

This document was prepared in conjunction with work accomplished under Contract No. DE-AC09-96SR18500 with the U. S. Department of Energy.

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Revision History:

Rev. 0 Issued on August 1, 2005

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I. Summary

The test was performed to determine the response of the HBL Phase III Glovebox during C&M Bottom Loading Furnace operations. In addition the data maybe used to benchmark a heat transfer model of the HBL Phase III Glovebox and Furnace.

II. Test Setup

The test setup included a Glove Port Panel, with a stainless steel sheet attached to its face, a C&M Bottom Loading Furnace, and a DAS system that down loaded the thermocouple readings into a computer.

The Glove Port Panel consists of the following:

- A glove port assembly which consists of Central Research Enclosure Ring Assembly model # C-30438. The material is stainless steel. The i.d. of the assembly is approximately 9 inches. See item # 2 on the Test Setup Pictures.
- A ½" thick glass plate, which consists of two ¼" thick annealed plate glass sheets bonded by a 0.030" laminate layer of polyvinyl-butynal (PVB). The glass density is 2.5 G/CC (156 lb/ft³). The index of refraction is 1.5. The dimensions are 16" x 16" x ½". The outer edge of the glass plate was covered by a black "U" shaped Neoprene gasket. See item # 3 on the Test Setup Pictures.
- An Acrylic plastic shield is wedged between the inner glass plate and the outer lead glass plate. The dimensions are 19" x 19" x 4 1/16". The Acrylic has a normal service temperature of 200° F and a self ignition of 650° F. See item # 4 on the Test Setup Pictures.
- The lead glass plate consists of a 1 ¼" thick lead glass with a density 5.2 G/CC and a refractive index not to exceed 1.95. It also has a 1/8" thick plate glass laminated to the outside. The dimensions are 19" x 19" x 1.25". See item # 5 on the Test Setup Pictures.

The stainless steel sheet metal face that was added to the Glove Port Panel was used to simulate the connection point between the Glove Port Panel and the Glovebox frame.

A C&M Bottom Loading Furnace model # 1608BL was used in the test. It has a chamber heating range of 0° C to 1600° C. The inside chamber dimensions is an 8 inch cube with a 6.5" door opening. The insulating pack, which is mounted on top of the bottom pedestal, dimensions are 6.5" x 6.5" x 1.5"

The hypalon/neoprene glove was removed from the glove port due to fire hazards and replaced with a 1/8" thick sheet of neoprene. Then a 1/8" thick stainless steel sheet was placed on the back side of the neoprene. The neoprene sheet will be considered to be an equal neoprene glove replacement.

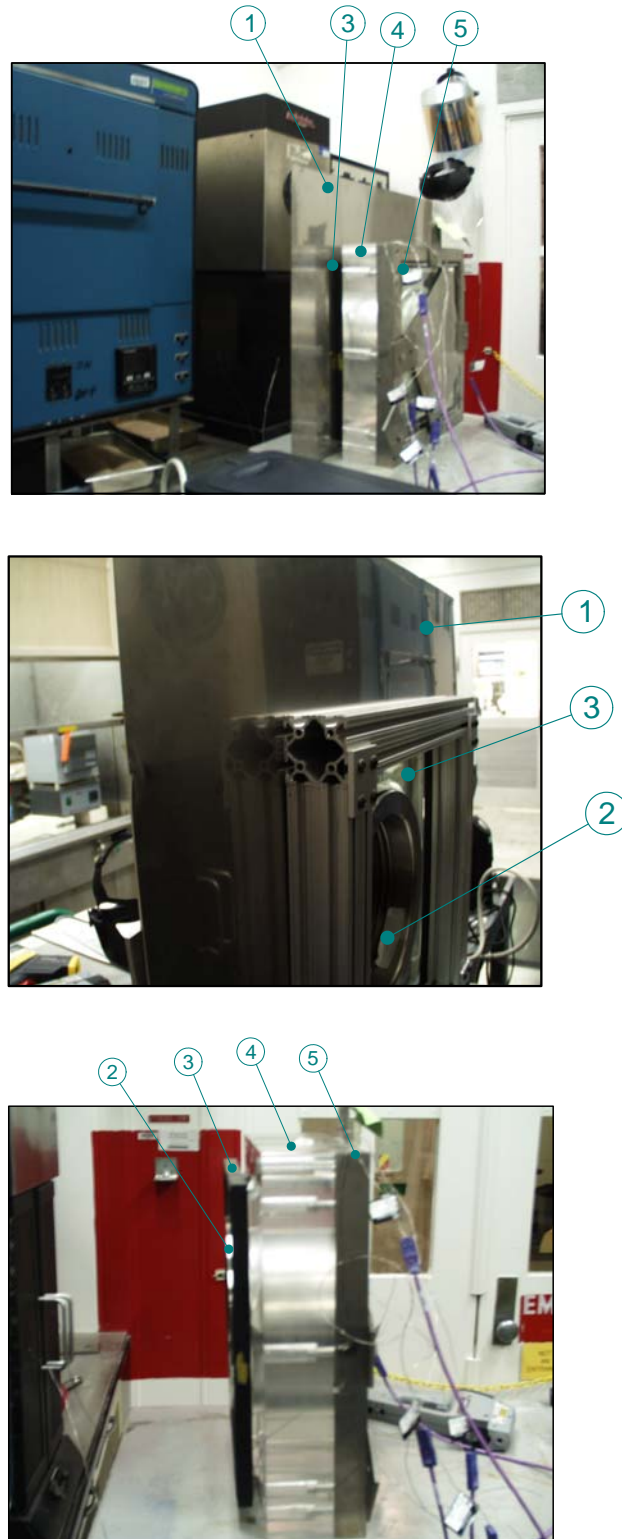


Figure 1: Test Setup Pictures

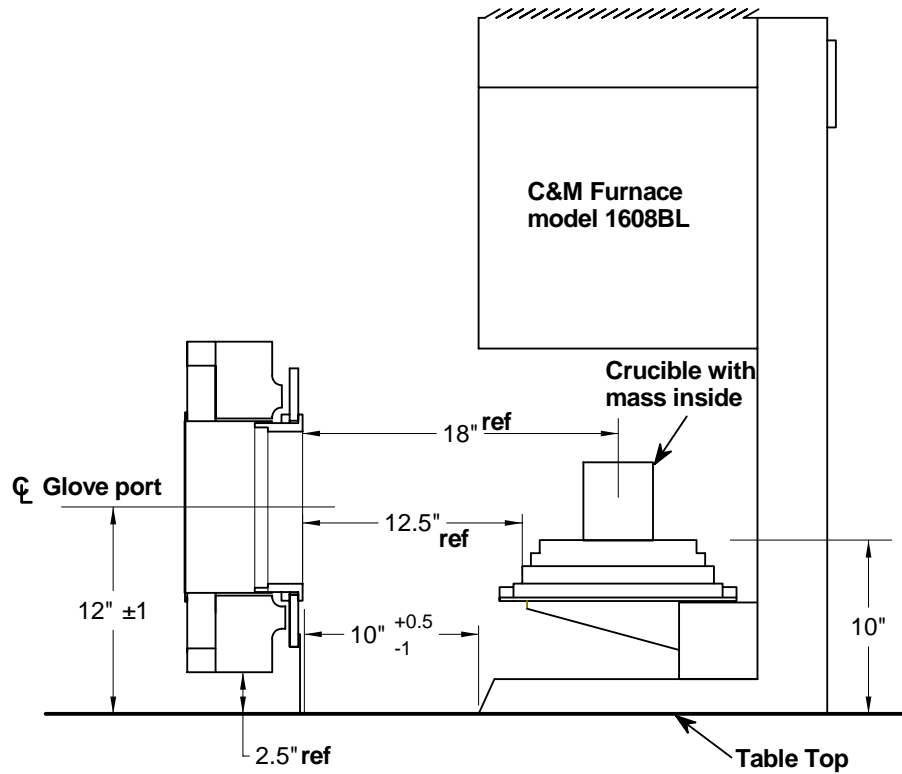


Figure 2: Test Setup Sketch

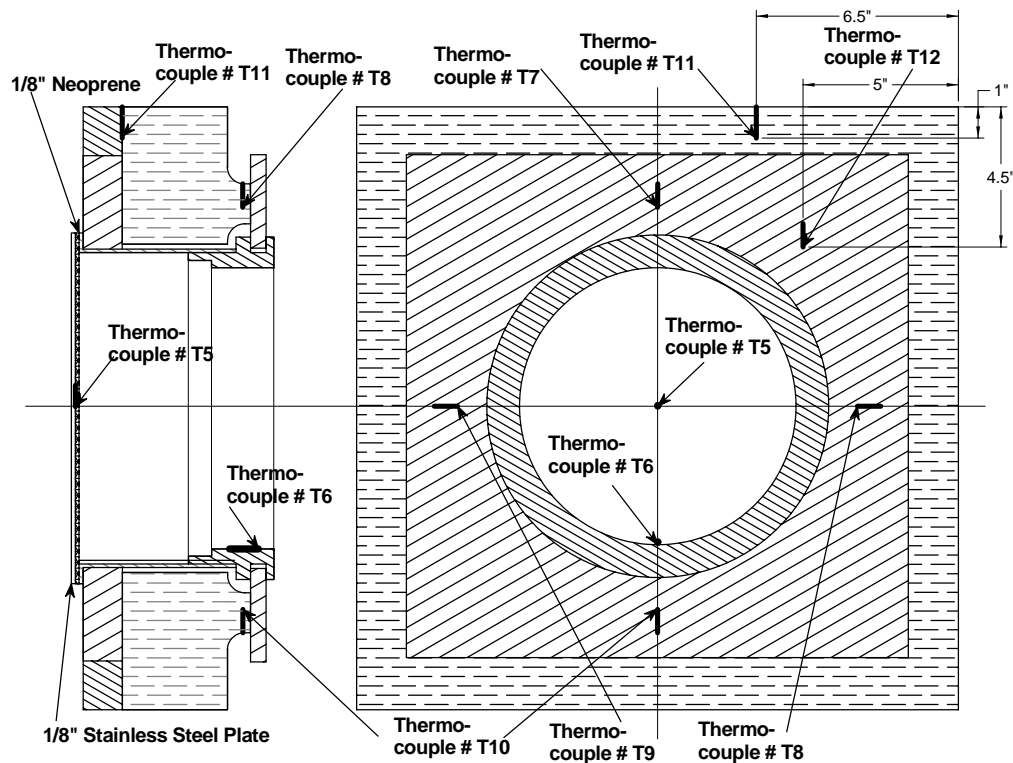


Figure 3: Thermocouple Location Sketch

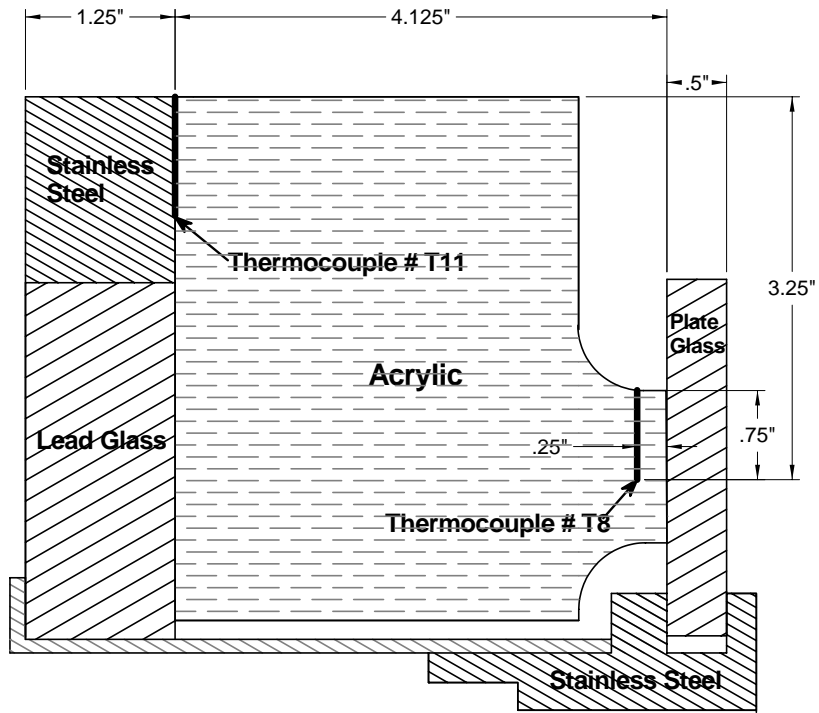


Figure 4: Detail Sketch of the Upper Thermocouple Locations

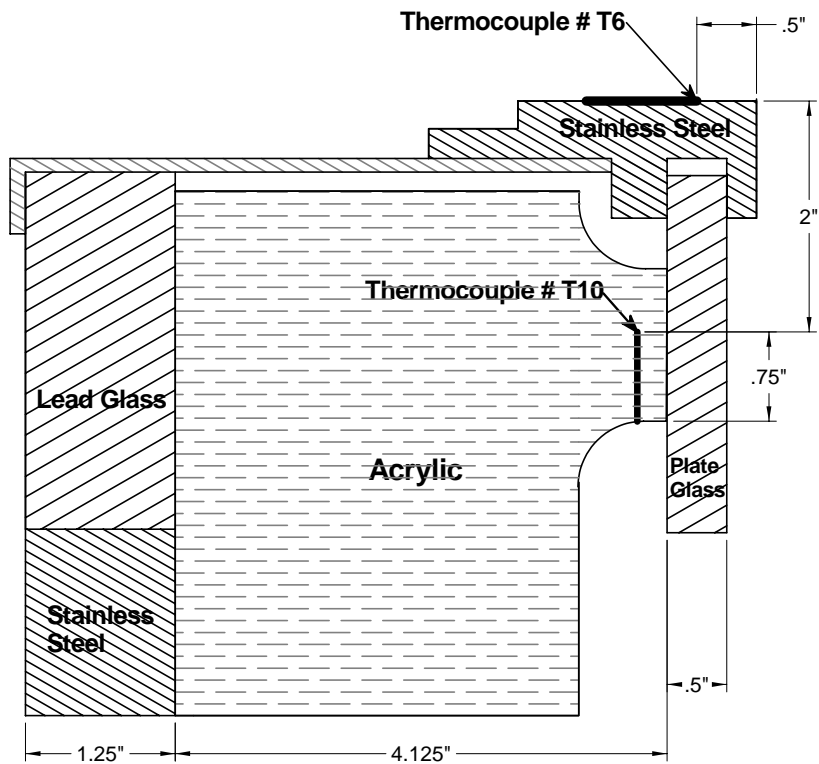


Figure 5: Detail Sketch of the Lower Thermocouple Locations

III. Thermocouple Location:

- Thermocouple T1 is near the center on the right side of the Right Safety Shield Door on the Furnace.
- Thermocouple T2 is near the center on the face of the Right Safety Shield on the Furnace.
- Thermocouple T3 is near the center on the face of the Left Safety Shield on the Furnace.
- Thermocouple T4 is near the center on the left side of the Left Safety Shield on the Furnace.
- Thermocouple T5 is near the centerline of the Stainless Steel Glove Port Assembly mounted onto a stainless steel plate that has been installed on the back side of the assembly since the glove had to be removed due to the risk of a fire during testing.
- Thermocouple T6 is mounted to the inside surface of the cylindrical portion of the Stainless Steel Glove Port Assembly. Facing the assembly (assuming that 0° degrees is vertical and a clockwise rotation) the thermocouple is at 180°. It is also 1/2" into the cylinder from the face of the assembly.
- Thermocouple T7 is located at 0° degree, 1/4" from the Acrylic to Glass panel contact area, 3/4" deep into the Acrylic.
- Thermocouple T8 is located at 90° degree, 1/4" from the Acrylic to Glass panel contact area, 3/4" deep into the Acrylic.
- Thermocouple T9 is located at 270° degree, 1/4" from the Acrylic to Glass panel contact area, 3/4" deep into the Acrylic.
- Thermocouple T10 is located at 180° degree, 1/4" from the Acrylic to Glass panel contact area, 3/4" deep into the Acrylic.
- Thermocouple T11 is wedged between the Acrylic and Lead Glass Plate. The location is 6.5" from the side and 2" from the top.
- Thermocouple T12 is mounted on the outside surface of the Lead Glass Plate. The location is 4.5" from the top and 5" from the side.

IV. Measurement and Testing Equipment

This test only measured temperature changes caused by an exposed furnace onto the inside face of a glove portal. Therefore the measurement equipment consisted of twelve Type E thermocouples (TC) and data acquisition system (DAS) to capture output the data from those TC with time.

Thermocouples

After the twelve (12) requested thermocouples were obtained and pretest calibrated they were affixed to the experimental setup. See Fig. 6.

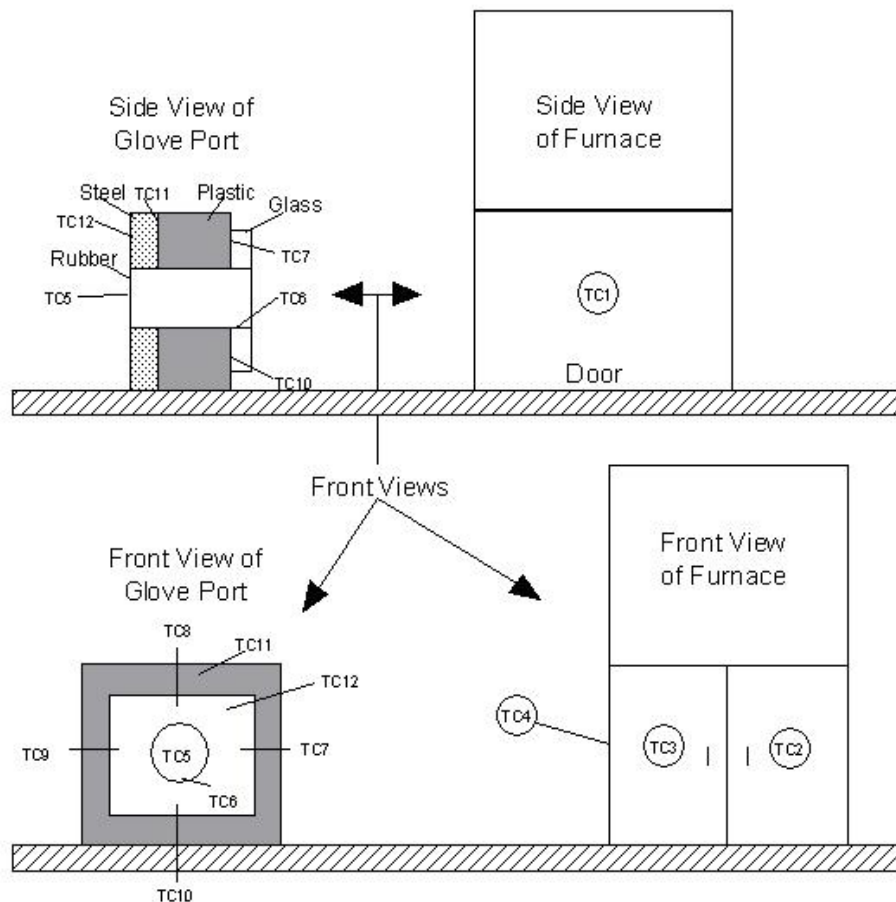


Figure 6. Placement of Thermocouples on Experimental Setup

The TC locations on the glove portal were obtained just before the post-calibration was done and the TC locations on the furnace were verbally obtained from the customer. The locations are related to the exact instrument as listed in Table 1.

Table 1: Relationship between TC number and the TC locations (see Fig. 6)

T1	TR-3380	In the middle of the SIDE of right furnace door
T2	TR-1842	In the middle of the FRONT of right furnace door
T3	TR-3382	In the middle of the FRONT of left furnace door
T4	TR-1841	In the middle of the SIDE of left furnace door
T5	TR-3389	In the middle of the REAR of the glove port (imbedded in black rubber)
T6	TR-3398	On the bottom center opening of the glove port
T7	TR-3392	On the TOP window face behind glass
T8	TR-3395	On the SIDE window face behind glass
T9	TR-3396	On the SIDE window face behind glass
T10	TR-3394	On the BOTTOM window face behind glass
T11	TR-3393	At the TOP of the window between the Plastic and Metal
T12	TR-3399	Near the TOP and diagonally placed on the REAR of th window

The thermocouples used were electrically ungrounded and of type E and the TC make-up is shown in Fig. 7.

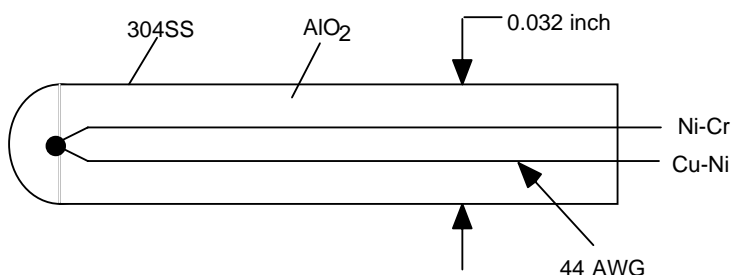


Figure 7. Type E Ungrounded Thermocouple used for the experiment

Some TC notes:

1. Overall characteristics of this type of TC can be found in Burns, et al., 1993[†].
2. Time Response: In using this TC and evaluating the experimental data it must be noted that due to being ungrounded the temporal response will be slower than either grounded thermocouple or bare-wire thermocouples. A rough estimate of the time constant for these stainless-steel sheathed 0.032-inch TC is about 3 seconds. That is, in 3 seconds the TC will attain 68% of its steady state measurement after a change in temperature. Approximately 9 to 10 seconds are needed to obtain a temperature measurement within 95% of its final reading.
3. Placement: It must be remembered that the TC only measures the temperature at the TC juncture. When relating that temperature to its outside surroundings care must be taken to make sure that a placed TC is in good thermal communications with its surroundings. Otherwise, the TC measurement may differ significantly from the desired temperature reading.

[†] Burns, G.W., M.G. Scroger, G.F. Strouse, M.C. Croarkin, and W.F. Guthrie, "Temperature-Electromotive Force Reference Functions and Tables for the Letter-Designated Thermocouples Types Based on the ITS-90," NIST Monograph 175, U.S. Department of Commerce, April, 1993

The thermocouples were calibrated before and after the experiment. Table 2 shows a summary of the calibrations and the level of measurement uncertainty:

Table 2: Summary of Pre- and Post-test calibrations of the thermocouples

DAS Chan. No.	Test No.	Instrument	M&TE No.	Make/Type	Model No.	Calibrated Range	Uncertainty (pre-test) °F	Uncertainty (post-test) °F	Overall Uncertainty °F	Standard Error 3.1 °F
0	T1	TC	TR-03380	Omega / E	HEMQSS-032U-36	32-212°F	0.9	N/A	0.9	Yes
1	T2	TC	TR-01842	Omega / E	HEMQSS-032U-36	32-212°F	1.0	N/A	1.0	Yes
2	T3	TC	TR-03382	Omega / E	HEMQSS-032U-36	32-212°F	0.9	N/A	0.9	Yes
3	T4	TC	TR-01841	Omega / E	HEMQSS-032U-36	32-212°F	0.8	N/A	0.8	Yes
4	T5	TC	TR-03389	Omega / E	HEMQSS-032U-36	32-212°F	1.2	0.8	1.2	Yes
5	T6	TC	TR-03398	Omega / E	HEMQSS-032U-36	32-212°F	1.1	1.4	1.4	Yes
6	T7	TC	TR-03392	Omega / E	HEMQSS-032U-36	32-212°F	1.2	0.9	1.2	Yes
7	T8	TC	TR-03395	Omega / E	HEMQSS-032U-36	32-212°F	1.0	0.9	1.0	Yes
8	T9	TC	TR-03396	Omega / E	HEMQSS-032U-36	32-212°F	0.9	0.6	0.9	Yes
9	T10	TC	TR-03394	Omega / E	HEMQSS-032U-36	32-212°F	1.1	1.2	1.2	Yes
10	T11	TC	TR-03393	Omega / E	HEMQSS-032U-36	32-212°F	1.1	0.8	1.1	Yes
11	T12	TC	TR-03399	Omega / E	HEMQSS-032U-36	32-212°F	1.2	0.8	1.2	Yes

The individual calibration sheets can be found at the end of this section as Table 4 to 15 for the pre-test data and Tables 16 to 23 for the post-test data. Included in those sheets are the raw calibration data along with the transfer functions to improve the TC error above the standard errors.

Data Acquisition System

There are several ways to relate the EMS output of thermocouples to the temperature the TC junction is experiences. For this experiment an IBM computer, with installed appropriate Type E thermocouple cards, was used to convert the TC signal to temperature and log the data at the same time. The computer equipment was:

Computer Hardware

Dell Table-top PC Workstation PWS360
Intel Pentium 4 CPU with a speed of 3.2 GHz
DEO-SRS 00401699

Computer Operating System

Microsoft Windows 2000, Version 5.00.2195 Service Pack 4
No. 51873-OEM-0045023-09136

DAS Hardware

National Instruments Thermocouple Module, SCXI-1000
Type E 12 Channel Card, Ni SCXI-1303
Max 42V / Cat 1 Chan-Chan

DAS Software

LABVIEW, Version 6.1.0.4004
National Instrument, Version 2.2.0.3010

In order to know that the DAS take the output of a thermocouple and give an accurate result it is also necessary to calibrate the DAS. This is done with a TC simulator which creates a NIST voltage for an inputted temperature in order to see what temperature the DAS obtains and records. The simulator equipment is:

Ectron Corporation, 1120 Thermocouple Simulator/Calibrator

Serial No. 25580, M&T No. EA-989

Calibrated on 02/23/2005 to be recalibrated on or before 02/23/2006

DOE-SRL#T0023031

The results of the calibration are shown in Table 3.

Table 3: Channel-by-Channel DAS Calibration done on 05/25/2005

Temperature	Channel 0	Channel 1	Channel 2	Channel 3	Channel 4	Channel 5
T Applied, °F	T, Output, °F	T, Output, °F	T, Output, °F	T, Output, °F	T, Output, °F	T, Output, °F
0	-0.2	-0.2	-0.2	-0.2	-0.3	-0.7
200	199.8	199.8	199.7	199.7	199.7	199.4
400	399.9	399.9	399.7	399.7	399.7	399.5
600	599.9	599.9	599.8	599.8	599.7	599.5
800	799.9	799.9	799.9	799.8	799.8	799.6
Temperature	Channel 6	Channel 7	Channel 8	Channel 9	Channel 10	Channel 11
T Applied, °F	T, Output, °F	T, Output, °F	T, Output, °F	T, Output, °F	T, Output, °F	T, Output, °F
0	-0.6	-0.6	-0.1	0.2	0.2	0.1
200	199.5	199.4	199.9	200.1	200.1	200.0
400	399.5	399.5	400.0	400.2	400.1	400.0
600	599.6	599.5	600.0	600.2	600.1	600.0
800	799.6	799.5	800.0	800.2	800.1	800.0

Table 3 numbers are shown in Fig. 8 for convenience. Note the different scales.

Whereas the TC calibrations were over a temperature range from the freezing point to the boiling point of water at atmospheric pressures (to minimize cost to the customer), the DAS calibration was done from 0 to 800°F. Since the calibration is only simulated with electronic signals any range could have been chosen. Since Type E thermocouples are rated for use from -328 to 1652°F, then a larger DAS range was chosen in case the experimentally obtained temperatures ranged outside the TC calibration range.

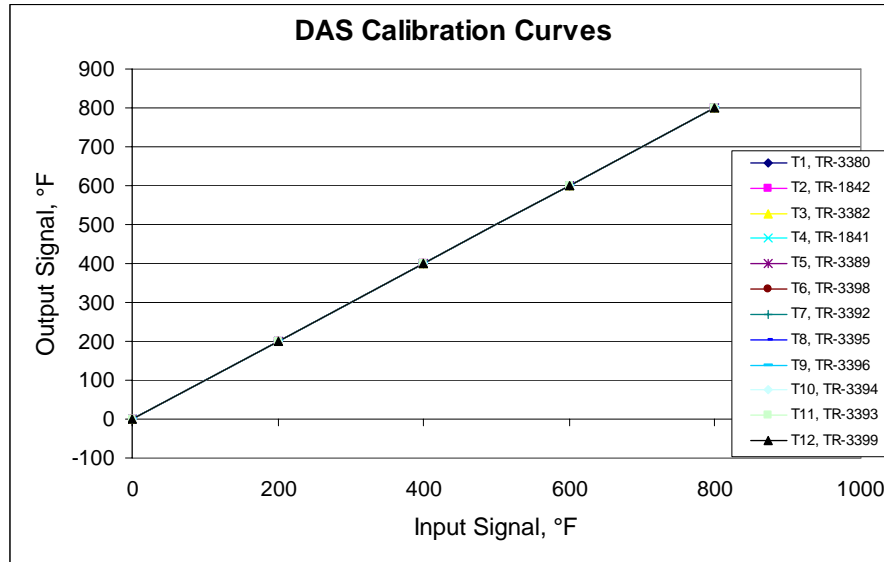


Figure 8. Graphical representation of the data in Table 3

The calibration curves in Fig 8 indicate that the DAS was operating properly. However, caution must be used if the accuracies of obtained temperature are to be held to better than the standard error for Type E thermocouples. That is, the standard error is $\pm 3.1^{\circ}\text{F}$, and measured TC uncertainties shown in Table 2 are well within this error bound. However, if the individual TC uncertainties shown in Table 2 instead of the standard error, THEN the added measurement uncertainty of the DAS must be included. For instance, Table 3 indicates that for DAS channels 5, 6, and 7 (or TC6, TC7, and TC8) have a bias of 0.7 or 0.6°F . This offset is real, but will only be important if the data user want measurement accuracies of less than the standard TC error.

Pre-test and Post-test Thermocouple Calibration Sheets

Table 4: Pre-test calibrations TC1, TR-3380

UNCERTAINTY ANALYSIS
REF. L9.5-9114, REV. 1

TR-03380

page ____ of ____
calibration date _____

Calibration Data

Temperature Medium	Standard Temperature (C)	Voltage Output (mV)	Calculated Temperature (eq. 1) (C)	Error (C)
Ice Point	0.00	-0.007	-0.11	-0.11
Room Temp	22.75	1.353	22.66	-0.09
Boiling Water	99.84	6.299	99.71	-0.13
Boiling Water	99.84	6.295	99.65	-0.19
Room Temp	22.97	1.367	22.89	-0.08
Ice Point	0.00	-0.011	-0.18	-0.18
Ice Point	0.00	-0.011	-0.18	-0.18
Room Temp	21.18	1.261	21.15	-0.03
Boiling Water	99.84	6.314	99.93	0.09
Boiling Water	99.84	6.316	99.96	0.12
Room Temp	21.16	1.246	20.90	-0.26
Ice Point	0.00	-0.006	-0.10	-0.10

$T (C) = 0.00483 + 17.040918 * mV - 0.224284 * mV^2 + 0.005038 * mV^3$ (eq. 1)
(Limited Curve Fit, 0-100 C. From N.I.S.T. Reference Tables)

Uncertainty of the Standards: Temperature Curve Fit: +/- 0.010 C
 Thermometer: +/- 0.20 C
 Ice Bath: +/- 0.10 C
 Multimeter: +/- (0.0045 % RDG + 0.0400 mV)
 = +/- 0.063 C @ 6.32 mV

Accepted Tolerance: +/- 1.7 C

Statistical Info.

a	b	n	T	Xbar (C)	Sxx (C^2)	SEE (C^2)	MSE (C^2)
-0.14	1.00	12.00	2.228	40.62	<u>22015.4</u>	0.109	0.0109

Calculated Uncertainties:

Standard Uncertainty (C)	Curv-fit Uncertainty (C)	Fixed Uncertainty (C)	Total Uncertainty (C) (F)
0.21	0.26	0.14	0.5 0.9

PASS CALIBRATION?

YES

Table 5: Pre-test calibrations TC2, TR-1842

UNCERTAINTY ANALYSIS
REF. L9.5-9114, REV. 1

TR-03380

page ____ of ____
calibration date_____

Calibration Data

Temperature Medium	Standard Temperature (C)	Voltage Output (mV)	Calculated Temperature (eq. 1) (C)	Error (C)
Ice Point	0.00	-0.007	-0.11	-0.11
Room Temp	22.75	1.353	22.66	-0.09
Boiling Water	99.84	6.299	99.71	-0.13
Boiling Water	99.84	6.295	99.65	-0.19
Room Temp	22.97	1.367	22.89	-0.08
Ice Point	0.00	-0.011	-0.18	-0.18
Ice Point	0.00	-0.011	-0.18	-0.18
Room Temp	21.18	1.261	21.15	-0.03
Boiling Water	99.84	6.314	99.93	0.09
Boiling Water	99.84	6.316	99.96	0.12
Room Temp	21.16	1.246	20.90	-0.26
Ice Point	0.00	-0.006	-0.10	-0.10

$T (C) = 0.00483 + 17.040918 * mV - 0.224284 * mV^2 + 0.005038 * mV^3$ (eq. 1)
(Limited Curve Fit, 0-100 C. From N.I.S.T. Reference Tables)

Uncertainty of the Standards: Temperature Curve Fit: +/- 0.010 C
 Thermometer: +/- 0.20 C
 Ice Bath: +/- 0.10 C
 Multimeter: +/- (0.0045 % RDG + 0.0400 mV)
 = +/- 0.063 C @ 6.32 mV

Accepted Tolerance: +/- 1.7 C

Statistical Info.

a	b	n	T	Xbar (C)	Sxx (C^2)	SEE (C^2)	MSE (C^2)
-0.14	1.00	12.00	2.228	40.62	<u>22015.4</u>	0.109	0.0109

Calculated Uncertainties:

Standard Uncertainty (C)	Curv-fit Uncertainty (C)	Fixed Uncertainty (C)	Total Uncertainty (C) (F)
0.21	0.26	0.14	0.5 0.9

PASS CALIBRATION?

YES

Table 6: Pre-test calibrations TC3, TR-3382

UNCERTAINTY ANALYSIS
REF. L9.5-9114, REV. 1

TR-03382

page ____ of ____
calibration date_____

Calibration Data

Temperature Medium	Standard Temperature (C)	Voltage Output (mV)	Calculated Temperature (eq. 1) (C)	Error (C)
Ice Point	0.00	-0.009	-0.15	-0.15
Room Temp	22.75	1.358	22.75	0.00
Boiling Water	99.84	6.297	99.68	-0.16
Boiling Water	99.84	6.301	99.74	-0.10
Room Temp	22.97	1.365	22.86	-0.11
Ice Point	0.00	-0.012	-0.20	-0.20
Ice Point	0.00	-0.012	-0.20	-0.20
Room Temp	21.18	1.264	21.20	0.02
Boiling Water	99.84	6.320	100.02	0.18
Boiling Water	99.84	6.316	99.96	0.12
Room Temp	21.16	1.244	20.87	-0.29
Ice Point	0.00	-0.009	-0.15	-0.15

$T (C) = 0.00483 + 17.040918 * mV - 0.224284 * mV^2 + 0.005038 * mV^3$ (eq. 1)
(Limited Curve Fit, 0-100 C. From N.I.S.T. Reference Tables)

Uncertainty of the Standards: Temperature Curve Fit: +/- 0.010 C
 Thermometer: +/- 0.20 C
 Ice Bath: +/- 0.10 C
 Multimeter: +/- (0.0045 % RDG + 0.0400 mV)
 = +/- 0.063 C @ 6.32 mV

Accepted Tolerance: +/- 1.7 C

Statistical Info.

a	b	n	T	Xbar (C)	Sxx (C^2)	SEE (C^2)	MSE (C^2)
-0.16	1.00	12.00	2.228	40.62	<u>22015.4</u>	0.148	0.0148

Calculated Uncertainties:

Standard Uncertainty (C)	Curv-fit Uncertainty (C)	Fixed Uncertainty (C)	Total Uncertainty (C) (F)
0.21	0.30	0.16	0.5 0.9

PASS CALIBRATION?

YES

Table 7: Pre-test calibrations TC4, TR-1841

UNCERTAINTY ANALYSIS
REF. L9.5-9114, REV. 1

TR-01841

page ____ of ____
calibration date_____

Calibration Data

Temperature Medium	Standard Temperature (C)	Voltage Output (mV)	Calculated Temperature (eq. 1) (C)	Error (C)
Ice Point	0.00	-0.007	-0.11	-0.11
Room Temp	21.19	1.259	21.11	-0.08
Boiling Water	100.00	6.305	99.79	-0.21
Boiling Water	100.00	6.307	99.82	-0.18
Room Temp	21.31	1.254	21.03	-0.28
Ice Point	0.00	-0.004	-0.06	-0.06
Ice Point	0.00	-0.004	-0.06	-0.06
Room Temp	21.28	1.257	21.08	-0.20
Boiling Water	100.00	6.308	99.84	-0.16
Boiling Water	100.00	6.311	99.88	-0.12
Room Temp	21.30	1.258	21.10	-0.20
Ice Point	0.00	-0.004	-0.06	-0.06

$T (C) = 0.00483 + 17.040918 * mV - 0.224284 * mV^2 + 0.005038 * mV^3$ (eq. 1)
(Limited Curve Fit, 0-100 C. From N.I.S.T. Reference Tables)

Uncertainty of the Standards: Temperature Curve Fit: +/- 0.010 C
 Thermometer: +/- 0.20 C
 Ice Bath: +/- 0.10 C
 Multimeter: +/- (0.0045 % RDG + 0.0400 mV)
 = +/- 0.063 C @ 6.31 mV

Accepted Tolerance: +/- 1.7 C

Statistical Info.

a	b	n	T	Xbar (C)	Sxx (C^2)	SEE (C^2)	MSE (C^2)
-0.12	1.00	12.00	2.228	40.42	<u>22201.1</u>	0.048	0.0048

Calculated Uncertainties:

Standard Uncertainty (C)	Curv-fit Uncertainty (C)	Fixed Uncertainty (C)	Total Uncertainty (C) (F)
0.21	0.17	0.18	0.4 0.8

PASS CALIBRATION?

YES

Table 8: Pre-test calibrations TC5, TR-3389

UNCERTAINTY ANALYSIS
REF. L9.5-9114, REV. 1

TR-03389

page ____ of ____
calibration date_____

Calibration Data

Temperature Medium	Standard Temperature (C)	Voltage Output (mV)	Calculated Temperature (eq. 1) (C)	Error (C)
Ice Point	0.00	-0.015	-0.25	-0.25
Room Temp	22.75	1.341	22.47	-0.28
Boiling Water	100.00	6.339	100.30	0.30
Boiling Water	100.00	6.336	100.25	0.25
Room Temp	22.87	1.343	22.50	-0.37
Ice Point	0.00	-0.015	-0.25	-0.25
Ice Point	0.00	-0.015	-0.25	-0.25
Room Temp	22.86	1.346	22.55	-0.31
Boiling Water	100.00	6.336	100.25	0.25
Boiling Water	100.00	6.336	100.25	0.25
Room Temp	23.47	1.381	23.12	-0.35
Ice Point	0.00	-0.018	-0.30	-0.30

$T (C) = 0.00483 + 17.040918 * mV - 0.224284 * mV^2 + 0.005038 * mV^3$ (eq. 1)
(Limited Curve Fit, 0-100 C. From N.I.S.T. Reference Tables)

Uncertainty of the Standards: Temperature Curve Fit: +/- 0.010 C
 Thermometer: +/- 0.20 C
 Ice Bath: +/- 0.10 C
 Multimeter: +/- (0.0045 % RDG + 0.0400 mV)
 = +/- 0.063 C @ 6.34 mV

Accepted Tolerance: +/- 1.7 C

Statistical Info.

a	b	n	T	Xbar (C)	Sxx (C^2)	SEE (C^2)	MSE (C^2)
-0.35	1.01	12.00	2.228	41.00	<u>21946.1</u>	0.092	0.0092

Calculated Uncertainties:

Standard Uncertainty (C)	Curv-fit Uncertainty (C)	Fixed Uncertainty (C)	Total Uncertainty (C) (F)
0.21	0.24	0.35	0.7 1.2

PASS CALIBRATION?

YES

Table 9: Pre-test calibrations TC6, TR-3398

UNCERTAINTY ANALYSIS
REF. L9.5-9114, REV. 1

TR-03398

page ____ of ____
calibration date_____

Calibration Data

Temperature Medium	Standard Temperature (C)	Voltage Output (mV)	Calculated Temperature (eq. 1) (C)	Error (C)
Ice Point	0.00	-0.018	-0.30	-0.30
Room Temp	21.89	1.284	21.53	-0.36
Boiling Water	99.99	6.322	100.05	0.06
Boiling Water	99.99	6.324	100.08	0.09
Room Temp	21.93	1.287	21.58	-0.35
Ice Point	0.00	-0.018	-0.30	-0.30
Ice Point	0.00	-0.018	-0.30	-0.30
Room Temp	22.08	1.298	21.76	-0.32
Boiling Water	99.98	6.322	100.05	0.07
Boiling Water	99.98	6.322	100.05	0.07
Room Temp	22.59	1.332	22.32	-0.27
Ice Point	0.00	-0.018	-0.30	-0.30

$T (C) = 0.00483 + 17.040918 * mV - 0.224284 * mV^2 + 0.005038 * mV^3$ (eq. 1)
(Limited Curve Fit, 0-100 C. From N.I.S.T. Reference Tables)

Uncertainty of the Standards: Temperature Curve Fit: +/- 0.010 C
 Thermometer: +/- 0.20 C
 Ice Bath: +/- 0.10 C
 Multimeter: +/- (0.0045 % RDG + 0.0400 mV)
 = +/- 0.063 C @ 6.32 mV

Accepted Tolerance: +/- 1.7 C

Statistical Info.

a	b	n	T	Xbar (C)	Sxx (C^2)	SEE (C^2)	MSE (C^2)
-0.35	1.00	12.00	2.228	40.70	<u>22065.6</u>	0.034	0.0034

Calculated Uncertainties:

Standard Uncertainty (C)	Curv-fit Uncertainty (C)	Fixed Uncertainty (C)	Total Uncertainty (C) (F)
0.21	0.14	0.35	0.6 1.1

PASS CALIBRATION?

YES

Table 10: Pre-test calibrations TC7, TR-3392

UNCERTAINTY ANALYSIS
REF. L9.5-9114, REV. 1

TR-03392

page ____ of ____
calibration date_____

Calibration Data

Temperature Medium	Standard Temperature (C)	Voltage Output (mV)	Calculated Temperature (eq. 1) (C)	Error (C)
Ice Point	0.00	-0.014	-0.23	-0.23
Room Temp	21.33	1.261	21.15	-0.18
Boiling Water	100.00	6.344	100.37	0.37
Boiling Water	100.00	6.349	100.45	0.45
Room Temp	21.36	1.257	21.08	-0.28
Ice Point	0.00	-0.013	-0.22	-0.22
Ice Point	0.00	-0.013	-0.22	-0.22
Room Temp	21.57	1.267	21.25	-0.32
Boiling Water	100.00	6.345	100.39	0.39
Boiling Water	100.00	6.341	100.33	0.33
Room Temp	21.54	1.270	21.30	-0.24
Ice Point	0.00	-0.013	-0.22	-0.22

$T (C) = 0.00483 + 17.040918 * mV - 0.224284 * mV^2 + 0.005038 * mV^3$ (eq. 1)
(Limited Curve Fit, 0-100 C. From N.I.S.T. Reference Tables)

Uncertainty of the Standards: Temperature Curve Fit: +/- 0.010 C
 Thermometer: +/- 0.20 C
 Ice Bath: +/- 0.10 C
 Multimeter: +/- (0.0045 % RDG + 0.0400 mV)
 = +/- 0.063 C @ 6.35 mV

Accepted Tolerance: +/- 1.7 C

Statistical Info.

a	b	n	T	Xbar (C)	Sxx (C^2)	SEE (C^2)	MSE (C^2)
-0.30	1.01	12.00	2.228	40.48	<u>22173.7</u>	0.085	0.0085

Calculated Uncertainties:

Standard Uncertainty (C)	Curv-fit Uncertainty (C)	Fixed Uncertainty (C)	Total Uncertainty (C) (F)
0.21	0.23	0.36	0.7 1.2

PASS CALIBRATION?

YES

Table 11: Pre-test calibrations TC8, TR-3395

UNCERTAINTY ANALYSIS
REF. L9.5-9114, REV. 1

TR-03395

page ____ of ____
calibration date_____

Calibration Data

Temperature Medium	Standard Temperature (C)	Voltage Output (mV)	Calculated Temperature (eq. 1) (C)	Error (C)
Ice Point	0.00	-0.009	-0.15	-0.15
Room Temp	21.66	1.274	21.36	-0.30
Boiling Water	100.00	6.308	99.84	-0.16
Boiling Water	100.00	6.303	99.76	-0.24
Room Temp	21.73	1.275	21.38	-0.35
Ice Point	0.00	-0.009	-0.15	-0.15
Ice Point	0.00	-0.009	-0.15	-0.15
Room Temp	21.77	1.277	21.41	-0.36
Boiling Water	100.00	6.311	99.88	-0.12
Boiling Water	100.00	6.308	99.84	-0.16
Room Temp	21.83	1.280	21.46	-0.37
Ice Point	0.00	-0.009	-0.15	-0.15

$T (C) = 0.00483 + 17.040918 * mV - 0.224284 * mV^2 + 0.005038 * mV^3$ (eq. 1)
(Limited Curve Fit, 0-100 C. From N.I.S.T. Reference Tables)

Uncertainty of the Standards: Temperature Curve Fit: +/- 0.010 C
 Thermometer: +/- 0.20 C
 Ice Bath: +/- 0.10 C
 Multimeter: +/- (0.0045 % RDG + 0.0400 mV)
 = +/- 0.063 C @ 6.31 mV

Accepted Tolerance: +/- 1.7 C

Statistical Info.

a	b	n	T	Xbar (C)	Sxx (C^2)	SEE (C^2)	MSE (C^2)
-0.24	1.00	12.00	2.228	40.58	<u>22128.6</u>	0.099	0.0099

Calculated Uncertainties:

Standard Uncertainty (C)	Curv-fit Uncertainty (C)	Fixed Uncertainty (C)	Total Uncertainty (C) (F)
0.21	0.25	0.24	0.6 1.0

PASS CALIBRATION?

YES

Table 12: Pre-test calibrations TC9, TR-3396

UNCERTAINTY ANALYSIS
REF. L9.5-9114, REV. 1

TR-03396

page ____ of ____
calibration date_____

Calibration Data

Temperature Medium	Standard Temperature (C)	Voltage Output (mV)	Calculated Temperature (eq. 1) (C)	Error (C)
Ice Point	0.00	-0.005	-0.08	-0.08
Room Temp	21.89	1.288	21.59	-0.30
Boiling Water	99.99	6.309	99.85	-0.14
Boiling Water	99.99	6.317	99.97	-0.02
Room Temp	21.93	1.290	21.63	-0.30
Ice Point	0.00	-0.005	-0.08	-0.08
Ice Point	0.00	-0.005	-0.08	-0.08
Room Temp	22.08	1.299	21.77	-0.31
Boiling Water	99.98	6.311	99.88	-0.10
Boiling Water	99.98	6.309	99.85	-0.13
Room Temp	22.58	1.337	22.40	-0.18
Ice Point	0.00	-0.005	-0.08	-0.08

$T (C) = 0.00483 + 17.040918 * mV - 0.224284 * mV^2 + 0.005038 * mV^3$ (eq. 1)
(Limited Curve Fit, 0-100 C. From N.I.S.T. Reference Tables)

Uncertainty of the Standards: Temperature Curve Fit: +/- 0.010 C
 Thermometer: +/- 0.20 C
 Ice Bath: +/- 0.10 C
 Multimeter: +/- (0.0045 % RDG + 0.0400 mV)
 = +/- 0.063 C @ 6.32 mV

Accepted Tolerance: +/- 1.7 C

Statistical Info.

a	b	n	T	Xbar (C)	Sxx (C^2)	SEE (C^2)	MSE (C^2)
-0.17	1.00	12.00	2.228	40.70	<u>22066.0</u>	0.106	0.0106

Calculated Uncertainties:

Standard Uncertainty (C)	Curv-fit Uncertainty (C)	Fixed Uncertainty (C)	Total Uncertainty (C) (F)
0.21	0.26	0.17	0.5 0.9

PASS CALIBRATION?

YES

Table 13: Pre-test calibrations TC10, TR-3394

UNCERTAINTY ANALYSIS
REF. L9.5-9114, REV. 1

TR-03394

page ____ of ____
calibration date_____

Calibration Data

Temperature Medium	Standard Temperature (C)	Voltage Output (mV)	Calculated Temperature (eq. 1) (C)	Error (C)
Ice Point	0.00	-0.014	-0.23	-0.23
Room Temp	21.66	1.276	21.39	-0.27
Boiling Water	100.00	6.341	100.33	0.33
Boiling Water	100.00	6.344	100.37	0.37
Room Temp	21.73	1.278	21.43	-0.30
Ice Point	0.00	-0.015	-0.25	-0.25
Ice Point	0.00	-0.015	-0.25	-0.25
Room Temp	21.76	1.279	21.44	-0.32
Boiling Water	100.00	6.340	100.31	0.31
Boiling Water	100.00	6.344	100.37	0.37
Room Temp	21.83	1.285	21.54	-0.29
Ice Point	0.00	-0.015	-0.25	-0.25

$T (C) = 0.00483 + 17.040918 * mV - 0.224284 * mV^2 + 0.005038 * mV^3$ (eq. 1)
(Limited Curve Fit, 0-100 C. From N.I.S.T. Reference Tables)

Uncertainty of the Standards: Temperature Curve Fit: +/- 0.010 C
 Thermometer: +/- 0.20 C
 Ice Bath: +/- 0.10 C
 Multimeter: +/- (0.0045 % RDG + 0.0400 mV)
 = +/- 0.063 C @ 6.34 mV

Accepted Tolerance: +/- 1.7 C

Statistical Info.

a	b	n	T	Xbar (C)	Sxx (C^2)	SEE (C^2)	MSE (C^2)
-0.33	1.01	12.00	2.228	40.58	<u>22128.9</u>	0.078	0.0078

Calculated Uncertainties:

Standard Uncertainty (C)	Curv-fit Uncertainty (C)	Fixed Uncertainty (C)	Total Uncertainty (C) (F)
0.21	0.22	0.33	0.6 1.1

PASS CALIBRATION?

YES

Table 14: Pre-test calibrations TC11, TR-3393

UNCERTAINTY ANALYSIS
REF. L9.5-9114, REV. 1

TR-03393

page ____ of ____
calibration date_____

Calibration Data

Temperature Medium	Standard Temperature (C)	Voltage Output (mV)	Calculated Temperature (eq. 1) (C)	Error (C)
Ice Point	0.00	-0.017	-0.28	-0.28
Room Temp	21.33	1.258	21.10	-0.23
Boiling Water	100.00	6.333	100.21	0.21
Boiling Water	100.00	6.330	100.16	0.16
Room Temp	21.36	1.258	21.10	-0.26
Ice Point	0.00	-0.017	-0.28	-0.28
Ice Point	0.00	-0.017	-0.28	-0.28
Room Temp	21.56	1.265	21.21	-0.35
Boiling Water	100.00	6.333	100.21	0.21
Boiling Water	100.00	6.337	100.27	0.27
Room Temp	21.54	1.265	21.21	-0.33
Ice Point	0.00	-0.017	-0.28	-0.28

$T (C) = 0.00483 + 17.040918 * mV - 0.224284 * mV^2 + 0.005038 * mV^3$ (eq. 1)
(Limited Curve Fit, 0-100 C. From N.I.S.T. Reference Tables)

Uncertainty of the Standards: Temperature Curve Fit: +/- 0.010 C
 Thermometer: +/- 0.20 C
 Ice Bath: +/- 0.10 C
 Multimeter: +/- (0.0045 % RDG + 0.0400 mV)
 = +/- 0.063 C @ 6.34 mV

Accepted Tolerance: +/- 1.7 C

Statistical Info.

a	b	n	T	Xbar (C)	Sxx (C^2)	SEE (C^2)	MSE (C^2)
-0.34	1.01	12.00	2.228	40.48	<u>22174.0</u>	0.046	0.0046

Calculated Uncertainties:

Standard Uncertainty (C)	Curv-fit Uncertainty (C)	Fixed Uncertainty (C)	Total Uncertainty (C) (F)
0.21	0.17	0.34	0.6 1.1

PASS CALIBRATION?

YES

Table 15: Pre-test calibrations TC12, TR-3399

UNCERTAINTY ANALYSIS
REF. L9.5-9114, REV. 1

TR-03399

page ____ of ____
calibration date_____

Calibration Data

Temperature Medium	Standard Temperature (C)	Voltage Output (mV)	Calculated Temperature (eq. 1) (C)	Error (C)
Ice Point	0.00	-0.018	-0.30	-0.30
Room Temp	22.73	1.336	22.38	-0.35
Boiling Water	100.00	6.336	100.26	0.26
Boiling Water	100.00	6.340	100.31	0.31
Room Temp	22.78	1.339	22.43	-0.35
Ice Point	0.00	-0.018	-0.30	-0.30
Ice Point	0.00	-0.018	-0.30	-0.30
Room Temp	22.85	1.343	22.50	-0.35
Boiling Water	100.00	6.341	100.33	0.33
Boiling Water	100.00	6.337	100.27	0.27
Room Temp	23.47	1.381	23.12	-0.35
Ice Point	0.00	-0.018	-0.30	-0.30

$T (C) = 0.00483 + 17.040918 * mV - 0.224284 * mV^2 + 0.005038 * mV^3$ (eq. 1)
(Limited Curve Fit, 0-100 C. From N.I.S.T. Reference Tables)

Uncertainty of the Standards: Temperature Curve Fit: +/- 0.010 C
 Thermometer: +/- 0.20 C
 Ice Bath: +/- 0.10 C
 Multimeter: +/- (0.0045 % RDG + 0.0400 mV)
 = +/- 0.063 C @ 6.34 mV

Accepted Tolerance: +/- 1.7 C

Statistical Info.

a	b	n	T	Xbar (C)	Sxx (C^2)	SEE (C^2)	MSE (C^2)
-0.39	1.01	12.00	2.228	40.99	<u>21950.5</u>	0.084	0.0084

Calculated Uncertainties:

Standard Uncertainty (C)	Curv-fit Uncertainty (C)	Fixed Uncertainty (C)	Total Uncertainty (C) (F)
0.21	0.23	0.38	0.7 1.2

PASS CALIBRATION?

YES

Table 16: Post-test calibrations TC5, TR-3389

UNCERTAINTY ANALYSIS

TR-3389

page _____ of _____

Post-test cal date: 14 June 2005

(Note: This uncertainty is the variance of the actual T from the NIST curve (Eq.1) based on the output mV)

Calibration Data			Calculated			
Temperature	Standard	Voltage	Temperature		Curve	Curve Fit
Medium	Temp	Output	(eq. 1)	Error	Fit	Error
	(°C)	(mV)	(°C)	(°C)	(°C)	(°C)
Ice Point	0.00	-0.016	-0.27	-0.3	-0.33	-0.06
Ice Point	0.00	-0.016	-0.27	-0.3	-0.33	-0.06
Ice Point	0.00	-0.016	-0.27	-0.3	-0.33	-0.06
Ice Point	0.00	-0.016	-0.27	-0.3	-0.33	-0.06
Room Temp	23.40	1.379	23.10	-0.3	23.17	0.08
Room Temp	23.48	1.383	23.16	-0.3	23.25	0.09
Room Temp	23.55	1.388	23.24	-0.3	23.32	0.08
Room Temp	23.63	1.395	23.36	-0.3	23.40	0.04
Boiling Water	100.10	6.333	100.21	0.1	100.19	-0.02
Boiling Water	100.10	6.336	100.26	0.2	100.19	-0.06
Boiling Water	100.10	6.330	100.17	0.1	100.19	0.03
Boiling Water	100.10	6.333	100.21	0.1	100.19	-0.02

$$T\text{ (C)} = 0.001419 + 17.049479 \cdot mV - 0.226837 \cdot mV^2 + 0.005248 \cdot mV^3 \quad (\text{Eq. 1})$$

(Limited Curve Fit, -10°C to +110°C. From NIST (1993) Reference Tables for Type E)

Uncertainty of the Standards:	Temperature Curve Fit: +/-	0.010	°C		
	Thermister: +/-	0.20	°C		
	Ice Bath: +/-	0.10	°C		
	Multimeter: +/- (	0.0045	% RDG +	0.0005	mV)
	= +/-	0.012	°C @	6.34	mV

Accepted Tolerance: +/- 1.7 °C (or 3.1°F)

Statistical Info.				Xbar	Sxx	SEE	MSE
a	b	n	T	(°C)	(C^2)	(C^2)	(C^2)
-0.33	1.00	12.00	2.228	41.21	21917.7	0.040	0.0040

Calculated Uncertainties:

standard	curve-fit	fixed	total	total
uncertainty	uncertainty	uncertainty	uncertainty	uncertainty
(°C)	(°C)	(°C)	(°C)	(°F)
0.22	0.16	0.33	0.4	0.8

PASS CALIBRATION?

YES

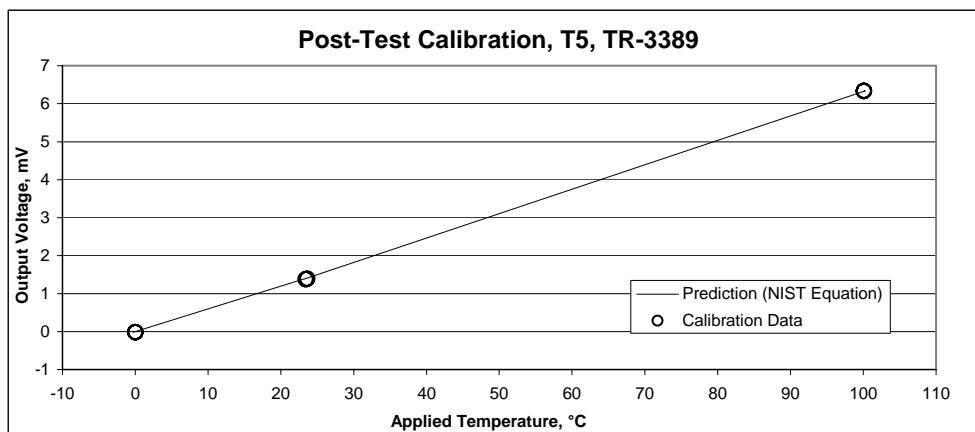


Table 17: Post-test calibrations TC6, TR-3398

UNCERTAINTY ANALYSIS

TR-3398

page _____ of _____

Post-test cal date: 13 June 2005

(Note: This uncertainty is the variance of the actual T from the NIST curve (Eq.1) based on the output mV)

Calibration Data			Calculated			
Temperature	Standard	Voltage	Temperature		Curve	Curve Fit
Medium	Temp	Output	(eq. 1)	Error	Fit	Error
	(°C)	(mV)	(°C)	(°C)	(°C)	(°C)
Ice Point	0.00	-0.049	-0.83	-0.8	-0.38	0.45
Ice Point	0.00	-0.020	-0.34	-0.3	-0.38	-0.04
Ice Point	0.00	-0.020	-0.34	-0.3	-0.38	-0.04
Ice Point	0.00	-0.019	-0.32	-0.3	-0.38	-0.06
Room Temp	23.35	1.415	23.69	0.3	23.03	-0.66
Room Temp	23.48	1.373	23.00	-0.5	23.16	0.16
Room Temp	23.49	1.374	23.01	-0.5	23.17	0.15
Room Temp	23.96	1.416	23.70	-0.3	23.64	-0.07
Boiling Water	100.20	6.323	100.06	-0.1	100.06	0.00
Boiling Water	100.20	6.320	100.02	-0.2	100.06	0.04
Boiling Water	100.20	6.321	100.03	-0.2	100.06	0.03
Boiling Water	100.20	6.321	100.03	-0.2	100.06	0.03

$$T\text{ (C)} = 0.001419 + 17.049479 \cdot mV - 0.226837 \cdot mV^2 + 0.005248 \cdot mV^3 \quad (\text{Eq. 1})$$

(Limited Curve Fit, -10°C to +110°C. From NIST (1993) Reference Tables for Type E)

Uncertainty of the Standards:	Temperature Curve Fit: +/-	0.010	°C		
	Thermister: +/-	0.20	°C		
	Ice Bath: +/-	0.10	°C		
	Multimeter: +/- (	0.0045	% RDG +	0.0005	mV)
	= +/-	0.012	°C @	6.32	mV

Accepted Tolerance: +/- 1.7 °C (or 3.1°F)

Statistical Info.				Xbar	Sxx	SEE	MSE
a	b	n	T	(°C)	(C^2)	(C^2)	(C^2)
-0.38	1.00	12.00	2.228	41.26	21957.2	0.707	0.0707

Calculated Uncertainties:

standard	curve-fit	fixed	total	total
uncertainty	uncertainty	uncertainty	uncertainty	uncertainty
(°C)	(°C)	(°C)	(°C)	(°F)
0.22	0.66	0.38	0.8	1.4

PASS CALIBRATION?

YES

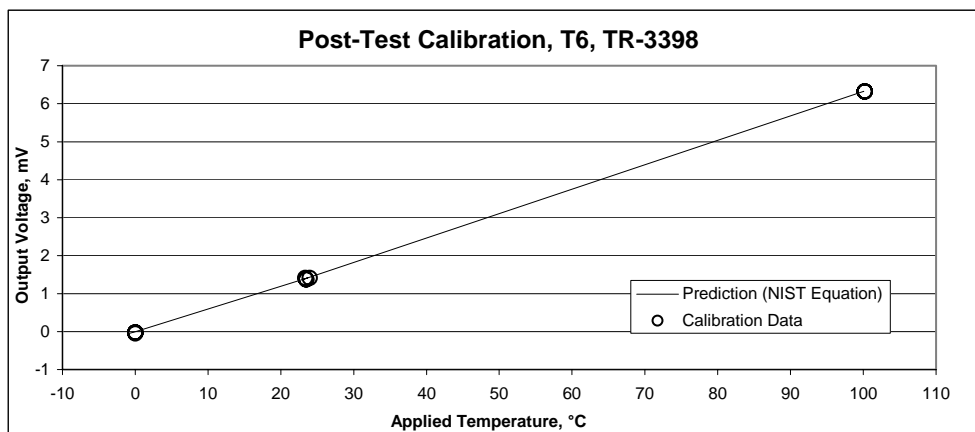


Table 18: Post-test calibrations TC7, TR-3392

UNCERTAINTY ANALYSIS

TR-3392

page _____ of _____

Post-test cal date: 14 June 2005

(Note: This uncertainty is the variance of the actual T from the NIST curve (Eq.1) based on the output mV)

Calibration Data			Calculated			
Temperature	Standard	Voltage	Temperature		Curve	Curve Fit
Medium	Temp	Output	(eq. 1)	Error	Fit	Error
	(°C)	(mV)	(°C)	(°C)	(°C)	(°C)
Ice Point	0.00	-0.016	-0.27	-0.3	-0.36	-0.08
Ice Point	0.00	-0.015	-0.25	-0.3	-0.36	-0.10
Ice Point	0.00	-0.015	-0.25	-0.3	-0.36	-0.10
Ice Point	0.00	-0.015	-0.25	-0.3	-0.36	-0.10
Room Temp	22.32	1.305	21.88	-0.4	22.09	0.22
Room Temp	22.32	1.309	21.94	-0.4	22.09	0.15
Room Temp	22.34	1.315	22.04	-0.3	22.11	0.07
Room Temp	22.35	1.316	22.06	-0.3	22.12	0.06
Boiling Water	100.20	6.350	100.46	0.3	100.42	-0.04
Boiling Water	100.20	6.346	100.40	0.2	100.42	0.01
Boiling Water	100.10	6.344	100.37	0.3	100.32	-0.06
Boiling Water	100.10	6.342	100.34	0.2	100.32	-0.03

$$T\text{ (C)} = 0.001419 + 17.049479 \cdot mV - 0.226837 \cdot mV^2 + 0.005248 \cdot mV^3 \quad (\text{Eq. 1})$$

(Limited Curve Fit, -10°C to +110°C. From NIST (1993) Reference Tables for Type E)

Uncertainty of the Standards:	Temperature Curve Fit: +/-	0.010	°C		
	Thermister: +/-	0.20	°C		
	Ice Bath: +/-	0.10	°C		
	Multimeter: +/- (	0.0045	% RDG +	0.0005	mV)
	= +/-	0.012	°C @	6.35	mV

Accepted Tolerance: +/- 1.7 °C (or 3.1°F)

Statistical Info.				Xbar	Sxx	SEE	MSE
a	b	n	T	(°C)	(C^2)	(C^2)	(C^2)
-0.36	1.01	12.00	2.228	40.83	22112.4	0.122	0.0122

Calculated Uncertainties:

standard	curve-fit	fixed	total	total
uncertainty	uncertainty	uncertainty	uncertainty	uncertainty
(°C)	(°C)	(°C)	(°C)	(°F)
0.22	0.27	0.35	0.5	0.9

PASS CALIBRATION?

YES

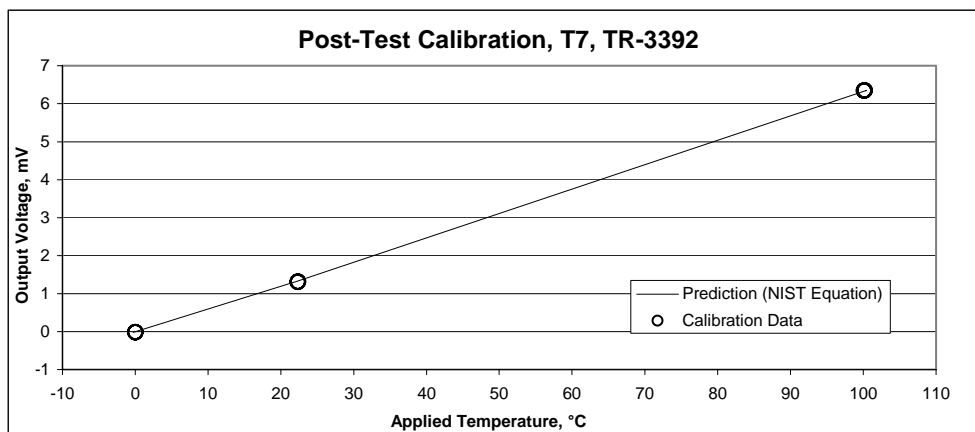


Table 19: Post-test calibrations TC8, TR-3395

UNCERTAINTY ANALYSIS

TR-3395

page _____ of _____

Post-test cal date: 14 June 2005

(Note: This uncertainty is the variance of the actual T from the NIST curve (Eq.1) based on the output mV)

Calibration Data			Calculated			
Temperature	Standard	Voltage	Temperature		Curve	Curve Fit
Medium	Temp	Output	(eq. 1)	Error	Fit	Error
	(°C)	(mV)	(°C)	(°C)	(°C)	(°C)
Ice Point	0.00	-0.009	-0.15	-0.2	-0.24	-0.09
Ice Point	0.00	-0.009	-0.15	-0.2	-0.24	-0.09
Ice Point	0.00	-0.009	-0.15	-0.2	-0.24	-0.09
Ice Point	0.00	-0.009	-0.15	-0.2	-0.24	-0.09
Room Temp	22.32	1.304	21.86	-0.5	22.06	0.20
Room Temp	22.32	1.309	21.94	-0.4	22.06	0.12
Room Temp	22.34	1.313	22.01	-0.3	22.08	0.07
Room Temp	22.35	1.313	22.01	-0.3	22.09	0.08
Boiling Water	100.20	6.309	99.86	-0.3	99.88	0.02
Boiling Water	100.20	6.308	99.84	-0.4	99.88	0.04
Boiling Water	100.10	6.311	99.89	-0.2	99.78	-0.11
Boiling Water	100.10	6.308	99.84	-0.3	99.78	-0.06

$$T\text{ (C)} = 0.001419 + 17.049479 \cdot mV - 0.226837 \cdot mV^2 + 0.005248 \cdot mV^3 \quad (\text{Eq. 1})$$

(Limited Curve Fit, -10°C to +110°C. From NIST (1993) Reference Tables for Type E)

Uncertainty of the Standards:	Temperature Curve Fit: +/-	0.010	°C		
	Thermister: +/-	0.20	°C		
	Ice Bath: +/-	0.10	°C		
	Multimeter: +/- (	0.0045	% RDG +	0.0005	mV)
	= +/-	0.012	°C @	6.31	mV

Accepted Tolerance: +/- 1.7 °C (or 3.1°F)

Statistical Info.				Xbar	Sxx	SEE	MSE
a	b	n	T	(°C)	(C^2)	(C^2)	(C^2)
-0.24	1.00	12.00	2.228	40.83	22112.4	0.115	0.0115

Calculated Uncertainties:

standard	curve-fit	fixed	total	total
uncertainty	uncertainty	uncertainty	uncertainty	uncertainty
(°C)	(°C)	(°C)	(°C)	(°F)
0.22	0.27	0.32	0.5	0.9

PASS CALIBRATION?

YES

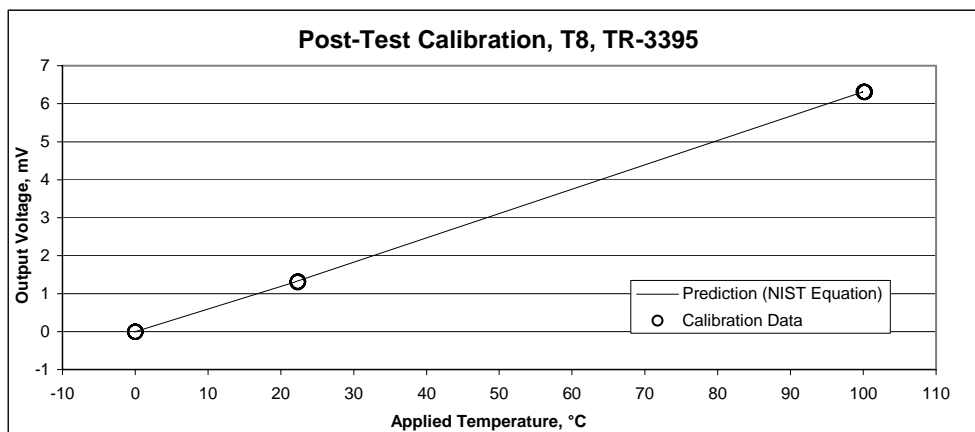


Table 20: Post-test calibrations TC9, TR-3396

UNCERTAINTY ANALYSIS

TR-3396

page _____ of _____

Post-test cal date: 15 June 2005

(Note: This uncertainty is the variance of the actual T from the NIST curve (Eq.1) based on the output mV)

Calibration Data			Calculated			
Temperature	Standard	Voltage	Temperature		Curve	Curve Fit
Medium	Temp	Output	(eq. 1)	Error	Fit	Error
	(°C)	(mV)	(°C)	(°C)	(°C)	(°C)
Ice Point	0.00	-0.007	-0.12	-0.1	-0.18	-0.06
Ice Point	0.00	-0.006	-0.10	-0.1	-0.18	-0.08
Ice Point	0.00	-0.006	-0.10	-0.1	-0.18	-0.08
Ice Point	0.00	-0.007	-0.12	-0.1	-0.18	-0.06
Room Temp	22.37	1.321	22.14	-0.2	22.19	0.05
Room Temp	22.41	1.322	22.16	-0.3	22.23	0.08
Room Temp	22.61	1.332	22.32	-0.3	22.43	0.11
Room Temp	23.04	1.359	22.77	-0.3	22.86	0.10
Boiling Water	100.10	6.316	99.96	-0.1	99.93	-0.03
Boiling Water	100.10	6.312	99.90	-0.2	99.93	0.03
Boiling Water	100.10	6.315	99.94	-0.2	99.93	-0.02
Boiling Water	100.10	6.318	99.99	-0.1	99.93	-0.06

$$T\text{ (C)} = 0.001419 + 17.049479 \cdot mV - 0.226837 \cdot mV^2 + 0.005248 \cdot mV^3 \quad (\text{Eq. 1})$$

(Limited Curve Fit, -10°C to +110°C. From NIST (1993) Reference Tables for Type E)

Uncertainty of the Standards:	Temperature Curve Fit: +/-	0.010	°C		
	Thermister: +/-	0.20	°C		
	Ice Bath: +/-	0.10	°C		
	Multimeter: +/- (	0.0045	% RDG +	0.0005	mV)
	= +/-	0.012	°C @	6.32	mV

Accepted Tolerance: +/- 1.7 °C (or 3.1°F)

Statistical Info.				Xbar	Sxx	SEE	MSE
a	b	n	T	(°C)	(C^2)	(C^2)	(C^2)
-0.18	1.00	12.00	2.228	40.90	22048.5	0.055	0.0055

Calculated Uncertainties:

standard	curve-fit	fixed	total	total
uncertainty	uncertainty	uncertainty	uncertainty	uncertainty
(°C)	(°C)	(°C)	(°C)	(°F)
0.22	0.18	0.18	0.3	0.6

PASS CALIBRATION?

YES

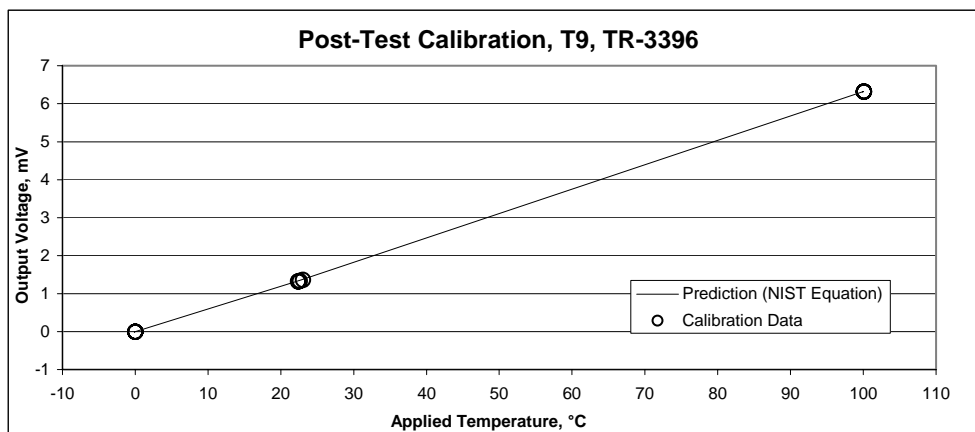


Table 21: Post-test calibrations TC10, TR-3394

UNCERTAINTY ANALYSIS

TR-3394

page _____ of _____

Post-test cal date: 13 June 2005

(Note: This uncertainty is the variance of the actual T from the NIST curve (Eq.1) based on the output mV)

Calibration Data			Calculated			
Temperature	Standard	Voltage	Temperature		Curve	Curve Fit
Medium	Temp	Output	(eq. 1)	Error	Fit	Error
	(°C)	(mV)	(°C)	(°C)	(°C)	(°C)
Ice Point	0.00	-0.048	-0.82	-0.8	-0.43	0.38
Ice Point	0.00	-0.017	-0.29	-0.3	-0.43	-0.14
Ice Point	0.00	-0.017	-0.29	-0.3	-0.43	-0.14
Ice Point	0.00	-0.016	-0.27	-0.3	-0.43	-0.16
Room Temp	23.35	1.385	23.19	-0.2	22.97	-0.22
Room Temp	23.48	1.373	23.00	-0.5	23.10	0.11
Room Temp	23.49	1.375	23.03	-0.5	23.11	0.08
Room Temp	23.97	1.402	23.47	-0.5	23.59	0.12
Boiling Water	100.20	6.320	100.02	-0.2	100.00	-0.02
Boiling Water	100.20	6.316	99.96	-0.2	100.00	0.04
Boiling Water	100.20	6.322	100.05	-0.2	100.00	-0.05
Boiling Water	100.20	6.319	100.00	-0.2	100.00	0.00

$$T\text{ (C)} = 0.001419 + 17.049479 \cdot mV - 0.226837 \cdot mV^2 + 0.005248 \cdot mV^3 \quad (\text{Eq. 1})$$

(Limited Curve Fit, -10°C to +110°C. From NIST (1993) Reference Tables for Type E)

Uncertainty of the Standards:	Temperature Curve Fit: +/-	0.010	°C		
	Thermister: +/-	0.20	°C		
	Ice Bath: +/-	0.10	°C		
	Multimeter: +/- (	0.0045	% RDG +	0.0005	mV)
	= +/-	0.012	°C @	6.32	mV

Accepted Tolerance: +/- 1.7 °C (or 3.1°F)

Statistical Info.				Xbar	Sxx	SEE	MSE
a	b	n	T	(°C)	(C^2)	(C^2)	(C^2)
-0.43	1.00	12.00	2.228	41.26	21956.9	0.302	0.0302

Calculated Uncertainties:

standard	curve-fit	fixed	total	total
uncertainty	uncertainty	uncertainty	uncertainty	uncertainty
(°C)	(°C)	(°C)	(°C)	(°F)
0.22	0.43	0.43	0.6	1.2

PASS CALIBRATION?

YES

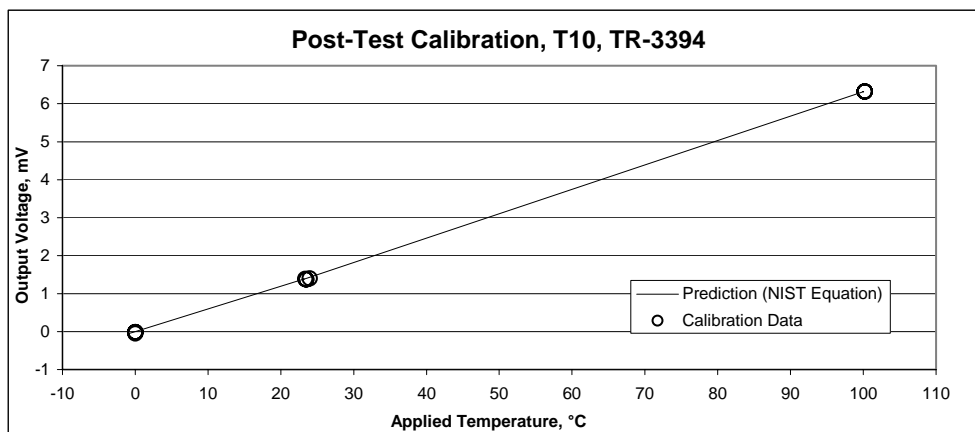


Table 22: Post-test calibrations TC11, TR-3393

UNCERTAINTY ANALYSIS

TR-3393

page _____ of _____

Post-test cal date: 14 June 2005

(Note: This uncertainty is the variance of the actual T from the NIST curve (Eq.1) based on the output mV)

Calibration Data			Calculated			
Temperature	Standard	Voltage	Temperature		Curve	Curve Fit
Medium	Temp	Output	(eq. 1)	Error	Fit	Error
	(°C)	(mV)	(°C)	(°C)	(°C)	(°C)
Ice Point	0.00	-0.018	-0.31	-0.3	-0.36	-0.06
Ice Point	0.00	-0.018	-0.31	-0.3	-0.36	-0.06
Ice Point	0.00	-0.018	-0.31	-0.3	-0.36	-0.06
Ice Point	0.00	-0.018	-0.31	-0.3	-0.36	-0.06
Room Temp	23.41	1.377	23.06	-0.3	23.14	0.08
Room Temp	23.48	1.382	23.14	-0.3	23.21	0.07
Room Temp	23.55	1.385	23.19	-0.4	23.28	0.09
Room Temp	23.63	1.392	23.31	-0.3	23.36	0.05
Boiling Water	100.10	6.330	100.17	0.1	100.13	-0.03
Boiling Water	100.10	6.328	100.14	0.0	100.13	0.00
Boiling Water	100.10	6.329	100.15	0.1	100.13	-0.02
Boiling Water	100.10	6.329	100.15	0.1	100.13	-0.02

$$T\text{ (C)} = 0.001419 + 17.049479 \cdot mV - 0.226837 \cdot mV^2 + 0.005248 \cdot mV^3 \quad (\text{Eq. 1})$$

(Limited Curve Fit, -10°C to +110°C. From NIST (1993) Reference Tables for Type E)

Uncertainty of the Standards:	Temperature Curve Fit: +/-	0.010	°C		
	Thermister: +/-	0.20	°C		
	Ice Bath: +/-	0.10	°C		
	Multimeter: +/- (	0.0045	% RDG +	0.0005	mV)
	= +/-	0.012	°C @	6.33	mV

Accepted Tolerance: +/- 1.7 °C (or 3.1°F)

Statistical Info.				Xbar	Sxx	SEE	MSE
a	b	n	T	(°C)	(C^2)	(C^2)	(C^2)
-0.36	1.00	12.00	2.228	41.21	21917.3	0.035	0.0035

Calculated Uncertainties:

standard	curve-fit	fixed	total	total
uncertainty	uncertainty	uncertainty	uncertainty	uncertainty
(°C)	(°C)	(°C)	(°C)	(°F)
0.22	0.15	0.36	0.4	0.8

PASS CALIBRATION?

YES

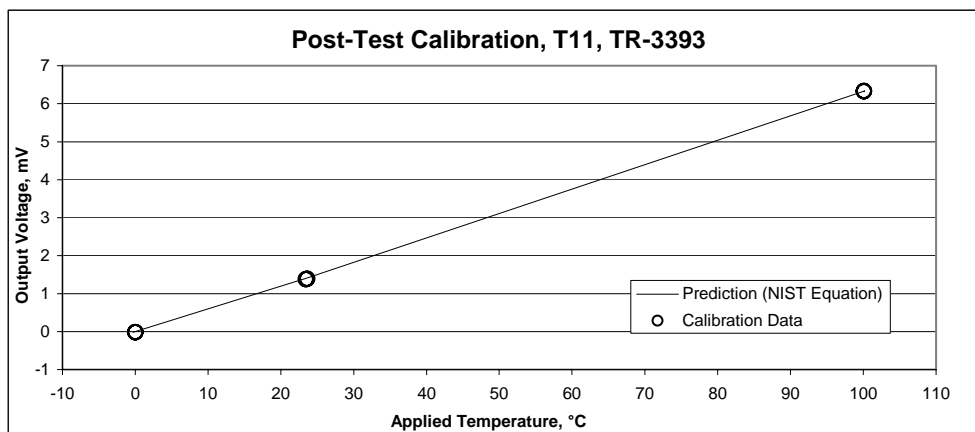


Table 23: Post-test calibrations TC12, TR-3399

UNCERTAINTY ANALYSIS
REF. WSRC-TR-91-106

TR-3399

page _____ of _____

Post-test cal date: 15 June 2005

(Note: This uncertainty is the variance of the actual T from the NIST curve (Eq.1) based on the output mV)

Calibration Data			Calculated			
Temperature	Standard	Voltage	Temperature		Curve	Curve Fit
Medium	Temp	Output	(eq. 1)	Error	Fit	Error
	(°C)	(mV)	(°C)	(°C)	(°C)	(°C)
Ice Point	0.00	-0.017	-0.29	-0.3	-0.36	-0.07
Ice Point	0.00	-0.017	-0.29	-0.3	-0.36	-0.07
Ice Point	0.00	-0.017	-0.29	-0.3	-0.36	-0.07
Ice Point	0.00	-0.017	-0.29	-0.3	-0.36	-0.07
Room Temp	22.37	1.317	22.07	-0.3	22.15	0.08
Room Temp	22.41	1.318	22.09	-0.3	22.19	0.10
Room Temp	22.60	1.331	22.30	-0.3	22.38	0.08
Room Temp	23.04	1.356	22.72	-0.3	22.83	0.11
Boiling Water	100.10	6.345	100.39	0.3	100.37	-0.01
Boiling Water	100.10	6.347	100.42	0.3	100.37	-0.04
Boiling Water	100.10	6.344	100.37	0.3	100.37	0.00
Boiling Water	100.10	6.346	100.40	0.3	100.37	-0.03

$$T\text{ (C)} = 0.001419 + 17.049479 \cdot mV - 0.226837 \cdot mV^2 + 0.005248 \cdot mV^3 \quad (\text{Eq. 1})$$

(Limited Curve Fit, -10°C to +110°C. From NIST (1993) Reference Tables for Type E)

Uncertainty of the Standards:	Temperature Curve Fit: +/-	0.010	°C		
	Thermister: +/-	0.20	°C		
	Ice Bath: +/-	0.10	°C		
	Multimeter: +/- (	0.0045	% RDG +	0.0005	mV)
	= +/-	0.012	°C @	6.35	mV

Accepted Tolerance: +/- 1.7 °C (or 3.1°F)

Statistical Info.				Xbar	Sxx	SEE	MSE
a	b	n	T	(°C)	(C^2)	(C^2)	(C^2)
-0.36	1.01	12.00	2.228	40.90	22048.9	0.058	0.0058

Calculated Uncertainties:

standard	curve-fit	fixed	total	total
uncertainty	uncertainty	uncertainty	uncertainty	uncertainty
(°C)	(°C)	(°C)	(°C)	(°F)
0.22	0.19	0.36	0.5	0.8

PASS CALIBRATION?

YES

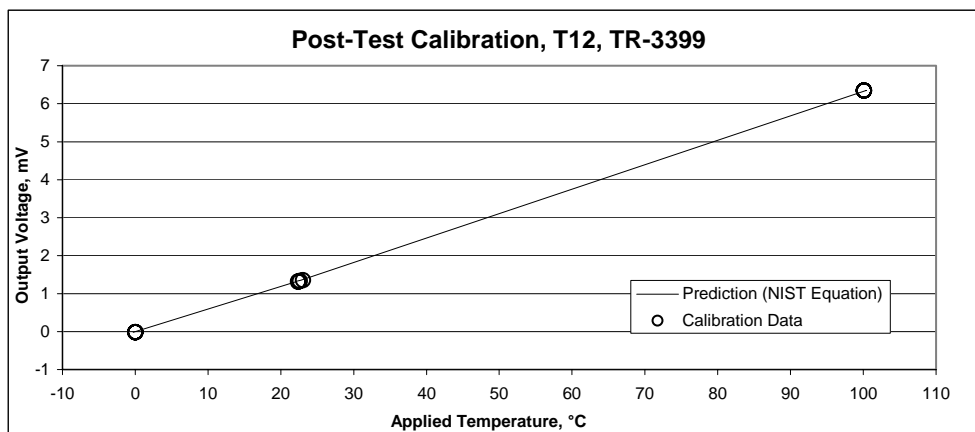


Table 24 Post-test Calibration TC9, TR-3396

UNCERTAINTY ANALYSIS
REF. WSRC-TR-91-106

TR-3396

page _____ of _____

Post-test cal date: 15 June 2005

(Note: This uncertainty is the variance of the actual T from the NIST curve (Eq.1) based on the output mV)

Calibration Data			Calculated			
Temperature	Standard	Voltage	Temperature		Curve	Curve Fit
Medium	Temp	Output	(eq. 1)	Error	Fit	Error
	(°C)	(mV)	(°C)	(°C)	(°C)	(°C)
Ice Point	0.00	-0.007	-0.12	-0.1	-0.18	-0.06
Ice Point	0.00	-0.006	-0.10	-0.1	-0.18	-0.08
Ice Point	0.00	-0.006	-0.10	-0.1	-0.18	-0.08
Ice Point	0.00	-0.007	-0.12	-0.1	-0.18	-0.06
Room Temp	22.37	1.321	22.14	-0.2	22.19	0.05
Room Temp	22.41	1.322	22.16	-0.3	22.23	0.08
Room Temp	22.61	1.332	22.32	-0.3	22.43	0.11
Room Temp	23.04	1.359	22.77	-0.3	22.86	0.10
Boiling Water	100.10	6.316	99.96	-0.1	99.93	-0.03
Boiling Water	100.10	6.312	99.90	-0.2	99.93	0.03
Boiling Water	100.10	6.315	99.94	-0.2	99.93	-0.02
Boiling Water	100.10	6.318	99.99	-0.1	99.93	-0.06

$$T\text{ (C)} = 0.001419 + 17.049479 \cdot mV - 0.226837 \cdot mV^2 + 0.005248 \cdot mV^3 \quad (\text{Eq. 1})$$

(Limited Curve Fit, -10°C to +110°C. From NIST (1993) Reference Tables for Type E)

Uncertainty of the Standards:	Temperature Curve Fit: +/-	0.010	°C		
	Thermister: +/-	0.20	°C		
	Ice Bath: +/-	0.10	°C		
	Multimeter: +/- (	0.0045	% RDG +	0.0005	mV)
	= +/-	0.012	°C @	6.32	mV

Accepted Tolerance: +/- 1.7 °C (or 3.1°F)

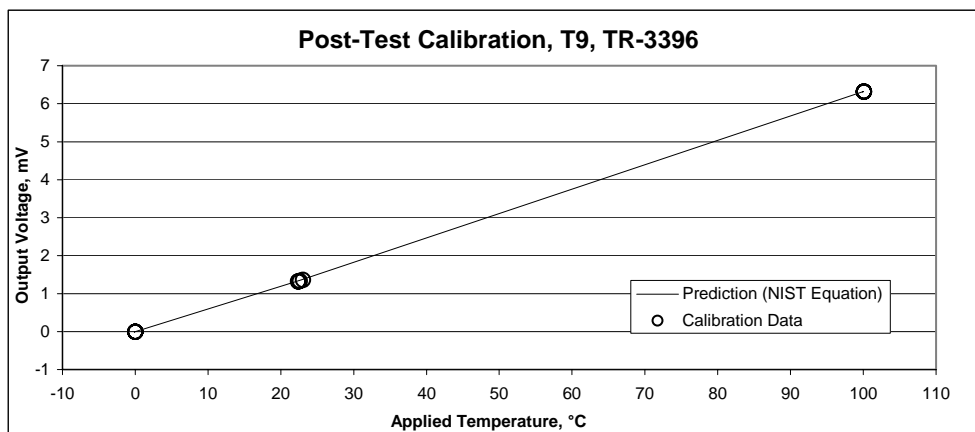
Statistical Info.				Xbar	Sxx	SEE	MSE
a	b	n	T	(°C)	(C^2)	(C^2)	(C^2)
-0.18	1.00	12.00	2.228	40.90	22048.5	0.055	0.0055

Calculated Uncertainties:

standard	curve-fit	fixed	total	total
uncertainty	uncertainty	uncertainty	uncertainty	uncertainty
(°C)	(°C)	(°C)	(°C)	(°F)
0.22	0.18	0.18	0.3	0.6

PASS CALIBRATION?

YES



V. Crucible Information

MgO Crucible

Weight: 664.46 gram

Volume: 800 mL

Catalog Number: SC40045

Supplier: Ozark Technical Ceramics

402 Ware St.

Webb City, MO 64870-2789

417-673-2463

ozarktech.com

Material: MgO

Melting Point: 2825° C

Alumina Crucible

Weight: 521.48 gram

Volume: 750 mL

Material: 99.8% Al₂O₃

Operating Conditions: 1950° C

Catalog Number ACA-3716

Supplier: McDanel Advanced Ceramic Technologies

Beaver Falls, PA 15010

724-843-8300

techceramics.com

VI. Material Mass Inside the Crucible

The crucible contains 245 grams of MgO, which will have approximately the same heat capacity as 610 grams of Tantalum oxide (Ta₂O₅).

VII. Comparing the Phase III HBL Glove Port Panel to the Panel used in the Test:

The inner glass plate is the same on the test panel and the HBL panel.

The gasket material, locations, and thickness are the same on the test panel and HBL panel.

The glove port is the same on the test panel and the HBL panel.

The Acrylic Shield in the HBL Panel is 5 1/8" thick, however, the Acrylic in the test panel is 4 1/16" thick.

The Lead Glass Plate in the HBL Panel is 1" thick, however, the Lead Glass Panel in the Test is 1.25" thick.

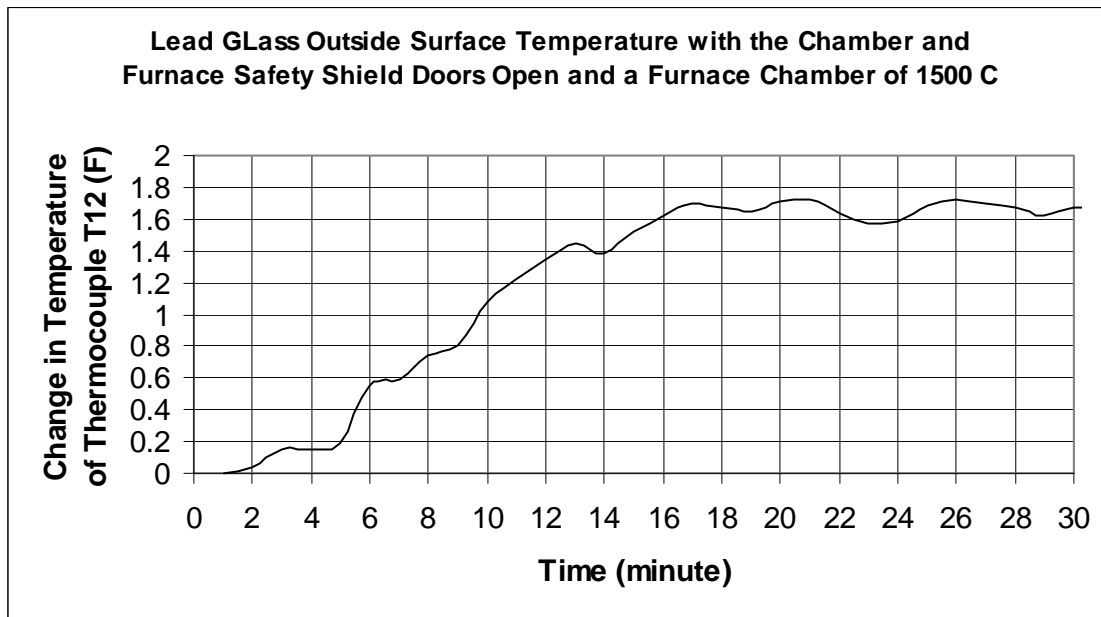


Figure 9: Lead Glass Outside Surface Temperature

The ΔT_{\max} during the 1500° C Furnace Chamber Test for the Outside Surface of the Lead Glass Plate was less than 2° F, which is less than the +/- 3.1° F uncertainty of the experiment. This shows that the Lead Glass Plate and the Acrylic are extremely slow heat conductors. Therefore, the difference in the Lead Glass Plate thickness and Acrylic thickness from the Test Glove Port Panel to the HBL Glove Port Panels is insignificant.

VIII. Test Data:

Initially the Furnace was allowed to heat up and maintain the desired temperature two hours prior to collecting data, then one hour prior to collecting additional data.

The DAS system was activated prior to pressing the switch to open the Furnace Chamber so the data collected during the first 10 to 30 seconds of each test shows no change in temperature.

The detailed information related to each section of the test is stated in the Table Title.

Table 25: Chamber Temperature Maintained at 800° C for Two Hours Prior to Opening the Chamber, Bottom Chamber Door Lowered to the Lowest Height, Furnace Safety Shield Doors Remained Closed

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
5/26/2005	11:30:52 AM	79.957	77.809	77.762	76.807	77.443	75.416
5/26/2005	11:31:31 AM	79.957	77.809	77.762	76.807	77.443	75.416
5/26/2005	11:32:01 AM	79.957	77.809	77.762	76.762	77.397	75.462
5/26/2005	11:32:31 AM	126.584	108.063	102.453	112.83	78.253	75.597
5/26/2005	11:33:01 AM	163.727	137.477	130.037	139.691	79.389	75.607
5/26/2005	11:33:31 AM	173.835	146.932	138.983	145.805	80.423	75.653
5/26/2005	11:33:59 AM	172.706	146.377	139.711	144.696	81.321	75.653
5/26/2005	11:34:09 AM	171.293	148.347	138.864	143.424	81.646	75.663
5/26/2005	11:34:19 AM	169.692	146.548	138.897	141.875	81.95	75.698
5/26/2005	11:34:29 AM	168.056	147.23	137.482	140.462	82.219	75.698
5/26/2005	11:34:39 AM	166.503	146.59	136.495	139.734	82.533	75.698
5/26/2005	11:34:49 AM	164.905	144.542	135.292	138.49	82.757	75.743
5/26/2005	11:34:59 AM	162.895	144.595	134.227	137.384	83.082	75.753
5/26/2005	11:35:09 AM	162.137	144.894	133.366	135.795	83.306	75.753
5/26/2005	11:35:19 AM	161.209	144.467	131.945	133.73	83.53	75.753
5/26/2005	11:35:29 AM	160.619	144.424	131.428	132.351	83.799	75.753
5/26/2005	11:35:39 AM	160.46	143.366	130.791	130.42	83.989	75.809
5/26/2005	11:35:49 AM	158.02	142.093	130.542	131.423	84.223	75.819
5/26/2005	11:35:59 AM	156.107	141.527	129.194	130.636	84.482	75.809
5/26/2005	11:36:09 AM	154.761	140.423	128.945	129.739	84.671	75.865
5/26/2005	11:36:19 AM	154.878	140.242	128.416	127.265	84.84	75.854
5/26/2005	11:36:29 AM	152.014	138.59	127.183	127.329	84.995	75.875

Table 25 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
5/26/2005	11:30:52 AM	75.65	75.951	74.553	76.357	75.683	75.782
5/26/2005	11:31:31 AM	75.65	75.951	74.553	76.357	75.683	75.782
5/26/2005	11:32:01 AM	75.65	75.951	74.734	76.448	75.774	75.872
5/26/2005	11:32:31 AM	75.65	75.996	74.689	76.402	75.683	75.827
5/26/2005	11:33:01 AM	75.705	76.007	74.745	76.413	75.739	75.792
5/26/2005	11:33:31 AM	75.66	76.052	74.745	76.368	75.694	75.792
5/26/2005	11:33:59 AM	75.66	76.052	74.745	76.413	75.694	75.837
5/26/2005	11:34:09 AM	75.716	76.062	74.755	76.378	75.75	75.803
5/26/2005	11:34:19 AM	75.705	76.052	74.745	76.368	75.694	75.792
5/26/2005	11:34:29 AM	75.705	76.097	74.745	76.413	75.694	75.837
5/26/2005	11:34:39 AM	75.705	76.097	74.79	76.458	75.739	75.837
5/26/2005	11:34:49 AM	75.705	76.097	74.745	76.413	75.694	75.837
5/26/2005	11:34:59 AM	75.761	76.153	74.8	76.423	75.75	75.848
5/26/2005	11:35:09 AM	75.761	76.198	74.8	76.423	75.704	75.848
5/26/2005	11:35:19 AM	75.806	76.198	74.755	76.423	75.704	75.803
5/26/2005	11:35:29 AM	75.806	76.243	74.755	76.423	75.704	75.803
5/26/2005	11:35:39 AM	75.817	76.253	74.766	76.434	75.67	75.813
5/26/2005	11:35:49 AM	75.827	76.309	74.821	76.49	75.725	75.869
5/26/2005	11:35:59 AM	75.817	76.298	74.856	76.479	75.715	75.813
5/26/2005	11:36:09 AM	75.872	76.354	74.821	76.444	75.68	75.869
5/26/2005	11:36:19 AM	75.862	76.389	74.811	76.389	75.625	75.813
5/26/2005	11:36:29 AM	75.928	76.41	74.877	76.455	75.691	75.789

Table 26: Chamber Temperature Maintained at 1000° C for One Hour Prior to Opening the Chamber, Bottom Chamber Door Lowered to the Lowest Height, Furnace Safety Shield Doors Remained Closed

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
5/26/2005	12:46:59 PM	81.22	79.884	79.477	78.209	78.753	76.639
5/26/2005	12:47:17 PM	81.22	79.884	79.477	78.209	78.753	76.639
5/26/2005	12:47:27 PM	81.32	79.849	79.487	78.219	78.718	76.695
5/26/2005	12:47:37 PM	81.365	79.849	79.487	78.129	78.718	76.649
5/26/2005	12:47:47 PM	81.635	79.894	79.442	78.084	78.673	76.604
5/26/2005	12:47:57 PM	81.814	79.849	79.397	77.994	78.763	76.695
5/26/2005	12:48:07 PM	81.87	79.905	79.453	78.185	78.729	76.66
5/26/2005	12:48:17 PM	117.484	101.346	96.508	102.217	79.494	76.84
5/26/2005	12:48:27 PM	166.223	134.224	125.859	141.803	80.393	76.84
5/26/2005	12:48:37 PM	196.113	156.206	146.434	163.238	81.067	76.84
5/26/2005	12:48:47 PM	212.196	168.428	161.267	179.106	81.74	76.885
5/26/2005	12:48:57 PM	223.147	179.044	170.048	188.153	82.369	76.885
5/26/2005	12:49:07 PM	230.334	187.481	177.243	190.56	82.962	76.896
5/26/2005	12:49:17 PM	233.349	189.756	180.073	192.5	83.635	76.941
5/26/2005	12:49:27 PM	233.389	190.541	181.86	192.459	84.217	76.941
5/26/2005	12:49:37 PM	231.349	191.625	181.413	192.592	84.855	76.952
5/26/2005	12:49:47 PM	230.746	192.202	180.374	188.131	85.392	76.997
5/26/2005	12:49:57 PM	228.581	191.882	179.261	186.071	85.939	77.007
5/26/2005	12:50:07 PM	224.952	189.941	178.179	183.79	86.431	77.007
5/26/2005	12:50:17 PM	222.205	185.637	172.505	183.915	86.968	77.052
5/26/2005	12:50:27 PM	217.435	181.205	170.548	186.288	87.47	77.063
5/26/2005	12:50:37 PM	216.42	184.154	172.807	179.936	87.917	77.108
5/26/2005	12:50:47 PM	213.454	183.075	171.552	175.811	88.363	77.108
5/26/2005	12:50:57 PM	209.106	180.882	168.463	172.645	88.82	77.118
5/26/2005	12:51:07 PM	206.452	178.968	167.54	168.625	89.266	77.118
5/26/2005	12:51:17 PM	202.78	177.103	164.862	167.166	89.589	77.219
5/26/2005	12:51:27 PM	199.295	174.515	162.885	163.929	89.99	77.174
5/26/2005	12:51:37 PM	196.098	172.309	161.463	162.591	90.357	77.23
5/26/2005	12:51:47 PM	192.978	171.189	159.111	159.986	90.724	77.24
5/26/2005	12:51:57 PM	182.924	165.44	152.169	150.668	90.902	77.195

Table 26 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
5/26/2005	12:46:59 PM	76.827	77.128	75.19	77.444	76.049	76.282
5/26/2005	12:47:17 PM	76.827	77.128	75.19	77.444	76.049	76.282
5/26/2005	12:47:27 PM	76.792	77.138	75.246	77.364	76.014	76.248
5/26/2005	12:47:37 PM	76.792	77.138	75.291	77.454	76.059	76.293
5/26/2005	12:47:47 PM	76.792	77.138	75.336	77.454	76.104	76.338
5/26/2005	12:47:57 PM	76.838	77.138	75.336	77.454	76.059	76.293
5/26/2005	12:48:07 PM	76.848	77.149	75.347	77.51	76.115	76.349
5/26/2005	12:48:17 PM	76.803	77.149	75.392	77.51	76.115	76.349
5/26/2005	12:48:27 PM	76.803	77.194	75.347	77.465	76.07	76.304
5/26/2005	12:48:37 PM	76.848	77.194	75.392	77.51	76.07	76.304
5/26/2005	12:48:47 PM	76.848	77.194	75.392	77.465	76.07	76.304
5/26/2005	12:48:57 PM	76.848	77.239	75.347	77.465	76.025	76.258
5/26/2005	12:49:07 PM	76.859	77.25	75.357	77.475	75.99	76.269
5/26/2005	12:49:17 PM	76.859	77.25	75.447	77.52	76.035	76.359
5/26/2005	12:49:27 PM	76.859	77.25	75.447	77.475	76.08	76.359
5/26/2005	12:49:37 PM	76.869	77.26	75.503	77.531	76.091	76.37
5/26/2005	12:49:47 PM	76.869	77.305	75.503	77.531	76.091	76.325
5/26/2005	12:49:57 PM	76.88	77.316	75.514	77.496	76.102	76.38
5/26/2005	12:50:07 PM	76.925	77.316	75.514	77.541	76.147	76.38
5/26/2005	12:50:17 PM	76.88	77.361	75.559	77.541	76.102	76.38
5/26/2005	12:50:27 PM	76.935	77.371	75.615	77.597	76.157	76.436
5/26/2005	12:50:37 PM	76.935	77.416	75.615	77.552	76.112	76.436
5/26/2005	12:50:47 PM	76.98	77.461	75.615	77.552	76.067	76.391
5/26/2005	12:50:57 PM	76.946	77.517	75.625	77.563	76.078	76.356
5/26/2005	12:51:07 PM	76.991	77.562	75.625	77.517	76.078	76.356
5/26/2005	12:51:17 PM	77.001	77.573	75.681	77.573	76.088	76.367
5/26/2005	12:51:27 PM	77.046	77.618	75.726	77.573	76.088	76.412
5/26/2005	12:51:37 PM	77.057	77.673	75.691	77.584	76.099	76.422
5/26/2005	12:51:47 PM	77.113	77.774	75.747	77.639	76.064	76.433
5/26/2005	12:51:57 PM	77.158	77.774	75.747	77.639	76.109	76.433

Table 27: Chamber Temperature Maintained at 1200° C for One Hour Prior to Opening the Chamber, Bottom Chamber Door Lowered to the Lowest Height, Furnace Safety Shield Doors Remained Closed

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
5/26/2005	2:26:05 PM	83.575	83.138	82.193	81.063	81.471	78.192
5/26/2005	2:26:34 PM	83.575	83.138	82.193	81.063	81.471	78.192
5/26/2005	2:26:44 PM	83.754	83.094	82.283	80.929	81.471	78.237
5/26/2005	2:26:54 PM	102.391	93.411	88.948	87.784	82.145	78.462
5/26/2005	2:27:04 PM	198.918	157.57	145.677	168.753	83.815	78.473
5/26/2005	2:27:14 PM	250.049	195.489	182.442	211.474	85.024	78.518
5/26/2005	2:27:24 PM	281.173	220.878	206.486	232.226	86.143	78.518
5/26/2005	2:27:34 PM	297.264	236.017	222.765	246.779	87.205	78.552
5/26/2005	2:27:44 PM	307.614	243.458	231.91	256.034	88.277	78.597
5/26/2005	2:27:54 PM	310.857	247.215	235.572	260	89.359	78.608
5/26/2005	2:28:04 PM	312.241	251.113	238.055	257.944	90.339	78.653
5/26/2005	2:28:14 PM	312.471	253.694	235.932	253.466	91.32	78.698
5/26/2005	2:28:24 PM	311.318	251.471	233.446	248.381	92.21	78.743
5/26/2005	2:28:34 PM	304.819	249.89	229.879	242.331	93.11	78.799
5/26/2005	2:28:44 PM	301.576	246.109	225.731	235.647	93.866	78.799
5/26/2005	2:28:54 PM	294.346	243.606	220.974	231.642	94.676	78.854
5/26/2005	2:29:04 PM	290.96	240.44	219.305	226.236	95.42	78.889
5/26/2005	2:29:14 PM	284.937	236.606	215.26	221.438	96.185	78.899
5/26/2005	2:29:24 PM	278.299	231.467	212.699	217.509	96.895	78.944
5/26/2005	2:29:34 PM	272.736	228.892	207.444	213.732	97.559	78.989
5/26/2005	2:29:44 PM	272.157	223.697	202.221	209.343	98.234	79

Table 27 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
5/26/2005	2:26:05 PM	78.425	78.725	76.565	78.906	76.882	77.296
5/26/2005	2:26:34 PM	78.425	78.725	76.565	78.906	76.882	77.296
5/26/2005	2:26:44 PM	78.425	78.725	76.655	78.951	76.972	77.341
5/26/2005	2:26:54 PM	78.47	78.77	76.655	78.951	76.972	77.386
5/26/2005	2:27:04 PM	78.481	78.826	76.711	79.052	76.982	77.396
5/26/2005	2:27:14 PM	78.436	78.871	76.711	79.007	77.028	77.441
5/26/2005	2:27:24 PM	78.481	78.871	76.711	79.052	77.028	77.396
5/26/2005	2:27:34 PM	78.47	78.905	76.745	78.996	77.017	77.431
5/26/2005	2:27:44 PM	78.515	78.95	76.745	79.086	77.017	77.431
5/26/2005	2:27:54 PM	78.526	78.961	76.756	79.007	76.982	77.396
5/26/2005	2:28:04 PM	78.526	79.006	76.756	79.052	77.028	77.441
5/26/2005	2:28:14 PM	78.571	79.006	76.711	79.007	76.982	77.396
5/26/2005	2:28:24 PM	78.571	79.051	76.756	79.052	76.982	77.441
5/26/2005	2:28:34 PM	78.626	79.062	76.767	79.062	76.993	77.452
5/26/2005	2:28:44 PM	78.581	79.152	76.812	79.107	77.038	77.452
5/26/2005	2:28:54 PM	78.637	79.162	76.822	79.073	77.049	77.463
5/26/2005	2:29:04 PM	78.626	79.197	76.812	79.062	76.993	77.452
5/26/2005	2:29:14 PM	78.682	79.297	76.822	79.118	77.049	77.418
5/26/2005	2:29:24 PM	78.727	79.342	76.822	79.073	76.959	77.418
5/26/2005	2:29:34 PM	78.727	79.342	76.822	79.073	76.959	77.418
5/26/2005	2:29:44 PM	78.783	79.488	76.833	79.128	77.014	77.473

Table 28: Data Collected after the Table 27 Data was collected and the Furnace Chamber Closed

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
5/26/2005	2:30:04 PM	224.841	203.933	176.648	170.501	98.411	78.955
5/26/2005	2:30:32 PM	224.841	203.933	176.648	170.501	98.411	78.955
5/26/2005	2:30:42 PM	170.667	161.949	134.488	120.358	98.456	79
5/26/2005	2:30:52 PM	165.221	155.494	128.592	114.918	98.422	79.011
5/26/2005	2:31:02 PM	156.415	148.837	123.537	109.717	98.521	79.021
5/26/2005	2:31:12 PM	147.498	142.651	118.582	105.806	98.521	79.021
5/26/2005	2:31:22 PM	140.492	137.38	113.87	101.838	98.432	79.021
5/26/2005	2:31:32 PM	133.578	132.562	110.193	99.008	98.344	79.021
5/26/2005	2:31:42 PM	127.848	128.773	107.746	96.493	98.31	79.077
5/26/2005	2:31:52 PM	122.213	125.571	105.284	94.184	98.221	79.032
5/26/2005	2:32:02 PM	117.915	122.631	103.003	92.728	98.099	79.042
5/26/2005	2:32:12 PM	114.859	119.543	100.531	91.392	98.01	79.088
5/26/2005	2:32:22 PM	111.534	115.705	98.762	90.545	97.877	79.088
5/26/2005	2:32:32 PM	109.034	113.17	97.744	89.52	97.745	79.088
5/26/2005	2:32:42 PM	105.737	110.015	97.168	88.895	97.567	79.132
5/26/2005	2:32:52 PM	104.161	108.752	96.204	88.191	97.489	79.098
5/26/2005	2:33:02 PM	101.602	107.302	95.538	87.521	97.268	79.143
5/26/2005	2:33:12 PM	99.712	104.671	93.995	86.995	97.189	79.154
5/26/2005	2:33:22 PM	98.118	103.04	93.24	86.727	97.012	79.154
5/26/2005	2:33:32 PM	97.232	101.671	92.306	85.922	96.879	79.154
5/26/2005	2:33:42 PM	96.134	100.842	91.916	85.754	96.668	79.164
5/26/2005	2:33:52 PM	94.713	100.046	91.782	85.709	96.535	79.164
5/26/2005	2:34:02 PM	93.246	97.877	91.604	85.664	96.402	79.164
5/26/2005	2:34:12 PM	91.778	95.881	91.426	85.664	96.225	79.164
5/26/2005	2:34:22 PM	90.709	94.816	91.07	85.709	96.047	79.164
5/26/2005	2:34:32 PM	89.906	93.704	90.892	85.53	95.914	79.164
5/26/2005	2:34:42 PM	89.738	93.092	90.1	85.317	95.791	79.175
5/26/2005	2:34:52 PM	89.827	93.359	90.145	84.869	95.481	79.22

Table 28 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
5/26/2005	2:35:02 PM	89.56	92.914	89.833	84.421	95.303	79.22
5/26/2005	2:35:12 PM	89.292	92.736	89.565	84.018	95.17	79.22
5/26/2005	2:35:22 PM	88.99	92.613	89.219	83.849	95.003	79.276
5/26/2005	2:35:32 PM	88.722	92.213	89.085	83.804	94.781	79.231
5/26/2005	2:35:42 PM	88.633	91.634	88.639	83.49	94.648	79.231
5/26/2005	2:35:52 PM	88.544	91.456	88.327	83.176	94.47	79.276
5/26/2005	2:36:02 PM	88.242	91.422	88.159	83.052	94.303	79.286
5/26/2005	2:36:12 PM	88.108	91.021	87.668	82.873	94.214	79.286
5/26/2005	2:36:22 PM	88.029	90.675	87.366	82.704	94.002	79.297
5/26/2005	2:36:32 PM	88.118	90.274	87.142	82.525	93.869	79.252
5/26/2005	2:36:42 PM	88.208	90.14	86.919	82.48	93.691	79.252
5/26/2005	2:37:42 PM	87.291	89.403	85.778	81.693	92.69	79.318
5/26/2005	2:38:42 PM	86.06	87.95	85.128	82.028	91.91	79.384
5/26/2005	2:39:42 PM	85.668	86.396	84.959	82.353	91.074	79.395
5/26/2005	2:40:42 PM	85.141	86.183	84.612	81.691	90.327	79.451
5/26/2005	2:41:42 PM	85.107	85.746	84.13	81.477	89.669	79.461
5/26/2005	2:42:42 PM	85.252	84.951	83.782	81.577	88.966	79.472
5/26/2005	2:43:42 PM	84.456	84.872	83.389	81.318	88.441	79.483
5/26/2005	2:44:42 PM	84.322	84.603	83.345	81.273	87.861	79.528
5/26/2005	2:45:42 PM	84.77	84.603	83.031	81.004	87.414	79.528
5/26/2005	2:46:42 PM	84.388	84.266	82.828	81.205	86.988	79.549
5/26/2005	2:47:42 PM	84.029	84.221	82.828	81.339	86.586	79.549
5/26/2005	2:48:42 PM	84.085	84.142	82.838	81.395	86.283	79.56
5/26/2005	2:49:42 PM	84.006	84.153	82.849	81.361	85.936	79.57
5/26/2005	3:13:48 PM	87.082	86.201	84.137	82.337	83.82	79.783
5/26/2005	3:13:57 PM	87.082	86.201	84.137	82.337	83.82	79.783
5/26/2005	3:14:57 PM	87.887	86.066	84.092	82.202	83.775	79.783
5/26/2005	3:15:57 PM	87.251	85.742	84.216	82.55	83.854	79.773
5/26/2005	3:16:57 PM	87.463	85.956	84.34	82.45	83.844	79.762
5/26/2005	3:17:57 PM	87.363	86.258	84.374	82.35	83.833	79.751
5/26/2005	3:30:01 PM	87.666	87.097	85.124	83.326	84.181	79.831
5/26/2005	3:30:12 PM	87.666	87.097	85.124	83.326	84.181	79.831
5/26/2005	3:31:12 PM	87.978	86.963	85.079	82.967	84.226	79.831
5/26/2005	3:32:12 PM	88.157	87.232	84.99	82.698	84.27	79.876
5/26/2005	3:33:12 PM	88.37	87.176	84.711	82.642	84.305	79.91
5/26/2005	3:34:12 PM	88.716	86.942	84.7	82.632	84.339	79.854

Table 28 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
5/26/2005	2:30:04 PM	78.873	79.533	76.833	79.128	76.924	77.428
5/26/2005	2:30:32 PM	78.873	79.533	76.833	79.128	76.924	77.428
5/26/2005	2:30:42 PM	79.053	79.848	76.968	79.218	77.014	77.473
5/26/2005	2:30:52 PM	79.063	79.903	76.979	79.274	77.07	77.484
5/26/2005	2:31:02 PM	79.119	80.004	76.989	79.285	77.036	77.495
5/26/2005	2:31:12 PM	79.164	80.094	77.035	79.285	77.081	77.495
5/26/2005	2:31:22 PM	79.254	80.139	77.08	79.33	77.036	77.495
5/26/2005	2:31:32 PM	79.254	80.228	77.08	79.375	77.036	77.54
5/26/2005	2:31:42 PM	79.354	80.284	77.09	79.34	77.001	77.55
5/26/2005	2:31:52 PM	79.399	80.374	77.135	79.43	77.046	77.55
5/26/2005	2:32:02 PM	79.455	80.474	77.101	79.441	77.012	77.516
5/26/2005	2:32:12 PM	79.5	80.519	77.146	79.486	77.012	77.561
5/26/2005	2:32:22 PM	79.545	80.609	77.146	79.486	77.057	77.516
5/26/2005	2:32:32 PM	79.59	80.609	77.236	79.621	77.102	77.606
5/26/2005	2:32:42 PM	79.635	80.699	77.191	79.531	77.012	77.516
5/26/2005	2:32:52 PM	79.69	80.755	77.202	79.542	77.068	77.572
5/26/2005	2:33:02 PM	79.735	80.799	77.202	79.587	77.023	77.527
5/26/2005	2:33:12 PM	79.791	80.855	77.212	79.642	77.078	77.582
5/26/2005	2:33:22 PM	79.791	80.9	77.257	79.687	77.123	77.582
5/26/2005	2:33:32 PM	79.836	80.9	77.212	79.732	77.078	77.582
5/26/2005	2:33:42 PM	79.892	81	77.223	79.743	77.089	77.593
5/26/2005	2:33:52 PM	79.937	81.045	77.223	79.743	77.044	77.593
5/26/2005	2:34:02 PM	79.937	81.045	77.178	79.788	77.089	77.548
5/26/2005	2:34:12 PM	79.982	81.09	77.178	79.788	77.089	77.593
5/26/2005	2:34:22 PM	80.026	81.09	77.223	79.878	77.089	77.593
5/26/2005	2:34:32 PM	80.071	81.18	77.178	79.923	77.134	77.593
5/26/2005	2:34:42 PM	80.082	81.191	77.189	79.888	77.145	77.604
5/26/2005	2:34:52 PM	80.127	81.236	77.144	79.888	77.055	77.558

Table 28 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
5/26/2005	2:35:02 PM	80.127	81.236	77.189	79.888	77.1	77.604
5/26/2005	2:35:12 PM	80.172	81.236	77.189	79.933	77.055	77.604
5/26/2005	2:35:22 PM	80.183	81.246	77.109	79.899	77.02	77.569
5/26/2005	2:35:32 PM	80.183	81.291	77.199	79.989	77.11	77.614
5/26/2005	2:35:42 PM	80.228	81.291	77.244	79.944	77.065	77.569
5/26/2005	2:35:52 PM	80.228	81.336	77.199	80.034	77.11	77.614
5/26/2005	2:36:02 PM	80.283	81.302	77.21	79.999	77.121	77.58
5/26/2005	2:36:12 PM	80.283	81.347	77.21	80.044	77.076	77.58
5/26/2005	2:36:22 PM	80.294	81.357	77.221	80.01	77.087	77.635
5/26/2005	2:36:32 PM	80.294	81.357	77.221	80.1	77.087	77.59
5/26/2005	2:36:42 PM	80.339	81.402	77.221	80.1	77.132	77.635
5/26/2005	2:37:42 PM	80.405	81.423	77.242	80.166	77.108	77.612
5/26/2005	2:38:42 PM	80.471	81.445	77.308	80.232	77.129	77.678
5/26/2005	2:39:42 PM	80.482	81.455	77.274	80.243	77.095	77.599
5/26/2005	2:40:42 PM	80.537	81.421	77.194	80.299	77.15	77.699
5/26/2005	2:41:42 PM	80.548	81.432	77.25	80.399	77.161	77.71
5/26/2005	2:42:42 PM	80.514	81.352	77.261	80.455	77.217	77.721
5/26/2005	2:43:42 PM	80.524	81.318	77.181	80.42	77.182	77.731
5/26/2005	2:44:42 PM	80.524	81.273	77.091	80.42	77.228	77.731
5/26/2005	2:45:42 PM	80.479	81.273	77.001	80.42	77.182	77.686
5/26/2005	2:46:42 PM	80.501	81.205	76.977	80.442	77.204	77.663
5/26/2005	2:47:42 PM	80.456	81.205	76.932	80.442	77.159	77.708
5/26/2005	2:48:42 PM	80.421	81.17	76.943	80.452	77.305	77.763
5/26/2005	2:49:42 PM	80.432	81.091	76.908	80.418	77.27	77.729
5/26/2005	3:13:48 PM	80.24	80.585	77.032	80.451	77.529	77.942
5/26/2005	3:13:57 PM	80.24	80.585	77.032	80.451	77.529	77.942
5/26/2005	3:14:57 PM	80.195	80.585	77.167	80.451	77.484	77.987
5/26/2005	3:15:57 PM	80.23	80.575	77.201	80.441	77.518	77.977
5/26/2005	3:16:57 PM	80.219	80.564	77.191	80.43	77.507	78.011
5/26/2005	3:17:57 PM	80.164	80.508	77.27	80.464	77.542	78.045
5/26/2005	3:30:01 PM	80.198	80.543	77.44	80.454	77.621	78.125
5/26/2005	3:30:12 PM	80.198	80.543	77.44	80.454	77.621	78.125
5/26/2005	3:31:12 PM	80.198	80.543	77.53	80.498	77.711	78.125
5/26/2005	3:32:12 PM	80.243	80.588	77.485	80.454	77.666	78.125
5/26/2005	3:33:12 PM	80.277	80.532	77.564	80.488	77.656	78.159
5/26/2005	3:34:12 PM	80.266	80.566	77.599	80.522	77.69	78.194

Table 29: Repeat of Data in Table 27 using an Aluminum Oxide Crucible instead of a Magnesium Oxide Crucible

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
5/31/2005	11:50:10 AM	81.56	81.842	80.896	80.079	80.757	79.142
5/31/2005	11:50:34 AM	81.56	81.842	80.896	80.079	80.757	79.142
5/31/2005	11:50:44 AM	81.93	81.807	81.041	79.955	80.723	79.107
5/31/2005	11:50:54 AM	82.21	81.863	81.186	79.92	80.733	79.163
5/31/2005	11:51:04 AM	147.665	122.216	114.74	125.585	82.249	79.422
5/31/2005	11:51:14 AM	233.433	179.266	169.434	200.156	83.998	79.467
5/31/2005	11:51:24 AM	279.311	211.105	203.965	237.615	85.307	79.478
5/31/2005	11:51:34 AM	304.784	229.853	224.201	259.025	86.515	79.523
5/31/2005	11:51:44 AM	320.088	242.252	232.023	269.875	87.643	79.578
5/31/2005	11:51:54 AM	327.645	248.86	242.265	273.007	88.749	79.568
5/31/2005	11:52:04 AM	326.51	253.24	248.887	272.153	89.785	79.623
5/31/2005	11:52:14 AM	326.472	250.858	247.177	270.622	90.899	79.668
5/31/2005	11:52:24 AM	321.81	250.619	247.097	265.074	91.879	79.668
5/31/2005	11:52:34 AM	315.412	249.904	244.548	257.689	92.814	79.713
5/31/2005	11:52:44 AM	308.608	243.25	237.677	250.153	93.747	79.713
5/31/2005	11:52:54 AM	300.516	241.303	232.594	242.593	94.602	79.814
5/31/2005	11:53:04 AM	294.592	232.968	228.131	237.794	95.357	79.814
5/31/2005	11:53:14 AM	286.431	231.28	224.785	230.891	96.2	79.814
5/31/2005	11:53:24 AM	278.156	228.825	219.49	225.371	96.953	79.859
5/31/2005	11:53:34 AM	273.739	224.236	214.064	219.194	97.584	79.914
5/31/2005	11:53:44 AM	267.926	219.219	210.769	215.543	98.249	79.914
5/31/2005	11:53:54 AM	261.145	216.867	205.67	209.764	98.913	79.914
5/31/2005	11:54:04 AM	254.308	214.277	201.014	202.705	99.454	79.97
5/31/2005	11:54:14 AM	247.544	211.012	198.544	198.059	99.886	79.959
5/31/2005	11:54:24 AM	244.605	204.366	197.691	194.284	100.338	79.97
5/31/2005	11:54:34 AM	241.172	201.458	193.701	190.076	100.869	80.015
5/31/2005	11:54:44 AM	235.807	199.365	190.278	188.133	101.399	80.015

Table 29 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
5/31/2005	11:50:10 AM	79.014	78.73	75.577	80.08	76.165	76.759
5/31/2005	11:50:34 AM	79.014	78.73	75.577	80.08	76.165	76.759
5/31/2005	11:50:44 AM	78.98	78.785	75.587	80.091	76.22	76.815
5/31/2005	11:50:54 AM	78.991	78.796	75.598	80.101	76.231	76.87
5/31/2005	11:51:04 AM	79.025	78.83	75.587	80.135	76.22	76.86
5/31/2005	11:51:14 AM	79.025	78.875	75.633	80.135	76.22	76.905
5/31/2005	11:51:24 AM	79.036	78.886	75.643	80.146	76.231	76.87
5/31/2005	11:51:34 AM	79.036	78.886	75.643	80.146	76.186	76.825
5/31/2005	11:51:44 AM	79.091	78.942	75.609	80.157	76.196	76.836
5/31/2005	11:51:54 AM	79.036	78.931	75.643	80.146	76.231	76.87
5/31/2005	11:52:04 AM	79.091	78.987	75.654	80.157	76.196	76.836
5/31/2005	11:52:14 AM	79.046	79.032	75.654	80.112	76.242	76.836
5/31/2005	11:52:24 AM	79.091	79.032	75.699	80.067	76.196	76.836
5/31/2005	11:52:34 AM	79.091	79.032	75.699	80.112	76.196	76.836
5/31/2005	11:52:44 AM	79.091	79.076	75.699	80.112	76.196	76.836
5/31/2005	11:52:54 AM	79.147	79.132	75.71	80.167	76.207	76.847
5/31/2005	11:53:04 AM	79.147	79.177	75.755	80.167	76.252	76.847
5/31/2005	11:53:14 AM	79.147	79.267	75.845	80.257	76.297	76.937
5/31/2005	11:53:24 AM	79.192	79.267	75.8	80.212	76.252	76.892
5/31/2005	11:53:34 AM	79.202	79.368	75.81	80.178	76.218	76.902
5/31/2005	11:53:44 AM	79.247	79.413	75.81	80.178	76.218	76.857
5/31/2005	11:53:54 AM	79.292	79.502	75.856	80.223	76.263	76.902
5/31/2005	11:54:04 AM	79.348	79.603	75.911	80.233	76.273	76.913
5/31/2005	11:54:14 AM	79.337	79.682	75.901	80.223	76.263	76.902
5/31/2005	11:54:24 AM	79.393	79.738	75.956	80.233	76.228	76.958
5/31/2005	11:54:34 AM	79.438	79.828	75.956	80.233	76.228	76.958
5/31/2005	11:54:44 AM	79.528	79.963	75.956	80.233	76.183	76.913

Table 30: Repeat of Data in Table 28 using an Aluminum Oxide Crucible instead of a Magnesium Oxide Crucible

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
5/31/2005	11:54:56 AM	225.227	194.883	185.398	181.415	101.885	80.06
5/31/2005	11:55:28 AM	225.227	194.883	185.398	181.415	101.885	80.06
5/31/2005	11:55:38 AM	167.859	160.812	138.611	123.835	101.42	80.036
5/31/2005	11:55:48 AM	155.009	153.121	130.105	117.669	101.342	80.047
5/31/2005	11:55:58 AM	146.892	145.462	124.352	112.733	101.298	80.092
5/31/2005	11:56:58 AM	112.357	115.74	102.994	94.763	100.39	80.113
5/31/2005	11:57:58 AM	98.596	106.027	95.451	87.076	99.173	80.134
5/31/2005	11:58:58 AM	91.779	99.693	91.204	84.232	97.954	80.2
5/31/2005	11:59:58 AM	88.868	95.47	88.784	82.605	96.656	80.232
5/31/2005	12:00:58 PM	86.923	91.934	86.93	81.953	95.435	80.298
5/31/2005	12:01:58 PM	85.692	89.503	85.386	81.345	94.346	80.274
5/31/2005	12:02:58 PM	84.862	88.051	84.378	80.737	93.255	80.34
5/31/2005	12:03:58 PM	83.998	87.01	83.917	80.904	92.397	80.372
5/31/2005	12:04:58 PM	83.964	86.171	83.658	80.78	91.429	80.337
5/31/2005	12:05:58 PM	83.357	85.207	83.052	80.756	90.603	80.359
5/31/2005	12:06:58 PM	82.84	85.183	82.939	80.417	89.822	80.38
5/31/2005	12:07:58 PM	82.682	84.398	82.511	80.483	89.174	80.401
5/31/2005	12:08:58 PM	82.434	83.523	81.994	80.729	88.525	80.332
5/31/2005	12:09:58 PM	82.31	83.488	81.96	80.515	87.911	80.433
5/31/2005	12:10:58 PM	82.286	83.061	81.712	80.626	87.351	80.364

Table 30 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
5/31/2005	11:54:56 AM	79.573	80.008	76.001	80.233	76.228	76.868
5/31/2005	11:55:28 AM	79.573	80.008	76.001	80.233	76.228	76.868
5/31/2005	11:55:38 AM	79.819	80.433	76.113	80.389	76.249	76.979
5/31/2005	11:55:48 AM	79.874	80.579	76.169	80.4	76.305	76.99
5/31/2005	11:55:58 AM	79.964	80.624	76.124	80.49	76.26	76.99
5/31/2005	11:56:58 AM	80.255	81.139	76.235	80.601	76.281	77.011
5/31/2005	11:57:58 AM	80.546	81.474	76.346	80.802	76.302	77.032
5/31/2005	11:58:58 AM	80.792	81.72	76.322	80.913	76.279	77.053
5/31/2005	11:59:58 AM	80.958	81.931	76.445	81.169	76.355	77.13
5/31/2005	12:00:58 PM	81.069	82.042	76.511	81.235	76.332	77.151
5/31/2005	12:01:58 PM	81.18	82.018	76.532	81.301	76.398	77.173
5/31/2005	12:02:58 PM	81.201	82.084	76.463	81.277	76.284	77.104
5/31/2005	12:03:58 PM	81.233	82.071	76.45	81.309	76.271	77.135
5/31/2005	12:04:58 PM	81.243	81.992	76.551	81.409	76.462	77.236
5/31/2005	12:05:58 PM	81.22	81.968	76.437	81.386	76.347	77.167
5/31/2005	12:06:58 PM	81.241	81.944	76.503	81.496	76.459	77.279
5/31/2005	12:07:58 PM	81.217	81.876	76.434	81.473	76.435	77.255
5/31/2005	12:08:58 PM	81.148	81.807	76.41	81.494	76.501	77.276
5/31/2005	12:09:58 PM	81.159	81.773	76.33	81.46	76.467	77.242
5/31/2005	12:10:58 PM	81.135	81.659	76.307	81.481	76.443	77.263

Table 31: Chamber Temperature Maintained at 1400° C for One Hour Prior to Opening the Chamber, Bottom Chamber Door Lowered to the Lowest Height, Furnace Safety Shield Doors Remained Closed

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
5/26/2005	3:54:52 PM	88.967	87.506	85.13	83.332	84.724	80.016
5/26/2005	3:55:33 PM	88.967	87.506	85.13	83.332	84.724	80.016
5/26/2005	3:55:43 PM	88.822	87.45	85.254	83.276	84.669	80.051
5/26/2005	3:55:53 PM	88.867	87.629	85.209	83.276	84.624	80.051
5/26/2005	3:56:03 PM	195.879	154.863	138.883	156.454	87.04	80.545
5/26/2005	3:56:13 PM	310.975	238.152	214.959	259.41	89.451	80.545
5/26/2005	3:56:23 PM	367.445	284.41	261.544	305.316	91.412	80.59
5/26/2005	3:56:33 PM	398.588	312.588	288.338	326.302	93.103	80.68
5/26/2005	3:56:43 PM	415.633	328.466	301.35	337.524	94.825	80.714
5/26/2005	3:56:53 PM	422.287	332.657	308.29	339.459	96.512	80.759
5/26/2005	3:57:03 PM	428.449	334.293	308.175	337.486	98.24	80.849
5/26/2005	3:57:13 PM	423.388	335.852	305.093	327.895	99.7	80.894
5/26/2005	3:57:23 PM	416.001	333.723	300.809	322.281	101.159	80.939
5/26/2005	3:57:33 PM	407.46	327.865	297.919	319.036	102.538	80.995
5/26/2005	3:57:43 PM	396.393	323.044	292.252	309.198	103.983	81.074
5/26/2005	3:57:53 PM	390.54	317.233	282.574	296.425	105.183	81.084
5/26/2005	3:58:03 PM	382.878	312.819	276.518	288.195	106.371	81.174
5/26/2005	3:58:13 PM	373.651	305.302	272.551	280.309	107.46	81.209
5/26/2005	3:58:23 PM	363.235	299.083	265.32	273.772	108.558	81.209
5/26/2005	3:58:33 PM	352.706	293.163	258.858	266.118	109.622	81.264
5/26/2005	3:58:43 PM	344.204	282.225	250.696	259.845	110.543	81.354
5/26/2005	3:58:53 PM	333.844	275.067	245.724	257.471	111.55	81.354
5/26/2005	3:59:03 PM	327.406	272.635	239.178	251.643	112.339	81.399
5/26/2005	3:59:13 PM	320.881	267.536	237.427	244.568	113.181	81.454
5/26/2005	3:59:23 PM	314.442	262.017	231.611	236.973	113.924	81.499
5/26/2005	3:59:33 PM	307.096	255.807	227.507	232.881	114.58	81.544
5/26/2005	3:59:43 PM	300.883	251.086	220.886	228.657	115.06	81.544
5/26/2005	3:59:53 PM	295.348	247.506	217.363	224.382	115.584	81.589
5/26/2005	4:00:03 PM	291.166	244.047	214.288	219.295	116.119	81.645
5/26/2005	4:00:13 PM	287.666	238.732	208.793	213.49	116.686	81.69

Table 31 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
5/26/2005	4:00:23 PM	282.726	235.857	207.008	210.936	117.045	81.7
5/26/2005	4:00:33 PM	276.237	232.565	205.17	207.837	117.481	81.745
5/26/2005	4:00:43 PM	268.239	226.979	198.913	206.784	117.927	81.801
5/26/2005	4:00:53 PM	261.421	224.397	198.379	204.291	118.32	81.846
5/26/2005	4:01:03 PM	258.15	220.038	195.471	200.777	118.591	81.901
5/26/2005	4:01:13 PM	255.606	216.095	190.309	196.043	118.799	81.89
5/26/2005	4:01:23 PM	250.655	214.317	189.741	194.86	119.114	81.946
5/26/2005	4:01:33 PM	246.487	212.414	186.153	190.539	119.429	81.957
5/26/2005	4:01:43 PM	248.607	207.899	181.061	187.158	119.613	81.967
5/26/2005	4:01:53 PM	243.865	206.143	180.978	184.05	119.657	82.012
5/26/2005	4:02:03 PM	238.39	204.262	180.105	181.891	119.787	82.012
5/26/2005	4:02:13 PM	233.468	200.748	177.534	180.446	119.928	82.068
5/26/2005	4:02:23 PM	230.262	198.007	176.085	178.083	119.939	82.123
5/26/2005	4:02:33 PM	230.825	193.52	172.829	175.456	119.939	82.168
5/26/2005	4:02:43 PM	226.242	190.89	169.701	172.75	119.992	82.179
5/26/2005	4:02:53 PM	220.797	189.371	168.914	172.593	120.133	82.234
5/26/2005	4:03:03 PM	216.185	187.643	168.589	171.766	120.144	82.245
5/26/2005	4:03:13 PM	212.862	185.914	165.913	169.095	120.328	82.256
5/26/2005	4:03:23 PM	208.544	181.972	164.526	170.143	120.371	82.3
5/26/2005	4:03:33 PM	204.672	179.777	163.274	168.853	120.425	82.356
5/26/2005	4:03:43 PM	200.914	177.705	164.42	168.066	120.436	82.367
5/26/2005	4:03:53 PM	198.255	177.59	162.326	165.893	120.402	82.377
5/26/2005	4:04:03 PM	195.551	174.47	160.017	162.326	120.326	82.433
5/26/2005	4:04:13 PM	194.357	172.254	157.315	161.567	120.282	82.433
5/26/2005	4:04:23 PM	190.985	172.39	157.452	161.703	120.249	82.443
5/26/2005	4:04:33 PM	188.846	169.887	156.87	160.828	120.172	82.499
5/26/2005	4:04:43 PM	185.876	168.43	156.711	158.896	120.096	82.51
5/26/2005	4:04:53 PM	184.467	168.346	155.568	156.02	119.922	82.555
5/26/2005	4:05:03 PM	183.595	167.002	153.238	153.435	119.704	82.599
5/26/2005	4:05:13 PM	180.416	165.131	151.943	151.163	119.638	82.576

Table 31 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
5/26/2005	3:54:52 PM	80.429	80.639	77.536	80.639	77.898	78.266
5/26/2005	3:55:33 PM	80.429	80.639	77.536	80.639	77.898	78.266
5/26/2005	3:55:43 PM	80.418	80.628	77.615	80.674	77.887	78.3
5/26/2005	3:55:53 PM	80.418	80.673	77.66	80.674	77.887	78.3
5/26/2005	3:56:03 PM	80.508	80.763	77.66	80.808	77.932	78.39
5/26/2005	3:56:13 PM	80.508	80.897	77.66	80.763	77.932	78.39
5/26/2005	3:56:23 PM	80.553	80.942	77.66	80.763	77.932	78.39
5/26/2005	3:56:33 PM	80.598	81.032	77.66	80.763	77.932	78.39
5/26/2005	3:56:43 PM	80.587	81.067	77.695	80.843	77.921	78.425
5/26/2005	3:56:53 PM	80.632	81.111	77.74	80.843	77.921	78.425
5/26/2005	3:57:03 PM	80.632	81.111	77.74	80.843	77.921	78.425
5/26/2005	3:57:13 PM	80.677	81.201	77.695	80.798	77.876	78.335
5/26/2005	3:57:23 PM	80.677	81.246	77.785	80.888	77.921	78.425
5/26/2005	3:57:33 PM	80.732	81.302	77.796	80.898	77.932	78.435
5/26/2005	3:57:43 PM	80.722	81.336	77.875	80.888	77.966	78.47
5/26/2005	3:57:53 PM	80.777	81.436	77.886	80.943	77.932	78.48
5/26/2005	3:58:03 PM	80.777	81.481	77.931	80.943	77.932	78.48
5/26/2005	3:58:13 PM	80.857	81.516	77.92	80.888	77.876	78.425
5/26/2005	3:58:23 PM	80.901	81.605	77.965	80.977	77.966	78.515
5/26/2005	3:58:33 PM	81.002	81.706	78.021	80.988	77.887	78.48
5/26/2005	3:58:43 PM	81.002	81.84	78.066	81.033	77.977	78.525
5/26/2005	3:58:53 PM	81.047	81.93	78.066	81.123	77.977	78.525
5/26/2005	3:59:03 PM	81.137	82.02	78.066	81.078	77.977	78.57
5/26/2005	3:59:13 PM	81.192	82.12	78.077	81.089	77.988	78.491
5/26/2005	3:59:23 PM	81.282	82.255	78.167	81.134	77.988	78.536
5/26/2005	3:59:33 PM	81.327	82.39	78.167	81.134	77.943	78.536
5/26/2005	3:59:43 PM	81.462	82.524	78.212	81.178	77.943	78.536
5/26/2005	3:59:53 PM	81.507	82.614	78.212	81.178	77.943	78.536
5/26/2005	4:00:03 PM	81.607	82.759	78.222	81.234	77.908	78.502
5/26/2005	4:00:13 PM	81.697	82.849	78.267	81.234	77.953	78.547

Table 31 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
5/26/2005	4:00:23 PM	81.797	83.039	78.323	81.334	78.009	78.648
5/26/2005	4:00:33 PM	81.887	83.173	78.323	81.379	77.964	78.557
5/26/2005	4:00:43 PM	81.987	83.274	78.424	81.435	78.02	78.703
5/26/2005	4:00:53 PM	82.077	83.408	78.424	81.48	77.975	78.613
5/26/2005	4:01:03 PM	82.178	83.553	78.434	81.535	77.985	78.669
5/26/2005	4:01:13 PM	82.257	83.677	78.424	81.525	77.975	78.613
5/26/2005	4:01:23 PM	82.357	83.822	78.434	81.58	77.94	78.669
5/26/2005	4:01:33 PM	82.413	83.967	78.58	81.726	78.041	78.725
5/26/2005	4:01:43 PM	82.513	84.023	78.501	81.691	77.962	78.735
5/26/2005	4:01:53 PM	82.648	84.157	78.546	81.781	78.007	78.735
5/26/2005	4:02:03 PM	82.737	84.291	78.501	81.781	77.962	78.645
5/26/2005	4:02:13 PM	82.793	84.436	78.557	81.882	78.017	78.746
5/26/2005	4:02:23 PM	82.938	84.581	78.567	81.892	77.983	78.757
5/26/2005	4:02:33 PM	82.983	84.626	78.612	81.982	78.028	78.802
5/26/2005	4:02:43 PM	83.128	84.726	78.623	82.038	78.039	78.767
5/26/2005	4:02:53 PM	83.183	84.826	78.634	82.093	78.049	78.778
5/26/2005	4:03:03 PM	83.284	84.971	78.554	82.149	78.015	78.789
5/26/2005	4:03:13 PM	83.384	85.072	78.61	82.159	77.981	78.754
5/26/2005	4:03:23 PM	83.474	85.206	78.655	82.204	78.026	78.754
5/26/2005	4:03:33 PM	83.574	85.306	78.666	82.305	78.036	78.81
5/26/2005	4:03:43 PM	83.63	85.451	78.631	82.36	78.047	78.866
5/26/2005	4:03:53 PM	83.685	85.506	78.687	82.416	78.058	78.876
5/26/2005	4:04:03 PM	83.785	85.651	78.653	82.516	78.069	78.887
5/26/2005	4:04:13 PM	83.83	85.696	78.653	82.516	78.023	78.887
5/26/2005	4:04:23 PM	83.93	85.841	78.663	82.527	78.034	78.853
5/26/2005	4:04:33 PM	84.031	85.896	78.674	82.627	78.045	78.953
5/26/2005	4:04:43 PM	84.131	85.996	78.685	82.683	78.101	78.964
5/26/2005	4:04:53 PM	84.176	86.086	78.73	82.772	78.056	78.964
5/26/2005	4:05:03 PM	84.22	86.13	78.685	82.817	78.056	78.964
5/26/2005	4:05:13 PM	84.331	86.241	78.706	82.883	78.077	79.03

Table 32: Data Collected after the Table 31 Data was collected and the Furnace Chamber Closed

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
5/26/2005	4:05:37 PM	160.106	151.106	137.058	128.849	118.647	82.631
5/26/2005	4:06:00 PM	160.106	151.106	137.058	128.849	118.647	82.631
5/26/2005	4:07:00 PM	119.888	115.937	103.413	95.94	115.263	82.74
5/26/2005	4:08:00 PM	106.584	106.247	96.382	88.906	112.682	82.783
5/26/2005	4:09:00 PM	99.257	100.598	93.006	86.268	110.402	82.87
5/26/2005	4:10:00 PM	94.511	97.054	90.6	85.012	108.205	82.958
5/26/2005	4:11:00 PM	91.785	93.267	88.893	84.82	106.215	83.035
5/26/2005	4:12:00 PM	90.246	92.131	88.067	84.035	104.254	83.056
5/26/2005	4:13:00 PM	89.242	90.726	87.239	83.653	102.512	83.122
5/26/2005	4:14:00 PM	88.047	89.488	86.401	83.484	100.888	83.133
5/26/2005	4:15:00 PM	86.751	87.926	86.043	83.35	99.341	83.178
5/26/2005	4:16:00 PM	86.27	87.49	85.472	82.643	98.024	83.188
5/26/2005	4:17:00 PM	85.867	86.998	84.801	82.688	96.694	83.233
5/26/2005	4:18:00 PM	85.451	86.225	84.251	82.406	95.528	83.22
5/26/2005	4:19:00 PM	85.407	85.688	84.117	81.957	94.418	83.22
5/26/2005	4:20:00 PM	84.88	85.072	83.545	81.788	93.451	83.231
5/26/2005	4:21:00 PM	84.846	84.634	83.197	81.305	92.528	83.242
5/26/2005	4:22:00 PM	84.263	84.052	83.018	81.529	91.593	83.197
5/26/2005	4:23:00 PM	84.398	83.738	82.838	81.17	90.836	83.242
5/26/2005	4:24:00 PM	84.711	83.29	82.255	81.08	90.034	83.197
5/26/2005	4:25:00 PM	83.984	82.875	82.379	81.069	89.399	83.141
5/26/2005	4:26:00 PM	84.287	82.954	82.189	80.474	88.719	83.176
5/26/2005	4:27:00 PM	84.086	82.798	81.943	80.183	88.117	83.154
5/26/2005	4:28:00 PM	84.345	82.698	81.888	80.038	87.571	83.099
5/26/2005	4:29:00 PM	84.133	82.441	81.945	79.961	87.003	83.067
5/26/2005	4:30:00 PM	84.067	82.375	81.745	79.939	86.534	83.045
5/26/2005	4:31:00 PM	83.946	82.074	81.578	79.682	86.1	83.013
5/26/2005	4:32:00 PM	83.689	81.817	81.232	79.335	85.576	82.937
5/26/2005	4:33:00 PM	83.489	81.616	80.986	79.134	85.152	82.915
5/26/2005	4:34:00 PM	83.177	81.439	80.898	79.091	84.796	82.873
5/26/2005	4:35:00 PM	83.055	81.182	80.686	78.969	84.495	82.885
5/26/2005	4:36:00 PM	82.789	80.96	80.509	78.791	84.094	82.798
5/26/2005	4:37:00 PM	82.701	80.827	80.376	78.658	83.783	82.8
5/26/2005	4:38:00 PM	82.513	80.594	80.143	78.56	83.461	82.747
5/26/2005	4:39:00 PM	82.46	80.496	80.09	78.506	83.183	82.694
5/26/2005	4:40:00 PM	82.003	80.307	79.902	78.318	82.996	82.685
5/26/2005	4:41:00 PM	81.849	80.109	79.838	78.434	82.752	82.577

Table 32 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
5/26/2005	4:05:37 PM	84.432	86.386	78.717	82.984	78.088	79.041
5/26/2005	4:06:00 PM	84.432	86.386	78.717	82.984	78.088	79.041
5/26/2005	4:07:00 PM	84.943	86.941	78.826	83.362	78.152	79.015
5/26/2005	4:08:00 PM	85.254	87.207	78.734	83.584	78.105	78.968
5/26/2005	4:09:00 PM	85.431	87.384	78.732	83.805	78.192	79.101
5/26/2005	4:10:00 PM	85.608	87.426	78.729	83.938	78.19	79.099
5/26/2005	4:11:00 PM	85.729	87.458	78.672	84.104	78.222	79.131
5/26/2005	4:12:00 PM	85.706	87.39	78.558	84.125	78.199	79.107
5/26/2005	4:13:00 PM	85.727	87.322	78.534	84.236	78.22	79.174
5/26/2005	4:14:00 PM	85.693	87.199	78.545	84.381	78.321	79.274
5/26/2005	4:15:00 PM	85.693	87.109	78.41	84.337	78.276	79.184
5/26/2005	4:16:00 PM	85.614	86.941	78.286	84.303	78.287	79.24
5/26/2005	4:17:00 PM	85.57	86.852	78.241	84.303	78.287	79.195
5/26/2005	4:18:00 PM	85.557	86.705	78.138	84.335	78.319	79.182
5/26/2005	4:19:00 PM	85.467	86.615	78.048	84.335	78.364	79.182
5/26/2005	4:20:00 PM	85.388	86.447	77.923	84.211	78.285	79.148
5/26/2005	4:21:00 PM	85.31	86.324	77.889	84.221	78.34	79.204
5/26/2005	4:22:00 PM	85.22	86.19	77.754	84.221	78.34	79.159
5/26/2005	4:23:00 PM	85.131	86.055	77.709	84.311	78.43	79.249
5/26/2005	4:24:00 PM	85.041	85.966	77.573	84.221	78.385	79.294
5/26/2005	4:25:00 PM	84.986	85.776	77.473	84.166	78.375	79.238
5/26/2005	4:26:00 PM	84.885	85.631	77.417	84.155	78.454	79.227
5/26/2005	4:27:00 PM	84.819	85.476	77.35	84.134	78.478	79.251
5/26/2005	4:28:00 PM	84.719	85.376	77.294	84.078	78.467	79.195
5/26/2005	4:29:00 PM	84.598	85.165	77.307	84.091	78.48	79.253
5/26/2005	4:30:00 PM	84.531	85.143	77.196	83.98	78.458	79.232
5/26/2005	4:31:00 PM	84.41	84.977	77.119	83.993	78.471	79.199
5/26/2005	4:32:00 PM	84.333	84.856	76.996	83.916	78.439	79.122
5/26/2005	4:33:00 PM	84.312	84.79	76.975	83.895	78.463	79.191
5/26/2005	4:34:00 PM	84.18	84.658	76.842	83.808	78.465	79.103
5/26/2005	4:35:00 PM	84.103	84.536	76.764	83.776	78.478	79.116
5/26/2005	4:36:00 PM	84.015	84.449	76.631	83.688	78.39	79.028
5/26/2005	4:37:00 PM	83.928	84.317	76.634	83.69	78.482	79.075
5/26/2005	4:38:00 PM	83.83	84.174	76.58	83.637	78.474	79.067
5/26/2005	4:39:00 PM	83.777	84.076	76.482	83.584	78.465	79.104
5/26/2005	4:40:00 PM	83.634	84.023	76.518	83.576	78.457	79.05
5/26/2005	4:41:00 PM	83.57	83.869	76.364	83.422	78.438	79.031

Table 33: Chamber Temperature Maintained at 1000° C for Two Hours Prior to Opening the Chamber, Bottom Chamber Door Lowered to the Lowest Height, Furnace Safety Shield Doors Opened and Remained Open

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
5/31/2005	10:27:59 AM	80.041	79.198	78.926	78.243	78.337	76.132
5/31/2005	10:28:25 AM	80.041	79.198	78.926	78.243	78.337	76.132
5/31/2005	10:28:35 AM	80.646	79.129	78.947	77.994	78.313	76.198
5/31/2005	10:28:45 AM	90.761	85.235	83.079	82.355	78.718	76.289
5/31/2005	10:28:55 AM	134.54	118.536	110.383	124.694	82.089	77.055
5/31/2005	10:29:05 AM	139.103	136.03	124.472	148.206	86.579	77.111
5/31/2005	10:29:15 AM	140.046	147.713	133.93	161.468	89.883	77.246
5/31/2005	10:29:25 AM	132.396	152.348	139.169	168.995	92.688	77.291
5/31/2005	10:29:35 AM	160.801	160.78	145.975	176.657	95.276	77.392
5/31/2005	10:29:45 AM	168.541	162.003	146.657	178.158	97.626	77.482
5/31/2005	10:29:55 AM	163.887	166.768	146.326	177.959	99.717	77.582
5/31/2005	10:30:05 AM	179.165	172.26	147.433	177.042	101.75	77.627
5/31/2005	10:30:15 AM	201.881	167.23	148.37	178.584	103.647	77.717
5/31/2005	10:30:25 AM	205.238	163.53	148.285	179.667	105.497	77.717
5/31/2005	10:30:35 AM	185.033	167.744	146.165	174.381	107.267	77.818
5/31/2005	10:30:45 AM	195.123	162.876	145.791	174.015	108.859	77.919
5/31/2005	10:30:55 AM	202.187	164.854	143.529	171.38	110.35	78.009
5/31/2005	10:31:05 AM	200.721	159.427	142.557	170.469	111.763	78.064
5/31/2005	10:31:15 AM	177.111	161.157	140.032	166.61	112.945	78.109
5/31/2005	10:31:25 AM	171.816	162.979	136.87	160.768	114.048	78.165
5/31/2005	10:31:35 AM	174.19	164.022	134.367	157.125	115.043	78.199
5/31/2005	10:31:45 AM	182.53	163.443	132.957	155.4	116.189	78.255
5/31/2005	10:31:55 AM	187.639	160.671	131.244	152.739	117.115	78.355
5/31/2005	10:32:05 AM	178.423	160.713	128.827	149.85	117.987	78.401
5/31/2005	10:32:15 AM	172.589	159.752	127.237	147.732	118.825	78.456
5/31/2005	10:32:25 AM	174.73	156.718	125.906	145.567	119.488	78.557
5/31/2005	10:32:35 AM	168.032	153.456	124.91	143.475	119.923	78.557

Table 33 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
5/31/2005	10:32:45 AM	169.175	152.744	124.617	143.186	120.586	78.612
5/31/2005	10:32:55 AM	176.586	147.95	126.878	145.63	121.248	78.623
5/31/2005	10:33:05 AM	171.363	146.714	128.953	144.734	121.9	78.713
5/31/2005	10:33:15 AM	150.27	147.353	125.407	142.555	122.378	78.758
5/31/2005	10:33:25 AM	138.365	147.832	123.596	139.182	122.692	78.813
5/31/2005	10:33:35 AM	141.312	146.501	121.242	136.94	122.986	78.848
5/31/2005	10:33:45 AM	134.852	145.539	119.218	134.209	123.223	78.914
5/31/2005	10:33:55 AM	139.576	144.558	118.347	133.477	123.483	78.959
5/31/2005	10:34:05 AM	155.953	140.472	118.237	132.98	123.937	79.07
5/31/2005	10:34:15 AM	159.673	137.555	116.275	131.644	124.241	79.07
5/31/2005	10:34:25 AM	157.486	134.643	115.936	131.352	124.555	79.125
5/31/2005	10:34:35 AM	152.911	133.997	114.32	129.582	124.815	79.17
5/31/2005	10:34:45 AM	150.372	131.939	113.806	128.642	124.955	79.181
5/31/2005	10:34:55 AM	146.721	130.612	113.16	127.008	125.138	79.236
5/31/2005	10:35:05 AM	151.625	128.548	114.089	128.1	125.149	79.247
5/31/2005	10:35:15 AM	148.989	127.164	113.389	126.542	125.365	79.337
5/31/2005	10:35:25 AM	143.668	128.342	112.131	124.472	125.462	79.347
5/31/2005	10:35:35 AM	144.148	127.271	112.097	124.092	125.559	79.403
5/31/2005	10:35:45 AM	144.661	127.833	110.959	123.528	125.515	79.493
5/31/2005	10:35:55 AM	137.135	127.886	109.434	121.28	125.482	79.503
5/31/2005	10:36:05 AM	140.457	127.387	109.104	120.517	125.329	79.569
5/31/2005	10:36:15 AM	141.014	126.825	108.884	120.212	125.416	79.569
5/31/2005	10:36:25 AM	142.735	126.402	109.728	121.266	125.426	79.625
5/31/2005	10:36:35 AM	139.534	123.247	109.519	121.364	125.436	79.68
5/31/2005	10:36:45 AM	122.545	124.298	107.774	118.196	125.446	79.691
5/31/2005	10:36:55 AM	124.238	125.079	106.411	116.757	125.1	79.736
5/31/2005	10:37:05 AM	125.245	124.222	105.234	115.72	124.98	79.791

Table 33 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
5/31/2005	10:27:59 AM	76.275	76.351	74.999	77.028	75.497	75.731
5/31/2005	10:28:25 AM	76.275	76.351	74.999	77.028	75.497	75.731
5/31/2005	10:28:35 AM	76.296	76.372	74.93	77.004	75.427	75.661
5/31/2005	10:28:45 AM	76.296	76.417	75.02	77.094	75.518	75.706
5/31/2005	10:28:55 AM	76.251	76.417	74.975	77.004	75.427	75.661
5/31/2005	10:29:05 AM	76.307	76.473	74.94	77.014	75.348	75.627
5/31/2005	10:29:15 AM	76.352	76.473	74.94	77.014	75.393	75.672
5/31/2005	10:29:25 AM	76.352	76.473	74.985	77.104	75.438	75.672
5/31/2005	10:29:35 AM	76.317	76.483	75.041	77.07	75.403	75.727
5/31/2005	10:29:45 AM	76.362	76.483	75.041	77.07	75.403	75.682
5/31/2005	10:29:55 AM	76.373	76.539	75.052	77.125	75.414	75.738
5/31/2005	10:30:05 AM	76.373	76.539	75.142	77.17	75.459	75.738
5/31/2005	10:30:15 AM	76.418	76.584	75.142	77.17	75.414	75.783
5/31/2005	10:30:25 AM	76.463	76.584	75.142	77.125	75.414	75.693
5/31/2005	10:30:35 AM	76.519	76.685	75.152	77.226	75.424	75.749
5/31/2005	10:30:45 AM	76.529	76.695	75.163	77.191	75.435	75.759
5/31/2005	10:30:55 AM	76.619	76.74	75.118	77.191	75.39	75.669
5/31/2005	10:31:05 AM	76.675	76.796	75.219	77.292	75.445	75.77
5/31/2005	10:31:15 AM	76.72	76.886	75.219	77.337	75.4	75.77
5/31/2005	10:31:25 AM	76.821	76.987	75.274	77.393	75.456	75.825
5/31/2005	10:31:35 AM	76.9	77.066	75.173	77.337	75.4	75.77
5/31/2005	10:31:45 AM	76.956	77.122	75.274	77.438	75.456	75.825
5/31/2005	10:31:55 AM	77.102	77.222	75.24	77.448	75.376	75.791
5/31/2005	10:32:05 AM	77.147	77.312	75.285	77.538	75.421	75.791
5/31/2005	10:32:15 AM	77.293	77.368	75.34	77.594	75.432	75.846
5/31/2005	10:32:25 AM	77.393	77.469	75.396	77.649	75.442	75.812
5/31/2005	10:32:35 AM	77.528	77.559	75.441	77.83	75.488	75.902

Table 33 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
5/31/2005	10:32:45 AM	77.629	77.659	75.407	77.84	75.453	75.867
5/31/2005	10:32:55 AM	77.775	77.76	75.417	77.896	75.418	75.833
5/31/2005	10:33:05 AM	77.865	77.85	75.417	77.986	75.464	75.878
5/31/2005	10:33:15 AM	78	77.94	75.417	78.031	75.418	75.833
5/31/2005	10:33:25 AM	78.1	78.041	75.428	78.131	75.474	75.979
5/31/2005	10:33:35 AM	78.18	78.12	75.462	78.211	75.418	75.923
5/31/2005	10:33:45 AM	78.291	78.276	75.483	78.322	75.485	75.899
5/31/2005	10:33:55 AM	78.426	78.321	75.529	78.457	75.485	75.944
5/31/2005	10:34:05 AM	78.537	78.432	75.55	78.568	75.506	75.965
5/31/2005	10:34:15 AM	78.672	78.522	75.55	78.613	75.415	75.92
5/31/2005	10:34:25 AM	78.773	78.623	75.605	78.759	75.516	76.021
5/31/2005	10:34:35 AM	78.908	78.668	75.515	78.759	75.381	75.931
5/31/2005	10:34:45 AM	78.963	78.768	75.571	78.904	75.436	75.941
5/31/2005	10:34:55 AM	79.109	78.914	75.626	79.005	75.492	76.042
5/31/2005	10:35:05 AM	79.254	78.969	75.682	79.15	75.503	76.052
5/31/2005	10:35:15 AM	79.344	79.059	75.637	79.24	75.458	75.962
5/31/2005	10:35:25 AM	79.4	79.16	75.693	79.296	75.468	76.018
5/31/2005	10:35:35 AM	79.545	79.215	75.703	79.396	75.479	76.028
5/31/2005	10:35:45 AM	79.59	79.305	75.703	79.441	75.479	76.028
5/31/2005	10:35:55 AM	79.69	79.361	75.714	79.632	75.534	76.084
5/31/2005	10:36:05 AM	79.801	79.472	75.735	79.698	75.51	76.105
5/31/2005	10:36:15 AM	79.936	79.517	75.735	79.832	75.51	76.105
5/31/2005	10:36:25 AM	79.992	79.617	75.79	79.933	75.521	76.116
5/31/2005	10:36:35 AM	80.092	79.673	75.756	79.988	75.531	76.126
5/31/2005	10:36:45 AM	80.148	79.773	75.766	80.089	75.542	76.137
5/31/2005	10:36:55 AM	80.237	79.773	75.811	80.224	75.497	76.137
5/31/2005	10:37:05 AM	80.338	79.874	75.822	80.279	75.507	76.147

Table 34: Data Collected after the Table 33 Data was collected and the Furnace Chamber Closed

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
5/31/2005	10:37:19 AM	122.913	122.973	104.892	114.463	124.513	79.712
5/31/2005	10:37:52 AM	122.913	122.973	104.892	114.463	124.513	79.712
5/31/2005	10:38:52 AM	107.475	100.922	94.351	87.668	117.803	79.875
5/31/2005	10:39:52 AM	93.556	92.903	88.081	83.423	114.275	79.973
5/31/2005	10:40:52 AM	86.105	88.934	85.665	82.164	111.121	80.015
5/31/2005	10:41:52 AM	84.67	86.697	84.006	80.05	108.091	80.102
5/31/2005	10:42:52 AM	83.357	84.759	82.737	79.541	105.307	80.178
5/31/2005	10:43:52 AM	83.03	83.804	81.961	78.943	102.606	80.165
5/31/2005	10:44:52 AM	82.209	83.029	81.32	78.75	100.473	80.241
5/31/2005	10:45:52 AM	81.601	82.107	81.071	78.681	98.591	80.218
5/31/2005	10:46:52 AM	81.353	81.769	80.508	78.161	96.751	80.284
5/31/2005	10:47:52 AM	81.767	81.375	80.249	77.857	95.165	80.339
5/31/2005	10:48:52 AM	81.149	80.982	79.99	78.002	93.754	80.35
5/31/2005	10:49:52 AM	80.869	80.701	79.665	77.812	92.454	80.294
5/31/2005	10:50:52 AM	81.014	80.442	79.451	77.777	91.307	80.305
5/31/2005	10:51:52 AM	80.779	80.297	79.26	77.631	90.227	80.294
5/31/2005	10:52:52 AM	80.689	80.117	79.215	77.496	89.201	80.294
5/31/2005	10:53:52 AM	80.644	79.982	79.215	77.947	88.354	80.249
5/31/2005	10:54:52 AM	80.903	80.016	79.34	77.711	87.584	80.284
5/31/2005	10:55:52 AM	80.769	79.926	79.25	77.711	86.869	80.284
5/31/2005	10:56:52 AM	81.442	79.926	79.115	77.666	86.153	80.284
5/31/2005	10:57:52 AM	81.028	80.006	79.284	78.016	85.606	80.228

Table 34 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
5/31/2005	10:37:19 AM	80.438	79.974	75.833	80.424	75.518	76.158
5/31/2005	10:37:52 AM	80.438	79.974	75.833	80.424	75.518	76.158
5/31/2005	10:38:52 AM	81.096	80.497	75.997	81.217	75.547	76.231
5/31/2005	10:39:52 AM	81.373	80.729	76.004	81.629	75.554	76.239
5/31/2005	10:40:52 AM	81.55	80.861	76.046	81.985	75.551	76.281
5/31/2005	10:41:52 AM	81.681	80.993	75.998	82.251	75.548	76.324
5/31/2005	10:42:52 AM	81.713	81.025	76.03	82.417	75.625	76.4
5/31/2005	10:43:52 AM	81.744	80.966	75.926	82.584	75.612	76.477
5/31/2005	10:44:52 AM	81.731	80.908	75.913	82.66	75.643	76.509
5/31/2005	10:45:52 AM	81.707	80.929	75.889	82.726	75.619	76.44
5/31/2005	10:46:52 AM	81.683	80.86	75.82	82.747	75.641	76.416
5/31/2005	10:47:52 AM	81.604	80.781	75.74	82.712	75.696	76.471
5/31/2005	10:48:52 AM	81.57	80.746	75.661	82.768	75.707	76.482
5/31/2005	10:49:52 AM	81.469	80.646	75.605	82.712	75.696	76.516
5/31/2005	10:50:52 AM	81.39	80.567	75.615	82.723	75.752	76.572
5/31/2005	10:51:52 AM	81.335	80.511	75.469	82.623	75.696	76.516
5/31/2005	10:52:52 AM	81.245	80.466	75.424	82.623	75.741	76.516
5/31/2005	10:53:52 AM	81.2	80.421	75.424	82.533	75.786	76.516
5/31/2005	10:54:52 AM	81.1	80.276	75.414	82.478	75.731	76.551
5/31/2005	10:55:52 AM	81.055	80.276	75.414	82.388	75.776	76.596
5/31/2005	10:56:52 AM	80.965	80.231	75.459	82.388	75.821	76.596
5/31/2005	10:57:52 AM	80.909	80.176	75.448	82.333	75.81	76.585

Table 35: Chamber Temperature Maintained at 1200° C for One Hour Prior to Opening the Chamber, Bottom Chamber Door Lowered to the Lowest Height, Furnace Safety Shield Doors Opened and Remained Open

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
5/31/2005	12:56:14 PM	83.181	83.014	81.71	80.489	81.526	79.822
5/31/2005	12:57:42 PM	83.181	83.014	81.71	80.489	81.526	79.822
5/31/2005	12:57:52 PM	83.36	82.79	81.844	80.13	81.481	79.777
5/31/2005	12:58:02 PM	87.076	86.91	84.31	81.747	81.93	80.047
5/31/2005	12:58:12 PM	172.897	143.882	138.836	163.626	84.576	80.586
5/31/2005	12:58:22 PM	184.764	163.351	153.457	193.86	92.476	81.305
5/31/2005	12:58:32 PM	164.298	177.011	163.173	210.944	98.291	81.395
5/31/2005	12:58:42 PM	152.497	176.293	167.114	216.343	102.877	81.519
5/31/2005	12:58:52 PM	161.644	181.3	168.046	216.556	106.807	81.665
5/31/2005	12:59:02 PM	200.928	199.682	175.576	224.168	110.539	81.844
5/31/2005	12:59:12 PM	198.507	203.495	179.034	222.066	113.866	81.934
5/31/2005	12:59:22 PM	157.972	196.312	174.198	222.47	116.967	82.069
5/31/2005	12:59:32 PM	170.008	201.323	169.011	216.961	119.799	82.158
5/31/2005	12:59:42 PM	146.339	197.834	164.435	209.762	122.407	82.293
5/31/2005	12:59:52 PM	134.258	192.852	158.45	203.512	124.663	82.383
5/31/2005	1:00:02 PM	135.43	182.598	154.823	196.134	126.752	82.528
5/31/2005	1:00:12 PM	164.256	194.748	150.996	191.839	128.818	82.607
5/31/2005	1:00:22 PM	192.539	193.8	147.296	189.113	130.933	82.697
5/31/2005	1:00:32 PM	152.974	188.887	144.567	186.258	132.701	82.786
5/31/2005	1:00:42 PM	145.623	187.573	143.297	181.205	134.218	82.887
5/31/2005	1:00:52 PM	151.328	189.889	140.902	177.209	135.766	82.976
5/31/2005	1:01:02 PM	145.538	181.185	137.388	174.371	137.055	83.066
5/31/2005	1:01:12 PM	158.827	181.933	136.057	171.277	138.213	83.156
5/31/2005	1:01:22 PM	147.798	178.896	134.897	168.511	139.457	83.201
5/31/2005	1:01:32 PM	137.621	173.305	134.682	166.706	140.399	83.246
5/31/2005	1:01:42 PM	118.375	174.517	132.573	162.204	141.255	83.38
5/31/2005	1:01:52 PM	114.938	172.144	131.075	159.008	141.993	83.435
5/31/2005	1:02:02 PM	121.867	173.984	129.78	156.513	142.805	83.525
5/31/2005	1:02:12 PM	120.737	168.96	129.003	154.777	143.617	83.615
5/31/2005	1:02:22 PM	126.671	167.02	127.653	153.198	144.29	83.649
5/31/2005	1:02:32 PM	129.655	164.329	126.312	151.755	144.803	83.694
5/31/2005	1:02:42 PM	127.46	158.266	124.07	149.3	145.197	83.794
5/31/2005	1:02:52 PM	119.334	158.509	123.279	147.203	145.485	83.828
5/31/2005	1:03:02 PM	110.429	159.744	122.03	144.611	145.794	83.929
5/31/2005	1:03:12 PM	111.121	161.38	121.194	142.935	146.04	83.963
5/31/2005	1:03:22 PM	123.333	162.097	121.107	142.764	146.424	84.052
5/31/2005	1:03:32 PM	141.66	159.026	120.292	142.09	146.476	84.108
5/31/2005	1:03:42 PM	135.817	156.014	118.628	140.753	146.679	84.142
5/31/2005	1:03:52 PM	120.389	151.188	117.462	138.92	146.775	84.197
5/31/2005	1:04:02 PM	116.03	150.891	116.808	137.976	146.86	84.287
5/31/2005	1:04:12 PM	107.268	147.188	115.63	136.044	146.903	84.332
5/31/2005	1:04:22 PM	107.718	145.962	115.378	133.774	146.913	84.387
5/31/2005	1:04:32 PM	110.649	147.103	114.145	133.204	146.86	84.466
5/31/2005	1:04:42 PM	108.465	143.998	113.718	132.18	146.742	84.522
5/31/2005	1:04:52 PM	114.643	146.516	113.193	131.188	146.699	84.611
5/31/2005	1:05:02 PM	139.775	147.785	111.87	129.408	146.391	84.645

Table 35 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
5/31/2005	12:56:14 PM	79.965	79.95	76.079	80.715	76.937	77.486
5/31/2005	12:57:42 PM	79.965	79.95	76.079	80.715	76.937	77.486
5/31/2005	12:57:52 PM	79.92	79.95	76.169	80.625	76.892	77.486
5/31/2005	12:58:02 PM	79.965	79.995	76.079	80.58	76.847	77.486
5/31/2005	12:58:12 PM	79.965	80.085	76.079	80.58	76.802	77.396
5/31/2005	12:58:22 PM	80.01	80.13	76.169	80.76	76.847	77.486
5/31/2005	12:58:32 PM	80.054	80.175	76.124	80.76	76.847	77.486
5/31/2005	12:58:42 PM	80.089	80.209	76.158	80.794	76.881	77.475
5/31/2005	12:58:52 PM	80.144	80.265	76.214	80.85	76.892	77.531
5/31/2005	12:59:02 PM	80.189	80.265	76.214	80.895	76.937	77.576
5/31/2005	12:59:12 PM	80.234	80.354	76.259	80.939	76.892	77.531
5/31/2005	12:59:22 PM	80.234	80.399	76.304	80.939	76.937	77.531
5/31/2005	12:59:32 PM	80.279	80.444	76.304	80.984	76.892	77.576
5/31/2005	12:59:42 PM	80.324	80.534	76.304	80.984	76.847	77.576
5/31/2005	12:59:52 PM	80.414	80.579	76.304	80.939	76.847	77.531
5/31/2005	1:00:02 PM	80.47	80.725	76.36	81.085	76.902	77.632
5/31/2005	1:00:12 PM	80.549	80.804	76.395	81.119	76.937	77.666
5/31/2005	1:00:22 PM	80.594	80.894	76.44	81.164	76.937	77.621
5/31/2005	1:00:32 PM	80.729	81.073	76.53	81.254	76.937	77.711
5/31/2005	1:00:42 PM	80.874	81.174	76.54	81.264	76.947	77.677
5/31/2005	1:00:52 PM	81.054	81.308	76.54	81.354	76.902	77.722
5/31/2005	1:01:02 PM	81.099	81.488	76.586	81.399	76.947	77.722
5/31/2005	1:01:12 PM	81.278	81.623	76.586	81.444	76.857	77.677
5/31/2005	1:01:22 PM	81.413	81.802	76.631	81.579	76.902	77.767
5/31/2005	1:01:32 PM	81.548	81.982	76.631	81.669	76.947	77.767
5/31/2005	1:01:42 PM	81.727	82.161	76.676	81.758	76.902	77.767
5/31/2005	1:01:52 PM	81.873	82.351	76.732	81.904	76.958	77.867
5/31/2005	1:02:02 PM	82.007	82.486	76.732	81.993	76.958	77.867
5/31/2005	1:02:12 PM	82.187	82.665	76.777	82.083	76.913	77.867
5/31/2005	1:02:22 PM	82.356	82.834	76.811	82.207	76.947	77.902
5/31/2005	1:02:32 PM	82.49	83.058	76.856	82.297	76.947	77.902
5/31/2005	1:02:42 PM	82.68	83.204	76.867	82.442	76.913	77.913
5/31/2005	1:02:52 PM	82.804	83.372	76.901	82.566	76.902	77.902
5/31/2005	1:03:02 PM	82.994	83.607	76.822	82.667	76.868	77.913
5/31/2005	1:03:12 PM	83.163	83.731	76.901	82.791	76.947	77.947
5/31/2005	1:03:22 PM	83.253	83.91	76.946	82.925	76.947	78.037
5/31/2005	1:03:32 PM	83.442	84.1	77.002	83.16	76.958	78.048
5/31/2005	1:03:42 PM	83.611	84.224	76.991	83.239	76.947	78.037
5/31/2005	1:03:52 PM	83.711	84.413	77.047	83.384	77.003	78.093
5/31/2005	1:04:02 PM	83.891	84.593	77.092	83.564	76.958	78.093
5/31/2005	1:04:12 PM	84.025	84.727	77.092	83.653	77.003	78.138
5/31/2005	1:04:22 PM	84.17	84.872	77.103	83.798	76.969	78.058
5/31/2005	1:04:32 PM	84.294	85.04	77.047	83.877	76.913	78.093
5/31/2005	1:04:42 PM	84.439	85.185	77.148	84.112	76.969	78.148
5/31/2005	1:04:52 PM	84.573	85.319	77.148	84.246	76.969	78.238
5/31/2005	1:05:02 PM	84.697	85.488	77.182	84.37	76.958	78.183

Table 36: Data Collected after the Table 35 Data was collected and the Furnace Chamber Closed

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
5/31/2005	1:05:07 PM	148.456	148.306	114.068	129.245	145.975	84.432
5/31/2005	1:05:21 PM	148.456	148.306	114.068	129.245	145.975	84.432
5/31/2005	1:06:21 PM	107.255	110.476	97.767	92.483	137.524	84.588
5/31/2005	1:07:21 PM	97.609	100.722	92.061	85.363	132.083	84.653
5/31/2005	1:08:21 PM	91.277	96.136	88.741	82.785	127.137	84.764
5/31/2005	1:09:21 PM	88.732	92.712	87.533	81.975	122.801	84.851
5/31/2005	1:10:21 PM	87.29	90.651	85.956	81.423	118.483	84.973
5/31/2005	1:11:21 PM	86.472	88.809	85.54	81.365	114.805	85.049
5/31/2005	1:12:21 PM	85.251	87.679	84.542	80.857	111.818	85.081
5/31/2005	1:13:21 PM	84.645	86.493	83.937	80.834	109.077	85.147
5/31/2005	1:14:21 PM	84.173	85.574	83.644	80.9	106.593	85.168
5/31/2005	1:15:21 PM	84.105	84.745	83.083	80.786	104.237	85.144
5/31/2005	1:16:21 PM	83.902	84.542	82.969	80.313	102.052	85.165
5/31/2005	1:17:21 PM	83.375	84.239	82.621	80.009	100.031	85.131
5/31/2005	1:18:21 PM	83.486	83.946	82.463	80.12	98.415	85.152
5/31/2005	1:19:21 PM	82.779	83.688	82.16	80.131	96.919	85.118
5/31/2005	1:20:21 PM	82.565	83.205	81.901	80.456	95.51	85.084
5/31/2005	1:21:21 PM	82.441	82.947	82.136	80.781	94.233	85.05
5/31/2005	1:22:21 PM	82.531	82.902	82.271	80.422	93.077	85.005
5/31/2005	1:23:21 PM	82.631	82.688	82.057	80.702	92.064	84.971
5/31/2005	1:24:21 PM	82.866	82.744	82.247	80.083	91.184	84.937
5/31/2005	1:25:21 PM	83.035	82.733	82.012	80.028	90.283	84.881
5/31/2005	1:26:21 PM	82.945	82.957	82.012	79.983	89.614	84.837
5/31/2005	1:27:21 PM	82.631	82.823	81.833	79.893	88.945	84.837
5/31/2005	1:28:21 PM	82.62	82.812	81.777	79.792	88.309	84.781
5/31/2005	1:29:21 PM	82.465	82.746	81.846	79.906	87.797	84.715
5/31/2005	1:30:21 PM	82.364	82.825	81.745	79.85	87.25	84.66
5/31/2005	1:31:21 PM	82.219	82.994	81.824	80.11	86.793	84.604
5/31/2005	1:32:21 PM	82.522	83.118	81.993	80.009	86.469	84.549

Table 36 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
5/31/2005	1:33:21 PM	82.702	83.342	81.948	79.919	86.156	84.504
5/31/2005	1:34:21 PM	82.871	83.332	81.983	79.953	85.833	84.449
5/31/2005	1:35:21 PM	82.905	83.366	82.062	80.078	85.554	84.438
5/31/2005	1:36:21 PM	83.119	83.445	81.962	80.112	85.319	84.338
5/31/2005	1:37:21 PM	83.253	83.49	82.051	80.292	85.096	84.338
5/31/2005	1:38:21 PM	83.388	83.669	82.141	80.382	84.872	84.249
5/31/2005	1:39:21 PM	83.433	83.759	82.276	80.382	84.737	84.249
5/31/2005	1:40:21 PM	83.467	84.062	82.489	80.551	84.592	84.193
5/31/2005	1:41:21 PM	83.657	84.162	82.634	80.696	84.469	84.159
5/31/2005	1:42:21 PM	83.702	84.386	82.634	80.517	84.379	84.069
5/31/2005	1:43:21 PM	84.015	84.431	82.545	80.562	84.289	84.024
5/31/2005	1:44:21 PM	84.094	84.241	82.444	80.596	84.234	83.969
5/31/2005	1:45:21 PM	84.073	84.265	82.513	80.665	84.123	83.903
5/31/2005	1:46:21 PM	84.197	84.389	82.682	80.609	84.068	83.892
5/31/2005	1:47:21 PM	84.321	84.513	82.761	80.778	84.013	83.837
5/31/2005	1:48:21 PM	84.445	84.547	82.885	80.768	83.912	83.826
5/31/2005	1:49:21 PM	84.592	84.605	82.853	81.05	83.836	83.705
5/31/2005	1:50:21 PM	84.727	84.873	83.077	81.185	83.836	83.705
5/31/2005	1:51:21 PM	84.671	85.042	83.022	81.04	83.78	83.65
5/31/2005	1:52:21 PM	84.885	85.031	83.146	81.029	83.815	83.594
5/31/2005	1:55:21 PM	85.311	85.682	83.573	81.232	83.838	83.483
5/31/2005	1:58:21 PM	85.893	86.308	83.976	81.592	83.838	83.394
5/31/2005	2:01:21 PM	86.004	86.151	83.818	81.613	83.904	83.236
5/31/2005	2:04:21 PM	86.609	86.308	83.976	81.771	83.928	83.08
5/31/2005	2:07:21 PM	86.711	86.232	83.899	81.65	83.986	83.003
5/31/2005	2:10:21 PM	86.824	86.613	84.057	81.898	84.054	82.937
5/31/2005	2:13:21 PM	87.114	87.082	84.437	82.278	84.165	82.869
5/31/2005	2:16:21 PM	87.66	86.913	84.805	82.782	84.22	82.79
5/31/2005	2:19:21 PM	86.99	86.869	84.268	82.064	84.31	82.7

Table 36 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
5/31/2005	1:05:07 PM	84.752	85.498	77.193	84.47	77.014	78.283
5/31/2005	1:05:21 PM	84.752	85.498	77.193	84.47	77.014	78.283
5/31/2005	1:06:21 PM	85.624	86.414	77.44	85.566	77.08	78.44
5/31/2005	1:07:21 PM	86.182	86.927	77.506	86.169	77.011	78.416
5/31/2005	1:08:21 PM	86.516	87.306	77.527	86.727	77.033	78.482
5/31/2005	1:09:21 PM	86.782	87.526	77.57	87.216	77.165	78.615
5/31/2005	1:10:21 PM	86.903	87.513	77.557	87.56	77.152	78.557
5/31/2005	1:11:21 PM	86.979	87.5	77.589	87.815	77.184	78.679
5/31/2005	1:12:21 PM	86.966	87.443	77.53	87.936	77.171	78.62
5/31/2005	1:13:21 PM	86.898	87.375	77.461	88.002	77.147	78.597
5/31/2005	1:14:21 PM	86.874	87.262	77.393	88.068	77.214	78.618
5/31/2005	1:15:21 PM	86.761	87.104	77.369	88.089	77.235	78.639
5/31/2005	1:16:21 PM	86.693	86.991	77.3	88.065	77.211	78.661
5/31/2005	1:17:21 PM	86.57	86.823	77.311	88.031	77.312	78.716
5/31/2005	1:18:21 PM	86.457	86.665	77.242	87.963	77.333	78.693
5/31/2005	1:19:21 PM	86.333	86.497	77.298	87.884	77.344	78.703
5/31/2005	1:20:21 PM	86.209	86.373	77.173	87.806	77.309	78.714
5/31/2005	1:21:21 PM	86.131	86.25	77.049	87.682	77.365	78.679
5/31/2005	1:22:21 PM	85.996	86.071	77.094	87.637	77.365	78.724
5/31/2005	1:23:21 PM	85.918	85.903	77.059	87.514	77.376	78.69
5/31/2005	1:24:21 PM	85.749	85.779	77.025	87.48	77.432	78.746
5/31/2005	1:25:21 PM	85.649	85.679	77.014	87.335	77.421	78.735
5/31/2005	1:26:21 PM	85.56	85.5	76.924	87.246	77.421	78.735
5/31/2005	1:27:21 PM	85.425	85.366	76.834	87.156	77.421	78.735
5/31/2005	1:28:21 PM	85.325	85.266	76.778	87.056	77.455	78.724
5/31/2005	1:29:21 PM	85.215	85.11	76.712	86.946	77.434	78.703
5/31/2005	1:30:21 PM	85.114	85.01	76.746	86.846	77.513	78.738
5/31/2005	1:31:21 PM	85.014	84.91	76.645	86.791	77.503	78.727
5/31/2005	1:32:21 PM	84.869	84.765	76.68	86.735	77.537	78.761

Table 36 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
5/31/2005	1:33:21 PM	84.869	84.631	76.635	86.601	77.537	78.716
5/31/2005	1:34:21 PM	84.769	84.531	76.624	86.501	77.527	78.751
5/31/2005	1:35:21 PM	84.669	84.43	76.658	86.446	77.561	78.74
5/31/2005	1:36:21 PM	84.569	84.33	76.557	86.256	77.505	78.729
5/31/2005	1:37:21 PM	84.479	84.241	76.603	86.212	77.55	78.729
5/31/2005	1:38:21 PM	84.435	84.106	76.512	86.078	77.505	78.684
5/31/2005	1:39:21 PM	84.345	84.061	76.603	86.033	77.55	78.729
5/31/2005	1:40:21 PM	84.245	84.006	76.547	85.888	77.54	78.719
5/31/2005	1:41:21 PM	84.211	83.927	76.603	85.854	77.595	78.729
5/31/2005	1:42:21 PM	84.121	83.837	76.648	85.72	77.595	78.729
5/31/2005	1:43:21 PM	84.031	83.748	76.648	85.675	77.595	78.729
5/31/2005	1:44:21 PM	83.976	83.648	76.682	85.62	77.63	78.764
5/31/2005	1:45:21 PM	83.91	83.582	76.616	85.509	77.609	78.742
5/31/2005	1:46:21 PM	83.855	83.481	76.605	85.409	77.598	78.732
5/31/2005	1:47:21 PM	83.799	83.471	76.594	85.353	77.632	78.721
5/31/2005	1:48:21 PM	83.744	83.415	76.629	85.343	77.667	78.711
5/31/2005	1:49:21 PM	83.667	83.294	76.597	85.222	77.68	78.724
5/31/2005	1:50:21 PM	83.578	83.249	76.642	85.222	77.68	78.769
5/31/2005	1:51:21 PM	83.567	83.194	76.631	85.166	77.759	78.803
5/31/2005	1:52:21 PM	83.512	83.183	76.621	85.021	77.659	78.747
5/31/2005	1:55:21 PM	83.356	83.027	76.69	84.776	77.637	78.726
5/31/2005	1:58:21 PM	83.221	82.893	76.87	84.687	77.727	78.771
5/31/2005	2:01:21 PM	83.108	82.779	76.981	84.529	77.839	78.792
5/31/2005	2:04:21 PM	82.997	82.624	77.005	84.373	77.817	78.771
5/31/2005	2:07:21 PM	82.876	82.502	76.973	84.207	77.831	78.784
5/31/2005	2:10:21 PM	82.81	82.436	77.042	84.096	77.854	78.808
5/31/2005	2:13:21 PM	82.786	82.368	77.153	83.983	77.876	78.784
5/31/2005	2:16:21 PM	82.662	82.288	77.209	83.859	77.931	78.84
5/31/2005	2:19:21 PM	82.617	82.244	77.164	83.77	77.976	78.84

Table 37: Chamber Temperature Maintained at 1400° C for One Hour Prior to Opening the Chamber, Bottom Chamber Door Lowered to the Lowest Height, Furnace Safety Shield Doors Opened and Remained Open

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
5/31/2005	2:46:09 PM	88.097	87.126	84.705	82.592	84.523	82.106
5/31/2005	2:47:56 PM	88.097	87.126	84.705	82.592	84.523	82.106
5/31/2005	2:48:06 PM	86.935	87.484	85.063	82.682	84.434	82.106
5/31/2005	2:48:16 PM	132.873	116.106	107.412	111.193	86.134	82.555
5/31/2005	2:48:26 PM	196.733	173.706	165.983	210.571	99.213	84.751
5/31/2005	2:48:36 PM	219.638	198.576	191.054	251.484	109.709	84.806
5/31/2005	2:48:46 PM	216.182	203.201	205.294	272.987	117.003	84.93
5/31/2005	2:48:56 PM	178.565	205.37	211.737	278.784	122.964	85.154
5/31/2005	2:49:06 PM	175.03	204.889	212.235	281.216	128.302	85.344
5/31/2005	2:49:16 PM	170.849	207.668	210.892	275.427	133.048	85.523
5/31/2005	2:49:26 PM	160.002	201.08	208.039	270.798	137.434	85.657
5/31/2005	2:49:36 PM	170.482	200.474	207.11	265.733	141.387	85.847
5/31/2005	2:49:46 PM	176.167	220.323	203.063	261.276	145.062	85.981
5/31/2005	2:49:56 PM	161.952	198.668	198.595	252.367	148.216	86.115
5/31/2005	2:50:06 PM	170.984	202.442	194.814	246.322	151.192	86.294
5/31/2005	2:50:16 PM	157.984	192.328	188.875	239.615	153.993	86.428
5/31/2005	2:50:26 PM	142.08	191.007	184.404	232.358	156.449	86.517
5/31/2005	2:50:36 PM	136.646	189.158	180.595	225.037	158.531	86.662
5/31/2005	2:50:46 PM	159.187	204.918	179.316	222.582	160.525	86.807
5/31/2005	2:50:56 PM	194.961	212.751	175.066	217.683	162.59	86.896
5/31/2005	2:51:06 PM	167.996	193.512	171.189	212.166	164.326	87.041
5/31/2005	2:51:16 PM	151.786	207.094	169.43	207.682	165.713	87.13
5/31/2005	2:51:26 PM	168.751	205.05	166.83	203.799	167.183	87.264
5/31/2005	2:51:36 PM	173.827	203.587	166.084	200.859	168.368	87.32
5/31/2005	2:51:46 PM	176.04	201.292	165.202	200.982	169.542	87.409
5/31/2005	2:51:56 PM	172.823	193.275	161.541	194.941	170.38	87.498
5/31/2005	2:52:06 PM	155.538	186.673	156.654	190.704	171.06	87.643
5/31/2005	2:52:16 PM	155.496	180.821	155.469	187.106	172.106	87.732
5/31/2005	2:52:26 PM	137.899	175.289	153.021	182.098	172.576	87.788
5/31/2005	2:52:36 PM	125.706	162.633	152.438	176.864	172.962	87.932
5/31/2005	2:52:46 PM	124.232	169.861	149.209	174.903	173.338	87.932
5/31/2005	2:52:56 PM	142.76	180.809	147.432	173.492	173.808	88.077
5/31/2005	2:53:06 PM	132.166	171.389	145.055	169.986	174.11	88.132
5/31/2005	2:53:16 PM	122.647	152.715	143.006	167.344	174.235	88.266
5/31/2005	2:53:26 PM	121.049	149.964	141.776	164.791	174.37	88.321
5/31/2005	2:53:36 PM	116.519	156.836	139.336	162.264	174.537	88.41
5/31/2005	2:53:46 PM	126.137	161.619	139.518	160.925	174.547	88.466
5/31/2005	2:53:56 PM	123.59	159.815	138.542	159.5	174.474	88.565
5/31/2005	2:54:06 PM	118.022	161.587	137.813	156.287	174.39	88.61
5/31/2005	2:54:16 PM	115.589	162.735	136.149	155.281	174.233	88.71
5/31/2005	2:54:26 PM	112.145	159.835	134.182	153.638	174.034	88.81
5/31/2005	2:54:36 PM	110.183	146.351	133.159	151.144	173.96	88.865
5/31/2005	2:54:46 PM	116.44	156.124	133.891	151.866	173.668	88.909

Table 37 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
5/31/2005	2:46:09 PM	82.203	81.874	77.379	83.131	78.191	78.964
5/31/2005	2:47:56 PM	82.203	81.874	77.379	83.131	78.191	78.964
5/31/2005	2:48:06 PM	82.203	81.874	77.424	83.086	78.236	78.964
5/31/2005	2:48:16 PM	82.293	82.009	77.424	83.086	78.191	78.964
5/31/2005	2:48:26 PM	82.607	82.233	77.379	83.4	78.191	78.964
5/31/2005	2:48:36 PM	82.707	82.333	77.48	83.501	78.247	79.02
5/31/2005	2:48:46 PM	82.786	82.502	77.424	83.625	78.281	78.964
5/31/2005	2:48:56 PM	82.876	82.547	77.424	83.625	78.236	78.964
5/31/2005	2:49:06 PM	82.976	82.692	77.525	83.725	78.292	79.11
5/31/2005	2:49:16 PM	83.021	82.782	77.525	83.814	78.247	79.065
5/31/2005	2:49:26 PM	83.066	82.782	77.57	83.904	78.292	79.065
5/31/2005	2:49:36 PM	83.166	82.927	77.625	83.915	78.302	79.076
5/31/2005	2:49:46 PM	83.211	83.017	77.625	84.004	78.302	79.121
5/31/2005	2:49:56 PM	83.301	83.106	77.625	84.049	78.302	79.166
5/31/2005	2:50:06 PM	83.435	83.241	77.67	84.183	78.302	79.166
5/31/2005	2:50:16 PM	83.569	83.42	77.67	84.183	78.257	79.121
5/31/2005	2:50:26 PM	83.749	83.555	77.625	84.228	78.257	79.076
5/31/2005	2:50:36 PM	83.894	83.7	77.681	84.328	78.313	79.131
5/31/2005	2:50:46 PM	84.084	83.89	77.737	84.473	78.324	79.187
5/31/2005	2:50:56 PM	84.263	84.069	77.737	84.563	78.234	79.142
5/31/2005	2:51:06 PM	84.453	84.259	77.838	84.663	78.244	79.242
5/31/2005	2:51:16 PM	84.632	84.482	77.838	84.753	78.244	79.242
5/31/2005	2:51:26 PM	84.811	84.706	77.838	84.887	78.199	79.197
5/31/2005	2:51:36 PM	85.045	84.941	77.893	85.032	78.255	79.298
5/31/2005	2:51:46 PM	85.269	85.165	77.983	85.256	78.3	79.343
5/31/2005	2:51:56 PM	85.448	85.344	77.983	85.345	78.255	79.388
5/31/2005	2:52:06 PM	85.682	85.578	77.994	85.535	78.31	79.444
5/31/2005	2:52:16 PM	85.951	85.846	78.039	85.669	78.265	79.489
5/31/2005	2:52:26 PM	86.14	86.036	78.05	85.859	78.276	79.454
5/31/2005	2:52:36 PM	86.374	86.27	78.06	86.004	78.287	79.465
5/31/2005	2:52:46 PM	86.598	86.449	78.105	86.182	78.287	79.555
5/31/2005	2:52:56 PM	86.832	86.728	78.161	86.417	78.387	79.565
5/31/2005	2:53:06 PM	87.066	86.917	78.127	86.561	78.308	79.531
5/31/2005	2:53:16 PM	87.29	87.141	78.127	86.74	78.263	79.576
5/31/2005	2:53:26 PM	87.524	87.33	78.227	86.974	78.319	79.632
5/31/2005	2:53:36 PM	87.702	87.553	78.227	87.153	78.319	79.677
5/31/2005	2:53:46 PM	87.936	87.742	78.193	87.298	78.284	79.642
5/31/2005	2:53:56 PM	88.17	87.932	78.204	87.532	78.295	79.653
5/31/2005	2:54:06 PM	88.349	88.155	78.294	87.71	78.295	79.743
5/31/2005	2:54:16 PM	88.538	88.344	78.349	87.944	78.351	79.754
5/31/2005	2:54:26 PM	88.771	88.533	78.36	88.134	78.316	79.719
5/31/2005	2:54:36 PM	88.916	88.722	78.281	88.278	78.282	79.64
5/31/2005	2:54:46 PM	89.094	88.901	78.416	88.501	78.327	79.82

Table 38: Data Collected after the Table 37 Data was collected and the Furnace Chamber Closed

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
5/31/2005	2:54:52 PM	150.259	163.649	136.695	152.343	172.549	88.697
5/31/2005	2:55:06 PM	150.259	163.649	136.695	152.343	172.549	88.697
5/31/2005	2:56:06 PM	107.797	122.189	110.207	99.465	160.682	88.76
5/31/2005	2:57:06 PM	97.832	108.084	97.612	88.762	152.567	88.902
5/31/2005	2:58:06 PM	95.124	101.207	92.995	85.452	145.119	88.9
5/31/2005	2:59:06 PM	91.664	96.611	89.664	84.251	138.581	89.087
5/31/2005	3:00:06 PM	90.091	94.2	88.491	83.655	132.767	89.118
5/31/2005	3:01:06 PM	90.758	92.73	87.641	82.846	127.715	89.205
5/31/2005	3:02:06 PM	88.871	91.248	87.226	82.877	123.457	89.237
5/31/2005	3:03:06 PM	88.491	90.69	86.621	82.495	119.697	89.258
5/31/2005	3:04:06 PM	87.585	89.651	86.072	82.123	116.241	89.29
5/31/2005	3:05:06 PM	86.756	89.092	85.646	81.965	113.072	89.266
5/31/2005	3:06:06 PM	86.878	88.454	85.275	81.907	110.432	89.343
5/31/2005	3:08:06 PM	85.467	87.448	84.67	81.614	105.532	89.23
5/31/2005	3:10:06 PM	86.115	86.843	84.378	81.545	101.674	89.207
5/31/2005	3:12:06 PM	85.589	86.138	83.851	81.286	98.457	89.083
5/31/2005	3:14:06 PM	85.107	85.791	83.772	81.387	95.941	89.005
5/31/2005	3:16:06 PM	85.173	85.185	83.748	81.633	93.786	88.847
5/31/2005	3:19:06 PM	85.418	85.565	84.083	81.699	91.361	88.601
5/31/2005	3:22:06 PM	85.171	85.989	83.88	81.047	89.465	88.399
5/31/2005	3:25:06 PM	86.4	85.607	83.588	81.562	88.192	88.152
5/31/2005	3:28:06 PM	86.087	85.652	83.812	81.876	87.388	87.884
5/31/2005	3:31:06 PM	85.07	85.038	84.228	83.011	86.776	87.584
5/31/2005	3:34:06 PM	86.805	87.22	84.844	81.968	86.363	87.439
5/31/2005	3:37:06 PM	87.688	87.79	85.102	82.586	86.084	87.205
5/31/2005	3:40:06 PM	87.444	87.814	85.26	82.789	86.107	87.005
5/31/2005	3:43:06 PM	87.859	88.05	85.139	82.264	86.031	86.839
5/31/2005	3:46:06 PM	87.248	88.11	84.84	82.548	85.956	86.631
5/31/2005	3:49:06 PM	89.16	88.459	85.503	83.078	85.948	86.444
5/31/2005	3:52:06 PM	88.75	89.165	86.166	83.249	86.163	86.212
5/31/2005	3:55:06 PM	88.574	88.766	85.945	83.117	86.255	86.125
5/31/2005	3:58:06 PM	88.298	89.115	85.937	83.019	86.292	85.938
5/31/2005	4:01:06 PM	88.534	88.726	85.592	83.211	86.215	85.772
5/31/2005	4:04:06 PM	89.896	89.731	86.51	83.594	86.328	85.616
5/31/2005	4:07:06 PM	89.519	89.933	86.891	83.886	86.486	85.55
5/31/2005	4:10:06 PM	90.222	89.967	86.701	84.1	86.565	85.406

Table 38 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
5/31/2005	2:54:52 PM	89.194	89.001	78.426	88.601	78.337	79.74
5/31/2005	2:55:06 PM	89.194	89.001	78.426	88.601	78.337	79.74
5/31/2005	2:56:06 PM	90.461	90.09	78.49	89.958	78.356	79.939
5/31/2005	2:57:06 PM	91.227	90.766	78.588	90.902	78.365	79.947
5/31/2005	2:58:06 PM	91.714	91.209	78.631	91.702	78.407	80.215
5/31/2005	2:59:06 PM	92.034	91.396	78.639	92.289	78.505	80.133
5/31/2005	3:00:06 PM	92.155	91.472	78.581	92.721	78.492	80.075
5/31/2005	3:01:06 PM	92.241	91.425	78.624	93.074	78.535	80.298
5/31/2005	3:02:06 PM	92.184	91.367	78.566	93.284	78.567	80.374
5/31/2005	3:03:06 PM	92.116	91.21	78.497	93.305	78.588	80.396
5/31/2005	3:04:06 PM	92.103	91.109	78.484	93.381	78.575	80.428
5/31/2005	3:05:06 PM	91.946	90.862	78.46	93.402	78.642	80.404
5/31/2005	3:06:06 PM	91.8	90.716	78.402	93.3	78.674	80.436
5/31/2005	3:08:06 PM	91.465	90.291	78.289	93.188	78.74	80.502
5/31/2005	3:10:06 PM	91.13	89.911	78.22	92.987	78.762	80.479
5/31/2005	3:12:06 PM	90.784	89.565	78.096	92.686	78.817	80.399
5/31/2005	3:14:06 PM	90.483	89.174	77.971	92.385	78.873	80.455
5/31/2005	3:16:06 PM	90.147	88.883	77.857	92.05	78.849	80.476
5/31/2005	3:19:06 PM	89.678	88.458	77.834	91.626	78.916	80.453
5/31/2005	3:22:06 PM	89.253	87.944	77.9	91.157	78.937	80.474
5/31/2005	3:25:06 PM	88.828	87.518	78.012	90.733	79.003	80.54
5/31/2005	3:28:06 PM	88.426	87.161	77.967	90.332	79.048	80.54
5/31/2005	3:31:06 PM	88.037	86.861	77.664	89.988	79.061	80.553
5/31/2005	3:34:06 PM	87.714	86.582	77.924	89.621	79.141	80.633
5/31/2005	3:37:06 PM	87.435	86.303	78.093	89.253	79.13	80.622
5/31/2005	3:40:06 PM	87.146	86.058	77.982	88.92	79.154	80.601
5/31/2005	3:43:06 PM	86.936	85.847	77.86	88.62	79.212	80.524
5/31/2005	3:46:06 PM	86.683	85.639	77.875	88.412	79.272	80.584
5/31/2005	3:49:06 PM	86.495	85.496	77.867	88.091	79.264	80.531
5/31/2005	3:52:06 PM	86.353	85.354	77.903	87.904	79.3	80.522
5/31/2005	3:55:06 PM	86.176	85.177	77.996	87.683	79.348	80.57
5/31/2005	3:58:06 PM	86.034	85.079	77.897	87.407	79.294	80.471
5/31/2005	4:01:06 PM	85.913	84.958	77.865	87.196	79.262	80.439
5/31/2005	4:04:06 PM	85.802	84.847	77.889	86.996	79.331	80.463
5/31/2005	4:07:06 PM	85.691	84.781	78.003	86.886	79.4	80.532
5/31/2005	4:10:06 PM	85.591	84.681	78.037	86.696	79.434	80.476

Table 39: Chamber Temperature Maintained at 1500° C for 45 Minute Prior to Opening the Chamber, Bottom Chamber Door Lowered to the Lowest Height, Furnace Safety Shield Doors Opened and Remained Open

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
5/31/2005	4:13:14 PM	89.529	89.854	87.08	84.3	86.586	85.248
5/31/2005	4:14:15 PM	89.529	89.854	87.08	84.3	86.586	85.248
5/31/2005	4:14:25 PM	90.888	90.143	87.235	85.083	86.607	85.224
5/31/2005	4:14:35 PM	127.89	115.432	105.238	105.066	88.439	85.851
5/31/2005	4:14:45 PM	270.425	219.769	200.004	254.007	99.027	88.498
5/31/2005	4:14:55 PM	265.547	238.134	224.778	295.904	113.894	88.543
5/31/2005	4:15:05 PM	235.029	261.17	234.884	316.192	123.313	88.687
5/31/2005	4:15:15 PM	198.132	257.651	240.009	322.014	130.54	88.91
5/31/2005	4:15:25 PM	209.674	252.974	239.409	321.823	137.082	89.134
5/31/2005	4:15:35 PM	225.906	285.074	236.858	319.765	142.662	89.323
5/31/2005	4:15:45 PM	235.118	266.937	234.974	307.706	147.654	89.546
5/31/2005	4:15:55 PM	216.842	269.809	227.78	301.688	152.712	89.769
5/31/2005	4:16:05 PM	198.183	243.79	220.392	293.325	156.737	89.947
5/31/2005	4:16:15 PM	188.919	266.907	217.08	284.349	160.549	90.091
5/31/2005	4:16:25 PM	204.434	269.002	215.264	275.643	164.013	90.325
5/31/2005	4:16:35 PM	248.759	275.792	215.182	275.486	167.459	90.369
5/31/2005	4:16:45 PM	255.994	267.004	215.395	272.869	170.697	90.603
5/31/2005	4:16:55 PM	238.553	250.708	205.702	260.703	173.165	90.692
5/31/2005	4:17:05 PM	222.703	251.105	201.365	250.719	175.337	90.87
5/31/2005	4:17:15 PM	203.931	235.315	193.289	248.63	177.817	91.069
5/31/2005	4:17:25 PM	173.954	233.629	183.989	244.089	179.732	91.203
5/31/2005	4:17:35 PM	187.179	236.117	182.537	237.973	181.644	91.292
5/31/2005	4:17:45 PM	194.127	231.429	180.761	234.094	183.149	91.436
5/31/2005	4:17:55 PM	157.792	216.003	173.896	224.602	184.154	91.536
5/31/2005	4:18:05 PM	165.549	213.524	169.295	218.817	185.564	91.67
5/31/2005	4:18:15 PM	148.096	204.446	164.319	208.426	186.329	91.78
5/31/2005	4:18:25 PM	164.981	205.1	163.267	202.17	187.074	91.869
5/31/2005	4:18:35 PM	164.654	198.593	160.243	198.816	187.829	92.013
5/31/2005	4:18:45 PM	140.418	186.092	157.288	192.808	188.615	92.013
5/31/2005	4:18:55 PM	143.851	199.834	155.86	188.771	188.997	92.201
5/31/2005	4:19:05 PM	144.202	203.288	153.582	185.261	189.296	92.212
5/31/2005	4:19:15 PM	169.429	203.625	152.702	182.865	189.719	92.401

Table 39 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
5/31/2005	4:19:25 PM	158.191	200.346	149.432	178.832	190.008	92.49
5/31/2005	4:19:35 PM	147.593	195.095	146.675	174.713	190.224	92.589
5/31/2005	4:19:45 PM	128.237	183.519	143.262	172.163	190.141	92.634
5/31/2005	4:19:55 PM	118.883	184.617	140.288	168.832	190.12	92.744
5/31/2005	4:20:05 PM	117.412	180.141	139.913	166.996	190.171	92.799
5/31/2005	4:20:15 PM	122.504	183.216	139.485	164.852	190.13	92.977
5/31/2005	4:20:25 PM	129.315	179.568	138.338	162.378	190.057	93.076
5/31/2005	4:20:35 PM	129.412	183.319	137.018	161.756	189.777	93.131
5/31/2005	4:20:45 PM	148.58	179.37	137.275	161.503	189.529	93.176
5/31/2005	4:20:55 PM	141.515	177.182	135.836	159.245	189.342	93.286
5/31/2005	4:21:05 PM	124.932	167.685	133.815	155.438	188.97	93.33
5/31/2005	4:21:15 PM	117.071	160.835	131.974	152.65	188.567	93.43
5/31/2005	4:21:25 PM	113.105	165.73	130.906	152.448	188.205	93.529
5/31/2005	4:21:35 PM	113.422	165.362	130.744	149.824	187.718	93.584
5/31/2005	4:21:45 PM	120.239	168.48	130.797	150.854	187.355	93.683
5/31/2005	4:21:55 PM	117.156	164.919	129.901	150.312	186.91	93.738
5/31/2005	4:22:05 PM	112.622	159.408	127.925	147.981	186.423	93.838
5/31/2005	4:22:15 PM	109.081	157.135	126.204	145.647	185.812	93.937
5/31/2005	4:22:25 PM	109.838	153.078	126.258	143.309	185.283	93.992
5/31/2005	4:22:35 PM	109.629	154.7	125.749	142.592	184.588	94.047
5/31/2005	4:22:45 PM	117.241	158.762	124.319	142.207	184.09	94.136
5/31/2005	4:22:55 PM	113.024	158.064	122.865	140.001	183.446	94.246
5/31/2005	4:23:05 PM	107.288	152.057	122.007	139.326	182.875	94.212
5/31/2005	4:23:15 PM	114.958	151.165	122.137	139.583	182.128	94.39
5/31/2005	4:23:25 PM	111.084	155.513	121.897	138.102	181.524	94.411
5/31/2005	4:23:35 PM	110.481	154.463	120.952	138.112	180.952	94.555
5/31/2005	4:23:45 PM	107.022	145.329	118.613	135.889	180.172	94.565
5/31/2005	4:23:55 PM	105.526	144.774	118.351	134.212	179.382	94.565
5/31/2005	4:24:05 PM	111.51	142.519	118.057	133.318	178.684	94.709
5/31/2005	4:24:15 PM	106.295	139.489	117.588	132.165	177.944	94.72
5/31/2005	4:24:25 PM	102.868	140.656	115.723	131.14	177.163	94.775
5/31/2005	4:24:35 PM	111.366	138.18	115.646	131.754	176.422	94.83

Table 39 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
5/31/2005	4:13:14 PM	85.478	84.613	78.104	86.583	79.5	80.542
5/31/2005	4:14:15 PM	85.478	84.613	78.104	86.583	79.5	80.542
5/31/2005	4:14:25 PM	85.499	84.589	78.035	86.47	79.432	80.519
5/31/2005	4:14:35 PM	85.589	84.768	78.035	86.515	79.432	80.519
5/31/2005	4:14:45 PM	85.913	85.092	78.046	86.883	79.442	80.574
5/31/2005	4:14:55 PM	86.181	85.361	78.091	87.062	79.487	80.574
5/31/2005	4:15:05 PM	86.281	85.595	78.101	87.118	79.453	80.585
5/31/2005	4:15:15 PM	86.371	85.729	78.101	87.207	79.453	80.585
5/31/2005	4:15:25 PM	86.46	85.864	78.056	87.296	79.408	80.54
5/31/2005	4:15:35 PM	86.56	85.964	78.112	87.352	79.464	80.551
5/31/2005	4:15:45 PM	86.605	86.143	78.157	87.441	79.464	80.596
5/31/2005	4:15:55 PM	86.694	86.232	78.202	87.575	79.509	80.596
5/31/2005	4:16:05 PM	86.784	86.411	78.202	87.664	79.464	80.596
5/31/2005	4:16:15 PM	86.884	86.556	78.258	87.764	79.519	80.696
5/31/2005	4:16:25 PM	87.028	86.745	78.313	87.864	79.485	80.662
5/31/2005	4:16:35 PM	87.162	86.969	78.313	87.909	79.485	80.662
5/31/2005	4:16:45 PM	87.352	87.203	78.369	88.009	79.451	80.672
5/31/2005	4:16:55 PM	87.486	87.381	78.414	88.098	79.451	80.672
5/31/2005	4:17:05 PM	87.709	87.649	78.369	88.143	79.451	80.628
5/31/2005	4:17:15 PM	87.909	87.983	78.481	88.342	79.472	80.694
5/31/2005	4:17:25 PM	88.087	88.251	78.526	88.476	79.472	80.739
5/31/2005	4:17:35 PM	88.311	88.519	78.526	88.61	79.517	80.739
5/31/2005	4:17:45 PM	88.589	88.797	78.536	88.799	79.483	80.704
5/31/2005	4:17:55 PM	88.778	89.12	78.592	88.944	79.493	80.715
5/31/2005	4:18:05 PM	89.001	89.432	78.592	89.033	79.448	80.76
5/31/2005	4:18:15 PM	89.29	89.766	78.613	89.277	79.515	80.736
5/31/2005	4:18:25 PM	89.513	90.033	78.613	89.5	79.47	80.826
5/31/2005	4:18:35 PM	89.791	90.356	78.669	89.689	79.525	80.882
5/31/2005	4:18:45 PM	90.014	90.668	78.714	89.912	79.57	80.972
5/31/2005	4:18:55 PM	90.292	90.99	78.68	90.057	79.536	80.982
5/31/2005	4:19:05 PM	90.526	91.312	78.735	90.335	79.502	81.038
5/31/2005	4:19:15 PM	90.804	91.59	78.701	90.524	79.557	81.093

Table 39 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
5/31/2005	4:19:25 PM	91.026	91.902	78.791	90.747	79.557	81.138
5/31/2005	4:19:35 PM	91.26	92.224	78.757	90.935	79.523	81.059
5/31/2005	4:19:45 PM	91.527	92.491	78.757	91.158	79.478	81.059
5/31/2005	4:19:55 PM	91.771	92.779	78.778	91.357	79.544	81.08
5/31/2005	4:20:05 PM	92.004	93.056	78.834	91.591	79.465	81.046
5/31/2005	4:20:15 PM	92.182	93.323	78.834	91.813	79.51	81.136
5/31/2005	4:20:25 PM	92.459	93.6	78.889	92.002	79.521	81.102
5/31/2005	4:20:35 PM	92.648	93.877	79.08	92.324	79.621	81.247
5/31/2005	4:20:45 PM	92.87	94.099	78.945	92.457	79.531	81.112
5/31/2005	4:20:55 PM	93.069	94.387	79.011	92.701	79.553	81.089
5/31/2005	4:21:05 PM	93.291	94.609	79.011	92.923	79.463	81.134
5/31/2005	4:21:15 PM	93.48	94.842	79.112	93.156	79.563	81.279
5/31/2005	4:21:25 PM	93.713	95.03	79.123	93.389	79.529	81.29
5/31/2005	4:21:35 PM	93.856	95.262	79.133	93.578	79.54	81.255
5/31/2005	4:21:45 PM	94.045	95.539	79.144	93.855	79.55	81.221
5/31/2005	4:21:55 PM	94.233	95.727	79.155	93.999	79.561	81.322
5/31/2005	4:22:05 PM	94.377	95.915	79.165	94.231	79.527	81.332
5/31/2005	4:22:15 PM	94.565	96.103	79.221	94.464	79.537	81.343
5/31/2005	4:22:25 PM	94.753	96.291	79.232	94.652	79.548	81.488
5/31/2005	4:22:35 PM	94.941	96.479	79.287	94.885	79.559	81.499
5/31/2005	4:22:45 PM	95.075	96.656	79.287	95.107	79.604	81.634
5/31/2005	4:22:55 PM	95.229	96.855	79.309	95.306	79.58	81.655
5/31/2005	4:23:05 PM	95.372	96.998	79.319	95.494	79.591	81.576
5/31/2005	4:23:15 PM	95.506	97.175	79.319	95.671	79.591	81.621
5/31/2005	4:23:25 PM	95.66	97.329	79.296	95.825	79.567	81.552
5/31/2005	4:23:35 PM	95.803	97.473	79.351	96.058	79.578	81.653
5/31/2005	4:23:45 PM	95.947	97.616	79.407	96.246	79.588	81.619
5/31/2005	4:23:55 PM	95.991	97.705	79.407	96.379	79.588	81.574
5/31/2005	4:24:05 PM	96.179	97.893	79.463	96.567	79.644	81.539
5/31/2005	4:24:15 PM	96.279	97.992	79.428	96.799	79.61	81.685
5/31/2005	4:24:25 PM	96.378	98.135	79.394	96.898	79.53	81.74
5/31/2005	4:24:35 PM	96.566	98.234	79.495	97.086	79.586	81.796

Table 40: Data Collected after the Table 39 Data was collected and the Furnace Chamber Closed

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
5/31/2005	4:24:45 PM	145.616	148.065	120.622	131.506	174.345	94.707
5/31/2005	4:25:35 PM	114.088	122.515	106.717	102.139	166.008	94.794
5/31/2005	4:26:35 PM	103.469	107.755	96.927	91.193	157.206	94.846
5/31/2005	4:27:35 PM	98.051	100.323	93.573	88.492	149.506	94.999
5/31/2005	4:28:35 PM	95.044	96.965	91.758	86.579	142.35	95.007
5/31/2005	4:29:35 PM	92.563	93.643	90.43	85.648	136.401	95.06
5/31/2005	4:30:35 PM	90.189	91.628	89.125	84.784	131.18	95.091
5/31/2005	4:31:35 PM	88.604	90.669	88.209	84.044	126.535	95.068
5/31/2005	4:32:35 PM	87.419	90.066	87.159	83.124	122.306	95.001
5/31/2005	4:33:35 PM	87.787	88.827	86.588	82.461	118.489	95.011
5/31/2005	4:34:35 PM	87.083	88.436	86.197	82.741	115.271	94.977
5/31/2005	4:35:35 PM	86.691	87.643	85.402	83.245	112.221	94.899
5/31/2005	4:36:35 PM	85.907	87.53	85.871	83.087	109.612	94.876
5/31/2005	4:37:35 PM	85.784	87.004	85.568	82.245	107.163	94.798
5/31/2005	4:38:35 PM	85.347	86.747	85.4	82.436	104.886	94.675
5/31/2005	4:39:35 PM	85.034	86.165	85.176	82.077	102.946	94.675
5/31/2005	4:40:35 PM	85.134	85.952	85.008	82.042	101.191	94.508
5/31/2005	4:41:35 PM	84.528	85.436	84.626	81.705	99.577	94.44
5/31/2005	4:42:35 PM	84.573	85.123	84.134	81.39	98.072	94.396
5/31/2005	4:43:35 PM	83.867	84.641	83.607	81.042	96.753	94.229
5/31/2005	4:44:35 PM	84.18	84.103	83.383	80.817	95.556	94.14

Table 40 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
5/31/2005	4:24:45 PM	96.621	98.333	79.55	97.318	79.642	81.762
5/31/2005	4:25:35 PM	97.15	98.818	79.638	98.069	79.684	81.894
5/31/2005	4:26:35 PM	97.602	99.225	79.692	98.83	79.648	81.992
5/31/2005	4:27:35 PM	97.798	99.509	79.756	99.513	79.802	81.922
5/31/2005	4:28:35 PM	97.939	99.517	79.674	99.964	79.766	82.065
5/31/2005	4:29:35 PM	97.948	99.437	79.503	100.282	79.819	82.163
5/31/2005	4:30:35 PM	97.891	99.203	79.4	100.446	79.851	82.24
5/31/2005	4:31:35 PM	97.735	98.959	79.287	100.511	79.873	82.216
5/31/2005	4:32:35 PM	97.579	98.67	79.173	100.532	79.939	82.193
5/31/2005	4:33:35 PM	97.412	98.371	79.139	100.498	79.95	82.249
5/31/2005	4:34:35 PM	97.201	98.027	79.014	100.376	80.005	82.259
5/31/2005	4:35:35 PM	96.945	97.728	78.89	100.254	79.971	82.18
5/31/2005	4:36:35 PM	96.745	97.394	78.731	100.054	79.993	82.112
5/31/2005	4:37:35 PM	96.489	97.095	78.517	99.844	80.048	82.122
5/31/2005	4:38:35 PM	96.234	96.751	78.483	99.677	80.104	82.223
5/31/2005	4:39:35 PM	95.968	96.44	78.348	99.5	80.149	82.268
5/31/2005	4:40:35 PM	95.712	96.14	78.223	99.29	80.16	82.234
5/31/2005	4:41:35 PM	95.556	95.851	78.155	99.045	80.136	82.21
5/31/2005	4:42:35 PM	95.289	95.496	77.975	98.735	80.091	82.165
5/31/2005	4:43:35 PM	95.034	95.24	77.94	98.657	80.192	82.221
5/31/2005	4:44:35 PM	94.856	94.974	77.85	98.392	80.192	82.176

Table 41: Chamber Temperature Maintained at 1200° C for Two Hours Prior to Opening the Chamber, Bottom Chamber Door Lowered to the Lowest Height, Furnace Safety Shield Doors Remained Closed, No Crucible

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
6/3/2005	9:58:48 AM	81.666	81.274	80.909	80.32	79.333	75.101
6/3/2005	9:59:32 AM	81.666	81.274	80.909	80.32	79.333	75.101
6/3/2005	9:59:42 AM	82.123	81.238	81.008	80.104	79.342	75.11
6/3/2005	9:59:52 AM	94.069	89.809	86.316	84.881	79.902	75.356
6/3/2005	10:00:02 AM	175.251	139.703	127.655	142.897	81.046	75.286
6/3/2005	10:00:12 AM	211.31	165.961	153.795	170.053	81.795	75.317
6/3/2005	10:00:22 AM	225.567	179.375	169.709	184.339	82.455	75.393
6/3/2005	10:00:32 AM	229.284	186.112	178.904	191.589	83.138	75.358
6/3/2005	10:00:42 AM	230.037	189.534	183.171	194.627	83.751	75.389
6/3/2005	10:00:52 AM	233.24	192.329	185.19	197.782	84.364	75.42
6/3/2005	10:01:02 AM	227.676	189.219	183.809	192.541	84.932	75.496
6/3/2005	10:01:12 AM	225.113	189.899	183.869	191.734	85.49	75.472
6/3/2005	10:01:22 AM	225.382	190.464	183.151	190.359	86.013	75.503
6/3/2005	10:01:32 AM	222.564	186.213	180.71	187.267	86.56	75.558
6/3/2005	10:01:42 AM	219.404	185.09	179.043	183.782	87.048	75.555
6/3/2005	10:01:52 AM	214.025	182.495	176.563	181.268	87.56	75.62
6/3/2005	10:02:02 AM	207.729	180.56	173.452	177.124	87.982	75.596
6/3/2005	10:02:12 AM	203.055	177.341	170.679	173.061	88.414	75.582
6/3/2005	10:02:22 AM	204.393	174.532	166.725	171.165	88.847	75.658
6/3/2005	10:02:32 AM	201.135	172.963	165.485	169.089	89.313	75.678
6/3/2005	10:02:42 AM	196.348	170.638	163.401	164.993	89.691	75.699
6/3/2005	10:02:52 AM	194.35	168.603	162.158	163.75	90.068	75.72
6/3/2005	10:03:02 AM	190.79	166.533	160.121	160.787	90.455	75.706
6/3/2005	10:03:12 AM	187.833	164.408	157.015	157.935	90.787	75.726
6/3/2005	10:03:22 AM	185.947	161.478	154.114	155.034	91.12	75.747
6/3/2005	10:03:32 AM	184.94	160.495	152.235	155.318	91.462	75.778
6/3/2005	10:03:42 AM	180.848	157.853	151.321	152.369	91.705	75.799
6/3/2005	10:03:52 AM	177.838	157.078	149.14	150.487	92.003	75.785
6/3/2005	10:04:02 AM	175.939	155.489	147.798	147.74	92.246	75.805
6/3/2005	10:04:12 AM	174.131	154.501	146.89	146.064	92.543	75.836
6/3/2005	10:04:22 AM	172.655	153.046	144.617	145.539	92.796	75.912
6/3/2005	10:04:32 AM	171.618	149.955	143.175	144.183	93.029	75.878
6/3/2005	10:04:42 AM	168.085	149.644	142.606	140.962	93.282	75.909
6/3/2005	10:04:52 AM	167.139	148.557	141.471	140.254	93.435	75.929
6/3/2005	10:05:02 AM	164.005	147.128	140.763	139.674	93.634	75.95
6/3/2005	10:05:12 AM	162.392	145.366	139.551	138.76	93.798	75.936
6/3/2005	10:05:22 AM	161.4	144.019	138.628	137.406	93.951	75.957
6/3/2005	10:05:32 AM	159.224	142.842	137.146	136.567	94.105	76.023
6/3/2005	10:05:42 AM	157.605	141.545	135.587	134.404	94.224	76.009
6/3/2005	10:05:52 AM	155.213	139.637	133.93	133.218	94.378	75.984
6/3/2005	10:06:02 AM	153.579	138.242	133.089	131.557	94.532	76.005

Table 41 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
6/3/2005	10:06:12 AM	153.735	137.499	131.61	131.285	94.651	76.081
6/3/2005	10:06:22 AM	152.227	136.445	130.984	130.226	94.805	76.102
6/3/2005	10:06:32 AM	150.505	135.648	130.443	129.771	94.87	76.077
6/3/2005	10:06:42 AM	149.206	135.237	129.556	128.97	94.934	76.098
6/3/2005	10:06:52 AM	148.001	134.449	129.456	128.135	95.098	76.129
6/3/2005	10:07:02 AM	146.539	133.79	129.227	126.953	95.173	76.16
6/3/2005	10:07:12 AM	145.483	133.542	128.675	126.4	95.183	76.126
6/3/2005	10:07:22 AM	144.359	132.365	127.971	125.867	95.303	76.157
6/3/2005	10:07:32 AM	142.926	131.393	126.13	125.237	95.368	76.177
6/3/2005	10:07:42 AM	141.663	130.075	124.764	124.043	95.388	76.243
6/3/2005	10:07:52 AM	141.34	129.793	124.481	121.675	95.364	76.264
6/3/2005	10:08:02 AM	139.904	128.775	123.287	120.39	95.34	76.285
6/3/2005	10:08:12 AM	139.676	128.33	123.62	120.725	95.415	76.271
6/3/2005	10:08:22 AM	139.01	127.831	122.555	119.962	95.435	76.291
6/3/2005	10:08:32 AM	138.653	126.649	121.63	119.121	95.377	76.368
6/3/2005	10:08:42 AM	138.277	125.706	120.814	117.867	95.343	76.288
6/3/2005	10:08:52 AM	137.449	124.608	119.017	116.72	95.329	76.319
6/3/2005	10:09:02 AM	136.566	124.759	118.384	116.914	95.35	76.385
6/3/2005	10:09:12 AM	135.254	123.954	118.143	115.363	95.282	76.406
6/3/2005	10:09:22 AM	134.671	123.627	117.335	114.99	95.213	76.381
6/3/2005	10:09:32 AM	134.175	123.126	117.006	115.141	95.234	76.402
6/3/2005	10:09:42 AM	133.343	122.635	116.818	113.991	95.264	76.433
6/3/2005	10:09:52 AM	132.793	122.124	116.698	113.739	95.186	76.444
6/3/2005	10:10:02 AM	131.53	121.328	116.291	113.025	95.128	76.475
6/3/2005	10:10:12 AM	130.773	120.739	115.701	113.308	95.148	76.45
6/3/2005	10:10:22 AM	130.371	120.552	115.12	113.076	95.134	76.482
6/3/2005	10:10:32 AM	129.744	120.398	114.834	112.483	95.11	76.502
6/3/2005	10:10:42 AM	128.9	119.199	113.456	111.189	94.998	76.478
6/3/2005	10:10:52 AM	128.098	117.999	113.126	110.201	95.018	76.544
6/3/2005	10:11:02 AM	127.123	117.844	112.884	109.519	94.95	76.52
6/3/2005	10:11:12 AM	126.624	117.777	112.51	109.583	94.926	76.54
6/3/2005	10:11:22 AM	125.777	117.449	112.487	109.998	94.813	76.561
6/3/2005	10:11:32 AM	124.897	116.912	112.211	109.063	94.8	76.592
6/3/2005	10:11:42 AM	124.474	116.747	111.739	108.766	94.81	76.603
6/3/2005	10:11:52 AM	124.373	116.166	110.893	107.61	94.707	76.634
6/3/2005	10:12:02 AM	123.699	115.793	110.782	107.63	94.595	76.655
6/3/2005	10:12:12 AM	123.068	115.289	110.539	107.651	94.571	76.676
6/3/2005	10:12:22 AM	121.916	114.96	110.121	107.495	94.547	76.651
6/3/2005	10:12:32 AM	121.317	114.096	109.342	107.241	94.513	76.662
6/3/2005	10:12:42 AM	120.608	113.382	108.758	107.184	94.499	76.693

Table 41 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
6/3/2005	9:58:48 AM	75.514	75.59	75.773	75.591	75.097	75.286
6/3/2005	9:59:32 AM	75.514	75.59	75.773	75.591	75.097	75.286
6/3/2005	9:59:42 AM	75.478	75.599	75.872	75.645	75.151	75.34
6/3/2005	9:59:52 AM	75.544	75.619	75.848	75.665	75.082	75.27
6/3/2005	10:00:02 AM	75.519	75.64	75.823	75.686	75.057	75.291
6/3/2005	10:00:12 AM	75.55	75.671	75.899	75.672	75.133	75.322
6/3/2005	10:00:22 AM	75.536	75.702	75.93	75.703	75.164	75.398
6/3/2005	10:00:32 AM	75.592	75.712	75.895	75.668	75.084	75.363
6/3/2005	10:00:42 AM	75.577	75.743	75.926	75.744	75.16	75.349
6/3/2005	10:00:52 AM	75.563	75.774	75.912	75.685	75.146	75.334
6/3/2005	10:01:02 AM	75.594	75.805	75.943	75.716	75.132	75.365
6/3/2005	10:01:12 AM	75.615	75.78	75.964	75.691	75.107	75.341
6/3/2005	10:01:22 AM	75.646	75.811	75.949	75.722	75.138	75.327
6/3/2005	10:01:32 AM	75.611	75.822	76.005	75.732	75.104	75.337
6/3/2005	10:01:42 AM	75.652	75.863	76.046	75.774	75.145	75.333
6/3/2005	10:01:52 AM	75.673	75.929	75.976	75.749	75.166	75.399
6/3/2005	10:02:02 AM	75.693	75.904	76.042	75.77	75.141	75.374
6/3/2005	10:02:12 AM	75.724	75.98	76.073	75.801	75.172	75.36
6/3/2005	10:02:22 AM	75.755	76.011	76.104	75.832	75.203	75.436
6/3/2005	10:02:32 AM	75.776	76.077	76.08	75.807	75.133	75.367
6/3/2005	10:02:42 AM	75.752	76.098	76.1	75.828	75.154	75.388
6/3/2005	10:02:52 AM	75.817	76.118	76.166	75.894	75.175	75.408
6/3/2005	10:03:02 AM	75.848	76.195	76.152	75.88	75.206	75.439
6/3/2005	10:03:12 AM	75.869	76.215	76.173	75.855	75.181	75.415
6/3/2005	10:03:22 AM	75.89	76.281	76.148	75.921	75.157	75.435
6/3/2005	10:03:32 AM	75.921	76.357	76.179	75.907	75.188	75.421
6/3/2005	10:03:42 AM	75.941	76.378	76.2	75.928	75.163	75.352
6/3/2005	10:03:52 AM	76.018	76.409	76.231	75.959	75.149	75.383
6/3/2005	10:04:02 AM	76.083	76.474	76.207	75.889	75.125	75.358
6/3/2005	10:04:12 AM	76.069	76.551	76.192	75.965	75.156	75.389
6/3/2005	10:04:22 AM	76.145	76.627	76.314	76.041	75.187	75.42
6/3/2005	10:04:32 AM	76.156	76.637	76.324	76.052	75.197	75.431
6/3/2005	10:04:42 AM	76.187	76.713	76.31	76.128	75.228	75.462
6/3/2005	10:04:52 AM	76.207	76.824	76.376	76.148	75.204	75.437
6/3/2005	10:05:02 AM	76.273	76.845	76.396	76.124	75.225	75.458
6/3/2005	10:05:12 AM	76.304	76.876	76.382	76.155	75.256	75.489
6/3/2005	10:05:22 AM	76.325	76.941	76.448	76.221	75.231	75.51
6/3/2005	10:05:32 AM	76.391	77.007	76.469	76.242	75.252	75.485
6/3/2005	10:05:42 AM	76.467	77.038	76.41	76.228	75.238	75.471
6/3/2005	10:05:52 AM	76.488	77.104	76.43	76.248	75.213	75.447
6/3/2005	10:06:02 AM	76.553	77.17	76.451	76.314	75.234	75.513

Table 41 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
6/3/2005	10:06:12 AM	76.585	77.246	76.482	76.3	75.22	75.544
6/3/2005	10:06:22 AM	76.605	77.312	76.503	76.321	75.196	75.474
6/3/2005	10:06:32 AM	76.626	77.332	76.524	76.387	75.216	75.495
6/3/2005	10:06:42 AM	76.647	77.353	76.544	76.452	75.282	75.561
6/3/2005	10:06:52 AM	76.723	77.429	76.62	76.483	75.268	75.547
6/3/2005	10:07:02 AM	76.754	77.505	76.606	76.469	75.254	75.533
6/3/2005	10:07:12 AM	76.809	77.516	76.572	76.48	75.265	75.543
6/3/2005	10:07:22 AM	76.84	77.547	76.603	76.556	75.296	75.574
6/3/2005	10:07:32 AM	76.861	77.657	76.624	76.532	75.226	75.55
6/3/2005	10:07:42 AM	76.882	77.633	76.599	76.552	75.247	75.526
6/3/2005	10:07:52 AM	76.948	77.699	76.62	76.618	75.268	75.546
6/3/2005	10:08:02 AM	77.013	77.765	76.641	76.684	75.243	75.567
6/3/2005	10:08:12 AM	77.045	77.796	76.717	76.76	75.32	75.643
6/3/2005	10:08:22 AM	77.02	77.861	76.693	76.691	75.295	75.619
6/3/2005	10:08:32 AM	77.096	77.893	76.724	76.767	75.281	75.605
6/3/2005	10:08:42 AM	77.107	77.903	76.734	76.732	75.246	75.615
6/3/2005	10:08:52 AM	77.138	77.979	76.72	76.718	75.232	75.556
6/3/2005	10:09:02 AM	77.159	78.045	76.831	76.829	75.298	75.622
6/3/2005	10:09:12 AM	77.224	78.066	76.807	76.805	75.274	75.598
6/3/2005	10:09:22 AM	77.245	78.086	76.872	76.871	75.295	75.664
6/3/2005	10:09:32 AM	77.221	78.152	76.893	76.892	75.316	75.639
6/3/2005	10:09:42 AM	77.342	78.138	76.969	76.968	75.347	75.671
6/3/2005	10:09:52 AM	77.353	78.194	76.89	76.933	75.312	75.636
6/3/2005	10:10:02 AM	77.384	78.27	76.921	76.964	75.298	75.667
6/3/2005	10:10:12 AM	77.404	78.29	76.987	77.03	75.319	75.688
6/3/2005	10:10:22 AM	77.436	78.322	76.973	77.016	75.305	75.629
6/3/2005	10:10:32 AM	77.456	78.342	76.994	77.037	75.281	75.65
6/3/2005	10:10:42 AM	77.477	78.363	77.014	77.103	75.347	75.716
6/3/2005	10:10:52 AM	77.543	78.429	77.035	77.124	75.322	75.691
6/3/2005	10:11:02 AM	77.519	78.45	77.011	77.144	75.343	75.667
6/3/2005	10:11:12 AM	77.585	78.47	77.032	77.12	75.274	75.688
6/3/2005	10:11:22 AM	77.605	78.491	77.052	77.141	75.34	75.709
6/3/2005	10:11:32 AM	77.636	78.567	77.039	77.217	75.371	75.74
6/3/2005	10:11:42 AM	77.647	78.533	77.049	77.227	75.336	75.705
6/3/2005	10:11:52 AM	77.723	78.609	77.08	77.214	75.322	75.691
6/3/2005	10:12:02 AM	77.699	78.63	77.056	77.279	75.343	75.712
6/3/2005	10:12:12 AM	77.765	78.65	77.032	77.3	75.319	75.733
6/3/2005	10:12:22 AM	77.74	78.671	77.052	77.321	75.294	75.708
6/3/2005	10:12:32 AM	77.751	78.682	77.063	77.331	75.35	75.719
6/3/2005	10:12:42 AM	77.782	78.713	77.049	77.363	75.336	75.705

Table 42: Data Collected after the Table 41 Data was collected and the Furnace Chamber Closed

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
6/3/2005	10:12:53 AM	119.888	112.877	108.691	107.116	94.431	76.714
6/3/2005	10:13:36 AM	119.888	112.877	108.691	107.116	94.431	76.714
6/3/2005	10:14:36 AM	92.633	95.137	91.212	86.121	92.903	76.787
6/3/2005	10:15:36 AM	87.853	90.856	87.098	82.662	92.003	76.822
6/3/2005	10:16:36 AM	85.686	87.622	84.708	81.833	91.092	76.846
6/3/2005	10:17:36 AM	83.326	84.594	84.05	81.533	90.26	76.906
6/3/2005	10:18:36 AM	82.129	82.949	83.482	81.323	89.516	76.965
6/3/2005	10:19:36 AM	81.604	82.335	82.869	81.247	88.771	76.98
6/3/2005	10:20:36 AM	81.204	81.576	82.379	81.341	88.15	77.074
6/3/2005	10:21:36 AM	81.433	81.4	82.069	80.761	87.485	77.078
6/3/2005	10:22:36 AM	81.236	81.249	81.649	80.475	86.887	77.061
6/3/2005	10:23:36 AM	81.151	80.893	81.294	80.209	86.265	77.11
6/3/2005	10:24:36 AM	80.875	80.572	81.018	80.293	85.722	77.149
6/3/2005	10:25:36 AM	80.779	80.296	80.877	80.241	85.268	77.143
6/3/2005	10:26:36 AM	81.087	80.335	80.736	80.01	84.815	77.182
6/3/2005	10:27:36 AM	80.891	80.184	80.63	79.904	84.35	77.21
6/3/2005	10:28:36 AM	80.774	80.112	80.558	79.697	84.01	77.228
6/3/2005	10:29:36 AM	80.657	80.085	80.486	79.76	83.669	77.201
6/3/2005	10:30:36 AM	80.799	80.227	80.539	79.632	83.363	77.208
6/3/2005	10:31:36 AM	81.536	80.47	80.557	79.515	83.067	77.362
6/3/2005	10:32:36 AM	81.813	80.657	80.519	79.388	82.805	77.324

Table 42 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
6/3/2005	10:12:53 AM	77.803	78.733	77.16	77.474	75.402	75.771
6/3/2005	10:13:36 AM	77.803	78.733	77.16	77.474	75.402	75.771
6/3/2005	10:14:36 AM	77.966	78.986	77.098	77.547	75.385	75.754
6/3/2005	10:15:36 AM	78.091	79.066	77.042	77.672	75.375	75.789
6/3/2005	10:16:36 AM	78.16	79.091	77.067	77.831	75.444	75.813
6/3/2005	10:17:36 AM	78.22	79.15	76.901	77.846	75.459	75.737
6/3/2005	10:18:36 AM	78.279	79.119	76.87	77.905	75.473	75.752
6/3/2005	10:19:36 AM	78.248	79.134	76.794	78.009	75.487	75.856
6/3/2005	10:20:36 AM	78.297	79.093	76.753	78.013	75.537	75.86
6/3/2005	10:21:36 AM	78.302	79.097	76.667	78.017	75.45	75.774
6/3/2005	10:22:36 AM	78.24	79.035	76.65	78.091	75.479	75.802
6/3/2005	10:23:36 AM	78.244	79.039	76.609	78.095	75.528	75.897
6/3/2005	10:24:36 AM	78.238	78.988	76.513	78.134	75.567	75.936
6/3/2005	10:25:36 AM	78.231	78.937	76.507	78.127	75.56	75.884
6/3/2005	10:26:36 AM	78.225	78.931	76.5	78.166	75.554	75.923
6/3/2005	10:27:36 AM	78.209	78.914	76.484	78.195	75.583	75.907
6/3/2005	10:28:36 AM	78.226	78.887	76.411	78.167	75.601	75.97
6/3/2005	10:29:36 AM	78.199	78.815	76.429	78.23	75.664	75.988
6/3/2005	10:30:36 AM	78.162	78.777	76.392	78.148	75.581	75.95
6/3/2005	10:31:36 AM	78.135	78.795	76.545	78.211	75.644	76.103
6/3/2005	10:32:36 AM	78.142	78.713	76.598	78.218	75.652	76.021

Table 43: Chamber Temperature Maintained at 1200° C for 45 Minutes Prior to Opening the Chamber, Bottom Chamber Door Lowered to the Lowest Height, Furnace Safety Shield Doors Opened and Remained Open, No Crucible

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
6/3/2005	10:50:59 AM	82.408	81.342	80.98	80.119	80.932	77.381
6/3/2005	10:51:31 AM	82.408	81.342	80.98	80.119	80.932	77.381
6/3/2005	10:51:41 AM	82.653	81.498	81.091	79.96	80.953	77.402
6/3/2005	10:51:51 AM	120.465	105.028	97.725	103.473	81.716	77.627
6/3/2005	10:52:01 AM	133.073	120.144	114.232	133.548	85.894	78.538
6/3/2005	10:52:11 AM	127.331	126.569	120.161	146.275	89.691	78.583
6/3/2005	10:52:21 AM	129.675	131.074	123.646	152.921	92.374	78.639
6/3/2005	10:52:31 AM	124.492	130.955	126.256	156.914	94.696	78.785
6/3/2005	10:52:41 AM	118.329	134.499	126.049	158.361	96.836	78.885
6/3/2005	10:52:51 AM	117.152	136.434	126.352	159.586	98.874	78.975
6/3/2005	10:53:01 AM	116.202	135.842	124.63	158.118	100.786	79.031
6/3/2005	10:53:11 AM	111.205	136.735	123.883	155.188	102.453	79.155
6/3/2005	10:53:21 AM	108.452	130.026	122.939	154.266	104.095	79.166
6/3/2005	10:53:31 AM	111.105	137.71	122.221	153.268	105.702	79.277
6/3/2005	10:53:41 AM	110.14	136.55	120.483	149.785	107.197	79.367
6/3/2005	10:53:51 AM	112.648	137.935	120.015	148.816	108.657	79.422
6/3/2005	10:54:01 AM	108.483	130.704	117.969	147.411	109.886	79.512
6/3/2005	10:54:11 AM	103.652	120.313	116.191	142.811	110.992	79.568
6/3/2005	10:54:21 AM	104.368	131.328	114.848	140.682	112.098	79.623
6/3/2005	10:54:31 AM	116.351	136.548	116.212	141.976	113.071	79.679
6/3/2005	10:54:41 AM	111.979	126.497	114.859	141.12	114.164	79.769
6/3/2005	10:54:51 AM	105.093	122.865	113.776	137.958	115.005	79.869
6/3/2005	10:55:01 AM	102.899	117.566	113.262	137.582	115.233	79.835
6/3/2005	10:55:11 AM	99.994	120.364	111.171	133.68	115.768	79.936
6/3/2005	10:55:21 AM	101.453	129.815	110.207	132.388	116.815	80.025
6/3/2005	10:55:31 AM	106.181	129.782	109.867	132.053	117.654	80.036
6/3/2005	10:55:41 AM	101.793	119.48	109.098	129.786	118.197	80.102
6/3/2005	10:55:51 AM	102.632	125.475	108.527	129.484	118.981	80.147
6/3/2005	10:56:01 AM	99.848	120.046	107.166	127.279	119.504	80.192
6/3/2005	10:56:11 AM	99.107	120.883	106.429	126.423	120.123	80.248
6/3/2005	10:56:21 AM	98.453	120.763	106.571	126.52	120.655	80.303
6/3/2005	10:56:31 AM	102.344	121.459	106.483	126.217	121.134	80.348
6/3/2005	10:56:41 AM	102.707	123.988	105.921	126.097	121.535	80.404
6/3/2005	10:56:51 AM	111.512	122.522	105.932	126.194	122.023	80.459
6/3/2005	10:57:01 AM	101.006	111.494	104.225	122.909	122.381	80.515
6/3/2005	10:57:11 AM	98.362	119.324	103.707	121.007	122.652	80.57
6/3/2005	10:57:21 AM	99.567	117.766	103.365	120.539	122.966	80.671
6/3/2005	10:57:31 AM	107.242	121.727	103.805	121.756	123.269	80.671
6/3/2005	10:57:41 AM	113.523	120.259	104.08	122.765	123.67	80.726
6/3/2005	10:57:51 AM	110.161	116.739	103.033	122.385	123.897	80.782
6/3/2005	10:58:01 AM	102.912	112.553	102.69	121.309	124.124	80.792
6/3/2005	10:58:11 AM	98.945	112.826	101.906	120.188	124.351	80.803

Table 43 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
6/3/2005	10:58:21 AM	101.829	111.435	101.828	119.458	124.492	80.903
6/3/2005	10:58:31 AM	100.283	103.124	100.901	117.977	124.535	80.903
6/3/2005	10:58:41 AM	96.795	105.779	100.028	115.631	124.415	80.959
6/3/2005	10:58:51 AM	96.317	107.505	100.082	115.161	124.555	81.014
6/3/2005	10:59:01 AM	96.362	109.921	99.729	115.248	124.642	81.059
6/3/2005	10:59:11 AM	97.215	108.57	99.562	114.778	124.696	81.07
6/3/2005	10:59:21 AM	95.973	106.196	98.678	113.51	124.696	81.115
6/3/2005	10:59:31 AM	97.403	104.885	98.378	112.776	124.619	81.215
6/3/2005	10:59:41 AM	98.797	105.566	98.178	112.797	124.683	81.281
6/3/2005	10:59:51 AM	95.083	106.325	98.232	112.107	124.606	81.292
6/3/2005	11:00:01 AM	99.372	109.567	98.001	112.14	124.553	81.326
6/3/2005	11:00:11 AM	97.754	107.215	98.066	112.248	124.487	81.392
6/3/2005	11:00:21 AM	97.267	106.071	97.579	111.767	124.53	81.392
6/3/2005	11:00:31 AM	95.37	106.786	97.146	110.9	124.497	81.447
6/3/2005	11:00:41 AM	96.8	101.594	96.846	111.13	124.42	81.503
6/3/2005	11:00:51 AM	95.169	100.898	96.458	110.307	124.344	81.558
6/3/2005	11:01:01 AM	95.08	101.251	96.014	109.518	124.257	81.558
6/3/2005	11:01:11 AM	94.346	98.972	95.902	109.319	124.017	81.624
6/3/2005	11:01:21 AM	96.965	102.774	95.325	107.781	123.757	81.669
6/3/2005	11:01:31 AM	91.91	100.354	94.892	106.869	123.68	81.68
6/3/2005	11:01:41 AM	89.96	97.797	94.902	106.527	123.691	81.735
6/3/2005	11:01:51 AM	91.431	104.25	94.725	106.571	123.604	81.735
6/3/2005	11:02:01 AM	93.009	103.653	94.923	106.724	123.538	81.801
6/3/2005	11:02:11 AM	96.208	107.22	94.835	106.812	123.321	81.891
6/3/2005	11:02:21 AM	97.426	107.637	94.767	107.184	123.298	81.912
6/3/2005	11:02:31 AM	99.286	105.481	94.989	107.58	123.124	81.957
6/3/2005	11:02:41 AM	100.358	105.051	95.221	106.711	123.004	81.968
6/3/2005	11:02:51 AM	98.333	97.284	94.477	107.425	122.841	81.978
6/3/2005	11:03:01 AM	92.572	97.87	93.91	106.907	122.547	82.034
6/3/2005	11:03:11 AM	90.123	95.12	93.466	105.367	122.2	82.034
6/3/2005	11:03:21 AM	88.661	93.264	92.898	104.188	122.036	82.089
6/3/2005	11:03:31 AM	88.627	93.007	92.686	103.405	121.959	82.145
6/3/2005	11:03:41 AM	92.114	100.823	93.097	104.473	121.796	82.2
6/3/2005	11:03:51 AM	103.722	102.634	93.986	101.429	121.666	82.2
6/3/2005	11:04:01 AM	97.455	99.196	93.107	103.514	121.415	82.256
6/3/2005	11:04:11 AM	93.337	99.694	92.451	103.348	121.121	82.266
6/3/2005	11:04:21 AM	95.78	101.992	92.317	103.524	120.947	82.311
6/3/2005	11:04:31 AM	97.121	102.93	92.15	103.579	120.783	82.322
6/3/2005	11:04:41 AM	99.247	102.267	92.684	102.078	120.653	82.322
6/3/2005	11:04:51 AM	101.778	99.98	92.739	101.382	120.446	82.377
6/3/2005	11:05:01 AM	101.611	98.884	92.66	103.379	120.195	82.388
6/3/2005	11:05:11 AM	98.526	97.61	91.959	102.904	119.988	82.443

Table 43 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
6/3/2005	10:50:59 AM	77.929	78.365	77.105	78.23	75.889	76.393
6/3/2005	10:51:31 AM	77.929	78.365	77.105	78.23	75.889	76.393
6/3/2005	10:51:41 AM	77.905	78.341	77.081	78.206	75.955	76.369
6/3/2005	10:51:51 AM	77.95	78.386	77.081	78.251	75.955	76.414
6/3/2005	10:52:01 AM	77.961	78.486	77.092	78.307	75.966	76.38
6/3/2005	10:52:11 AM	78.006	78.531	77.137	78.397	75.966	76.47
6/3/2005	10:52:21 AM	78.016	78.587	77.148	78.362	76.021	76.436
6/3/2005	10:52:31 AM	78.027	78.598	77.113	78.373	75.942	76.446
6/3/2005	10:52:41 AM	78.082	78.653	77.169	78.429	75.997	76.457
6/3/2005	10:52:51 AM	78.127	78.698	77.124	78.429	75.907	76.412
6/3/2005	10:53:01 AM	78.138	78.709	77.134	78.439	75.963	76.422
6/3/2005	10:53:11 AM	78.127	78.743	77.169	78.519	75.952	76.457
6/3/2005	10:53:21 AM	78.138	78.799	77.179	78.529	75.963	76.422
6/3/2005	10:53:31 AM	78.204	78.865	77.246	78.55	75.984	76.489
6/3/2005	10:53:41 AM	78.204	78.955	77.246	78.64	76.029	76.489
6/3/2005	10:53:51 AM	78.26	79.055	77.346	78.696	76.04	76.499
6/3/2005	10:54:01 AM	78.305	79.145	77.301	78.696	76.04	76.499
6/3/2005	10:54:11 AM	78.405	79.246	77.312	78.752	76.005	76.465
6/3/2005	10:54:21 AM	78.416	79.346	77.322	78.762	75.971	76.475
6/3/2005	10:54:31 AM	78.517	79.447	77.333	78.773	75.981	76.486
6/3/2005	10:54:41 AM	78.562	79.582	77.333	78.818	75.981	76.486
6/3/2005	10:54:51 AM	78.617	79.682	77.344	78.918	75.947	76.451
6/3/2005	10:55:01 AM	78.718	79.828	77.354	79.019	75.957	76.507
6/3/2005	10:55:11 AM	78.818	79.973	77.455	79.119	76.058	76.563
6/3/2005	10:55:21 AM	78.863	80.063	77.41	79.119	76.013	76.473
6/3/2005	10:55:31 AM	79.009	80.209	77.42	79.22	75.979	76.483
6/3/2005	10:55:41 AM	79.075	80.365	77.442	79.331	76.045	76.549
6/3/2005	10:55:51 AM	79.165	80.454	77.442	79.421	76	76.549
6/3/2005	10:56:01 AM	79.21	80.589	77.532	79.556	76.09	76.64
6/3/2005	10:56:11 AM	79.311	80.824	77.497	79.567	76.011	76.56
6/3/2005	10:56:21 AM	79.411	80.925	77.553	79.667	76.021	76.616
6/3/2005	10:56:31 AM	79.456	81.06	77.553	79.757	76.021	76.616
6/3/2005	10:56:41 AM	79.557	81.205	77.564	79.858	76.032	76.581
6/3/2005	10:56:51 AM	79.657	81.305	77.529	79.958	75.952	76.547
6/3/2005	10:57:01 AM	79.713	81.45	77.585	80.059	76.053	76.602
6/3/2005	10:57:11 AM	79.768	81.596	77.595	80.204	76.064	76.658
6/3/2005	10:57:21 AM	79.869	81.741	77.606	80.349	76.074	76.669
6/3/2005	10:57:31 AM	79.959	81.876	77.651	80.439	76.029	76.669
6/3/2005	10:57:41 AM	80.014	82.021	77.571	80.45	76.04	76.679
6/3/2005	10:57:51 AM	80.16	82.121	77.627	80.595	76.05	76.735
6/3/2005	10:58:01 AM	80.26	82.266	77.593	80.696	76.016	76.655
6/3/2005	10:58:11 AM	80.316	82.367	77.648	80.796	76.026	76.711

Table 43 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
6/3/2005	10:58:21 AM	80.371	82.512	77.704	80.942	76.082	76.767
6/3/2005	10:58:31 AM	80.461	82.646	77.659	81.031	76.037	76.677
6/3/2005	10:58:41 AM	80.562	82.747	77.67	81.132	76.048	76.732
6/3/2005	10:58:51 AM	80.572	82.847	77.725	81.187	76.058	76.698
6/3/2005	10:59:01 AM	80.662	82.981	77.725	81.367	76.058	76.698
6/3/2005	10:59:11 AM	80.762	83.082	77.781	81.467	76.069	76.708
6/3/2005	10:59:21 AM	80.762	83.171	77.736	81.512	76.024	76.708
6/3/2005	10:59:31 AM	80.863	83.316	77.791	81.658	76.034	76.764
6/3/2005	10:59:41 AM	80.929	83.427	77.813	81.768	76.101	76.785
6/3/2005	10:59:51 AM	81.029	83.527	77.823	81.914	76.111	76.796
6/3/2005	11:00:01 AM	81.064	83.606	77.813	81.993	76.101	76.785
6/3/2005	11:00:11 AM	81.13	83.717	77.879	82.059	76.077	76.852
6/3/2005	11:00:21 AM	81.175	83.807	77.834	82.194	76.077	76.852
6/3/2005	11:00:31 AM	81.23	83.907	77.889	82.294	76.087	76.772
6/3/2005	11:00:41 AM	81.331	83.962	77.9	82.394	76.098	76.873
6/3/2005	11:00:51 AM	81.386	84.062	77.911	82.45	76.109	76.838
6/3/2005	11:01:01 AM	81.386	84.152	77.911	82.584	76.109	76.838
6/3/2005	11:01:11 AM	81.497	84.263	77.932	82.65	76.13	76.86
6/3/2005	11:01:21 AM	81.542	84.307	77.932	82.74	76.13	76.86
6/3/2005	11:01:31 AM	81.597	84.408	77.988	82.885	76.141	76.915
6/3/2005	11:01:41 AM	81.653	84.463	77.953	83.03	76.151	76.881
6/3/2005	11:01:51 AM	81.653	84.553	77.998	83.12	76.196	76.926
6/3/2005	11:02:01 AM	81.719	84.618	77.929	83.186	76.172	76.947
6/3/2005	11:02:11 AM	81.809	84.708	77.884	83.231	76.127	76.902
6/3/2005	11:02:21 AM	81.83	84.819	77.905	83.342	76.149	76.878
6/3/2005	11:02:31 AM	81.875	84.819	77.86	83.386	76.149	76.923
6/3/2005	11:02:41 AM	81.93	84.919	77.916	83.531	76.159	76.934
6/3/2005	11:02:51 AM	81.986	84.974	77.882	83.542	76.125	76.9
6/3/2005	11:03:01 AM	82.041	85.029	77.892	83.642	76.18	77
6/3/2005	11:03:11 AM	82.086	85.119	77.847	83.732	76.135	76.955
6/3/2005	11:03:21 AM	82.097	85.174	77.903	83.832	76.191	77.011
6/3/2005	11:03:31 AM	82.152	85.229	77.913	83.977	76.247	77.022
6/3/2005	11:03:41 AM	82.207	85.285	77.834	83.988	76.167	76.987
6/3/2005	11:03:51 AM	82.207	85.33	77.879	84.032	76.167	76.987
6/3/2005	11:04:01 AM	82.308	85.385	77.8	84.043	76.133	76.908
6/3/2005	11:04:11 AM	82.318	85.395	77.855	84.233	76.188	76.963
6/3/2005	11:04:21 AM	82.318	85.485	77.81	84.233	76.188	76.963
6/3/2005	11:04:31 AM	82.374	85.54	77.821	84.378	76.199	77.019
6/3/2005	11:04:41 AM	82.374	85.585	77.821	84.512	76.244	77.019
6/3/2005	11:04:51 AM	82.429	85.595	77.741	84.478	76.21	77.03
6/3/2005	11:05:01 AM	82.485	85.651	77.797	84.578	76.22	77.04
6/3/2005	11:05:11 AM	82.495	85.751	77.763	84.633	76.231	77.051

Table 44: Data Collected after the Table 43 Data was collected and the Furnace Chamber Closed

DATE	TIME	Thermocouple Number (° F)					
		T 1	T 2	T 3	T 4	T 5	T 6
6/3/2005	11:05:15 AM	99.81	97.521	91.914	103.786	119.944	82.398
6/3/2005	11:05:44 AM	99.81	97.521	91.914	103.786	119.944	82.398
6/3/2005	11:06:44 AM	94.053	91.174	87.911	87.236	114.501	82.451
6/3/2005	11:07:44 AM	88.517	87.994	85.395	82.969	111.382	82.528
6/3/2005	11:08:44 AM	85.822	85.968	84.039	82.104	108.606	82.605
6/3/2005	11:09:44 AM	84.096	84.781	83.432	81.631	106.121	82.626
6/3/2005	11:10:44 AM	83.479	83.895	82.771	80.923	103.886	82.681
6/3/2005	11:11:44 AM	83.321	83.244	82.298	80.315	101.833	82.702
6/3/2005	11:12:44 AM	83.353	82.827	81.971	80.122	99.876	82.734
6/3/2005	11:13:44 AM	83.06	82.399	81.544	79.918	98.171	82.755
6/3/2005	11:14:44 AM	82.643	82.027	81.261	79.725	96.519	82.742
6/3/2005	11:15:44 AM	82.261	81.689	81.058	79.477	95.12	82.719
6/3/2005	11:16:44 AM	82.282	81.216	80.72	79.318	93.764	82.695
6/3/2005	11:17:44 AM	81.854	81.013	80.427	78.979	92.629	82.716
6/3/2005	11:18:44 AM	81.999	80.844	80.392	79.035	91.438	82.682
6/3/2005	11:19:44 AM	81.606	80.585	80.268	79.001	90.468	82.692
6/3/2005	11:20:44 AM	81.381	80.405	80.178	78.82	89.621	82.603

Table 44 Continued

DATE	TIME	Thermocouple Number (° F)					
		T 7	T 8	T 9	T 10	T 11	T 12
6/3/2005	11:05:15 AM	82.54	85.706	77.763	84.633	76.231	77.051
6/3/2005	11:05:44 AM	82.54	85.706	77.763	84.633	76.231	77.051
6/3/2005	11:06:44 AM	82.772	86.027	77.816	85.224	76.239	77.149
6/3/2005	11:07:44 AM	82.849	86.148	77.757	85.524	76.226	77.136
6/3/2005	11:08:44 AM	82.926	86.225	77.654	85.69	76.258	77.123
6/3/2005	11:09:44 AM	82.947	86.201	77.63	85.89	76.324	77.234
6/3/2005	11:10:44 AM	82.913	86.077	77.461	86.035	76.29	77.29
6/3/2005	11:11:44 AM	82.934	85.964	77.437	86.1	76.356	77.311
6/3/2005	11:12:44 AM	82.921	85.817	77.379	86.132	76.388	77.298
6/3/2005	11:13:44 AM	82.852	85.659	77.265	86.109	76.364	77.319
6/3/2005	11:14:44 AM	82.839	85.557	77.207	86.051	76.351	77.351
6/3/2005	11:15:44 AM	82.726	85.399	77.183	86.027	76.418	77.373
6/3/2005	11:16:44 AM	82.657	85.241	77.114	85.959	76.439	77.349
6/3/2005	11:17:44 AM	82.634	85.128	77	85.89	76.415	77.37
6/3/2005	11:18:44 AM	82.51	84.96	77.011	85.812	76.516	77.426
6/3/2005	11:19:44 AM	82.475	84.836	76.931	85.777	76.481	77.391
6/3/2005	11:20:44 AM	82.341	84.657	76.841	85.643	76.481	77.436

The data in Tables 45 through 51 was taken for additional information.

The data collected on the crucible in Tables 47 through 50 may have errors. On several occasions there was interference between the crucible and the inferred instrument. Also due to the test setup it was impossible to maintain the same distance from the crucible to the inferred instrument, which will alter the results. The data collected on the crucible should be used for reference information only.

Table 45 Additional Data to Support Table 26

Time (min)	Furnace Chamber Temp. (°C)	Room Temp. (° F)
0	1000	76
2	744	----
4	630	----

Table 46 Additional Data to Support Table 27

Time (min)	Furnace Chamber Temp. (°C)	Room Temp. (° F)
0	1200	77
1	945	----
4	780	77

Table 47 Additional Data to Support Table 31

Time (min)	Furnace Chamber Temp. (°C)	Room Temp. (° F)
0	1400	78
2	967	----
3	848	-----
4	790	78
5	733	78
8	644	78
10	600	78

Table 48 Additional Data to Support Table 33

Time (min)	Furnace Chamber Temp. (°C)	Crucible Temp. (° F)	Room Temp. (° F)
0	1000		75
1	824	1412	----
2	----	1140	76
3	----	1000	----
5	----	860	----
6	----	650	----

Table 49 Additional Data to Support Table 35

Time (min)	Furnace Chamber Temp. (°C)	Crucible Temp. (° F)	Room Temp. (° F)
0	1200	1480	76
2	813	-----	----
3	716	1160	----
6	626	980	----

Table 50 Additional Data to Support Table 37

Time (min)	Furnace Chamber Temp. (°C)	Crucible Temp. (° F)	Room Temp. (° F)
0	1400	-----	77
1	----	1450	----
3	840	-----	----
4	----	1300	----
5	736	-----	----
6	700	960	77

Table 51 Additional Data to Support Table 25

Time (min)	Furnace Chamber Temp. (°C)	Crucible Temp. (° F)	Room Temp. (° F)
0	1500	1700	78
2	1000	----	80
3	886	-----	----
4	840	1230	----
5	764	1180	80
7	694	884	----
9	637	803	80

IX. Analysis of Data:**a. Analysis of the Acrylic:****Table 52: Summary of the Maximum Increase in Acrylic Temperature Related to the Furnace Chamber Temperature**

Chamber Temperature (°C)	ΔT_{\max} for Thermocouple T7 (°F)	ΔT_{\max} for Thermocouple T8 (°F)	ΔT_{\max} for Thermocouple T10 (°F)	Average (°F)
1000	5.5	4.7	5.7	5.3
1200	7.0	7.6	7.4	7.3
1400	10.0	9.6	10.3	10.0
1500	12.5	14.9	13.9	13.8

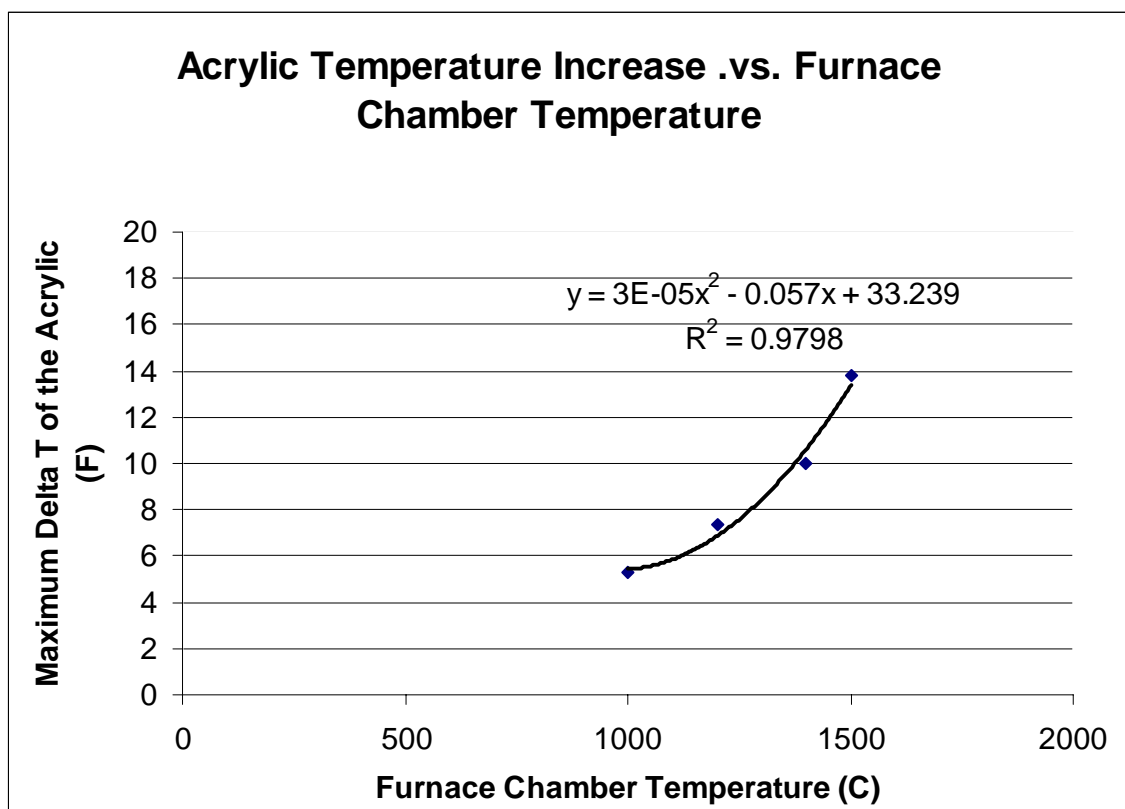
**Figure 10: Acrylic Temperature Increase .vs. Furnace Chamber Temperature**

Table 52 was developed by taking the ΔT_{\max} readings from the Test Data Tables. The data was collected with the Furnace Safety Shield Doors open, which releases more heat to the Glove Port Panel .vs. the Furnace Safety Shield Doors Closed. Then the Data from Table 52 was graphed and fitted with a second order polynomial. Using the second order polynomial the ΔT_{\max} for the Acrylic with a Furnace Chamber Temperature of 1700° C is approximately 23° F.

b..Analysis of the Glove:**Table 53: Maximum Increase in Glove Port Temperature**

Furnace Chamber Temperature (°C)	ΔT_{\max} for Thermocouple T5 with Furnace Safety Shield Doors Closed (°F)	ΔT_{\max} for Thermocouple T5 with Furnace Safety Shield Doors Open (°F)
100	17.0	47.1
1200	21.1	65.2
1400	35.7	90.0
1500	-----	103.6

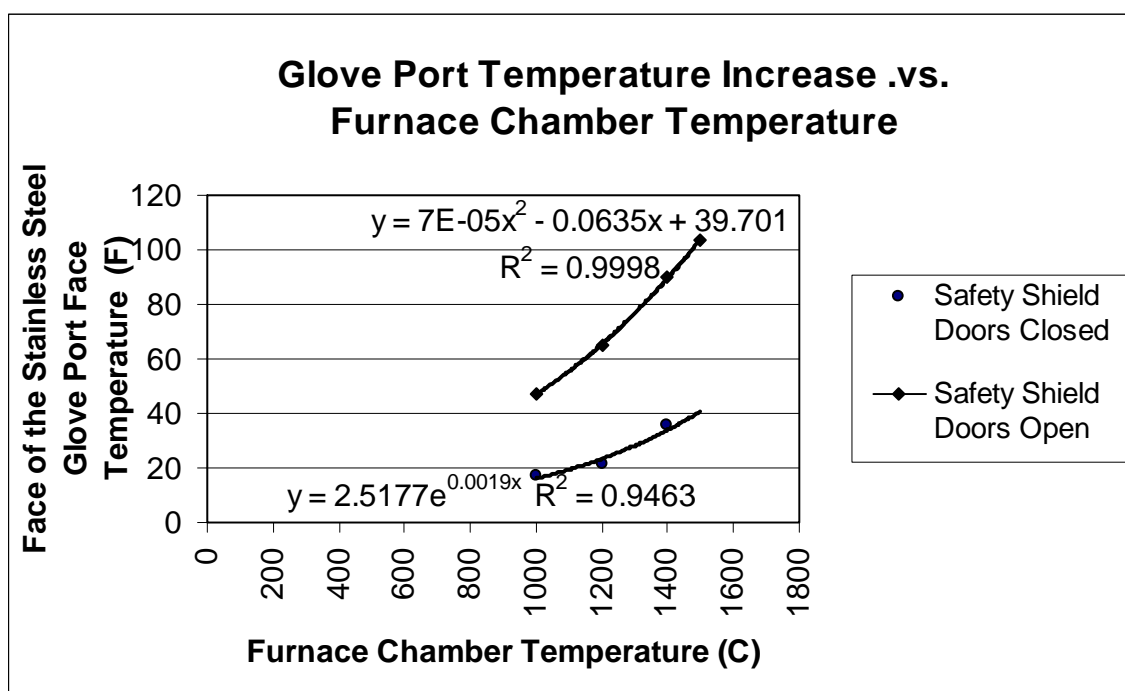
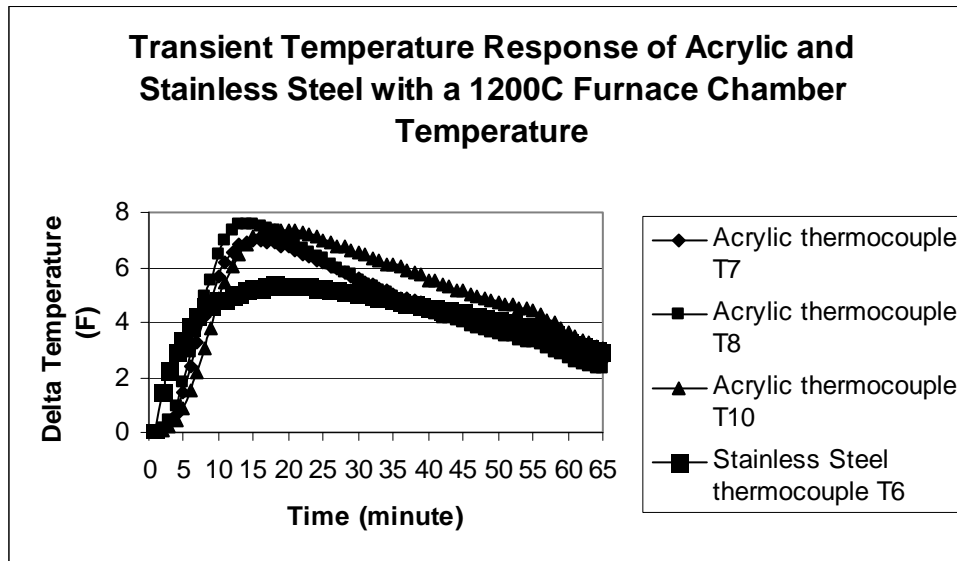
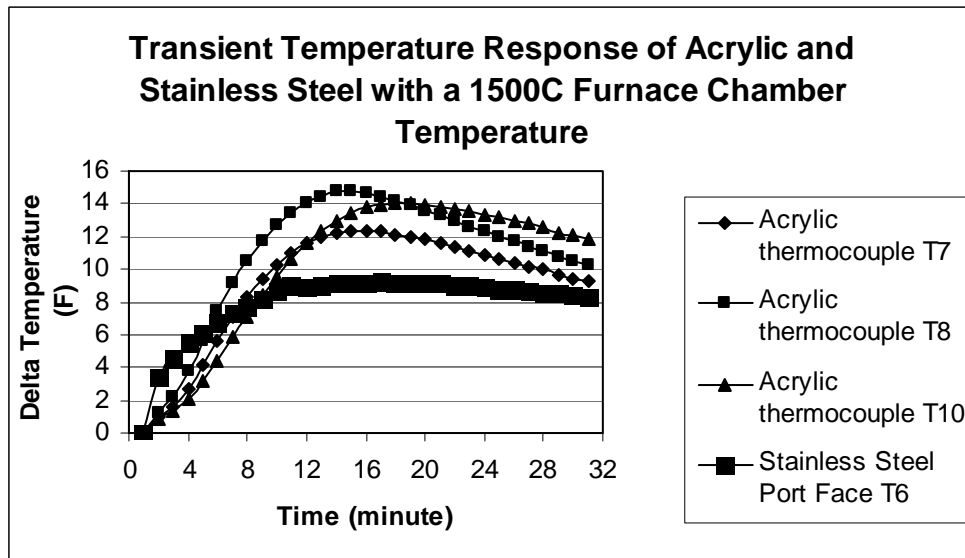
**Figure 11: Glove Port Temperature Increase .vs. Furnace Chamber Temperature**

Table 53 was developed by taking the ΔT_{\max} readings from the Test Data Tables. Then the Data from Table 53 was graphed and appropriate equations were selected. Based on the above equation the ΔT_{\max} for the Glove with a Furnace Chamber Temperature of 1700° C and the Furnace Safety Shield Doors Open is approximately 134° F and with the Furnace Safety Shield Doors Closed is approximately 64° F.

c. Comparing Stainless Steel to Acrylic

**Figure 12: Transient Temperature Response of Acrylic and Stainless Steel****Figure 13: Transient Temperature Response of Acrylic and Stainless Steel**

The Acrylic thermocouple points T7, T8 and T10 increased and decreased in temperature in the same pattern at 1200° C and 1500° C. The Stainless Steel Glove Port thermocouple T6 increased and decreased in temperature similar to the Acrylic, however, the Stainless Steel did not increase in temperature as much as the Acrylic. The Stainless Steel is more reflective than the Acrylic and does not absorb as much radiant heat.

d..Analysis of Furnace Chamber with and without a Crucible

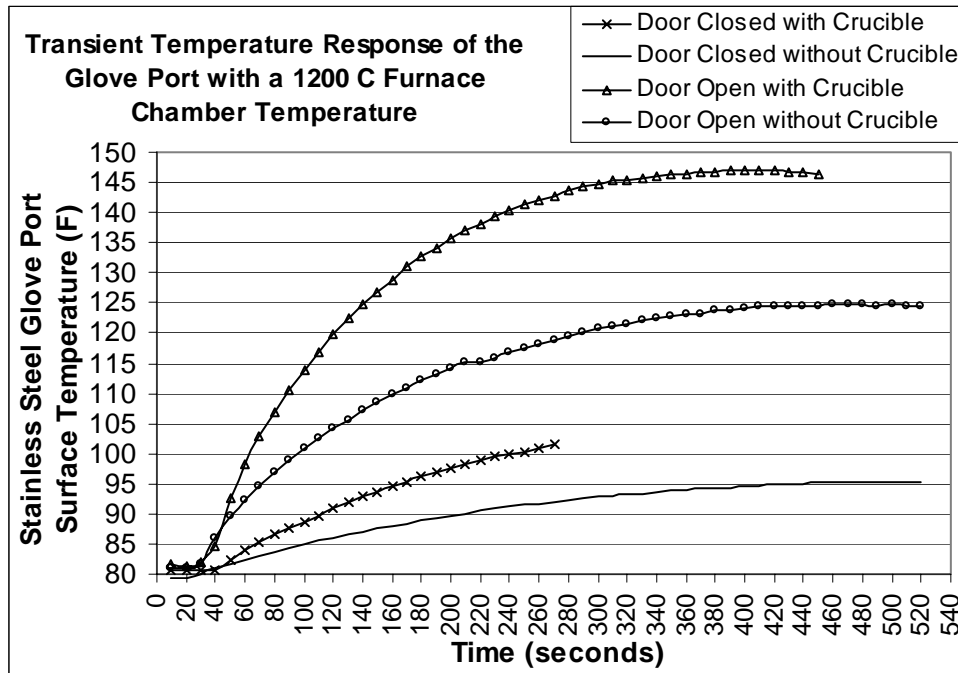
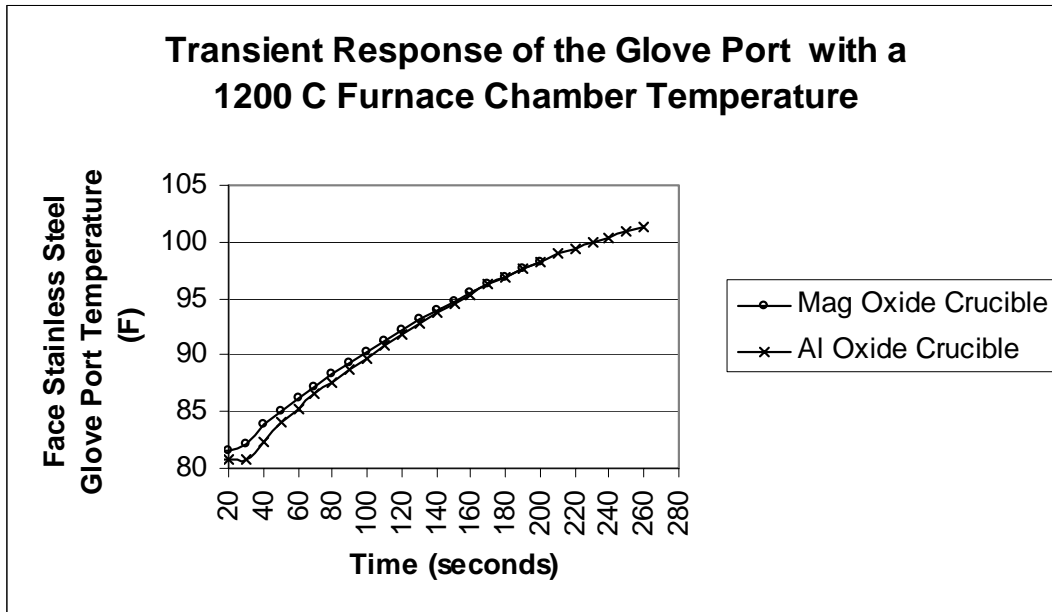


Figure 14: Transient Temperature Response of the Glove Port

The ΔT_{\max} for the Stainless Steel Glove Port Surface with the Furnace Safety Shield Door Closed Test Data without a crucible is 16.1° F. The ΔT_{\max} for the Stainless Steel Glove Port Surface with the Furnace Safety Shield Door Closed Test Data with a crucible is 21.3° F. The ΔT_{\max} for the Stainless Steel Glove Port Surface with the Furnace Safety Shield Door Open Test Data without a crucible is 43.8° F. The ΔT_{\max} for the Stainless Steel Glove Port with the Furnace Safety Shield Door Closed Test Data with a crucible is 65.2° F.

The status of the Furnace Safety Shield Doors is important in determining the temperature of the Glovebox. However, even with the Furnace Safety Shield Doors open, the increase in temperature is less than 85° F and it is of a short duration.

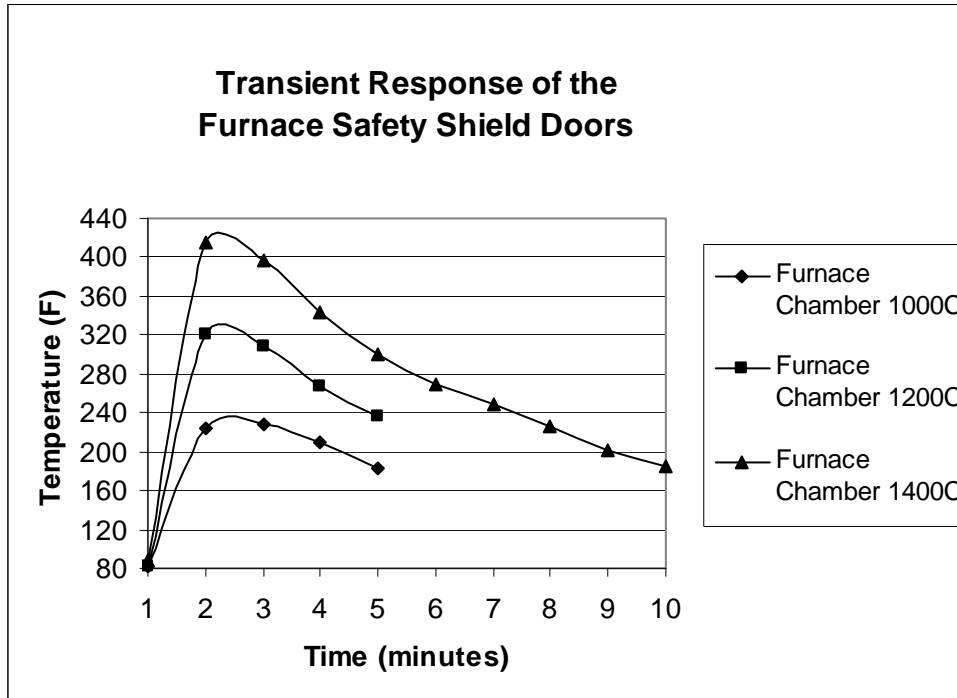
The crucible does absorb enough heat to cause the ΔT_{\max} to be approximately 20° F larger.

e..Comparing Crucibles:**Figure 15: Transient Response of the Glove Port**

The Magnesium Oxide (99.4% MgO), high density, fine grained, 800 mL volume, cylindrical shaped crucible that was used in the test weighed 664.46 grams empty. The outside dimensions were 4 inch diameter and a 4.5 inch height.

The 99.8% Alumina (Al_2O_3), 750 mL volume, high form shape, that was used in the test weighed 521.48 grams empty. The outside dimensions were 4.06 inch diameter at the top, 2.56 inch diameter at the base and a 5.35 inch height.

The changes in the crucible material and shape had negligible effects in the glove box temperature.

f. Furnace Safety Shield**Figure 16: Transient Response of the Furnace Safety Shield Doors.**

Based on the above graph the Furnace Safety Shield Doors can exceed 250° F when the Furnace Chamber is opened and the Furnace Chamber Temperature is greater than 1000° C. Therefore to prevent the risk of exposing the Glovebox Gloves to a temperature greater than 250° F, which is the maximum recommended continuous service temperature for the gloves, it is recommended that the Gloves are removed from the Glovebox when the Furnace Chamber is at 1000° C or greater.

X. Conclusion:

Based on the data taken from the Furnace with a Chamber temperature of 1500° C leaving the Safety Shield Doors closed on the Furnace until the Furnace has cooled down will decrease the ΔT in the glovebox. However, opening the Safety Shield Doors on the Furnace when the Furnace is hot should not increase the ΔT experienced with the Safety Shield Doors closed more than 85° F. The Acrylic, Stainless Steel and glass in the glovebox is not at risk with the Safety Shield Doors on the Furnace opened with the Furnace Chamber is hot.

Also minor changes to the crucible has minimal impact on the glovebox temperatures.

The facial area of the insulating pack on the C&M Furnace 1608BL is 6.5 inch x 1.5 inch = 9.75 in². The facial area of the insulating pack on the C&M Furnace 1712BL is 9 inch x 0.75 inch + 10 inch x 0.75 inch = 14.25 in². There is a 46.12% difference.

After applying a 46% increase in ΔT to compensate for the facial area difference in the insulating pack on the furnaces, which is a conservative assumption, the worst case temperatures are the following.

Table 54: Worst Case Temperature for Glovebox Material

Material	Max. Temp (°F)	Max. Continuous Service Temp. (°F)
Stainless Steel	111	800
Glass Panel	111	1100
Neoprene Gasket at the Glove Port	111	250
Glove	260.9	250
HEPA Filter	260.9	329
Acrylic	111	200

Notes:

1. Assume room temperature to be 80° F.
2. Furnace Chamber Temperature assumed to be 1700° C. The test data stopped at 1500° C. The values at 1700° C were extrapolated.
3. Furnace Chamber and Furnace Safety Shield Doors Open.
4. Even though the nearest HEPA filter in the Glovebox is over 48" from the location of the new Furnace, to be conservative, it will be assumed that the temperature at the HEPA filter is equal to the temperature of the Glove.
5. Assume the panel glass temperature on the inside of the Glove Port Panel is equal to the temperature on the inner face of the Stainless Steel Glove Port in the Glove Port Panel.

Based on the data in Table 54 the glove is the only material at risk

Also the glovebox, which the furnace will be installed in, has a normal exhaust rate of 625 cfm, which was not applied to the data. The glovebox exhaust should decrease the worst case temperatures listed in Table 54.

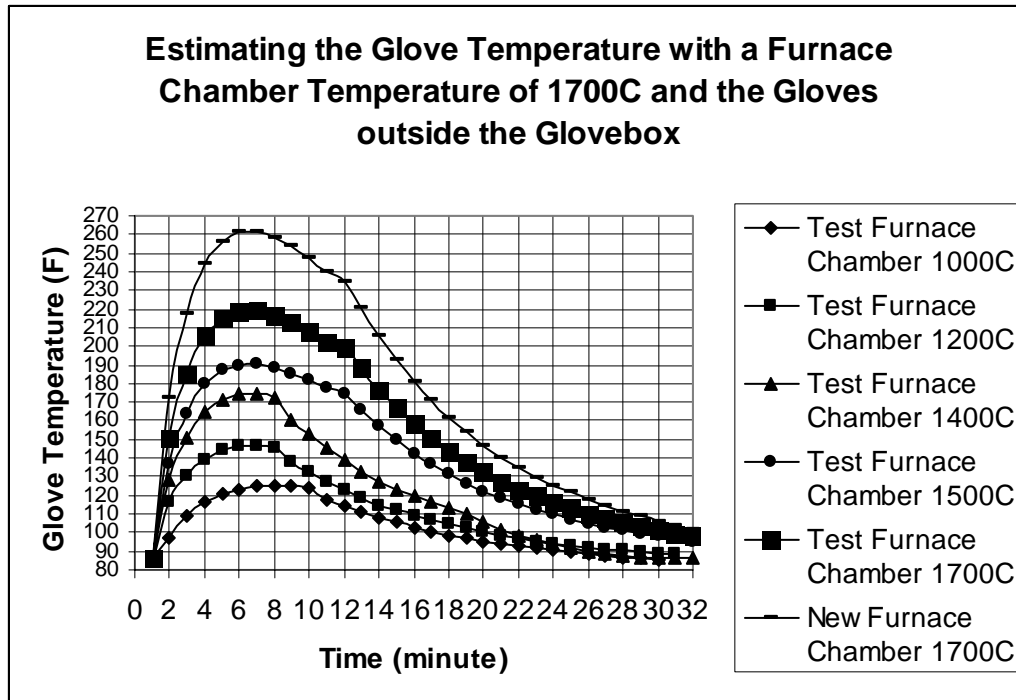


Figure 17: Rough Estimated Glove Temperature

The glove temperature graph for a 1700° C Furnace Chamber Temperature on the Test Furnace was estimated to have a 25% larger ΔT than the 1500° C Furnace Chamber Temperature, which matches the patterns of the other Furnace Temperature ranges.

Since the face of the insulating pack on the New Furnace is 46% larger than the insulating pack on the Test Furnace. The glove temperature caused by a 1700° C New Furnace Chamber Temperature was estimated to have a ΔT 46% larger than the ΔT for the Test Furnace conditions.

Based on the estimated Glove Temperature pattern the Glove Temperature will be equal to or greater than 250° F for approximately 6 minutes. This could damage the Glove since the maximum recommended continuous service temperature for the Glove is 250° F.

Based on the test data the gloves should be pulled outside the Glovebox anytime the Furnace Chamber Temperature is at or above 1000° C. Also if the worst case event were to occur, which is the Furnace Chamber is opened at or above 1000° C, then the gloves near the Furnace should be replaced as a safety precaution.

XI. Reference:

1. W719463 "HBL Glove Box Dry End Sheet 1 Equipment Arrangement, Phase III"
2. W719464 "HBL Glove Box Dry End Sheet 2 Equipment Arrangement, Phase III"
3. W723616 "HBL Product Handling Cabinet Sheet 1 Equipment Assembly, Phase III"
4. D181702 "Product Handling Cabinet Sheet 1 H360-300-11"
5. D181703 "Product Handling Cabinet Sheet 2 H360-300-11"
6. D181701 "Product Handling Lower Frame H360-300-11"
7. W724208 "HBL Conveyor Drop Cabinet Equipment Assembly, Phase III"
8. D181765 "Conveyor Drop Cabinet Details Sheet 1"
9. D181766 "Conveyor Drop Cabinet Details Sheet 2"
10. D181764 "Product Handling Lower Frame H360-300-10"
11. W723303 "Composite Shield Window-4 Port"
12. D181636 "Acrylic Shield 4 Port Window"
13. D181897 "Composite Shield Window Misc. Details"
14. D181896 "Lead Glass Shield 2 & 4 Port Windows"
15. D181790 "Containment Mounting Frame & Glass Retainer, 4 Port Window"
16. D181634 "Lead Glass Frame 4 Port Window"
17. D181895 "Containment Glass 2 & 4 Port Windows"
18. W735014 "Shield Window Assembly"
19. W735013 "Containment Window Sub. Assembly"
20. W735015 "Shield Window Sub. Assembly"
21. D184274 "Containment Glass Details"
22. D184279 "Lead Glass Details"

23. 10-0107-01D sheets 1 and 2 "C&M Furnace model 1712"
24. 10-0108-01D sheets 1 and 2 "C&M Furnace model 1608"
25. C&M Furnace model # 1608BL Specification Sheet
26. C&M Furnace model # 1712BL Specification Sheet
27. CBU-HCP-2005-00160 "C&M Bottom Loading Furnace Test"
28. M-CLC-H-02673 "Phase III C&M Furnace Heat Transfer Calculation"
29. Ozark Technical Ceramics
402 Ware St.
Webb City, MO 64870-2789
417-673-2463
ozarktech.com
30. McDanel Advanced Ceramic Technologies
Beaver Falls
PA 15010
724-843-8300
techceramics.com
31. C&M Furnaces Inc
103 Dewey St.
Bloomfield, New Jersey 07003
973-338-1625
cmfurnaces.com
32. North Safety Products
2000 Plainfield Pike
Cranston, RI 02921
800-430-4110
northsafety.com
33. "Perry's Chemical Engineering Handbook", 7th ed., 1997
34. "Mark's Standard Handbook for Mechanical Engineers", Eugene Avallone, 10th e.d., 1996
35. "Materials Selection in Mechanical Design", M. F. Ashby, 1997
36. "Mechanical Engineering Reference Manual", Michael Lindeburg, 11th ed., 2001