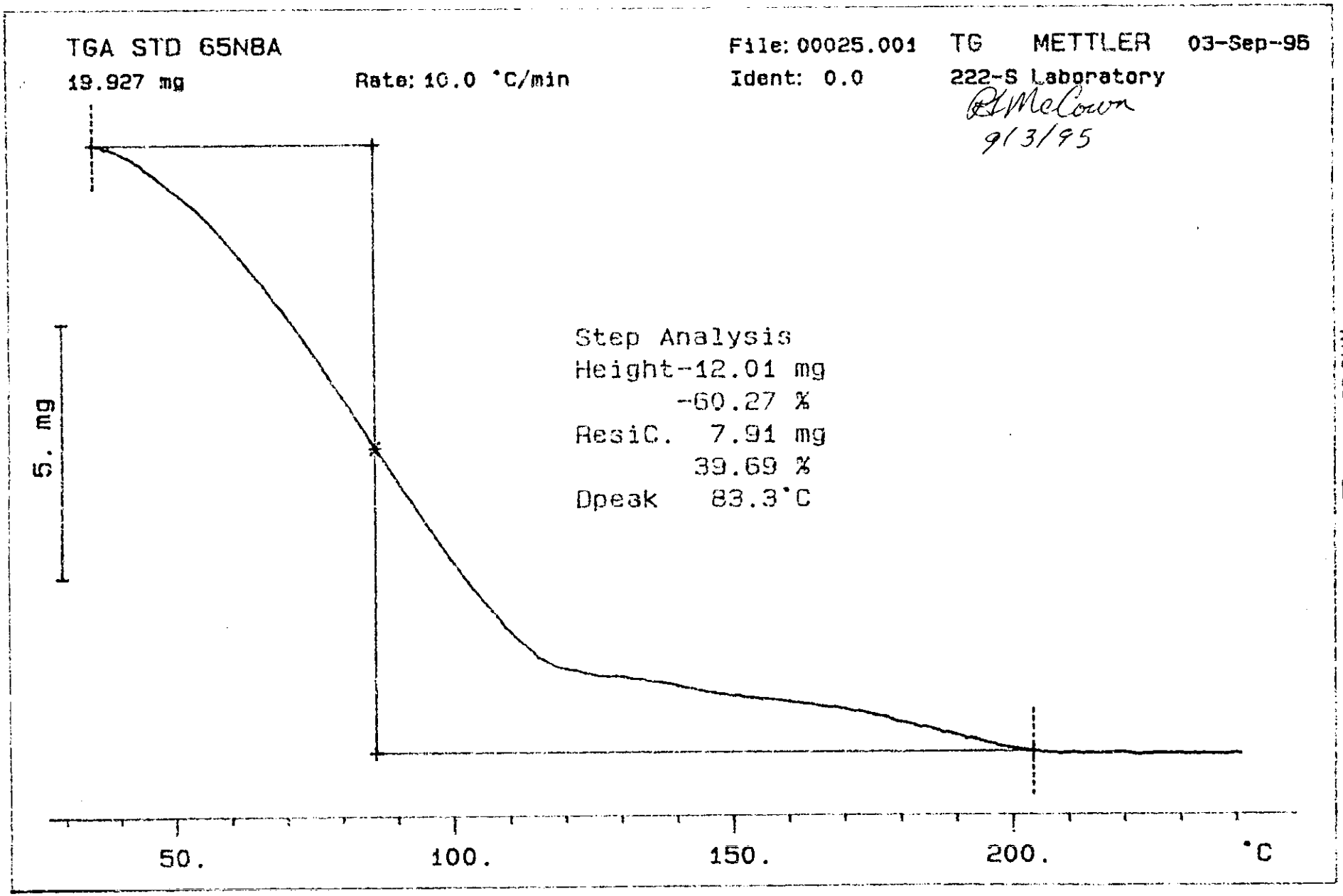

WHC-SD-WM-DP-144, REV. 1

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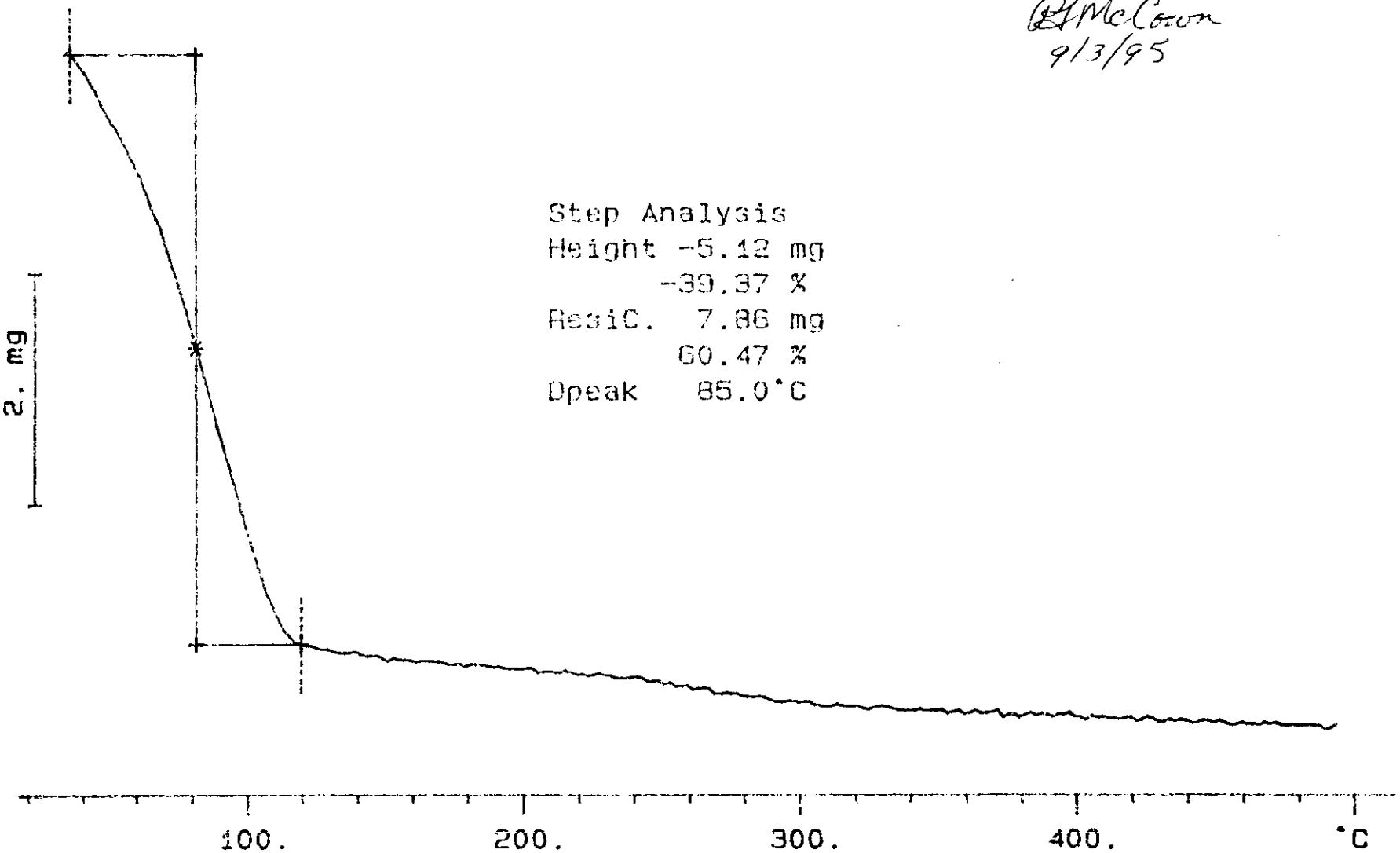
S95T001618 SAM N2 File: 00027.001 TG METTLER 04-Sep-95

12.998 mg Rate: 10.0 °C/min Ident: 0.0 222-S Laboratory

RJ McCown
9/3/95



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S95T001618 DUP N2

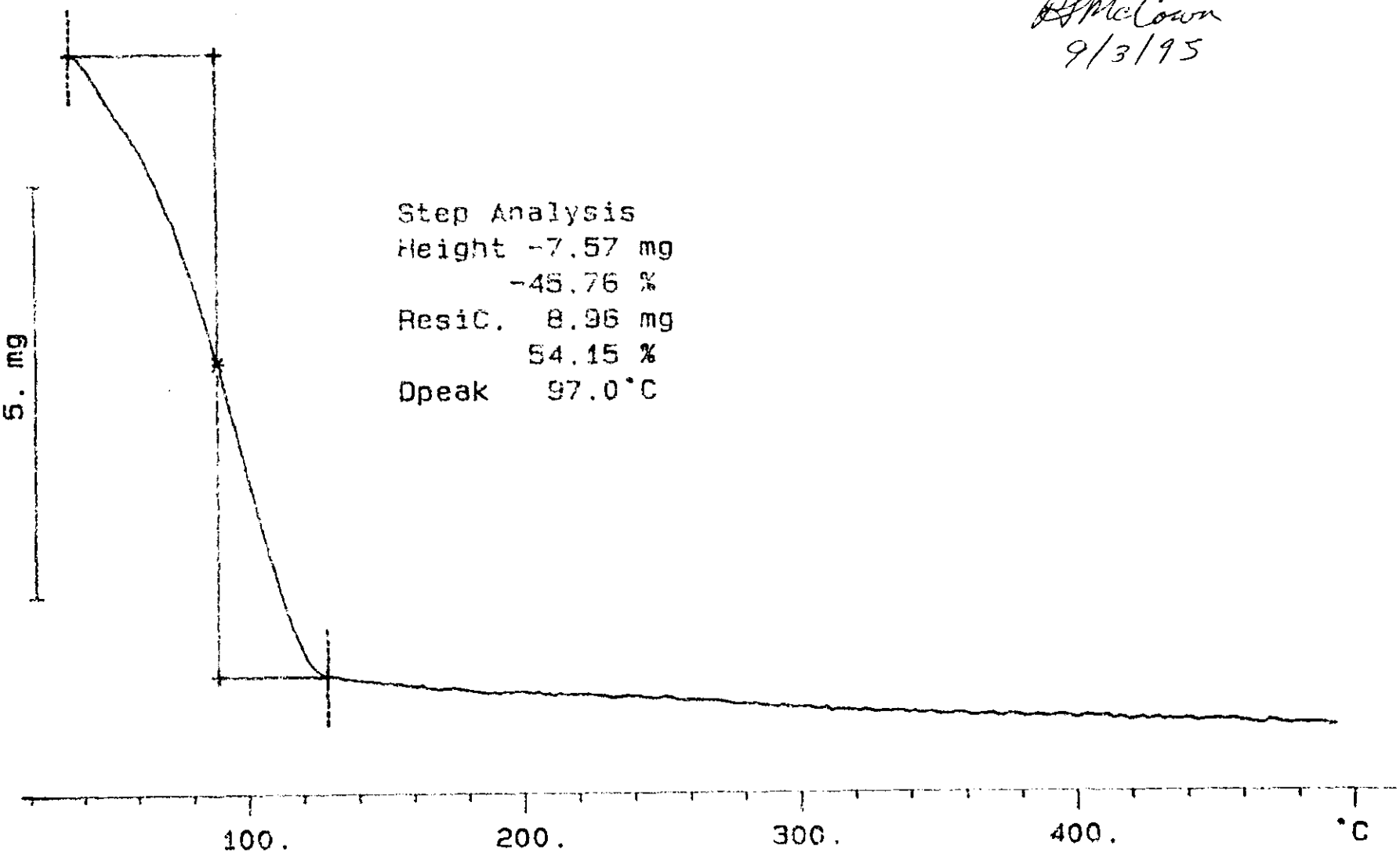
16.549 mg

Rate: 10.0 °C/min

File: 00029.001 TG METTLER 04-Sep-95

Ident: 0.0 222-S Laboratory

D.J. McCown
9/3/95



WHC-SD-WM-DP-144, REV. 1

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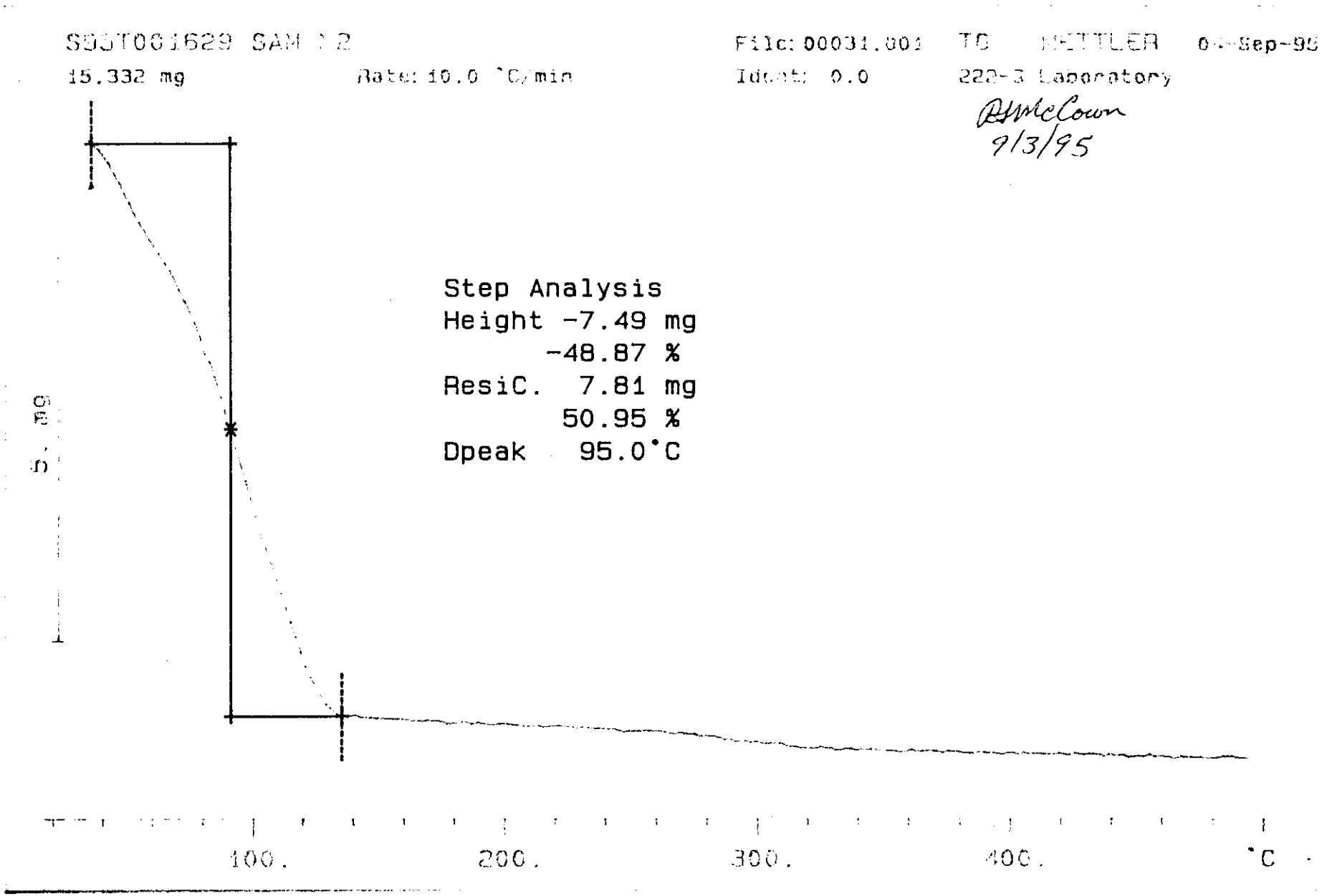

WHC-SD-WM-DP-144, REV. 1

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S95T001629 DUP N2

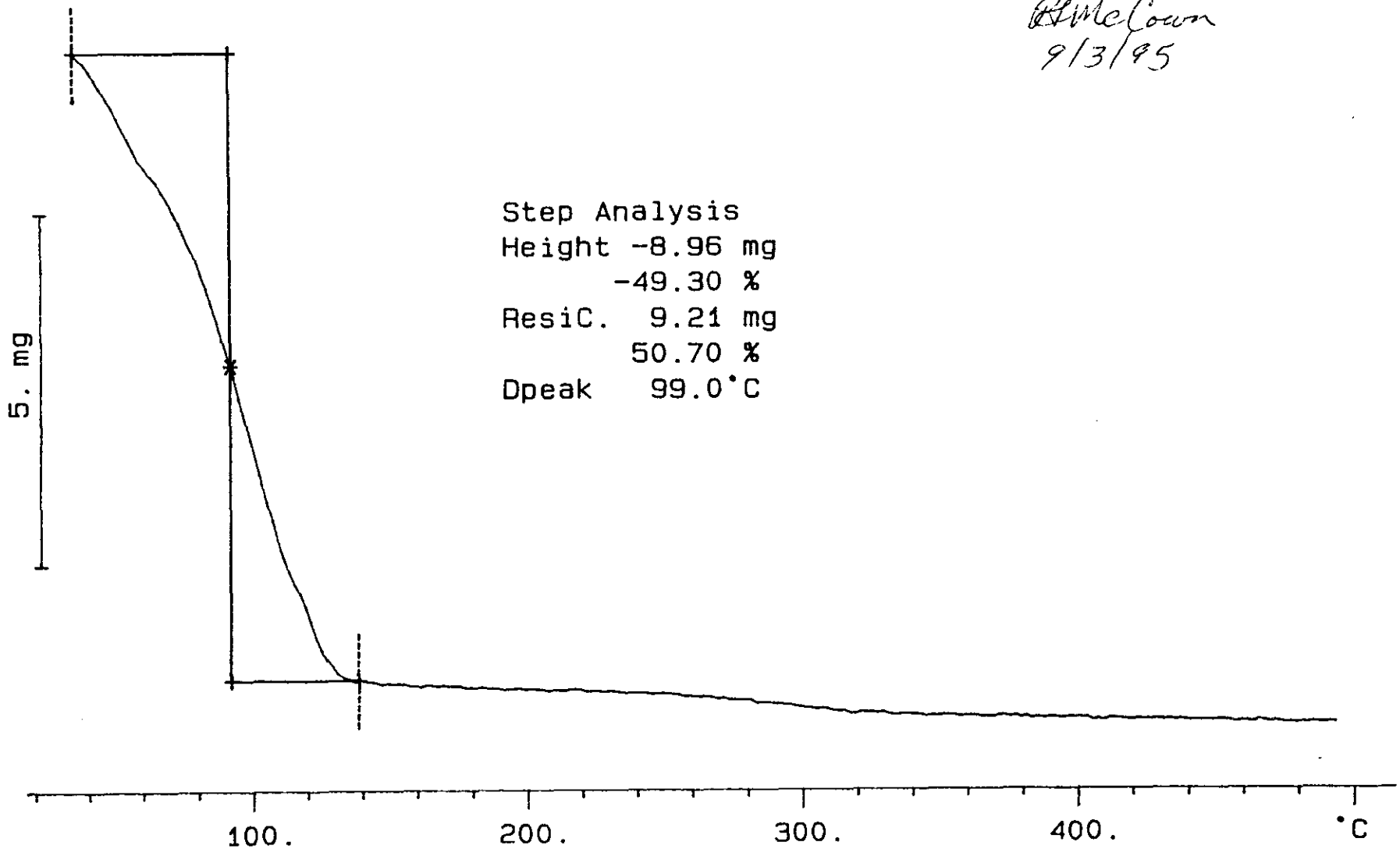
18.165 mg

Rate: 10.0 °C/min

File: 00033.001 TG METTLER 04-Sep-95

Ident: 0.0 222-S Laboratory

RHMcCown
9/3/95



WHC-SD-WM-DP-144, REV. 1

LABCORE Data Entry Template for Worklist# 2195

Analyst: JDS **Instrument:** TGA01 **Book #** 65N8A

Method: LA-560-112 Rev/Mod B-0 9-19-95 BDV

WHC-SD-WM-DP-144, REV. 0

Worklist Comment: Please run T-109 TGAs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD				TGA-01	SOLID	59.74	60.39	N/A	%
95000121	T-109	2 SAMPLE	S95T001597	0		TGA-01	SOLID	N/A	15.57		%
95000121	T-109	3 DUP	S95T001597	0		TGA-01	SOLID	15.57	16.87	N/A	%
95000121	T-109	4 SAMPLE	S95T001600	0		TGA-01	SOLID	N/A	12.70		%
95000121	T-109	5 DUP	S95T001600	0		TGA-01	SOLID	12.70	12.21	N/A	%

Final page for worklist # 2195

BD Valenzuela for JDS
Analyst Signature Date 9-19-95

Analyst Signature Date 9-20-95

Verified by Blandina Valenzuela 9-21-95

Data Entry Comments: S95T001597 produced second and third weight loss steps. The second weight loss step of 25.41% occurred at approximately 120°C and the third step of 2.79% occurred at 250°C. The sharp dip in the curve is due to a door being slammed shut, and will not affect the validity of the results.

S95T001600 produced a second and third weight loss steps. The second weight loss step of 37.41% occurred at approximately 140°C, and the third step of 2.40% occurred at approximately 290°C.

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.

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

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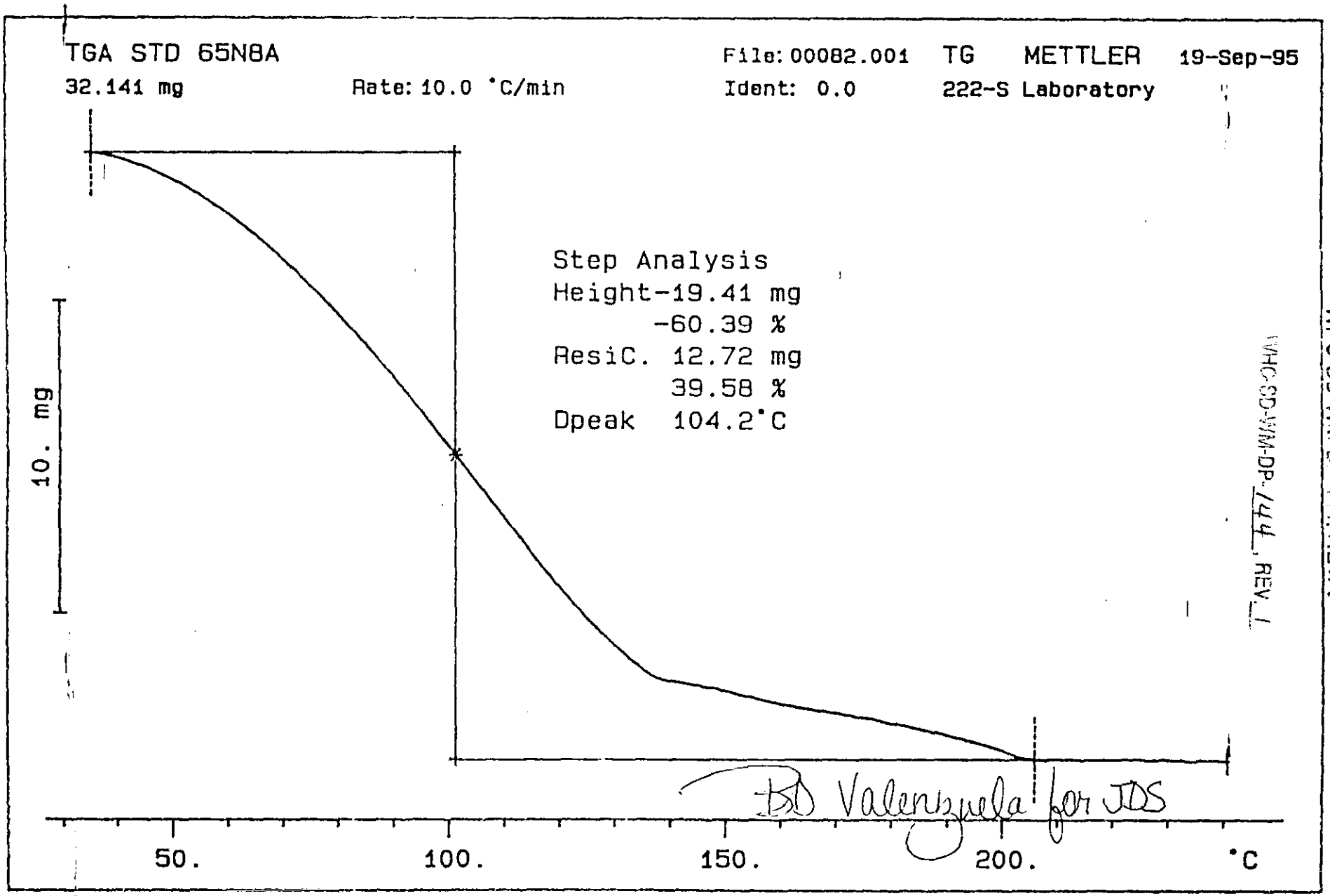

BD Valenzuela for JDS

WHC-SD-WM-DP-144, REV. 0

WHC-SD-WM-DP-144, REV. 1

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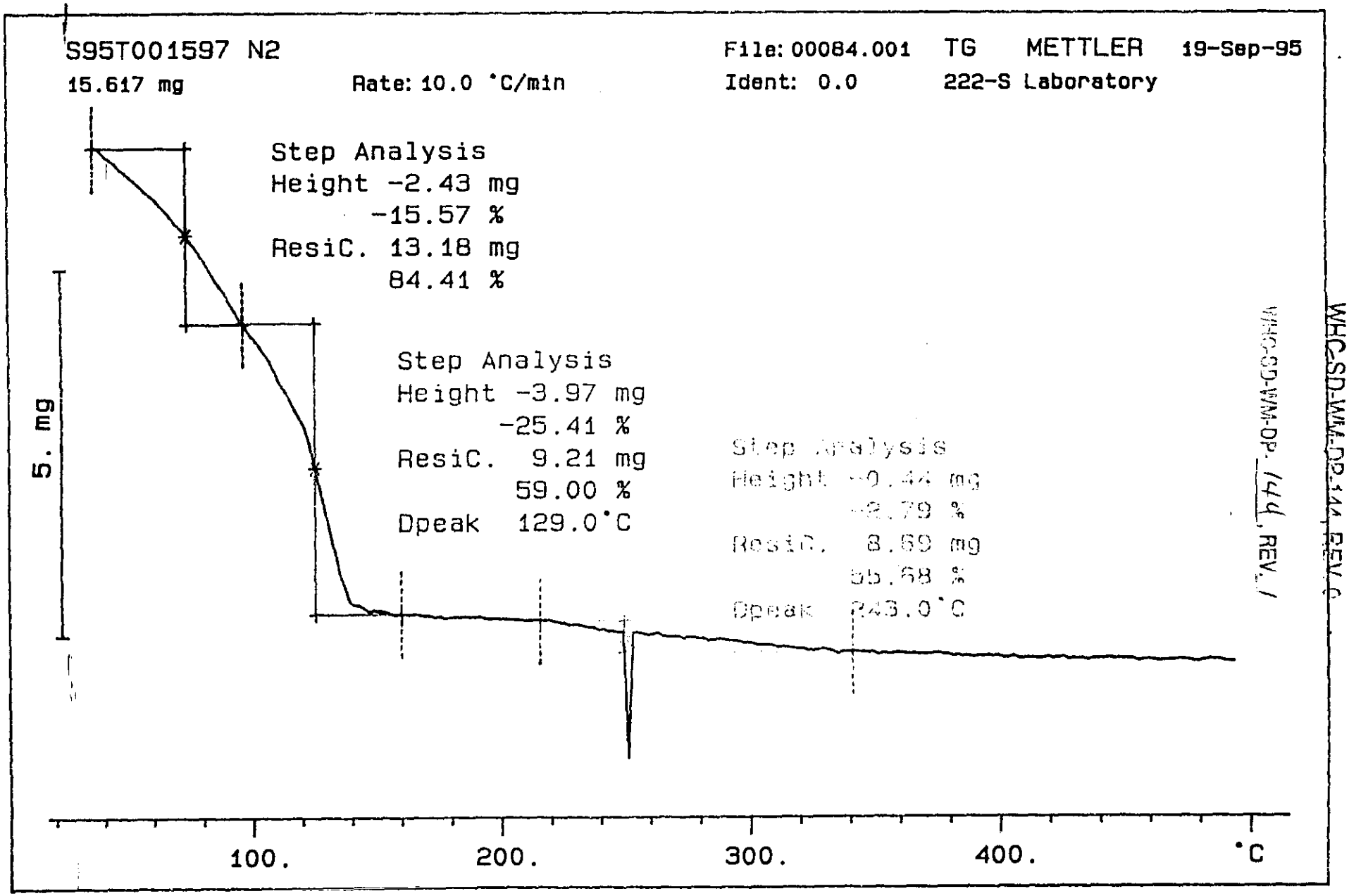

WHC-SD-WM-DP-144, REV. 0

WHC-SD-WM-DP-144, REV. 1

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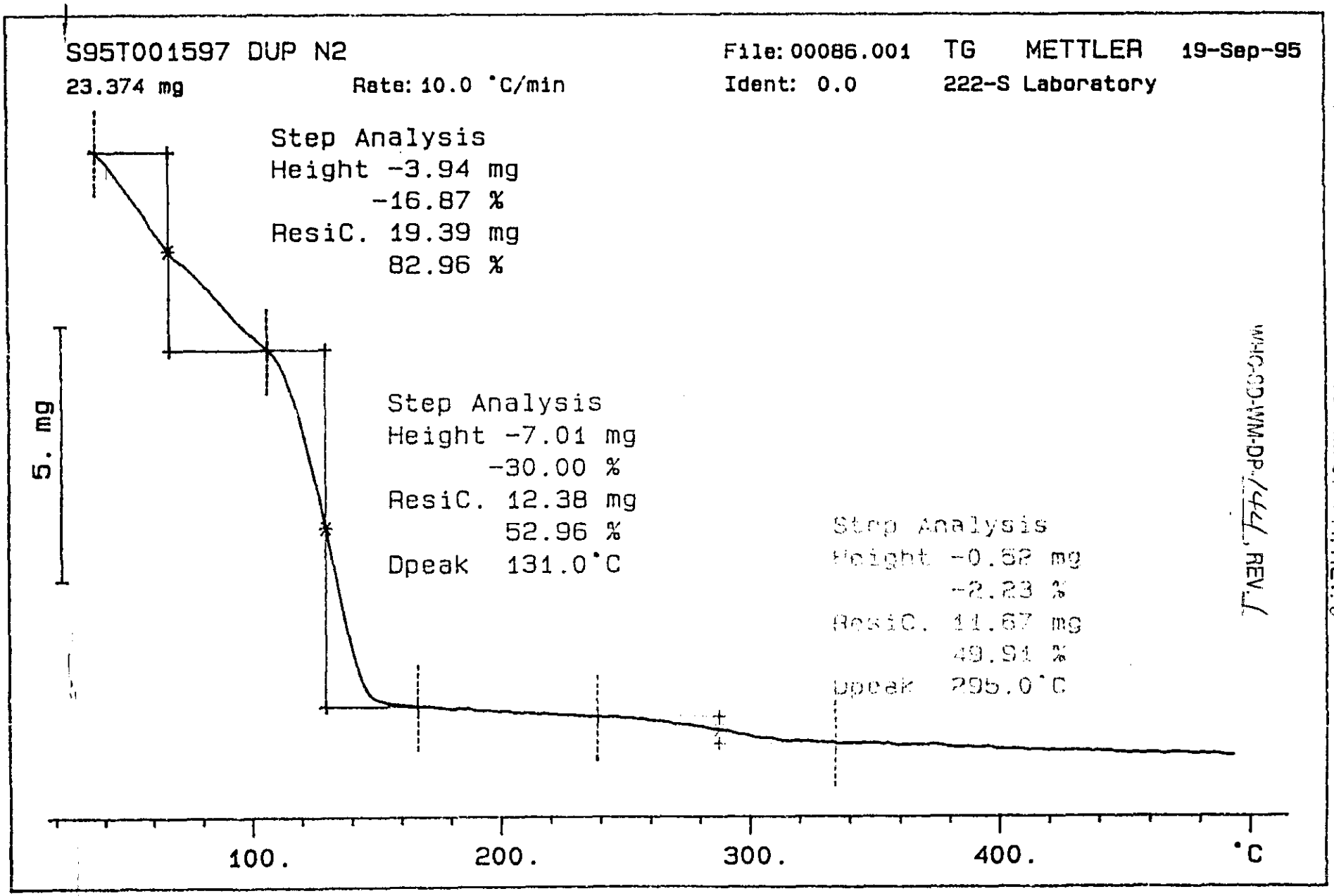

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WHC-SD-WM-DP-144, REV. 0

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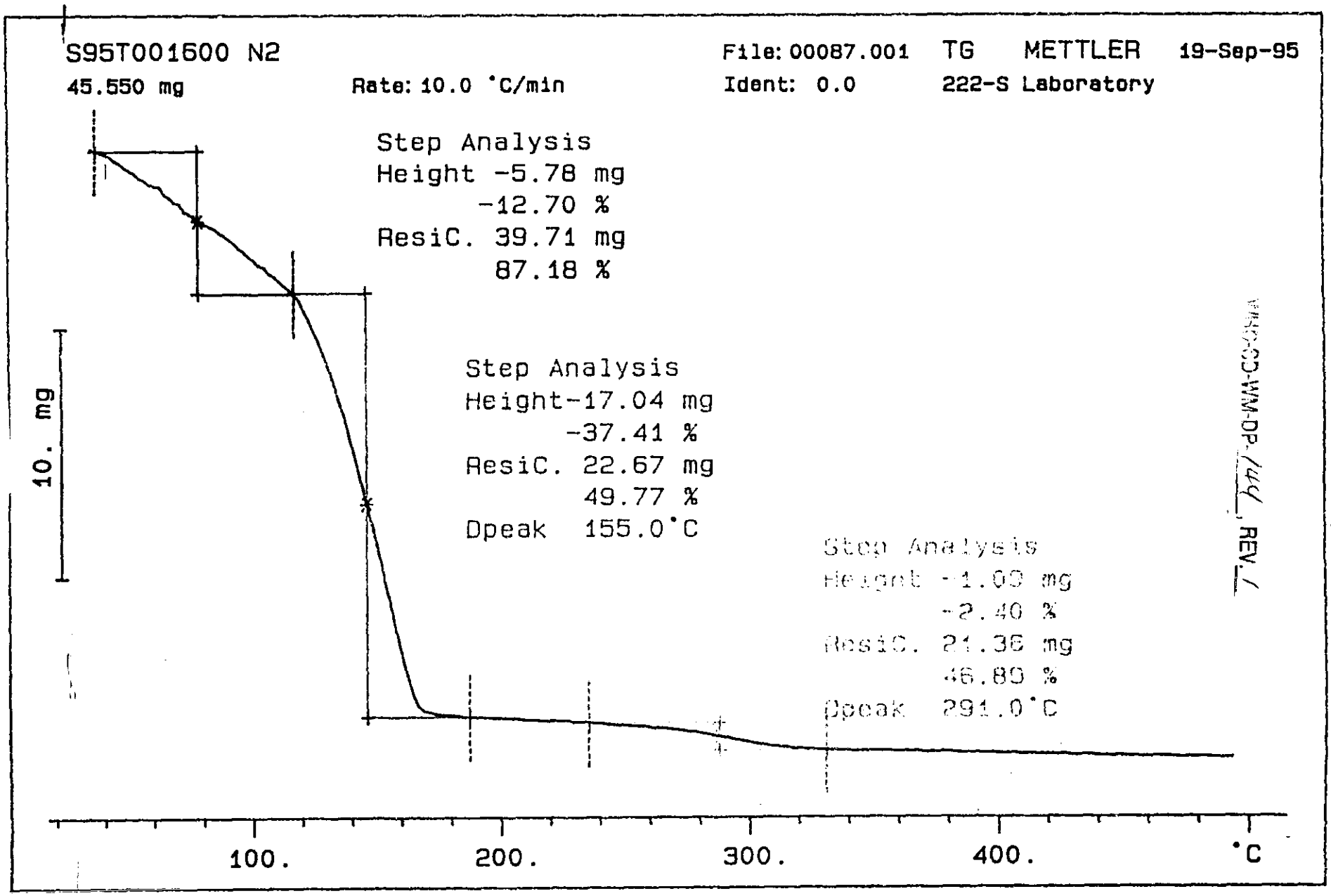

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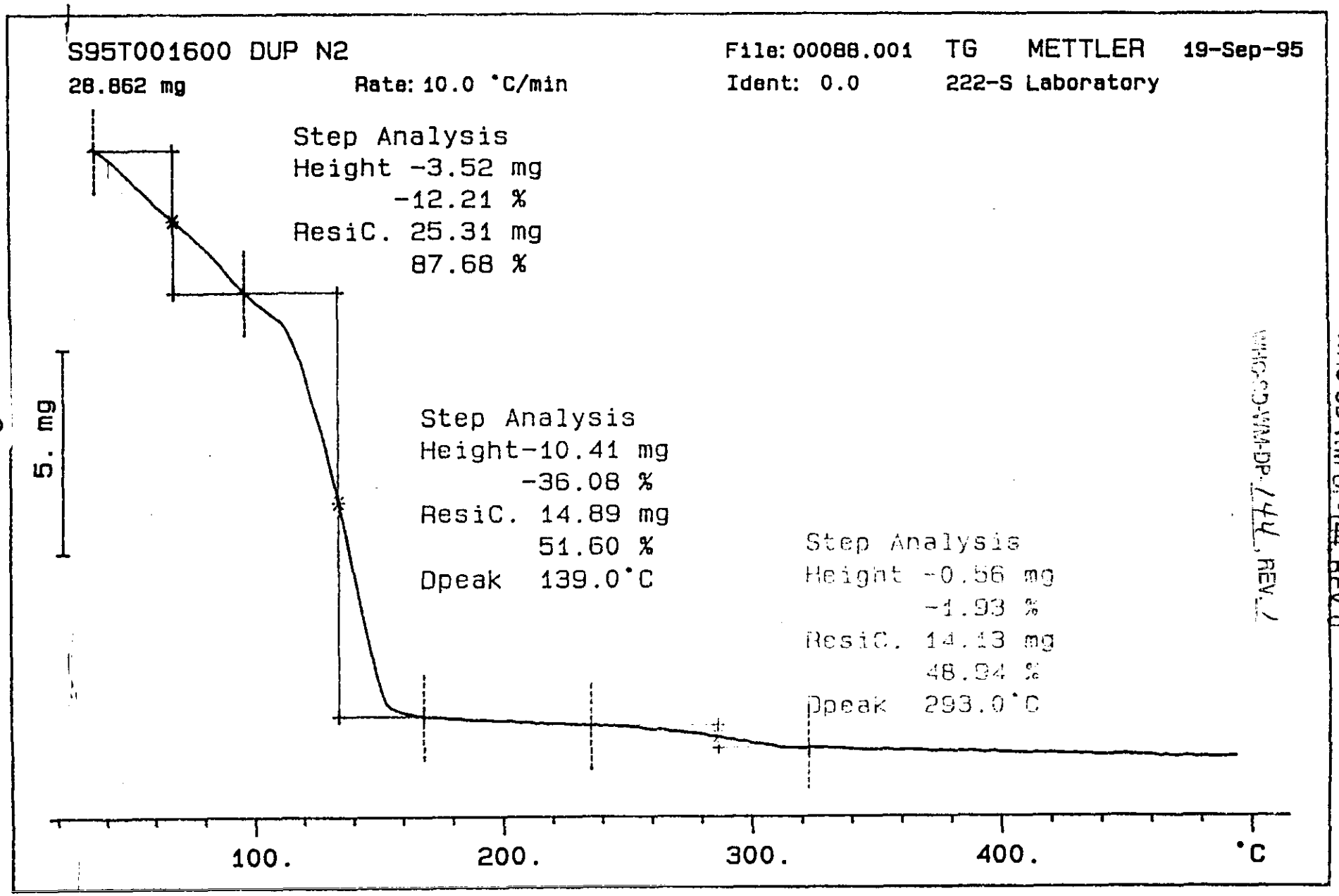

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WHC-SD-WM-DP-144, REV. 1

173

LABCORE Data Entry Template for Worklist# 2197

Analyst: PJM **Instrument:** TGA0 3 **Book #** 65N8A

Method: LA-514-114 Rev/Mod C-0

Worklist Comment: Please run BY-110 TGAs under N2. bdv

GROUP	PROJECT	S TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1 STD				TGA-03	SOLID	59.74	60.06	N/A	%
95000121	T-109	2 SAMPLE	S95T001616	0		TGA-03	SOLID	N/A	44.35		%
95000121	T-109	3 DUP	S95T001616	0		TGA-03	SOLID	44.35	46.50	N/A	%
95000121	T-109	4 SAMPLE	S95T001626	0		TGA-03	SOLID	N/A	49.11		%
95000121	T-109	5 DUP	S95T001626	0		TGA-03	SOLID	49.11	51.95	N/A	%

Final page for worklist # 2197

See Attached for Signature
Analyst Signature **Date** 9/6/95

Analyst Signature **Date** 9-7-95

Verified 9/7/95. J. M. Fuge

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 Data Entry Template for Worklist# 2197

Analyst: RMcCown **Instrument:** TGA0 _____ **Book #** 65418A

Method: LA-~~560-112 Rev~~/Mod C-0
RMm 9/3/95
514-114

Worklist Comment: Please run BY-110 TGAs under N2. bdv

GROUP	PROJECT	S	TYPE	SAMPLE#	R	A	TEST	MATRIX	ACTUAL	FOUND	DL	UNIT
		1	STD				TGA-01	SOLID			N/A	%
95000121	T-109	2	SAMPLE	S95T001616	0		TGA-01	SOLID	N/A			%
95000121	T-109	3	DUP	S95T001616	0		TGA-01	SOLID			N/A	%
95000121	T-109	4	SAMPLE	S95T001626	0		TGA-01	SOLID	N/A			%
95000121	T-109	5	DUP	S95T001626	0		TGA-01	SOLID			N/A	%

Final page for worklist # 2197

RMcCown 9/3/95
Analyst Signature Date

Analyst Signature Date

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.

Curve 1: TGA
File info: TER090301 Sun Sep 3 15:29:46 1995
Sample Weight: 26.081 mg
65N8-A Terliq

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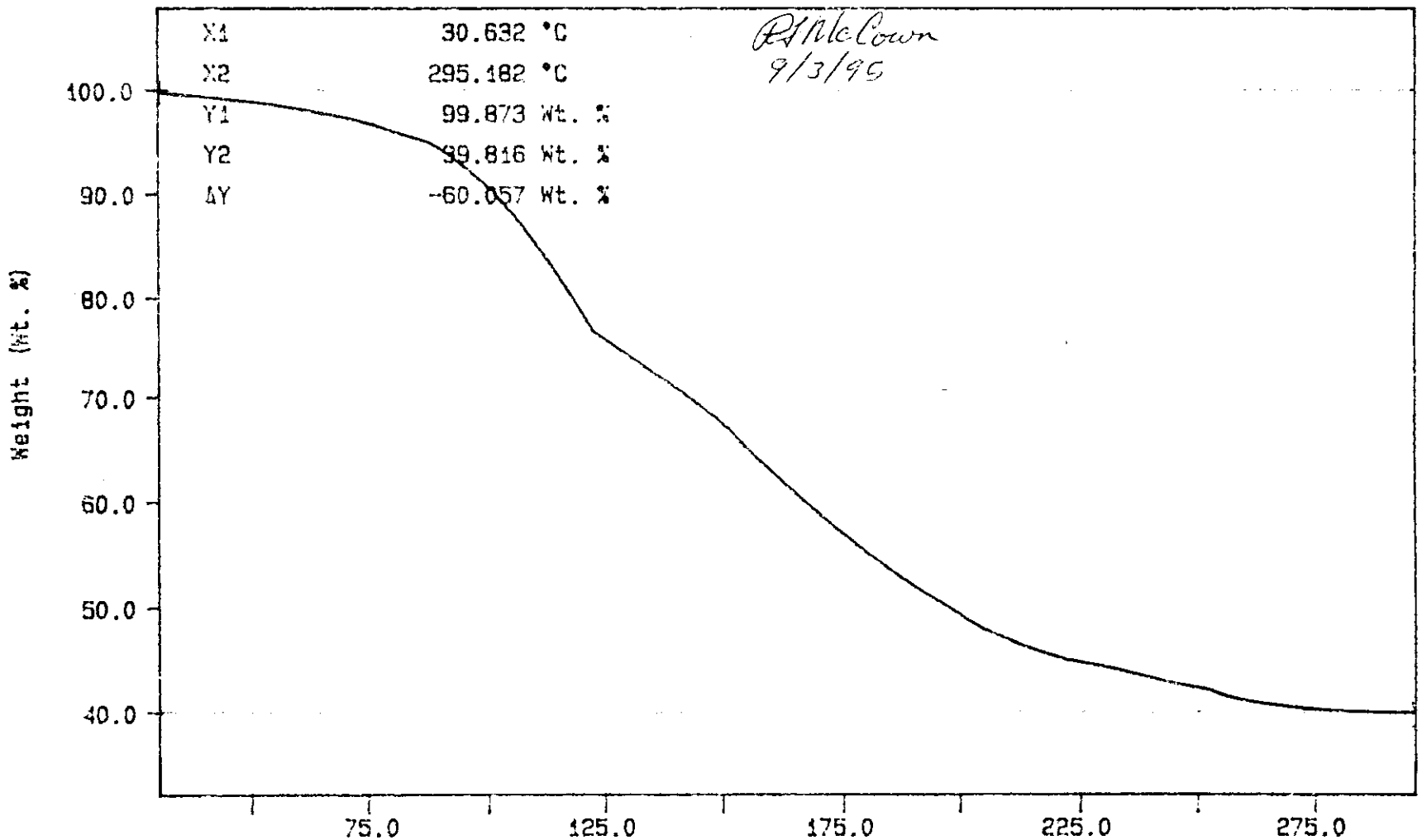

N2 10C/MIN
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 300.0 C

PJ MCCOWN
PERKIN-ELMER
7 Series Thermal Analysis System
Sun Sep 3 17:00:45 1995

WHC-SD-WM-DP-144, REV. 1

Curve 1: TGA
File info: SAM090301 Sun Sep 3 18:40:48 1995
Sample Weight: 8.665 mg
S95T001616

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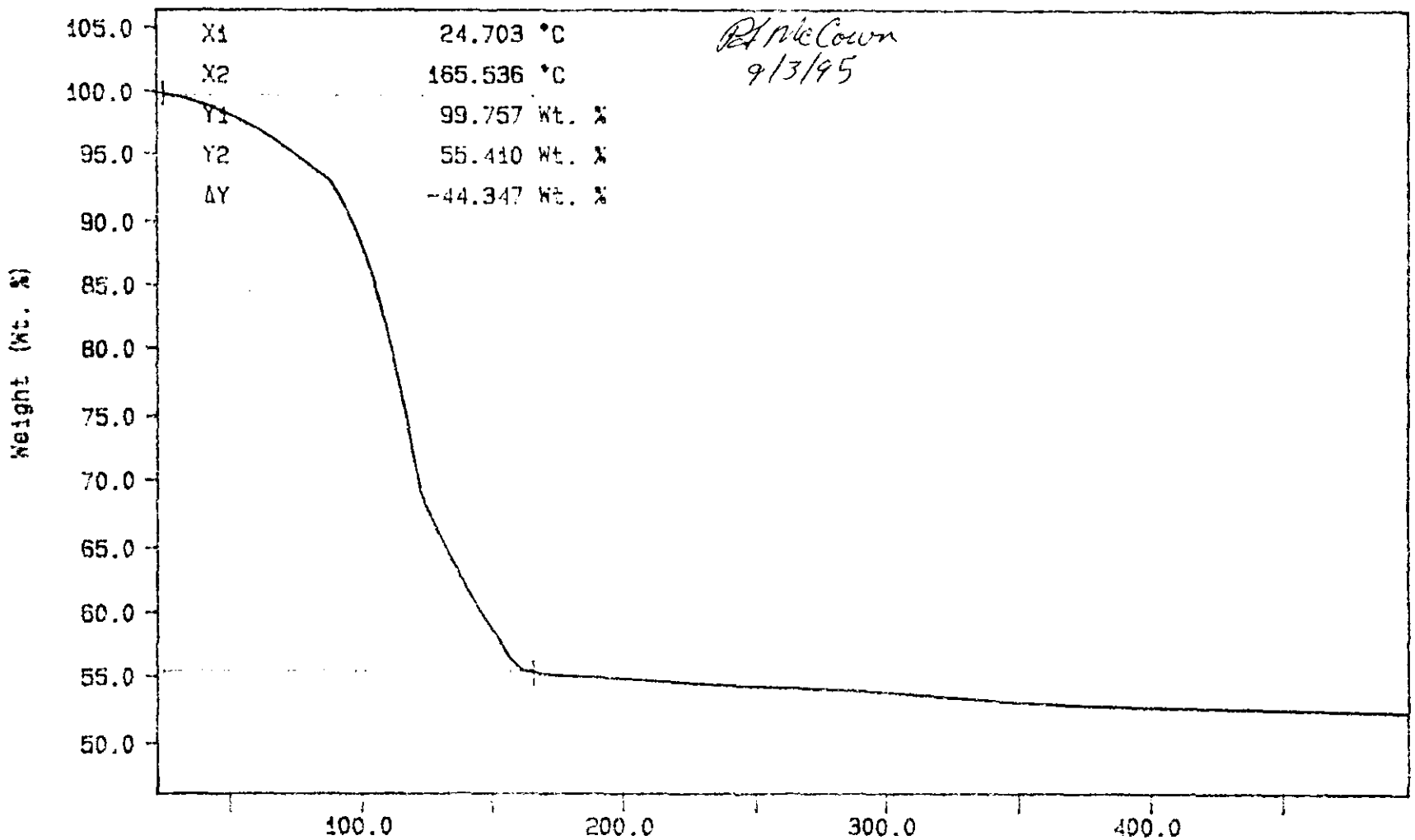

N2 10C/MIN
TEMP1: 38.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 800.0 C

PJ MCCOWN
PERKIN-ELMER
7 Series Thermal Analysis System
Sun Sep 3 18:41:56 1995

WHC-SD-WM-DP-144, REV. 1

Curve 1: TGA
File info: SAM090302 Sun Sep 3 19:52:39 1995
Sample Weight: 9.192 mg
S95T001616 DUP

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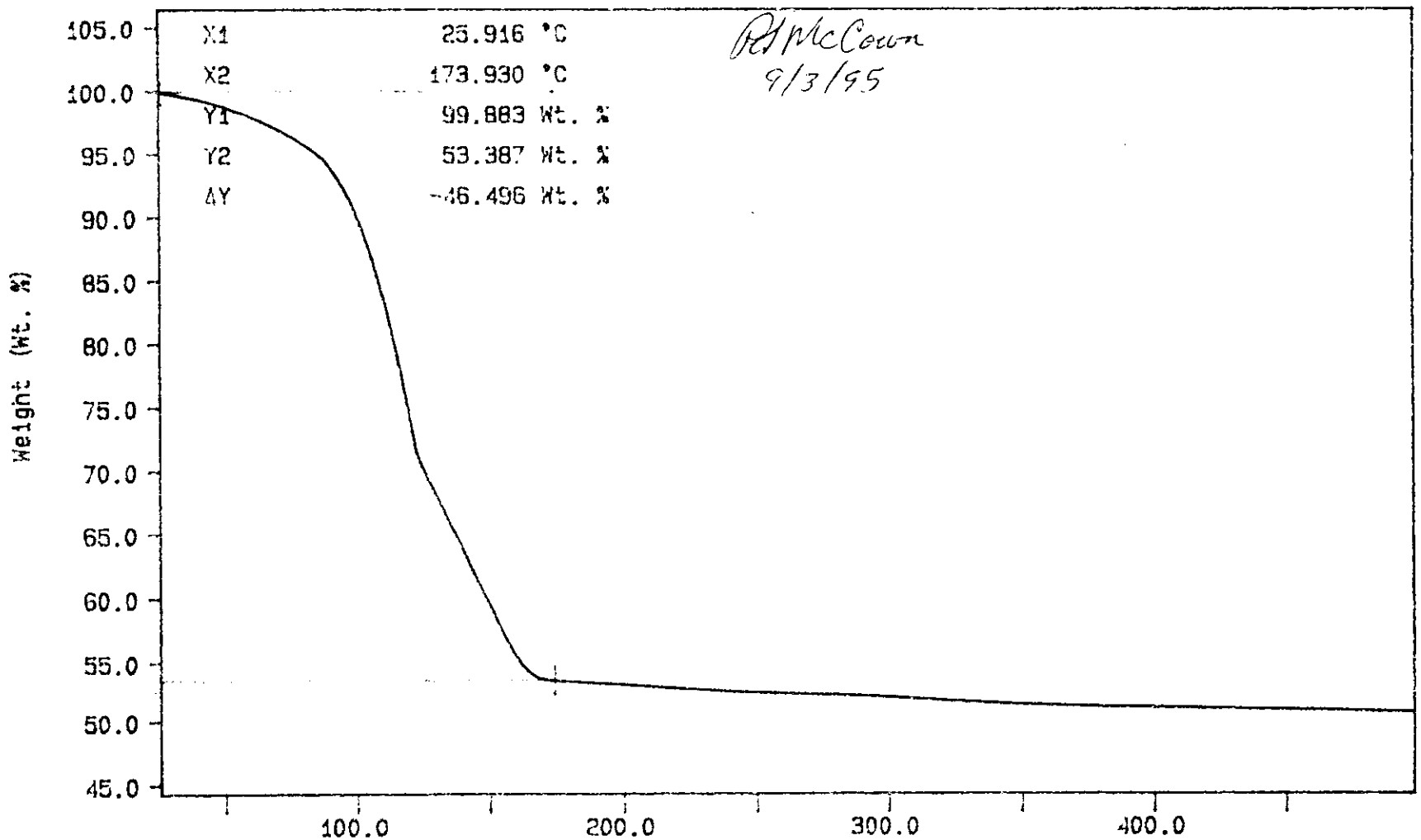

RJ McCown
9/3/95

N2 10C/MIN
TEMP1: 30.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 500.0 C

PJ MCCOWN
PERKIN-ELMER
7 Series Thermal Analysis System
Sun Sep 3 20:05:53 1995

WHC-SD-WM-DP-144, REV. 1

Curve 1: TGA
File info: SAM090303 Sun Sep 3 21:25:31 1995
Sample Weight: 12.544 mg
S95T001626

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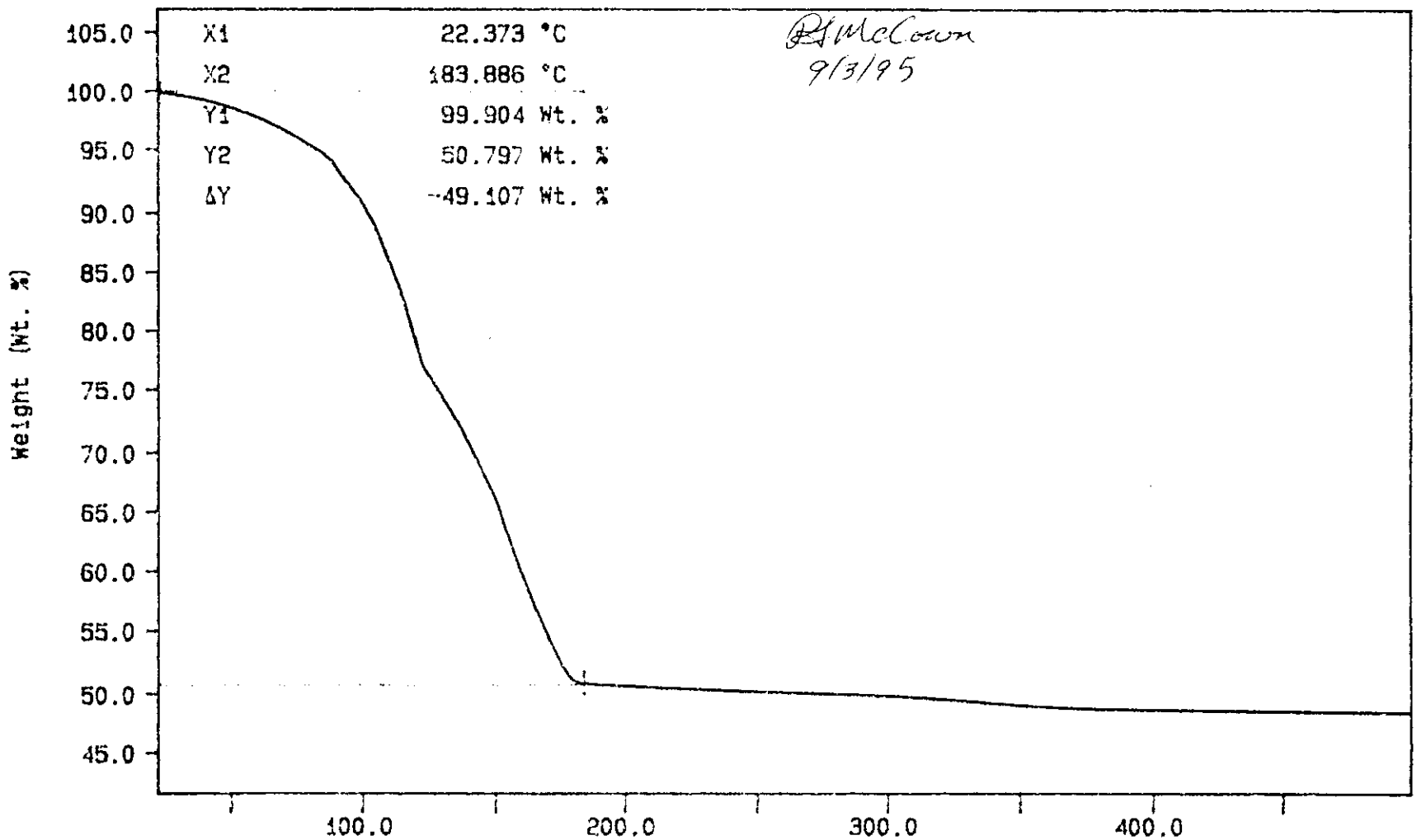

N2 10C/MIN
TEMP1: 35.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 800.0 C

PJ MCCOWN
PERKIN-ELMER
7 Series Thermal Analysis System
Sun Sep 3 21:26:31 1995

WHC-SD-WM-DP-144, REV. 1

Curve 1: TGA
File info: SAM090304 Sun Sep 3 22:37:05 1995
Sample Weight: 13.782 mg
S95T001626 DUPLICATE

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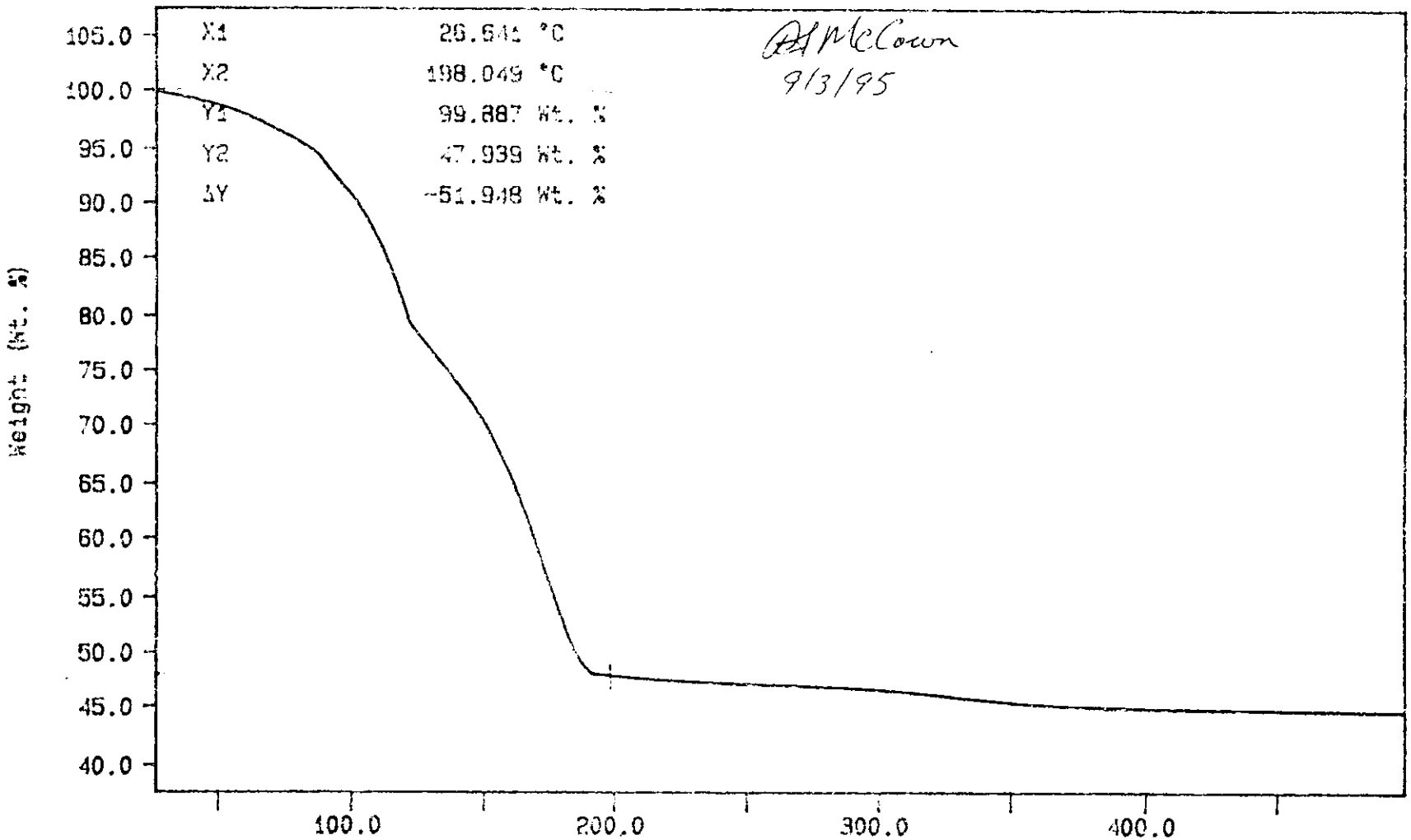

PJ McCown
9/3/95

N2 10C/MIN
TEMP1: 30.0 C TIME1: 0.0 min RATE1: 10.0 C/min
TEMP2: 600.0 C

PJ MCCOWN
PERKIN-ELMER
7 Series Thermal Analysis System
Sun Sep 3 22:40:59 1995

WHC-SD-WM-DP-144, REV. 1

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		Date: 12/04/95
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		ECN NO.: ECN-627027

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