NSWC MP 80-151

AD-A225 273

HEAT TRANSFER TESTING IN THE NSWC HYPERVELOCITY WIND TUNNEL UTILIZING CO-AXIAL SURFACE THERMOCOUPLES

BY E. R. HEDLUND, J. A. F. HILL, W. C. RAGSDALE, and R. L. P. VOISINET

STRATEGIC SYSTEMS DEPARTMENT

19 MARCH 1980

NAVAL SURFACE WEAPONS CENTER

Dahlgren, Virginia 22448 • Silver Spring, Maryland 20910

FOREWORD

This publication is a documentation of a wind tunnel test that took place in the Naval Surface Weapons Center's Hypervelocity Wind Tunnel #9 in December 1979. The experimental program was a heat transfer test made at Mach 14 on a sphere-cone body instrumented with co-axial surface thermocouples. This test was the "trial run" for the use of these gages in the hypervelocity wind tunnel.

This publication describes the thermocouples used, together with a description of how heat transfer rates are calculated from the surface temperature measurements. It explains the details of the test set-up, the model configuration, and the data reduction technique. It also gives the final results of this test and states the accuracy and advantages of this method.

Special acknowledgements are extended to the Arnold Engineering Development Center for their assistance in sending reports that described their experiences with the use of co-axial thermocouples in their wind tunnels. The reports helped us to avoid unnecesary problems with the implementation of the technique.

C. A. Fisher

C. A. FISHER
By direction

Accession For	
NTIS GRA&I	☑
DTIC TAB	☐
Unannounced	☐
Justification	
By per telecon	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	

STATEMENT "A" per Robert Voisinet
Naval Surface Weapons Center/Code K24
Dahlgren, VA 22448
TELECON 8/13/90 VG

CONTENTS

ILLUSTRATIONS

TABLES

INTRODUCTION

In the Naval Surface Weapons Center's Hypervelocity Wind Tunnel #9, heat transfer measurements were generally made using Gardon gages (Reference 1). However, the use of co-axial thermocouples to measure heat transfer offers some important advantages:

1. Calibration stability
2. Sturdy design
3. Quick response time
4. Ability to be contoured to model surface

Since these surface thermocouples had never been used in Tunnel 9, a shakedown test plan was established to "iron out" any problems associated with the use of these gages. This publication is a documentation of that shakedown test and its results.

WIND TUNNEL FACILITY

The shakedown test was conducted in the Hypervelocity Wind Tunnel #9 from 10-12 December 1979. Tunnel 9 has a five foot diameter test cell that uses nitrogen as the working fluid. For the shakedown test the Mach 14 nozzle was used to expand the nitrogen. The average run time for Tunnel 9 is 1.3 seconds, with uniform flow occurring during the last 0.7 seconds of the run (Fig. 1). During this uniform flow, the model can be pitched through a range of angles of attack. More information about Tunnel 9 can be found in Reference 2.

---

[1] Gardon, Robert, "An Instrument for the Direct Measurement of Intense Thermal Radiation," The Review of Scientific Instruments, Vol. 24, No. 5, May 1953.

[2] Hill, J. A. F., Wardlaw, A. B., Jr., Pronchick, S. W., and Holmes, J. E., "Verification Tests in the Mach 14 Nozzle of the Hypervelocity Tunnel at NSWC (White Oak)," AIAA Paper 77-150, Jan 1977.

DESCRIPTION OF CO-AXIAL SURFACE THERMOCOUPLE

The model number TCS-101-E thermocouples used in the shakedown test are manufactured by Medtherm Corporation in Huntsville, Alabama. Figure 2(a) shows a picture of a typical thermocouple, and Figure 2(b) shows a cross-sectional view of the sensing probe of the thermocouple. The sensing probe consists of two metals, chromel and constantan; chromel being the outer tube (first thermocouple element) and constantan being the center wire (second thermocouple element). The two elements are insulated except for a vacuum deposited metallic coating which is placed on the end of the probe to form a thermal junction between the chromel and the constantan. Therefore, temperature readings are measured only at the very tip of the sensing probe. Just below the sensing probe is a mounting thread so that the thermal junction can be positioned relative to the surface of the wall (Fig. 2(c)).

Surfaces of models tested in the wind tunnel are often curved. Since any surface discrepancies could cause disturbances in the boundary layer, the thermocouples are contoured to the surface by sanding down the tip of the thermocouple using 180 grit sandpaper. Although this sanding process takes away the plating, a thermal junction is still created by the blending of the two metals.

The average time response for a thermocouple with the vacuum deposited coating is one microsecond. For the "blended metal" thermal junction the average time response is about ten microseconds.

Thermal properties for chromel and constantan are given in Table 1, and thermal properties for the chromel-constantan thermocouple are given in Table 2.

THEORY BEHIND CALCULATING HEAT FLUX FROM SURFACE THERMOCOUPLES

For a one-dimensional heat flux into a homogeneous, semi-infinite solid, the heat flux, $\dot{q}(t)$ can be calculated from the change in surface temperature, $T(t)$, from $t = 0$ by the following equation (References 3 and 4):

$$\dot{q}(t) = K(\pi k)^{-\frac{1}{2}} \left[\frac{T(t)}{t^{\frac{1}{2}}} + \frac{1}{2} \int_0^t \frac{T(t) - T(\tau)}{(t - \tau)^{3/2}} \, d\tau \right] \qquad (1)$$

where τ is the dummy time variable of integration. Since a linear relationship is assumed to exist between the actual thermocouple output voltage, $E(t)$, and temperature, ($\Delta E = \delta \Delta T$), Equation (1) can be rewritten as:

[3] Carslaw, H. S. and Jaeger, J. C., Conduction of Heat in Solids, Second Edition, Oxford, Clarendon Press, 1959.

[4] Vidal, R. J., "Model Instrumentation Techniques for Heat Transfer and Force Measurements in a Hypersonic Shock Tunnel," CAL Report No. AD-917-A-1, Feb 1956, WADC TN 56-315, AD 97238.

$$\dot{q}(t) = K(\pi k)^{-\frac{1}{2}} \delta^{-1} \left[\frac{E(t)}{t^{\frac{1}{2}}} + \frac{1}{2} \int_0^t \frac{E(t) - E(\tau)}{(t - \tau)^{3/2}} d\tau \right] \quad (2)$$

Since the integral in Equation (2) is very difficult to evaluate, a method will be illustrated later in this report (See DATA REDUCTION) for the calculation of $\dot{q}(t)$.

PARAMETERS FOR CREATING A HOMOGENEOUS, SEMI-INFINITE SOLID

Since Equations (1) and (2) are based on the fact that the heat is flowing into a homogeneous, semi-infinite solid, there are three parameters to consider in making a wind tunnel model wall with a thermocouple mounted into it behave as a homogeneous, semi-infinite wall.

The first parameter to consider is the lumped thermal property, $\sqrt{k/K}$, of the chromel, constantan, and the model wall. If this property is relatively the same for all three materials, then the concept of homogeneity is valid. Since $\sqrt{k/K}$ for chromel and constantan is approximately 2.45 $ft^2\text{-}sec^{\frac{1}{2}}\text{-}^oF/BTU$, then the thermocouple itself is essentially homogeneous. To prevent any radial heat conduction the material that the thermocouple is mounted in (model wall) should also have a $\sqrt{k/K}$ value approximately equal to 2.45.

The second and third parameters are the duration of the actual wind tunnel run and the effective length of the thermocouple sensing probe. If the wind tunnel run is of short duration and the sensing probe is long enough, then the semi-infinite assumption is valid (Reference 5). Since the duration of an average Tunnel 9 run is 1.3 seconds, an appropriate sensing probe length, L, can be selected using the graph shown in Figure 3. Therefore,

$$L(kt)^{-\frac{1}{2}} = 2.6 \quad \text{for 0\% error.} \quad (3)$$

For $k = 8.84 \times 10^{-3}$ in^2/sec (constantan)
$t = 1.3$ seconds

then $L \geq .28$ inches.

The appropriate sensing probe length and wall thickness for a model in Tunnel 9 should be greater than .28 inches.

MODEL CONFIGURATION

The model configuration that was tested was a sphere-cone type body. The nosetip had a 1.8" radius and the cone half-angle was 7^o. The model was made out of 17-4PH Stainless steel. The $\sqrt{k/K}$ for this material is 2.44 $ft^2sec^{\frac{1}{2}}\text{-}^oF/BTU$,* which is very close to the $\sqrt{k/K}$ of the chronel-constantan thermocouple.

---

[5] Brown, H. K., "The Theoretical Response of Heat Transfer Gages Employed in Shock Tubes," AVCO Research Laboratory, Research Note 58, Feb 1958.

*Obtained from Materials Selector 75, Vol. 80, No. 4.

There were two interchangeable conical sections used in the test. The first conical section was referred to as the "thick wall body" because its wall was 3/8" thick (which is thicker than the critical 0.28 inches), and the second conical section was referred to as the "thin wall body" because its wall thickness was only 0.125" thick. Figure 4 shows a sketch of the two configurations.

INSTRUMENTATION

In the nosetip of the model, two co-axial thermocouples were mounted as shown in Figure 5. Thermocouple "1" was mounted directly in the wall; the wall at that point being thicker than 0.28 inches. However, co-axial thermocouple "2" was mounted in the wall inside a 17-4PH stainless steel 0.5" diameter plug that was required to make the wall thicker than 0.28 inches.

In the "thick wall" conical section, three co-axial thermocouples and three Gardon gages were mounted as shown in Figure 6. The three thermocouples were mounted 5.83 inches downstream from the nosetip; one thermocouple on the leeward meridian, one on the 90° meridian, and one on the windward meridian. Each Gardon gage was mounted one inch downstream from the thermocouples; one on each of the meridians.

In the "thin wall" conical section, three co-axial thermocouples and three Gardon gages were also mounted in the same positions as the "thick wall" body, as shown in Figure 6. However, since the wall was only 0.125" thick, the thermocouples were mounted in the wall with plugs that would make the wall 0.375". The plugs had varying diameters to determine a minimum permissible plug diameter.

The Gardon gages used in both the "thick" and "thin" wall bodies were manufactured by Thermogage and had been used in previous wind tunnel tests. Each gage's heat flux sensitivity, C, was calculated using a calibrated lamp as a known heat source. Each gage's time delay constant, τ_G, used in the data reduction equations (see DATA REDUCTION) was then calculated by observing the time it took for each gage to respond to 63.2% of its fullscale output for a step heat input. The Gardon gages were used in this shakedown test as a check to the co-axial thermocouples.

TEST SCHEDULE

The test matrix and run conditions are given in Table 3. The pitch sweeps were set up to compare upsweep (Run 496) with downsweep (Run 498) data, to compare a static angle of attack (Run 497) with the upsweep and downsweep data, and to compare thick and thin wall configurations (Runs 496 and 499).

DATA REDUCTION

As was stated previously, Equation (2) is very difficult to evaluate. For reduction of the raw surface thermocouple output, E(t), into heat flux data, the Dixon Method (Reference 6) was used. The Dixon Method is a two-step procedure

[6] Kendall, D. N. and Dixon W. P., "Heat Transfer Measurements in a Hot Shot Wind Tunnel," presented at the IEEE Aerospace Systems Conference, Seattle, Washington, 11-15 Jul 1966.

that does not require any initial smoothing of the raw thermocouple output. First, the total heat transfer to the surface is calculated using the following equation:

$$Q(t_n) = K(k\pi)^{-\frac{1}{2}}\delta^{-1} \sum_{i=1}^{n} \left[\frac{E(t_{i-1}) + E(t_i)}{(t_n - t_{i-1})^{\frac{1}{2}} + (t_n - t_i)^{\frac{1}{2}}} \right] \Delta t \qquad (4)$$

where n = 0, 1, 2 ... ($^{t}/\Delta t$ + 1) and where Δt is an equal time increment.

Then, the heat transfer rate is computed by differentiating Q(t):

$$\dot{q}(t) = \frac{dQ(t)}{dt} \qquad (5)$$

The expression for differentiating Q(t) is described in Reference 7 and is:

$$\dot{q}(t_n) = \frac{dQ(t_n)}{dt} = \frac{1}{(40)(\Delta t)} \left[-2Q(t_{n-8}) - Q(t_{n-4}) + Q(t_{n+4}) + 2Q(t_{n+8}) \right] \qquad (6)$$

A sample voltage was recorded just prior to the wind tunnel run. This sample voltage was then subtracted from all subsequent voltage readings. Therefore, at $t_o = 0$, $E(t_o) = 0$ which imples that $q(t_o) = 0$.

For the reduction of the Gardon gage output, E(t), the raw data was first smoothed, reversed, and smoothed again using a sixth order Butterworth digital filter set at a cutoff frequency of 5Hz. Heat transfer rates were than calculated using the following standard Tunnel 9 equation:

$$\dot{q}(t) = C \left[E(t) + \tau_G \frac{dE(t)}{dt} \right] \qquad (7)$$

where c = calibrated gage sensitivity $(\frac{\dot{q}}{E(t)})$

τ_G = calibrated time delay constant

The term $\frac{dE(t)}{dt}$ is calculated by the method given in Reference 7.

$$\frac{dE(t_n)}{dt} = \frac{1}{(40)(\Delta t)} \left[-2E(t_{n-8}) - E(t_{n-4}) + E(t_{n+4}) + 2E(t_{n+8}) \right] \qquad (8)$$

where n = 0, 1, 2 ...($^{t}/\Delta t$ + 1)

[7] Ehrich, Fredric F., "Differentation of Experimental Data Using Least Squares Fitting," Journal of the Aeronautical Sciences, Vol. 22, No. 2, Feb 1955.

Equation (7) is only valid if at $t_o = 0$, $\dot{q}(t_o) = 0$. Therefore, a sample of data was recorded just prior to each wind tunnel run, and this sample voltage was then subtracted from all subsequent voltages so that at $t_o = 0$, $E(t_o) = 0$ implying that $\dot{q}(t_o) = 0$.

From the heat transfer rates calculated from the co-axial thermocouple and Gardon gage readings, Stanton numbers were calculated by the following equation:

$$ST = \dot{q}\left[\rho_\infty U_\infty C_p (T_{01} - T_w)\right]^{-1} \qquad (9)$$

where $\dot{q}$ = calculated heat transfer rate (BTU/ft^2-sec)

ρ_∞ = free stream density (lbm/ft^3)

U_∞ = free stream velocity (ft/sec)

C_p = heat capacity for nitrogen = 0.2481 $^{BTU}/_{lbm - {}^oF}$

T_{01} = equivalent ideal gas supply temperature (^oF)
(calculated from T_o and tables in Reference 8)

T_w = measured wall temperature (^oF)*

The free stream properties are calculated from a pitot tube measurement in the flow and a supply pressure, P_o, measurement.

RESULTS

Table 4 is a listing of the data obtained from the shakedown test. It should be noted that T5 went bad on Run 499, and G3 went bad on Run 498. The listing only shows data during the "uniform flow" portion of each run. Figures 7 through 14 show plotted data of Stanton number vs. angle of attack for all four runs. Heat transfer calculations made by the G.E. 3-D Viscous Code (Reference 9) are also shown on these figures.

---

[8] Cullotta, S. and Richards, B. E., "Methods for Determining Conditions in Real Nitrogen Expanding Flows," VKI-TN-58, Feb 1970.

* For Gardon gage data the nearest co-axial thermocouple temperature reading was used as the t_w value.

[9] Hecht, A. M., Nestler, D. E., and Richbourg, D. H., "Application of a Three-Dimensional Viscous Computer Code to Reentry Vehicle Design," AIAA Paper 79-0306, Jan 1979.

ACCURACY

Comparisons will be made with respect to the repeatability of the upsweep (Run 496) and downsweep (Run 498) data; the repeatability of the upsweep (Run 496), downsweep (Run 498), and static angle (Run 497) data; and the repeatability of the "thick wall" configuration (Run 496) and the "thin wall" configuration (Run 499) data. A comparison will also be made between the calculations of the G.E. 3-D Viscous Code (Reference 9) and the data for Runs 496, 498, and 499. It should be noted that the following tunnel properties have the following previously observed accuracies:

Supply pressure, P_o - $\pm$.4%

Supply temperature, T_o - -1.7% to +.5%

Pitot measurement - $\pm$.3%

Free stream Mach number, M_∞ - $\pm$.4%

Free stream pressure, P_∞ - $\pm$2.8%

Free stream unit Reynolds number, Re_∞/ft - -1.4% to +2.8%

The angle of attack measurements are accurate to within 0.1^o for Run 496 and to within 0.3^o for Runs 497 through 499.

The Dixon method calculates heat transfer rates to within an accuracy of less than 1%. As for the Gardon gages, the gage sensitivities and the time delay constants are accurate to $\pm$5%.

Comparison of Upsweep vs. Downsweep Data. Table 5 lists the accuracies for the repeatability of the Stanton number data for Run 496 (upsweep) vs. Run 498 (downsweep) for each gage at 5 angles of attack. The repeatability for the two runs shows an average percentage difference of about 7.8%.

Comparison of Upsweep-Downsweep vs. Static Angle Data. Table 6 lists the accuracies for the repeatability of the Stanton number data for Run 496 (upsweep) vs. Run 497 (static angle) and Run 498 (downsweep) vs. Run 497 (static angle) for each gage at an angle of attack of 10^o. The repeatability between the dynamic and static data has an average difference of about 4.1%.

Comparison of "Thick Wall" vs. "Thin Wall" Data. Table 7 lists the accuracies for the repeatability of the Stanton number data for Run 496 (thick wall) vs. Run 499 (thin wall) for each gage at five angles of attack. G2 is not listed because it was slightly recessed in the model wall and was, therefore, measuring lower heating rates. T3, T4, and T5 were mounted in plugs of 3/4", 1/2", and 1/4" diameters, respectively. Each plug made the wall thickness 3/8". Since T3 went bad, the results are inconclusive as to the minimum diameter plug that can be used so that the wall will be semi-infinite in the radial direction. A plug may

[9] See footnote 9 on page 10.

not be needed as long as the sensor length is greater than 0.28 inch. However, T2 was mounted in a 1/2" diameter plug and its repeatability difference throughout the test was about 6.5%. Therefore, a configuration of a 1/2" diameter plug and thermocouple is a possible working configuration.

Comparison of Runs 496, 498, and 499 vs. the G.E. 3-D Viscous Code. Table 8 lists the accuracies for agreement of the Stanton number data between Runs 496, 498, and 499, and the GE 3-D Viscous Code (Reference 9) for each gage at 0^{o} and 5^{o} angle of attack. The average difference in agreement with the code is about 8.8%, with the code's calculation of the leeward heating contributing to most of the error.

CONCLUSIONS

In comparing the surface thermocouple method of measuring heat transfer to the use of Gardon gages in Tunnel 9, the thermocouples have distinct advantages:

1. Gardon gages require a calibration, whereas the thermocouples have an inherent bi-metallic calibration.

2. Gardon gages have a slow response time (on the order of 50 msec) that must be rectified in the data reduction procedure to acquire accurate timewise data, whereas the thermocouples have an almost "instantaneous" response time (about 10 μsec).

3. Gardon gages have a delicate, thin skin that can be broken by the flow (e.g., G3 on Run 498), whereas thermocouples are a solid piece of metal that cannot be disturbed by the flow.

4. Gardon gages cannot be contoured to the model surface, e.g., G2 was slightly recessed in the model wall causing it to measure a lower heating rate, whereas the thermocouples can be contoured exactly to the model surface.

An estimate of the accuracy of heat transfer rates by the thermocouples is $\pm 6\%$. This is slightly better than the 7% accuracy that has been observed for Gardon gages in Tunnel 9. In light of this accuracy along with the advantages over the Gardon gages, the co-axial thermocouples proved to be a viable method for measuring aerodynamic heating during pitch sweeps in Tunnel 9.

---

[9] See footnote 9 on page 10.

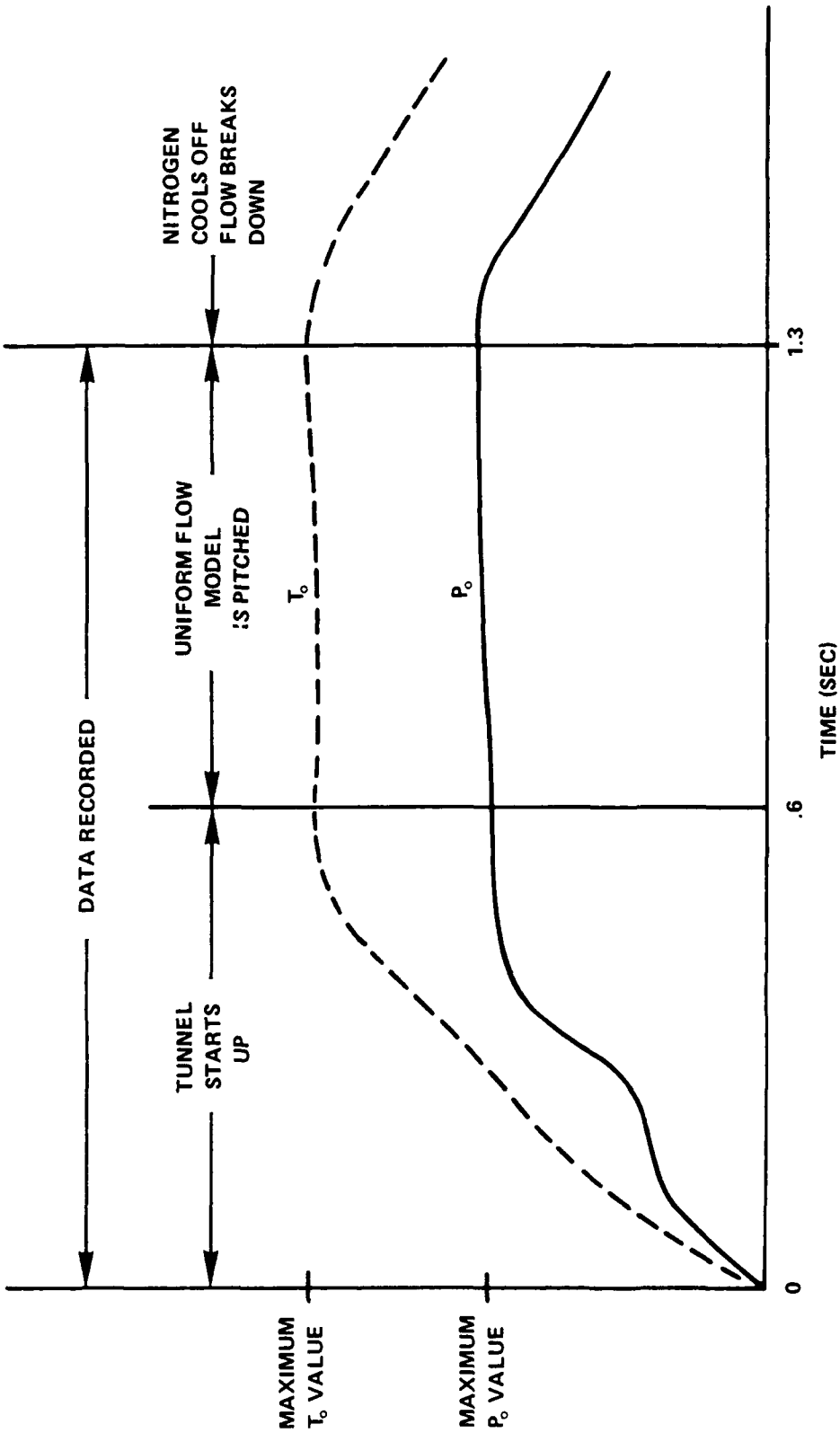


FIGURE 1 TIME SEQUENCE OF EVENTS FOR TUNNEL 9

FIGURE 2(a) A TYPICAL TCS MODEL THERMOCOUPLE

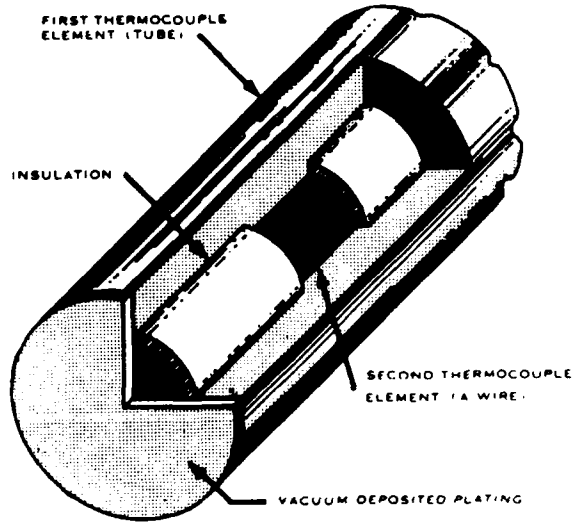


FIGURE 2(b) CROSS - SECTIONAL VIEW OF THERMOCOUPLE. (PLATING AND INSULATION EXAGGERATED IN SIZE)

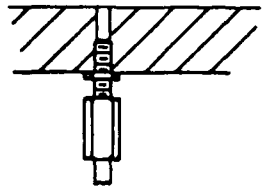


FIGURE 2(c) THERMOCOUPLE PROBE MOUNTED IN MODEL WALL

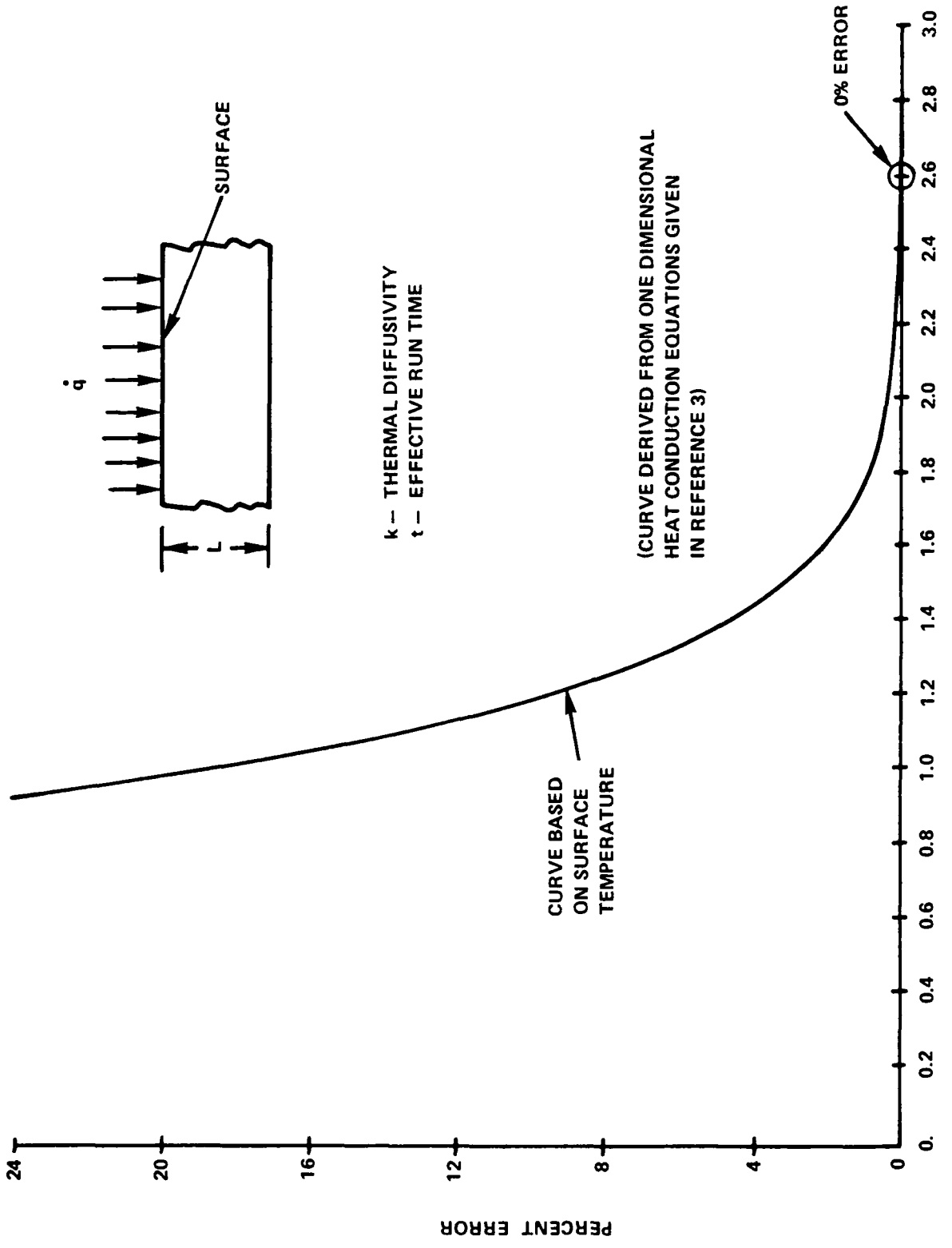


FIGURE 3 ERROR IN HEAT TRANSFER BY ASSUMING SEMI-INFINITE SOLID BEHAVIOR FOR A FINITE SLAB OF LENGTH, L

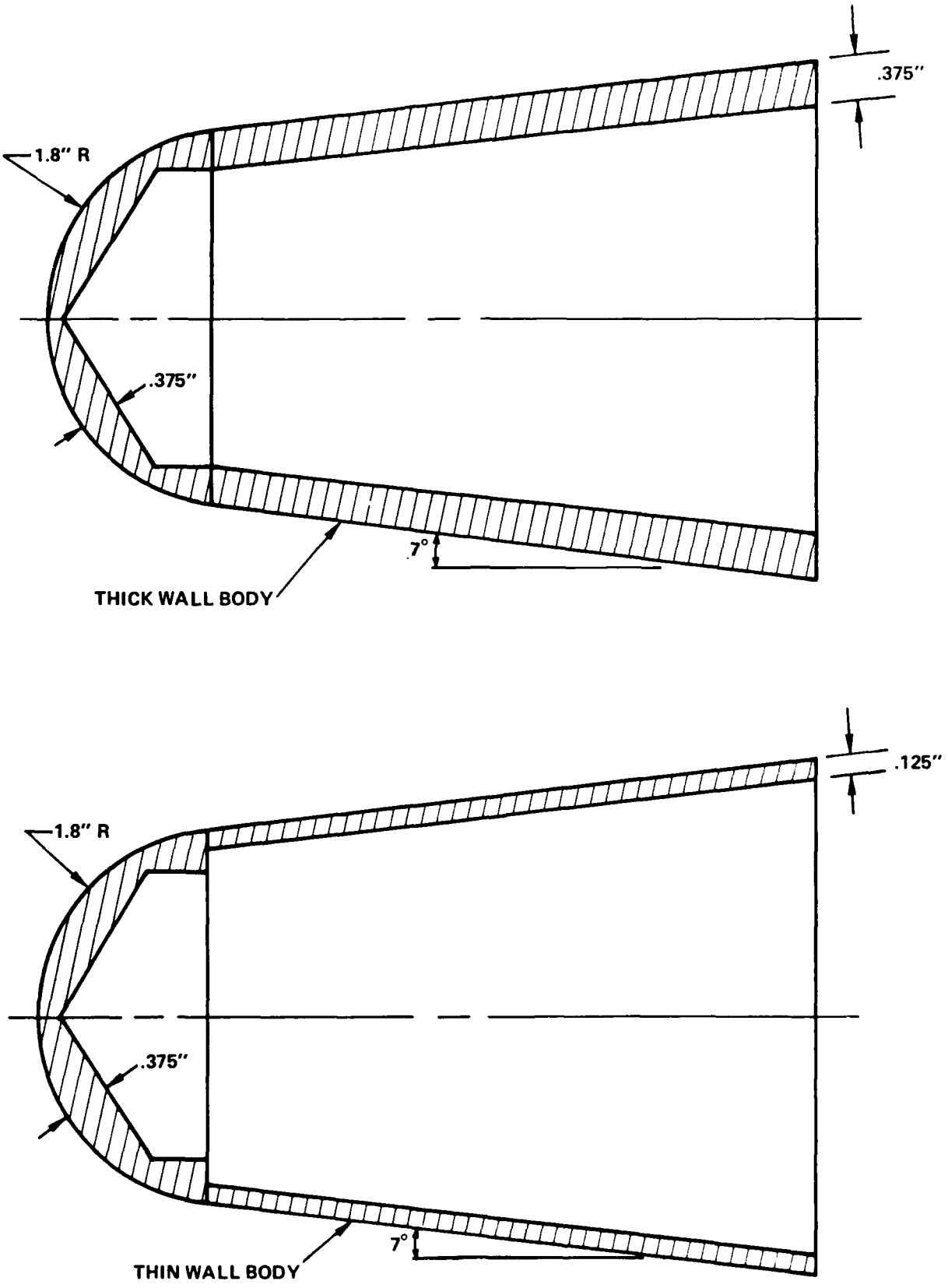
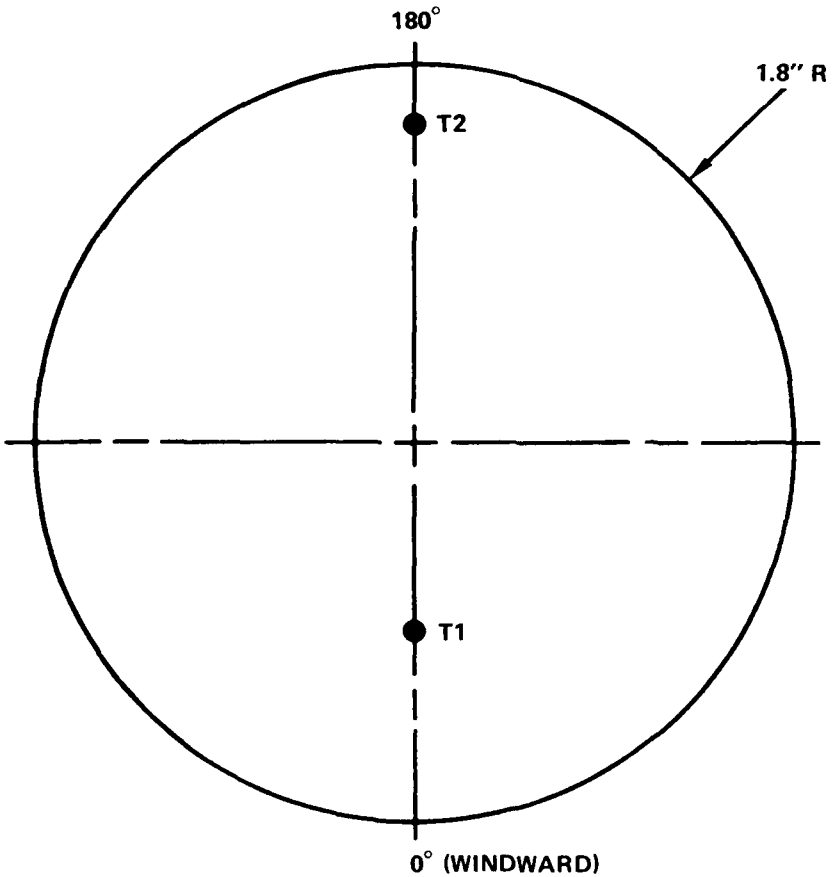
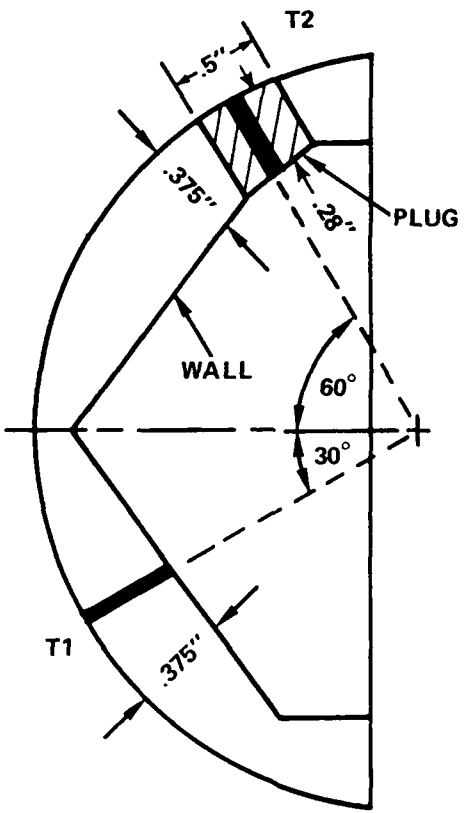


FIGURE 4 MODEL CONFIGURATIONS



FRONT VIEW



SIDE VIEW

NOT TO SCALE

FIGURE 5 NOSETIP INSTRUMENTATION

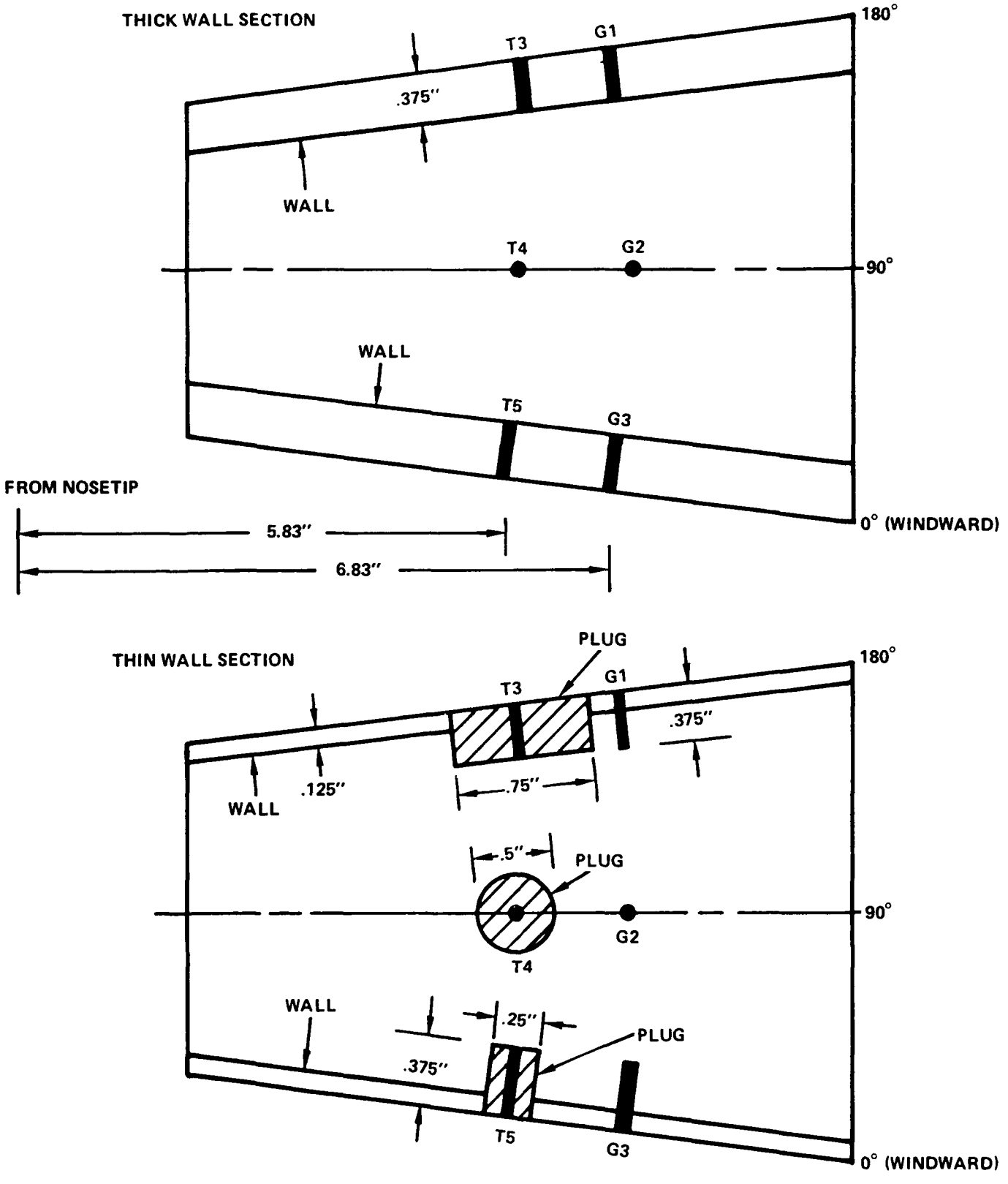


FIGURE 6 CONICAL SECTION INSTRUMENTATION (NOT TO SCALE)

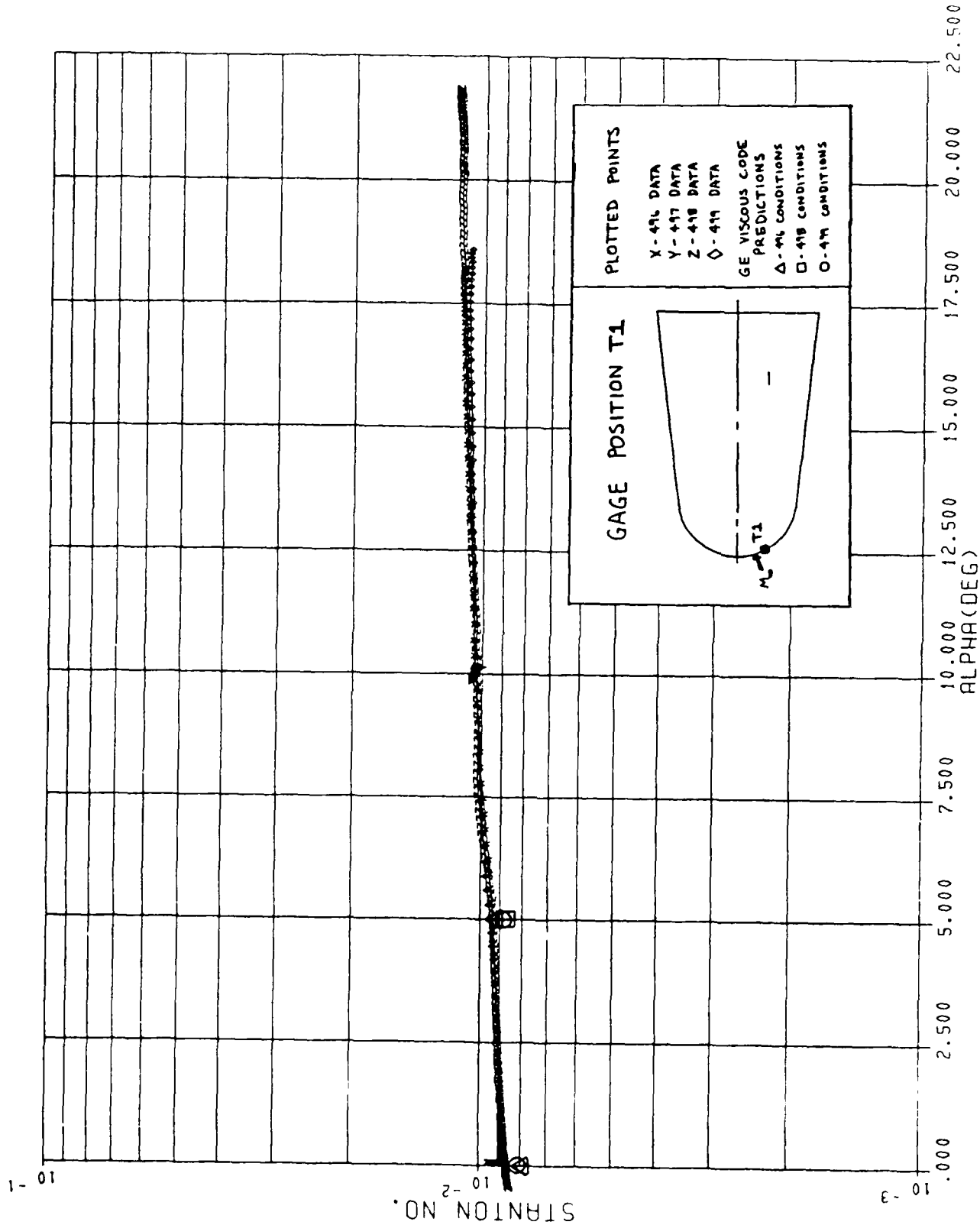


FIGURE 7 STANTON NUMBER VS. ANGLE OF ATTACK FOR ALL 4 RUNS (T1)

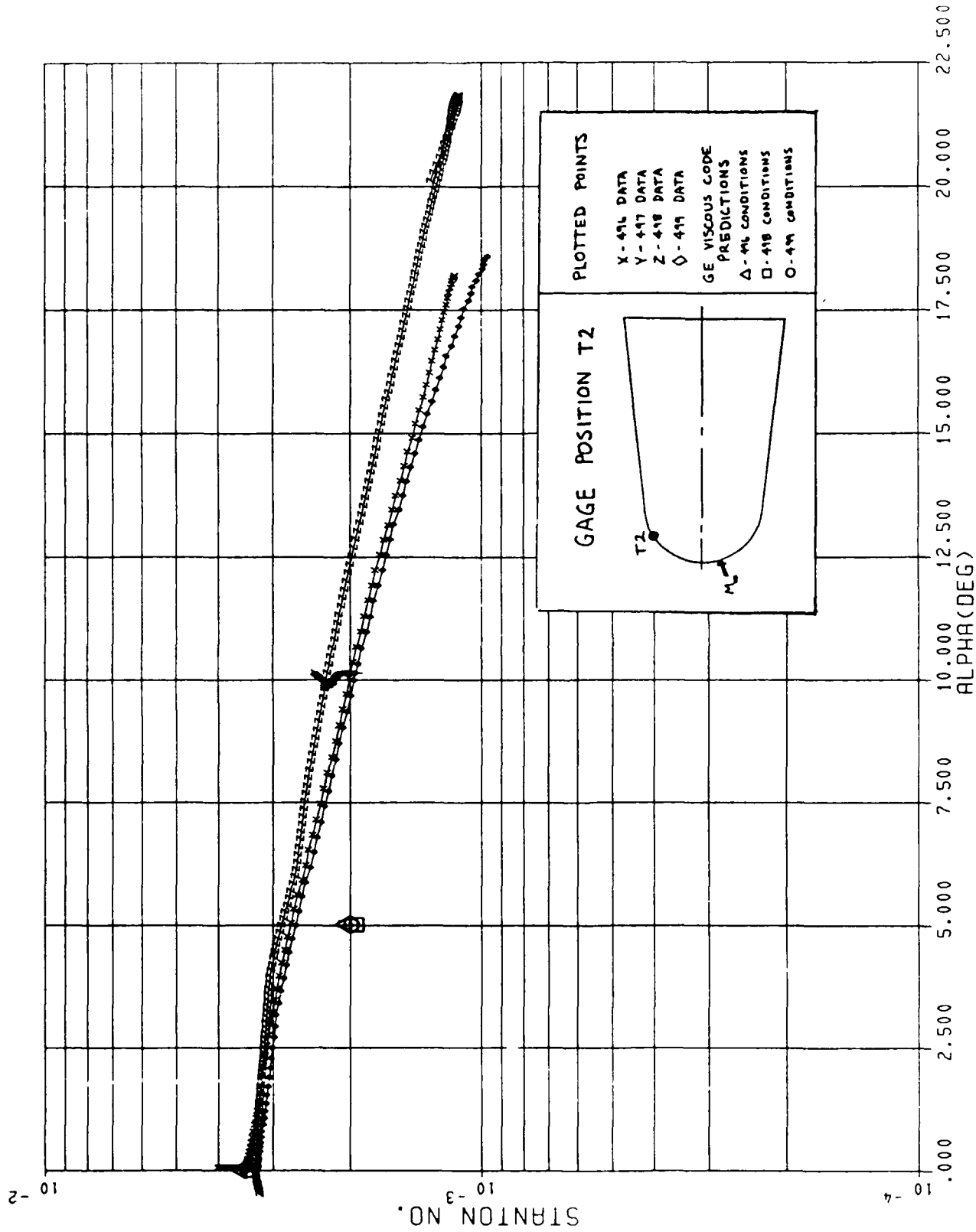


FIGURE 8 STANTON NUMBER VS. ANGLE OF ATTACK FOR ALL 4 RUNS (T2)

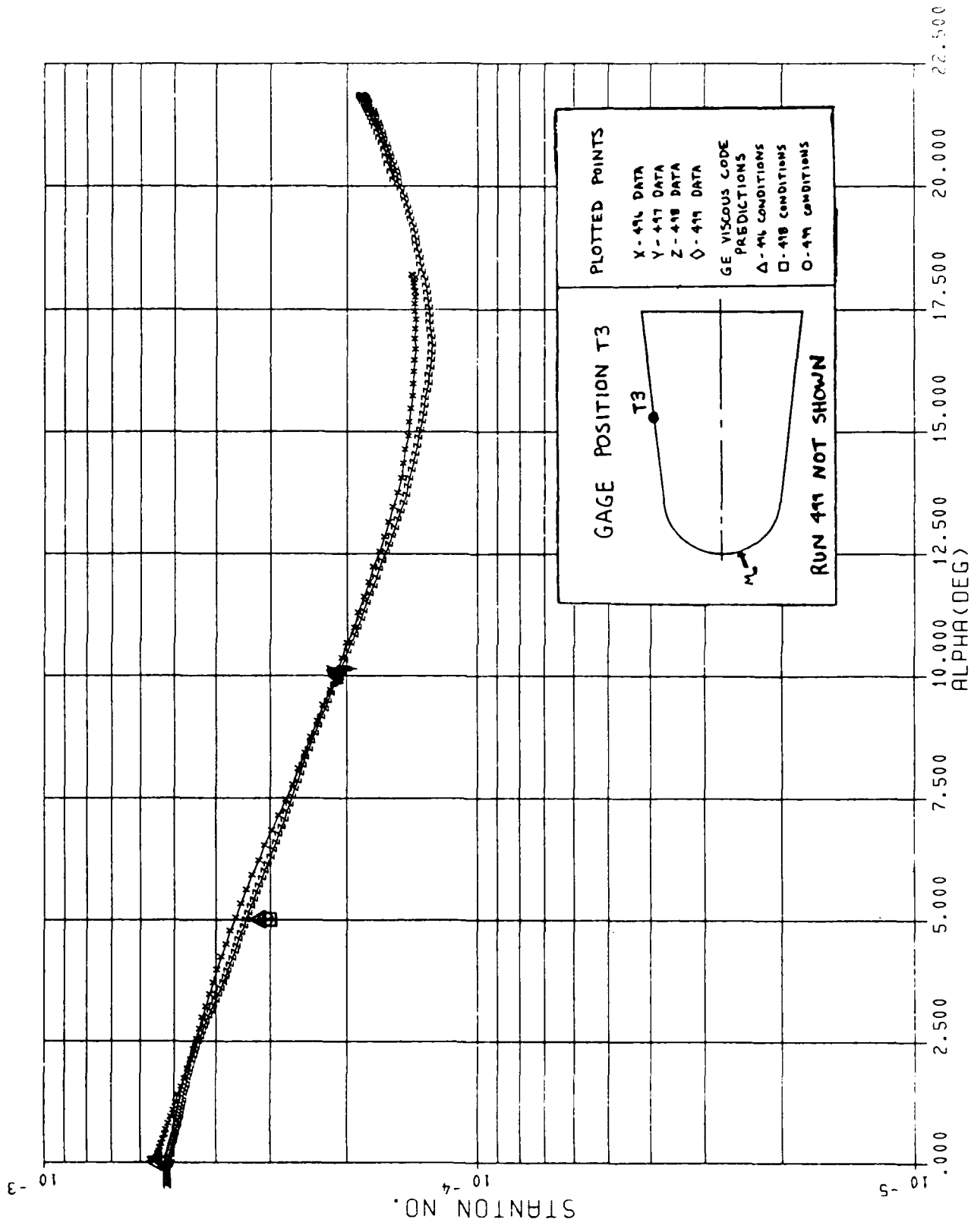


FIGURE 9 STANTON NUMBER VS. ANGLE OF ATTACK FOR ALL 4 RUNS (T3)

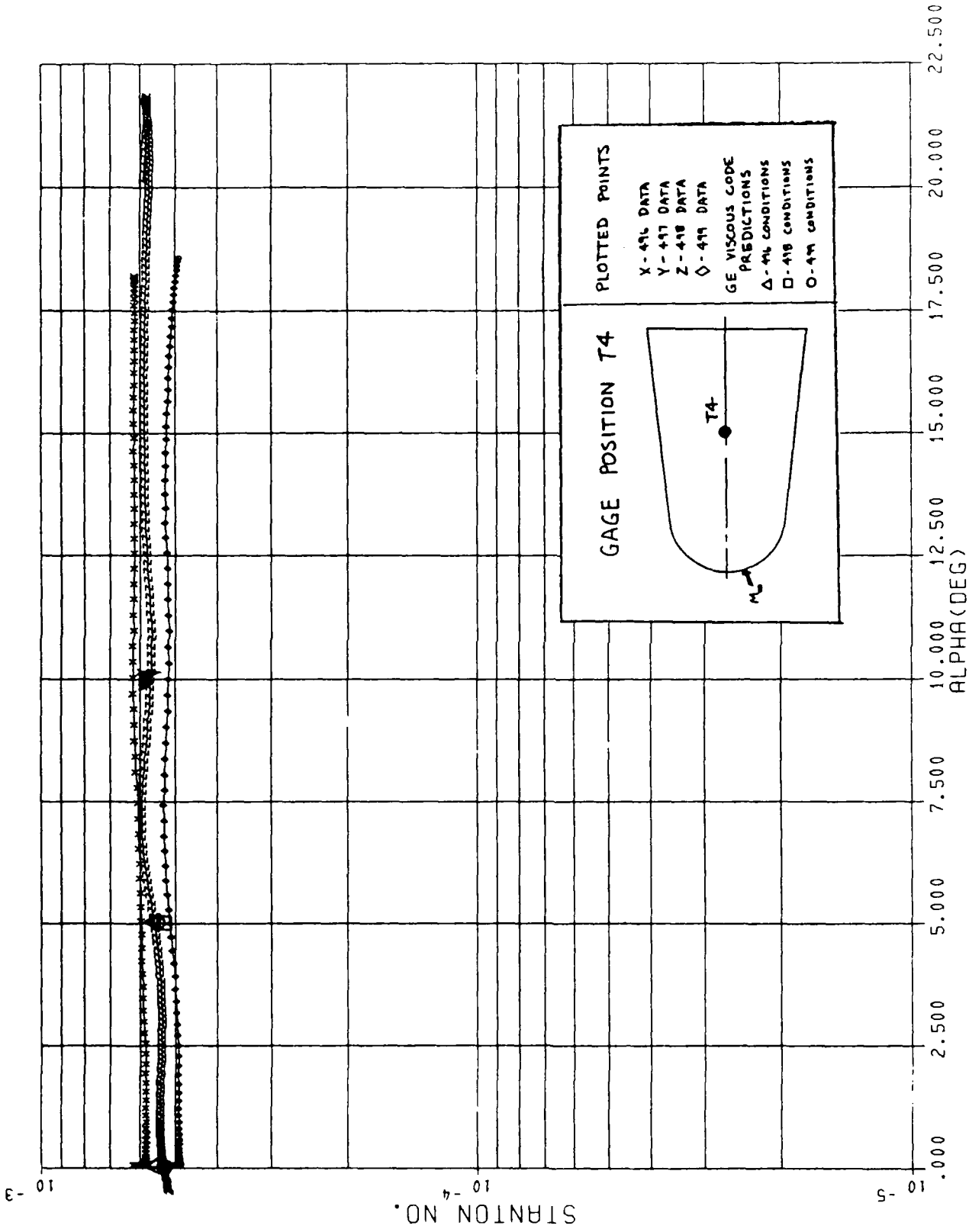


FIGURE 10 STANTON NUMBER VS. ANGLE OF ATTACK FOR ALL 4 RUNS (T4)

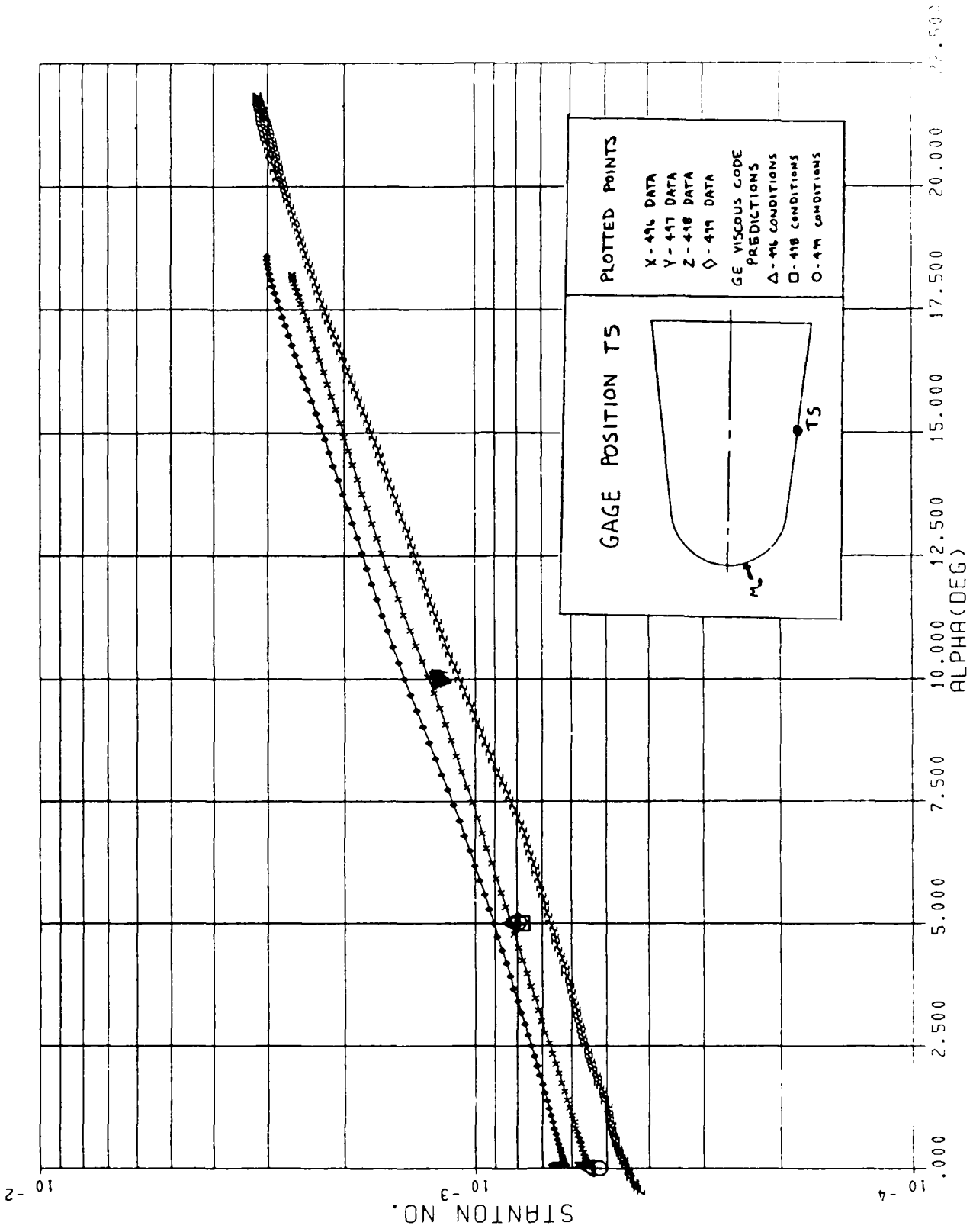


FIGURE 11 STANTON NUMBER VS. ANGLE OF ATTACK FOR ALL 4 RUNS (T5)

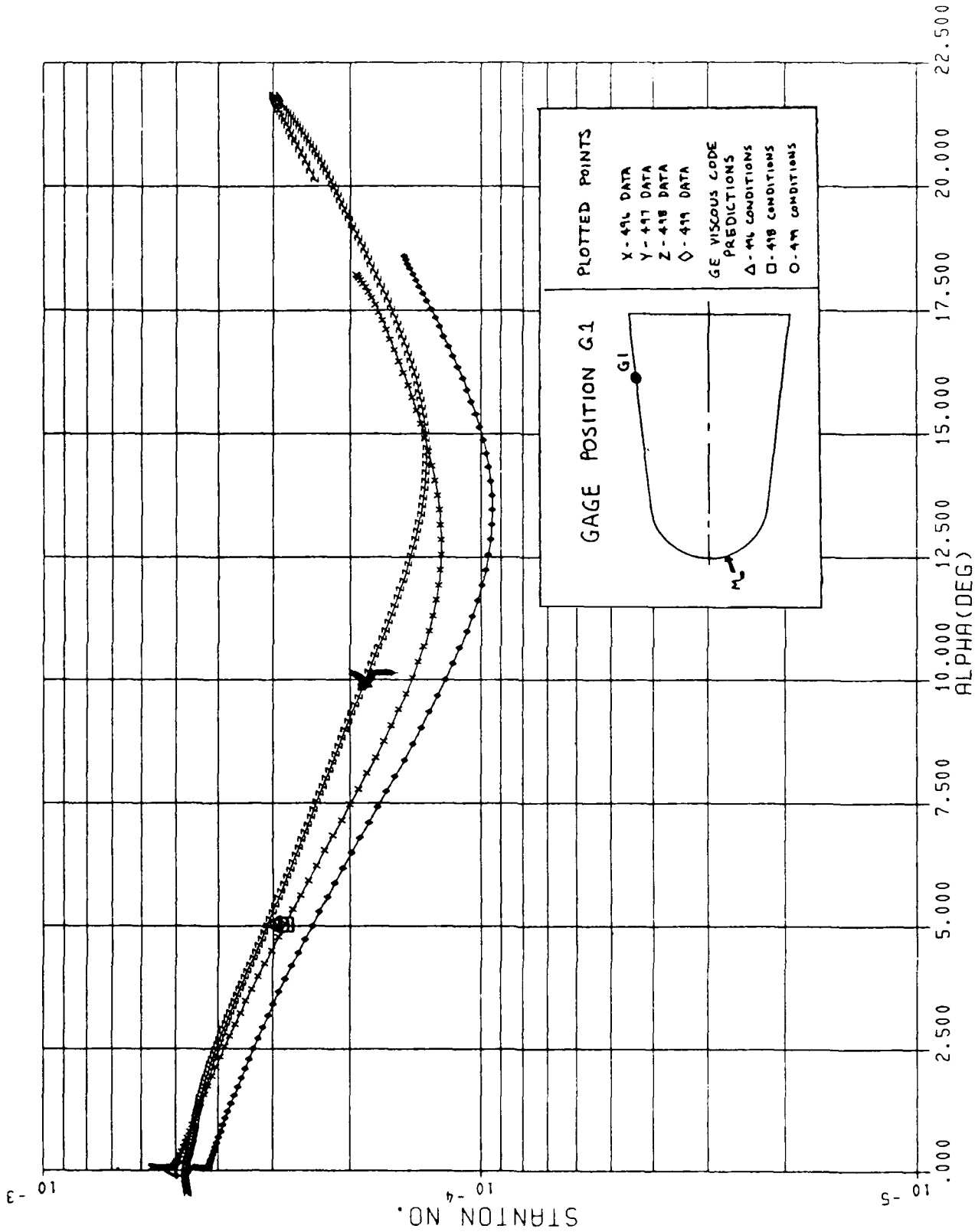


FIGURE 12 STANTON NUMBER VS. ANGLE OF ATTACK FOR ALL 4 RUNS (G1)

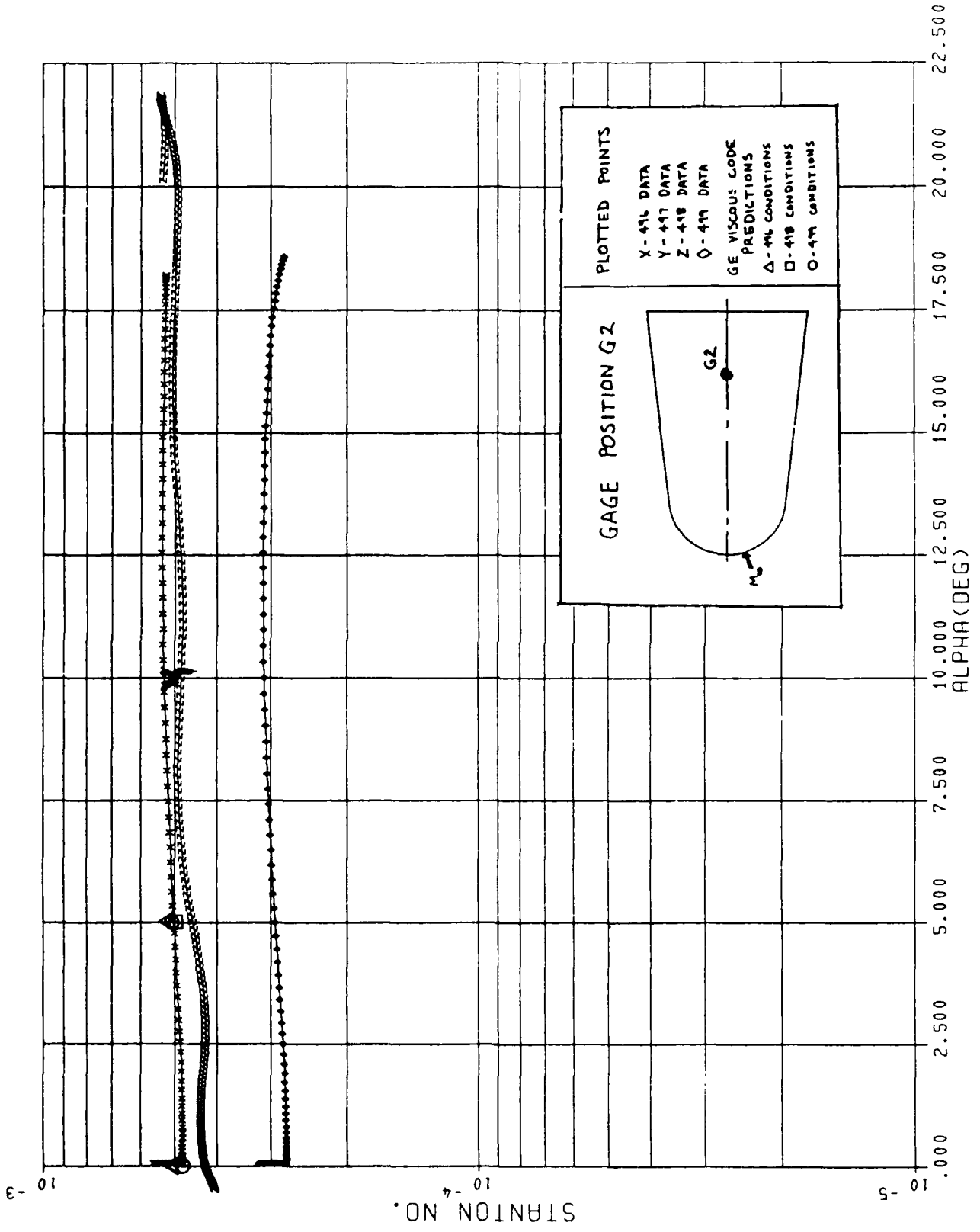


FIGURE 13 STANTON NUMBER VS. ANGLE OF ATTACK FOR ALL 4 RUNS (G2)

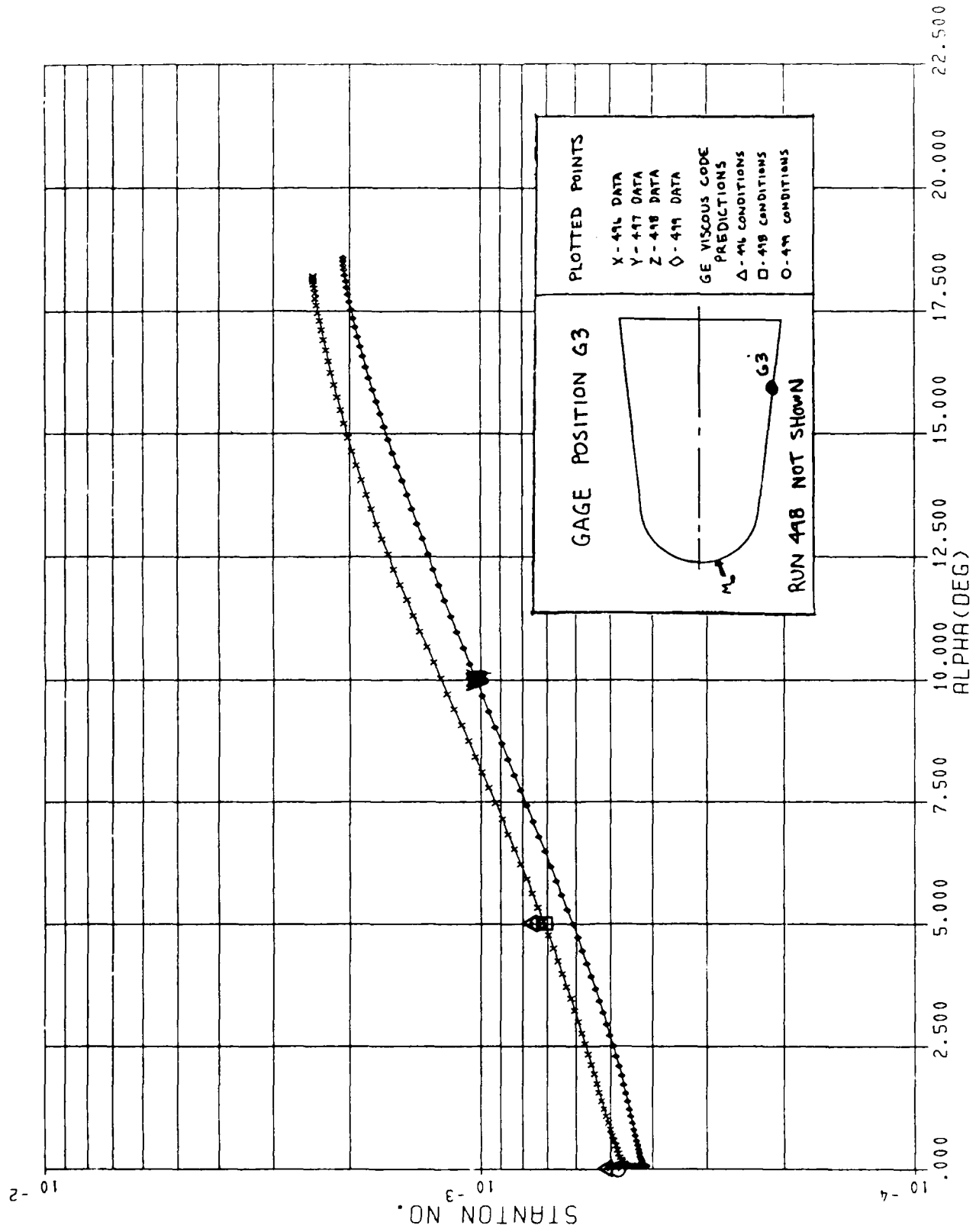


FIGURE 14 STANTON NUMBER VS. ANGLE OF ATTACK FOR ALL 4 RUNS (G3)

TABLE 1 THERMAL PROPERTIES OF CHROMEL* AND CONSTANTAN**

Thermal Property	Chromel	Constantan
1. Thermal Conductivity K (BTU/in-sec-^{o}F) @ 75^{o}F	.242 X 10^{-3}	.267 X 10^{-3}
2. Specific Heat C_p (BTU/lb-^{o}F) @ 68^{o}F	.107	.094
3. Density ρ (lb/in^3)	.315	.322
4. Thermal Diffusivity k (in^2/sec)	7.18 X 10^{-3}	8.84 X 10^{-3}
5. Melting Point (^{o}F)	2600	2210

*Properties given by the Hoskins Manufacturing Company, Detroit, Michigan 48208

**Properties given by the Thermo-Electric Company, Inc., Saddle Brook, New Jersey 07662

TABLE 2 THERMAL PROPERTIES OF CHROMEL-CONSTANTAN THERMOCOUPLE*

Thermal Property	Value
1. Lumped Thermal Property	
$\sqrt{k}/K$ (ft^2-$sec^{\frac{1}{2}}$-^oF/BTU)	2.45
2. Thermoelectric Sensitivity**	
δ ($\mu v/^oF$)	34.5
3. Heat Flux Sensitivity	
$E(t)/\sqrt{t}/\dot{q}$ $\left(\frac{mv/sec^{\frac{1}{2}}}{BTU/ft^2 - sec}\right)$	.096

*Theoretical values

**Value obtained from National Bureau of Standards Circular #561 for a chromel-constantan thermocouple

TABLE 3 TEST SCHEDULE AND RUN CONDITIONS

Run No.	Model Configuration	Average Mach No.	Average P_o(psia)	Average T_o(^oF)	Average Re_∞/ft	Angle of Attack Pitch Sweep during Uniform Flow
496	"Thick Wall" Body	14.01	19604	2913	3.44×10^6	0^o for .4sec then a pitch from 0^o to 18^o
497	"Thick Wall" Body	13.82	19538	2867	3.73×10^6	$\approx 10^o$ constant
498	"Thick Wall" Body	13.85	19782	2802	3.92×10^6	Pitch from 19^o to 22^o to 0^o
499	"Thin Wall" Body	13.97	20741	2872	3.85×10^6	Same as 496

TABLE 4 DATA LISTING

RUN 496 WTR 1333 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	PO	TO	TOI	MACH	PINF	TINF	UINF	RHOINF	REINF
.441	.06	18469.5	2604.1	3121.8	14.16	.0450	87.1	6591.1	1.345E-03	3.692E+06
.445	.06	18489.7	2613.4	3133.4	14.17	.0448	87.3	6601.8	1.337E-03	3.687E+06
.449	.06	18514.9	2623.4	3145.9	14.17	.0447	87.6	6613.3	1.330E-03	3.682E+06
.453	.06	18543.8	2633.9	3159.2	14.17	.0446	87.9	6625.5	1.324E-03	3.818E+06
.457	.06	18574.9	2644.9	3173.0	14.18	.0446	88.2	6638.1	1.318E-03	3.795E+06
.461	.06	18606.9	2656.0	3187.0	14.18	.0446	88.5	6650.9	1.313E-03	3.774E+06
.465	.06	18638.5	2667.1	3200.8	14.17	.0446	88.9	6663.5	1.309E-03	3.754E+06
.470	.06	18668.7	2677.8	3214.3	14.17	.0447	89.3	6675.7	1.305E-03	3.735E+06
.474	.06	18696.7	2687.9	3227.1	14.17	.0448	89.6	6687.2	1.302E-03	3.718E+06
.478	.06	18721.9	2697.3	3238.9	14.16	.0448	90.0	6697.9	1.300E-03	3.704E+06
.482	.06	18744.1	2705.7	3249.5	14.16	.0449	90.3	6707.5	1.298E-03	3.691E+06
.486	.06	18763.1	2713.2	3258.9	14.15	.0450	90.6	6715.9	1.297E-03	3.680E+06
.490	.06	18779.1	2719.6	3267.0	14.15	.0452	90.8	6723.2	1.296E-03	3.671E+06
.495	.06	18792.5	2725.1	3273.9	14.14	.0453	91.1	6729.3	1.295E-03	3.665E+06
.499	.06	18804.7	2729.6	3279.6	14.14	.0453	91.3	6734.3	1.295E-03	3.659E+06
.503	.06	18813.4	2733.3	3284.2	14.13	.0454	91.4	6738.4	1.295E-03	3.655E+06
.507	.06	18822.0	2736.2	3288.0	14.13	.0455	91.6	6741.8	1.296E-03	3.653E+06
.511	.06	18830.3	2738.7	3291.1	14.13	.0456	91.7	6744.6	1.296E-03	3.650E+06
.515	.06	18836.7	2740.8	3293.8	14.12	.0456	91.8	6747.0	1.296E-03	3.649E+06
.519	.06	18842.6	2742.8	3296.4	14.12	.0457	91.9	6749.3	1.296E-03	3.647E+06
.524	.06	18857.7	2744.6	3298.9	14.12	.0457	91.9	6751.6	1.296E-03	3.645E+06
.528	.06	18866.9	2747.0	3301.8	14.12	.0457	92.0	6754.1	1.296E-03	3.643E+06
.532	.06	18881.4	2749.4	3304.9	14.12	.0458	92.1	6756.9	1.296E-03	3.640E+06
.536	.06	18895.2	2752.3	3308.6	14.12	.0458	92.2	6760.2	1.295E-03	3.637E+06
.540	.06	18910.2	2755.6	3312.8	14.12	.0458	92.3	6764.0	1.294E-03	3.632E+06
.544	.06	18926.4	2759.3	3317.7	14.12	.0459	92.4	6768.3	1.293E-03	3.627E+06
.548	.06	18943.4	2763.6	3323.1	14.12	.0459	92.6	6773.2	1.292E-03	3.621E+06
.553	.06	18961.0	2768.2	3329.1	14.12	.0459	92.7	6778.5	1.291E-03	3.614E+06
.557	.06	18978.9	2773.2	3335.5	14.12	.0460	92.9	6784.3	1.290E-03	3.606E+06
.561	.06	18997.0	2778.5	3342.3	14.11	.0460	93.1	6790.3	1.288E-03	3.599E+06
.565	.06	19015.0	2784.0	3349.3	14.11	.0461	93.3	6796.5	1.287E-03	3.591E+06
.569	.06	19032.6	2789.6	3356.4	14.11	.0461	93.5	6802.8	1.286E-03	3.583E+06
.574	.06	19049.8	2795.1	3363.4	14.10	.0462	93.7	6809.0	1.285E-03	3.576E+06
.578	.06	19066.6	2800.6	3370.4	14.10	.0463	94.0	6815.2	1.284E-03	3.569E+06
.582	.06	19082.8	2805.8	3377.0	14.10	.0464	94.2	6821.1	1.284E-03	3.563E+06
.586	.06	19098.6	2810.8	3383.4	14.09	.0465	94.4	6826.6	1.284E-03	3.558E+06
.590	.06	19114.0	2815.4	3389.3	14.09	.0466	94.6	6831.9	1.284E-03	3.554E+06
.594	.06	19129.1	2819.7	3394.6	14.08	.0467	94.8	6836.7	1.285E-03	3.550E+06
.598	.06	19144.0	2823.6	3399.9	14.08	.0468	95.0	6841.1	1.285E-03	3.548E+06
.603	.06	19158.8	2827.1	3404.4	14.07	.0470	95.2	6845.1	1.287E-03	3.546E+06
.607	.06	19173.6	2830.3	3408.6	14.07	.0471	95.3	6848.7	1.288E-03	3.546E+06
.611	.06	19188.4	2833.2	3412.3	14.06	.0472	95.5	6851.9	1.290E-03	3.546E+06
.615	.06	19203.4	2835.8	3415.7	14.06	.0474	95.7	6854.9	1.291E-03	3.547E+06
.619	.06	19218.5	2838.1	3418.9	14.05	.0475	95.8	6857.6	1.293E-03	3.548E+06
.623	.06	19233.7	2840.3	3421.7	14.05	.0477	95.9	6860.1	1.295E-03	3.550E+06
.628	.06	19248.9	2842.3	3424.5	14.04	.0478	96.1	6862.4	1.297E-03	3.552E+06
.632	.06	19264.1	2844.3	3427.1	14.04	.0479	96.2	6864.7	1.299E-03	3.554E+06
.636	.06	19279.1	2846.2	3429.6	14.03	.0481	96.3	6866.9	1.301E-03	3.555E+06
.640	.06	19293.8	2848.1	3432.2	14.03	.0482	96.4	6869.1	1.302E-03	3.556E+06
.644	.06	19308.2	2850.1	3434.8	14.03	.0483	96.5	6871.4	1.304E-03	3.557E+06
.648	.06	19322.2	2852.1	3437.5	14.02	.0484	96.6	6873.7	1.305E-03	3.558E+06
.652	.06	19335.8	2854.2	3440.4	14.02	.0485	96.7	6876.2	1.306E-03	3.557E+06
.657	.06	19349.0	2856.5	3443.4	14.02	.0485	96.9	6878.8	1.306E-03	3.556E+06
.661	.06	19361.7	2858.9	3446.6	14.02	.0486	97.0	6881.6	1.307E-03	3.555E+06
.665	.06	19374.2	2861.5	3449.9	14.01	.0486	97.1	6884.5	1.307E-03	3.553E+06
.669	.06	19386.6	2864.2	3453.4	14.01	.0487	97.2	6887.6	1.306E-03	3.550E+06
AVERAGE		18975.2	2768.0	3329.3	14.10	.0463	92.9	6778.1	1.299E-03	3.630E+06

RUN 496 WTR 1333 CO-AXIAL THERMOCOUPLE SHADOWN TEST 12/10/79-12/12/79

TIME	ALPHA	G1 QDOT	G2 QDOT	G3 QDOT	T1 TW	T1 QDOT	T2 TW	T2 QDOT	T3 TW	T3 QDOT	T4 TW	T4 QDOT	T5 TW	T5 DOT
.441	.06	3.799	3.745	3.407	134.39	60.719	98.20	26.542	73.92	3.786	74.22	4.078	74.01	3.858
.445	.06	3.794	3.741	3.402	135.38	60.816	98.62	26.561	73.96	3.790	74.2[illegible]	4.092	74.07	3.861
.449	.06	3.787	3.734	3.395	136.23	60.934	99.04	26.525	74.02	3.796	74.33	4.106	74.11	3.862
.453	.06	3.777	3.724	3.385	137.22	60.874	99.33	26.512	74.10	3.814	74.42	4.123	74.18	3.869
.457	.06	3.766	3.712	3.375	138.07	61.547	99.82	26.493	74.18	3.820	74.49	4.144	74.24	3.889
.461	.06	3.752	3.698	3.363	139.06	62.456	100.18	26.525	74.22	3.827	74.54	4.179	74.29	3.915
.465	.06	3.738	3.683	3.350	140.05	62.477	100.60	26.493	74.27	3.829	74.60	4.195	74.34	3.918
.470	.06	3.723	3.666	3.337	140.76	62.588	100.96	26.460	74.36	3.834	74.67	4.203	74.41	3.928
.474	.06	3.707	3.649	3.323	141.75	62.604	101.38	26.420	74.42	3.839	74.7[illegible]	4.210	74.49	3.948
.478	.06	3.691	3.631	3.309	142.74	63.332	101.73	26.419	74.44	3.847	74.81	4.223	74.52	3.963
.482	.06	3.675	3.613	3.296	143.59	63.396	102.09	26.384	74.50	3.850	74.87	4.232	74.58	3.969
.486	.06	3.659	3.596	3.283	144.44	63.489	102.37	26.393	74.57	3.854	74.9[illegible]	4.240	74.65	3.990
.490	.06	3.645	3.578	3.271	149.11	63.463	102.87	26.325	74.64	3.846	75.10	4.233	74.83	4.002
.495	.06	3.631	3.562	3.260	146.97	63.535	103.15	26.299	74.68	3.850	75.14	4.234	74.83	4.015
.499	.06	3.618	3.546	3.250	148.68	63.555	103.43	26.289	74.71	3.853	75.15	4.241	74.85	4.021
.503	.06	3.607	3.531	3.241	149.25	63.622	103.72	26.249	74.78	3.853	75.21	4.245	74.93	4.032
.507	.06	3.597	3.517	3.234	149.67	63.441	104.00	26.215	74.85	3.857	75.25	4.238	74.99	4.036
.511	.06	3.589	3.505	3.228	150.38	62.980	104.35	26.125	74.87	3.859	75.2[illegible]	4.216	75.00	4.028
.515	.06	3.583	3.494	3.223	151.09	63.006	104.64	26.128	74.93	3.867	75.35	4.217	75.07	4.032
.519	.06	3.578	3.485	3.220	151.80	63.118	104.99	26.130	74.98	3.872	75.41	4.222	75.14	4.037
.524	.06	3.576	3.477	3.219	152.65	62.500	105.27	26.109	75.04	3.878	75.46	4.211	75.21	4.026
.528	.06	3.575	3.472	3.219	153.35	61.852	105.63	26.091	75.07	3.886	75.51	4.195	75.24	4.012
.532	.06	3.576	3.467	3.220	154.06	61.738	105.98	26.054	75.12	3.888	75.58	4.188	75.26	4.013
.536	.06	3.578	3.465	3.223	154.91	61.886	106.12	26.068	75.18	3.901	75.61	4.195	75.34	4.018
.540	.06	3.583	3.464	3.228	155.62	62.176	106.48	26.118	75.25	3.927	75.68	4.208	75.40	4.024
.544	.06	3.589	3.465	3.233	156.33	62.336	106.76	26.123	75.29	3.946	75.7[illegible]	4.216	75.43	4.033
.548	.06	3.597	3.467	3.240	157.03	62.473	107.11	26.164	75.32	3.959	75.78	4.226	75.45	4.040
.553	.06	3.606	3.471	3.247	157.88	62.459	107.40	26.131	75.39	3.961	75.82	4.226	75.54	4.045
.557	.06	3.616	3.477	3.256	158.59	62.424	107.68	26.159	75.45	3.984	75.84	4.238	75.60	4.044
.561	.06	3.626	3.483	3.265	159.16	62.846	108.03	26.223	75.49	4.006	75.9[illegible]	4.253	75.62	4.060
.565	.06	3.640	3.491	3.275	159.86	62.905	108.24	26.223	75.52	4.011	75.97	4.254	75.68	4.074
.569	.06	3.654	3.500	3.286	160.57	62.994	108.53	26.250	75.60	4.024	76.03	4.263	75.72	4.069
.574	.06	3.668	3.509	3.297	161.99	63.091	108.88	26.296	75.72	4.040	76.0[illegible]	4.276	75.81	4.097
.578	.06	3.683	3.520	3.308	162.55	63.186	109.24	26.322	75.73	4.045	76.14	4.285	75.85	4.102
.582	.06	3.698	3.531	3.319	163.12	63.401	109.52	26.341	75.75	4.060	76.1[illegible]	4.298	75.88	4.117
.586	.06	3.713	3.543	3.330	163.83	63.403	109.73	26.363	75.82	4.068	76.24	4.293	75.95	4.122
.590	.06	3.729	3.555	3.342	164.53	63.446	110.01	26.376	75.87	4.078	76.30	4.303	75.99	4.135
.594	.06	3.744	3.567	3.353	165.24	63.503	110.37	26.379	75.90	4.082	76.34	4.314	76.03	4.142
.598	.06	3.759	3.579	3.363	166.09	63.635	110.72	26.404	75.94	4.089	76.3[illegible]	4.318	76.09	4.148
.603	.06	3.774	3.591	3.374	166.80	63.739	110.93	26.445	76.03	4.095	76.4[illegible]	4.320	76.16	4.152
.607	.06	3.789	3.604	3.384	167.36	63.752	111.22	26.467	76.07	4.094	76.50	4.331	76.20	4.163
.611	.06	3.803	3.615	3.393	168.07	63.723	111.50	26.454	76.10	4.094	76.55	4.340	76.22	4.166
.615	.06	3.817	3.627	3.402	168.78	63.767	111.78	26.442	76.14	4.105	76.57	4.346	76.26	4.163
.619	.06	3.830	3.638	3.410	169.49	63.799	112.00	26.443	76.21	4.111	76.6[illegible]	4.351	76.33	4.162
.623	.06	3.843	3.649	3.418	170.05	63.[illegible]91	112.21	26.506	76.27	4.118	76.7[illegible]	4.360	76.40	4.172
.628	.06	3.854	3.659	3.425	170.90	64.000	112.56	26.525	76.30	4.131	76.7[illegible]	4.366	76.43	4.180
.632	.06	3.865	3.668	3.431	171.47	64.[illegible]46	112.84	26.521	76.31	4.142	76.77	4.375	76.46	4.177
.636	.06	3.875	3.677	3.437	172.18	64.174	113.13	26.508	76.38	4.154	76.84	4.395	76.52	4.185
.640	.06	3.885	3.685	3.442	173.03	64.133	113.41	26.547	76.45	4.153	76.8[illegible]	4.399	76.59	4.184
.644	.06	3.893	3.692	3.447	173.59	64.[illegible]07	113.62	26.583	76.48	4.166	76.94	4.409	76.60	4.192
.648	.06	3.901	3.698	3.451	174.16	64.[illegible]76	113.91	26.596	76.52	4.179	76.9[illegible]	4.421	76.62	4.204
.652	.06	3.908	3.704	3.455	174.87	64.504	114.15	26.629	76.58	4.193	77.04	4.418	76.70	4.218
.657	.06	3.914	3.709	3.458	175.57	64.[illegible]60	114.47	26.666	76.64	4.198	77.0[illegible]	4.447	76.76	4.221
.661	.06	3.920	3.713	3.461	176.28	64.[illegible]70	114.75	26.651	76.68	4.195	77.12	4.442	76.77	4.215
.665	.06	3.925	3.716	3.463	176.99	64.712	115.04	26.640	76.71	4.207	77.1[illegible]	4.451	76.81	4.233
.669	.06	3.929	3.719	3.466	177.70	64.[illegible]07	115.25	26.739	76.79	4.224	77.2[illegible]	4.464	76.90	4.248

RUN 496 STN 1333 CO-AXIAL THERMOCOUPLE SHADOWN TEST 12/10/79-12/12/79

TIME	ALPHA	PO	TO	TOI	MACH	PINF	TINF	UINF	RHOINF	REINF
.673	.06	19394.1	2867.1	3457.2	14.01	.0487	97.3	6840.9	1.306E-03	3.547E+06
.677	.06	19411.8	2870.0	3461.1	14.01	.0488	97.4	6844.3	1.306E-03	3.543E+06
.682	.06	19425.0	2873.2	3465.1	14.01	.0488	97.5	6847.8	1.305E-03	3.539E+06
.686	.06	19439.0	2876.4	3469.3	14.01	.0488	97.6	6901.5	1.304E-03	3.535E+06
.690	.06	19454.0	2879.7	3473.6	14.01	.0489	97.8	6905.3	1.304E-03	3.531E+06
.694	.06	19470.0	2883.0	3478.0	14.01	.0489	97.9	6909.1	1.303E-03	3.527E+06
.698	.06	19487.4	2886.4	3482.4	14.01	.0489	98.0	6913.0	1.302E-03	3.523E+06
.702	.06	19506.0	2889.7	3486.9	14.01	.0490	98.1	6916.9	1.302E-03	3.519E+06
.707	.06	19526.0	2893.0	3491.3	14.01	.0490	98.2	6920.7	1.301E-03	3.516E+06
.711	.06	19547.2	2896.3	3495.6	14.01	.0491	98.3	6924.5	1.301E-03	3.513E+06
.715	.06	19569.5	2899.4	3499.6	14.00	.0491	98.4	6928.2	1.300E-03	3.510E+06
.719	.06	19592.6	2902.4	3503.9	14.00	.0491	98.5	6931.7	1.300E-03	3.506E+06
.723	.06	19616.2	2905.2	3507.7	14.00	.0492	98.6	6935.1	1.300E-03	3.506E+06
.727	.06	19640.0	2907.9	3511.3	14.01	.0492	98.7	6938.3	1.300E-03	3.504E+06
.731	.06	19663.6	2910.4	3514.7	14.01	.0493	98.8	6941.2	1.300E-03	3.503E+06
.736	.06	19686.5	2912.6	3517.9	14.01	.0493	98.9	6944.0	1.300E-03	3.502E+06
.740	.06	19708.4	2914.7	3520.8	14.01	.0494	99.0	6946.5	1.301E-03	3.502E+06
.744	.06	19729.0	2916.6	3523.4	14.01	.0494	99.0	6948.8	1.301E-03	3.502E+06
.748	.06	19747.9	2918.3	3525.6	14.00	.0495	99.1	6950.9	1.301E-03	3.502E+06
.752	.06	19764.9	2919.9	3528.0	14.00	.0495	99.1	6952.9	1.302E-03	3.502E+06
.756	.06	19779.9	2921.4	3530.1	14.00	.0496	99.2	6954.8	1.302E-03	3.502E+06
.761	.06	19792.9	2922.8	3532.0	14.00	.0496	99.3	6956.4	1.303E-03	3.502E+06
.765	.06	19803.8	2924.1	3533.8	14.00	.0496	99.3	6957.9	1.303E-03	3.501E+06
.769	.06	19812.9	2925.4	3535.6	14.00	.0497	99.4	6959.4	1.303E-03	3.501E+06
.773	.06	19820.4	2926.8	3537.4	14.00	.0497	99.4	6960.9	1.304E-03	3.500E+06
.777	.06	19826.5	2928.1	3539.2	14.00	.0498	99.5	6962.5	1.304E-03	3.500E+06
.781	.06	19831.6	2929.6	3541.1	14.00	.0498	99.6	6964.1	1.304E-03	3.499E+06
.785	.06	19836.1	2931.1	3543.0	13.99	.0499	99.7	6965.8	1.304E-03	3.497E+06
.790	.06	19840.3	2932.7	3545.1	13.99	.0499	99.7	6967.5	1.304E-03	3.496E+06
.794	.06	19844.8	2934.4	3547.3	13.99	.0499	99.8	6969.4	1.305E-03	3.494E+06
.798	.06	19849.7	2936.1	3549.6	13.99	.0500	99.9	6971.4	1.305E-03	3.492E+06
.802	.06	19855.5	2938.0	3552.0	13.99	.0500	100.0	6973.5	1.305E-03	3.490E+06
.806	.06	19862.2	2939.9	3554.5	13.99	.0501	100.1	6975.6	1.304E-03	3.488E+06
.810	.06	19870.2	2941.9	3557.1	13.98	.0501	100.1	6977.9	1.304E-03	3.486E+06
.815	.06	19879.4	2943.9	3559.7	13.98	.0501	100.2	6980.2	1.304E-03	3.484E+06
.819	.06	19889.9	2945.9	3562.5	13.98	.0502	100.3	6982.5	1.304E-03	3.482E+06
.823	.06	19901.6	2948.0	3565.2	13.98	.0502	100.4	6984.9	1.304E-03	3.481E+06
.827	.06	19914.3	2950.0	3567.9	13.98	.0502	100.5	6987.2	1.304E-03	3.479E+06
.831	.06	19927.8	2952.0	3570.6	13.98	.0503	100.5	6989.6	1.303E-03	3.477E+06
.835	.07	19941.7	2954.0	3573.3	13.98	.0503	100.6	6991.9	1.303E-03	3.475E+06
.840	.07	19955.9	2955.9	3575.9	13.98	.0503	100.7	6994.2	1.303E-03	3.473E+06
.844	.07	19970.0	2957.8	3578.5	13.98	.0503	100.7	6996.4	1.303E-03	3.471E+06
.848	.07	19983.7	2959.7	3581.0	13.98	.0503	100.8	6998.6	1.302E-03	3.469E+06
.852	.07	19996.7	2961.4	3583.4	13.98	.0504	100.8	7000.7	1.302E-03	3.468E+06
.856	.08	20008.8	2963.2	3585.8	13.98	.0504	100.9	7002.7	1.301E-03	3.466E+06
.860	.08	20019.6	2964.8	3588.0	13.98	.0504	100.9	7004.6	1.301E-03	3.464E+06
.864	.07	20029.2	2966.3	3590.0	13.98	.0504	101.0	7006.4	1.300E-03	3.462E+06
.869	.07	20037.3	2967.8	3592.0	13.98	.0504	101.0	7008.1	1.300E-03	3.460E+06
.873	.07	20043.9	2969.1	3593.7	13.98	.0504	101.1	7009.6	1.299E-03	3.458E+06
.877	.07	20049.1	2970.3	3595.3	13.98	.0504	101.1	7011.0	1.299E-03	3.456E+06
.881	.06	20053.0	2971.4	3596.8	13.98	.0504	101.1	7012.3	1.298E-03	3.454E+06
.885	.06	20055.5	2972.4	3598.0	13.98	.0504	101.2	7013.3	1.298E-03	3.452E+06
.889	.05	20057.0	2973.2	3599.1	13.98	.0504	101.2	7014.2	1.298E-03	3.451E+06
.894	.05	20057.6	2973.9	3600.0	13.98	.0504	101.2	7015.0	1.297E-03	3.450E+06
.898	.04	20057.5	2974.5	3600.7	13.98	.0504	101.2	7015.7	1.297E-03	3.449E+06
.902	.04	20057.0	2975.0	3601.4	13.98	.0504	101.3	7016.2	1.297E-03	3.448E+06
AVERAGE		19801.7	2930.8	3542.3	13.99	.0496	99.6	6965.1	1.302E-03	3.491E+06

RUN 496 STR 1333 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	G1 QDOT	G2 QDOT	G3 QDOT	T1 Tw	T1 QDOT	T2 Tw	T2 QDOT	T3 Tw	T3 QDOT	T4 Tw	T4 QDOT	T5 Tw	T5 QDOT
.673	.06	3.933	3.721	3.466	178.26	64.884	115.53	26.693	76.84	4.222	77.30	4.460	76.94	4.248
.677	.06	3.936	3.722	3.470	178.97	64.927	115.75	26.684	76.86	4.221	77.35	4.465	76.97	4.255
.682	.06	3.938	3.723	3.472	179.68	65.066	116.03	26.713	76.91	4.222	77.37	4.473	77.01	4.266
.686	.06	3.941	3.724	3.474	180.24	65.157	116.24	26.721	76.96	4.222	77.42	4.472	77.07	4.273
.690	.06	3.942	3.724	3.476	180.95	65.312	116.52	26.758	77.01	4.232	77.47	4.478	77.12	4.285
.694	.06	3.944	3.723	3.478	181.66	65.236	116.81	26.644	77.03	4.225	77.50	4.474	77.17	4.283
.698	.06	3.945	3.722	3.480	182.23	65.331	117.09	26.711	77.06	4.228	77.54	4.479	77.18	4.286
.702	.06	3.945	3.721	3.482	182.93	65.370	117.30	26.739	77.13	4.228	77.60	4.474	77.25	4.284
.707	.06	3.946	3.720	3.484	183.64	65.396	117.51	26.758	77.18	4.230	77.64	4.470	77.31	4.286
.711	.06	3.946	3.719	3.486	184.21	65.443	117.73	26.761	77.20	4.233	77.70	4.467	77.32	4.286
.715	.06	3.947	3.717	3.489	184.91	65.517	118.01	26.774	77.22	4.237	77.73	4.469	77.35	4.285
.719	.06	3.947	3.716	3.492	185.48	65.575	118.22	26.797	77.29	4.244	77.77	4.474	77.42	4.287
.723	.06	3.947	3.715	3.495	186.05	65.606	118.51	26.828	77.35	4.253	77.84	4.478	77.48	4.290
.727	.06	3.947	3.713	3.498	186.75	65.635	118.72	26.853	77.37	4.256	77.87	4.479	77.49	4.285
.731	.06	3.947	3.712	3.501	187.32	65.805	119.00	26.910	77.40	4.261	77.88	4.487	77.51	4.291
.736	.06	3.947	3.712	3.504	187.89	65.675	119.28	26.857	77.47	4.266	77.94	4.480	77.58	4.283
.740	.06	3.947	3.711	3.507	188.45	65.729	119.50	26.898	77.52	4.273	77.98	4.487	77.62	4.287
.744	.06	3.947	3.711	3.511	189.16	65.849	119.71	26.970	77.53	4.282	78.01	4.492	77.65	4.295
.748	.06	3.948	3.711	3.514	189.87	65.766	119.99	26.943	77.59	4.286	78.07	4.482	77.68	4.284
.752	.06	3.948	3.711	3.518	190.43	65.768	120.20	26.929	77.64	4.286	78.11	4.487	77.75	4.290
.756	.06	3.949	3.712	3.521	191.00	65.828	120.49	26.941	77.70	4.289	78.17	4.496	77.79	4.297
.761	.06	3.950	3.713	3.524	191.71	65.858	120.77	26.973	77.70	4.292	78.20	4.497	77.80	4.302
.765	.06	3.951	3.715	3.527	192.27	65.883	120.98	26.993	77.74	4.295	78.22	4.499	77.83	4.304
.769	.06	3.952	3.717	3.530	192.70	65.906	121.14	26.935	77.80	4.288	78.24	4.495	77.89	4.301
.773	.06	3.953	3.719	3.532	193.41	65.870	121.41	26.950	77.84	4.293	78.32	4.504	77.96	4.310
.777	.06	3.955	3.722	3.535	193.83	65.940	121.62	26.983	77.87	4.300	78.34	4.516	77.98	4.322
.781	.06	3.957	3.725	3.537	194.54	65.774	121.83	26.921	77.90	4.297	78.38	4.505	77.99	4.313
.785	.06	3.959	3.728	3.538	195.10	65.966	122.04	26.957	77.95	4.301	78.45	4.506	78.06	4.315
.790	.06	3.960	3.732	3.539	195.53	65.905	122.26	26.964	78.00	4.306	78.46	4.506	78.12	4.314
.794	.06	3.964	3.736	3.540	196.10	65.905	122.54	26.956	78.01	4.312	78.51	4.506	78.12	4.324
.798	.06	3.967	3.741	3.541	196.80	65.953	122.75	26.971	78.05	4.320	78.55	4.511	78.14	4.330
.802	.06	3.971	3.746	3.541	197.37	66.041	123.03	26.998	78.11	4.322	78.54	4.511	78.21	4.332
.806	.06	3.974	3.750	3.541	197.79	66.123	123.18	27.005	78.17	4.327	78.61	4.509	78.26	4.332
.810	.06	3.978	3.755	3.540	198.36	66.214	123.39	27.026	78.18	4.337	78.63	4.514	78.29	4.334
.815	.06	3.982	3.761	3.539	199.07	66.202	123.67	27.044	78.21	4.341	78.71	4.523	78.30	4.338
.819	.06	3.987	3.766	3.538	199.63	66.275	123.88	27.058	78.28	4.342	78.75	4.527	78.36	4.338
.823	.06	3.992	3.771	3.537	200.20	66.468	124.10	27.067	78.32	4.345	78.74	4.525	78.41	4.338
.827	.06	3.996	3.776	3.536	200.77	66.474	124.38	27.075	78.35	4.356	78.82	4.530	78.43	4.342
.831	.06	4.002	3.781	3.534	201.47	66.516	124.59	27.098	78.38	4.361	78.84	4.539	78.46	4.345
.835	.07	4.007	3.786	3.533	202.04	66.499	124.80	27.097	78.42	4.363	78.90	4.546	78.51	4.352
.840	.07	4.012	3.791	3.531	202.61	66.512	125.02	27.091	78.48	4.361	78.94	4.550	78.57	4.352
.844	.07	4.018	3.796	3.530	203.17	66.534	125.23	27.106	78.51	4.362	78.94	4.556	78.57	4.355
.848	.07	4.023	3.800	3.529	203.60	66.583	125.44	27.114	78.52	4.368	79.01	4.564	78.60	4.361
.852	.07	4.028	3.804	3.529	204.16	66.512	125.65	27.148	78.58	4.381	79.07	4.577	78.65	4.373
.856	.08	4.034	3.808	3.529	204.73	66.552	125.79	27.061	78.62	4.368	79.12	4.572	78.71	4.362
.860	.08	4.038	3.811	3.529	205.29	66.606	126.06	27.073	78.65	4.367	79.14	4.587	78.72	4.367
.864	.07	4.043	3.814	3.531	205.86	66.618	126.36	27.077	78.69	4.367	79.19	4.597	78.77	4.373
.869	.07	4.047	3.817	3.533	206.29	66.590	126.50	27.097	78.73	4.376	79.22	4.606	78.81	4.382
.873	.07	4.051	3.819	3.536	206.71	66.728	126.71	27.099	78.78	4.380	79.27	4.614	78.85	4.388
.877	.07	4.054	3.821	3.540	207.28	66.594	126.93	27.052	78.79	4.364	79.31	4.610	78.88	4.381
.881	.06	4.056	3.822	3.545	207.98	66.690	127.14	27.080	78.83	4.367	79.34	4.617	78.91	4.384
.885	.06	4.057	3.823	3.552	208.55	66.769	127.28	27.113	78.89	4.383	79.39	4.627	78.95	4.394
.889	.05	4.057	3.824	3.560	209.12	66.810	127.49	27.084	78.92	4.381	79.42	4.625	79.01	4.394
.894	.05	4.056	3.824	3.569	209.54	66.736	127.70	27.121	78.93	4.384	79.48	4.638	79.01	4.394
.898	.04	4.054	3.824	3.580	210.11	66.776	127.99	27.062	78.96	4.372	79.51	4.628	79.05	4.381
.902	.04	4.050	3.824	3.592	210.67	66.944	128.13	27.078	79.02	4.378	79.58	4.631	79.11	4.385

RUN 496 WTR 1333 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	PO	TO	TO1	MACH	PINF	TINF	UINF	RHOINF	REINF
.906	.04	20056.1	2975.4	3601.9	13.98	.0504	101.3	7016.7	1.297E-03	3.447E+06
.910	.04	20055.3	2975.8	3602.4	13.98	.0504	101.3	7017.1	1.297E-03	3.446E+06
.914	.05	20054.5	2976.2	3602.9	13.98	.0504	101.3	7017.5	1.297E-03	3.446E+06
.918	.06	20054.1	2976.6	3603.4	13.98	.0504	101.4	7017.9	1.297E-03	3.445E+06
.923	.08	20054.2	2977.1	3604.0	13.98	.0504	101.4	7018.4	1.297E-03	3.445E+06
.927	.11	20054.6	2977.6	3604.7	13.98	.0505	101.4	7019.0	1.297E-03	3.444E+06
.931	.14	20056.0	2978.2	3605.5	13.98	.0505	101.5	7019.7	1.297E-03	3.444E+06
.935	.19	20058.0	2979.0	3606.5	13.98	.0505	101.5	7020.5	1.297E-03	3.443E+06
.939	.24	20060.7	2979.8	3607.6	13.98	.0505	101.5	7021.5	1.297E-03	3.443E+06
.943	.31	20064.1	2980.8	3608.8	13.97	.0505	101.6	7022.5	1.297E-03	3.442E+06
.948	.38	20068.1	2981.8	3610.2	13.97	.0506	101.6	7023.7	1.297E-03	3.441E+06
.952	.47	20072.6	2982.9	3611.7	13.97	.0506	101.7	7025.0	1.297E-03	3.440E+06
.956	.57	20077.6	2984.1	3613.2	13.97	.0506	101.7	7026.3	1.297E-03	3.438E+06
.960	.64	20082.8	2985.3	3614.8	13.97	.0506	101.8	7027.7	1.297E-03	3.437E+06
.964	.80	20088.2	2986.5	3616.4	13.97	.0506	101.8	7029.0	1.297E-03	3.436E+06
.968	.93	20093.5	2987.6	3617.8	13.97	.0507	101.9	7030.3	1.297E-03	3.435E+06
.973	1.07	20098.5	2988.6	3619.2	13.97	.0507	101.9	7031.5	1.296E-03	3.433E+06
.977	1.23	20103.2	2989.6	3620.5	13.97	.0507	101.9	7032.6	1.296E-03	3.432E+06
.981	1.39	20107.2	2990.4	3621.6	13.97	.0507	102.0	7033.5	1.296E-03	3.431E+06
.985	1.56	20110.5	2991.0	3622.5	13.97	.0507	102.0	7034.3	1.296E-03	3.430E+06
.989	1.74	20112.9	2991.6	3623.2	13.97	.0507	102.0	7034.9	1.295E-03	3.429E+06
.993	1.93	20114.3	2991.9	3623.7	13.97	.0507	102.0	7035.3	1.295E-03	3.429E+06
.997	2.13	20114.5	2992.2	3624.0	13.97	.0507	102.0	7035.5	1.295E-03	3.428E+06
1.002	2.34	20113.6	2992.3	3624.1	13.97	.0507	102.0	7035.6	1.295E-03	3.428E+06
1.006	2.55	20111.5	2992.2	3624.0	13.97	.0507	102.0	7035.6	1.295E-03	3.427E+06
1.010	2.77	20108.1	2992.1	3623.8	13.97	.0507	102.0	7035.4	1.295E-03	3.427E+06
1.014	3.00	20103.6	2992.0	3623.6	13.97	.0506	102.0	7035.2	1.294E-03	3.427E+06
1.018	3.23	20097.9	2991.7	3623.2	13.97	.0506	102.0	7034.9	1.294E-03	3.426E+06
1.022	3.47	20091.1	2991.5	3622.8	13.97	.0506	102.0	7034.5	1.294E-03	3.426E+06
1.027	3.72	20083.5	2991.3	3622.4	13.97	.0506	102.0	7034.2	1.294E-03	3.425E+06
1.031	3.97	20075.0	2991.0	3622.0	13.97	.0506	102.0	7033.8	1.294E-03	3.425E+06
1.035	4.23	20065.9	2990.9	3621.7	13.97	.0506	102.0	7033.5	1.294E-03	3.424E+06
1.039	4.50	20056.3	2990.8	3621.4	13.97	.0506	102.0	7033.3	1.294E-03	3.423E+06
1.043	4.77	20046.3	2990.7	3621.2	13.96	.0506	102.0	7033.1	1.294E-03	3.423E+06
1.047	5.05	20036.1	2990.7	3621.1	13.96	.0506	102.0	7033.0	1.293E-03	3.421E+06
1.051	5.34	20025.8	2990.9	3621.1	13.96	.0506	102.1	7033.0	1.293E-03	3.420E+06
1.056	5.63	20015.6	2991.0	3621.2	13.96	.0506	102.1	7033.1	1.293E-03	3.419E+06
1.060	5.93	20005.5	2991.3	3621.4	13.96	.0506	102.1	7033.2	1.293E-03	3.417E+06
1.064	6.23	19995.6	2991.6	3621.7	13.96	.0506	102.1	7033.4	1.292E-03	3.416E+06
1.068	6.53	19986.1	2991.9	3622.0	13.96	.0506	102.2	7033.7	1.292E-03	3.414E+06
1.072	6.84	19976.9	2992.3	3622.3	13.96	.0506	102.2	7033.9	1.292E-03	3.413E+06
1.076	7.15	19968.0	2992.6	3622.6	13.95	.0506	102.2	7034.2	1.291E-03	3.411E+06
1.081	7.47	19959.5	2992.9	3622.9	13.95	.0506	102.2	7034.4	1.291E-03	3.409E+06
1.085	7.79	19951.2	2993.1	3623.1	13.95	.0506	102.2	7034.6	1.290E-03	3.407E+06
1.089	8.11	19943.2	2993.3	3623.2	13.95	.0506	102.2	7034.6	1.290E-03	3.406E+06
1.093	8.43	19935.4	2993.3	3623.1	13.95	.0506	102.2	7034.6	1.289E-03	3.404E+06
1.097	8.75	19927.7	2993.2	3622.9	13.95	.0505	102.2	7034.4	1.289E-03	3.403E+06
1.101	9.07	19920.0	2993.0	3622.5	13.95	.0505	102.2	7034.0	1.288E-03	3.402E+06
1.106	9.40	19912.2	2992.6	3621.9	13.95	.0505	102.2	7033.5	1.288E-03	3.401E+06
1.110	9.72	19904.2	2992.1	3621.1	13.95	.0504	102.2	7032.9	1.287E-03	3.400E+06
1.114	10.04	19896.0	2991.4	3620.1	13.95	.0504	102.1	7032.0	1.286E-03	3.399E+06
1.118	10.36	19887.4	2990.6	3619.0	13.96	.0504	102.1	7031.1	1.286E-03	3.399E+06
1.122	10.68	19878.3	2989.6	3617.7	13.96	.0503	102.0	7029.9	1.285E-03	3.398E+06
1.126	10.99	19868.8	2988.6	3616.3	13.96	.0503	102.0	7028.7	1.285E-03	3.398E+06
1.130	11.31	19858.8	2987.5	3614.8	13.96	.0502	102.0	7027.5	1.285E-03	3.398E+06
1.135	11.62	19848.2	2986.5	3613.2	13.96	.0502	101.9	7026.2	1.284E-03	3.398E+06
AVERAGE		20026.2	2988.2	3617.7	13.97	.0506	101.9	7030.1	1.293E-03	3.424E+06

RUN 49A WTR 1333 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	G1 QDOT	G2 QDOT	G3 QDOT	T1 Tw	T1 QDOT	T2 Tw	T2 QDOT	T3 Tw	T3 QDOT	T4 Tw	T4 QDOT	T5 Tw	T5 QDOT
.406	.04	4.044	3.823	3.606	211.10	67.043	128.34	27.119	79.06	4.386	79.6[illegible]	4.645	79.16	4.399
.410	.04	4.036	3.822	3.622	211.81	66.975	128.62	27.063	79.06	4.375	79.63	4.640	79.16	4.394
.414	.05	4.027	3.821	3.639	212.23	66.932	128.77	27.051	79.11	4.368	79.6[illegible]	4.636	79.16	4.391
.418	.06	4.015	3.820	3.658	212.80	66.940	128.91	27.054	79.17	4.367	79.7[illegible]	4.639	79.25	4.396
.423	.08	4.001	3.819	3.679	213.36	66.966	129.12	27.035	79.21	4.363	79.7[illegible]	4.640	79.29	4.405
.427	.11	3.984	3.818	3.702	213.79	67.100	129.40	27.054	79.21	4.366	79.7[illegible]	4.647	79.29	4.425
.431	.14	3.965	3.817	3.727	214.21	66.903	129.62	26.927	79.26	4.341	79.80	4.630	79.32	4.427
.435	.19	3.943	3.817	3.753	214.78	66.980	129.76	26.892	79.30	4.330	79.84	4.634	79.37	4.443
.439	.24	3.918	3.816	3.782	215.34	67.040	129.90	26.821	79.33	4.314	79.89	4.636	79.42	4.460
.443	.31	3.890	3.816	3.812	215.77	67.079	130.11	26.716	79.33	4.298	79.92	4.633	79.45	4.485
.448	.38	3.859	3.816	3.844	216.33	67.241	130.32	26.663	79.36	4.279	79.9[illegible]	4.641	79.46	4.527
.452	.47	3.825	3.816	3.879	216.76	67.157	130.39	26.507	79.41	4.230	79.99	4.632	79.53	4.548
.456	.57	3.788	3.817	3.916	217.47	67.314	130.61	26.424	79.44	4.199	80.02	4.639	79.60	4.588
.460	.68	3.747	3.819	3.955	217.75	67.416	130.75	26.282	79.44	4.162	80.06	4.637	79.62	4.628
.464	.80	3.703	3.821	3.996	218.32	67.616	130.89	26.165	79.44	4.122	80.08	4.643	79.66	4.680
.468	.93	3.656	3.824	4.039	218.88	67.697	130.96	25.991	79.48	4.063	80.13	4.640	79.73	4.730
.473	1.07	3.605	3.827	4.086	219.45	67.874	131.03	25.857	79.50	4.012	80.18	4.648	79.80	4.791
.477	1.23	3.551	3.832	4.134	220.01	68.019	131.17	25.695	79.50	3.962	80.19	4.651	79.84	4.853
.481	1.39	3.493	3.837	4.186	220.58	68.368	131.31	25.579	79.48	3.919	80.22	4.661	79.88	4.930
.485	1.56	3.432	3.842	4.242	221.29	68.416	131.46	25.434	79.51	3.846	80.24	4.649	79.98	4.989
.489	1.74	3.368	3.849	4.300	221.85	68.686	131.46	25.202	79.51	3.786	80.32	4.659	80.05	5.065
.493	1.93	3.301	3.856	4.363	222.28	68.948	131.60	25.038	79.48	3.722	80.36	4.666	80.08	5.144
.497	2.13	3.232	3.865	4.429	222.99	69.242	131.74	24.846	79.47	3.664	80.38	4.668	80.17	5.227
1.002	2.34	3.159	3.874	4.500	223.55	69.473	131.74	24.622	79.47	3.605	80.40	4.670	80.27	5.310
1.006	2.55	3.084	3.883	4.576	224.12	69.686	131.81	24.400	79.47	3.539	80.47	4.673	80.37	5.404
1.010	2.77	3.006	3.894	4.658	224.68	69.914	131.88	24.219	79.45	3.485	80.46	4.693	80.44	5.514
1.014	3.00	2.926	3.905	4.745	225.53	70.055	131.95	23.989	79.44	3.436	80.52	4.718	80.51	5.623
1.018	3.23	2.845	3.917	4.838	226.10	70.098	131.95	23.690	79.45	3.369	80.54	4.721	80.61	5.716
1.022	3.47	2.762	3.929	4.939	226.81	70.237	132.09	23.420	79.43	3.300	80.60	4.719	80.72	5.822
1.027	3.72	2.677	3.942	5.047	227.52	70.502	132.09	23.173	79.40	3.238	80.64	4.730	80.79	5.950
1.031	3.97	2.591	3.956	5.162	228.08	70.746	132.09	22.868	79.38	3.171	80.64	4.744	80.88	6.073
1.035	4.23	2.505	3.969	5.287	228.65	71.088	131.95	22.596	79.38	3.104	80.70	4.761	81.00	6.204
1.039	4.50	2.418	3.983	5.420	229.21	71.135	131.88	22.202	79.36	3.025	80.74	4.749	81.14	6.328
1.043	4.77	2.331	3.998	5.563	229.78	71.459	132.09	21.873	79.40	2.957	80.84	4.756	81.30	6.470
1.047	5.05	2.244	4.012	5.717	229.92	71.688	131.88	21.499	79.33	2.875	80.87	4.765	81.36	6.615
1.051	5.34	2.157	4.027	5.881	230.49	72.030	131.81	21.169	79.28	2.798	80.87	4.776	81.48	6.778
1.056	5.63	2.072	4.042	6.056	231.34	72.253	131.81	20.752	79.27	2.717	80.91	4.779	81.64	6.939
1.060	5.93	1.987	4.056	6.243	232.19	72.614	131.74	20.334	79.20	2.635	80.94	4.790	81.75	7.104
1.064	6.23	1.905	4.071	6.443	233.18	73.066	131.60	19.927	79.14	2.543	80.97	4.796	81.88	7.280
1.068	6.53	1.824	4.085	6.655	233.88	73.804	131.53	19.622	79.13	2.466	81.01	4.823	82.06	7.487
1.072	6.84	1.745	4.098	6.880	234.59	74.201	131.38	19.192	79.11	2.374	81.05	4.833	82.25	7.672
1.076	7.15	1.669	4.112	7.117	235.16	74.767	131.17	18.800	79.04	2.288	81.08	4.847	82.38	7.869
1.081	7.47	1.596	4.124	7.368	235.72	75.305	131.03	18.401	79.00	2.198	81.11	4.846	82.53	8.080
1.085	7.79	1.526	4.136	7.633	236.71	75.911	130.89	18.050	78.97	2.128	81.15	4.858	82.74	8.314
1.089	8.11	1.459	4.148	7.910	237.42	76.563	130.68	17.727	78.93	2.067	81.22	4.845	82.94	8.554
1.093	8.43	1.396	4.159	8.200	238.41	76.784	130.54	17.289	78.86	1.988	81.27	4.904	83.10	8.785
1.097	8.75	1.337	4.169	8.503	239.55	77.187	130.39	16.975	78.79	1.929	81.3[illegible]	4.920	83.30	9.049
1.101	9.07	1.282	4.178	8.819	240.68	77.521	130.25	16.637	78.76	1.864	81.37	4.929	83.54	9.317
1.105	9.40	1.231	4.186	9.146	241.67	77.921	130.11	16.323	78.72	1.805	81.44	4.944	83.78	9.592
1.110	9.72	1.185	4.194	9.485	242.09	78.163	129.96	15.988	78.68	1.737	81.47	4.943	83.97	9.873
1.114	10.04	1.143	4.201	9.833	242.80	78.553	129.76	15.721	78.61	1.682	81.48	4.944	84.22	10.183
1.118	10.36	1.106	4.206	10.192	243.51	78.766	129.54	15.422	78.61	1.629	81.51	4.942	84.47	10.498
1.122	10.68	1.073	4.211	10.559	244.22	79.180	129.40	15.180	78.56	1.588	81.54	4.944	84.74	10.833
1.126	10.99	1.045	4.214	10.933	244.92	79.100	129.26	14.778	78.51	1.526	81.61	4.918	84.98	11.155
1.130	11.31	1.022	4.217	11.313	245.63	79.526	129.05	14.557	78.44	1.493	81.62	4.927	85.26	11.523
1.135	11.62	1.004	4.219	11.698	246.48	79.498	128.91	14.178	78.41	1.443	81.68	4.906	85.56	11.868

RUN 49A STR 1333 CO-AXIAL THERMOCOUPLE SHADOWGRAPH TEST 12/10/79-12/12/79

TIME	ALPHA	PO	TO	TOI	MACH	PINF	TINF	UINF	RHOINF	REINF
1.139	11.93	19837.0	2985.4	3611.7	13.96	.0502	101.9	7024.9	1.2841E-03	3.398E+06
1.143	12.24	19825.3	2984.3	3610.3	13.96	.0501	101.8	7023.6	1.2838E-03	3.396E+06
1.147	12.55	19813.0	2983.4	3608.9	13.96	.0501	101.8	7022.4	1.2836E-03	3.396E+06
1.151	12.85	19800.2	2982.5	3607.6	13.96	.0501	101.8	7021.1	1.2833E-03	3.397E+06
1.155	13.15	19787.0	2981.8	3606.5	13.96	.0501	101.7	7020.4	1.2831E-03	3.397E+06
1.160	13.46	19773.3	2981.2	3605.6	13.96	.0500	101.7	7019.8	1.2828E-03	3.396E+06
1.164	13.76	19759.3	2980.7	3604.8	13.96	.0500	101.7	7018.8	1.2826E-03	3.395E+06
1.168	14.05	19744.9	2980.3	3604.1	13.96	.0500	101.7	7018.3	1.2824E-03	3.394E+06
1.172	14.34	19730.3	2980.1	3603.6	13.95	.0500	101.7	7017.5	1.2822E-03	3.393E+06
1.176	14.63	19715.4	2979.8	3603.1	13.95	.0500	101.7	7017.3	1.2821E-03	3.392E+06
1.180	14.92	19700.3	2979.6	3602.6	13.95	.0500	101.7	7016.9	1.2821E-03	3.390E+06
1.184	15.20	19684.9	2979.3	3602.0	13.95	.0500	101.7	7016.3	1.2820E-03	3.389E+06
1.189	15.47	19669.3	2978.8	3601.2	13.95	.0499	101.7	7015.7	1.2818E-03	3.387E+06
1.193	15.74	19653.5	2978.2	3600.2	13.95	.0499	101.7	7014.8	1.2817E-03	3.386E+06
1.197	15.99	19637.6	2977.2	3598.8	13.95	.0499	101.7	7013.6	1.2815E-03	3.385E+06
1.201	16.24	19621.3	2975.9	3596.9	13.95	.0498	101.6	7012.0	1.2813E-03	3.385E+06
1.205	16.48	19604.9	2974.2	3594.6	13.95	.0498	101.6	7009.9	1.2810E-03	3.385E+06
1.209	16.70	19588.3	2972.0	3591.6	13.95	.0497	101.5	7007.3	1.2807E-03	3.385E+06
1.214	16.91	19571.4	2969.3	3587.9	13.95	.0496	101.3	7004.2	1.2803E-03	3.387E+06
1.218	17.11	19554.4	2966.0	3583.5	13.96	.0496	101.2	7000.4	1.2798E-03	3.389E+06
1.222	17.30	19537.3	2962.1	3578.3	13.96	.0495	101.0	6996.0	1.2793E-03	3.392E+06
1.226	17.46	19520.1	2957.6	3572.3	13.96	.0494	100.8	6990.9	1.2786E-03	3.396E+06
1.230	17.61	19502.9	2952.4	3565.6	13.97	.0493	100.6	6985.1	1.2779E-03	3.401E+06
1.234	17.74	19485.7	2946.7	3558.2	13.97	.0491	100.3	6978.7	1.2772E-03	3.408E+06
1.239	17.86	19468.7	2940.4	3550.0	13.98	.0490	100.1	6971.6	1.2764E-03	3.415E+06
1.243	17.96	19451.8	2933.6	3541.2	13.98	.0489	99.8	6964.0	1.2756E-03	3.423E+06
1.247	18.04	19435.3	2926.3	3531.8	13.99	.0488	99.5	6955.9	1.2747E-03	3.433E+06
1.251	18.11	19419.1	2918.5	3521.8	13.99	.0487	99.1	6947.3	1.2737E-03	3.443E+06
1.255	18.16	19403.3	2910.5	3511.5	14.00	.0486	98.8	6938.4	1.2727E-03	3.454E+06
1.259	18.19	19387.9	2902.1	3500.8	14.01	.0485	98.4	6929.1	1.2716E-03	3.466E+06
1.263	18.21	19373.0	2893.5	3489.8	14.01	.0484	98.1	6919.5	1.2706E-03	3.479E+06
AVERAGE		19614.7	2961.7	3578.9	13.97	.0496	101.0	6996.5	1.2801E-03	3.404E+06

PIN 496 WTR 1333 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	G1 QDOT	G2 QDOT	G3 QDOT	T1 TW	T1 QDOT	T2 TW	T2 QDOT	T3 TW	T3 QDOT	T4 TW	T4 QDOT	T5 TW	T5 QDOT
1.139	11.93	.990	4.220	12.087	247.19	79.525	128.62	13.894	78.38	1.407	81.71	4.896	85.90	12.195
1.143	12.24	.980	4.220	12.478	248.04	79.871	128.55	13.649	78.29	1.374	81.72	4.890	86.18	12.556
1.147	12.55	.975	4.219	12.869	248.74	79.996	128.34	13.318	78.27	1.326	81.72	4.877	86.51	12.888
1.151	12.85	.973	4.217	13.258	249.31	80.205	128.13	13.023	78.24	1.292	81.74	4.875	86.88	13.230
1.155	13.16	.976	4.214	13.645	250.16	80.503	127.85	12.749	78.21	1.260	81.80	4.870	87.24	13.574
1.160	13.46	.982	4.210	14.027	251.01	80.808	127.63	12.489	78.14	1.231	81.85	4.866	87.58	13.933
1.164	13.76	.992	4.206	14.402	251.86	81.096	127.42	12.230	78.10	1.206	81.88	4.869	87.92	14.288
1.168	14.05	1.005	4.201	14.769	252.57	81.157	127.21	11.898	78.07	1.181	81.92	4.860	88.26	14.618
1.172	14.34	1.021	4.195	15.126	253.27	81.489	127.00	11.673	78.05	1.167	81.94	4.868	88.62	14.973
1.176	14.63	1.039	4.189	15.471	254.12	81.813	126.86	11.486	77.98	1.157	81.97	4.878	88.93	15.336
1.180	14.92	1.059	4.181	15.804	254.83	81.694	126.64	11.170	77.94	1.134	82.02	4.860	89.28	15.660
1.184	15.20	1.082	4.174	16.121	255.68	81.964	126.43	10.965	77.94	1.128	82.04	4.866	89.66	16.007
1.189	15.47	1.105	4.165	16.422	256.39	82.158	126.15	10.752	77.91	1.117	82.04	4.867	90.03	16.355
1.193	15.74	1.130	4.156	16.705	257.10	82.217	126.01	10.552	77.84	1.104	82.10	4.861	90.44	16.692
1.197	15.99	1.156	4.147	16.970	257.94	82.249	125.79	10.356	77.83	1.098	82.13	4.848	90.81	17.025
1.201	16.24	1.183	4.137	17.214	258.65	82.282	125.56	10.184	77.83	1.096	82.14	4.839	91.26	17.354
1.205	16.48	1.209	4.126	17.437	259.50	82.328	125.37	10.029	77.80	1.091	82.24	4.832	91.69	17.693
1.209	16.70	1.236	4.116	17.638	259.93	82.323	125.23	9.853	77.76	1.086	82.24	4.822	92.08	18.017
1.214	16.91	1.262	4.104	17.816	260.63	82.254	125.02	9.678	77.73	1.085	82.24	4.809	92.48	18.312
1.218	17.11	1.287	4.092	17.971	261.34	82.204	124.80	9.540	77.73	1.079	82.24	4.796	92.91	18.585
1.222	17.30	1.312	4.080	18.103	261.91	82.131	124.54	9.417	77.70	1.076	82.31	4.784	93.34	18.847
1.226	17.46	1.335	4.068	18.211	262.47	82.013	124.38	9.285	77.64	1.079	82.33	4.772	93.73	19.075
1.230	17.61	1.357	4.055	18.296	263.18	81.957	124.24	9.164	77.63	1.076	82.34	4.762	94.11	19.276
1.234	17.74	1.377	4.042	18.356	263.75	81.656	124.10	9.079	77.63	1.068	82.34	4.743	94.55	19.443
1.238	17.86	1.395	4.028	18.394	264.45	81.460	123.95	8.991	77.61	1.067	82.41	4.722	94.96	19.573
1.241	17.96	1.411	4.014	18.409	264.88	81.241	123.74	8.884	77.57	1.069	82.43	4.711	95.30	19.675
1.247	18.04	1.425	3.999	18.403	265.45	80.955	123.60	8.794	77.54	1.065	82.44	4.702	95.64	19.742
1.251	18.11	1.437	3.984	18.375	266.15	80.771	123.46	8.786	77.54	1.064	82.47	4.699	95.98	19.802
1.255	18.16	1.447	3.969	18.327	266.58	80.193	123.25	8.662	77.54	1.053	82.50	4.666	96.33	19.779
1.259	18.19	1.455	3.953	18.261	267.00	79.956	123.11	8.627	77.50	1.065	82.54	4.659	96.63	19.768
1.263	18.21	1.460	3.938	18.177	267.43	79.654	123.03	8.567	77.47	1.069	82.54	4.647	96.92	19.705

RUN 496 MTR 1333 STATION NUMBERS CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/17/79

	TIME	ALPHA	G1 ST	G2 ST	G3 ST	T1 ST	T2 ST	T3 ST	T4 ST	T5 ST
99	.441	.06	5.667E-04	5.587E-04	5.083E-04	9.240E-03	3.691E-03	5.647E-04	5.083E-04	5.756E-04
100	.445	.06	5.664E-04	5.583E-04	5.077E-04	9.261E-03	3.698E-03	5.656E-04	5.107E-04	5.761E-04
101	.449	.06	5.649E-04	5.569E-04	5.063E-04	9.281E-03	3.939E-03	5.662E-04	5.125E-04	5.761E-04
102	.453	.06	5.627E-04	5.547E-04	5.043E-04	9.257E-03	3.942E-03	5.662E-04	5.142E-04	5.764E-04
103	.457	.06	5.590E-04	5.519E-04	5.017E-04	9.343E-03	3.972E-03	5.679E-04	5.162E-04	5.782E-04
104	.461	.06	5.564E-04	5.484E-04	4.987E-04	9.459E-03	3.960E-03	5.675E-04	5.197E-04	5.805E-04
105	.465	.06	5.526E-04	5.445E-04	4.953E-04	9.450E-03	3.950E-03	5.660E-04	5.202E-04	5.792E-04
106	.470	.06	5.465E-04	5.403E-04	4.917E-04	9.422E-03	3.932E-03	5.649E-04	5.194E-04	5.769E-04
107	.474	.06	5.443E-04	5.359E-04	4.880E-04	9.439E-03	3.913E-03	5.636E-04	5.183E-04	5.790E-04
108	.478	.06	5.401E-04	5.314E-04	4.843E-04	9.472E-03	3.900E-03	5.629E-04	5.181E-04	5.799E-04
109	.482	.06	5.359E-04	5.270E-04	4.807E-04	9.451E-03	3.881E-03	5.614E-04	5.172E-04	5.788E-04
110	.486	.06	5.319E-04	5.227E-04	4.773E-04	9.438E-03	3.870E-03	5.602E-04	5.164E-04	5.800E-04
111	.490	.06	5.282E-04	5.187E-04	4.741E-04	9.417E-03	3.849E-03	5.576E-04	5.136E-04	5.800E-04
112	.495	.06	5.240E-04	5.148E-04	4.712E-04	9.401E-03	3.835E-03	5.565E-04	5.121E-04	5.803E-04
113	.499	.06	5.217E-04	5.113E-04	4.686E-04	9.390E-03	3.825E-03	5.550E-04	5.110E-04	5.798E-04
114	.503	.06	5.190E-04	5.081E-04	4.664E-04	9.372E-03	3.811E-03	5.544E-04	5.109E-04	5.801E-04
115	.507	.06	5.166E-04	5.052E-04	4.645E-04	9.369E-03	3.799E-03	5.540E-04	5.088E-04	5.797E-04
116	.511	.06	5.146E-04	5.026E-04	4.629E-04	9.348E-03	3.781E-03	5.533E-04	5.094E-04	5.774E-04
117	.515	.06	5.130E-04	5.004E-04	4.616E-04	9.341E-03	3.770E-03	5.536E-04	5.094E-04	5.773E-04
118	.519	.06	5.117E-04	4.985E-04	4.606E-04	9.347E-03	3.772E-03	5.536E-04	5.088E-04	5.774E-04
119	.524	.06	5.108E-04	4.968E-04	4.599E-04	9.356E-03	3.765E-03	5.539E-04	5.086E-04	5.752E-04
120	.528	.06	5.101E-04	4.956E-04	4.594E-04	9.346E-03	3.759E-03	5.545E-04	5.088E-04	5.725E-04
121	.532	.06	5.097E-04	4.943E-04	4.591E-04	9.021E-03	3.750E-03	5.543E-04	5.070E-04	5.721E-04
122	.536	.06	5.095E-04	4.934E-04	4.590E-04	9.034E-03	3.747E-03	5.554E-04	5.074E-04	5.721E-04
123	.540	.06	5.095E-04	4.927E-04	4.590E-04	9.067E-03	3.750E-03	5.564E-04	5.084E-04	5.723E-04
124	.544	.06	5.097E-04	4.921E-04	4.592E-04	9.079E-03	3.746E-03	5.604E-04	5.088E-04	5.728E-04
125	.549	.06	5.100E-04	4.918E-04	4.594E-04	9.086E-03	3.747E-03	5.613E-04	5.094E-04	5.740E-04
126	.553	.06	5.105E-04	4.915E-04	4.598E-04	9.073E-03	3.736E-03	5.608E-04	5.084E-04	5.726E-04
127	.557	.06	5.111E-04	4.914E-04	4.602E-04	9.082E-03	3.734E-03	5.630E-04	5.090E-04	5.721E-04
128	.561	.06	5.117E-04	4.914E-04	4.606E-04	9.097E-03	3.736E-03	5.650E-04	5.100E-04	5.726E-04
129	.565	.06	5.124E-04	4.914E-04	4.610E-04	9.088E-03	3.728E-03	5.640E-04	5.089E-04	5.734E-04
130	.569	.06	5.132E-04	4.916E-04	4.615E-04	9.082E-03	3.724E-03	5.651E-04	5.088E-04	5.743E-04
131	.574	.06	5.139E-04	4.918E-04	4.619E-04	9.078E-03	3.722E-03	5.660E-04	5.092E-04	5.741E-04
132	.578	.06	5.147E-04	4.921E-04	4.624E-04	9.071E-03	3.717E-03	5.654E-04	5.090E-04	5.734E-04
133	.582	.06	5.155E-04	4.923E-04	4.628E-04	9.079E-03	3.717E-03	5.660E-04	5.093E-04	5.740E-04
134	.586	.06	5.163E-04	4.927E-04	4.631E-04	9.057E-03	3.704E-03	5.657E-04	5.070E-04	5.732E-04
135	.590	.06	5.170E-04	4.930E-04	4.634E-04	9.040E-03	3.696E-03	5.654E-04	5.068E-04	5.734E-04
136	.594	.06	5.177E-04	4.933E-04	4.636E-04	9.024E-03	3.686E-03	5.644E-04	5.066E-04	5.729E-04
137	.598	.06	5.184E-04	4.936E-04	4.638E-04	9.019E-03	3.679E-03	5.636E-04	5.055E-04	5.717E-04
138	.603	.06	5.190E-04	4.939E-04	4.639E-04	9.010E-03	3.675E-03	5.631E-04	5.041E-04	5.709E-04
139	.607	.06	5.195E-04	4.941E-04	4.639E-04	8.987E-03	3.668E-03	5.614E-04	5.039E-04	5.708E-04
140	.611	.06	5.200E-04	4.944E-04	4.639E-04	8.959E-03	3.655E-03	5.598E-04	5.034E-04	5.696E-04
141	.615	.06	5.204E-04	4.945E-04	4.638E-04	8.941E-03	3.644E-03	5.596E-04	5.025E-04	5.675E-04
142	.619	.06	5.207E-04	4.947E-04	4.636E-04	8.922E-03	3.637E-03	5.589E-04	5.016E-04	5.659E-04
143	.623	.06	5.210E-04	4.948E-04	4.634E-04	8.912E-03	3.633E-03	5.583E-04	5.012E-04	5.657E-04
144	.628	.06	5.212E-04	4.948E-04	4.631E-04	8.906E-03	3.626E-03	5.587E-04	5.005E-04	5.653E-04
145	.632	.06	5.214E-04	4.948E-04	4.628E-04	8.891E-03	3.617E-03	5.587E-04	5.003E-04	5.635E-04
146	.636	.06	5.215E-04	4.948E-04	4.625E-04	8.889E-03	3.615E-03	5.589E-04	5.015E-04	5.632E-04
147	.640	.06	5.216E-04	4.948E-04	4.622E-04	8.866E-03	3.604E-03	5.576E-04	5.007E-04	5.618E-04
148	.644	.06	5.216E-04	4.947E-04	4.618E-04	8.867E-03	3.601E-03	5.581E-04	5.006E-04	5.618E-04
149	.648	.06	5.216E-04	4.946E-04	4.614E-04	8.865E-03	3.596E-03	5.586E-04	5.013E-04	5.621E-04
150	.652	.06	5.216E-04	4.944E-04	4.611E-04	8.866E-03	3.594E-03	5.596E-04	5.024E-04	5.627E-04
151	.657	.06	5.216E-04	4.942E-04	4.608E-04	8.866E-03	3.594E-03	5.594E-04	5.026E-04	5.624E-04
152	.661	.06	5.215E-04	4.940E-04	4.604E-04	8.852E-03	3.586E-03	5.580E-04	5.010E-04	5.613E-04
153	.665	.06	5.214E-04	4.937E-04	4.601E-04	8.860E-03	3.586E-03	5.589E-04	5.013E-04	5.623E-04
154	.669	.06	5.212E-04	4.934E-04	4.598E-04	8.876E-03	3.588E-03	5.604E-04	5.023E-04	5.635E-04

RUN 496 WTR 1333 STANTON NUMBERS CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

	TIME	ALPHA	G1 ST	G2 ST	G3 ST	T1 ST	T2 ST	T3 ST	T4 ST	T5 ST
155	.673	.06	5.210E-04	4.930E-04	4.595E-04	8.862E-03	3.577E-03	5.594E-04	5.910E-04	5.628E-04
156	.677	.06	5.208E-04	4.926E-04	4.591E-04	8.858E-03	3.572E-03	5.585E-04	5.908E-04	5.630E-04
157	.682	.06	5.205E-04	4.921E-04	4.588E-04	8.866E-03	3.571E-03	5.579E-04	5.912E-04	5.640E-04
158	.686	.06	5.201E-04	4.915E-04	4.585E-04	8.870E-03	3.568E-03	5.572E-04	5.903E-04	5.641E-04
159	.690	.06	5.197E-04	4.909E-04	4.582E-04	8.881E-03	3.569E-03	5.570E-04	5.903E-04	5.648E-04
160	.694	.06	5.192E-04	4.902E-04	4.578E-04	8.861E-03	3.556E-03	5.563E-04	5.891E-04	5.639E-04
161	.698	.06	5.186E-04	4.895E-04	4.575E-04	8.863E-03	3.554E-03	5.558E-04	5.890E-04	5.635E-04
162	.702	.06	5.180E-04	4.887E-04	4.571E-04	8.858E-03	3.553E-03	5.551E-04	5.875E-04	5.625E-04
163	.707	.06	5.174E-04	4.878E-04	4.568E-04	8.850E-03	3.550E-03	5.546E-04	5.862E-04	5.619E-04
164	.711	.06	5.166E-04	4.869E-04	4.564E-04	8.844E-03	3.545E-03	5.541E-04	5.849E-04	5.612E-04
165	.715	.06	5.159E-04	4.860E-04	4.561E-04	8.842E-03	3.542E-03	5.539E-04	5.843E-04	5.602E-04
166	.719	.06	5.151E-04	4.851E-04	4.558E-04	8.838E-03	3.540E-03	5.539E-04	5.840E-04	5.596E-04
167	.723	.06	5.144E-04	4.842E-04	4.554E-04	8.830E-03	3.539E-03	5.542E-04	5.837E-04	5.591E-04
168	.727	.06	5.136E-04	4.833E-04	4.551E-04	8.822E-03	3.537E-03	5.538E-04	5.830E-04	5.576E-04
169	.731	.06	5.128E-04	4.824E-04	4.549E-04	8.832E-03	3.539E-03	5.545E-04	5.831E-04	5.575E-04
170	.736	.06	5.121E-04	4.816E-04	4.546E-04	8.803E-03	3.527E-03	5.535E-04	5.813E-04	5.557E-04
171	.740	.06	5.114E-04	4.809E-04	4.544E-04	8.799E-03	3.528E-03	5.536E-04	5.814E-04	5.554E-04
172	.744	.06	5.107E-04	4.802E-04	4.543E-04	8.805E-03	3.533E-03	5.541E-04	5.812E-04	5.557E-04
173	.748	.06	5.101E-04	4.796E-04	4.541E-04	8.784E-03	3.525E-03	5.533E-04	5.792E-04	5.543E-04
174	.752	.06	5.096E-04	4.790E-04	4.540E-04	8.775E-03	3.519E-03	5.532E-04	5.791E-04	5.537E-04
175	.756	.06	5.091E-04	4.786E-04	4.539E-04	8.774E-03	3.517E-03	5.529E-04	5.797E-04	5.540E-04
176	.761	.06	5.086E-04	4.782E-04	4.538E-04	8.770E-03	3.517E-03	5.527E-04	5.792E-04	5.539E-04
177	.765	.06	5.082E-04	4.779E-04	4.537E-04	8.765E-03	3.510E-03	5.525E-04	5.788E-04	5.537E-04
178	.769	.06	5.078E-04	4.777E-04	4.536E-04	8.747E-03	3.505E-03	5.510E-04	5.777E-04	5.527E-04
179	.773	.06	5.075E-04	4.775E-04	4.535E-04	8.749E-03	3.504E-03	5.512E-04	5.783E-04	5.533E-04
180	.777	.06	5.073E-04	4.774E-04	4.534E-04	8.751E-03	3.505E-03	5.522E-04	5.793E-04	5.543E-04
181	.781	.06	5.071E-04	4.774E-04	4.534E-04	8.722E-03	3.494E-03	5.506E-04	5.773E-04	5.527E-04
182	.785	.06	5.069E-04	4.774E-04	4.534E-04	8.728E-03	3.496E-03	5.506E-04	5.770E-04	5.526E-04
183	.790	.06	5.067E-04	4.775E-04	4.534E-04	8.725E-03	3.493E-03	5.507E-04	5.764E-04	5.524E-04
184	.794	.06	5.066E-04	4.775E-04	4.534E-04	8.719E-03	3.489E-03	5.511E-04	5.769E-04	5.525E-04
185	.798	.06	5.065E-04	4.777E-04	4.534E-04	8.718E-03	3.488E-03	5.515E-04	5.769E-04	5.528E-04
186	.802	.06	5.065E-04	4.778E-04	4.536E-04	8.723E-03	3.487E-03	5.512E-04	5.764E-04	5.525E-04
187	.806	.06	5.064E-04	4.780E-04	4.536E-04	8.720E-03	3.486E-03	5.514E-04	5.766E-04	5.526E-04
188	.810	.06	5.064E-04	4.781E-04	4.537E-04	8.730E-03	3.486E-03	5.521E-04	5.767E-04	5.517E-04
189	.815	.06	5.065E-04	4.783E-04	4.538E-04	8.730E-03	3.485E-03	5.521E-04	5.753E-04	5.517E-04
190	.819	.06	5.065E-04	4.785E-04	4.539E-04	8.724E-03	3.483E-03	5.516E-04	5.752E-04	5.511E-04
191	.823	.06	5.066E-04	4.787E-04	4.539E-04	8.729E-03	3.481E-03	5.515E-04	5.745E-04	5.507E-04
192	.827	.06	5.066E-04	4.789E-04	4.539E-04	8.730E-03	3.479E-03	5.519E-04	5.745E-04	5.505E-04
193	.831	.06	5.069E-04	4.791E-04	4.477E-04	8.735E-03	3.479E-03	5.525E-04	5.751E-04	5.510E-04
194	.835	.07	5.072E-04	4.793E-04	4.476E-04	8.726E-03	3.476E-03	5.522E-04	5.755E-04	5.509E-04
195	.840	.07	5.074E-04	4.795E-04	4.476E-04	8.721E-03	3.472E-03	5.516E-04	5.755E-04	5.504E-04
196	.844	.07	5.077E-04	4.797E-04	4.476E-04	8.721E-03	3.472E-03	5.512E-04	5.758E-04	5.503E-04
197	.848	.07	5.080E-04	4.799E-04	4.457E-04	8.719E-03	3.470E-03	5.515E-04	5.763E-04	5.507E-04
198	.852	.07	5.083E-04	4.801E-04	4.453E-04	8.731E-03	3.472E-03	5.520E-04	5.777E-04	5.519E-04
199	.856	.08	5.087E-04	4.803E-04	4.450E-04	8.707E-03	3.459E-03	5.509E-04	5.767E-04	5.501E-04
200	.860	.08	5.091E-04	4.805E-04	4.449E-04	8.710E-03	3.459E-03	5.505E-04	5.763E-04	5.503E-04
201	.864	.07	5.094E-04	4.806E-04	4.449E-04	8.709E-03	3.459E-03	5.502E-04	5.743E-04	5.510E-04
202	.869	.07	5.097E-04	4.808E-04	4.450E-04	8.717E-03	3.460E-03	5.511E-04	5.801E-04	5.520E-04
203	.873	.07	5.100E-04	4.809E-04	4.452E-04	8.719E-03	3.459E-03	5.515E-04	5.810E-04	5.525E-04
204	.877	.07	5.103E-04	4.810E-04	4.450E-04	8.700E-03	3.452E-03	5.493E-04	5.804E-04	5.515E-04
205	.881	.05	5.104E-04	4.811E-04	4.452E-04	8.713E-03	3.455E-03	5.496E-04	5.811E-04	5.516E-04
206	.885	.05	5.105E-04	4.811E-04	4.449E-04	8.736E-03	3.459E-03	5.515E-04	5.822E-04	5.526E-04
207	.889	.05	5.104E-04	4.811E-04	4.479E-04	8.728E-03	3.456E-03	5.511E-04	5.820E-04	5.520E-04
208	.894	.05	5.102E-04	4.811E-04	4.490E-04	8.744E-03	3.459E-03	5.515E-04	5.835E-04	5.533E-04
209	.898	.04	5.099E-04	4.811E-04	4.503E-04	8.724E-03	3.452E-03	5.499E-04	5.822E-04	5.511E-04
210	.902	.04	5.095E-04	4.810E-04	4.518E-04	8.735E-03	3.454E-03	5.505E-04	5.824E-04	5.510E-04

RUN 496 WTR 1333 STANTON NUMBERS CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

	TIME	ALPHA	G1 ST	G2 ST	G3 ST	T1 ST	T2 ST	T3 ST	T4 ST	T5 ST
211	.906	.04	5.085E-04	4.80BE-04	4.535E-04	8.759F-03	3.459E-03	5.115F-04	5.842E-04	5.532E-04
212	.910	.04	5.075E-04	4.807E-04	4.554E-04	8.750F-03	3.451E-03	5.500E-04	5.835E-04	5.524E-04
213	.914	.05	5.062E-04	4.804E-04	4.575E-04	8.744F-03	3.449E-03	5.490F-04	5.828E-04	5.519E-04
214	.918	.06	5.046E-04	4.802E-04	4.596E-04	8.744F-03	3.449E-03	5.486F-04	5.831E-04	5.525E-04
215	.923	.08	5.027E-04	4.799F-04	4.623E-04	8.746F-03	3.445E-03	5.482F-04	5.831E-04	5.535E-04
216	.927	.11	5.004E-04	4.796F-04	4.649E-04	8.762F-03	3.447E-03	5.483F-04	5.837E-04	5.557E-04
217	.931	.14	4.978E-04	4.793E-04	4.679E-04	8.733F-03	3.429E-03	5.450F-04	5.814E-04	5.558F-04
218	.935	.19	4.948E-04	4.790E-04	4.710E-04	8.741F-03	3.424E-03	5.433F-04	5.816E-04	5.575F-04
219	.939	.24	4.914E-04	4.787E-04	4.743E-04	8.746F-03	3.413E-03	5.410F-04	5.815E-04	5.593E-04
220	.943	.31	4.877E-04	4.784E-04	4.779E-04	8.747F-03	3.398E-03	5.387F-04	5.809E-04	5.622E-04
221	.948	.38	4.835E-04	4.782E-04	4.817E-04	8.765F-03	3.389E-03	5.361F-04	5.815E-04	5.671E-04
222	.952	.47	4.790E-04	4.780E-04	4.857E-04	8.750F-03	3.368E-03	5.297E-04	5.801E-04	5.696E-04
223	.956	.57	4.741E-04	4.778F-04	4.901E-04	8.767F-03	3.356E-03	5.255F-04	5.806E-04	5.742E-04
224	.960	.68	4.687E-04	4.776E-04	4.947E-04	8.776F-03	3.336F-03	5.206F-04	5.801E-04	5.790E-04
225	.964	.80	4.630E-04	4.776E-04	4.996E-04	8.799F-03	3.320F-03	5.153F-04	5.806E-04	5.851E-04
226	.968	.93	4.566E-04	4.779F-04	5.048E-04	8.807F-03	3.298E-03	5.077F-04	5.799E-04	5.911E-04
227	.973	1.07	4.503E-04	4.782E-04	5.104E-04	8.828F-03	3.278E-03	5.012F-04	5.807E-04	5.986E-04
228	.977	1.23	4.434E-04	4.786E-04	5.164E-04	8.845F-03	3.256F-03	4.948F-04	5.810E-04	6.061E-04
229	.981	1.39	4.361E-04	4.791E-04	5.227E-04	8.869F-03	3.241E-03	4.892F-04	5.820E-04	6.156F-04
230	.985	1.56	4.284E-04	4.797E-04	5.295E-04	8.896F-03	3.209F-03	4.803F-04	5.805E-04	6.228E-04
231	.989	1.74	4.204E-04	4.805E-04	5.368E-04	8.931F-03	3.192E-03	4.725F-04	5.816E-04	6.322E-04
232	.993	1.93	4.120E-04	4.814E-04	5.446E-04	8.966F-03	3.171E-03	4.645F-04	5.824E-04	6.422E-04
233	.997	2.13	4.033E-04	4.825E-04	5.529E-04	9.007F-03	3.147E-03	4.573F-04	5.826E-04	6.525E-04
234	1.002	2.34	3.943E-04	4.836E-04	5.619E-04	9.039F-03	3.119F-03	4.500F-04	5.831E-04	6.630E-04
235	1.006	2.55	3.850E-04	4.849E-04	5.714E-04	9.069F-03	3.092F-03	4.418F-04	5.835E-04	6.747F-04
236	1.010	2.77	3.753E-04	4.863E-04	5.817E-04	9.102F-03	3.069E-03	4.356F-04	5.862E-04	6.887E-04
237	1.014	3.00	3.655E-04	4.878E-04	5.927E-04	9.125F-03	3.041E-03	4.291F-04	5.894E-04	7.024E-04
238	1.018	3.23	3.554E-04	4.894E-04	6.046E-04	9.134F-03	3.004E-03	4.206F-04	5.899E-04	7.142E-04
239	1.022	3.47	3.450E-04	4.911E-04	6.173E-04	9.157F-03	2.970E-03	4.123F-04	5.898E-04	7.277E-04
240	1.027	3.72	3.345E-04	4.928E-04	6.309E-04	9.195F-03	2.940E-03	4.047F-04	5.913E-04	7.438E-04
241	1.031	3.97	3.239E-04	4.946E-04	6.456E-04	9.231F-03	2.902E-03	3.964F-04	5.933E-04	7.595E-04
242	1.035	4.23	3.132E-04	4.965E-04	6.613E-04	9.279F-03	2.868E-03	3.881F-04	5.954E-04	7.761E-04
243	1.039	4.50	3.023E-04	4.984E-04	6.781E-04	9.289F-03	2.818F-03	3.783F-04	5.941E-04	7.915E-04
244	1.043	4.77	2.915E-04	5.003E-04	6.962E-04	9.334F-03	2.777F-03	3.699F-04	5.951E-04	8.097E-04
245	1.047	5.05	2.807E-04	5.022E-04	7.155E-04	9.366F-03	2.730E-03	3.597E-04	5.964E-04	8.280E-04
246	1.051	5.34	2.699E-04	5.041E-04	7.362E-04	9.414F-03	2.688E-03	3.501E-04	5.978E-04	8.486E-04
247	1.056	5.63	2.592E-04	5.060E-04	7.583E-04	9.447F-03	2.636E-03	3.399E-04	5.983E-04	8.689E-04
248	1.060	5.93	2.487E-04	5.079E-04	7.819E-04	9.498F-03	2.583E-03	3.298E-04	5.998E-04	8.899E-04
249	1.064	6.23	2.384E-04	5.097E-04	8.070E-04	9.561F-03	2.532E-03	3.182F-04	6.006E-04	9.119F-04
250	1.068	6.53	2.283E-04	5.116E-04	8.337E-04	9.661F-03	2.493E-03	3.087F-04	6.040E-04	9.380E-04
251	1.072	6.84	2.185E-04	5.134E-04	8.621E-04	9.716F-03	2.439E-03	2.972E-04	6.055E-04	9.614E-04
252	1.076	7.15	2.090E-04	5.152E-04	8.921E-04	9.794F-03	2.389E-03	2.865E-04	6.074E-04	9.863E-04
253	1.081	7.47	1.999E-04	5.169E-04	9.238E-04	9.869F-03	2.339E-03	2.753F-04	6.073E-04	1.013E-03
254	1.085	7.79	1.912E-04	5.186E-04	9.573E-04	9.954F-03	2.295E-03	2.667E-04	6.091E-04	1.043E-03
255	1.089	8.11	1.829E-04	5.202E-04	9.925E-04	1.005F-02	2.255F-03	2.591E-04	6.139E-04	1.074E-03
256	1.093	8.43	1.751E-04	5.218E-04	1.029E-03	1.008F-02	2.200E-03	2.493F-04	6.153E-04	1.103E-03
257	1.097	8.75	1.677E-04	5.234E-04	1.068E-03	1.014F-02	2.161E-03	2.420F-04	6.176E-04	1.137E-03
258	1.101	9.07	1.609E-04	5.249E-04	1.109E-03	1.020F-02	2.119E-03	2.340F-04	6.191E-04	1.171E-03
259	1.106	9.40	1.547E-04	5.263E-04	1.151E-03	1.026F-02	2.081E-03	2.266E-04	6.215E-04	1.207E-03
260	1.110	9.72	1.490E-04	5.276E-04	1.194E-03	1.030F-02	2.039E-03	2.184E-04	6.219E-04	1.243E-03
261	1.114	10.04	1.438E-04	5.289E-04	1.239E-03	1.036F-02	2.007E-03	2.116E-04	6.224E-04	1.283E-03
262	1.118	10.36	1.393E-04	5.301E-04	1.285E-03	1.040F-02	1.970E-03	2.052F-04	6.228E-04	1.324E-03
263	1.122	10.68	1.353E-04	5.312E-04	1.333E-03	1.046F-02	1.939E-03	2.001F-04	6.237E-04	1.368E-03
264	1.126	10.99	1.319E-04	5.321E-04	1.382E-03	1.047E-02	1.891F-03	1.926E-04	6.209E-04	1.410F-03
265	1.130	11.31	1.291E-04	5.330E-04	1.431E-03	1.054F-02	1.865E-03	1.885F-04	6.226E-04	1.458E-03
266	1.135	11.62	1.268E-04	5.337E-04	1.481E-03	1.054F-02	1.818E-03	1.823F-04	6.206E-04	1.500E-03

RUN 496 WTR 1333 STANTON NUMBERS CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

	TIME	ALPHA	G1 ST	G2 ST	G3 ST	T1 ST	T2 ST	T3 ST	T4 ST	T5 ST
267	1.139	11.93	1.252E-04	5.343E-04	1.532E-03	1.056E-02	1.783E-03	1.780E-04	6.199E-04	1.546E-03
268	1.143	12.24	1.241E-04	5.347E-04	1.563E-03	1.062E-02	1.753E-03	1.739E-04	6.196E-04	1.593E-03
269	1.147	12.55	1.235E-04	5.350E-04	1.634E-03	1.065E-02	1.711E-03	1.680E-04	6.185E-04	1.637E-03
270	1.151	12.85	1.234E-04	5.351E-04	1.685E-03	1.069E-02	1.675E-03	1.637E-04	6.187E-04	1.681E-03
271	1.155	13.16	1.238E-04	5.351E-04	1.735E-03	1.074E-02	1.640E-03	1.599E-04	6.184E-04	1.727E-03
272	1.160	13.46	1.247E-04	5.350E-04	1.785E-03	1.079E-02	1.608E-03	1.563E-04	6.183E-04	1.773E-03
273	1.164	13.76	1.260E-04	5.347E-04	1.834E-03	1.083E-02	1.575E-03	1.531E-04	6.190E-04	1.820E-03
274	1.168	14.05	1.277E-04	5.343E-04	1.882E-03	1.085E-02	1.533E-03	1.501E-04	6.182E-04	1.863E-03
275	1.172	14.34	1.297E-04	5.339E-04	1.929E-03	1.090E-02	1.505E-03	1.483E-04	6.195E-04	1.909E-03
276	1.176	14.63	1.321E-04	5.333E-04	1.974E-03	1.095E-02	1.481E-03	1.472E-04	6.210E-04	1.956E-03
277	1.180	14.92	1.348E-04	5.326E-04	2.017E-03	1.094E-02	1.441E-03	1.443E-04	6.191E-04	1.999E-03
278	1.184	15.20	1.377E-04	5.320E-04	2.059E-03	1.099E-02	1.415E-03	1.436E-04	6.202E-04	2.045E-03
279	1.189	15.47	1.408E-04	5.313E-04	2.099E-03	1.103E-02	1.389E-03	1.423E-04	6.207E-04	2.091E-03
280	1.193	15.74	1.441E-04	5.306E-04	2.138E-03	1.105E-02	1.364E-03	1.408E-04	6.205E-04	2.136E-03
281	1.197	16.00	1.476E-04	5.299E-04	2.174E-03	1.108E-02	1.340E-03	1.402E-04	6.195E-04	2.181E-03
282	1.201	16.24	1.511E-04	5.292E-04	2.208E-03	1.108E-02	1.319E-03	1.401E-04	6.191E-04	2.226E-03
283	1.205	16.48	1.547E-04	5.286E-04	2.240E-03	1.111E-02	1.301E-03	1.395E-04	6.190E-04	2.273E-03
284	1.209	16.70	1.584E-04	5.281E-04	2.270E-03	1.113E-02	1.280E-03	1.391E-04	6.187E-04	2.318E-03
285	1.214	16.91	1.620E-04	5.276E-04	2.297E-03	1.114E-02	1.259E-03	1.392E-04	6.182E-04	2.361E-03
286	1.218	17.11	1.656E-04	5.272E-04	2.322E-03	1.116E-02	1.244E-03	1.388E-04	6.179E-04	2.401E-03
287	1.222	17.30	1.691E-04	5.268E-04	2.345E-03	1.118E-02	1.231E-03	1.387E-04	6.178E-04	2.441E-03
288	1.226	17.46	1.725E-04	5.265E-04	2.365E-03	1.119E-02	1.210E-03	1.395E-04	6.176E-04	2.477E-03
289	1.230	17.61	1.758E-04	5.262E-04	2.382E-03	1.120E-02	1.204E-03	1.395E-04	6.180E-04	2.510E-03
290	1.234	17.74	1.789E-04	5.259E-04	2.397E-03	1.121E-02	1.196E-03	1.388E-04	6.171E-04	2.539E-03
291	1.239	17.86	1.818E-04	5.256E-04	2.409E-03	1.122E-02	1.188E-03	1.390E-04	6.163E-04	2.565E-03
292	1.243	17.96	1.844E-04	5.253E-04	2.419E-03	1.123E-02	1.177E-03	1.397E-04	6.166E-04	2.585E-03
293	1.247	18.04	1.869E-04	5.250E-04	2.425E-03	1.122E-02	1.168E-03	1.397E-04	6.173E-04	2.602E-03
294	1.251	18.11	1.890E-04	5.247E-04	2.430E-03	1.124E-02	1.171E-03	1.400E-04	6.188E-04	2.618E-03
295	1.255	18.16	1.909E-04	5.243E-04	2.431E-03	1.120E-02	1.158E-03	1.389E-04	6.164E-04	2.624E-03
296	1.259	18.19	1.925E-04	5.239E-04	2.430E-03	1.120E-02	1.157E-03	1.409E-04	6.175E-04	2.631E-03
297	1.263	18.21	1.938E-04	5.233E-04	2.427E-03	1.116E-02	1.153E-03	1.419E-04	6.179E-04	2.631E-03

RUN 497 WTR 1333 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	PO	TO	TO1	MACH	PINF	TINF	UINF	RHOINF	REINF
.540	10.16	19287.4	2830.5	3164.5	14.25	.0453	87.1	6631.2	1.354E-03	3.942E+06
.544	10.15	19305.3	2836.9	3172.5	14.24	.0454	87.4	6638.4	1.355E-03	3.936E+06
.549	10.14	19321.4	2843.1	3180.3	14.23	.0457	87.7	6645.4	1.357E-03	3.931E+06
.553	10.12	19335.3	2849.1	3187.8	14.22	.0459	88.0	6652.1	1.358E-03	3.926E+06
.557	10.11	19346.3	2854.8	3195.0	14.21	.0461	88.3	6658.6	1.360E-03	3.922E+06
.561	10.10	19354.3	2860.4	3201.9	14.20	.0463	88.7	6664.7	1.362E-03	3.918E+06
.565	10.09	19354.3	2865.9	3208.7	14.18	.0466	89.0	6670.8	1.364E-03	3.914E+06
.569	10.08	19361.5	2871.4	3215.4	14.17	.0468	89.3	6676.7	1.367E-03	3.911E+06
.574	10.07	19361.4	2876.7	3222.0	14.15	.0471	89.6	6682.5	1.370E-03	3.909E+06
.578	10.06	19359.6	2882.2	3228.6	14.14	.0474	90.0	6688.3	1.373E-03	3.906E+06
.582	10.05	19356.8	2887.7	3235.3	14.12	.0477	90.4	6694.2	1.377E-03	3.904E+06
.586	10.04	19353.9	2893.4	3242.2	14.11	.0481	90.8	6700.3	1.381E-03	3.902E+06
.590	10.03	19351.5	2899.2	3249.4	14.09	.0484	91.2	6706.5	1.385E-03	3.901E+06
.594	10.02	19350.6	2905.3	3256.8	14.07	.0488	91.6	6713.0	1.389E-03	3.900E+06
.598	10.01	19351.7	2911.5	3264.4	14.05	.0492	92.0	6719.8	1.394E-03	3.899E+06
.603	10.00	19355.2	2917.9	3272.3	14.03	.0496	92.4	6726.5	1.399E-03	3.898E+06
.607	9.99	19361.5	2924.5	3280.4	14.01	.0500	92.9	6733.6	1.403E-03	3.897E+06
.611	9.98	19370.6	2731.1	3288.7	13.99	.0504	93.3	6740.9	1.408E-03	3.896E+06
.615	9.97	19382.4	2737.8	3297.1	13.98	.0508	93.8	6748.2	1.413E-03	3.895E+06
.619	9.96	19396.5	2744.4	3305.4	13.96	.0512	94.2	6755.5	1.417E-03	3.894E+06
.623	9.95	19412.4	2751.0	3313.7	13.95	.0515	94.6	6762.7	1.421E-03	3.892E+06
.628	9.94	19429.4	2757.3	3321.7	13.93	.0519	95.0	6769.7	1.424E-03	3.891E+06
.632	9.93	19446.8	2763.5	3329.5	13.92	.0522	95.3	6776.5	1.427E-03	3.889E+06
.636	9.93	19463.6	2769.3	3336.8	13.91	.0525	95.7	6783.0	1.430E-03	3.886E+06
.640	9.92	19479.1	2774.7	3343.7	13.90	.0527	96.0	6789.0	1.432E-03	3.883E+06
.644	9.91	19492.5	2779.7	3350.1	13.89	.0529	96.2	6794.6	1.434E-03	3.880E+06
.648	9.90	19503.1	2784.3	3355.8	13.88	.0531	96.5	6799.6	1.435E-03	3.876E+06
.652	9.90	19510.4	2788.4	3361.0	13.88	.0533	96.7	6804.1	1.436E-03	3.872E+06
.657	9.89	19514.0	2792.0	3365.5	13.87	.0534	96.9	6808.1	1.436E-03	3.868E+06
.661	9.88	19513.8	2795.2	3369.5	13.87	.0535	97.1	6811.6	1.436E-03	3.863E+06
.665	9.88	19509.7	2798.0	3372.9	13.86	.0535	97.2	6814.5	1.436E-03	3.859E+06
.669	9.87	19502.2	2800.5	3375.9	13.86	.0536	97.3	6817.1	1.435E-03	3.854E+06
.673	9.87	19491.7	2802.7	3378.4	13.85	.0536	97.4	6819.3	1.434E-03	3.849E+06
.677	9.86	19478.9	2804.6	3380.7	13.85	.0536	97.5	6821.3	1.434E-03	3.844E+06
.682	9.86	19464.6	2806.4	3382.7	13.85	.0537	97.6	6823.0	1.433E-03	3.839E+06
.686	9.86	19449.9	2808.1	3384.6	13.84	.0537	97.7	6824.7	1.432E-03	3.834E+06
.690	9.85	19435.7	2809.7	3386.4	13.84	.0537	97.8	6826.3	1.432E-03	3.830E+06
.694	9.85	19423.2	2811.4	3388.4	13.84	.0538	97.9	6828.0	1.431E-03	3.825E+06
.698	9.85	19413.4	2813.2	3390.4	13.83	.0538	98.0	6829.7	1.431E-03	3.821E+06
.702	9.85	19407.3	2815.1	3392.7	13.83	.0538	98.1	6831.7	1.430E-03	3.818E+06
.707	9.85	19405.7	2817.1	3395.2	13.83	.0539	98.3	6833.9	1.430E-03	3.815E+06
.711	9.84	19409.3	2819.3	3398.0	13.82	.0540	98.4	6836.3	1.430E-03	3.812E+06
.715	9.84	19418.6	2821.7	3401.1	13.82	.0540	98.5	6839.0	1.430E-03	3.810E+06
.719	9.84	19433.7	2824.3	3404.4	13.82	.0541	98.6	6842.0	1.431E-03	3.808E+06
.723	9.84	19454.6	2827.0	3408.0	13.82	.0542	98.7	6845.1	1.431E-03	3.806E+06
.727	9.84	19481.0	2829.8	3411.9	13.82	.0542	98.8	6848.5	1.431E-03	3.805E+06
.731	9.84	19512.3	2832.7	3415.9	13.82	.0543	98.9	6852.1	1.431E-03	3.804E+06
.736	9.84	19547.6	2835.7	3420.0	13.82	.0544	99.0	6855.8	1.432E-03	3.804E+06
.740	9.84	19585.9	2838.7	3424.3	13.82	.0544	99.1	6859.5	1.432E-03	3.803E+06
.744	9.84	19626.1	2841.6	3428.5	13.82	.0544	99.1	6863.3	1.432E-03	3.802E+06
.748	9.84	19666.7	2844.6	3432.6	13.83	.0545	99.2	6867.0	1.432E-03	3.802E+06
.752	9.85	19706.5	2847.4	3436.7	13.83	.0545	99.3	6870.6	1.432E-03	3.801E+06
.756	9.85	19744.1	2850.1	3440.6	13.83	.0545	99.3	6874.0	1.431E-03	3.799E+06
.761	9.85	19778.2	2852.7	3444.2	13.84	.0545	99.4	6877.3	1.431E-03	3.798E+06
.765	9.85	19807.9	2855.2	3447.6	13.84	.0545	99.4	6880.3	1.430E-03	3.796E+06
.769	9.85	19832.2	2857.4	3450.8	13.84	.0545	99.5	6883.1	1.429E-03	3.793E+06
AVERAGE		19460.3	2766.9	3334.1	13.95	.0516	95.1	6780.5	1.413E-03	3.861E+06

RUN 497 WTR 1333 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	G1 QDOT	G2 QDOT	G3 QDOT	T1 Tw	T1 QDOT	T2 Tw	T2 QDOT	T3 Tw	T3 QDOT	T4 Tw	T4 QDOT	T5 Tw	T5 QDOT
.540	10.16	1.360	3.635	7.292	157.96	68.991	93.26	16.529	73.94	1.505	77.05	4.103	82.23	8.517
.544	10.15	1.357	3.626	7.249	158.95	69.085	93.40	16.531	73.94	1.505	77.09	4.105	82.33	8.499
.549	10.14	1.354	3.607	7.211	159.94	69.336	93.61	16.537	73.97	1.508	77.15	4.108	82.44	8.479
.553	10.12	1.352	3.597	7.179	160.94	69.704	93.82	16.547	73.99	1.514	77.17	4.119	82.55	8.490
.557	10.11	1.351	3.590	7.152	161.50	70.057	94.00	16.556	74.02	1.521	77.23	4.138	82.69	8.505
.561	10.10	1.351	3.585	7.131	162.35	70.327	94.18	16.571	74.01	1.527	77.27	4.154	82.76	8.514
.565	10.09	1.351	3.584	7.116	163.34	70.452	94.42	16.574	74.03	1.528	77.33	4.159	82.86	8.499
.569	10.08	1.353	3.586	7.108	164.47	70.809	94.64	16.603	74.06	1.534	77.40	4.176	82.97	8.508
.574	10.07	1.356	3.590	7.106	165.46	71.307	94.85	16.640	74.09	1.544	77.47	4.202	83.11	8.528
.578	10.06	1.359	3.598	7.111	166.45	71.627	95.10	16.641	74.11	1.550	77.51	4.218	83.18	8.530
.582	10.05	1.363	3.609	7.123	167.59	72.177	95.27	16.716	74.13	1.559	77.57	4.245	83.29	8.562
.586	10.04	1.368	3.623	7.140	168.72	72.486	95.45	16.739	74.17	1.565	77.65	4.267	83.43	8.564
.590	10.03	1.374	3.639	7.164	169.57	73.070	95.63	16.801	74.20	1.573	77.73	4.303	83.54	8.584
.594	10.02	1.380	3.658	7.194	170.70	73.697	95.84	16.851	74.20	1.581	77.77	4.336	83.68	8.609
.598	10.01	1.387	3.679	7.229	171.69	74.351	96.09	16.919	74.21	1.592	77.84	4.373	83.75	8.645
.603	10.00	1.394	3.702	7.269	172.82	75.008	96.30	16.996	74.25	1.597	77.90	4.407	83.86	8.670
.607	9.99	1.402	3.727	7.314	173.96	75.545	96.51	17.036	74.28	1.600	77.97	4.430	83.96	8.682
.611	9.98	1.409	3.754	7.363	175.09	76.234	96.69	17.107	74.28	1.605	78.02	4.461	84.07	8.718
.615	9.97	1.417	3.782	7.416	176.22	76.968	96.94	17.203	74.30	1.611	78.07	4.501	84.17	8.775
.619	9.96	1.425	3.810	7.472	177.35	77.505	97.16	17.275	74.33	1.614	78.15	4.527	84.28	8.822
.623	9.95	1.433	3.840	7.530	178.63	78.153	97.36	17.390	74.35	1.622	78.22	4.556	84.42	8.894
.628	9.94	1.441	3.869	7.590	179.62	78.601	97.57	17.464	74.38	1.624	78.25	4.575	84.53	8.940
.632	9.93	1.449	3.899	7.652	181.17	79.190	97.86	17.567	74.38	1.631	78.36	4.603	84.63	9.007
.636	9.93	1.457	3.929	7.714	182.45	79.803	98.07	17.672	74.41	1.637	78.45	4.631	84.74	9.101
.640	9.92	1.464	3.958	7.777	183.72	80.127	98.28	17.730	74.44	1.643	78.50	4.644	84.88	9.173
.644	9.91	1.471	3.986	7.840	184.85	80.546	98.53	17.830	74.45	1.653	78.56	4.663	84.99	9.256
.648	9.90	1.477	4.014	7.901	186.13	80.733	98.78	17.878	74.46	1.653	78.63	4.674	85.16	9.316
.652	9.90	1.483	4.040	7.962	187.12	81.041	99.02	17.943	74.51	1.655	78.70	4.688	85.34	9.399
.657	9.89	1.489	4.065	8.021	188.11	81.326	99.27	18.022	74.53	1.663	78.76	4.699	85.52	9.480
.661	9.88	1.494	4.089	8.078	189.10	81.368	99.48	18.056	74.53	1.670	78.82	4.701	85.62	9.526
.665	9.88	1.498	4.111	8.132	190.23	81.385	99.73	18.085	74.55	1.673	78.84	4.700	85.77	9.571
.669	9.87	1.502	4.131	8.184	191.22	81.390	99.94	18.116	74.57	1.676	78.91	4.698	85.91	9.619
.674	9.87	1.505	4.150	8.233	192.21	81.381	100.12	18.139	74.62	1.678	78.97	4.700	86.05	9.657
.677	9.86	1.508	4.167	8.278	193.06	81.493	100.33	18.176	74.62	1.684	79.03	4.710	86.16	9.707
.682	9.86	1.510	4.182	8.320	194.05	81.312	100.55	18.154	74.63	1.684	79.08	4.703	86.30	9.713
.686	9.86	1.511	4.195	8.359	195.04	81.308	100.72	18.176	74.64	1.686	79.14	4.711	86.40	9.729
.690	9.85	1.512	4.206	8.394	195.89	81.297	100.93	18.178	74.69	1.684	79.20	4.720	86.54	9.736
.694	9.85	1.513	4.215	8.425	196.74	81.317	101.11	18.175	74.70	1.684	79.24	4.725	86.62	9.745
.698	9.85	1.513	4.222	8.453	197.59	81.446	101.32	18.202	74.70	1.689	79.28	4.737	86.72	9.767
.702	9.85	1.513	4.228	8.477	198.44	81.267	101.50	18.179	74.74	1.692	79.34	4.739	86.83	9.767
.707	9.85	1.513	4.232	8.497	199.43	81.436	101.68	18.233	74.76	1.695	79.41	4.762	86.97	9.794
.711	9.84	1.512	4.234	8.514	200.42	81.369	101.85	18.210	74.76	1.686	79.45	4.764	87.08	9.788
.715	9.84	1.511	4.235	8.528	201.27	81.610	102.10	18.243	74.77	1.691	79.51	4.772	87.18	9.810
.719	9.84	1.509	4.235	8.539	202.12	81.745	102.28	18.267	74.81	1.695	79.59	4.778	87.32	9.828
.723	9.84	1.508	4.233	8.548	202.83	81.761	102.46	18.267	74.82	1.696	79.64	4.778	87.43	9.837
.727	9.84	1.506	4.231	8.553	203.82	81.967	102.63	18.297	74.84	1.698	79.68	4.787	87.54	9.870
.731	9.84	1.505	4.227	8.557	204.67	82.104	102.85	18.290	74.84	1.699	79.74	4.790	87.64	9.898
.736	9.84	1.503	4.223	8.556	205.52	82.224	103.06	18.281	74.88	1.697	79.79	4.792	87.78	9.916
.740	9.84	1.502	4.217	8.556	206.51	82.415	103.23	18.310	74.89	1.701	79.86	4.796	87.89	9.946
.744	9.84	1.500	4.212	8.556	207.50	82.401	103.41	18.297	74.90	1.704	79.89	4.791	88.00	9.957
.748	9.84	1.499	4.206	8.553	208.49	82.495	103.59	18.280	74.92	1.703	79.92	4.790	88.07	9.974
.752	9.85	1.498	4.199	8.549	209.34	82.779	103.77	18.297	74.93	1.704	79.98	4.790	88.21	10.005
.756	9.85	1.497	4.193	8.544	210.19	82.718	103.94	18.248	74.98	1.702	80.02	4.770	88.31	10.002
.761	9.85	1.496	4.186	8.539	211.04	82.985	104.08	18.281	74.98	1.708	80.08	4.779	88.46	10.038
.765	9.85	1.495	4.180	8.534	212.03	82.879	104.26	18.235	74.98	1.703	80.12	4.772	88.56	10.021
.769	9.85	1.495	4.173	8.529	212.74	83.012	104.44	18.230	75.01	1.705	80.17	4.774	88.67	10.050

RUN 497 WTR 1333 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	PO	TO	TOI	MACH	PINF	TINF	UINF	RHOINF	REINF
.773	9.85	19850.6	2859.5	3453.6	13.84	.0545	99.5	6885.7	1.426E-03	3.791E+06
.777	9.86	19862.6	2861.4	3456.1	13.84	.0545	99.6	6887.9	1.427E-03	3.797E+06
.781	9.86	19868.3	2862.2	3458.4	13.85	.0545	99.6	6889.9	1.426E-03	3.794E+06
.785	9.86	19868.0	2864.8	3460.4	13.85	.0545	99.7	6891.6	1.425E-03	3.790E+06
.790	9.86	19862.1	2866.2	3462.1	13.84	.0545	99.7	6893.2	1.424E-03	3.785E+06
.794	9.86	19851.6	2867.5	3463.6	13.84	.0544	99.8	6894.5	1.423E-03	3.781E+06
.798	9.87	19837.3	2868.7	3464.9	13.84	.0545	99.8	6895.6	1.422E-03	3.777E+06
.802	9.87	19820.3	2869.8	3466.1	13.84	.0545	99.9	6896.6	1.421E-03	3.773E+06
.806	9.87	19802.0	2870.9	3467.1	13.83	.0545	100.0	6897.4	1.421E-03	3.769E+06
.810	9.87	19783.4	2871.9	3468.1	13.83	.0545	100.1	6898.2	1.420E-03	3.766E+06
.815	9.87	19765.6	2872.8	3469.1	13.83	.0546	100.2	6899.0	1.420E-03	3.763E+06
.819	9.88	19749.7	2873.7	3470.0	13.82	.0546	100.2	6899.8	1.420E-03	3.761E+06
.823	9.88	19736.5	2874.7	3471.0	13.82	.0547	100.3	6900.6	1.421E-03	3.759E+06
.827	9.88	19726.5	2875.7	3472.1	13.81	.0548	100.4	6901.5	1.421E-03	3.758E+06
.831	9.88	19720.2	2876.7	3473.3	13.81	.0548	100.5	6902.6	1.422E-03	3.757E+06
.835	9.89	19717.7	2877.8	3474.7	13.80	.0549	100.6	6903.7	1.423E-03	3.757E+06
.840	9.89	19719.0	2879.0	3476.3	13.80	.0550	100.7	6905.0	1.424E-03	3.758E+06
.844	9.89	19723.8	2880.4	3476.0	13.80	.0551	100.8	6906.5	1.426E-03	3.760E+06
.848	9.89	19731.6	2881.9	3480.0	13.79	.0552	100.9	6908.2	1.427E-03	3.764E+06
.852	9.90	19741.9	2883.6	3482.2	13.79	.0553	101.0	6910.1	1.428E-03	3.769E+06
.856	9.90	19754.1	2885.4	3484.6	13.79	.0554	101.1	6912.2	1.429E-03	3.774E+06
.860	9.90	19767.5	2887.4	3487.3	13.79	.0555	101.2	6914.5	1.430E-03	3.780E+06
.864	9.91	19781.3	2889.6	3490.2	13.78	.0556	101.3	6917.0	1.430E-03	3.786E+06
.869	9.91	19795.1	2891.9	3493.4	13.78	.0556	101.4	6919.8	1.430E-03	3.792E+06
.873	9.91	19808.3	2894.4	3496.8	13.78	.0557	101.5	6922.8	1.430E-03	3.798E+06
.877	9.92	19820.4	2897.0	3500.1	13.78	.0557	101.6	6925.8	1.430E-03	3.803E+06
.881	9.92	19831.2	2899.8	3503.6	13.78	.0558	101.7	6928.7	1.430E-03	3.807E+06
.885	9.92	19840.5	2902.5	3507.2	13.78	.0558	101.8	6931.5	1.429E-03	3.811E+06
.889	9.93	19848.2	2905.3	3510.8	13.78	.0558	101.9	6935.0	1.428E-03	3.814E+06
.894	9.93	19854.4	2908.1	3514.4	13.78	.0558	102.0	6938.0	1.427E-03	3.816E+06
.898	9.93	19859.4	2910.8	3517.8	13.77	.0559	102.1	6941.0	1.426E-03	3.817E+06
.902	9.94	19863.3	2913.3	3521.1	13.77	.0559	102.2	6943.8	1.425E-03	3.818E+06
.906	9.94	19866.4	2915.7	3524.1	13.77	.0559	102.3	6946.5	1.423E-03	3.819E+06
.910	9.94	19869.0	2917.9	3526.9	13.77	.0559	102.4	6948.9	1.422E-03	3.820E+06
.914	9.95	19871.6	2919.8	3529.3	13.77	.0559	102.5	6951.0	1.421E-03	3.821E+06
.918	9.95	19874.2	2921.5	3531.4	13.77	.0559	102.5	6952.9	1.421E-03	3.822E+06
.923	9.95	19877.3	2922.9	3533.2	13.77	.0559	102.6	6954.4	1.420E-03	3.823E+06
.927	9.96	19880.9	2924.0	3534.6	13.77	.0559	102.6	6955.6	1.420E-03	3.824E+06
.931	9.96	19885.1	2924.8	3535.7	13.77	.0559	102.6	6956.6	1.419E-03	3.824E+06
.935	9.96	19890.0	2925.3	3536.4	13.77	.0559	102.7	6957.2	1.419E-03	3.824E+06
.939	9.96	19895.4	2925.6	3536.9	13.77	.0559	102.7	6957.6	1.420E-03	3.824E+06
.943	9.97	19901.3	2925.7	3537.0	13.77	.0559	102.7	6957.7	1.420E-03	3.823E+06
.948	9.97	19907.5	2925.5	3537.0	13.77	.0559	102.7	6957.7	1.420E-03	3.822E+06
.952	9.97	19913.6	2925.3	3536.7	13.77	.0560	102.7	6957.5	1.421E-03	3.820E+06
.956	9.98	19919.4	2924.9	3536.4	13.77	.0560	102.6	6957.2	1.422E-03	3.818E+06
.960	9.98	19924.6	2924.5	3535.9	13.77	.0560	102.6	6956.8	1.422E-03	3.816E+06
.964	9.98	19929.0	2924.1	3535.5	13.77	.0560	102.6	6956.4	1.423E-03	3.814E+06
.968	9.98	19932.2	2923.8	3535.1	13.77	.0560	102.6	6956.1	1.423E-03	3.813E+06
.973	9.99	19934.0	2923.5	3534.8	13.77	.0560	102.6	6955.8	1.424E-03	3.812E+06
.977	9.99	19934.2	2923.4	3534.6	13.77	.0560	102.6	6955.6	1.424E-03	3.811E+06
.981	9.99	19932.8	2923.4	3534.6	13.77	.0560	102.6	6955.6	1.424E-03	3.811E+06
.985	9.99	19929.8	2923.6	3534.8	13.77	.0561	102.6	6955.8	1.424E-03	3.811E+06
.989	10.00	19925.1	2924.0	3535.3	13.77	.0561	102.6	6956.2	1.424E-03	3.812E+06
.993	10.00	19919.0	2924.6	3536.0	13.77	.0561	102.7	6956.8	1.423E-03	3.812E+06
.997	10.00	19911.5	2925.5	3536.9	13.77	.0561	102.7	6957.6	1.423E-03	3.809E+06
1.002	10.00	19903.0	2926.5	3538.1	13.77	.0561	102.8	6958.6	1.422E-03	3.806E+06
AVERAGE		19844.4	2899.9	3504.0	13.79	.0555	101.5	6929.1	1.424E-03	3.729E+06

RUN 497 WTR 1333 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	G1 QDOT	G2 QDOT	G3 QDOT	T1 Tw	T1 QDOT	T2 Tw	T2 QDOT	T3 Tw	T3 QDOT	T4 Tw	T4 QDOT	T5 Tw	T5 QDOT
.773	9.85	1.494	4.167	8.524	213.44	83.099	104.58	18.216	75.04	1.708	80.22	4.773	88.77	10.078
.777	9.86	1.495	4.162	8.520	214.29	83.127	104.76	18.212	75.03	1.710	80.24	4.776	88.88	10.082
.781	9.86	1.495	4.156	8.516	215.28	83.204	104.90	18.237	75.04	1.711	80.30	4.790	88.95	10.089
.785	9.86	1.495	4.151	8.514	215.99	82.456	105.07	18.189	75.07	1.710	80.33	4.789	89.09	10.069
.790	9.86	1.496	4.147	8.512	216.84	83.015	105.22	18.199	75.10	1.711	80.39	4.803	89.20	10.078
.794	9.86	1.497	4.143	8.512	217.69	83.068	105.39	18.208	75.10	1.709	80.43	4.816	89.27	10.076
.798	9.87	1.499	4.139	8.513	218.40	83.065	105.57	18.234	75.11	1.714	80.46	4.827	89.34	10.082
.802	9.87	1.500	4.137	8.515	219.25	83.052	105.71	18.245	75.14	1.719	80.51	4.835	89.55	10.085
.806	9.87	1.502	4.135	8.518	220.09	82.949	105.89	18.212	75.17	1.717	80.60	4.834	89.62	10.066
.810	9.87	1.504	4.133	8.523	220.80	83.040	106.07	18.230	75.17	1.718	80.67	4.841	89.69	10.075
.815	9.87	1.506	4.132	8.529	221.51	83.156	106.21	18.261	75.18	1.723	80.68	4.848	89.73	10.106
.819	9.88	1.508	4.132	8.536	222.08	83.015	106.38	18.240	75.20	1.723	80.74	4.848	89.84	10.097
.823	9.88	1.510	4.132	8.545	222.93	83.109	106.53	18.273	75.22	1.728	80.80	4.860	89.91	10.105
.827	9.88	1.512	4.133	8.555	223.77	82.949	106.70	18.237	75.22	1.726	80.84	4.849	90.05	10.101
.831	9.88	1.515	4.134	8.566	224.34	83.062	106.88	18.240	75.25	1.727	80.88	4.848	90.15	10.134
.835	9.89	1.517	4.136	8.578	225.33	83.256	107.02	18.272	75.27	1.733	80.92	4.851	90.26	10.154
.840	9.89	1.520	4.138	8.591	226.04	83.115	107.16	18.244	75.30	1.734	80.97	4.842	90.37	10.141
.844	9.89	1.522	4.141	8.605	226.75	83.079	107.30	18.226	75.29	1.735	80.98	4.821	90.44	10.151
.848	9.89	1.524	4.144	8.619	227.60	83.200	107.44	18.229	75.30	1.735	81.02	4.822	90.54	10.183
.852	9.90	1.526	4.148	8.634	228.16	83.291	107.62	18.230	75.33	1.736	81.08	4.812	90.65	10.211
.856	9.90	1.529	4.151	8.650	229.01	83.461	107.80	18.264	75.36	1.742	81.12	4.811	90.75	10.249
.860	9.90	1.531	4.156	8.665	229.72	83.300	107.90	18.218	75.35	1.739	81.15	4.794	90.86	10.245
.864	9.91	1.532	4.160	8.681	230.57	83.426	108.05	18.228	75.37	1.739	81.14	4.794	90.93	10.264
.869	9.91	1.534	4.164	8.697	231.28	83.486	108.22	18.234	75.40	1.740	81.22	4.793	91.04	10.275
.873	9.91	1.536	4.169	8.713	231.84	83.524	108.33	18.236	75.42	1.742	81.25	4.791	91.14	10.286
.877	9.92	1.537	4.174	8.729	232.69	83.492	108.51	18.272	75.42	1.747	81.31	4.802	91.21	10.309
.881	9.92	1.538	4.179	8.744	233.40	83.479	108.65	18.242	75.42	1.744	81.35	4.793	91.36	10.284
.885	9.92	1.540	4.184	8.759	234.11	83.624	108.82	18.276	75.46	1.744	81.38	4.801	91.43	10.294
.889	9.93	1.540	4.189	8.774	234.81	83.781	108.97	18.286	75.47	1.743	81.45	4.811	91.53	10.310
.894	9.93	1.541	4.194	8.787	235.66	83.859	109.11	18.302	75.47	1.746	81.45	4.818	91.64	10.320
.898	9.93	1.542	4.199	8.800	236.23	83.901	109.25	18.317	75.48	1.748	81.51	4.819	91.71	10.314
.902	9.94	1.542	4.203	8.812	237.08	83.798	109.43	18.289	75.51	1.745	81.52	4.819	91.82	10.301
.906	9.94	1.542	4.208	8.824	237.79	83.941	109.53	18.331	75.54	1.748	81.54	4.840	91.92	10.323
.910	9.94	1.542	4.212	8.834	238.35	84.122	109.71	18.375	75.54	1.752	81.61	4.858	91.96	10.355
.914	9.95	1.542	4.217	8.843	239.06	84.040	109.85	18.335	75.54	1.749	81.66	4.853	92.03	10.334
.918	9.95	1.541	4.221	8.852	240.05	84.083	110.06	18.327	75.56	1.750	81.71	4.854	92.13	10.328
.923	9.95	1.541	4.224	8.859	240.76	84.176	110.17	18.351	75.59	1.756	81.77	4.862	92.28	10.343
.927	9.96	1.540	4.228	8.865	241.18	84.208	110.28	18.356	75.59	1.756	81.80	4.871	92.31	10.351
.931	9.96	1.540	4.231	8.871	242.17	84.406	110.42	18.382	75.60	1.761	81.83	4.889	92.42	10.374
.935	9.96	1.539	4.234	8.875	242.74	84.202	110.54	18.324	75.64	1.760	81.90	4.876	92.52	10.354
.939	9.96	1.538	4.238	8.879	243.31	84.246	110.77	18.341	75.66	1.761	81.94	4.881	92.63	10.373
.944	9.97	1.537	4.239	8.881	244.16	84.302	110.88	18.345	75.65	1.761	81.99	4.891	92.74	10.392
.948	9.97	1.536	4.240	8.883	244.86	84.309	110.98	18.331	75.65	1.761	82.01	4.898	92.77	10.405
.952	9.97	1.535	4.242	8.884	245.57	84.363	111.15	18.340	75.69	1.767	82.04	4.905	92.88	10.432
.956	9.98	1.534	4.243	8.884	246.28	84.344	111.31	18.279	75.72	1.766	82.11	4.888	92.98	10.413
.960	9.98	1.533	4.244	8.884	246.84	84.080	111.41	18.273	75.71	1.766	82.14	4.890	93.05	10.424
.964	9.98	1.531	4.245	8.883	247.55	84.221	111.55	18.264	75.73	1.766	82.17	4.892	93.13	10.429
.968	9.98	1.530	4.245	8.882	248.12	84.148	111.69	18.264	75.75	1.765	82.21	4.894	93.23	10.433
.973	9.99	1.529	4.245	8.880	248.83	84.163	111.83	18.246	75.77	1.765	82.24	4.893	93.37	10.444
.977	9.99	1.528	4.244	8.878	249.39	83.731	111.94	18.190	75.76	1.756	82.33	4.879	93.41	10.410
.981	9.99	1.527	4.244	8.875	249.96	83.695	112.04	18.202	75.77	1.760	82.33	4.885	93.48	10.411
.985	9.99	1.527	4.243	8.872	250.52	83.436	112.19	18.232	75.80	1.767	82.37	4.898	93.59	10.435
.989	10.00	1.526	4.241	8.870	251.09	83.563	112.33	18.188	75.82	1.763	82.40	4.890	93.69	10.417
.993	10.00	1.525	4.240	8.867	251.66	83.736	112.48	18.204	75.81	1.761	82.44	4.896	93.73	10.425
.997	10.00	1.524	4.238	8.865	252.36	83.535	112.64	18.167	75.82	1.757	82.45	4.888	93.80	10.397
1.002	10.00	1.524	4.236	8.862	253.07	83.652	112.84	18.197	75.87	1.761	82.51	4.895	93.90	10.408

RUN 497 ATR 1333 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	PO	TO	TOI	MACH	PINF	TINF	UINF	RHOINF	REINF
1.006	10.01	19893.7	2927.7	3539.5	13.76	.0561	102.8	6959.8	1.421E-03	3.692E+06
1.010	10.01	19883.9	2929.1	3541.1	13.76	.0561	102.9	6961.2	1.420E-03	3.688E+06
1.014	10.01	19874.0	2930.6	3542.9	13.76	.0561	103.0	6962.7	1.419E-03	3.684E+06
1.018	10.01	19864.3	2932.2	3544.6	13.76	.0561	103.1	6964.4	1.418E-03	3.679E+06
1.022	10.02	19855.1	2933.9	3546.6	13.76	.0561	103.1	6966.1	1.417E-03	3.675E+06
1.027	10.02	19846.5	2935.6	3548.9	13.75	.0561	103.2	6967.8	1.416E-03	3.670E+06
1.031	10.02	19838.6	2937.3	3550.9	13.75	.0561	103.3	6969.6	1.416E-03	3.666E+06
1.035	10.02	19832.2	2939.0	3552.9	13.75	.0561	103.4	6971.3	1.415E-03	3.662E+06
1.039	10.03	19826.6	2940.5	3554.8	13.75	.0561	103.5	6972.9	1.414E-03	3.659E+06
1.043	10.03	19822.2	2942.0	3556.6	13.75	.0561	103.5	6974.4	1.413E-03	3.655E+06
1.047	10.03	19818.7	2943.3	3558.2	13.75	.0561	103.6	6975.8	1.413E-03	3.652E+06
1.051	10.04	19816.2	2944.4	3559.6	13.75	.0561	103.6	6977.0	1.412E-03	3.650E+06
1.056	10.04	19814.4	2945.4	3560.8	13.74	.0562	103.7	6978.0	1.412E-03	3.648E+06
1.060	10.04	19813.2	2946.2	3561.8	13.74	.0562	103.7	6978.9	1.412E-03	3.647E+06
1.064	10.05	19812.2	2946.9	3562.7	13.74	.0562	103.8	6979.6	1.412E-03	3.646E+06
1.068	10.05	19811.4	2947.5	3563.4	13.74	.0562	103.8	6980.2	1.412E-03	3.645E+06
1.072	10.05	19810.3	2947.9	3563.9	13.74	.0562	103.8	6980.7	1.412E-03	3.644E+06
1.076	10.05	19808.9	2948.3	3564.4	13.74	.0562	103.8	6981.1	1.412E-03	3.643E+06
1.081	10.06	19806.9	2948.6	3564.8	13.74	.0562	103.9	6981.4	1.412E-03	3.643E+06
1.085	10.06	19804.1	2949.0	3565.2	13.74	.0562	103.9	6981.8	1.412E-03	3.642E+06
1.089	10.06	19800.5	2949.4	3565.6	13.74	.0563	103.9	6982.1	1.412E-03	3.641E+06
1.093	10.06	19796.0	2949.8	3566.2	13.74	.0563	103.9	6982.6	1.411E-03	3.640E+06
1.097	10.06	19790.5	2950.4	3566.8	13.73	.0563	104.0	6983.1	1.411E-03	3.639E+06
1.101	10.06	19784.0	2951.1	3567.6	13.73	.0563	104.0	6983.8	1.411E-03	3.637E+06
1.106	10.06	19776.7	2952.0	3568.6	13.73	.0563	104.1	6984.7	1.410E-03	3.634E+06
1.110	10.06	19768.5	2953.0	3569.8	13.73	.0563	104.1	6985.7	1.410E-03	3.631E+06
1.114	10.06	19759.7	2954.2	3571.2	13.73	.0563	104.2	6986.8	1.409E-03	3.628E+06
1.118	10.06	19750.[illegible]	2955.5	3572.8	13.73	.0563	104.3	6988.2	1.408E-03	3.624E+06
1.122	10.06	19740.5	2957.0	3574.5	13.72	.0563	104.3	6989.7	1.407E-03	3.620E+06
1.126	10.06	19730.4	2958.6	3576.4	13.72	.0563	104.4	6991.3	1.406E-03	3.616E+06
1.130	10.06	19720.3	2960.3	3578.4	13.72	.0563	104.5	6993.0	1.405E-03	3.611E+06
1.135	10.06	19710.1	2962.1	3580.5	13.72	.0563	104.6	6994.8	1.404E-03	3.606E+06
1.139	10.06	19700.1	2963.9	3582.7	13.72	.0563	104.7	6996.6	1.403E-03	3.601E+06
1.143	10.06	19690.3	2965.6	3584.6	13.71	.0563	104.7	6998.4	1.402E-03	3.596E+06
1.147	10.06	19680.9	2967.4	3586.6	13.71	.0563	104.8	7000.2	1.400E-03	3.592E+06
1.151	10.06	19671.7	2969.0	3588.8	13.71	.0563	104.9	7001.8	1.399E-03	3.587E+06
1.155	10.06	19662.9	2970.5	3590.6	13.71	.0563	105.0	7003.4	1.398E-03	3.583E+06
1.160	10.06	19654.4	2971.9	3592.3	13.71	.0563	105.0	7004.8	1.397E-03	3.579E+06
1.164	10.06	19646.3	2973.2	3593.7	13.71	.0563	105.1	7006.1	1.396E-03	3.575E+06
1.168	10.06	19638.3	2974.2	3595.0	13.71	.0563	105.1	7007.2	1.395E-03	3.571E+06
1.172	10.06	19630.5	2975.2	3596.1	13.71	.0562	105.2	7008.1	1.394E-03	3.568E+06
1.176	10.06	19622.8	2975.9	3596.9	13.71	.0562	105.2	7008.8	1.393E-03	3.565E+06
1.180	10.06	19615.2	2976.5	3597.5	13.70	.0562	105.2	7009.3	1.393E-03	3.563E+06
1.184	10.06	19607.4	2976.9	3597.9	13.70	.0562	105.2	7009.6	1.392E-03	3.561E+06
1.189	10.07	19599.5	2977.1	3598.1	13.70	.0562	105.2	7009.8	1.391E-03	3.559E+06
1.193	10.07	19591.4	2977.2	3598.2	13.70	.0561	105.2	7009.9	1.391E-03	3.557E+06
1.197	10.07	19583.0	2977.2	3598.1	13.70	.0561	105.2	7009.8	1.390E-03	3.555E+06
1.201	10.07	19574.4	2977.1	3597.8	13.70	.0561	105.2	7009.6	1.389E-03	3.554E+06
1.205	10.07	19565.4	2976.9	3597.4	13.70	.0560	105.2	7009.2	1.389E-03	3.552E+06
1.209	10.07	19556.0	2976.6	3596.9	13.70	.0560	105.2	7008.8	1.388E-03	3.551E+06
1.214	10.07	19546.4	2976.2	3596.3	13.70	.0560	105.2	7008.3	1.387E-03	3.549E+06
1.218	10.08	19536.4	2975.8	3595.6	13.71	.0559	105.2	7007.7	1.386E-03	3.548E+06
1.222	10.08	19526.0	2975.2	3594.8	13.71	.0559	105.1	7007.0	1.386E-03	3.547E+06
1.226	10.08	19515.3	2974.6	3593.9	13.71	.0558	105.1	7006.2	1.385E-03	3.546E+06
1.230	10.08	19504.4	2974.0	3592.9	13.71	.0558	105.1	7005.4	1.384E-03	3.544E+06
1.234	10.08	19493.2	2973.3	3591.9	13.71	.0557	105.0	7004.5	1.383E-03	3.543E+06
AVERAGE		19717.7	2957.9	3575.3	13.73	.0562	104.3	6990.4	1.404E-03	3.612E+06

RUN 497 WTR 1333 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	G1 QDOT	G2 QDOT	G3 QDOT	T1 Tw	T1 QDOT	T2 Tw	T2 QDOT	T3 Tw	T3 QDOT	T4 Tw	T4 QDOT	T5 Tw	T5 QDOT
1.006	10.01	1.523	4.234	8.860	253.64	83.831	112.82	18.233	75.88	1.763	82.55	4.907	94.01	10.415
1.010	10.01	1.523	4.232	8.858	254.06	83.657	112.96	18.182	75.86	1.759	82.59	4.900	94.05	10.387
1.014	10.01	1.523	4.230	8.857	254.77	83.775	113.07	18.202	75.88	1.764	82.64	4.910	94.12	10.403
1.018	10.01	1.522	4.227	8.855	255.62	83.611	113.25	18.167	75.92	1.758	82.66	4.900	94.22	10.376
1.022	10.02	1.522	4.225	8.855	256.19	83.759	113.35	18.181	75.92	1.757	82.71	4.906	94.33	10.376
1.027	10.02	1.522	4.222	8.854	256.89	83.890	113.46	18.205	75.92	1.764	82.75	4.916	94.36	10.399
1.031	10.02	1.522	4.220	8.855	257.46	83.859	113.64	18.159	75.94	1.763	82.78	4.905	94.43	10.391
1.035	10.02	1.522	4.217	8.855	258.17	83.936	113.78	18.180	75.96	1.759	82.82	4.912	94.54	10.407
1.039	10.03	1.522	4.215	8.857	258.59	83.755	113.88	18.131	75.97	1.749	82.86	4.904	94.61	10.385
1.043	10.03	1.523	4.213	8.859	259.16	83.913	113.96	18.130	75.97	1.756	82.89	4.908	94.68	10.409
1.047	10.03	1.523	4.210	8.861	259.72	84.089	114.06	18.146	75.98	1.761	82.93	4.903	94.75	10.440
1.051	10.04	1.523	4.208	8.864	260.43	83.946	114.20	18.096	76.00	1.753	82.95	4.889	94.82	10.423
1.056	10.04	1.524	4.206	8.867	261.14	83.911	114.31	18.115	76.03	1.755	83.00	4.900	94.93	10.440
1.060	10.04	1.524	4.205	8.871	261.71	83.701	114.42	18.069	76.02	1.752	83.02	4.885	95.00	10.424
1.064	10.05	1.524	4.203	8.875	262.27	83.750	114.52	18.070	76.03	1.749	83.05	4.879	95.07	10.439
1.068	10.05	1.525	4.202	8.880	262.84	83.885	114.70	18.093	76.05	1.752	83.09	4.886	95.18	10.465
1.072	10.05	1.525	4.200	8.885	263.54	83.686	114.80	18.057	76.07	1.752	83.16	4.876	95.28	10.452
1.076	10.05	1.526	4.199	8.890	264.11	83.753	114.88	18.093	76.07	1.754	83.18	4.881	95.35	10.457
1.081	10.06	1.526	4.198	8.896	264.54	83.535	115.02	18.055	76.07	1.749	83.17	4.866	95.39	10.430
1.085	10.06	1.526	4.198	8.902	265.10	83.629	115.16	18.072	76.11	1.754	83.23	4.872	95.50	10.454
1.089	10.06	1.527	4.197	8.908	265.67	83.742	115.30	18.112	76.12	1.761	83.27	4.880	95.57	10.480
1.093	10.06	1.527	4.197	8.914	266.23	83.494	115.37	18.080	76.11	1.757	83.24	4.867	95.64	10.450
1.097	10.06	1.527	4.197	8.920	266.80	83.429	115.48	18.074	76.12	1.757	83.32	4.872	95.67	10.441
1.101	10.06	1.527	4.197	8.927	267.51	83.548	115.65	18.081	76.16	1.763	83.36	4.878	95.81	10.454
1.106	10.06	1.527	4.197	8.933	267.93	83.677	115.76	18.074	76.17	1.765	83.40	4.870	95.85	10.459
1.110	10.06	1.527	4.197	8.939	268.36	83.688	115.87	18.108	76.17	1.766	83.43	4.881	95.89	10.471
1.114	10.06	1.527	4.197	8.944	269.06	83.425	115.97	18.048	76.18	1.762	83.46	4.876	95.99	10.446
1.118	10.06	1.527	4.196	8.950	269.63	83.572	116.11	18.063	76.20	1.765	83.50	4.883	96.10	10.467
1.122	10.06	1.527	4.196	8.955	270.20	83.657	116.22	18.062	76.24	1.760	83.53	4.883	96.17	10.474
1.126	10.06	1.527	4.196	8.960	270.76	83.679	116.33	18.058	76.22	1.767	83.56	4.888	96.24	10.490
1.130	10.06	1.527	4.195	8.965	271.33	83.694	116.43	18.061	76.24	1.765	83.60	4.893	96.27	10.499
1.135	10.06	1.526	4.195	8.969	272.18	83.711	116.57	18.061	76.26	1.763	83.63	4.899	96.42	10.505
1.139	10.06	1.526	4.195	8.973	272.60	83.717	116.66	18.058	76.27	1.764	83.67	4.905	96.49	10.512
1.143	10.06	1.526	4.200	8.976	273.03	83.782	116.75	18.053	76.26	1.765	83.71	4.906	96.52	10.533
1.147	10.06	1.525	4.200	8.979	273.59	83.817	116.86	18.044	76.27	1.761	83.73	4.904	96.63	10.539
1.151	10.06	1.525	4.200	8.981	274.30	83.782	117.03	18.042	76.30	1.762	83.77	4.910	96.70	10.536
1.155	10.06	1.524	4.200	8.983	274.87	83.746	117.14	18.042	76.33	1.765	83.81	4.917	96.81	10.544
1.160	10.06	1.523	4.199	8.984	275.29	83.739	117.25	18.035	76.31	1.764	83.84	4.916	96.84	10.553
1.164	10.06	1.523	4.199	8.985	276.00	83.949	117.35	18.064	76.31	1.765	83.87	4.921	96.91	10.579
1.168	10.06	1.522	4.198	8.985	276.42	83.833	117.49	17.998	76.34	1.760	83.92	4.908	97.02	10.544
1.172	10.06	1.521	4.197	8.985	276.99	83.758	117.60	18.042	76.37	1.769	83.95	4.927	97.09	10.564
1.176	10.06	1.521	4.196	8.983	277.56	83.449	117.67	17.974	76.36	1.762	83.97	4.907	97.16	10.538
1.180	10.06	1.520	4.195	8.982	278.12	83.603	117.78	18.004	76.36	1.761	84.00	4.910	97.19	10.548
1.184	10.06	1.519	4.193	8.980	278.55	83.559	117.92	17.997	76.41	1.761	84.05	4.912	97.30	10.542
1.189	10.07	1.519	4.191	8.977	279.11	83.255	118.02	17.947	76.42	1.762	84.04	4.901	97.41	10.524
1.193	10.07	1.518	4.189	8.974	279.54	83.302	118.10	17.965	76.40	1.762	84.09	4.900	97.44	10.536
1.197	10.07	1.517	4.188	8.970	280.39	83.178	118.20	17.939	76.41	1.758	84.12	4.890	97.51	10.519
1.201	10.07	1.516	4.186	8.966	280.67	82.974	118.34	17.901	76.45	1.757	84.17	4.878	97.58	10.492
1.205	10.07	1.515	4.181	8.961	281.09	83.014	118.41	17.913	76.46	1.759	84.21	4.877	97.65	10.501
1.209	10.07	1.515	4.178	8.956	281.52	82.906	118.52	17.869	76.44	1.752	84.22	4.866	97.69	10.480
1.214	10.07	1.514	4.174	8.950	282.09	82.843	118.59	17.843	76.43	1.749	84.24	4.863	97.73	10.468
1.218	10.08	1.514	4.171	8.944	282.37	82.774	118.73	17.867	76.48	1.754	84.26	4.872	97.83	10.496
1.222	10.08	1.513	4.167	8.937	282.79	82.438	118.84	17.786	76.51	1.747	84.31	4.853	97.94	10.452
1.226	10.08	1.512	4.164	8.930	283.50	82.603	118.94	17.828	76.48	1.753	84.32	4.869	97.97	10.471
1.230	10.08	1.511	4.158	8.923	283.93	82.132	119.06	17.749	76.49	1.750	84.35	4.852	98.01	10.434
1.234	10.08	1.511	4.154	8.915	284.35	82.047	119.16	17.746	76.53	1.749	84.39	4.854	98.08	10.445

RUN 497 WTR 1343 CO-AXIAL THERMOCOUPLE SHADOWGRAPH TEST 12/10/79-12/12/79

TIME	ALPHA	PO	TO	TOI	MACH	PINF	TINF	QINF	RHOINF	REINF
1.239	10.09	19481.7	2972.5	3590.7	13.71	.0557	105.0	7003.5	1.383E-03	3.542E+06
1.243	10.09	19479.0	2971.6	3589.5	13.71	.0556	104.9	7002.4	1.382E-03	3.541E+06
1.247	10.09	19456.0	2970.7	3588.2	13.71	.0556	104.9	7001.4	1.381E-03	3.540E+06
1.251	10.09	19443.7	2969.7	3586.6	13.71	.0555	104.8	7000.1	1.381E-03	3.540E+06
1.255	10.09	19433.3	2968.7	3585.4	13.71	.0555	104.8	6998.9	1.380E-03	3.539E+06
1.259	10.09	19420.5	2967.7	3583.9	13.71	.0554	104.8	6997.6	1.379E-03	3.538E+06
1.263	10.09	19407.6	2966.6	3582.4	13.71	.0554	104.7	6996.3	1.379E-03	3.538E+06
1.267	10.09	19394.3	2965.6	3580.8	13.71	.0553	104.7	6995.0	1.378E-03	3.537E+06
1.272	10.09	19380.7	2964.5	3579.3	13.71	.0553	104.6	6993.6	1.378E-03	3.536E+06
1.276	10.10	19366.9	2963.4	3577.7	13.71	.0552	104.6	6992.3	1.377E-03	3.536E+06
1.280	10.10	19352.7	2962.2	3576.1	13.71	.0552	104.5	6990.9	1.376E-03	3.535E+06
1.284	10.10	19338.3	2961.1	3574.4	13.72	.0551	104.5	6989.5	1.376E-03	3.535E+06
1.288	10.10	19323.7	2959.9	3572.7	13.72	.0551	104.4	6988.0	1.375E-03	3.534E+06
1.293	10.10	19308.9	2958.6	3570.9	13.72	.0550	104.4	6986.4	1.375E-03	3.533E+06
1.297	10.10	19294.0	2957.2	3568.9	13.72	.0550	104.3	6984.7	1.374E-03	3.533E+06
1.301	10.10	19278.9	2955.6	3566.7	13.72	.0549	104.2	6982.8	1.373E-03	3.533E+06
1.305	10.10	19263.9	2953.8	3564.3	13.72	.0548	104.1	6980.7	1.373E-03	3.533E+06
1.309	10.10	19249.0	2951.8	3561.5	13.72	.0548	104.0	6978.3	1.372E-03	3.533E+06
1.313	10.11	19234.2	2949.4	3558.3	13.72	.0547	103.9	6975.6	1.372E-03	3.534E+06
1.317	10.11	19219.7	2946.6	3554.6	13.73	.0546	103.8	6972.4	1.371E-03	3.536E+06
1.322	10.11	19205.5	2943.3	3550.3	13.73	.0545	103.6	6968.7	1.371E-03	3.539E+06
1.326	10.11	19191.6	2939.5	3545.3	13.73	.0544	103.5	6964.4	1.371E-03	3.542E+06
1.330	10.11	19178.2	2935.1	3539.6	13.74	.0543	103.3	6959.5	1.371E-03	3.547E+06
1.334	10.11	19165.3	2930.1	3533.1	13.74	.0542	103.0	6953.9	1.371E-03	3.553E+06
1.338	10.11	19152.8	2924.4	3525.7	13.75	.0541	102.8	6947.5	1.372E-03	3.560E+06
1.342	10.11	19140.8	2917.9	3517.4	13.75	.0540	102.5	6940.4	1.373E-03	3.569E+06
1.347	10.12	19129.1	2910.7	3508.2	13.76	.0538	102.1	6932.4	1.374E-03	3.579E+06
1.351	10.12	19117.9	2902.7	3498.0	13.76	.0537	101.8	6923.6	1.375E-03	3.590E+06
1.355	10.12	19107.0	2894.0	3487.0	13.77	.0536	101.4	6914.1	1.377E-03	3.603E+06
1.359	10.12	19096.2	2884.6	3475.1	13.78	.0534	101.0	6903.7	1.379E-03	3.618E+06
1.363	10.12	19085.6	2874.5	3462.4	13.79	.0533	100.5	6892.7	1.382E-03	3.634E+06
1.367	10.12	19075.0	2863.8	3448.9	13.79	.0531	100.1	6880.9	1.384E-03	3.651E+06
1.371	10.13	19064.4	2852.5	3434.8	13.80	.0530	99.6	6868.6	1.387E-03	3.670E+06
1.375	10.13	19053.6	2840.8	3420.1	13.81	.0529	99.1	6855.7	1.391E-03	3.690E+06
1.380	10.13	19042.6	2828.7	3404.9	13.82	.0527	98.6	6842.3	1.394E-03	3.711E+06
1.384	10.13	19031.4	2816.2	3389.2	13.83	.0526	98.1	6828.6	1.398E-03	3.732E+06
1.388	10.13	19019.8	2803.4	3373.2	13.84	.0524	97.5	6814.5	1.402E-03	3.755E+06
1.392	10.13	19007.8	2790.4	3357.0	13.85	.0523	97.0	6800.2	1.406E-03	3.778E+06
1.396	10.13	18995.5	2777.3	3340.7	13.86	.0522	96.5	6785.7	1.410E-03	3.802E+06
1.401	10.14	18982.8	2764.0	3324.1	13.86	.0521	95.9	6771.0	1.415E-03	3.827E+06
1.405	10.14	18969.8	2750.6	3307.5	13.87	.0519	95.4	6756.3	1.419E-03	3.852E+06
1.409	10.14	18956.5	2737.2	3290.9	13.88	.0518	94.9	6741.4	1.424E-03	3.878E+06
1.413	10.14	18942.9	2723.7	3274.1	13.89	.0517	94.3	6726.5	1.429E-03	3.904E+06
1.417	10.14	18929.2	2710.1	3257.3	13.90	.0516	93.8	6711.4	1.434E-03	3.930E+06
1.421	10.14	18915.4	2696.5	3240.4	13.90	.0515	93.3	6696.2	1.439E-03	3.957E+06
1.425	10.14	18901.5	2682.8	3223.5	13.91	.0514	92.8	6681.0	1.444E-03	3.985E+06
1.430	10.14	18887.7	2669.0	3206.4	13.92	.0513	92.2	6665.6	1.450E-03	4.013E+06
1.434	10.14	18874.0	2655.0	3189.1	13.93	.0512	91.7	6650.0	1.455E-03	4.042E+06
1.438	10.14	18860.4	2640.9	3171.7	13.94	.0511	91.1	6634.2	1.461E-03	4.071E+06
1.442	10.14	18847.0	2626.6	3154.1	13.95	.0510	90.6	6618.2	1.466E-03	4.101E+06
1.446	10.14	18833.8	2612.2	3136.4	13.95	.0508	90.0	6602.0	1.472E-03	4.132E+06
1.450	10.14	18820.8	2597.6	3118.4	13.96	.0507	89.5	6585.7	1.477E-03	4.162E+06
1.455	10.14	18808.1	2582.9	3100.4	13.97	.0506	88.9	6569.1	1.483E-03	4.194E+06
1.459	10.14	18795.6	2568.1	3082.1	13.99	.0504	88.3	6552.4	1.488E-03	4.225E+06
1.463	10.14	18783.3	2553.2	3063.9	14.00	.0502	87.7	6535.6	1.493E-03	4.257E+06
AVERAGE		19128.9	2844.3	3426.6	13.80	.0534	99.5	6859.7	1.401E-03	3.716E+06

RUN 497 WTR 1333 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	G1 QDOT	G2 QDOT	G3 QDOT	T1 TW	T1 QDOT	T2 TW	T2 QDOT	T3 TW	T3 QDOT	T4 TW	T4 QDOT	T5 TW	T5 QDOT
1.238	10.09	1.510	4.149	8.906	284.92	82.032	119.23	17.724	76.53	1.742	84.42	4.852	98.19	10.435
1.243	10.09	1.509	4.144	8.897	285.34	81.957	119.30	17.698	76.53	1.740	84.45	4.851	98.22	10.435
1.247	10.09	1.508	4.139	8.887	285.77	81.994	119.37	17.718	76.53	1.746	84.48	4.861	98.29	10.463
1.251	10.09	1.507	4.133	8.877	286.33	81.636	119.48	17.640	76.58	1.741	84.52	4.840	98.40	10.428
1.255	10.09	1.506	4.128	8.866	286.61	81.492	119.56	17.630	76.59	1.739	84.56	4.838	98.43	10.423
1.259	10.09	1.505	4.122	8.854	287.04	81.580	119.65	17.594	76.58	1.735	84.58	4.834	98.47	10.412
1.263	10.09	1.503	4.116	8.842	287.18	81.540	119.76	17.586	76.58	1.733	84.59	4.835	98.54	10.416
1.268	10.09	1.502	4.109	8.829	287.75	81.489	119.86	17.575	76.60	1.732	84.63	4.833	98.61	10.416
1.272	10.09	1.500	4.103	8.816	288.31	81.149	119.94	17.494	76.61	1.731	84.66	4.809	98.68	10.376
1.276	10.10	1.499	4.096	8.801	288.74	81.090	120.01	17.482	76.60	1.733	84.67	4.802	98.75	10.366
1.280	10.10	1.497	4.089	8.786	289.16	81.177	120.11	17.503	76.60	1.732	84.70	4.804	98.79	10.369
1.284	10.10	1.495	4.081	8.769	289.73	80.935	120.22	17.454	76.65	1.726	84.74	4.783	98.86	10.327
1.288	10.10	1.492	4.073	8.752	290.01	80.951	120.29	17.463	76.67	1.730	84.75	4.774	98.93	10.323
1.293	10.10	1.490	4.065	8.733	290.44	80.850	120.32	17.381	76.63	1.725	84.76	4.752	98.96	10.278
1.297	10.10	1.487	4.056	8.714	290.86	80.854	120.43	17.364	76.64	1.724	84.74	4.753	99.00	10.275
1.301	10.10	1.484	4.047	8.693	291.28	80.696	120.54	17.371	76.69	1.727	84.81	4.749	99.11	10.283
1.305	10.10	1.480	4.038	8.671	291.71	80.351	120.61	17.302	76.71	1.723	84.84	4.724	99.14	10.244
1.309	10.10	1.477	4.028	8.648	291.85	80.257	120.64	17.295	76.68	1.729	84.85	4.726	99.14	10.242
1.313	10.11	1.473	4.017	8.624	292.42	79.448	120.78	17.141	76.69	1.725	84.89	4.705	99.21	10.197
1.317	10.11	1.468	4.006	8.598	292.98	79.789	120.89	17.180	76.72	1.726	84.90	4.699	99.28	10.188
1.322	10.11	1.464	3.995	8.571	293.12	79.792	120.98	17.153	76.74	1.716	84.91	4.699	99.32	10.184
1.326	10.11	1.459	3.982	8.543	293.41	79.794	121.00	17.063	76.72	1.709	84.97	4.677	99.39	10.141
1.330	10.11	1.453	3.969	8.513	293.83	79.115	121.03	16.991	76.72	1.708	84.97	4.663	99.42	10.119
1.334	10.11	1.448	3.956	8.482	294.26	78.634	121.14	16.939	76.75	1.703	84.99	4.654	99.49	10.100
1.338	10.11	1.441	3.942	8.449	294.54	78.700	121.21	16.881	76.77	1.690	85.01	4.644	99.57	10.073
1.342	10.11	1.435	3.927	8.415	294.68	78.452	121.21	16.859	76.76	1.684	85.03	4.644	99.60	10.074
1.347	10.12	1.428	3.911	8.379	295.25	78.074	121.28	16.720	76.76	1.671	85.06	4.614	99.64	10.003
1.351	10.12	1.421	3.895	8.341	295.53	77.806	121.35	16.655	76.79	1.668	85.05	4.609	99.67	9.979
1.355	10.12	1.413	3.877	8.303	295.81	77.484	121.39	16.561	76.79	1.660	85.08	4.597	99.71	9.946
1.359	10.12	1.405	3.859	8.263	295.96	77.192	121.42	16.464	76.77	1.646	85.10	4.575	99.74	9.894
1.363	10.12	1.397	3.841	8.221	296.24	77.046	121.46	16.428	76.77	1.641	85.11	4.568	99.78	9.858
1.367	10.12	1.389	3.821	8.178	296.52	76.380	121.56	16.278	76.80	1.629	85.14	4.537	99.85	9.769
1.371	10.13	1.380	3.801	8.133	296.80	76.093	121.60	16.188	76.80	1.622	85.17	4.526	99.88	9.728
1.376	10.13	1.370	3.780	8.087	296.80	75.748	121.60	16.089	76.79	1.611	85.18	4.505	99.88	9.684
1.380	10.13	1.361	3.759	8.040	297.09	75.450	121.63	16.010	76.78	1.605	85.20	4.485	99.88	9.604
1.384	10.13	1.351	3.736	7.992	297.23	75.043	121.67	15.905	76.82	1.597	85.21	4.463	99.95	9.551
1.388	10.13	1.341	3.713	7.942	297.37	74.331	121.63	15.738	76.82	1.581	85.21	4.427	99.95	9.468
1.392	10.13	1.331	3.690	7.891	297.51	74.011	121.63	15.648	76.80	1.575	85.21	4.409	99.95	9.420
1.396	10.13	1.320	3.666	7.839	297.80	73.797	121.70	15.575	76.81	1.570	85.24	4.390	99.95	9.380
1.401	10.14	1.310	3.641	7.786	297.94	73.151	121.70	15.405	76.83	1.553	85.24	4.352	99.99	9.292
1.405	10.14	1.299	3.616	7.731	298.08	72.824	121.70	15.307	76.83	1.545	85.27	4.332	100.03	9.252
1.409	10.14	1.288	3.590	7.676	298.08	72.148	121.70	15.133	76.82	1.534	85.24	4.286	99.99	9.166
1.413	10.14	1.277	3.564	7.620	298.22	71.809	121.67	15.032	76.82	1.524	85.25	4.259	99.99	9.124
1.417	10.14	1.265	3.538	7.563	298.22	71.661	121.70	14.954	76.84	1.512	85.27	4.241	100.03	9.095
1.421	10.14	1.254	3.511	7.505	298.22	71.024	121.70	14.804	76.84	1.498	85.28	4.206	100.03	9.024
1.426	10.14	1.243	3.484	7.446	298.36	70.789	121.67	14.724	76.82	1.496	85.27	4.190	100.06	8.996
1.430	10.14	1.231	3.457	7.387	298.36	70.052	121.67	14.543	76.81	1.476	85.27	4.146	100.06	8.912
1.434	10.14	1.220	3.430	7.327	298.50	69.673	121.67	14.443	76.82	1.462	85.28	4.127	100.10	8.871
1.438	10.14	1.208	3.402	7.266	298.50	69.454	121.63	14.367	76.85	1.461	85.28	4.113	100.13	8.837
1.442	10.14	1.197	3.375	7.204	298.50	68.828	121.60	14.197	76.82	1.448	85.27	4.074	100.10	8.755
1.446	10.14	1.186	3.347	7.143	298.50	68.615	121.60	14.106	76.80	1.434	85.28	4.058	100.10	8.727
1.450	10.14	1.174	3.320	7.080	298.64	67.641	121.60	13.940	76.83	1.417	85.28	4.023	100.13	8.687
1.455	10.14	1.163	3.292	7.018	299.07	67.417	121.60	13.845	76.85	1.412	85.31	4.007	100.17	8.682
1.459	10.14	1.152	3.265	6.955	298.79	67.252	121.53	13.764	76.82	1.408	85.28	3.989	100.13	8.644
1.463	10.14	1.141	3.237	6.892	298.64	66.559	121.49	13.591	76.80	1.393	85.28	3.955	100.10	8.456

RUN 497 BTR 1333 STANTON NUMBERS CO-AXIAL THERMOCOUPLE SHADOW TEST 12/10/79-12/12/79

	TIME	ALPHA	G1 ST	G2 ST	G3 ST	T1 ST	T2 ST	T3 ST	T4 ST	T5 ST
123	.549	10.16	1.476E-04	5.285E-04	1.062E-03	1.030E-02	2.410E-03	2.185E-04	5.966E-04	1.240E-03
124	.554	10.15	1.462E-04	5.234E-04	1.051E-03	1.027E-02	2.405E-03	2.177E-04	5.942E-04	1.232E-03
125	.559	10.14	1.449E-04	5.197E-04	1.041E-03	1.026E-02	2.395E-03	2.171E-04	5.920E-04	1.224E-03
126	.563	10.12	1.437E-04	5.159E-04	1.031E-03	1.027E-02	2.386E-03	2.170E-04	5.907E-04	1.220E-03
127	.567	10.11	1.427E-04	5.125E-04	1.023E-03	1.026E-02	2.377E-03	2.170E-04	5.908E-04	1.216E-03
128	.571	10.10	1.417E-04	5.095E-04	1.015E-03	1.027E-02	2.368E-03	2.168E-04	5.903E-04	1.212E-03
129	.575	10.09	1.409E-04	5.069E-04	1.008E-03	1.025E-02	2.357E-03	2.158E-04	5.882E-04	1.204E-03
130	.579	10.08	1.402E-04	5.046E-04	1.002E-03	1.025E-02	2.350E-03	2.156E-04	5.878E-04	1.200E-03
131	.583	10.07	1.396E-04	5.027E-04	9.968E-04	1.027E-02	2.343E-03	2.160E-04	5.883E-04	1.196E-03
132	.587	10.06	1.391E-04	5.011E-04	9.922E-04	1.027E-02	2.331E-03	2.156E-04	5.874E-04	1.190E-03
133	.592	10.05	1.386E-04	4.998E-04	9.882E-04	1.029E-02	2.328E-03	2.157E-04	5.879E-04	1.188E-03
134	.596	10.04	1.382E-04	4.986E-04	9.849E-04	1.028E-02	2.318E-03	2.153E-04	5.874E-04	1.181E-03
135	.600	10.03	1.378E-04	4.979E-04	9.821E-04	1.030E-02	2.314E-03	2.150E-04	5.868E-04	1.177E-03
136	.604	10.02	1.374E-04	4.973E-04	9.798E-04	1.032E-02	2.304E-03	2.147E-04	5.865E-04	1.173E-03
137	.608	10.01	1.371E-04	4.966E-04	9.780E-04	1.035E-02	2.298E-03	2.147E-04	5.905E-04	1.170E-03
138	.613	10.00	1.368E-04	4.966E-04	9.768E-04	1.037E-02	2.293E-03	2.140E-04	5.911E-04	1.165E-03
139	.617	9.99	1.365E-04	4.965E-04	9.760E-04	1.037E-02	2.284E-03	2.128E-04	5.900E-04	1.158E-03
140	.611	9.98	1.362E-04	4.965E-04	9.758E-04	1.040E-02	2.278E-03	2.121E-04	5.901E-04	1.155E-03
141	.615	9.97	1.360E-04	4.966E-04	9.760E-04	1.043E-02	2.273E-03	2.114E-04	5.912E-04	1.155E-03
142	.619	9.96	1.358E-04	4.972E-04	9.768E-04	1.043E-02	2.268E-03	2.104E-04	5.908E-04	1.153E-03
143	.623	9.95	1.356E-04	4.976E-04	9.776E-04	1.046E-02	2.268E-03	2.100E-04	5.908E-04	1.155E-03
144	.628	9.94	1.356E-04	4.981E-04	9.802E-04	1.046E-02	2.264E-03	2.091E-04	5.896E-04	1.154E-03
145	.632	9.93	1.355E-04	4.997E-04	9.827E-04	1.048E-02	2.265E-03	2.088E-04	5.899E-04	1.157E-03
146	.636	9.93	1.355E-04	5.010E-04	9.857E-04	1.051E-02	2.267E-03	2.086E-04	5.905E-04	1.163E-03
147	.640	9.92	1.356E-04	5.025E-04	9.893E-04	1.051E-02	2.265E-03	2.083E-04	5.896E-04	1.161E-03
148	.644	9.91	1.358E-04	5.041E-04	9.934E-04	1.053E-02	2.269E-03	2.088E-04	5.897E-04	1.173E-03
149	.648	9.90	1.360E-04	5.059E-04	9.980E-04	1.052E-02	2.268E-03	2.086E-04	5.892E-04	1.177E-03
150	.652	9.90	1.362E-04	5.079E-04	1.003E-03	1.054E-02	2.270E-03	2.078E-04	5.893E-04	1.184E-03
151	.657	9.89	1.365E-04	5.100E-04	1.008E-03	1.055E-02	2.275E-03	2.084E-04	5.895E-04	1.192E-03
152	.661	9.88	1.368E-04	5.121E-04	1.014E-03	1.054E-02	2.276E-03	2.089E-04	5.887E-04	1.195E-03
153	.665	9.88	1.371E-04	5.142E-04	1.019E-03	1.054E-02	2.276E-03	2.090E-04	5.878E-04	1.200E-03
154	.669	9.87	1.374E-04	5.163E-04	1.025E-03	1.053E-02	2.279E-03	2.092E-04	5.871E-04	1.205E-03
155	.673	9.87	1.377E-04	5.183E-04	1.030E-03	1.052E-02	2.280E-03	2.093E-04	5.869E-04	1.209E-03
156	.677	9.86	1.380E-04	5.202E-04	1.036E-03	1.054E-02	2.284E-03	2.100E-04	5.880E-04	1.214E-03
157	.682	9.86	1.382E-04	5.219E-04	1.041E-03	1.051E-02	2.280E-03	2.096E-04	5.869E-04	1.215E-03
158	.686	9.86	1.383E-04	5.233E-04	1.045E-03	1.051E-02	2.283E-03	2.101E-04	5.877E-04	1.217E-03
159	.690	9.85	1.384E-04	5.245E-04	1.049E-03	1.051E-02	2.284E-03	2.098E-04	5.886E-04	1.217E-03
160	.694	9.85	1.384E-04	5.254E-04	1.053E-03	1.051E-02	2.281E-03	2.097E-04	5.890E-04	1.217E-03
161	.698	9.85	1.383E-04	5.260E-04	1.055E-03	1.052E-02	2.283E-03	2.10cE-04	5.902E-04	1.220E-03
162	.702	9.85	1.381E-04	5.263E-04	1.058E-03	1.049E-02	2.278E-03	2.103E-04	5.899E-04	1.218E-03
163	.707	9.85	1.379E-04	5.263E-04	1.059E-03	1.051E-02	2.283E-03	2.105E-04	5.922E-04	1.221E-03
164	.711	9.84	1.375E-04	5.260E-04	1.060E-03	1.049E-02	2.277E-03	2.091E-04	5.917E-04	1.219E-03
165	.715	9.84	1.371E-04	5.254E-04	1.060E-03	1.051E-02	2.279E-03	2.095E-04	5.920E-04	1.220E-03
166	.719	9.84	1.367E-04	5.245E-04	1.060E-03	1.051E-02	2.278E-03	2.097E-04	5.918E-04	1.220E-03
167	.723	9.84	1.362E-04	5.234E-04	1.059E-03	1.050E-02	2.274E-03	2.094E-04	5.908E-04	1.219E-03
168	.727	9.84	1.357E-04	5.221E-04	1.058E-03	1.051E-02	2.274E-03	2.092E-04	5.907E-04	1.221E-03
169	.731	9.84	1.351E-04	5.207E-04	1.056E-03	1.051E-02	2.269E-03	2.089E-04	5.900E-04	1.222E-03
170	.736	9.84	1.345E-04	5.191E-04	1.055E-03	1.050E-02	2.263E-03	2.083E-04	5.891E-04	1.222E-03
171	.740	9.84	1.340E-04	5.175E-04	1.053E-03	1.051E-02	2.263E-03	2.084E-04	5.885E-04	1.223E-03
172	.744	9.84	1.335E-04	5.159E-04	1.050E-03	1.049E-02	2.257E-03	2.084E-04	5.868E-04	1.223E-03
173	.748	9.84	1.330E-04	5.142E-04	1.048E-03	1.049E-02	2.251E-03	2.079E-04	5.857E-04	1.222E-03
174	.752	9.85	1.326E-04	5.127E-04	1.046E-03	1.051E-02	2.250E-03	2.077E-04	5.848E-04	1.224E-03
175	.756	9.85	1.322E-04	5.112E-04	1.044E-03	1.049E-02	2.241E-03	2.072E-04	5.816E-04	1.222E-03
176	.761	9.85	1.319E-04	5.098E-04	1.042E-03	1.052E-02	2.242E-03	2.077E-04	5.820E-04	1.225E-03
177	.765	9.85	1.316E-04	5.085E-04	1.041E-03	1.049E-02	2.234E-03	2.069E-04	5.806E-04	1.222E-03
178	.769	9.85	1.314E-04	5.074E-04	1.039E-03	1.051E-02	2.232E-03	2.070E-04	5.804E-04	1.225E-03

RUN 497 WTR 1333 STANTON NUMBERS CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

	TIME	ALPHA	G1 ST	G2 ST	G3 ST	T1 ST	T2 ST	T3 ST	T4 ST	T5 ST
179	.773	9.85	1.813E-04	5.064E-04	1.038E-03	1.051E-02	2.230E-03	2.072F-04	5.800E-04	1.228E-03
180	.777	9.86	1.813E-04	5.055E-04	1.038E-03	1.051F-02	2.228E-03	2.074F-04	5.801E-04	1.228E-03
181	.781	9.86	1.813E-04	5.048E-04	1.037E-03	1.053F-02	2.231F-03	2.075E-04	5.818E-04	1.228E-03
182	.785	9.86	1.813E-04	5.041E-04	1.037E-03	1.050F-02	2.225E-03	2.073E-04	5.816E-04	1.226E-03
183	.790	9.86	1.814E-04	5.036E-04	1.037E-03	1.051F-02	2.227E-03	2.075E-04	5.834E-04	1.227E-03
184	.794	9.86	1.816E-04	5.032E-04	1.037E-03	1.052E-02	2.228E-03	2.073E-04	5.850E-04	1.227E-03
185	.798	9.87	1.818E-04	5.028E-04	1.037E-03	1.052F-02	2.231E-03	2.079E-04	5.863E-04	1.228E-03
186	.802	9.87	1.819E-04	5.025E-04	1.037E-03	1.052E-02	2.233E-03	2.085F-04	5.874E-04	1.228E-03
187	.806	9.87	1.821E-04	5.022E-04	1.037E-03	1.051F-02	2.229E-03	2.082E-04	5.872E-04	1.226E-03
188	.810	9.87	1.823E-04	5.020E-04	1.038E-03	1.052E-02	2.231E-03	2.083E-04	5.879E-04	1.227E-03
189	.815	9.87	1.825E-04	5.017E-04	1.038E-03	1.053F-02	2.234E-03	2.088F-04	5.886E-04	1.230E-03
190	.819	9.88	1.827E-04	5.014E-04	1.039E-03	1.051E-02	2.230E-03	2.088E-04	5.883E-04	1.229E-03
191	.823	9.88	1.828E-04	5.010E-04	1.039E-03	1.052E-02	2.233E-03	2.092E-04	5.893E-04	1.229E-03
192	.827	9.88	1.829E-04	5.007E-04	1.039E-03	1.049F-02	2.226E-03	2.087E-04	5.874E-04	1.227E-03
193	.831	9.88	1.830E-04	5.003E-04	1.039E-03	1.050F-02	2.229E-03	2.087E-04	5.867E-04	1.230E-03
194	.835	9.89	1.831E-04	4.999E-04	1.040E-03	1.051F-02	2.225E-03	2.091E-04	5.863E-04	1.231E-03
195	.840	9.89	1.831E-04	4.994E-04	1.040E-03	1.046F-02	2.219E-03	2.089E-04	5.832E-04	1.227E-03
196	.844	9.89	1.831E-04	4.990E-04	1.040E-03	1.046F-02	2.213E-03	2.087E-04	5.810E-04	1.227E-03
197	.848	9.89	1.831E-04	4.986E-04	1.040E-03	1.046F-02	2.210E-03	2.083F-04	5.801E-04	1.229E-03
198	.852	9.90	1.830E-04	4.982E-04	1.040E-03	1.046F-02	2.207E-03	2.082F-04	5.780E-04	1.230E-03
199	.856	9.90	1.830E-04	4.978E-04	1.040E-03	1.046F-02	2.207E-03	2.086E-04	5.768E-04	1.232E-03
200	.860	9.90	1.829E-04	4.975E-04	1.040E-03	1.043F-02	2.198E-03	2.078E-04	5.740E-04	1.230F-03
201	.864	9.91	1.829E-04	4.972E-04	1.041E-03	1.043F-02	2.196E-03	2.075E-04	5.730E-04	1.230E-03
202	.869	9.91	1.828E-04	4.970E-04	1.041E-03	1.042F-02	2.194E-03	2.073F-04	5.720E-04	1.230F-03
203	.873	9.91	1.827E-04	4.969E-04	1.041E-03	1.041F-02	2.191E-03	2.073E-04	5.710E-04	1.229F-03
204	.877	9.92	1.827E-04	4.968E-04	1.042E-03	1.042F-02	2.192E-03	2.075E-04	5.716E-04	1.231E-03
205	.881	9.92	1.826E-04	4.969E-04	1.043E-03	1.039F-02	2.186E-03	2.070F-04	5.699E-04	1.226E-03
206	.885	9.92	1.826E-04	4.970E-04	1.044E-03	1.040F-02	2.188E-03	2.068F-04	5.703E-04	1.226E-03
207	.889	9.93	1.825E-04	4.972E-04	1.044E-03	1.041E-02	2.188E-03	2.065E-04	5.709E-04	1.227E-03
208	.894	9.93	1.825E-04	4.974E-04	1.045E-03	1.041F-02	2.188F-03	2.067E-04	5.714E-04	1.228F-03
209	.898	9.93	1.824E-04	4.976E-04	1.046E-03	1.041F-02	2.189E-03	2.068E-04	5.712E-04	1.228E-03
210	.902	9.94	1.823E-04	4.980E-04	1.047E-03	1.040F-02	2.184E-03	2.064F-04	5.709E-04	1.224E-03
211	.906	9.94	1.823E-04	4.983E-04	1.048E-03	1.041F-02	2.188E-03	2.067F-04	5.732E-04	1.228E-03
212	.910	9.94	1.822E-04	4.986E-04	1.049E-03	1.043F-02	2.193E-03	2.070F-04	5.750E-04	1.229E-03
213	.914	9.95	1.821E-04	4.990E-04	1.050E-03	1.042F-02	2.188E-03	2.066F-04	5.743E-04	1.227E-03
214	.918	9.95	1.820E-04	4.993E-04	1.050E-03	1.043F-02	2.188E-03	2.067F-04	5.742E-04	1.225E-03
215	.923	9.95	1.819E-04	4.996E-04	1.051E-03	1.044F-02	2.188E-03	2.073F-04	5.750E-04	1.227E-03
216	.927	9.96	1.818E-04	4.998E-04	1.051E-03	1.044F-02	2.188E-03	2.074F-04	5.759E-04	1.228F-03
217	.931	9.96	1.816E-04	5.001E-04	1.052E-03	1.046F-02	2.191E-03	2.078F-04	5.779E-04	1.230F-03
218	.935	9.96	1.815E-04	5.003E-04	1.052E-03	1.043F-02	2.183E-03	2.075F-04	5.761E-04	1.227F-03
219	.939	9.96	1.813E-04	5.004E-04	1.052E-03	1.044F-02	2.185E-03	2.077E-04	5.766E-04	1.229E-03
220	.943	9.97	1.811E-04	5.005E-04	1.052E-03	1.044F-02	2.185E-03	2.075F-04	5.775E-04	1.231E-03
221	.948	9.97	1.810E-04	5.006E-04	1.052E-03	1.044F-02	2.182E-03	2.075F-04	5.782E-04	1.232E-03
222	.952	9.97	1.808E-04	5.006E-04	1.052E-03	1.045F-02	2.183E-03	2.062F-04	5.789E-04	1.235E-03
223	.956	9.98	1.806E-04	5.006E-04	1.051E-03	1.041F-02	2.174E-03	2.075F-04	5.764E-04	1.232E-03
224	.960	9.98	1.804E-04	5.006E-04	1.051E-03	1.041F-02	2.174E-03	2.074E-04	5.767E-04	1.233E-03
225	.964	9.98	1.803E-04	5.005E-04	1.051E-03	1.041F-02	2.172E-03	2.074F-04	5.768E-04	1.233F-03
226	.968	9.98	1.801E-04	5.005E-04	1.051E-03	1.041F-02	2.172E-03	2.077F-04	5.770E-04	1.234E-03
227	.973	9.99	1.800E-04	5.004E-04	1.050E-03	1.041F-02	2.170E-03	2.077F-04	5.766E-04	1.235E-03
228	.977	9.99	1.798E-04	5.003E-04	1.050E-03	1.037F-02	2.163F-03	2.069E-04	5.752E-04	1.231E-03
229	.981	9.99	1.797E-04	5.002E-04	1.049E-03	1.037F-02	2.164E-03	2.070F-04	5.756E-04	1.231F-03
230	.985	9.99	1.796E-04	5.000E-04	1.049E-03	1.039F-02	2.168E-03	2.079F-04	5.773E-04	1.234E-03
231	.989	10.00	1.795E-04	4.999E-04	1.049E-03	1.037E-02	2.162E-03	2.073F-04	5.764E-04	1.232E-03
232	.994	10.00	1.794E-04	4.997E-04	1.049E-03	1.038F-02	2.164E-03	2.071F-04	5.771E-04	1.233F-03
233	.997	10.00	1.793E-04	4.995E-04	1.048E-03	1.038F-02	2.164E-03	2.067F-04	5.761E-04	1.229F-03
234	1.002	10.00	1.793E-04	4.993E-04	1.048E-03	1.037F-02	2.164F-03	2.071F-04	5.770E-04	1.231F-03

RUN 497 WTP 1333 STANTON NUMBERS CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

	TIME	ALPHA	G1 ST	G2 ST	G3 ST	T1 ST	T2 ST	T3 ST	T4 ST	T5 ST
235	1.006	10.01	1.792E-04	4.991E-04	1.048E-03	1.040E-02	2.168E-03	2.074E-04	5.784E-04	1.232E-03
236	1.010	10.01	1.791E-04	4.988E-04	1.048E-03	1.037E-02	2.142E-03	2.069E-04	5.775E-04	1.228E-03
237	1.014	10.01	1.791E-04	4.985E-04	1.047E-03	1.039E-02	2.164E-03	2.075E-04	5.787E-04	1.230E-03
238	1.018	10.01	1.791E-04	4.982E-04	1.047E-03	1.037E-02	2.160E-03	2.068E-04	5.775E-04	1.227E-03
239	1.022	10.02	1.790E-04	4.978E-04	1.047E-03	1.039E-02	2.161E-03	2.067E-04	5.781E-04	1.227E-03
240	1.027	10.02	1.790E-04	4.975E-04	1.047E-03	1.042E-02	2.164E-03	2.074E-04	5.793E-04	1.229E-03
241	1.031	10.02	1.790E-04	4.971E-04	1.047E-03	1.040E-02	2.158E-03	2.073E-04	5.779E-04	1.228E-03
242	1.035	10.02	1.789E-04	4.967E-04	1.047E-03	1.041E-02	2.160E-03	2.067E-04	5.785E-04	1.230E-03
243	1.039	10.03	1.789E-04	4.963E-04	1.046E-03	1.039E-02	2.154E-03	2.056E-04	5.774E-04	1.227E-03
244	1.043	10.03	1.789E-04	4.959E-04	1.046E-03	1.041E-02	2.154E-03	2.064E-04	5.777E-04	1.229E-03
245	1.047	10.03	1.789E-04	4.955E-04	1.046E-03	1.043E-02	2.155E-03	2.066E-04	5.771E-04	1.233E-03
246	1.051	10.04	1.789E-04	4.952E-04	1.047E-03	1.040E-02	2.148E-03	2.056E-04	5.753E-04	1.231E-03
247	1.056	10.04	1.789E-04	4.948E-04	1.047E-03	1.040E-02	2.150E-03	2.061E-04	5.764E-04	1.232E-03
248	1.060	10.04	1.789E-04	4.945E-04	1.047E-03	1.038E-02	2.144E-03	2.057E-04	5.745E-04	1.230E-03
249	1.064	10.05	1.789E-04	4.942E-04	1.047E-03	1.038E-02	2.144E-03	2.052E-04	5.737E-04	1.232E-03
250	1.068	10.05	1.789E-04	4.939E-04	1.047E-03	1.040E-02	2.146E-03	2.056E-04	5.743E-04	1.234E-03
251	1.072	10.05	1.789E-04	4.936E-04	1.048E-03	1.037E-02	2.142E-03	2.055E-04	5.731E-04	1.233E-03
252	1.076	10.05	1.789E-04	4.934E-04	1.048E-03	1.038E-02	2.145E-03	2.057E-04	5.735E-04	1.233E-03
253	1.081	10.05	1.789E-04	4.932E-04	1.049E-03	1.035E-02	2.141E-03	2.051E-04	5.716E-04	1.230E-03
254	1.085	10.06	1.789E-04	4.931E-04	1.049E-03	1.038E-02	2.142E-03	2.056E-04	5.723E-04	1.232E-03
255	1.089	10.06	1.789E-04	4.929E-04	1.050E-03	1.038E-02	2.147E-03	2.064E-04	5.731E-04	1.235E-03
256	1.093	10.06	1.789E-04	4.928E-04	1.050E-03	1.035E-02	2.143E-03	2.059E-04	5.715E-04	1.231E-03
257	1.097	10.06	1.789E-04	4.928E-04	1.051E-03	1.034E-02	2.142E-03	2.059E-04	5.720E-04	1.230E-03
258	1.101	10.06	1.789E-04	4.927E-04	1.052E-03	1.036E-02	2.143E-03	2.066E-04	5.727E-04	1.232E-03
259	1.106	10.06	1.789E-04	4.927E-04	1.052E-03	1.038E-02	2.142E-03	2.068E-04	5.718E-04	1.232E-03
260	1.110	10.06	1.789E-04	4.927E-04	1.053E-03	1.037E-02	2.140E-03	2.069E-04	5.729E-04	1.234E-03
261	1.114	10.06	1.789E-04	4.927E-04	1.054E-03	1.034E-02	2.138E-03	2.064E-04	5.723E-04	1.231E-03
262	1.118	10.06	1.789E-04	4.927E-04	1.054E-03	1.036E-02	2.140E-03	2.067E-04	5.731E-04	1.233E-03
263	1.122	10.06	1.789E-04	4.927E-04	1.055E-03	1.037E-02	2.140E-03	2.068E-04	5.731E-04	1.234E-03
264	1.126	10.06	1.788E-04	4.927E-04	1.055E-03	1.038E-02	2.140E-03	2.069E-04	5.737E-04	1.236E-03
265	1.130	10.06	1.788E-04	4.928E-04	1.056E-03	1.038E-02	2.140E-03	2.067E-04	5.743E-04	1.237E-03
266	1.135	10.06	1.788E-04	4.928E-04	1.057E-03	1.038E-02	2.140E-03	2.065E-04	5.750E-04	1.237E-03
267	1.139	10.06	1.787E-04	4.929E-04	1.057E-03	1.039E-02	2.139E-03	2.066E-04	5.756E-04	1.238E-03
268	1.143	10.06	1.787E-04	4.929E-04	1.057E-03	1.040E-02	2.139E-03	2.067E-04	5.758E-04	1.241E-03
269	1.147	10.06	1.786E-04	4.929E-04	1.058E-03	1.040E-02	2.138E-03	2.063E-04	5.756E-04	1.242E-03
270	1.151	10.06	1.786E-04	4.929E-04	1.058E-03	1.040E-02	2.138E-03	2.064E-04	5.763E-04	1.241E-03
271	1.155	10.06	1.785E-04	4.930E-04	1.058E-03	1.040E-02	2.138E-03	2.067E-04	5.772E-04	1.242E-03
272	1.160	10.06	1.785E-04	4.930E-04	1.059E-03	1.040E-02	2.138E-03	2.067E-04	5.771E-04	1.244E-03
273	1.164	10.06	1.784E-04	4.930E-04	1.059E-03	1.043E-02	2.141E-03	2.068E-04	5.776E-04	1.247E-03
274	1.168	10.06	1.784E-04	4.930E-04	1.059E-03	1.039E-02	2.134E-03	2.062E-04	5.763E-04	1.243E-03
275	1.172	10.06	1.783E-04	4.930E-04	1.059E-03	1.041E-02	2.140E-03	2.073E-04	5.787E-04	1.246E-03
276	1.176	10.06	1.783E-04	4.930E-04	1.059E-03	1.038E-02	2.132E-03	2.066E-04	5.765E-04	1.243E-03
277	1.180	10.06	1.782E-04	4.929E-04	1.060E-03	1.040E-02	2.136E-03	2.065E-04	5.770E-04	1.244E-03
278	1.184	10.06	1.782E-04	4.929E-04	1.060E-03	1.040E-02	2.136E-03	2.066E-04	5.774E-04	1.244E-03
279	1.189	10.07	1.782E-04	4.929E-04	1.060E-03	1.037E-02	2.131E-03	2.066E-04	5.764E-04	1.242E-03
280	1.193	10.07	1.782E-04	4.929E-04	1.060E-03	1.038E-02	2.135E-03	2.069E-04	5.766E-04	1.244E-03
281	1.197	10.07	1.782E-04	4.929E-04	1.060E-03	1.037E-02	2.133E-03	2.065E-04	5.757E-04	1.243E-03
282	1.201	10.07	1.782E-04	4.928E-04	1.060E-03	1.035E-02	2.129E-03	2.066E-04	5.746E-04	1.241E-03
283	1.205	10.07	1.783E-04	4.928E-04	1.060E-03	1.037E-02	2.132E-03	2.069E-04	5.749E-04	1.243E-03
284	1.209	10.07	1.783E-04	4.928E-04	1.060E-03	1.035E-02	2.129E-03	2.062E-04	5.740E-04	1.241E-03
285	1.214	10.07	1.784E-04	4.928E-04	1.061E-03	1.034E-02	2.127E-03	2.060E-04	5.741E-04	1.240E-03
286	1.218	10.08	1.784E-04	4.927E-04	1.061E-03	1.036E-02	2.132E-03	2.068E-04	5.757E-04	1.245E-03
287	1.222	10.08	1.785E-04	4.927E-04	1.061E-03	1.033E-02	2.124E-03	2.061E-04	5.734E-04	1.241E-03
288	1.226	10.08	1.786E-04	4.927E-04	1.061E-03	1.037E-02	2.131E-03	2.070E-04	5.763E-04	1.244E-03
289	1.230	10.08	1.786E-04	4.926E-04	1.061E-03	1.032E-02	2.124E-03	2.069E-04	5.749E-04	1.241E-03
290	1.234	10.08	1.787E-04	4.926E-04	1.061E-03	1.032E-02	2.126E-03	2.069E-04	5.757E-04	1.243E-03

RUN 497 WTR 1333 STANTON NUMBERS CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

	TIME	ALPHA	G1 ST	G2 ST	G3 ST	T1 ST	T2 ST	T3 ST	T4 ST	T5 ST
291	1.238	10.09	1.788E-04	4.925E-04	1.061E-03	1.033F-02	2.125E-03	2.063E-04	5.760E-04	1.244E-03
292	1.243	10.09	1.789E-04	4.924E-04	1.061E-03	1.033F-02	2.124E-03	2.063E-04	5.764E-04	1.245E-03
293	1.247	10.09	1.790E-04	4.923E-04	1.061E-03	1.035F-02	2.129E-03	2.074E-04	5.782E-04	1.250E-03
294	1.251	10.09	1.790E-04	4.922E-04	1.061E-03	1.036F-02	2.122E-03	2.069E-04	5.764E-04	1.247E-03
295	1.255	10.09	1.791E-04	4.921E-04	1.061E-03	1.033F-02	2.123E-03	2.066E-04	5.768E-04	1.247E-03
296	1.259	10.09	1.792E-04	4.919E-04	1.061E-03	1.033E-02	2.121E-03	2.066E-04	5.769E-04	1.248E-03
297	1.263	10.09	1.792E-04	4.917E-04	1.061E-03	1.034F-02	2.122E-03	2.065E-04	5.776E-04	1.249E-03
298	1.268	10.09	1.792E-04	4.914E-04	1.060E-03	1.035F-02	2.123E-03	2.067E-04	5.779E-04	1.251E-03
299	1.272	10.09	1.792E-04	4.912E-04	1.060E-03	1.032F-02	2.116E-03	2.068E-04	5.756E-04	1.247E-03
300	1.276	10.10	1.792E-04	4.909E-04	1.059E-03	1.032F-02	2.117E-03	2.072F-04	5.755E-04	1.247E-03
301	1.280	10.10	1.792E-04	4.905E-04	1.058E-03	1.035F-02	2.121E-03	2.073E-04	5.764E-04	1.249E-03
302	1.284	10.10	1.791E-04	4.902E-04	1.058E-03	1.033F-02	2.118E-03	2.069E-04	5.745E-04	1.245E-03
303	1.288	10.10	1.790E-04	4.898E-04	1.057E-03	1.034F-02	2.122E-03	2.075E-04	5.741E-04	1.246F-03
304	1.293	10.10	1.789E-04	4.894E-04	1.056E-03	1.031F-02	2.114E-03	2.072F-04	5.722E-04	1.243E-03
305	1.297	10.10	1.788E-04	4.890E-04	1.055E-03	1.032F-02	2.115E-03	2.074E-04	5.730E-04	1.244F-03
306	1.301	10.10	1.787E-04	4.886E-04	1.054E-03	1.036F-02	2.119E-03	2.080F-04	5.734E-04	1.246E-03
307	1.305	10.10	1.786E-04	4.882E-04	1.053E-03	1.033F-02	2.113E-03	2.079F-04	5.711E-04	1.244E-03
308	1.309	10.10	1.784E-04	4.877E-04	1.052E-03	1.033F-02	2.116F-03	2.089F-04	5.722E-04	1.245F-03
309	1.313	10.11	1.782E-04	4.873E-04	1.050E-03	1.030E-02	2.107E-03	2.088F-04	5.707E-04	1.242E-03
310	1.317	10.11	1.780E-04	4.868E-04	1.049E-03	1.031F-02	2.107F-03	2.088E-04	5.710E-04	1.243E-03
311	1.322	10.11	1.778E-04	4.864E-04	1.048E-03	1.034F-02	2.110E-03	2.085F-04	5.721E-04	1.245E-03
312	1.326	10.11	1.776E-04	4.859E-04	1.047E-03	1.031F-02	2.104E-03	2.086E-04	5.707E-04	1.243E-03
313	1.330	10.11	1.773E-04	4.854F-04	1.045E-03	1.030F-02	2.100E-03	2.084F-04	5.703E-04	1.243E-03
314	1.334	10.11	1.770E-04	4.850F-04	1.044E-03	1.030F-02	2.099E-03	2.082F-04	5.706E-04	1.243F-03
315	1.338	10.11	1.768E-04	4.845E-04	1.043E-03	1.030F-02	2.097E-03	2.072F-04	5.708E-04	1.243F-03
316	1.342	10.11	1.764E-04	4.840E-04	1.042E-03	1.033F-02	2.100E-03	2.070F-04	5.724E-04	1.247E-03
317	1.347	10.12	1.761E-04	4.835E-04	1.040E-03	1.028F-02	2.089E-03	2.061E-04	5.704E-04	1.242E-03
318	1.351	10.12	1.758E-04	4.830E-04	1.039E-03	1.028F-02	2.088E-03	2.063E-04	5.717E-04	1.243F-03
319	1.355	10.12	1.754E-04	4.825E-04	1.038E-03	1.028F-02	2.083E-03	2.060F-04	5.721E-04	1.243F-03
320	1.359	10.12	1.751E-04	4.819E-04	1.036E-03	1.028F-02	2.078E-03	2.050F-04	5.713E-04	1.241E-03
321	1.363	10.12	1.747E-04	4.813E-04	1.035E-03	1.030F-02	2.081E-03	2.051F-04	5.724E-04	1.241E-03
322	1.367	10.12	1.742E-04	4.807E-04	1.033E-03	1.025F-02	2.070E-03	2.044F-04	5.707E-04	1.234E-03
323	1.371	10.13	1.738E-04	4.800E-04	1.032E-03	1.026F-02	2.067E-03	2.043E-04	5.715E-04	1.234E-03
324	1.376	10.13	1.733E-04	4.792E-04	1.030E-03	1.025F-02	2.062E-03	2.037F-04	5.711E-04	1.231F-03
325	1.380	10.13	1.728E-04	4.784E-04	1.028E-03	1.026F-02	2.060E-03	2.038F-04	5.708E-04	1.228F-03
326	1.384	10.13	1.722E-04	4.775E-04	1.026E-03	1.025F-02	2.055E-03	2.030F-04	5.704E-04	1.226E-03
327	1.388	10.13	1.717E-04	4.765E-04	1.024E-03	1.020F-02	2.042E-03	2.024F-04	5.681E-04	1.220F-03
328	1.392	10.13	1.710E-04	4.755E-04	1.021E-03	1.020F-02	2.039E-03	2.024E-04	5.681E-04	1.219F-03
329	1.396	10.13	1.704E-04	4.743E-04	1.019E-03	1.021F-02	2.038E-03	2.026F-04	5.680E-04	1.219E-03
330	1.401	10.14	1.697E-04	4.730E-04	1.016E-03	1.017F-02	2.024E-03	2.012F-04	5.654E-04	1.213E-03
331	1.405	10.14	1.690E-04	4.717E-04	1.013E-03	1.017F-02	2.020E-03	2.010E-04	5.651E-04	1.212E-03
332	1.409	10.14	1.682E-04	4.702E-04	1.010E-03	1.016F-02	2.009E-03	2.004E-04	5.613E-04	1.208E-03
333	1.413	10.14	1.674E-04	4.687E-04	1.007E-03	1.012F-02	2.000E-03	1.999F-04	5.600E-04	1.205E-03
334	1.417	10.14	1.666E-04	4.671E-04	1.003E-03	1.013F-02	1.997E-03	1.991F-04	5.599E-04	1.206E-03
335	1.421	10.14	1.658E-04	4.654E-04	9.995E-04	1.010F-02	1.985E-03	1.981F-04	5.575E-04	1.202E-03
336	1.425	10.14	1.650E-04	4.637E-04	9.957E-04	1.011F-02	1.983E-03	1.980F-04	5.576E-04	1.203F-03
337	1.430	10.14	1.641E-04	4.620E-04	9.918E-04	1.005F-02	1.966E-03	1.967F-04	5.540E-04	1.197E-03
338	1.434	10.14	1.632E-04	4.602F-04	9.878E-04	1.004F-02	1.961E-03	1.957F-04	5.537E-04	1.196E-03
339	1.438	10.14	1.624E-04	4.584F-04	9.838E-04	1.005F-02	1.959E-03	1.964F-04	5.543E-04	1.197E-03
340	1.442	10.14	1.616E-04	4.567E-04	9.798E-04	1.001F-02	1.944E-03	1.954E-04	5.514E-04	1.191E-03
341	1.446	10.14	1.607E-04	4.550E-04	9.758E-04	1.001F-02	1.941E-03	1.944E-04	5.517E-04	1.192E-03
342	1.450	10.14	1.599E-04	4.534E-04	9.718E-04	9.967F-03	1.927E-03	1.930E-04	5.495E-04	1.185E-03
343	1.455	10.14	1.592E-04	4.518E-04	9.679E-04	9.973F-03	1.923E-03	1.933F-04	5.499E-04	1.184E-03
344	1.459	10.14	1.584E-04	4.503E-04	9.641E-04	9.988F-03	1.922F-03	1.930F-04	5.502E-04	1.184E-03
345	1.463	10.14	1.577E-04	4.489F-04	9.605E-04	9.942F-03	1.908E-03	1.926F-04	5.485E-04	1.179F-03

RUN 499 VTR 1333 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	PO	TO	TOI	MACH	PINF	TINF	UINF	RHOINF	REINF
.407	20.13	19051.7	2594.9	3123.0	14.13	.0474	87.5	6591.3	1.412E-03	4.069E+06
.411	20.30	19064.2	2605.8	3131.0	14.12	.0477	87.9	6599.5	1.415E-03	4.065E+06
.416	20.46	19076.0	2612.5	3139.0	14.10	.0480	88.3	6607.0	1.418E-03	4.061E+06
.420	20.61	19087.8	2618.9	3147.0	14.09	.0483	88.6	6614.1	1.421E-03	4.058E+06
.424	20.75	19100.1	2625.0	3155.4	14.08	.0486	89.0	6620.9	1.424E-03	4.055E+06
.428	20.88	19113.4	2630.9	3162.8	14.06	.0489	89.3	6627.5	1.427E-03	4.052E+06
.432	21.01	1912[illegible].1	2636.5	3169.8	14.05	.0492	89.6	6633.8	1.430E-03	4.050E+06
.436	21.12	19144.3	2642.0	3176.7	14.04	.0494	90.0	6639.9	1.433E-03	4.048E+06
.441	21.22	19162.0	2647.3	3183.4	14.03	.0497	90.3	6645.9	1.436E-03	4.047E+06
.445	21.32	19181.2	2652.4	3189.9	14.02	.0500	90.5	6651.7	1.439E-03	4.046E+06
.449	21.40	19201.5	2657.4	3196.3	14.01	.0502	90.8	6657.4	1.441E-03	4.045E+06
.453	21.48	19222.5	2662.4	3202.8	14.00	.0505	91.1	6663.1	1.444E-03	4.044E+06
.457	21.55	19243.9	2667.2	3208.8	13.99	.0507	91.4	6668.6	1.446E-03	4.042E+06
.461	21.61	19265.0	2672.0	3215.0	13.98	.0509	91.6	6674.1	1.449E-03	4.041E+06
.465	21.67	19285.4	2676.8	3221.1	13.98	.0511	91.9	6679.6	1.451E-03	4.039E+06
.470	21.72	19304.7	2681.5	3227.0	13.97	.0513	92.1	6684.9	1.452E-03	4.036E+06
.474	21.76	19322.4	2686.1	3232.9	13.96	.0515	92.3	6690.1	1.454E-03	4.033E+06
.478	21.79	19338.2	2690.6	3238.6	13.96	.0516	92.6	6695.2	1.454E-03	4.030E+06
.482	21.82	19351.8	2695.0	3244.2	13.95	.0518	92.8	6700.2	1.455E-03	4.025E+06
.486	21.84	19363.4	2699.2	3249.5	13.95	.0519	93.0	6705.0	1.455E-03	4.021E+06
.490	21.85	19372.7	2703.3	3254.6	13.94	.0520	93.2	6709.5	1.456E-03	4.016E+06
.495	21.86	19380.1	2707.1	3259.4	13.94	.0521	93.3	6713.8	1.455E-03	4.011E+06
.499	21.86	19385.8	2710.7	3263.6	13.93	.0522	93.5	6717.7	1.455E-03	4.005E+06
.503	21.86	19390.1	2714.0	3268.0	13.93	.0523	93.7	6721.4	1.455E-03	4.000E+06
.507	21.85	19393.5	2717.1	3271.8	13.93	.0523	93.8	6724.8	1.455E-03	3.996E+06
.511	21.83	19396.3	2719.8	3275.2	13.92	.0524	93.9	6727.8	1.455E-03	3.992E+06
.515	21.81	19399.1	2722.3	3278.2	13.92	.0525	94.0	6730.5	1.455E-03	3.988E+06
.520	21.78	19402.1	2724.5	3281.0	13.92	.0525	94.2	6733.0	1.455E-03	3.986E+06
.524	21.75	19405.7	2726.4	3283.4	13.91	.0526	94.3	6735.1	1.455E-03	3.984E+06
.528	21.72	19410.3	2728.1	3285.6	13.91	.0527	94.4	6737.0	1.456E-03	3.983E+06
.532	21.68	19416.0	2729.7	3287.5	13.91	.0528	94.4	6738.7	1.457E-03	3.983E+06
.536	21.63	19422.9	2731.1	3289.3	13.90	.0529	94.5	6740.3	1.458E-03	3.984E+06
.540	21.58	19431.0	2732.4	3291.0	13.90	.0530	94.6	6741.8	1.460E-03	3.985E+06
.544	21.53	19440.2	2733.6	3292.7	13.90	.0531	94.7	6743.3	1.462E-03	3.987E+06
.549	21.47	19450.4	2734.9	3294.4	13.89	.0532	94.8	6744.8	1.463E-03	3.989E+06
.553	21.41	19461.3	2736.3	3296.2	13.89	.0534	94.9	6746.3	1.465E-03	3.991E+06
.557	21.34	19472.7	2737.7	3298.2	13.88	.0535	95.0	6748.0	1.467E-03	3.994E+06
.561	21.27	19484.3	2739.3	3300.3	13.88	.0536	95.1	6749.9	1.469E-03	3.995E+06
.565	21.20	19495.9	2741.1	3302.6	13.88	.0537	95.2	6751.9	1.471E-03	3.997E+06
.569	21.12	19507.2	2743.0	3305.1	13.87	.0539	95.4	6754.1	1.473E-03	3.998E+06
.574	21.04	19517.9	2745.1	3307.8	13.87	.0540	95.5	6756.5	1.474E-03	3.998E+06
.578	20.95	19527.9	2747.4	3310.7	13.86	.0541	95.6	6759.0	1.475E-03	3.997E+06
.582	20.87	19537.1	2749.8	3313.8	13.86	.0542	95.7	6761.7	1.476E-03	3.995E+06
.586	20.77	19545.5	2752.3	3317.0	13.86	.0543	95.8	6764.6	1.476E-03	3.993E+06
.590	20.68	19553.0	2754.9	3320.3	13.86	.0543	96.0	6767.5	1.476E-03	3.989E+06
.594	20.58	19559.7	2757.5	3323.6	13.85	.0544	96.1	6770.5	1.475E-03	3.986E+06
.598	20.48	19565.8	2760.2	3327.0	13.85	.0544	96.2	6773.5	1.475E-03	3.981E+06
.603	20.38	19571.4	2762.9	3330.4	13.85	.0544	96.3	6776.5	1.474E-03	3.976E+06
.607	20.27	19576.7	2765.5	3333.7	13.85	.0544	96.4	6779.4	1.473E-03	3.971E+06
.611	20.17	19581.9	2768.1	3336.9	13.85	.0545	96.5	6782.3	1.471E-03	3.966E+06
.615	20.06	19587.2	2770.6	3340.1	13.85	.0545	96.6	6785.1	1.470E-03	3.961E+06
.619	19.94	19592.9	2773.0	3343.1	13.85	.0545	96.6	6787.8	1.469E-03	3.956E+06
.623	19.83	19599.2	2775.3	3346.0	13.85	.0545	96.7	6790.4	1.468E-03	3.951E+06
.628	19.71	19606.2	2777.5	3348.8	13.85	.0545	96.8	6792.9	1.467E-03	3.947E+06
.632	19.59	19614.2	2779.6	3351.5	13.85	.0545	96.9	6795.3	1.466E-03	3.944E+06
.636	19.47	19623.2	2781.6	3354.1	13.85	.0545	96.9	6797.6	1.466E-03	3.941E+06
AVERAGE		19387.2	2710.9	3264.3	13.93	.0522	93.5	6717.9	1.455E-03	4.006E+06

RUN 49A WTR 1333 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	G1 QDOT	G2 QDOT	T1 TW	T1 QDOT	T2 TW	T2 QDOT	T3 TW	T3 QDOT	T4 TW	T4 QDOT	T5 TW	T5 QDOT
.407	20.13	1.701	3.747	163.77	77.020	89.16	9.182	74.58	1.104	78.1[illegible]	4.147	90.49	20.012
.411	20.30	1.748	3.757	165.19	77.579	89.18	9.076	74.60	1.127	78.1[illegible]	4.167	90.98	20.374
.416	20.46	1.795	3.765	166.60	78.220	89.21	8.999	74.63	1.152	78.2[illegible]	4.187	91.55	20.744
.420	20.61	1.840	3.781	167.66	78.566	89.25	8.895	74.63	1.168	78.2[illegible]	4.190	92.04	21.076
.424	20.75	1.885	3.797	168.72	79.018	89.25	8.833	74.66	1.185	78.3[illegible]	4.200	92.54	21.422
.428	20.88	1.929	3.815	170.14	79.494	89.25	8.770	74.70	1.207	78.40	4.217	92.96	21.764
.432	21.01	1.971	3.834	170.85	79.887	89.25	8.701	74.72	1.229	78.45	4.231	93.46	22.061
.436	21.12	2.011	3.855	172.26	80.273	89.28	8.634	74.75	1.247	78.50	4.243	93.95	22.314
.441	21.22	2.050	3.877	173.32	80.773	89.32	8.590	74.75	1.270	78.57	4.254	94.52	22.574
.445	21.32	2.086	3.901	174.74	81.271	89.35	8.563	74.77	1.291	78.62	4.267	94.87	22.834
.449	21.40	2.121	3.925	176.15	81.661	89.39	8.541	74.77	1.307	78.66	4.285	95.51	23.060
.453	21.48	2.152	3.949	177.22	82.051	89.46	8.516	74.81	1.327	78.74	4.306	95.94	23.254
.457	21.55	2.181	3.974	178.63	82.561	89.49	8.499	74.84	1.349	78.80	4.322	96.43	23.430
.461	21.61	2.208	3.999	180.05	83.041	89.53	8.495	74.88	1.362	78.87	4.339	97.00	23.604
.465	21.67	2.231	4.023	181.11	83.429	89.56	8.498	74.90	1.377	78.94	4.358	97.42	23.765
.470	21.72	2.252	4.047	182.52	83.964	89.60	8.511	74.94	1.396	79.00	4.381	7.85	23.903
.474	21.76	2.270	4.069	183.94	84.423	89.67	8.518	74.97	1.406	79.04	4.398	98.34	24.009
.478	21.79	2.285	4.091	185.00	84.730	89.71	8.529	74.99	1.413	79.1[illegible]	4.413	98.62	24.103
.482	21.82	2.297	4.111	186.06	84.976	89.78	8.551	75.01	1.425	79.17	4.430	99.12	24.154
.486	21.84	2.306	4.130	187.12	85.277	89.81	8.572	75.03	1.438	79.23	4.446	99.47	24.195
.490	21.85	2.313	4.146	188.54	85.620	89.86	8.609	75.04	1.440	79.2[illegible]	4.469	99.90	24.266
.495	21.86	2.316	4.161	189.60	85.804	89.92	8.626	75.05	1.432	79.34	4.470	100.25	24.2[illegible]
.499	21.86	2.317	4.174	190.66	85.909	89.99	8.683	75.10	1.428	79.4[illegible]	4.481	100.68	24.262
.503	21.86	2.316	4.184	192.43	86.148	90.10	8.727	75.12	1.425	79.47	4.494	101.03	24.280
.507	21.85	2.312	4.192	193.14	86.243	90.13	8.767	75.11	1.417	79.51	4.507	101.45	24.278
.511	21.83	2.305	4.199	194.20	86.373	90.24	8.811	75.13	1.409	79.57	4.516	101.74	24.274
.515	21.81	2.297	4.202	195.26	86.470	90.31	8.842	75.16	1.406	79.64	4.517	102.02	24.233
.520	21.78	2.286	4.203	196.32	86.625	90.38	8.892	75.18	1.404	79.69	4.528	102.45	24.202
.524	21.75	2.274	4.202	197.38	86.743	90.48	8.946	75.18	1.400	79.7[illegible]	4.540	102.73	24.184
.528	21.72	2.259	4.199	198.45	86.748	90.59	8.983	75.19	1.395	79.7[illegible]	4.536	103.08	24.116
.532	21.68	2.244	4.194	199.86	86.920	90.70	9.043	75.21	1.395	79.85	4.539	103.44	24.075
.536	21.63	2.228	4.188	200.57	86.728	90.73	9.064	75.23	1.384	79.91	4.536	103.72	23.983
.540	21.58	2.208	4.179	201.63	86.778	90.80	9.113	75.22	1.375	79.95	4.542	104.00	23.922
.544	21.53	2.188	4.169	202.69	86.476	90.87	9.169	75.24	1.369	79.99	4.550	104.29	23.865
.549	21.47	2.167	4.157	203.75	86.956	90.98	9.190	75.28	1.360	80.0[illegible]	4.546	104.50	23.775
.553	21.41	2.145	4.145	204.46	86.990	91.05	9.249	75.28	1.357	80.10	4.553	104.78	23.741
.557	21.34	2.123	4.131	205.52	86.924	91.16	9.273	75.29	1.350	80.15	4.546	105.06	23.629
.561	21.27	2.100	4.117	206.58	86.997	91.26	9.314	75.30	1.344	80.17	4.551	105.28	23.547
.565	21.20	2.076	4.103	207.29	87.107	91.33	9.372	75.33	1.338	80.23	4.565	105.56	23.494
.569	21.12	2.052	4.088	208.35	87.034	91.44	9.413	75.33	1.327	80.30	4.568	105.84	23.392
.574	21.04	2.028	4.073	209.41	87.198	91.51	9.478	75.32	1.327	80.33	4.575	106.05	23.320
.578	20.95	2.003	4.058	210.12	87.667	91.62	9.505	75.32	1.320	80.39	4.568	106.27	23.188
.582	20.87	1.979	4.044	211.18	87.112	91.72	9.579	75.33	1.306	80.44	4.581	106.55	23.122
.586	20.77	1.954	4.031	212.25	87.296	91.83	9.676	75.38	1.296	80.50	4.597	106.83	23.063
.590	20.68	1.929	4.019	212.95	87.289	91.90	9.723	75.37	1.285	80.54	4.591	106.97	22.914
.594	20.58	1.904	4.007	214.01	87.420	92.01	9.789	75.38	1.279	80.57	4.599	107.19	22.815
.598	20.48	1.879	3.997	215.08	87.401	92.15	9.850	75.38	1.265	80.64	4.601	107.47	22.664
.603	20.38	1.854	3.988	215.78	87.736	92.25	9.963	75.40	1.253	80.71	4.617	107.61	22.593
.607	20.27	1.829	3.981	216.84	87.950	92.32	10.024	75.40	1.245	80.71	4.616	107.82	22.423
.611	20.17	1.805	3.975	217.55	87.546	92.43	10.093	75.40	1.239	80.77	4.617	107.97	22.251
.615	20.06	1.780	3.971	218.26	87.685	92.61	10.195	75.42	1.234	80.82	4.625	108.18	22.119
.619	19.94	1.755	3.969	219.32	87.700	92.75	10.268	75.43	1.218	80.85	4.628	108.32	21.941
.623	19.83	1.731	3.968	220.38	87.706	92.82	10.347	75.40	1.202	80.90	4.634	108.46	21.754
.628	19.71	1.707	3.969	221.09	87.886	92.96	10.465	75.43	1.192	80.95	4.650	108.53	21.600
.632	19.59	1.682	3.972	222.51	87.901	93.14	10.547	75.42	1.178	81.01	4.652	108.81	21.469
.636	19.47	1.659	3.977	223.21	87.908	93.24	10.638	75.43	1.168	81.0[illegible]	4.658	108.96	21.175

RUN 49 WTH 1333 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	PO	TO	TOI	MACH	PINF	TINF	QINF	RHOINF	REINF
.640	19.34	19633.4	2763.6	3356.7	13.85	.0545	97.0	6799.9	1.466E-03	3.939E+06
.644	19.21	19644.9	2765.5	3359.2	13.84	.0546	97.1	6802.1	1.466E-03	3.937E+06
.648	19.09	19657.8	2767.4	3361.7	13.84	.0547	97.2	6804.3	1.466E-03	3.936E+06
.652	18.95	19672.1	2769.2	3364.1	13.84	.0547	97.3	6806.5	1.467E-03	3.936E+06
.657	18.82	19687.8	2771.1	3366.7	13.84	.0548	97.4	6808.7	1.468E-03	3.936E+06
.661	18.69	19704.9	2773.0	3369.2	13.84	.0549	97.4	6810.9	1.469E-03	3.937E+06
.665	18.55	19723.4	2774.9	3371.9	13.84	.0550	97.5	6813.3	1.470E-03	3.937E+06
.669	18.41	19743.3	2776.9	3374.6	13.83	.0551	97.6	6815.7	1.471E-03	3.938E+06
.673	18.27	19764.4	2779.0	3377.4	13.83	.0552	97.7	6818.2	1.473E-03	3.939E+06
.677	18.13	19786.7	2781.2	3380.4	13.83	.0553	97.8	6820.8	1.474E-03	3.940E+06
.682	17.99	19810.1	2783.5	3383.6	13.83	.0554	97.9	6823.6	1.475E-03	3.940E+06
.686	17.84	19834.6	2785.9	3386.8	13.83	.0555	98.0	6826.5	1.476E-03	3.941E+06
.690	17.70	19859.1	2788.4	3390.3	13.83	.0556	98.1	6829.5	1.477E-03	3.940E+06
.694	17.55	19884.4	2791.1	3393.9	13.82	.0557	98.3	6832.7	1.477E-03	3.940E+06
.699	17.40	19909.9	2793.8	3397.6	13.82	.0557	98.4	6836.0	1.478E-03	3.938E+06
.702	17.25	19935.3	2796.7	3401.5	13.82	.0558	98.5	6839.5	1.478E-03	3.937E+06
.707	17.10	19960.4	2819.7	3405.5	13.82	.0559	98.6	6843.0	1.478E-03	3.934E+06
.711	16.95	19984.7	2822.7	3409.6	13.82	.0559	98.7	6846.6	1.477E-03	3.932E+06
.715	16.80	20008.0	2825.8	3413.7	13.82	.0559	98.8	6850.3	1.477E-03	3.928E+06
.719	16.64	20030.2	2829.0	3417.9	13.82	.0560	98.9	6853.9	1.476E-03	3.925E+06
.723	16.49	20050.3	2832.0	3422.0	13.83	.0560	99.0	6857.6	1.475E-03	3.921E+06
.727	16.33	20068.7	2835.1	3426.0	13.83	.0560	99.1	6861.1	1.474E-03	3.916E+06
.731	16.17	20085.0	2838.0	3429.9	13.83	.0560	99.2	6864.6	1.473E-03	3.912E+06
.736	16.01	20098.8	2840.9	3433.6	13.83	.0560	99.2	6867.9	1.472E-03	3.907E+06
.740	15.85	20110.2	2843.6	3437.1	13.83	.0561	99.3	6870.9	1.471E-03	3.903E+06
.744	15.69	20118.9	2846.1	3440.4	13.83	.0561	99.4	6873.8	1.470E-03	3.898E+06
.748	15.53	20125.0	2848.4	3443.3	13.83	.0561	99.5	6876.3	1.469E-03	3.894E+06
.752	15.37	20128.5	2850.4	3445.9	13.82	.0561	99.6	6878.6	1.468E-03	3.890E+06
.756	15.21	20129.6	2852.2	3448.1	13.82	.0561	99.7	6880.6	1.468E-03	3.887E+06
.761	15.05	20128.4	2853.7	3450.0	13.82	.0561	99.7	6882.2	1.467E-03	3.884E+06
.765	14.88	20125.2	2855.0	3451.5	13.82	.0561	99.8	6883.5	1.467E-03	3.881E+06
.769	14.72	20120.4	2855.9	3452.7	13.82	.0562	99.8	6884.6	1.466E-03	3.879E+06
.773	14.55	20114.4	2856.8	3453.7	13.82	.0562	99.9	6885.4	1.466E-03	3.877E+06
.777	14.39	20107.4	2857.4	3454.3	13.81	.0562	99.9	6885.9	1.466E-03	3.876E+06
.781	14.22	20100.1	2857.8	3454.7	13.81	.0563	100.0	6886.2	1.467E-03	3.875E+06
.785	14.05	20092.9	2858.0	3454.9	13.81	.0563	100.0	6886.4	1.467E-03	3.875E+06
.790	13.88	20086.2	2858.2	3455.0	13.81	.0563	100.1	6886.4	1.468E-03	3.875E+06
.794	13.72	20080.3	2858.2	3455.0	13.80	.0564	100.1	6886.4	1.468E-03	3.875E+06
.798	13.55	20076.1	2858.2	3454.9	13.80	.0564	100.1	6886.3	1.469E-03	3.876E+06
.802	13.38	20073.5	2858.2	3454.8	13.80	.0565	100.1	6886.2	1.470E-03	3.877E+06
.806	13.21	20072.9	2858.2	3454.8	13.80	.0565	100.2	6886.2	1.470E-03	3.878E+06
.810	13.04	20074.4	2858.2	3454.9	13.80	.0565	100.2	6886.2	1.471E-03	3.880E+06
.815	12.87	20078.1	2858.4	3455.1	13.80	.0566	100.2	6886.4	1.472E-03	3.881E+06
.819	12.70	20084.1	2858.6	3455.4	13.80	.0566	100.2	6886.7	1.473E-03	3.882E+06
.823	12.53	20092.2	2858.8	3455.9	13.80	.0566	100.2	6887.1	1.473E-03	3.884E+06
.827	12.36	20102.1	2859.3	3456.5	13.80	.0567	100.3	6887.6	1.474E-03	3.885E+06
.831	12.19	20113.6	2859.8	3457.3	13.80	.0567	100.3	6888.3	1.474E-03	3.886E+06
.835	12.02	20126.3	2860.4	3458.3	13.80	.0567	100.3	6889.2	1.475E-03	3.886E+06
.840	11.85	20139.7	2861.2	3459.4	13.80	.0567	100.3	6890.2	1.475E-03	3.887E+06
.844	11.68	20153.2	2862.0	3460.6	13.80	.0568	100.3	6891.2	1.475E-03	3.887E+06
.848	11.51	20166.5	2862.9	3461.9	13.80	.0568	100.3	6892.4	1.475E-03	3.886E+06
.852	11.34	20179.0	2863.9	3463.4	13.80	.0568	100.4	6893.7	1.475E-03	3.886E+06
.856	11.17	20190.1	2865.0	3464.8	13.80	.0568	100.4	6895.0	1.474E-03	3.885E+06
.860	11.00	20199.6	2866.1	3466.3	13.80	.0568	100.4	6896.3	1.474E-03	3.884E+06
.864	10.83	20207.0	2867.3	3467.9	13.80	.0568	100.5	6897.7	1.474E-03	3.882E+06
.869	10.67	20212.0	2868.4	3469.4	13.80	.0568	100.5	6899.0	1.473E-03	3.880E+06
AVERAGE		20008.0	2837.2	3427.9	13.82	.0560	99.2	6862.6	1.472E-03	3.904E+06

RUN 49A #TR 1333 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	G1 QDOT	G2 QDOT	T1 Tw	T1 QDOT	T2 Tw	T2 QDOT	T3 Tw	T3 QDOT	T4 Tw	T4 QDOT	T5 Tw	T5 QDOT
.641	19.34	1.635	3.983	223.57	87.835	93.32	10.753	75.44	1.157	81.0[illegible]	4.670	108.96	21.007
.644	19.21	1.611	3.991	224.28	87.883	93.49	10.865	75.44	1.144	81.14	4.683	109.10	20.820
.648	19.09	1.587	4.000	225.34	88.107	93.63	10.982	75.45	1.140	81.19	4.704	109.24	20.637
.652	18.95	1.564	4.011	226.40	87.818	93.78	11.040	75.45	1.133	81.28	4.704	109.38	20.365
.657	18.82	1.540	4.022	227.11	87.929	93.88	11.172	75.45	1.131	81.28	4.723	109.38	20.225
.661	18.69	1.517	4.035	228.17	87.936	94.06	11.282	75.44	1.121	81.33	4.734	109.45	20.034
.665	18.55	1.494	4.049	228.87	87.913	94.24	11.380	75.45	1.114	81.41	4.750	109.52	19.814
.669	18.41	1.472	4.064	229.58	87.764	94.41	11.487	75.46	1.111	81.44	4.764	109.66	19.588
.673	18.27	1.449	4.079	230.29	87.758	94.55	11.611	75.45	1.102	81.48	4.775	109.73	19.402
.677	18.13	1.427	4.094	231.35	87.867	94.70	11.734	75.45	1.091	81.55	4.788	109.81	19.212
.682	17.99	1.406	4.110	232.06	87.880	94.87	11.844	75.49	1.084	81.60	4.804	109.81	18.997
.686	17.84	1.385	4.125	232.77	87.955	95.01	11.969	75.50	1.081	81.66	4.820	109.95	18.799
.690	17.70	1.364	4.141	233.47	87.823	95.16	12.102	75.49	1.079	81.67	4.836	109.95	18.597
.694	17.55	1.343	4.156	234.18	87.645	95.33	12.204	75.47	1.073	81.73	4.838	109.95	18.348
.699	17.40	1.324	4.170	235.24	87.698	95.51	12.336	75.49	1.072	81.80	4.855	110.02	18.161
.702	17.25	1.305	4.184	235.60	87.854	95.69	12.489	75.49	1.074	81.8[illegible]	4.881	110.09	17.965
.707	17.10	1.286	4.197	236.66	87.741	95.86	12.603	75.48	1.071	81.85	4.889	110.09	17.677
.711	16.95	1.269	4.209	237.37	87.706	96.04	12.734	75.47	1.067	81.9[illegible]	4.893	110.09	17.429
.715	16.80	1.252	4.220	238.07	87.729	96.22	12.883	75.50	1.067	82.00	4.900	110.09	17.211
.719	16.64	1.236	4.230	238.78	87.746	96.43	13.025	75.51	1.069	82.07	4.912	110.16	16.964
.723	16.49	1.221	4.238	239.49	87.816	96.61	13.189	75.51	1.072	82.08	4.929	110.09	16.738
.727	16.33	1.206	4.245	240.55	87.710	96.78	13.298	75.50	1.075	82.1[illegible]	4.922	110.09	16.451
.731	16.17	1.193	4.251	241.26	87.889	97.03	13.469	75.54	1.086	82.2[illegible]	4.940	110.09	16.262
.736	16.01	1.181	4.255	241.97	87.694	97.24	13.582	75.55	1.090	82.27	4.935	110.02	15.964
.740	15.85	1.171	4.257	242.67	87.733	97.42	13.730	75.54	1.099	82.3[illegible]	4.941	109.95	15.729
.744	15.69	1.161	4.258	243.38	87.797	97.63	13.891	75.52	1.111	82.31	4.950	109.95	15.514
.748	15.53	1.153	4.257	244.09	87.604	97.84	14.007	75.57	1.118	82.3[illegible]	4.945	109.88	15.247
.752	15.37	1.146	4.255	244.80	87.426	98.02	14.130	75.57	1.125	82.44	4.944	109.88	15.008
.756	15.21	1.140	4.252	245.50	87.338	98.23	14.269	75.57	1.134	82.4[illegible]	4.945	109.81	14.789
.761	15.05	1.136	4.247	246.21	87.283	98.41	14.414	75.59	1.145	82.51	4.947	109.73	14.573
.765	14.88	1.133	4.241	246.92	87.187	98.60	14.547	75.60	1.154	82.58	4.948	109.73	14.348
.769	14.72	1.131	4.234	247.63	86.803	98.87	14.647	75.62	1.162	82.62	4.939	109.66	14.103
.773	14.55	1.131	4.226	247.98	86.746	99.08	14.799	75.62	1.175	82.64	4.942	109.59	13.923
.777	14.39	1.132	4.217	249.04	86.810	99.30	14.967	75.62	1.189	82.68	4.950	109.52	13.739
.781	14.22	1.135	4.208	249.40	86.456	99.51	15.077	75.64	1.199	82.75	4.941	109.45	13.484
.785	14.05	1.139	4.197	249.75	86.419	99.72	15.236	75.67	1.215	82.7[illegible]	4.947	109.45	13.301
.790	13.88	1.144	4.187	250.46	86.336	99.93	15.396	75.67	1.229	82.81	4.949	109.31	13.095
.794	13.72	1.151	4.176	251.17	86.195	100.14	15.555	75.67	1.238	82.82	4.949	109.24	12.880
.798	13.55	1.159	4.165	251.87	86.090	100.39	15.721	75.71	1.255	82.92	4.943	109.17	12.679
.802	13.38	1.169	4.154	252.23	86.007	100.64	15.880	75.74	1.277	82.9[illegible]	4.935	109.17	12.490
.806	13.21	1.180	4.143	253.29	85.946	100.89	16.041	75.72	1.296	82.98	4.934	109.03	12.294
.810	13.04	1.192	4.133	253.64	85.806	101.13	16.211	75.74	1.315	83.00	4.935	108.96	12.097
.815	12.87	1.206	4.123	254.35	85.659	101.38	16.388	75.77	1.339	83.05	4.930	108.89	11.932
.819	12.70	1.220	4.114	255.06	85.629	101.63	16.561	75.80	1.360	83.1[illegible]	4.921	108.81	11.765
.823	12.53	1.236	4.106	255.41	85.559	101.88	16.742	75.79	1.383	83.1[illegible]	4.913	108.67	11.602
.827	12.36	1.253	4.099	256.12	85.407	102.13	16.918	75.81	1.411	83.1[illegible]	4.908	108.53	11.445
.831	12.19	1.271	4.093	256.83	85.203	102.41	17.096	75.86	1.436	83.22	4.904	108.53	11.285
.835	12.02	1.291	4.088	257.18	84.984	102.66	17.272	75.89	1.456	83.2[illegible]	4.892	108.46	11.129
.840	11.85	1.311	4.084	257.89	84.787	102.90	17.444	75.89	1.481	83.27	4.878	108.32	10.961
.844	11.68	1.332	4.081	258.24	84.595	103.14	17.615	75.91	1.511	83.3[illegible]	4.862	108.25	10.801
.848	11.51	1.354	4.080	258.95	84.322	103.47	17.767	75.96	1.537	83.37	4.852	108.25	10.645
.852	11.34	1.376	4.080	259.30	84.271	103.72	17.974	75.98	1.563	83.4[illegible]	4.853	108.18	10.520
.856	11.17	1.400	4.081	260.01	83.933	104.04	18.106	76.01	1.588	83.4[illegible]	4.840	108.11	10.422
.861	11.00	1.424	4.084	260.37	83.900	104.25	18.281	76.02	1.617	83.4[illegible]	4.823	107.97	10.187
.864	10.83	1.449	4.087	260.72	83.711	104.57	18.450	76.06	1.643	83.5[illegible]	4.830	107.89	10.024
.868	10.67	1.475	4.092	261.07	83.629	104.85	18.635	76.08	1.673	83.5[illegible]	4.831	107.82	9.877

RUN 49x WTR 1333 CO-AXIAL THERMOCOUPLE SHARPSHOOTER TEST 12/10/79-12/12/79

TIME	ALPHA	PO	TO	TOI	MACH	PINF	TINF	UINF	RHOINF	MEINF
.x73	10.50	20214.7	2869.6	3470.8	13.80	.0566	100.5	6900.3	1.473E-03	3.878E+06
.x77	10.33	20214.8	2870.7	3472.3	13.80	.0566	100.6	6901.5	1.472E-03	3.875E+06
.x81	10.16	20212.5	2871.8	3473.6	13.80	.0566	100.6	6902.7	1.471E-03	3.873E+06
.x85	9.99	20208.0	2872.9	3474.9	13.80	.0566	100.7	6903.8	1.471E-03	3.870E+06
.x89	9.82	20201.6	2873.9	3476.1	13.80	.0566	100.7	6904.9	1.470E-03	3.867E+06
.x94	9.66	20193.6	2874.9	3477.3	13.80	.0566	100.8	6905.9	1.470E-03	3.864E+06
.x98	9.49	20184.4	2875.9	3478.3	13.79	.0566	100.8	6906.7	1.470E-03	3.862E+06
.y02	9.32	20174.3	2876.8	3479.3	13.79	.0565	100.9	6907.6	1.469E-03	3.859E+06
.y06	9.16	20164.4	2877.6	3480.2	13.79	.0565	101.0	6908.3	1.469E-03	3.856E+06
.y10	8.99	20154.6	2878.4	3481.1	13.79	.0565	101.0	6909.0	1.469E-03	3.854E+06
.y14	8.83	20145.4	2879.1	3481.9	13.78	.0565	101.1	6909.7	1.468E-03	3.852E+06
.y18	8.66	20137.3	2879.8	3482.6	13.78	.0565	101.1	6910.3	1.468E-03	3.850E+06
.y23	8.50	20130.0	2880.4	3483.3	13.78	.0570	101.2	6910.9	1.468E-03	3.849E+06
.y27	8.34	20125.3	2881.0	3483.9	13.78	.0570	101.2	6911.5	1.468E-03	3.848E+06
.y31	8.18	20122.2	2881.5	3484.6	13.78	.0570	101.2	6912.0	1.468E-03	3.847E+06
.y35	8.01	20120.7	2882.0	3485.1	13.78	.0570	101.3	6912.5	1.468E-03	3.846E+06
.y39	7.85	20121.0	2882.4	3485.7	13.78	.0571	101.3	6912.9	1.468E-03	3.846E+06
.y43	7.69	20123.0	2882.8	3486.2	13.78	.0571	101.3	6913.4	1.469E-03	3.846E+06
.y48	7.54	20125.4	2883.1	3486.6	13.77	.0571	101.3	6913.8	1.469E-03	3.846E+06
.y52	7.38	20131.0	2883.4	3487.0	13.77	.0571	101.3	6914.1	1.469E-03	3.846E+06
.y56	7.22	20136.6	2883.6	3487.4	13.78	.0571	101.3	6914.4	1.469E-03	3.846E+06
.y60	7.07	20142.7	2883.8	3487.7	13.78	.0571	101.3	6914.7	1.469E-03	3.847E+06
.y64	6.91	20149.0	2884.0	3488.0	13.78	.0571	101.3	6915.0	1.469E-03	3.847E+06
.y68	6.76	20155.3	2884.1	3488.2	13.78	.0571	101.3	6915.2	1.469E-03	3.847E+06
.y73	6.61	20161.1	2884.2	3488.4	13.78	.0571	101.3	6915.4	1.469E-03	3.847E+06
.y77	6.45	20166.3	2884.3	3488.6	13.78	.0571	101.3	6915.5	1.469E-03	3.847E+06
.y81	6.30	20170.5	2884.3	3488.7	13.78	.0570	101.3	6915.7	1.468E-03	3.847E+06
.y85	6.16	20173.6	2884.4	3488.8	13.78	.0570	101.3	6915.8	1.468E-03	3.846E+06
.y89	6.01	20175.4	2884.4	3488.9	13.78	.0570	101.3	6915.8	1.467E-03	3.845E+06
.y93	5.86	20175.9	2884.4	3488.9	13.79	.0570	101.2	6915.9	1.467E-03	3.844E+06
.y97	5.72	20175.0	2884.5	3489.0	13.79	.0569	101.2	6916.0	1.466E-03	3.843E+06
1.002	5.57	20172.7	2884.5	3489.0	13.79	.0569	101.2	6916.0	1.465E-03	3.841E+06
1.006	5.43	20169.0	2884.6	3489.0	13.79	.0568	101.2	6916.0	1.464E-03	3.840E+06
1.010	5.29	20164.0	2884.6	3489.0	13.79	.0568	101.2	6916.0	1.463E-03	3.838E+06
1.014	5.15	20157.8	2884.6	3488.9	13.79	.0567	101.2	6916.0	1.462E-03	3.836E+06
1.018	5.01	20150.5	2884.6	3488.8	13.79	.0567	101.1	6915.9	1.461E-03	3.833E+06
1.022	4.88	20142.1	2884.6	3488.7	13.79	.0566	101.1	6915.8	1.460E-03	3.831E+06
1.027	4.74	20132.8	2884.6	3488.5	13.79	.0566	101.1	6915.6	1.459E-03	3.829E+06
1.031	4.61	20122.5	2884.5	3488.2	13.79	.0565	101.1	6915.4	1.458E-03	3.826E+06
1.035	4.48	20111.5	2884.3	3487.9	13.79	.0565	101.1	6915.1	1.457E-03	3.824E+06
1.039	4.35	20099.8	2884.0	3487.4	13.79	.0565	101.1	6914.7	1.456E-03	3.822E+06
1.043	4.22	20086.9	2883.7	3486.8	13.79	.0564	101.1	6914.1	1.455E-03	3.821E+06
1.047	4.09	20073.6	2883.2	3486.0	13.79	.0564	101.0	6913.5	1.455E-03	3.819E+06
1.051	3.96	20059.5	2882.6	3485.1	13.79	.0563	101.0	6912.7	1.454E-03	3.818E+06
1.056	3.84	20044.7	2881.9	3484.0	13.79	.0563	101.0	6911.7	1.453E-03	3.816E+06
1.060	3.72	20029.2	2881.1	3482.8	13.79	.0563	101.0	6910.7	1.453E-03	3.815E+06
1.064	3.60	20013.2	2880.1	3481.4	13.79	.0562	100.9	6909.4	1.452E-03	3.814E+06
1.068	3.48	19996.6	2879.1	3479.9	13.79	.0562	100.9	6908.1	1.452E-03	3.814E+06
1.072	3.36	19979.5	2877.9	3478.2	13.79	.0562	100.9	6906.6	1.451E-03	3.813E+06
1.076	3.25	19962.2	2876.6	3476.4	13.79	.0561	100.8	6905.0	1.451E-03	3.813E+06
1.081	3.14	19944.6	2875.3	3474.4	13.79	.0561	100.8	6903.3	1.451E-03	3.813E+06
1.085	3.03	19927.0	2873.8	3472.5	13.79	.0560	100.7	6901.6	1.450E-03	3.813E+06
1.089	2.92	19909.5	2872.4	3470.4	13.79	.0560	100.7	6899.8	1.450E-03	3.812E+06
1.093	2.81	19892.3	2870.9	3468.4	13.79	.0559	100.6	6898.0	1.449E-03	3.812E+06
1.097	2.70	19875.6	2869.5	3466.3	13.79	.0559	100.6	6896.2	1.449E-03	3.812E+06
1.101	2.60	19859.5	2868.0	3464.3	13.79	.0558	100.5	6894.4	1.448E-03	3.812E+06
AVERAGE		20108.3	2880.1	3482.6	13.79	.0567	101.0	6910.4	1.463E-03	3.839E+06

RUN 494 WTH 1333 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	G1 QDOT	G2 QDOT	T1 TW	T1 QDOT	T2 TW	T2 QDOT	T3 TW	T3 QDOT	T4 TW	T4 QDOT	T5 TW	T5 QDOT
.973	10.50	1.501	4.098	261.78	83.567	105.10	18.810	76.10	1.702	83.51	4.838	107.61	9.726
.977	10.33	1.528	4.105	262.13	83.196	105.35	18.936	76.13	1.731	83.54	4.829	107.54	9.526
.981	10.16	1.555	4.112	262.49	83.132	105.66	19.114	76.17	1.763	83.60	4.839	107.47	9.368
.985	9.99	1.583	4.120	263.55	83.243	105.98	19.307	76.21	1.798	83.64	4.858	107.40	9.232
.989	9.82	1.611	4.129	263.90	82.999	106.23	19.434	76.23	1.830	83.66	4.867	107.26	9.044
.994	9.66	1.640	4.138	264.61	82.785	106.51	19.587	76.24	1.864	83.68	4.880	107.12	8.876
.998	9.49	1.669	4.147	264.97	82.732	106.83	19.770	76.31	1.894	83.77	4.894	107.05	8.730
1.002	9.32	1.699	4.156	265.32	82.643	107.11	19.933	76.34	1.926	83.84	4.905	106.97	8.574
1.006	9.16	1.729	4.164	266.03	82.687	107.40	20.126	76.37	1.966	83.84	4.933	106.83	8.457
1.010	8.99	1.759	4.173	266.03	82.378	107.66	20.257	76.42	1.996	83.88	4.935	106.69	8.284
1.014	8.83	1.789	4.180	266.73	82.550	108.00	20.443	76.46	2.032	83.95	4.954	106.62	8.155
1.018	8.66	1.820	4.187	267.44	82.629	108.28	20.611	76.49	2.068	84.00	4.976	106.55	8.002
1.023	8.50	1.852	4.193	267.80	82.583	108.57	20.767	76.54	2.101	84.02	4.998	106.41	7.859
1.027	8.34	1.883	4.197	268.15	82.726	108.85	20.960	76.56	2.136	84.04	5.027	106.27	7.756
1.031	8.18	1.915	4.201	268.50	82.485	109.20	21.055	76.59	2.167	84.11	5.041	106.20	7.582
1.035	8.01	1.947	4.206	268.86	82.596	109.52	21.216	76.65	2.201	84.15	5.056	106.05	7.450
1.039	7.85	1.979	4.208	269.57	82.492	109.80	21.359	76.67	2.230	84.17	5.071	105.91	7.305
1.043	7.69	2.012	4.211	270.27	82.462	110.12	21.494	76.70	2.258	84.19	5.083	105.84	7.187
1.048	7.54	2.045	4.197	271.33	82.371	110.44	21.628	76.78	2.290	84.28	5.095	105.70	7.075
1.052	7.38	2.07	4.192	272.04	81.890	110.76	21.715	76.82	2.321	84.34	5.090	105.63	6.917
1.056	7.22	2.112	4.184	272.40	81.810	111.01	21.883	76.85	2.356	84.34	5.106	105.49	6.839
1.060	7.07	2.145	4.179	272.75	81.367	111.29	21.977	76.89	2.385	84.42	5.101	105.35	6.714
1.064	6.91	2.180	4.184	273.10	80.965	111.61	22.064	76.93	2.422	84.50	5.096	105.28	6.591
1.068	6.76	2.214	4.190	273.45	80.471	111.89	22.188	76.98	2.464	84.54	5.093	105.13	6.521
1.073	6.61	2.249	4.195	273.46	79.927	112.14	22.278	77.00	2.499	84.55	5.071	104.99	6.424
1.077	6.45	2.284	4.114	273.81	79.436	112.39	22.424	77.05	2.539	84.56	5.066	104.85	6.327
1.081	6.30	2.319	4.099	273.81	78.793	112.74	22.538	77.10	2.573	84.64	5.045	104.85	6.280
1.085	6.16	2.355	4.079	274.16	78.037	113.02	22.653	77.17	2.609	84.65	5.008	104.71	6.183
1.089	6.01	2.390	4.057	274.16	77.471	113.31	22.828	77.19	2.654	84.66	4.980	104.64	6.142
1.093	5.86	2.428	4.034	274.52	76.951	113.59	22.984	77.24	2.689	84.67	4.942	104.50	6.070
1.097	5.72	2.463	4.004	274.52	76.685	113.87	23.148	77.31	2.730	84.71	4.921	104.43	6.015
1.002	5.57	2.499	3.984	274.52	76.233	114.14	23.387	77.37	2.770	84.74	4.885	104.36	5.939
1.006	5.43	2.538	3.958	274.87	75.704	114.51	23.568	77.41	2.805	84.76	4.843	104.29	5.869
1.010	5.29	2.577	3.931	275.23	75.595	114.83	23.838	77.45	2.848	84.78	4.830	104.21	5.861
1.014	5.15	2.605	3.904	275.58	75.267	115.22	24.024	77.52	2.881	84.82	4.792	104.07	5.761
1.018	5.01	2.647	3.877	275.93	75.156	115.54	24.275	77.58	2.920	84.84	4.773	104.00	5.716
1.022	4.88	2.684	3.850	275.93	74.701	115.89	24.444	77.62	2.945	84.82	4.736	103.93	5.604
1.027	4.74	2.721	3.823	276.29	74.543	116.28	24.653	77.65	2.981	84.84	4.712	103.79	5.544
1.031	4.61	2.758	3.797	276.64	74.680	116.67	24.878	77.73	3.020	84.90	4.696	103.72	5.515
1.035	4.48	2.796	3.771	276.64	74.276	117.09	25.032	77.78	3.045	84.92	4.665	103.65	5.440
1.039	4.35	2.833	3.745	277.00	74.088	117.41	25.186	77.80	3.073	84.90	4.644	103.58	5.367
1.043	4.22	2.870	3.722	277.35	73.963	117.73	25.322	77.85	3.111	84.93	4.627	103.44	5.297
1.047	4.09	2.908	3.700	277.35	73.858	118.12	25.430	77.93	3.148	84.94	4.602	103.37	5.247
1.051	3.96	2.945	3.678	277.70	73.787	118.47	25.579	77.99	3.188	84.97	4.595	103.29	5.230
1.056	3.84	2.981	3.659	278.06	73.288	118.78	25.687	78.02	3.217	84.98	4.584	103.15	5.135
1.060	3.72	3.018	3.640	278.06	73.215	119.04	25.849	78.08	3.257	84.99	4.559	103.08	5.091
1.064	3.60	3.054	3.624	278.41	73.262	119.36	25.749	78.14	3.297	85.01	4.543	103.01	5.052
1.068	3.48	3.090	3.609	278.76	72.971	119.71	25.776	78.19	3.339	85.04	4.533	103.01	5.014
1.072	3.36	3.125	3.596	278.76	72.937	119.96	25.784	78.25	3.383	85.04	4.525	102.87	4.960
1.076	3.25	3.160	3.584	279.47	72.620	120.17	25.819	78.31	3.424	85.04	4.515	102.80	4.906
1.081	3.14	3.194	3.575	279.83	72.290	120.58	25.833	78.38	3.458	85.07	4.509	102.73	4.876
1.085	3.03	3.227	3.567	279.47	72.170	120.84	25.847	78.45	3.499	85.14	4.505	102.66	4.845
1.089	2.92	3.261	3.561	279.83	71.965	121.05	25.855	78.49	3.542	85.19	4.500	102.59	4.798
1.093	2.81	3.293	3.556	280.18	71.760	121.41	25.886	78.54	3.578	85.11	4.500	102.45	4.751
1.097	2.70	3.324	3.553	280.18	71.631	121.69	25.930	78.62	3.609	85.17	4.499	102.45	4.721
1.101	2.60	3.354	3.551	280.53	71.480	121.94	25.945	78.70	3.643	85.23	4.492	102.37	4.687

RUN 496 WTR 1333 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	PO	TO	TOI	MACH	PINF	TINF	UINF	RHOINF	REINF
1.105	2.50	19844.2	2806.6	3462.4	13.79	.0558	100.4	6892.7	1.448E-03	3.812E+06
1.110	2.48	19829.9	2805.3	3460.6	13.79	.0557	100.4	6891.1	1.448E-03	3.812E+06
1.114	2.38	19816.6	2804.1	3458.6	13.79	.0557	100.3	6889.6	1.447E-03	3.812E+06
1.118	2.28	19804.3	2802.9	3457.2	13.79	.0557	100.3	6888.2	1.447E-03	3.812E+06
1.122	2.11	19793.1	2801.8	3455.7	13.80	.0556	100.2	6886.9	1.446E-03	3.811E+06
1.126	2.02	19783.0	2800.8	3454.4	13.80	.0556	100.2	6885.7	1.446E-03	3.811E+06
1.130	1.93	19773.8	2859.9	3453.2	13.80	.0555	100.2	6884.7	1.445E-03	3.811E+06
1.135	1.84	19765.6	2859.1	3452.0	13.80	.0555	100.1	6883.7	1.445E-03	3.811E+06
1.139	1.75	19758.0	2858.4	3451.0	13.80	.0555	100.1	6882.7	1.445E-03	3.811E+06
1.143	1.67	19751.0	2857.6	3450.0	13.80	.0554	100.1	6881.9	1.444E-03	3.811E+06
1.147	1.59	19744.4	2856.9	3448.9	13.80	.0554	100.0	6881.0	1.444E-03	3.811E+06
1.151	1.51	19738.0	2856.1	3447.9	13.80	.0554	100.0	6880.1	1.444E-03	3.811E+06
1.155	1.43	19731.6	2855.2	3446.8	13.80	.0554	100.0	6879.1	1.444E-03	3.812E+06
1.160	1.35	19725.1	2854.3	3445.5	13.80	.0553	99.9	6877.9	1.444E-03	3.813E+06
1.164	1.27	19718.3	2853.1	3443.9	13.80	.0553	99.9	6876.6	1.444E-03	3.813E+06
1.168	1.20	19711.1	2851.7	3442.1	13.80	.0553	99.8	6875.0	1.444E-03	3.815E+06
1.172	1.13	19703.4	2850.1	3439.9	13.80	.0552	99.7	6873.1	1.444E-03	3.816E+06
1.176	1.06	19695.3	2848.1	3437.4	13.80	.0552	99.7	6870.8	1.444E-03	3.818E+06
1.180	.99	19686.7	2845.7	3434.3	13.81	.0551	99.5	6868.1	1.444E-03	3.821E+06
1.184	.92	19677.6	2842.8	3430.6	13.81	.0550	99.4	6865.0	1.443E-03	3.825E+06
1.189	.85	19668.1	2839.5	3426.3	13.81	.0549	99.2	6861.2	1.443E-03	3.827E+06
1.193	.79	19658.4	2835.8	3421.4	13.82	.0548	99.1	6856.9	1.443E-03	3.831E+06
1.197	.73	19648.4	2831.2	3415.7	13.82	.0547	98.8	6852.0	1.442E-03	3.836E+06
1.201	.67	19638.3	2826.1	3409.3	13.83	.0545	98.6	6846.4	1.442E-03	3.841E+06
1.205	.61	19628.1	2820.4	3402.1	13.84	.0543	98.3	6840.1	1.442E-03	3.847E+06
1.209	.55	19618.0	2814.0	3394.1	13.85	.0542	98.0	6833.1	1.441E-03	3.855E+06
1.214	.50	19608.0	2806.9	3385.2	13.86	.0539	97.6	6825.4	1.441E-03	3.863E+06
1.218	.44	19598.1	2799.2	3375.5	13.87	.0537	97.2	6816.9	1.440E-03	3.872E+06
1.222	.39	19588.3	2790.8	3365.1	13.88	.0535	96.8	6807.7	1.440E-03	3.883E+06
1.226	.34	19578.6	2781.8	3353.8	13.89	.0532	96.4	6797.8	1.440E-03	3.895E+06
1.230	.28	19569.0	2772.1	3341.7	13.90	.0530	95.9	6787.3	1.441E-03	3.908E+06
1.234	.23	19559.5	2761.9	3329.0	13.91	.0527	95.4	6776.0	1.441E-03	3.923E+06
1.239	.18	19549.5	2751.1	3315.6	13.93	.0525	94.9	6764.1	1.443E-03	3.940E+06
1.243	.13	19539.6	2739.7	3301.5	13.94	.0523	94.4	6751.7	1.444E-03	3.958E+06
1.247	.09	19529.3	2727.9	3286.9	13.95	.0521	93.9	6738.7	1.447E-03	3.978E+06
1.251	.04	19518.7	2715.7	3271.7	13.96	.0519	93.4	6725.2	1.450E-03	4.000E+06
1.255	-.01	19507.6	2703.2	3256.2	13.97	.0518	92.8	6711.3	1.453E-03	4.024E+06
1.259	-.06	19496.0	2690.3	3240.3	13.98	.0516	92.3	6697.0	1.458E-03	4.050E+06
1.263	-.10	19483.9	2677.2	3224.1	13.99	.0515	91.8	6682.5	1.463E-03	4.077E+06
1.268	-.15	19471.2	2664.0	3207.8	13.99	.0515	91.3	6667.7	1.469E-03	4.106E+06
1.272	-.20	19457.9	2650.6	3191.2	14.00	.0514	90.8	6652.7	1.475E-03	4.136E+06
1.276	-.24	19444.1	2637.1	3174.6	14.00	.0514	90.4	6637.6	1.482E-03	4.167E+06
1.280	-.29	19429.9	2623.7	3158.0	14.01	.0514	89.9	6622.5	1.489E-03	4.200E+06
1.284	-.34	19415.2	2610.2	3141.4	14.01	.0514	89.5	6607.3	1.497E-03	4.233E+06
1.288	-.39	19400.2	2596.8	3124.9	14.01	.0514	89.0	6592.1	1.505E-03	4.267E+06
1.293	-.44	19385.1	2583.4	3108.4	14.02	.0514	88.6	6577.0	1.513E-03	4.301E+06
1.297	-.48	19369.8	2570.2	3092.0	14.02	.0514	88.1	6561.9	1.522E-03	4.335E+06
AVERAGE		19625.7	2781.9	3355.0	13.87	.0539	96.7	6796.0	1.453E-03	3.924E+06

PIN 498 WTR 1333 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	G1 QDOT	G2 QDOT	T1 Tw	T1 QDOT	T2 Tw	T2 QDOT	T3 Tw	T3 QDOT	T4 Tw	T4 QDOT	T5 Tw	T5 QDOT
1.106	2.50	3.384	3.551	280.53	71.536	122.15	25.993	78.74	3.683	85.18	4.497	102.23	4.652
1.110	2.40	3.412	3.552	280.89	71.037	122.40	25.966	78.79	3.708	85.18	4.481	102.16	4.562
1.114	2.30	3.440	3.553	281.24	70.861	122.72	26.021	78.85	3.739	85.24	4.486	102.16	4.544
1.118	2.20	3.466	3.556	281.60	70.801	123.00	26.051	78.94	3.760	85.28	4.483	102.09	4.503
1.122	2.11	3.491	3.559	281.60	70.823	123.25	26.106	78.98	3.783	85.27	4.485	101.95	4.460
1.126	2.02	3.515	3.563	281.95	70.628	123.53	26.148	79.03	3.812	85.30	4.487	101.88	4.427
1.130	1.93	3.538	3.566	282.30	70.204	123.85	26.123	79.09	3.829	85.34	4.472	101.88	4.363
1.135	1.84	3.559	3.570	282.30	70.195	124.06	26.183	79.15	3.846	85.37	4.474	101.81	4.330
1.139	1.75	3.579	3.574	282.66	70.314	124.28	26.264	79.20	3.864	85.35	4.484	101.67	4.324
1.143	1.67	3.598	3.578	282.66	69.995	124.56	26.272	79.26	3.875	85.37	4.475	101.60	4.265
1.147	1.59	3.615	3.581	283.01	69.733	124.84	26.304	79.33	3.892	85.41	4.472	101.60	4.208
1.151	1.51	3.631	3.583	283.36	69.602	125.12	26.337	79.37	3.914	85.45	4.476	101.45	4.183
1.155	1.43	3.646	3.585	283.36	69.421	125.37	26.350	79.42	3.927	85.44	4.474	101.38	4.165
1.160	1.35	3.659	3.586	283.36	69.438	125.62	26.409	79.47	3.941	85.45	4.475	101.31	4.157
1.164	1.27	3.671	3.586	283.72	68.948	125.90	26.352	79.53	3.945	85.51	4.451	101.31	4.078
1.168	1.20	3.681	3.584	284.07	68.836	126.15	26.376	79.59	3.963	85.54	4.457	101.24	4.064
1.172	1.13	3.690	3.582	284.43	68.644	126.33	26.383	79.62	3.975	85.54	4.457	101.17	4.050
1.176	1.06	3.698	3.578	284.43	68.504	126.68	26.370	79.66	3.979	85.56	4.449	101.03	4.029
1.180	.99	3.704	3.573	284.78	68.230	126.89	26.398	79.73	3.992	85.59	4.454	101.03	4.026
1.184	.92	3.710	3.566	284.78	67.947	127.11	26.303	79.81	3.996	85.65	4.430	101.03	3.971
1.189	.86	3.713	3.558	284.78	67.910	127.28	26.330	79.83	4.015	85.61	4.432	100.89	3.993
1.193	.79	3.716	3.548	285.13	67.474	127.53	26.218	79.87	4.009	85.61	4.406	100.82	3.940
1.197	.73	3.718	3.536	285.13	67.473	127.78	26.223	79.94	4.019	85.67	4.408	100.82	3.935
1.201	.67	3.718	3.524	285.49	67.187	127.99	26.189	79.98	4.027	85.71	4.395	100.75	3.895
1.205	.61	3.717	3.509	285.49	66.622	128.17	26.088	80.02	4.026	85.69	4.364	100.68	3.839
1.209	.55	3.715	3.494	285.84	66.399	128.34	26.038	80.05	4.032	85.69	4.352	100.61	3.840
1.214	.50	3.712	3.478	285.84	66.063	128.59	25.954	80.12	4.031	85.75	4.333	100.61	3.814
1.218	.44	3.708	3.458	285.84	65.815	128.77	25.867	80.18	4.027	85.75	4.303	100.53	3.756
1.222	.39	3.704	3.438	285.84	65.407	128.91	25.809	80.20	4.027	85.74	4.279	100.46	3.725
1.226	.34	3.698	3.418	286.19	64.826	129.16	25.661	80.22	4.022	85.75	4.250	100.39	3.680
1.230	.28	3.691	3.396	286.19	64.506	129.37	25.585	80.29	4.021	85.81	4.239	100.32	3.665
1.234	.23	3.684	3.373	286.19	64.042	129.51	25.463	80.34	4.013	85.81	4.209	100.25	3.613
1.238	.18	3.676	3.350	285.84	63.514	129.58	25.305	80.36	4.004	85.78	4.166	100.18	3.544
1.243	.13	3.667	3.325	286.19	63.410	129.76	25.260	80.39	4.010	85.78	4.154	100.11	3.552
1.247	.09	3.657	3.301	286.19	62.777	130.01	25.081	80.46	3.996	85.82	4.117	100.11	3.501
1.251	.04	3.646	3.275	286.19	62.550	130.11	24.968	80.50	3.987	85.82	4.099	100.04	3.474
1.255	-.01	3.635	3.250	286.19	62.057	130.18	24.821	80.51	3.971	85.78	4.059	99.90	3.407
1.259	-.06	3.623	3.224	285.84	61.776	130.25	24.723	80.55	3.971	85.75	4.039	99.90	3.389
1.263	-.10	3.611	3.197	285.84	61.491	130.43	24.616	80.58	3.969	85.84	4.026	99.83	3.379
1.268	-.15	3.598	3.171	285.84	60.938	130.54	24.424	80.63	3.946	85.84	3.990	99.76	3.327
1.272	-.20	3.584	3.145	286.19	60.793	130.68	24.348	80.65	3.938	85.81	3.976	99.69	3.331
1.276	-.24	3.570	3.119	286.19	60.275	130.79	24.176	80.68	3.923	85.81	3.942	99.69	3.264
1.280	-.29	3.555	3.093	286.19	60.027	130.93	24.066	80.73	3.917	85.85	3.924	99.61	3.226
1.284	-.34	3.540	3.067	286.19	59.514	131.03	23.983	80.76	3.909	85.85	3.913	99.54	3.217
1.288	-.39	3.524	3.042	286.19	59.406	131.14	23.810	80.78	3.888	85.81	3.886	99.47	3.177
1.293	-.44	3.508	3.017	285.84	59.275	131.21	23.727	80.81	3.881	85.82	3.873	99.40	3.165
1.297	-.48	3.491	2.992	285.84	58.783	131.32	23.552	80.85	3.863	85.86	3.834	99.33	3.102

RUN 498 WTH 1333 STANTON NUMBERS CO-AXIAL THERMOCOUPLE SHADOW TEST 12/10/79-12/12/79

	TIME	ALPHA	G1 ST	G2 ST	T1 ST	T2 ST	T3 ST	T4 ST	T5 ST
153	.665	18.55	1.624E-04	4.952E-04	1.126E-02	1.397E-03	1.360E-04	5.809E-04	2.444E-03
154	.669	18.41	1.793E-04	4.959E-04	1.122E-02	1.407E-03	1.354E-04	5.814E-04	2.411E-03
155	.673	18.27	1.762E-04	4.967E-04	1.119E-02	1.420E-03	1.340E-04	5.816E-04	2.383E-03
156	.677	18.13	1.732E-04	4.976E-04	1.119E-02	1.432E-03	1.324E-04	5.820E-04	2.355E-03
157	.682	17.99	1.702E-04	4.984E-04	1.117E-02	1.442E-03	1.312E-04	5.826E-04	2.329E-03
158	.686	17.84	1.673E-04	4.993E-04	1.114E-02	1.455E-03	1.306E-04	5.834E-04	2.295E-03
159	.690	17.70	1.644E-04	5.002E-04	1.112E-02	1.468E-03	1.301E-04	5.841E-04	2.266E-03
160	.694	17.55	1.617E-04	5.010E-04	1.108E-02	1.477E-03	1.291E-04	5.833E-04	2.231E-03
161	.698	17.40	1.590E-04	5.019E-04	1.107E-02	1.491E-03	1.287E-04	5.843E-04	2.204E-03
162	.702	17.25	1.564E-04	5.027E-04	1.107E-02	1.507E-03	1.288E-04	5.863E-04	2.177E-03
163	.707	17.10	1.540E-04	5.034E-04	1.104E-02	1.518E-03	1.282E-04	5.864E-04	2.138E-03
164	.711	16.95	1.516E-04	5.041E-04	1.102E-02	1.531E-03	1.276E-04	5.859E-04	2.105E-03
165	.715	16.80	1.494E-04	5.047E-04	1.101E-02	1.547E-03	1.273E-04	5.860E-04	2.076E-03
166	.719	16.64	1.473E-04	5.052E-04	1.100E-02	1.562E-03	1.274E-04	5.867E-04	2.043E-03
167	.723	16.49	1.453E-04	5.056E-04	1.101E-02	1.580E-03	1.277E-04	5.880E-04	2.014E-03
168	.727	16.33	1.435E-04	5.059E-04	1.097E-02	1.592E-03	1.278E-04	5.866E-04	1.977E-03
169	.731	16.17	1.418E-04	5.061E-04	1.099E-02	1.611E-03	1.290E-04	5.881E-04	1.952E-03
170	.736	16.01	1.403E-04	5.061E-04	1.095E-02	1.623E-03	1.294E-04	5.871E-04	1.915E-03
171	.740	15.85	1.389E-04	5.060E-04	1.095E-02	1.639E-03	1.304E-04	5.873E-04	1.885E-03
172	.744	15.69	1.376E-04	5.058E-04	1.095E-02	1.650E-03	1.310E-04	5.879E-04	1.859E-03
173	.748	15.53	1.366E-04	5.054E-04	1.093E-02	1.671E-03	1.324E-04	5.870E-04	1.825E-03
174	.752	15.37	1.357E-04	5.049E-04	1.090E-02	1.684E-03	1.336E-04	5.866E-04	1.795E-03
175	.756	15.21	1.349E-04	5.043E-04	1.089E-02	1.700E-03	1.342E-04	5.865E-04	1.768E-03
176	.761	15.05	1.343E-04	5.035E-04	1.088E-02	1.717E-03	1.354E-04	5.864E-04	1.742E-03
177	.765	14.88	1.339E-04	5.026E-04	1.086E-02	1.732E-03	1.365E-04	5.863E-04	1.714E-03
178	.769	14.72	1.337E-04	5.016E-04	1.081E-02	1.744E-03	1.374E-04	5.851E-04	1.684E-03
179	.773	14.55	1.336E-04	5.005E-04	1.080E-02	1.761E-03	1.389E-04	5.853E-04	1.662E-03
180	.777	14.39	1.337E-04	4.993E-04	1.081E-02	1.781E-03	1.404E-04	5.861E-04	1.640E-03
181	.781	14.22	1.340E-04	4.980E-04	1.076E-02	1.793E-03	1.416E-04	5.848E-04	1.609E-03
182	.785	14.05	1.344E-04	4.966E-04	1.076E-02	1.812E-03	1.435E-04	5.853E-04	1.586E-03
183	.790	13.88	1.350E-04	4.951E-04	1.074E-02	1.830E-03	1.451E-04	5.853E-04	1.561E-03
184	.794	13.72	1.358E-04	4.937E-04	1.073E-02	1.848E-03	1.460E-04	5.850E-04	1.535E-03
185	.798	13.55	1.367E-04	4.921E-04	1.071E-02	1.867E-03	1.480E-04	5.841E-04	1.510E-03
186	.802	13.38	1.378E-04	4.906E-04	1.070E-02	1.885E-03	1.505E-04	5.829E-04	1.487E-03
187	.805	13.21	1.390E-04	4.891E-04	1.069E-02	1.904E-03	1.526E-04	5.824E-04	1.463E-03
188	.810	13.04	1.404E-04	4.876E-04	1.066E-02	1.923E-03	1.548E-04	5.822E-04	1.438E-03
189	.815	12.87	1.419E-04	4.862E-04	1.064E-02	1.943E-03	1.570E-04	5.814E-04	1.418E-03
190	.819	12.70	1.435E-04	4.849E-04	1.063E-02	1.962E-03	1.600E-04	5.799E-04	1.398E-03
191	.823	12.53	1.453E-04	4.836E-04	1.062E-02	1.983E-03	1.626E-04	5.786E-04	1.377E-03
192	.827	12.36	1.472E-04	4.824E-04	1.060E-02	2.003E-03	1.650E-04	5.777E-04	1.357E-03
193	.831	12.19	1.492E-04	4.814E-04	1.057E-02	2.023E-03	1.686E-04	5.768E-04	1.338E-03
194	.835	12.02	1.514E-04	4.805E-04	1.053E-02	2.042E-03	1.708E-04	5.751E-04	1.318E-03
195	.840	11.85	1.537E-04	4.798E-04	1.051E-02	2.061E-03	1.736E-04	5.729E-04	1.297E-03
196	.844	11.68	1.560E-04	4.792E-04	1.048E-02	2.080E-03	1.771E-04	5.710E-04	1.278E-03
197	.848	11.51	1.585E-04	4.786E-04	1.044E-02	2.098E-03	1.800E-04	5.695E-04	1.259E-03
198	.852	11.34	1.611E-04	4.786E-04	1.043E-02	2.121E-03	1.830E-04	5.693E-04	1.243E-03
199	.856	11.17	1.638E-04	4.785E-04	1.038E-02	2.136E-03	1.858E-04	5.663E-04	1.219E-03
200	.860	11.00	1.666E-04	4.786E-04	1.038E-02	2.156E-03	1.892E-04	5.653E-04	1.203E-03
201	.864	10.83	1.694E-04	4.789E-04	1.035E-02	2.175E-03	1.921E-04	5.647E-04	1.183E-03
202	.869	10.67	1.724E-04	4.793E-04	1.034E-02	2.197E-03	1.955E-04	5.658E-04	1.165E-03
203	.873	10.50	1.754E-04	4.799E-04	1.033E-02	2.217E-03	1.989E-04	5.666E-04	1.147E-03
204	.877	10.33	1.785E-04	4.806E-04	1.028E-02	2.231E-03	2.022E-04	5.653E-04	1.123E-03
205	.881	10.16	1.816E-04	4.813E-04	1.027E-02	2.252E-03	2.059E-04	5.664E-04	1.104E-03
206	.885	9.99	1.849E-04	4.822E-04	1.029E-02	2.275E-03	2.099E-04	5.686E-04	1.088E-03
207	.889	9.82	1.881E-04	4.832E-04	1.028E-02	2.294E-03	2.136E-04	5.696E-04	1.066E-03
208	.894	9.66	1.915E-04	4.841E-04	1.023E-02	2.307E-03	2.176E-04	5.710E-04	1.046E-03

RUN 498 WTR 1333 STANTON NUMBERS CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

	TIME	ALPHA	G1 ST	G2 ST	T1 ST	T2 ST	T3 ST	T4 ST	T5 ST
209	.898	9.49	1.948E-04	4.851E-04	1.022E-02	2.329E-03	2.211E-04	5.725E-04	1.028E-03
210	.902	9.32	1.983E-04	4.861E-04	1.021E-02	2.340E-03	2.248E-04	5.738E-04	1.010E-03
211	.906	9.16	2.017E-04	4.871E-04	1.022E-02	2.370E-03	2.294E-04	5.769E-04	9.958E-04
212	.910	8.99	2.052E-04	4.879E-04	1.018E-02	2.385E-03	2.329E-04	5.771E-04	9.753E-04
213	.914	8.83	2.087E-04	4.887E-04	1.020E-02	2.407E-03	2.371E-04	5.792E-04	9.599E-04
214	.918	8.66	2.123E-04	4.896E-04	1.021E-02	2.427E-03	2.412E-04	5.817E-04	9.416E-04
215	.923	8.50	2.159E-04	4.900E-04	1.020E-02	2.444E-03	2.450E-04	5.841E-04	9.244E-04
216	.927	8.34	2.195E-04	4.904E-04	1.022E-02	2.466E-03	2.493E-04	5.873E-04	9.171E-04
217	.931	8.18	2.232E-04	4.906E-04	1.019E-02	2.477E-03	2.525E-04	5.877E-04	8.913E-04
218	.935	8.01	2.268E-04	4.907E-04	1.020E-02	2.496E-03	2.564E-04	5.903E-04	8.755E-04
219	.939	7.85	2.305E-04	4.905E-04	1.018E-02	2.512E-03	2.598E-04	5.919E-04	8.582E-04
220	.943	7.69	2.343E-04	4.902E-04	1.018E-02	2.527E-03	2.629E-04	5.931E-04	8.440E-04
221	.948	7.54	2.381E-04	4.897E-04	1.017E-02	2.543E-03	2.666E-04	5.944E-04	8.306E-04
222	.952	7.38	2.419E-04	4.889E-04	1.011E-02	2.552E-03	2.701E-04	5.937E-04	8.119E-04
223	.956	7.22	2.457E-04	4.879E-04	1.010E-02	2.572E-03	2.741E-04	5.954E-04	8.025E-04
224	.960	7.07	2.496E-04	4.866E-04	1.004E-02	2.583E-03	2.774E-04	5.948E-04	7.876E-04
225	.964	6.91	2.536E-04	4.854E-04	9.980E-03	2.593E-03	2.817E-04	5.941E-04	7.730E-04
226	.968	6.76	2.576E-04	4.838E-04	9.932E-03	2.607E-03	2.866E-04	5.937E-04	7.647E-04
227	.973	6.61	2.616E-04	4.821E-04	9.853E-03	2.618E-03	2.907E-04	5.912E-04	7.534E-04
228	.977	6.45	2.657E-04	4.801E-04	9.806E-03	2.636E-03	2.954E-04	5.906E-04	7.473E-04
229	.981	6.30	2.698E-04	4.780E-04	9.729E-03	2.650E-03	2.994E-04	5.883E-04	7.366E-04
230	.985	6.16	2.740E-04	4.758E-04	9.639E-03	2.664E-03	3.037E-04	5.842E-04	7.254E-04
231	.989	6.01	2.783E-04	4.734E-04	9.585E-03	2.680E-03	3.090E-04	5.811E-04	7.209E-04
232	.993	5.86	2.826E-04	4.709E-04	9.513E-03	2.706E-03	3.132E-04	5.769E-04	7.127E-04
233	.997	5.72	2.870E-04	4.683E-04	9.485E-03	2.733E-03	3.182E-04	5.747E-04	7.066E-04
234	1.002	5.57	2.914E-04	4.656E-04	9.435E-03	2.757E-03	3.230E-04	5.709E-04	6.981E-04
235	1.006	5.43	2.959E-04	4.628E-04	9.376E-03	2.780E-03	3.273E-04	5.663E-04	6.903E-04
236	1.010	5.29	3.004E-04	4.600E-04	9.382E-03	2.814E-03	3.325E-04	5.651E-04	6.898E-04
237	1.014	5.15	3.049E-04	4.572E-04	9.337E-03	2.839E-03	3.367E-04	5.611E-04	6.785E-04
238	1.018	5.01	3.095E-04	4.543E-04	9.331E-03	2.871E-03	3.414E-04	5.593E-04	6.731E-04
239	1.022	4.88	3.141E-04	4.515E-04	9.289E-03	2.893E-03	3.446E-04	5.554E-04	6.615E-04
240	1.027	4.74	3.187E-04	4.487E-04	9.283E-03	2.920E-03	3.491E-04	5.531E-04	6.548E-04
241	1.031	4.61	3.233E-04	4.459E-04	9.283E-03	2.945E-03	3.540E-04	5.515E-04	6.514E-04
242	1.035	4.48	3.280E-04	4.433E-04	9.253E-03	2.971E-03	3.572E-04	5.484E-04	6.430E-04
243	1.039	4.35	3.326E-04	4.407E-04	9.238E-03	2.992E-03	3.608E-04	5.464E-04	6.349E-04
244	1.043	4.22	3.373E-04	4.383E-04	9.233E-03	3.011E-03	3.656E-04	5.448E-04	6.271E-04
245	1.047	4.09	3.419E-04	4.360E-04	9.225E-03	3.026E-03	3.703E-04	5.423E-04	6.217E-04
246	1.051	3.96	3.466E-04	4.338E-04	9.225E-03	3.047E-03	3.752E-04	5.419E-04	6.202E-04
247	1.055	3.84	3.512E-04	4.319E-04	9.170E-03	3.053E-03	3.790E-04	5.393E-04	6.094E-04
248	1.060	3.72	3.558E-04	4.301E-04	9.171E-03	3.066E-03	3.840E-04	5.386E-04	6.047E-04
249	1.064	3.60	3.604E-04	4.285E-04	9.162E-03	3.076E-03	3.891E-04	5.372E-04	6.006E-04
250	1.068	3.48	3.650E-04	4.272E-04	9.140E-03	3.083E-03	3.944E-04	5.366E-04	5.967E-04
251	1.072	3.36	3.696E-04	4.261E-04	9.129E-03	3.087E-03	4.000E-04	5.362E-04	5.908E-04
252	1.076	3.25	3.741E-04	4.252E-04	9.113E-03	3.094E-03	4.053E-04	5.356E-04	5.850E-04
253	1.081	3.14	3.786E-04	4.245E-04	9.106E-03	3.100E-03	4.099E-04	5.354E-04	5.823E-04
254	1.085	3.03	3.830E-04	4.241E-04	9.103E-03	3.106E-03	4.152E-04	5.356E-04	5.791E-04
255	1.089	2.92	3.873E-04	4.238E-04	9.088E-03	3.110E-03	4.206E-04	5.357E-04	5.741E-04
256	1.093	2.81	3.916E-04	4.238E-04	9.075E-03	3.118E-03	4.255E-04	5.362E-04	5.691E-04
257	1.097	2.70	3.958E-04	4.239E-04	9.069E-03	3.127E-03	4.298E-04	5.368E-04	5.662E-04
258	1.101	2.60	3.999E-04	4.242E-04	9.062E-03	3.133E-03	4.343E-04	5.366E-04	5.627E-04
259	1.106	2.50	4.039E-04	4.246E-04	9.080E-03	3.143E-03	4.396E-04	5.378E-04	5.591E-04
260	1.110	2.40	4.077E-04	4.252E-04	9.027E-03	3.143E-03	4.430E-04	5.364E-04	5.489E-04
261	1.114	2.30	4.114E-04	4.258E-04	9.016E-03	3.153E-03	4.472E-04	5.376E-04	5.473E-04
262	1.118	2.20	4.150E-04	4.266E-04	9.016E-03	3.160E-03	4.502E-04	5.378E-04	5.428E-04
263	1.122	2.11	4.184E-04	4.273E-04	9.010E-03	3.170E-03	4.534E-04	5.385E-04	5.381E-04
264	1.125	2.02	4.216E-04	4.281E-04	9.014E-03	3.178E-03	4.572E-04	5.393E-04	5.347E-04

RUN 498 WTR 1333 STANTON NUMBERS CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

	TIME	ALPHA	G1 ST	G2 ST	T1 ST	T2 ST	T3 ST	T4 ST	T5 ST
265	1.130	1.93	4.247E-04	4.289E-04	6.965E-03	3.170E-03	4.596E-04	5.378E-04	5.274E-04
266	1.135	1.84	4.276E-04	4.297E-04	6.974E-03	3.148E-03	4.620E-04	5.385E-04	5.238E-04
267	1.139	1.75	4.303E-04	4.305E-04	6.996E-03	3.200E-03	4.646E-04	5.401E-04	5.234E-04
268	1.143	1.67	4.328E-04	4.312E-04	6.961E-03	3.203E-03	4.662E-04	5.393E-04	5.165E-04
269	1.147	1.59	4.351E-04	4.318E-04	6.933E-03	3.209E-03	4.685E-04	5.392E-04	5.099E-04
270	1.151	1.51	4.373E-04	4.323E-04	6.923E-03	3.215E-03	4.714E-04	5.400E-04	5.071E-04
271	1.155	1.43	4.393E-04	4.328E-04	6.905E-03	3.219E-03	4.733E-04	5.401E-04	5.051E-04
272	1.160	1.35	4.412E-04	4.332E-04	6.912E-03	3.229E-03	4.752E-04	5.405E-04	5.045E-04
273	1.164	1.27	4.429E-04	4.334E-04	6.857E-03	3.224E-03	4.760E-04	5.390E-04	4.952E-04
274	1.168	1.20	4.445E-04	4.336E-04	6.851E-03	3.230E-03	4.786E-04	5.392E-04	4.939E-04
275	1.172	1.13	4.461E-04	4.337E-04	6.836E-03	3.234E-03	4.805E-04	5.397E-04	4.927E-04
276	1.176	1.06	4.475E-04	4.338E-04	6.824E-03	3.237E-03	4.816E-04	5.394E-04	4.906E-04
277	1.180	.99	4.490E-04	4.337E-04	6.846E-03	3.245E-03	4.838E-04	5.408E-04	4.910E-04
278	1.184	.92	4.503E-04	4.337E-04	6.786E-03	3.239E-03	4.851E-04	5.387E-04	4.851E-04
279	1.189	.86	4.517E-04	4.335E-04	6.800E-03	3.249E-03	4.883E-04	5.401E-04	4.888E-04
280	1.193	.79	4.531E-04	4.333E-04	6.765E-03	3.243E-03	4.886E-04	5.381E-04	4.835E-04
281	1.197	.73	4.545E-04	4.331E-04	6.790E-03	3.253E-03	4.913E-04	5.399E-04	4.842E-04
282	1.201	.67	4.559E-04	4.326E-04	6.781E-03	3.258E-03	4.939E-04	5.399E-04	4.806E-04
283	1.205	.61	4.574E-04	4.325E-04	6.736E-03	3.257E-03	4.954E-04	5.374E-04	4.754E-04
284	1.209	.55	4.589E-04	4.322E-04	6.744E-03	3.264E-03	4.980E-04	5.384E-04	4.773E-04
285	1.214	.50	4.604E-04	4.319E-04	6.737E-03	3.267E-03	4.999E-04	5.383E-04	4.759E-04
286	1.218	.44	4.620E-04	4.315E-04	6.716E-03	3.270E-03	5.016E-04	5.369E-04	4.707E-04
287	1.222	.39	4.635E-04	4.311E-04	6.736E-03	3.279E-03	5.040E-04	5.384E-04	4.691E-04
288	1.226	.34	4.651E-04	4.305E-04	6.700E-03	3.276E-03	5.058E-04	5.354E-04	4.657E-04
289	1.230	.28	4.666E-04	4.299E-04	6.702E-03	3.283E-03	5.082E-04	5.367E-04	4.661E-04
290	1.234	.23	4.680E-04	4.292E-04	6.686E-03	3.284E-03	5.096E-04	5.356E-04	4.618E-04
291	1.239	.18	4.693E-04	4.284E-04	6.660E-03	3.281E-03	5.112E-04	5.328E-04	4.553E-04
292	1.243	.13	4.705E-04	4.274E-04	6.692E-03	3.292E-03	5.146E-04	5.340E-04	4.586E-04
293	1.247	.09	4.715E-04	4.263E-04	6.650E-03	3.285E-03	5.153E-04	5.318E-04	4.543E-04
294	1.251	.04	4.724E-04	4.250E-04	6.662E-03	3.288E-03	5.166E-04	5.320E-04	4.526E-04
295	1.255	-.01	4.730E-04	4.235E-04	6.634E-03	3.281E-03	5.167E-04	5.291E-04	4.460E-04
296	1.259	-.06	4.734E-04	4.219E-04	6.633E-03	3.282E-03	5.189E-04	5.286E-04	4.455E-04
297	1.263	-.10	4.736E-04	4.201E-04	6.629E-03	3.281E-03	5.206E-04	5.290E-04	4.460E-04
298	1.268	-.15	4.736E-04	4.181E-04	6.584E-03	3.267E-03	5.194E-04	5.260E-04	4.406E-04
299	1.272	-.20	4.733E-04	4.160E-04	6.595E-03	3.268E-03	5.200E-04	5.259E-04	4.425E-04
300	1.276	-.24	4.728E-04	4.137E-04	6.550E-03	3.254E-03	5.195E-04	5.229E-04	4.350E-04
301	1.280	-.29	4.721E-04	4.114E-04	6.541E-03	3.249E-03	5.201E-04	5.219E-04	4.310E-04
302	1.284	-.34	4.712E-04	4.090E-04	6.549E-03	3.246E-03	5.203E-04	5.217E-04	4.309E-04
303	1.288	-.39	4.702E-04	4.066E-04	6.500E-03	3.230E-03	5.187E-04	5.194E-04	4.265E-04
304	1.293	-.44	4.691E-04	4.042E-04	6.504E-03	3.227E-03	5.190E-04	5.189E-04	4.260E-04
305	1.297	-.48	4.680E-04	4.018E-04	6.456E-03	3.211E-03	5.179E-04	5.149E-04	4.184E-04

RUN 499 WTH 1333 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	PO	TO	TO1	MACH	PINF	TINF	UINF	RHOINF	REINF
.399	.07	19944.3	2669.1	3220.0	14.36	.0443	87.1	6683.1	1.327E-03	3.895E+06
.403	.07	19960.0	2674.6	3227.0	14.33	.0450	87.6	6689.1	1.338E-03	3.907E+06
.407	.07	19976.3	2679.6	3233.4	14.30	.0456	88.1	6694.5	1.348E-03	3.920E+06
.411	.07	19993.5	2684.2	3239.2	14.28	.0462	88.6	6699.5	1.360E-03	3.934E+06
.416	.07	20011.6	2688.4	3244.6	14.25	.0468	89.1	6704.0	1.371E-03	3.949E+06
.420	.07	20030.8	2692.4	3249.7	14.22	.0474	89.5	6708.4	1.382E-03	3.964E+06
.424	.07	20051.0	2696.2	3254.6	14.20	.0480	89.9	6712.5	1.392E-03	3.979E+06
.428	.07	20072.1	2699.9	3259.5	14.17	.0486	90.3	6716.7	1.402E-03	3.992E+06
.432	.07	20094.1	2703.7	3264.4	14.15	.0491	90.7	6720.8	1.411E-03	4.003E+06
.436	.07	20116.9	2707.5	3269.3	14.14	.0495	91.0	6725.1	1.419E-03	4.013E+06
.441	.07	20140.2	2711.5	3274.5	14.12	.0499	91.4	6729.6	1.425E-03	4.020E+06
.445	.07	20163.7	2715.6	3279.6	14.11	.0503	91.6	6734.2	1.430E-03	4.025E+06
.449	.07	20187.4	2719.8	3285.3	14.10	.0506	91.9	6739.1	1.434E-03	4.027E+06
.453	.07	20210.8	2724.2	3291.1	14.09	.0508	92.2	6744.1	1.437E-03	4.028E+06
.457	.07	20233.9	2728.8	3296.9	14.08	.0510	92.4	6749.3	1.439E-03	4.026E+06
.461	.07	20256.4	2733.4	3303.0	14.08	.0511	92.6	6754.7	1.440E-03	4.022E+06
.465	.07	20278.1	2738.2	3309.0	14.07	.0512	92.8	6760.1	1.440E-03	4.017E+06
.470	.07	20299.0	2742.9	3315.1	14.07	.0513	93.0	6765.5	1.439E-03	4.011E+06
.474	.07	20318.9	2747.6	3321.2	14.07	.0514	93.1	6770.9	1.438E-03	4.003E+06
.478	.07	20337.8	2752.2	3327.1	14.07	.0514	93.3	6776.2	1.436E-03	3.996E+06
.482	.07	20355.8	2756.7	3332.8	14.07	.0514	93.5	6781.3	1.435E-03	3.988E+06
.486	.07	20372.8	2761.0	3338.4	14.07	.0515	93.6	6786.3	1.433E-03	3.981E+06
.490	.07	20389.1	2765.2	3343.7	14.07	.0515	93.7	6791.0	1.432E-03	3.974E+06
.495	.07	20404.8	2769.1	3348.8	14.07	.0515	93.9	6795.5	1.431E-03	3.968E+06
.499	.07	20419.8	2772.9	3353.6	14.06	.0516	94.0	6799.8	1.430E-03	3.962E+06
.503	.07	20434.3	2776.4	3358.1	14.06	.0516	94.2	6803.8	1.429E-03	3.957E+06
.507	.07	20448.3	2779.8	3362.5	14.06	.0517	94.3	6807.7	1.429E-03	3.953E+06
.511	.07	20463.2	2783.1	3366.7	14.06	.0518	94.4	6811.4	1.429E-03	3.949E+06
.515	.07	20477.4	2786.2	3370.8	14.06	.0518	94.6	6815.0	1.429E-03	3.946E+06
.519	.07	20491.8	2789.3	3374.8	14.05	.0519	94.7	6818.6	1.429E-03	3.943E+06
.524	.07	20505.9	2792.4	3378.8	14.05	.0520	94.8	6822.1	1.430E-03	3.941E+06
.528	.07	20520.3	2795.5	3382.8	14.05	.0521	95.0	6825.6	1.430E-03	3.939E+06
.532	.07	20534.7	2798.6	3386.9	14.04	.0522	95.1	6829.2	1.431E-03	3.936E+06
.536	.07	20549.1	2801.9	3391.1	14.04	.0523	95.3	6832.8	1.431E-03	3.933E+06
.540	.07	20563.6	2805.2	3395.4	14.04	.0524	95.4	6836.6	1.431E-03	3.930E+06
.544	.07	20577.9	2808.7	3399.9	14.03	.0525	95.6	6840.6	1.431E-03	3.926E+06
.548	.07	20592.1	2812.3	3404.6	14.03	.0526	95.7	6844.7	1.431E-03	3.922E+06
.553	.07	20606.0	2816.1	3409.4	14.03	.0526	95.9	6848.9	1.431E-03	3.918E+06
.557	.07	20619.6	2820.0	3414.4	14.02	.0527	96.1	6853.3	1.431E-03	3.913E+06
.561	.07	20632.9	2824.0	3419.5	14.02	.0528	96.2	6857.8	1.430E-03	3.907E+06
.565	.07	20645.9	2828.1	3424.8	14.02	.0529	96.4	6862.4	1.429E-03	3.901E+06
.569	.07	20658.4	2832.2	3430.1	14.02	.0529	96.6	6867.1	1.429E-03	3.895E+06
.574	.07	20670.6	2836.4	3435.4	14.01	.0530	96.7	6871.7	1.428E-03	3.889E+06
.578	.07	20682.5	2840.5	3440.7	14.01	.0530	96.9	6876.3	1.427E-03	3.883E+06
.582	.07	20694.0	2844.5	3445.8	14.01	.0531	97.0	6880.8	1.426E-03	3.877E+06
.586	.07	20705.3	2848.4	3450.8	14.01	.0531	97.2	6885.2	1.426E-03	3.871E+06
.590	.07	20716.5	2852.1	3455.5	14.00	.0532	97.4	6889.3	1.425E-03	3.866E+06
.594	.07	20727.6	2855.5	3460.0	14.00	.0533	97.5	6893.2	1.424E-03	3.861E+06
.598	.07	20738.6	2858.7	3464.1	14.00	.0533	97.6	6896.8	1.424E-03	3.857E+06
.600	.07	20744.0	2860.2	3466.1	14.00	.0534	97.8	6898.6	1.424E-03	3.855E+06
.607	.07	20761.1	2864.4	3471.4	13.99	.0534	97.9	6903.2	1.424E-03	3.851E+06
.611	.07	20772.6	2868.8	3474.5	13.99	.0535	98.0	6905.9	1.424E-03	3.848E+06
.615	.07	20784.3	2868.9	3477.4	13.99	.0536	98.1	6908.4	1.424E-03	3.847E+06
.619	.07	20795.4	2870.8	3479.9	13.99	.0536	98.1	6910.5	1.424E-03	3.845E+06
.623	.07	20800.7	2872.6	3482.2	13.99	.0537	98.2	6912.6	1.425E-03	3.843E+06
.628	.07	20821.3	2874.1	3484.4	13.99	.0537	98.3	6914.5	1.425E-03	3.844E+06
AVERAGE		20435.2	2781.4	3363.3	14.04	.0513	94.1	6808.2	1.420E-03	3.937E+06

RUN 494 WTR 1331 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	G1 DOT	G2 DOT	G3 DOT	T1 TW	T1 DOT	T2 TW	T2 DOT	T4 T	T4 DOT	T5 TW	T5 DOT
.400	.07	3.130	2.203	3.091	156.48	61.596	110.43	25.170	81.8	3.707	82.96	4.602
.403	.07	3.134	2.204	3.095	157.42	61.763	110.72	25.205	81.8	3.710	83.00	4.616
.407	.07	3.140	2.205	3.100	158.17	62.234	111.00	25.324	81.93	3.720	83.03	4.641
.411	.07	3.150	2.207	3.114	159.02	62.645	111.35	25.481	82.00	3.731	83.07	4.667
.415	.07	3.171	2.209	3.124	160.01	62.895	111.71	25.527	82.05	3.740	83.17	4.683
.420	.07	3.154	2.212	3.134	161.00	63.287	112.13	25.661	82.10	3.746	83.28	4.701
.424	.07	3.147	2.215	3.145	161.99	63.512	112.48	25.751	82.14	3.749	83.28	4.709
.428	.07	3.211	2.219	3.150	162.99	63.778	112.84	25.876	82.27	3.749	83.39	4.726
.432	.07	3.222	2.223	3.160	163.83	64.268	113.19	26.008	82.24	3.744	83.46	4.742
.436	.07	3.234	2.227	3.179	164.66	64.460	113.55	26.056	82.30	3.743	83.53	4.756
.441	.07	3.234	2.233	3.192	165.67	64.785	113.90	26.212	82.34	3.811	83.56	4.777
.445	.07	3.255	2.237	3.204	166.52	64.941	114.16	26.259	82.35	3.811	83.63	4.793
.449	.07	3.267	2.244	3.218	167.51	65.219	114.54	26.358	82.44	3.814	83.71	4.813
.453	.07	3.281	2.249	3.228	168.22	65.474	114.89	26.456	82.48	3.825	83.78	4.821
.457	.07	3.301	2.255	3.240	169.07	65.563	115.17	26.463	82.53	3.831	83.81	4.821
.461	.07	3.303	2.261	3.252	170.06	65.665	115.53	26.490	82.56	3.836	83.85	4.831
.465	.07	3.335	2.267	3.264	170.77	65.857	115.88	26.539	82.63	3.841	83.95	4.840
.470	.07	3.347	2.274	3.275	171.62	66.013	116.24	26.577	82.68	3.848	84.02	4.847
.474	.07	3.356	2.280	3.288	172.47	66.236	116.52	26.633	82.74	3.862	84.06	4.867
.478	.07	3.365	2.286	3.297	173.32	66.256	116.80	26.612	82.76	3.860	84.13	4.874
.482	.07	3.379	2.292	3.307	174.17	66.422	117.16	26.675	82.80	3.867	84.20	4.886
.486	.07	3.386	2.298	3.316	174.87	66.553	117.44	26.715	82.85	3.877	84.24	4.896
.490	.07	3.395	2.303	3.325	175.72	66.672	117.72	26.719	82.91	3.885	84.27	4.910
.495	.07	3.404	2.309	3.334	176.57	66.777	118.00	26.716	82.94	3.892	84.34	4.924
.499	.07	3.411	2.315	3.342	177.42	66.898	118.29	26.729	82.94	3.902	84.41	4.929
.503	.07	3.417	2.320	3.350	178.13	67.001	118.64	26.743	83.04	3.912	84.48	4.936
.507	.07	3.422	2.325	3.357	178.98	67.188	118.85	26.751	83.08	3.919	84.55	4.950
.511	.07	3.427	2.330	3.364	179.83	67.170	119.21	26.761	83.11	3.929	84.59	4.957
.515	.07	3.432	2.335	3.370	180.54	67.259	119.55	26.749	83.14	3.945	84.66	4.956
.519	.07	3.435	2.340	3.376	181.24	67.378	119.84	26.813	83.22	3.956	84.73	4.965
.524	.07	3.438	2.344	3.382	181.95	67.491	119.99	26.843	83.25	3.963	84.77	4.976
.528	.07	3.442	2.347	3.387	182.40	67.473	120.27	26.927	83.31	3.979	84.80	4.986
.532	.07	3.445	2.351	3.393	183.01	67.639	120.55	26.922	83.35	3.982	84.87	4.985
.536	.07	3.447	2.357	3.397	184.22	67.796	120.91	26.970	83.4.	3.993	84.94	5.003
.540	.07	3.449	2.361	3.402	184.92	67.976	121.12	27.029	83.43	4.001	84.98	5.010
.544	.07	3.452	2.365	3.407	185.77	68.143	121.47	27.102	83.46	4.013	85.01	5.016
.548	.07	3.454	2.369	3.411	186.48	68.284	121.75	27.119	83.53	4.027	85.09	5.024
.553	.07	3.456	2.372	3.415	187.33	68.307	122.04	27.088	83.57	4.029	85.16	5.033
.557	.07	3.458	2.375	3.419	188.04	68.526	122.32	27.185	83.62	4.037	85.19	5.049
.561	.07	3.460	2.379	3.424	188.89	68.783	122.67	27.271	83.66	4.047	85.23	5.067
.565	.07	3.463	2.382	3.428	189.59	68.812	122.98	27.270	83.70	4.050	85.33	5.078
.569	.07	3.465	2.385	3.432	190.30	68.919	123.24	27.281	83.74	4.058	85.40	5.097
.574	.07	3.468	2.388	3.436	191.29	69.092	123.52	27.335	83.74	4.064	85.44	5.110
.578	.07	3.471	2.391	3.440	191.28	69.240	123.74	27.372	83.83	4.067	85.47	5.117
.582	.07	3.475	2.394	3.444	192.71	69.475	123.95	27.434	83.90	4.078	85.55	5.135
.586	.07	3.476	2.396	3.449	193.27	69.453	124.30	27.393	83.93	4.081	85.62	5.135
.590	.07	3.480	2.399	3.453	194.12	69.589	124.51	27.470	83.96	4.092	85.65	5.148
.594	.07	3.487	2.401	3.457	194.83	69.673	124.87	27.432	84.00	4.096	85.69	5.156
.598	.07	3.491	2.403	3.462	195.54	69.901	125.08	27.467	84.06	4.102	85.79	5.160
.603	.07	3.498	2.406	3.466	196.25	70.005	125.36	27.535	84.10	4.116	85.86	5.168
.607	.07	3.501	2.408	3.471	196.95	69.990	125.65	27.466	84.13	4.115	85.86	5.163
.611	.07	3.507	2.410	3.476	197.80	69.996	125.93	27.502	84.17	4.123	85.90	5.174
.615	.07	3.512	2.411	3.480	198.51	70.088	126.21	27.549	84.21	4.122	85.97	5.180
.619	.07	3.518	2.413	3.485	199.22	70.194	126.43	27.596	84.24	4.129	86.04	5.188
.623	.07	3.524	2.415	3.490	199.78	70.194	126.64	27.573	84.30	4.132	86.08	5.185
.628	.07	3.530	2.416	3.495	200.63	70.286	126.92	27.542	84.34	4.137	86.11	5.197

RUN 499 WTR 1333 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	PO	TO	(O)	MACH	PINF	TINF	UINF	RHOINF	REINF
.632	.07	20834.1	2875.6	3486.4	13.99	.0538	98.4	6916.2	1.426E-03	3.844E+06
.636	.07	20847.2	2877.1	3488.4	13.98	.0538	98.4	6918.0	1.426E-03	3.844E+06
.640	.07	20860.3	2878.6	3490.4	13.98	.0539	98.5	6919.7	1.427E-03	3.844E+06
.644	.07	20873.6	2880.1	3492.5	13.98	.0539	98.6	6921.5	1.427E-03	3.843E+06
.648	.07	20886.8	2881.8	3494.7	13.98	.0540	98.6	6923.5	1.427E-03	3.843E+06
.652	.07	20899.9	2883.6	3497.2	13.98	.0541	98.7	6925.6	1.428E-03	3.842E+06
.657	.07	20912.7	2885.6	3499.6	13.98	.0541	98.8	6927.9	1.428E-03	3.841E+06
.661	.07	20925.3	2887.7	3502.7	13.98	.0542	98.9	6930.4	1.428E-03	3.839E+06
.665	.07	20937.4	2890.1	3505.9	13.98	.0542	99.0	6933.1	1.428E-03	3.836E+06
.669	.07	20949.0	2892.7	3509.2	13.97	.0543	99.1	6936.1	1.428E-03	3.834E+06
.673	.07	20960.1	2895.4	3512.8	13.97	.0543	99.2	6939.2	1.428E-03	3.831E+06
.677	.07	20970.5	2898.3	3516.6	13.97	.0544	99.3	6942.4	1.428E-03	3.827E+06
.682	.07	20980.5	2901.3	3520.4	13.97	.0545	99.5	6945.7	1.427E-03	3.823E+06
.686	.07	20989.6	2904.4	3524.4	13.96	.0545	99.6	6949.1	1.427E-03	3.819E+06
.690	.07	20998.2	2907.4	3528.3	13.96	.0546	99.7	6952.6	1.427E-03	3.815E+06
.694	.07	21006.1	2910.4	3532.2	13.96	.0546	99.9	6955.9	1.426E-03	3.811E+06
.698	.07	21013.4	2913.4	3536.0	13.96	.0547	100.0	6959.2	1.426E-03	3.808E+06
.702	.07	21020.2	2916.2	3539.6	13.95	.0548	100.1	6962.3	1.426E-03	3.804E+06
.707	.07	21026.5	2918.9	3543.0	13.95	.0548	100.2	6965.3	1.426E-03	3.800E+06
.711	.07	21032.4	2921.3	3546.2	13.95	.0549	100.4	6968.0	1.426E-03	3.797E+06
.715	.07	21037.9	2923.6	3549.1	13.95	.0549	100.5	6970.5	1.426E-03	3.795E+06
.719	.07	21043.1	2925.6	3551.8	13.94	.0550	100.6	6972.8	1.426E-03	3.792E+06
.723	.07	21048.2	2927.5	3554.1	13.94	.0550	100.7	6974.8	1.426E-03	3.790E+06
.727	.07	21053.0	2929.1	3556.2	13.94	.0551	100.7	6976.6	1.426E-03	3.789E+06
.731	.07	21057.6	2930.4	3558.0	13.94	.0552	100.8	6978.1	1.426E-03	3.788E+06
.736	.07	21062.0	2931.6	3559.6	13.94	.0552	100.9	6979.4	1.427E-03	3.787E+06
.740	.07	21067.3	2932.6	3560.9	13.94	.0552	100.9	6980.6	1.427E-03	3.787E+06
.744	.07	21072.0	2933.5	3562.0	13.93	.0553	101.0	6981.5	1.428E-03	3.787E+06
.748	.07	21076.6	2934.2	3563.0	13.93	.0553	101.0	6982.4	1.428E-03	3.787E+06
.752	.07	21081.7	2934.8	3563.8	13.93	.0554	101.1	6983.1	1.429E-03	3.788E+06
.756	.07	21086.6	2935.4	3564.6	13.93	.0554	101.1	6983.7	1.429E-03	3.788E+06
.761	.07	21091.5	2935.9	3565.3	13.93	.0555	101.1	6984.3	1.430E-03	3.789E+06
.765	.07	21096.5	2936.4	3566.0	13.93	.0555	101.2	6984.9	1.430E-03	3.789E+06
.769	.07	21101.5	2936.9	3566.7	13.93	.0555	101.2	6985.5	1.431E-03	3.790E+06
.773	.07	21106.6	2937.4	3567.5	13.93	.0556	101.2	6986.2	1.431E-03	3.790E+06
.777	.07	21111.6	2938.0	3568.3	13.93	.0556	101.3	6986.8	1.432E-03	3.790E+06
.781	.07	21116.5	2938.6	3569.1	13.92	.0556	101.3	6987.5	1.432E-03	3.790E+06
.786	.07	21121.4	2939.3	3570.0	13.92	.0557	101.3	6988.3	1.432E-03	3.790E+06
.790	.07	21126.3	2940.0	3571.0	13.92	.0557	101.4	6989.2	1.432E-03	3.790E+06
.794	.07	21131.0	2940.8	3572.1	13.92	.0557	101.4	6990.1	1.432E-03	3.790E+06
.798	.07	21135.7	2941.7	3573.2	13.92	.0557	101.4	6991.1	1.433E-03	3.789E+06
.802	.07	21140.2	2942.7	3574.5	13.92	.0558	101.5	6992.2	1.433E-03	3.788E+06
.806	.07	21144.7	2943.7	3575.8	13.92	.0558	101.5	6993.3	1.433E-03	3.787E+06
.811	.07	21149.0	2944.8	3577.3	13.92	.0558	101.6	6994.6	1.433E-03	3.786E+06
.815	.07	21153.3	2946.0	3578.8	13.92	.0558	101.6	6995.9	1.432E-03	3.784E+06
.819	.07	21157.6	2947.2	3580.5	13.92	.0559	101.7	6997.3	1.432E-03	3.783E+06
.823	.07	21161.6	2948.5	3582.2	13.92	.0559	101.7	6998.8	1.432E-03	3.781E+06
.827	.07	21165.9	2950.0	3584.0	13.91	.0559	101.8	7000.4	1.432E-03	3.780E+06
.831	.07	21170.1	2951.4	3586.0	13.91	.0560	101.9	7002.0	1.432E-03	3.778E+06
.836	.07	21174.2	2953.0	3588.0	13.91	.0560	101.9	7003.8	1.432E-03	3.776E+06
.840	.07	21178.4	2954.6	3590.1	13.91	.0560	102.0	7005.6	1.432E-03	3.774E+06
.844	.07	21182.5	2956.3	3592.3	13.91	.0561	102.1	7007.4	1.432E-03	3.772E+06
.848	.07	21186.6	2958.0	3594.5	13.91	.0561	102.2	7009.3	1.432E-03	3.770E+06
.852	.07	21190.6	2959.7	3596.7	13.90	.0562	102.3	7011.2	1.432E-03	3.768E+06
.856	.07	21194.6	2961.5	3599.0	13.90	.0562	102.3	7013.1	1.432E-03	3.766E+06
.860	.07	21198.7	2963.2	3601.2	13.90	.0563	102.4	7015.0	1.432E-03	3.764E+06
AVERAGE		21054.9	2925.4	3551.6	13.94	.0552	100.6	6972.7	1.429E-03	3.800E+06

RUN [illegible] [illegible] COAXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	C1	C2	C3	T1 TW	T1 QDOT	T2 TW	T2 QDOT	T4 TW	T4 QDOT	T5 TW	T5 QDOT
[illegible]	.07	[illegible]	[illegible]	[illegible]	201.34	[illegible]	127.27	27.632	84.4	4.139	86.18	5.205
[illegible]	.07	[illegible]	[illegible]	3.507	201.41	70.500	127.44	27.620	84.44	4.145	86.25	5.209
[illegible]	.07	[illegible]	2.421	3.509	202.61	70.707	127.70	27.663	84.47	4.140	86.29	5.197
.644	.07	[illegible]	2.422	3.514	203.32	70.844	127.98	27.710	[illegible]	4.148	86.32	5.217
[illegible]	.07	[illegible]	2.423	3.519	203.69	70.610	128.19	27.739	84.54	4.148	86.39	5.236
[illegible]	.07	[illegible]	[illegible]	3.524	204.50	70.641	128.40	27.755	[illegible]	4.147	86.47	5.242
.657	.07	[illegible]	2.425	3.528	205.30	70.641	128.69	27.831	84.61	4.149	86.47	5.249
.661	.07	[illegible]	2.426	3.533	206.01	70.905	128.97	27.790	[illegible]	4.155	86.54	5.245
[illegible]	.07	[illegible]	2.427	3.537	206.72	[illegible]	129.40	27.818	84.64	4.158	86.61	5.266
[illegible]	.07	[illegible]	[illegible]	3.542	207.28	71.162	129.54	27.839	[illegible]	4.159	86.64	5.275
[illegible]	.07	[illegible]	[illegible]	3.546	207.99	71.215	129.75	27.845	84.74	4.167	86.68	5.282
.677	.07	[illegible]	[illegible]	3.550	208.64	71.400	130.11	27.965	84.81	4.173	86.75	5.292
[illegible]	.07	[illegible]	2.431	3.554	209.41	71.332	130.26	27.836	84.83	4.170	86.82	5.283
[illegible]	.07	[illegible]	[illegible]	3.556	209.97	[illegible]	130.53	27.883	[illegible]	4.177	86.85	5.290
[illegible]	.07	[illegible]	2.433	3.562	[illegible]	71.714	130.74	27.983	[illegible]	4.187	86.89	5.310
[illegible]	.07	[illegible]	2.434	3.565	211.53	[illegible]	[illegible]	27.914	[illegible]	4.185	86.93	5.307
[illegible]	.07	[illegible]	2.435	3.568	212.24	[illegible]	131.24	27.918	[illegible]	4.195	87.03	5.307
[illegible]	.07	3.621	2.436	3.572	[illegible]	[illegible]	131.52	27.884	[illegible]	4.191	87.07	5.306
.707	.07	3.624	2.438	3.574	213.51	71.959	131.73	27.910	85.07	4.194	87.10	5.326
.711	.07	[illegible]	2.439	3.577	214.22	72.134	131.87	27.951	85.10	4.203	87.14	5.339
[illegible]	.07	3.627	2.440	3.580	214.79	[illegible]	132.16	27.914	[illegible]	4.205	87.17	5.326
[illegible]	.07	[illegible]	2.442	3.582	215.49	72.130	132.44	27.934	[illegible]	4.208	87.24	5.336
[illegible]	.07	[illegible]	2.443	3.584	[illegible]	72.214	132.65	27.969	[illegible]	4.212	87.28	5.350
.727	.07	3.629	2.445	[illegible]	216.77	72.215	132.87	27.996	[illegible]	4.215	87.31	5.353
.731	.07	[illegible]	2.445	[illegible]	217.47	72.333	[illegible]	28.064	[illegible]	4.232	87.39	5.365
[illegible]	.07	[illegible]	[illegible]	3.590	[illegible]	72.159	133.36	28.004	85.34	4.231	87.46	5.353
.740	.07	[illegible]	2.450	3.591	218.75	[illegible]	133.57	28.035	85.37	4.240	87.49	5.359
.744	.07	3.627	2.451	3.592	219.40	[illegible]	133.78	28.057	[illegible]	4.243	87.53	5.361
[illegible]	.07	[illegible]	2.453	3.593	220.02	[illegible]	134.07	28.070	[illegible]	4.246	87.60	5.371
.752	.07	[illegible]	2.455	3.594	220.59	[illegible]	134.35	28.077	[illegible]	4.254	87.67	5.381
.756	.07	3.623	2.457	3.595	221.15	72.282	134.56	28.096	[illegible]	4.259	87.67	5.381
.761	.07	[illegible]	2.459	3.595	221.72	72.304	134.76	28.107	[illegible]	4.258	87.70	5.384
[illegible]	.07	3.621	2.460	3.595	222.29	72.313	134.99	28.122	[illegible]	4.262	87.77	5.390
[illegible]	.07	[illegible]	2.462	3.595	222.85	72.339	135.27	28.118	[illegible]	4.268	87.81	5.389
.774	.07	[illegible]	2.464	3.595	223.50	72.465	135.41	28.166	85.68	4.281	87.85	5.395
.777	.07	3.617	2.465	3.595	224.13	72.242	135.62	28.100	[illegible]	4.273	87.88	5.379
.781	.07	3.617	2.467	3.595	224.69	72.304	135.84	28.143	85.74	4.276	87.95	5.384
[illegible]	.07	3.616	[illegible]	3.595	225.26	72.404	136.12	28.193	[illegible]	4.281	88.02	5.396
.790	.07	3.615	2.470	3.594	225.97	72.370	136.33	28.121	[illegible]	4.273	88.02	5.389
.794	.07	3.616	2.471	3.594	226.53	72.374	136.54	28.115	85.84	4.273	88.09	5.387
.798	.07	3.616	2.472	3.593	227.24	72.439	136.83	28.160	[illegible]	4.274	88.13	5.393
.802	.07	3.617	2.473	3.593	227.81	72.515	136.97	28.179	85.94	4.273	88.20	5.400
.806	.07	3.618	2.473	3.592	228.23	72.452	137.18	28.174	85.97	4.278	88.20	5.406
.810	.07	3.620	2.474	3.592	228.80	72.419	137.39	28.135	85.99	4.275	88.23	5.395
[illegible]	.07	3.622	2.474	3.591	229.36	72.496	137.66	28.191	86.02	4.281	88.31	5.402
[illegible]	.07	3.624	2.474	3.591	229.93	72.612	137.89	28.234	86.07	4.289	88.38	5.416
.823	.07	3.627	2.474	3.591	230.64	72.424	138.03	28.141	[illegible]	4.278	88.38	5.405
.827	.07	3.631	2.474	3.591	231.20	[illegible]	138.31	28.173	86.12	4.281	88.41	5.410
.831	.07	3.635	2.473	3.591	231.63	[illegible]	138.53	28.174	[illegible]	4.278	88.48	5.408
[illegible]	.07	3.639	2.472	3.591	232.19	[illegible]	138.67	28.167	86.21	4.274	88.52	5.409
.840	.07	3.644	2.471	3.591	232.76	72.564	138.88	28.173	86.24	4.274	88.55	5.418
.844	.07	3.649	2.470	3.592	233.47	72.612	139.16	28.178	[illegible]	4.271	88.59	5.429
[illegible]	.07	3.654	2.468	3.593	233.89	72.799	139.36	28.232	[illegible]	4.282	88.66	5.437
.852	.07	3.660	2.466	3.595	234.40	72.644	139.52	28.152	[illegible]	4.273	88.73	5.418
.856	.07	3.665	2.464	3.597	235.02	72.735	139.73	28.185	[illegible]	4.275	88.73	5.427
.860	.07	3.671	2.462	3.599	235.73	72.651	139.94	28.230	[illegible]	4.282	88.77	5.440

RUN 494 WTR 1333 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	PO	TO	TO1	MACH	PINF	TINF	UINF	RHOINF	REINF
.464	.07	21201.6	2964.8	3603.3	13.90	.0563	102.5	7016.8	1.432E-03	3.762E+06
.469	.07	21204.7	2966.4	3605.3	13.90	.0563	102.6	7018.5	1.432E-03	3.760E+06
.473	.07	21207.4	2967.8	3607.2	13.90	.0564	102.7	7020.1	1.432E-03	3.758E+06
.477	.07	21209.6	2969.1	3608.9	13.90	.0564	102.7	7021.5	1.431E-03	3.756E+06
.481	.07	21211.3	2970.3	3610.4	13.89	.0564	102.8	7022.8	1.431E-03	3.754E+06
.485	.07	21212.3	2971.3	3611.6	13.89	.0564	102.8	7023.9	1.431E-03	3.753E+06
.488	.07	21212.6	2972.1	3612.6	13.89	.0564	102.8	7024.8	1.431E-03	3.751E+06
.492	.07	21212.2	2972.7	3613.4	13.89	.0564	102.9	7025.4	1.430E-03	3.750E+06
.496	.07	21211.1	2973.1	3613.9	13.89	.0564	102.9	7025.8	1.430E-03	3.749E+06
.502	.08	21209.2	2973.3	3614.1	13.89	.0564	102.9	7026.1	1.430E-03	3.748E+06
.504	.08	21206.5	2973.3	3614.1	13.89	.0564	102.9	7026.1	1.429E-03	3.747E+06
.510	.07	21203.1	2973.1	3613.9	13.89	.0564	102.9	7025.9	1.429E-03	3.746E+06
.514	.08	21199.0	2972.9	3613.6	13.89	.0564	102.9	7025.5	1.429E-03	3.746E+06
.519	.11	21194.4	2972.5	3612.9	13.89	.0563	102.8	7025.0	1.428E-03	3.746E+06
.523	.15	21189.1	2972.0	3612.2	13.89	.0563	102.8	7024.4	1.428E-03	3.745E+06
.527	.20	21183.4	2971.4	3611.5	13.89	.0563	102.8	7023.8	1.428E-03	3.745E+06
.531	.25	21177.4	2970.9	3610.7	13.89	.0563	102.8	7023.1	1.428E-03	3.745E+06
.535	.32	21171.0	2970.3	3609.9	13.89	.0563	102.7	7022.4	1.428E-03	3.745E+06
.539	.40	21164.3	2969.8	3609.1	13.89	.0562	102.7	7021.8	1.427E-03	3.745E+06
.543	.49	21157.5	2969.3	3608.5	13.89	.0562	102.7	7021.2	1.427E-03	3.745E+06
.548	.58	21150.5	2969.0	3607.9	13.89	.0562	102.7	7020.7	1.427E-03	3.745E+06
.552	.69	21143.5	2968.7	3607.5	13.89	.0562	102.7	7020.4	1.427E-03	3.745E+06
.556	.81	21136.3	2968.5	3607.2	13.89	.0562	102.7	7020.1	1.427E-03	3.744E+06
.560	.93	21129.1	2968.5	3607.0	13.89	.0562	102.7	7019.9	1.427E-03	3.743E+06
.564	1.07	21121.9	2968.5	3607.0	13.89	.0562	102.7	7019.9	1.426E-03	3.742E+06
.568	1.22	21114.8	2968.7	3607.0	13.89	.0562	102.7	7020.0	1.426E-03	3.740E+06
.573	1.37	21107.1	2968.9	3607.2	13.89	.0562	102.7	7020.1	1.425E-03	3.739E+06
.577	1.54	21099.6	2969.1	3607.5	13.89	.0561	102.7	7020.3	1.425E-03	3.737E+06
.581	1.71	21091.9	2969.5	3607.8	13.89	.0561	102.7	7020.6	1.424E-03	3.734E+06
.585	1.89	21084.1	2969.8	3608.1	13.89	.0561	102.7	7020.8	1.423E-03	3.732E+06
.589	2.08	21076.0	2970.1	3608.3	13.89	.0560	102.7	7021.1	1.422E-03	3.729E+06
.593	2.28	21067.7	2970.3	3608.6	13.89	.0560	102.7	7021.3	1.421E-03	3.726E+06
.597	2.50	21059.1	2970.5	3608.7	13.89	.0559	102.7	7021.4	1.419E-03	3.723E+06
1.002	2.71	21050.2	2970.7	3608.7	13.89	.0559	102.7	7021.5	1.418E-03	3.721E+06
1.006	2.94	21040.9	2970.7	3608.6	13.90	.0558	102.7	7021.4	1.417E-03	3.718E+06
1.010	3.17	21031.2	2970.5	3608.4	13.90	.0557	102.7	7021.2	1.415E-03	3.715E+06
1.014	3.42	21021.1	2970.3	3607.9	13.90	.0557	102.6	7020.8	1.414E-03	3.713E+06
1.018	3.66	21010.4	2969.9	3607.3	13.90	.0556	102.6	7020.3	1.413E-03	3.711E+06
1.022	3.92	20999.3	2969.4	3606.5	13.90	.0556	102.6	7019.6	1.412E-03	3.709E+06
1.027	4.18	20987.6	2968.7	3605.5	13.90	.0555	102.5	7018.7	1.411E-03	3.708E+06
1.031	4.45	20975.4	2967.9	3604.3	13.90	.0555	102.5	7017.7	1.410E-03	3.707E+06
1.035	4.72	20962.6	2967.0	3603.0	13.90	.0554	102.5	7016.6	1.410E-03	3.706E+06
1.039	5.01	20949.2	2965.9	3601.4	13.90	.0554	102.4	7015.3	1.410E-03	3.706E+06
1.043	5.29	20935.3	2964.8	3599.6	13.90	.0554	102.4	7013.9	1.409E-03	3.706E+06
1.047	5.59	20920.8	2963.5	3598.0	13.90	.0553	102.3	7012.3	1.409E-03	3.707E+06
1.051	5.88	20905.8	2962.1	3596.1	13.90	.0553	102.3	7010.6	1.410E-03	3.708E+06
1.056	6.19	20890.4	2960.7	3594.1	13.90	.0553	102.3	7008.9	1.410E-03	3.709E+06
1.060	6.49	20874.5	2959.2	3592.0	13.90	.0553	102.2	7007.1	1.410E-03	3.710E+06
1.064	6.79	20858.4	2957.7	3589.9	13.90	.0553	102.2	7005.2	1.410E-03	3.711E+06
1.068	7.10	20842.0	2956.2	3587.8	13.90	.0553	102.1	7003.4	1.411E-03	3.712E+06
1.072	7.42	20825.4	2954.7	3585.6	13.90	.0553	102.1	7001.5	1.411E-03	3.713E+06
1.076	7.74	20808.6	2953.2	3583.6	13.90	.0552	102.1	6999.7	1.411E-03	3.714E+06
1.081	8.06	20792.4	2951.8	3581.5	13.90	.0552	102.0	6997.9	1.411E-03	3.715E+06
1.085	8.3	20776.1	2950.4	3579.5	13.89	.0552	102.0	6996.2	1.411E-03	3.715E+06
1.089	8.70	20760.0	2949.0	3577.6	13.89	.0552	101.9	6994.5	1.411E-03	3.716E+06
1.093	9.02	20744.3	2947.7	3575.7	13.89	.0551	101.9	6992.9	1.410E-03	3.716E+06
AVERAGE		21054.6	2965.8	3603.9	13.90	.0559	102.6	7017.4	1.421E-03	3.731E+06

[illegible] COMBINED [illegible] TEST 12/10/79-12/[illegible]

TIME	ALPHA	CL [illegible]	[illegible]	[illegible]	T1 I[illegible]	T1 [illegible]	T2 I	T2 OUT	T4 I	T4 OUT	T5 IW	T5 OUT
[illegible]	.07	[illegible]	[illegible]	[illegible]	236.15	72.732	140.15	[illegible]	[illegible]	4.274	88.80	5.430
[illegible]	.07	[illegible]	.457	[illegible]	236.72	72.761	140.37	26.157	86.4	4.267	88.87	5.427
[illegible]	.07	[illegible]	.455	[illegible]	237.29	[illegible]	140.51	26.122	[illegible]	4.265	88.91	5.432
.77	.07	[illegible]	.452	3.612	237.65	[illegible]	140.74	26.155	86.5	4.269	88.94	5.439
[illegible]	.07	[illegible]	.445	3.517	236.42	72.95	141.00	[illegible]	[illegible]	4.270	88.98	5.447
[illegible]	.07	[illegible]	.446	3.522	235.49	72.716	141.22	26.136	[illegible]	4.258	89.05	5.432
[illegible]	.07	[illegible]	.443	3.628	234.55	72.51	141.36	26.170	[illegible]	4.260	89.05	5.430
[illegible]	.07	[illegible]	.43[illegible]	3.634	235.48	72.55	141.57	26.220	[illegible]	4.270	89.08	5.439
[illegible]	.07	3.547	.43[illegible]	3.642	241.54	72.754	141.76	26.155	[illegible]	4.261	89.15	5.433
[illegible]	.06	[illegible]	.433	3.650	241.11	[illegible]	141.92	[illegible]	[illegible]	4.275	89.19	5.459
[illegible]	.05	[illegible]	.43	3.655	241.54	72.751	142.14	26.111	[illegible]	4.263	89.23	5.440
[illegible]	.07	[illegible]	2.427	3.666	242.10	72.34	142.35	26.099	[illegible]	4.265	89.26	[illegible]
[illegible]	.08	3.676	.424	3.676	242.57	72.65	142.58	26.052	[illegible]	4.264	89.33	5.464
[illegible]	.11	[illegible]	2.422	[illegible]	243.23	72.99	142.77	26.054	[illegible]	4.265	89.37	5.481
[illegible]	.15	3.652	2.41	3.702	243.55	73.14	142.91	26.030	86.8	4.275	89.37	5.498
[illegible]	.20	3.637	2.417	3.716	244.22	72.61	143.13	27.092	86.8	4.268	89.40	5.507
.31	.25	3.61	2.415	3.731	244.74	73.600	143.34	27.662	[illegible]	4.273	89.47	5.531
[illegible]	.32	3.597	2.414	3.747	245.22	73.194	143.46	27.670	86.9	4.260	89.54	5.562
[illegible]	.40	3.573	2.412	3.755	245.78	73.107	143.62	27.733	[illegible]	4.273	89.54	5.58[illegible]
[illegible]	.48	3.54[illegible]	2.412	3.794	246.35	73.144	143.69	27.626	[illegible]	4.273	89.61	5.609
[illegible]	.55	3.515	2.411	3.805	247.15	73.57	143.91	27.535	[illegible]	4.276	89.69	5.64[illegible]
[illegible]	.69	[illegible]	2.411	3.826	247.44	73.34	144.12	27.426	87.07	4.273	89.72	5.686
[illegible]	.81	3.444	2.412	3.854	247.80	[illegible]	144.15	27.357	87.1	4.284	89.79	5.746
[illegible]	.93	3.404	2.413	3.881	248.47	73.403	144.33	27.135	[illegible]	4.276	89.83	5.786
[illegible]	1.07	3.35[illegible]	2.414	3.911	249.04	73.535	144.54	27.039	87.14	4.279	89.90	5.846
[illegible]	1.22	3.312	2.416	3.945	249.80	73.760	144.61	26.907	87.17	4.280	89.97	5.901
[illegible]	1.37	3.261	2.419	3.981	251.17	73.980	144.66	26.745	[illegible]	4.277	90.00	5.959
.77	1.54	3.207	2.422	4.020	250.73	74.137	144.82	26.63[illegible]	[illegible]	4.283	90.07	6.03[illegible]
[illegible]	1.71	3.14[illegible]	2.426	4.054	251.30	74.23	144.90	26.415	87.27	4.273	90.18	6.09[illegible]
[illegible]	1.89	[illegible]	2.43[illegible]	4.111	251.87	74.223	145.04	26.273	87.3	4.281	90.25	6.18[illegible]
[illegible]	2.09	[illegible]	2.43[illegible]	4.163	252.43	74.303	145.04	26.113	[illegible]	4.278	90.32	6.261
[illegible]	2.29	[illegible]	2.44[illegible]	4.221	253.00	74.46	145.11	25.977	[illegible]	4.277	90.39	6.347
.97	2.50	[illegible]	2.445	4.281	253.71	74.87	145.32	[illegible]	87.34	4.285	90.50	6.457
[illegible]	2.71	[illegible]	2.45[illegible]	4.34[illegible]	254.13	74.05	145.32	25.530	[illegible]	4.262	90.57	6.556
[illegible]	2.94	2.74[illegible]	2.45[illegible]	4.422	254.70	75.119	145.32	25.340	[illegible]	4.292	90.64	6.668
[illegible]	3.17	2.57	2.467	4.501	255.26	75.475	145.39	25.159	[illegible]	4.307	90.75	6.793
[illegible]	3.42	[illegible]	2.474	4.557	255.57	75.25	145.46	24.612	[illegible]	4.305	90.80	6.907
[illegible]	3.66	[illegible]	2.48[illegible]	4.631	256.54	75.54	145.53	24.540	[illegible]	4.322	90.99	7.049
[illegible]	3.92	2.43[illegible]	2.491	4.781	257.10	75.21	145.60	24.135	[illegible]	4.327	91.07	7.168
[illegible]	4.16	2.352	2.50[illegible]	4.990	257.95	76.16	145.69	23.827	[illegible]	4.352	91.17	7.311
[illegible]	4.45	2.27[illegible]	2.50[illegible]	5.007	256.52	76.37	145.67	23.514	[illegible]	4.386	91.38	7.472
[illegible]	4.72	[illegible]	2.51[illegible]	5.132	259.09	77.134	145.60	23.036	87.6	4.405	91.49	7.625
[illegible]	5.01	2.1[illegible]	2.527	5.265	259.79	77.86	145.46	22.609	[illegible]	4.431	91.60	7.795
[illegible]	5.29	2.02[illegible]	2.53[illegible]	5.41[illegible]	260.36	78.21	145.32	22.216	[illegible]	4.461	91.74	7.97[illegible]
[illegible]	5.58	1.942	2.54[illegible]	5.562	261.07	78.801	145.18	21.617	[illegible]	4.481	91.91	8.162
[illegible]	5.88	1.85[illegible]	2.555	5.722	261.77	79.423	145.04	21.434	[illegible]	4.511	92.06	8.375
[illegible]	6.18	1.7[illegible]	2.564	5.897	262.40	79.78	144.82	20.9[illegible]	[illegible]	4.520	92.20	8.575
[illegible]	6.48	1.707	2.573	6.079	263.47	80.202	144.75	20.503	87.91	4.541	92.34	8.816
[illegible]	6.79	1.631	2.581	6.271	264.46	80.610	144.61	20.095	87.94	4.548	92.55	9.058
[illegible]	7.10	1.557	2.58[illegible]	6.473	265.60	81.002	144.47	19.673	[illegible]	4.552	92.76	9.312
1.072	7.42	1.48[illegible]	2.597	6.685	266.67	81.493	144.26	19.325	[illegible]	4.557	92.91	9.604
[illegible]	7.74	1.417	2.605	6.907	267.58	81.41	144.19	18.657	[illegible]	4.530	93.12	9.880
1.081	8.06	1.352	2.611	7.138	265.14	81.900	144.05	18.579	[illegible]	4.521	93.40	10.197
[illegible]	8.38	1.28[illegible]	2.616	7.379	266.71	82.167	143.96	[illegible]	[illegible]	4.505	93.61	10.527
[illegible]	8.70	1.22[illegible]	2.623	7.629	269.28	82.435	143.64	17.656	[illegible]	4.490	93.86	10.875
[illegible]	9.02	1.173	2.624	7.887	269.88	82.616	143.55	17.513	[illegible]	4.471	94.11	11.246

RUN 499 WTR 1333 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	PO	TO	TOI	MACH	PINF	TINF	QINF	RHOINF	REINF
1.097	9.35	20726.9	2946.4	3574.8	13.90	.0551	101.8	6991.3	1.410E-03	3.715E+06
1.101	9.68	20713.9	2945.1	3572.0	13.90	.0550	101.8	6989.7	1.409E-03	3.715E+06
1.105	10.00	20699.3	2943.7	3570.1	13.90	.0550	101.7	6988.1	1.409E-03	3.715E+06
1.110	10.32	20685.1	2942.3	3568.1	13.90	.0549	101.6	6986.4	1.408E-03	3.715E+06
1.114	10.65	20671.1	2940.7	3566.0	13.90	.0548	101.6	6984.5	1.408E-03	3.715E+06
1.118	10.97	20657.4	2939.2	3564.0	13.90	.0548	101.5	6982.8	1.407E-03	3.715E+06
1.122	11.29	20644.7	2938.0	3562.3	13.90	.0547	101.4	6981.0	1.407E-03	3.717E+06
1.126	11.61	20630.0	2936.3	3560.4	13.90	.0547	101.4	6979.1	1.407E-03	3.719E+06
1.130	11.93	20616.1	2934.9	3558.5	13.91	.0546	101.2	6977.3	1.407E-03	3.722E+06
1.135	12.24	20601.9	2933.4	3556.4	13.91	.0545	101.0	6975.4	1.407E-03	3.726E+06
1.139	12.55	20587.3	2931.8	3554.2	13.91	.0545	100.9	6973.2	1.408E-03	3.731E+06
1.143	12.86	20572.1	2930.0	3551.8	13.91	.0544	100.7	6970.9	1.409E-03	3.736E+06
1.147	13.16	20556.3	2928.3	3549.4	13.91	.0544	100.4	6968.5	1.411E-03	3.741E+06
1.151	13.46	20539.8	2926.5	3547.0	13.92	.0543	100.2	6966.0	1.413E-03	3.747E+06
1.155	13.76	20522.6	2924.8	3544.6	13.92	.0542	99.9	6963.3	1.415E-03	3.754E+06
1.160	14.04	20504.7	2923.1	3542.2	13.92	.0542	99.6	6960.4	1.418E-03	3.761E+06
1.164	14.33	20486.1	2921.4	3539.8	13.93	.0541	99.3	6957.4	1.420E-03	3.769E+06
1.168	14.60	20466.9	2919.6	3537.4	13.93	.0540	99.0	6954.3	1.424E-03	3.778E+06
1.172	14.88	20447.2	2917.8	3535.0	13.94	.0539	98.7	6950.9	1.427E-03	3.788E+06
1.176	15.14	20427.2	2916.1	3532.6	13.94	.0538	98.4	6947.4	1.431E-03	3.798E+06
1.180	15.40	20406.9	2914.5	3530.3	13.95	.0537	98.1	6943.8	1.436E-03	3.809E+06
1.184	15.65	20385.3	2912.8	3528.0	13.95	.0536	97.8	6940.1	1.440E-03	3.820E+06
1.188	15.89	20363.3	2911.2	3525.8	13.96	.0535	97.5	6936.3	1.445E-03	3.832E+06
1.192	16.13	20340.8	2909.6	3523.7	13.96	.0534	97.2	6932.4	1.450E-03	3.845E+06
1.197	16.36	20317.9	2908.0	3521.6	13.97	.0533	96.9	6928.4	1.455E-03	3.858E+06
1.201	16.57	20294.6	2906.4	3519.6	13.97	.0532	96.6	6924.3	1.460E-03	3.871E+06
1.205	16.78	20270.8	2904.8	3517.6	13.98	.0531	96.3	6920.1	1.465E-03	3.885E+06
1.209	16.98	20246.8	2903.2	3515.7	13.98	.0530	96.0	6915.8	1.470E-03	3.899E+06
1.213	17.17	20222.4	2901.6	3513.8	13.99	.0529	95.7	6911.4	1.476E-03	3.914E+06
1.217	17.35	20197.8	2900.0	3512.0	13.99	.0528	95.4	6906.8	1.481E-03	3.929E+06
1.222	17.52	20172.9	2898.4	3510.3	14.00	.0527	95.1	6902.2	1.487E-03	3.944E+06
1.226	17.68	20147.7	2896.8	3508.6	14.00	.0526	94.8	6897.4	1.493E-03	3.960E+06
1.230	17.84	20122.4	2895.2	3506.9	14.01	.0525	94.5	6892.5	1.499E-03	3.976E+06
1.234	17.99	20096.8	2893.6	3505.3	14.01	.0524	94.2	6887.6	1.505E-03	3.992E+06
1.238	18.13	20071.0	2892.0	3503.7	14.02	.0523	93.9	6882.5	1.511E-03	4.008E+06
1.243	18.27	20045.0	2890.4	3502.1	14.02	.0522	93.6	6877.4	1.518E-03	4.025E+06
1.247	18.41	20018.8	2888.9	3500.5	14.03	.0521	93.3	6872.2	1.525E-03	4.042E+06
1.251	18.53	19992.6	2887.3	3499.0	14.03	.0520	93.0	6866.9	1.532E-03	4.059E+06
1.255	18.65	19966.2	2885.8	3497.5	14.04	.0519	92.7	6861.5	1.539E-03	4.076E+06
1.259	18.77	19939.7	2884.2	3496.0	14.04	.0518	92.4	6856.0	1.546E-03	4.094E+06
AVERAGE		20411.9	2914.9	3547.4	13.97	.0536	98.7	6944.3	1.448E-03	3.937E+06

S N 499 WTR 1433 CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

TIME	ALPHA	G1 GOOT	G2 GOOT	G3 GOOT	T1 T*	T1 GOOT	T2 T*	T2 GOOT	T4 T*	T4 GOOT	T5 TW	T5 GOOT
1.097	9.85	1.121	2.032	8.153	270.89	82.541	143.41	17.073	88.22	4.437	94.43	11.598
1.101	9.88	1.072	2.038	8.427	271.40	82.703	143.13	16.739	88.2	4.421	94.71	11.471
1.105	10.00	1.027	2.038	8.708	271.96	82.880	142.91	16.451	88.2	4.411	94.99	12.355
1.110	10.32	.986	2.040	8.995	272.87	82.704	142.70	16.046	88.24	4.388	95.31	12.708
1.114	10.65	.948	2.041	9.288	273.38	82.544	142.56	15.716	88.27	4.391	95.67	13.084
1.118	10.97	.911	2.041	9.585	274.23	82.948	142.35	15.323	88.31	4.376	96.02	13.433
1.122	11.29	.876	2.038	9.886	274.94	83.084	142.08	15.012	88.35	4.377	96.34	13.809
1.126	11.61	.841	2.037	10.190	275.79	83.436	141.97	14.736	88.36	4.389	96.73	14.191
1.130	11.93	.808	2.034	10.496	276.49	83.465	141.64	14.336	88.43	4.383	97.08	14.539
1.134	12.24	.776	2.030	10.802	277.06	83.697	141.43	13.997	88.43	4.381	97.43	14.899
1.138	12.55	.745	2.025	11.109	277.77	83.923	141.27	13.705	88.44	4.389	97.72	15.275
1.143	12.86	.715	2.018	11.413	278.47	83.954	141.00	13.412	88.47	4.400	98.04	15.636
1.147	13.16	.686	2.011	11.716	279.18	83.982	140.88	13.165	88.51	4.409	98.46	16.017
1.151	13.46	.658	2.003	12.014	279.81	83.535	140.75	12.776	88.54	4.386	98.81	16.358
1.155	13.76	.631	1.993	12.308	280.46	83.538	140.30	12.454	88.57	4.384	99.20	16.748
1.160	14.04	.605	1.983	12.596	281.02	83.462	140.04	12.149	88.60	4.377	99.59	17.126
1.164	14.33	.579	1.971	12.877	281.67	83.314	139.80	11.894	88.64	4.360	100.02	17.484
1.169	14.60	.555	1.959	13.150	282.44	83.158	139.59	11.594	88.64	4.336	100.44	17.850
1.173	14.88	.531	1.945	13.413	282.98	83.002	139.30	11.302	88.67	4.318	100.83	18.228
1.178	15.14	.507	1.931	13.667	283.29	82.705	139.10	11.032	88.69	4.299	101.26	18.599
1.183	15.40	.484	1.915	13.909	283.85	82.545	138.88	10.741	88.69	4.273	101.72	18.967
1.188	15.65	.462	1.900	14.139	284.28	82.322	138.68	10.456	88.71	4.244	102.18	19.328
1.193	15.89	.439	1.883	14.356	284.84	82.201	138.51	10.204	88.71	4.218	102.64	19.704
1.198	16.13	.418	1.865	14.560	285.55	82.121	138.10	9.950	88.74	4.191	103.02	20.079
1.203	16.35	.397	1.847	14.749	285.83	81.880	137.82	9.711	88.74	4.163	103.48	20.405
1.208	16.57	.377	1.828	14.923	286.26	81.761	137.54	9.542	88.75	4.144	103.91	20.734
1.213	16.78	.357	1.808	15.081	286.68	81.173	137.32	9.240	88.77	4.099	104.30	20.997
1.218	16.98	.337	1.788	15.224	286.97	80.999	137.11	9.032	88.78	4.069	104.72	21.294
1.224	17.17	.318	1.768	15.358	287.53	80.714	136.83	8.814	88.78	4.038	105.22	21.567
1.229	17.35	1.012	1.747	15.459	287.98	80.484	136.62	8.606	88.80	4.015	105.68	21.815
1.233	17.52	1.031	1.725	15.552	288.45	80.151	136.33	8.457	88.81	3.988	106.24	22.037
1.238	17.68	1.050	1.704	15.628	289.51	79.455	136.12	8.247	88.81	3.942	106.67	22.199
1.238	17.84	1.067	1.682	15.686	289.51	79.120	135.91	8.104	88.84	3.916	107.02	22.388
1.234	17.98	1.083	1.660	15.731	289.80	78.907	135.70	8.019	88.84	3.904	107.45	22.559
1.239	18.11	1.096	1.638	15.757	289.80	78.278	135.41	7.834	88.85	3.863	107.77	22.644
1.243	18.22	1.113	1.616	15.768	290.08	77.996	135.20	7.720	88.86	3.836	108.19	22.751
1.247	18.33	1.125	1.593	15.764	290.36	77.480	134.99	7.526	88.81	3.747	108.58	22.792
1.251	18.43	1.136	1.571	15.744	290.65	77.268	134.78	7.456	88.83	3.779	109.00	22.840
1.255	18.51	1.145	1.548	15.710	290.79	76.964	134.56	7.406	88.84	3.759	109.32	22.838
1.259	18.59	1.153	1.527	15.662	290.93	76.230	134.35	7.261	88.81	3.717	109.64	22.755

RUN 499 WTR 1333 STANTON NUMBERS CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

	TIME	ALPHA	G1 ST	G2 ST	G3 ST	T1 ST	T2 ST	T4 ST	T5 ST
89	.399	.07	4.531E-04	3.190E-04	4.477E-04	9.136E-03	3.478E-03	5.368E-04	6.665E-04
90	.403	.07	4.495E-04	3.157E-04	4.438E-04	9.073E-03	3.444E-03	5.314E-04	6.614E-04
91	.407	.07	4.460E-04	3.124E-04	4.401E-04	9.036E-03	3.421E-03	5.270E-04	6.578E-04
92	.411	.07	4.427E-04	3.092E-04	4.366E-04	9.000E-03	3.402E-03	5.229E-04	6.543E-04
93	.416	.07	4.397E-04	3.063E-04	4.333E-04	8.942E-03	3.373E-03	5.186E-04	6.496E-04
94	.420	.07	4.370E-04	3.036E-04	4.303E-04	8.909E-03	3.356E-03	5.155E-04	6.455E-04
95	.424	.07	4.345E-04	3.011E-04	4.276E-04	8.856E-03	3.334E-03	5.110E-04	6.404E-04
96	.428	.07	4.324E-04	2.989E-04	4.253E-04	8.829E-03	3.320E-03	5.077E-04	6.369E-04
97	.432	.07	4.307E-04	2.970E-04	4.233E-04	8.811E-03	3.308E-03	5.055E-04	6.337E-04
98	.436	.07	4.293E-04	2.953E-04	4.216E-04	8.772E-03	3.296E-03	5.026E-04	6.301E-04
99	.441	.07	4.283E-04	2.940E-04	4.204E-04	8.755E-03	3.288E-03	5.017E-04	6.292E-04
100	.445	.07	4.276E-04	2.929E-04	4.194E-04	8.728E-03	3.271E-03	4.988E-04	6.275E-04
101	.449	.07	4.272E-04	2.921E-04	4.189E-04	8.722E-03	3.266E-03	4.965E-04	6.268E-04
102	.453	.07	4.271E-04	2.915E-04	4.186E-04	8.718E-03	3.264E-03	4.957E-04	6.251E-04
103	.457	.07	4.272E-04	2.912E-04	4.185E-04	8.696E-03	3.252E-03	4.946E-04	6.227E-04
104	.461	.07	4.275E-04	2.910E-04	4.187E-04	8.687E-03	3.245E-03	4.936E-04	6.220E-04
105	.465	.07	4.280E-04	2.911E-04	4.191E-04	8.691E-03	3.242E-03	4.930E-04	6.215E-04
106	.470	.07	4.286E-04	2.912E-04	4.197E-04	8.694E-03	3.240E-03	4.929E-04	6.211E-04
107	.474	.07	4.292E-04	2.914E-04	4.203E-04	8.709E-03	3.241E-03	4.937E-04	6.225E-04
108	.478	.07	4.299E-04	2.917E-04	4.209E-04	8.700E-03	3.233E-03	4.927E-04	6.224E-04
109	.482	.07	4.305E-04	2.921E-04	4.216E-04	8.711E-03	3.230E-03	4.926E-04	6.230E-04
110	.486	.07	4.311E-04	2.924E-04	4.223E-04	8.717E-03	3.231E-03	4.934E-04	6.234E-04
111	.490	.07	4.316E-04	2.928E-04	4.229E-04	8.723E-03	3.233E-03	4.939E-04	6.244E-04
112	.495	.07	4.319E-04	2.931E-04	4.234E-04	8.726E-03	3.228E-03	4.940E-04	6.253E-04
113	.499	.07	4.322E-04	2.934E-04	4.238E-04	8.731E-03	3.225E-03	4.945E-04	6.250E-04
114	.503	.07	4.323E-04	2.936E-04	4.241E-04	8.733E-03	3.221E-03	4.951E-04	6.249E-04
115	.507	.07	4.323E-04	2.938E-04	4.243E-04	8.731E-03	3.217E-03	4.951E-04	6.251E-04
116	.511	.07	4.321E-04	2.939E-04	4.244E-04	8.726E-03	3.213E-03	4.955E-04	6.249E-04
117	.515	.07	4.319E-04	2.939E-04	4.245E-04	8.725E-03	3.210E-03	4.956E-04	6.236E-04
118	.519	.07	4.315E-04	2.940E-04	4.244E-04	8.725E-03	3.207E-03	4.970E-04	6.240E-04
119	.524	.07	4.311E-04	2.940E-04	4.243E-04	8.724E-03	3.204E-03	4.964E-04	6.244E-04
120	.528	.07	4.306E-04	2.939E-04	4.241E-04	8.731E-03	3.208E-03	4.979E-04	6.242E-04
121	.532	.07	4.300E-04	2.938E-04	4.238E-04	8.710E-03	3.200E-03	4.973E-04	6.221E-04
122	.536	.07	4.295E-04	2.936E-04	4.236E-04	8.714E-03	3.200E-03	4.976F-04	6.238E-04
123	.540	.07	4.289E-04	2.937E-04	4.233E-04	8.721E-03	3.200E-03	4.976E-04	6.234E-04
124	.544	.07	4.283E-04	2.935E-04	4.230E-04	8.727E-03	3.203E-03	4.981E-04	6.229E-04
125	.549	.07	4.277E-04	2.934E-04	4.227E-04	8.730E-03	3.199E-03	4.989E-04	6.233E-04
126	.553	.07	4.272E-04	2.933E-04	4.225E-04	8.716E-03	3.188E-03	4.992E-04	6.226E-04
127	.557	.07	4.267E-04	2.932E-04	4.222E-04	8.731E-03	3.196E-03	4.992E-04	6.234E-04
128	.561	.07	4.262E-04	2.931E-04	4.220E-04	8.750E-03	3.199E-03	4.986E-04	6.245E-04
129	.565	.07	4.257E-04	2.930E-04	4.217E-04	8.739E-03	3.193E-03	4.980E-04	6.248E-04
130	.569	.07	4.253E-04	2.928E-04	4.215E-04	8.739E-03	3.189E-03	4.981E-04	6.251E-04
131	.574	.07	4.250E-04	2.927E-04	4.213E-04	8.749E-03	3.190E-03	4.981E-04	6.266E-04
132	.578	.07	4.247E-04	2.926E-04	4.211E-04	8.754E-03	3.190E-03	4.977E-04	6.264E-04
133	.582	.07	4.244E-04	2.924E-04	4.210E-04	8.771E-03	3.192E-03	4.982E-04	6.276E-04
134	.586	.07	4.242E-04	2.923E-04	4.208E-04	8.756E-03	3.186E-03	4.978E-04	6.267E-04
135	.590	.07	4.240E-04	2.921E-04	4.207E-04	8.759E-03	3.184E-03	4.983E-04	6.272E-04
136	.594	.07	4.239E-04	2.920E-04	4.206E-04	8.760E-03	3.177E-03	4.980E-04	6.273E-04
137	.598	.07	4.238E-04	2.918E-04	4.206E-04	8.765E-03	3.176E-03	4.981E-04	6.268E-04
138	.603	.07	4.238E-04	2.917E-04	4.205E-04	8.774E-03	3.180E-03	4.991E-04	6.270E-04
139	.607	.07	4.238E-04	2.915E-04	4.205E-04	8.754E-03	3.167E-03	4.983E-04	6.255E-04
140	.611	.07	4.239E-04	2.914E-04	4.205E-04	8.757E-03	3.167E-03	4.985E-04	6.260E-04
141	.615	.07	4.240E-04	2.912E-04	4.205E-04	8.754E-03	3.165E-03	4.987E-04	6.259E-04
142	.619	.07	4.242E-04	2.911E-04	4.206E-04	8.763E-03	3.170E-03	4.986E-04	6.260E-04
143	.624	.07	4.244E-04	2.909E-04	4.206E-04	8.753E-03	3.163E-03	4.977E-04	6.249E-04
144	.628	.07	4.246E-04	2.907E-04	4.207E-04	8.758E-03	3.162E-03	4.977E-04	6.256E-04

RUN 499 WTR 1333 STANTON NUMBERS CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

	TIME	ALPHA	G1 ST	G2 ST	G3 ST	T1 ST	T2 ST	T4 ST	T5 ST
145	.632	.07	4.248E-04	2.905E-04	4.208E-04	8.754E-03	3.383E-03	4.973E-04	6.258E-04
146	.636	.07	4.251E-04	2.904E-04	4.209E-04	8.764E-03	3.370E-03	4.975E-04	6.255E-04
147	.640	.07	4.253E-04	2.902E-04	4.209E-04	8.744E-03	3.359E-03	4.984E-04	6.234E-04
148	.644	.07	4.256E-04	2.900E-04	4.210E-04	8.752E-03	3.361E-03	4.987E-04	6.251E-04
149	.648	.07	4.258E-04	2.898E-04	4.211E-04	8.751E-03	3.360E-03	4.981E-04	6.250E-04
150	.652	.07	4.260E-04	2.895E-04	4.211E-04	8.745E-03	3.359E-03	4.994E-04	6.265E-04
151	.657	.07	4.262E-04	2.893E-04	4.212E-04	8.761E-03	3.364E-03	4.982E-04	6.265E-04
152	.661	.07	4.263E-04	2.891E-04	4.212E-04	8.747E-03	3.355E-03	4.951E-04	6.252E-04
153	.665	.07	4.264E-04	2.888E-04	4.211E-04	8.755E-03	3.354E-03	4.947E-04	6.269E-04
154	.669	.07	4.265E-04	2.885E-04	4.211E-04	8.757E-03	3.356E-03	4.942E-04	6.272E-04
155	.673	.07	4.265E-04	2.882E-04	4.210E-04	8.766E-03	3.354E-03	4.945E-04	6.272E-04
156	.677	.07	4.265E-04	2.879E-04	4.209E-04	8.773E-03	3.351E-03	4.945E-04	6.274E-04
157	.682	.07	4.264E-04	2.877E-04	4.208E-04	8.758E-03	3.338E-03	4.935E-04	6.255E-04
158	.686	.07	4.263E-04	2.874E-04	4.207E-04	8.768E-03	3.339E-03	4.935E-04	6.254E-04
159	.690	.07	4.261E-04	2.871E-04	4.205E-04	8.783E-03	3.344E-03	4.940E-04	6.269E-04
160	.694	.07	4.259E-04	2.868E-04	4.203E-04	8.767E-03	3.334E-03	4.932E-04	6.257E-04
161	.698	.07	4.257E-04	2.866E-04	4.202E-04	8.777E-03	3.330E-03	4.937E-04	6.249E-04
162	.702	.07	4.255E-04	2.863E-04	4.200E-04	8.763E-03	3.319E-03	4.925E-04	6.239E-04
163	.707	.07	4.252E-04	2.861E-04	4.198E-04	8.777E-03	3.321E-03	4.923E-04	6.255E-04
164	.711	.07	4.249E-04	2.859E-04	4.196E-04	8.784E-03	3.322E-03	4.927E-04	6.253E-04
165	.715	.07	4.245E-04	2.857E-04	4.194E-04	8.768E-03	3.314E-03	4.923E-04	6.243E-04
166	.719	.07	4.242E-04	2.856E-04	4.192E-04	8.766E-03	3.312E-03	4.922E-04	6.245E-04
167	.723	.07	4.238E-04	2.855E-04	4.191E-04	8.768E-03	3.313E-03	4.921E-04	6.255E-04
168	.727	.07	4.234E-04	2.854E-04	4.189E-04	8.761E-03	3.314E-03	4.920E-04	6.252E-04
169	.731	.07	4.230E-04	2.853E-04	4.187E-04	8.769E-03	3.319E-03	4.935E-04	6.260E-04
170	.736	.07	4.226E-04	2.852E-04	4.185E-04	8.741E-03	3.309E-03	4.930E-04	6.241E-04
171	.740	.07	4.222E-04	2.852E-04	4.183E-04	8.746E-03	3.310E-03	4.936E-04	6.243E-04
172	.744	.07	4.217E-04	2.852E-04	4.181E-04	8.744E-03	3.310E-03	4.936E-04	6.240E-04
173	.748	.07	4.213E-04	2.851E-04	4.179E-04	8.737E-03	3.309E-03	4.935E-04	6.247E-04
174	.752	.07	4.209E-04	2.851E-04	4.177E-04	8.731E-03	3.308E-03	4.941E-04	6.254E-04
175	.756	.07	4.204E-04	2.852E-04	4.175E-04	8.730E-03	3.308E-03	4.944E-04	6.249E-04
176	.761	.07	4.200E-04	2.852E-04	4.173E-04	8.728E-03	3.307E-03	4.940E-04	6.250E-04
177	.765	.07	4.196E-04	2.852E-04	4.170E-04	8.725E-03	3.307E-03	4.941E-04	6.252E-04
178	.769	.07	4.192E-04	2.852E-04	4.168E-04	8.724E-03	3.305E-03	4.945E-04	6.247E-04
179	.773	.07	4.188E-04	2.853E-04	4.165E-04	8.736E-03	3.308E-03	4.956E-04	6.250E-04
180	.777	.07	4.184E-04	2.853E-04	4.163E-04	8.706E-03	3.299E-03	4.945E-04	6.228E-04
181	.781	.07	4.181E-04	2.853E-04	4.160E-04	8.710E-03	3.302E-03	4.945E-04	6.231E-04
182	.785	.07	4.178E-04	2.853E-04	4.158E-04	8.725E-03	3.307E-03	4.948E-04	6.241E-04
183	.790	.07	4.175E-04	2.853E-04	4.155E-04	8.711E-03	3.297E-03	4.936E-04	6.230E-04
184	.794	.07	4.173E-04	2.853E-04	4.152E-04	8.708E-03	3.294E-03	4.934E-04	6.224E-04
185	.798	.07	4.172E-04	2.853E-04	4.149E-04	8.713E-03	3.298E-03	4.932E-04	6.227E-04
186	.802	.07	4.170E-04	2.852E-04	4.147E-04	8.719E-03	3.299E-03	4.929E-04	6.233E-04
187	.806	.07	4.169E-04	2.851E-04	4.144E-04	8.720E-03	3.296E-03	4.932E-04	6.236E-04
188	.810	.07	4.169E-04	2.850E-04	4.141E-04	8.700E-03	3.290E-03	4.925E-04	6.220E-04
189	.815	.07	4.169E-04	2.849E-04	4.138E-04	8.706E-03	3.295E-03	4.930E-04	6.225E-04
190	.819	.07	4.169E-04	2.847E-04	4.135E-04	8.715E-03	3.298E-03	4.936E-04	6.230E-04
191	.823	.07	4.170E-04	2.845E-04	4.132E-04	8.688E-03	3.285E-03	4.920E-04	6.220E-04
192	.827	.07	4.171E-04	2.843E-04	4.129E-04	8.697E-03	3.287E-03	4.920E-04	6.222E-04
193	.831	.07	4.173E-04	2.840E-04	4.126E-04	8.695E-03	3.285E-03	4.913E-04	6.215E-04
194	.835	.07	4.174E-04	2.837E-04	4.123E-04	8.685E-03	3.281E-03	4.905E-04	6.211E-04
195	.840	.07	4.176E-04	2.833E-04	4.121E-04	8.683E-03	3.280E-03	4.900E-04	6.216E-04
196	.844	.07	4.179E-04	2.829E-04	4.118E-04	8.683E-03	3.278E-03	4.893E-04	6.224E-04
197	.848	.07	4.181E-04	2.825E-04	4.116E-04	8.699E-03	3.281E-03	4.901E-04	6.227E-04
198	.852	.07	4.184E-04	2.821E-04	4.114E-04	8.674E-03	3.269E-03	4.887E-04	6.200E-04
199	.856	.07	4.186E-04	2.816E-04	4.113E-04	8.679E-03	3.270E-03	4.885E-04	6.205E-04
200	.860	.07	4.189E-04	2.811E-04	4.112E-04	8.686E-03	3.273E-03	4.888E-04	6.215E-04

RUN 499 WTR 1333 STATION NUMBERS CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

	TIME	ALPHA	G1 ST	G2 ST	G3 ST	T1 ST	T2 ST	T4 ST	T5 ST
201	.864	.07	4.192E-04	2.801E-04	4.111E-04	5.666E-03	3.263E-03	4.175E-04	6.194E-04
202	.869	.07	4.19[illegible]-04	2.801E-04	4.114E-04	5.664E-03	3.260E-03	4.164E-04	6.191E-04
203	.873	.07	4.197E-04	2.796E-04	4.113E-04	5.666E-03	3.261E-03	4.159E-04	6.192E-04
204	.877	.07	4.200E-04	2.791E-04	4.116E-04	5.669E-03	3.261E-03	4.160E-04	6.197E-04
205	.881	.07	4.202E-04	2.787E-04	4.119E-04	5.670E-03	3.260E-03	4.160E-04	6.204E-04
206	.885	.07	4.203E-04	2.782E-04	4.124E-04	5.654E-03	3.251E-03	4.145E-04	6.195E-04
207	.889	.07	4.204E-04	2.778E-04	4.129E-04	5.662E-03	3.255E-03	4.146E-04	6.196E-04
208	.894	.07	4.204E-04	2.774E-04	4.136E-04	5.675E-03	3.260E-03	4.157E-04	6.196E-04
209	.898	.07	4.203E-04	2.771E-04	4.145E-04	5.652E-03	3.251E-03	4.147E-04	6.193E-04
210	.902	.06	4.201E-04	2.768E-04	4.154E-04	5.681E-03	3.260E-03	4.154E-04	6.214E-04
211	.906	.06	4.197E-04	2.765E-04	4.165E-04	5.656E-03	3.250E-03	4.150E-04	6.195E-04
212	.910	.07	4.192E-04	2.763E-04	4.176E-04	5.672E-03	3.250E-03	4.155E-04	6.205E-04
213	.914	.08	4.184E-04	2.761E-04	4.191E-04	5.645E-03	3.240E-03	4.155E-04	6.226E-04
214	.918	.11	4.174E-04	2.759E-04	4.206E-04	5.702E-03	3.264E-03	4.163E-04	6.248E-04
215	.923	.15	4.161E-04	2.757E-04	4.222E-04	5.709E-03	3.260E-03	4.172E-04	6.271E-04
216	.927	.20	4.145E-04	2.756E-04	4.240E-04	5.696E-03	3.253E-03	4.167E-04	6.284E-04
217	.931	.25	4.126E-04	2.755E-04	4.259E-04	5.716E-03	3.260E-03	4.174E-04	6.314E-04
218	.935	.32	4.104E-04	2.755E-04	4.280E-04	5.747E-03	3.273E-03	4.185E-04	6.353E-04
219	.939	.40	4.078E-04	2.754E-04	4.301E-04	5.741E-03	3.270E-03	4.178E-04	6.375E-04
220	.943	.48	4.048E-04	2.754E-04	4.325E-04	5.750E-03	3.268E-03	4.180E-04	6.411E-04
221	.948	.58	4.014E-04	2.755E-04	4.351E-04	5.788E-03	3.290E-03	4.188E-04	6.457E-04
222	.952	.69	3.976E-04	2.756E-04	4.379E-04	5.781E-03	3.280E-03	4.180E-04	6.503E-04
223	.956	.81	3.935E-04	2.757E-04	4.409E-04	5.814E-03	3.279E-03	4.187E-04	6.574E-04
224	.960	.93	3.889E-04	2.759E-04	4.441E-04	5.804E-03	3.254E-03	4.169E-04	6.621E-04
225	.964	1.07	3.840E-04	2.761E-04	4.477E-04	5.826E-03	3.244E-03	4.195E-04	6.692E-04
226	.968	1.22	3.787E-04	2.764E-04	4.516E-04	5.847E-03	3.229E-03	4.197E-04	6.751E-04
227	.973	1.37	3.730E-04	2.768E-04	4.559E-04	5.866E-03	3.216E-03	4.195E-04	6.825E-04
228	.977	1.54	3.669E-04	2.773E-04	4.607E-04	5.901E-03	3.202E-03	4.204E-04	6.917E-04
229	.981	1.71	3.605E-04	2.779E-04	4.659E-04	5.893E-03	3.178E-03	4.194E-04	6.986E-04
230	.985	1.89	3.538E-04	2.785E-04	4.716E-04	5.924E-03	3.161E-03	4.206E-04	7.094E-04
231	.989	2.09	3.468E-04	2.792E-04	4.778E-04	5.950E-03	3.145E-03	4.208E-04	7.186E-04
232	.993	2.29	3.394E-04	2.800E-04	4.847E-04	5.990E-03	3.131E-03	4.208E-04	7.290E-04
233	.997	2.50	3.316E-04	2.810E-04	4.922E-04	6.024E-03	3.113E-03	4.221E-04	7.423E-04
234	1.002	2.71	3.234E-04	2.820E-04	5.004E-04	6.034E-03	2.984E-03	4.222E-04	7.544E-04
235	1.006	2.94	3.157E-04	2.830E-04	5.093E-04	6.075E-03	2.960E-03	4.249E-04	7.684E-04
236	1.010	3.17	3.073E-04	2.841E-04	5.190E-04	6.130E-03	2.941E-03	4.261E-04	7.836E-04
237	1.014	3.42	2.987E-04	2.853E-04	5.295E-04	6.147E-03	2.907E-03	4.264E-04	7.976E-04
238	1.018	3.66	2.899E-04	2.866E-04	5.408E-04	6.195E-03	2.883E-03	4.249E-04	8.145E-04
239	1.022	3.92	2.810E-04	2.879E-04	5.531E-04	6.217E-03	2.836E-03	4.301E-04	8.291E-04
240	1.027	4.18	2.719E-04	2.892E-04	5.662E-04	6.270E-03	2.802E-03	4.334E-04	8.466E-04
241	1.031	4.45	2.627E-04	2.905E-04	5.803E-04	6.351E-03	2.787E-03	4.375E-04	8.651E-04
242	1.035	4.72	2.534E-04	2.918E-04	5.954E-04	6.398E-03	2.715E-03	4.405E-04	8.847E-04
243	1.039	5.01	2.441E-04	2.931E-04	6.115E-04	6.470E-03	2.686E-03	4.440E-04	9.053E-04
244	1.043	5.29	2.348E-04	2.944E-04	6.287E-04	6.502E-03	2.626E-03	4.479E-04	9.270E-04
245	1.047	5.58	2.256E-04	2.957E-04	6.470E-04	6.630E-03	2.570E-03	4.508E-04	9.494E-04
246	1.051	5.88	2.164E-04	2.970E-04	6.664E-04	6.715E-03	2.543E-03	4.544E-04	9.749E-04
247	1.056	6.18	2.074E-04	2.983E-04	6.869E-04	6.755E-03	2.447E-03	4.588E-04	9.988E-04
248	1.060	6.48	1.985E-04	2.995E-04	7.086E-04	6.826E-03	2.420E-03	4.626E-04	1.022E-03
249	1.064	6.79	1.898E-04	3.007E-04	7.315E-04	6.889E-03	2.379E-03	4.668E-04	1.051E-03
250	1.068	7.10	1.814E-04	3.018E-04	7.556E-04	6.947E-03	2.341E-03	4.730E-04	1.084E-03
251	1.072	7.42	1.732E-04	3.030E-04	7.809E-04	1.002E-02	2.291E-03	4.816E-04	1.122E-03
252	1.076	7.74	1.653E-04	3.041E-04	8.075E-04	1.003E-02	2.237E-03	4.849E-04	1.155E-03
253	1.081	8.05	1.576E-04	3.051E-04	8.353E-04	1.009E-02	2.200E-03	4.892E-04	1.193E-03
254	1.085	8.38	1.502E-04	3.061E-04	8.643E-04	1.013E-02	2.141E-03	4.928E-04	1.233E-03
255	1.089	8.70	1.431E-04	3.071E-04	8.944E-04	1.018E-02	2.109E-03	4.955E-04	1.275E-03
256	1.093	9.02	1.363E-04	3.080E-04	9.257E-04	1.021E-02	2.045E-03	4.995E-04	1.320E-03

RUN 499 WTR 1333 STANTON NUMBERS CO-AXIAL THERMOCOUPLE SHAKEDOWN TEST 12/10/79-12/12/79

	TIME	ALPHA	G1 ST	G2 ST	G3 ST	T1 ST	T2 ST	T4 ST	T5 ST
257	1.097	9.35	1.313E-04	3.088E-04	9.581E-04	1.022F-02	2.035E-03	5.205E-04	1.363E-03
258	1.101	9.68	1.257E-04	3.095E-04	9.915E-04	1.025F-02	1.997E-03	5.192E-04	1.408E-03
259	1.106	10.00	1.206E-04	3.102F-04	1.026E-03	1.028F-02	1.965E-03	5.187E-04	1.455E-03
260	1.110	10.32	1.159E-04	3.108F-04	1.061E-03	1.028F-02	1.919E-03	5.166E-04	1.499E-03
261	1.114	10.65	1.117E-04	3.113F-04	1.097E-03	1.033F-02	1.884E-03	5.176F-04	1.546E-03
262	1.118	10.97	1.079E-04	3.117F-04	1.134E-03	1.033F-02	1.837E-03	5.166E-04	1.589F-03
263	1.122	11.29	1.046E-04	3.120E-04	1.171E-03	1.038F-02	1.802E-03	5.174E-04	1.636E-03
264	1.126	11.61	1.018E-04	3.122E-04	1.209E-03	1.044F-02	1.772E-03	5.195E-04	1.684E-03
265	1.130	11.93	9.942E-05	3.123E-04	1.247E-03	1.046F-02	1.726E-03	5.196E-04	1.728E-03
266	1.135	12.24	9.750E-05	3.123E-04	1.286E-03	1.049F-02	1.688E-03	5.201E-04	1.774E-03
267	1.139	12.55	9.602E-05	3.122E-04	1.325E-03	1.052F-02	1.655E-03	5.220E-04	1.822E-03
268	1.143	12.86	9.499E-05	3.120F-04	1.364E-03	1.055F-02	1.623E-03	5.243E-04	1.868E-03
269	1.147	13.16	9.438E-05	3.117E-04	1.403E-03	1.054F-02	1.596E-03	5.263E-04	1.918E-03
270	1.151	13.46	9.418E-05	3.114E-04	1.442E-03	1.056F-02	1.550E-03	5.248E-04	1.963E-03
271	1.155	13.76	9.437E-05	3.110E-04	1.480E-03	1.061E-02	1.520E-03	5.257E-04	2.015E-03
272	1.160	14.04	9.494E-05	3.105E-04	1.519E-03	1.063F-02	1.488E-03	5.261E-04	2.065E-03
273	1.164	14.33	9.588E-05	3.099E-04	1.557E-03	1.065F-02	1.456E-03	5.255E-04	2.114E-03
274	1.168	14.60	9.711E-05	3.093E-04	1.595E-03	1.066F-02	1.423E-03	5.241E-04	2.165E-03
275	1.172	14.88	9.867E-05	3.086E-04	1.632E-03	1.068F-02	1.391E-03	5.230E-04	2.218E-03
276	1.176	15.14	1.005E-04	3.079E-04	1.669E-03	1.069F-02	1.362E-03	5.230E-04	2.271E-03
277	1.180	15.40	1.026E-04	3.071E-04	1.705E-03	1.070F-02	1.331E-03	5.217E-04	2.324E-03
278	1.184	15.65	1.049E-04	3.063E-04	1.739E-03	1.071F-02	1.301E-03	5.200E-04	2.377E-03
279	1.189	15.89	1.074E-04	3.053E-04	1.773E-03	1.074F-02	1.274E-03	5.188E-04	2.433E-03
280	1.193	16.13	1.101E-04	3.043E-04	1.805E-03	1.078F-02	1.247E-03	5.173E-04	2.490E-03
281	1.197	16.35	1.129E-04	3.033E-04	1.836E-03	1.080E-02	1.222E-03	5.159E-04	2.541E-03
282	1.201	16.57	1.158E-04	3.021E-04	1.866E-03	1.082F-02	1.200E-03	5.156E-04	2.592E-03
283	1.205	16.78	1.188E-04	3.009E-04	1.893E-03	1.080F-02	1.172F-03	5.121E-04	2.638E-03
284	1.209	16.98	1.218E-04	2.996E-04	1.919E-03	1.082F-02	1.150E-03	5.104E-04	2.685E-03
285	1.214	17.17	1.248E-04	2.982E-04	1.943E-03	1.084F-02	1.127E-03	5.085E-04	2.730E-03
286	1.218	17.35	1.277E-04	2.967E-04	1.965E-03	1.085F-02	1.112F-03	5.077E-04	2.773E-03
287	1.222	17.52	1.307E-04	2.952E-04	1.985E-03	1.086F-02	1.095E-03	5.063E-04	2.813E-03
288	1.226	17.68	1.335E-04	2.936E-04	2.003E-03	1.081E-02	1.067E-03	5.023E-04	2.845E-03
289	1.230	17.84	1.363E-04	2.919E-04	2.019E-03	1.081F-02	1.053E-03	5.010E-04	2.881E-03
290	1.234	17.98	1.389E-04	2.902E-04	2.032E-03	1.083F-02	1.045E-03	5.014E-04	2.914E-03
291	1.239	18.11	1.413E-04	2.884E-04	2.044E-03	1.079F-02	1.025E-03	4.980E-04	2.937E-03
292	1.243	18.22	1.437E-04	2.866E-04	2.053E-03	1.079F-02	1.014E-03	4.963F-04	2.962F-03
293	1.247	18.33	1.458E-04	2.848E-04	2.060E-03	1.076F-02	9.922E-04	4.930E-04	2.979E-03
294	1.251	18.43	1.478E-04	2.830E-04	2.066E-03	1.078F-02	9.857E-04	4.926E-04	2.997F-03
295	1.255	18.51	1.495E-04	2.811E-04	2.069E-03	1.078F-02	9.830F-04	4.917E-04	3.008E-03
296	1.259	18.59	1.511E-04	2.793E-04	2.071E-03	1.076F-02	9.681F-04	4.881E-04	3.009E-03

TABLE 5 ACCURACIES FOR REPEATABILITY OF RUN 496 VS. RUN 498
(UPSWEEP VS. DOWNSWEEP)

ALPHA	T1	T2	T3	T4	T5	G1	G2	G3
0°	2.3%	7.7%	6.9%	9.8%	20.1%	7.6%	12.7%	-
3°	.3%	2.1%	2.9%	9.1%	17.8%	4.9%	13.1%	-
5°	.3%	4.6%	5.6%	6.2%	18.3%	8.7%	9.5%	-
10°	.6%	11.6%	1.2%	8.6%	14.9%	21.8%	8.8%	-
16°	1.0%	17.4%	7.7%	5.2%	12.2%	4.9%	4.5%	-

(Note: Values in % difference in agreement)

TABLE 6 ACCURACIES FOR REPEATABILITY OF RUN 496 AND RUN 498 VS. RUN 497
(DYNAMIC SWEEP VS. STATIC)

RUN	ALPHA	T1	T2	T3	T4	T5	G1	G2	G3
496 vs. 497	10°	0%	6.9%	2.7%	7.4%	3.8%	19.3%	5.5%	15.1%
498 vs. 497	10°	.7%	5.1%	1.5%	1.3%	11.5%	3.0%	3.5%	-

(Note: Values in % difference in agreement)

TABLE 7 ACCURACIES FOR REPEATABILITY OF RUN 496 AND RUN 499 ("THICK WALL" VS. "THIN WALL")

ALPHA	T1	T2	T3	T4	T5	G1	G2*	G3
0^{o}	1.4%	6.6%	-	16.1%	10.2%	17.0%	-	8.0%
3^{o}	.4%	2.6%	-	16.1%	9.0%	14.0%	-	13.6%
5^{o}	1.2%	2.6%	-	13.8%	3.1%	13.6%	-	14.8%
10^{o}	.7%	2.3%	-	16.7%	12.1%	16.5%	-	17.8%
16^{o}	2.7%	5.9%	-	16.4%	11.4%	26.2%	-	17.7%

*G2 was recessed in model wall on Run 499. No comparison of this gage was made.

(Note: Values in % difference in agreement)

TABLE 8 ACCURACIES FOR AGREEMENT OF RUNS 496, 497, AND 499 vs. THE G.E. 3-D VISCOUS CODE

RUN	ALPHA	T1	T2	T3	T4	T5	G1	G2	G3
Run 496 vs. Code	0^{o}	10.0%	0.0%	.5%	5.9%	1.2%	.6%	4.6%	10.7%
	5^{o}	2.8%	25.1%	12.6%	6.0%	.1%	5.8%	3.5%	6.6%
Run 498 vs. Code	0^{o}	5.4%	3.5%	1.9%	.4%	15.4%	2.7%	12.9%	-
	5^{o}	8.0%	31.7%	17.4%	5.4%	13.1%	8.2%	7.3%	-
Run 499 vs. Code	0^{o}	6.2%	2.3%	-	6.6%	15.3%	13.0%	-	13.0%
	5^{o}	7.1%	25.7%	-	3.0%	13.2%	14.9%	-	14.9%

(Note: Values in % difference in agreement)

BIBLIOGRAPHY

Brown, H. K., "The Theoretical Response of Heat Transfer Gages Employed in Shock Tubes," AVCO Research Laboratory, Research Note 58, Feb 1958.

Carslaw, H. S. and Jaeger, J. C., Conduction of Heat in Solids, Second Edition, Oxford, Clarendon Press, 1959.

Culotta, S. and Richards, B. E., "Methods for Determining Conditions in Real Nitrogen Expanding Flows," VKI-TN-58, Feb 1970.

Ehrich, Fredric F., "Differentiation of Experimental Data Using Least Squares Fitting," Journal of the Aeronautical Sciences, Vol. 22, No. 2, Feb 1955.

Gardon, Robert, "An Instrument for the Direct Measurement of Intense Thermal Radiation," The Review of Scientific Instruments, Vol. 24, No. 5, May 1953.

Hecht, A. M., Nestler, D. E., and Richbourg, D. H., "Application of a Three-Dimensional Viscous Computer Code to Reentry Vehicle Design," AIAA Paper 79-0306, Jan 1979.

Hill, J. A. F., Wardlaw, A. B., Jr., Pronchick, S. W., and Holmes, J. E., "Verification Tests in the Mach 14 Nozzle of the Hypervelocity Tunnel at NSWC (White Oak)," AIAA Paper 77-150, Jan 1977.

Kendall, D. N. and Dixon, W. P., "Heat Transfer Measurements in a Hot Shot Wind Tunnel," Presented at the IEEE Aerospace Systems Conference, Seattle, Washington, 11-15 Jul 1966.

Vidal, R. J., "Model Instrumentation Techniques for Heat Transfer and Force Measurements in a Hypersonic Shock Tunnel," CAL Report No. AD-917-A-1, Feb 1956 WADC TN 56-315, AD 97238.

TERMS

ALPHA	angle of attack (^{o})
C	calibrated Gardon gage sensitivity ($\frac{\dot{q}}{E}$)
C_p	specific heat
E	output voltage
k	thermal diffusivity
K	thermal conductivity
L	minimum effective sensing probe length
M_∞	free stream Mach number
MACH	free stream Mach number
P_o	supply pressure (psia)
PINF	free stream pressure (psia)
PO	supply pressure (psia)
$\dot{q}$	heat transfer rate (BTU/ft^2-sec)
Q	cumulative heat transfer to a surface (BTU/ft^2)
QDOT	heat transfer rate (BTU/ft^2-sec)
$RE_{\infty/ft}$	free stream Reynolds number
REINF	free stream Reynolds number
RHO1NF	free stream density (lbm/ft^3)
ST	Stanton number
t	time

TERMS (Cont.)

T	temperature
T_o	supply temperature (^oF)
T_{01}	equivalent ideal gas supply temperature (^oF)
T_w	measured wall temperature (^oF)
TINF	free stream temperature (^oF)
TO	supply temperature (^oF)
TO1	equivalent ideal gas supply temperature (^oF)
TW	measured wall temperature (^oF)
U_∞	free stream velocity (ft/sec)
UINF	free stream velocity (ft/sec)
α	angle of attack
δ	thermoelectric sensitivity ($^{\mu v}/_{o_F}$)
ρ	density
ρ_∞	free stream density ($^{lbm}/_{ft^3}$)
τ	dummy variable of integration
τ_G	calibrated Gardon gage time delay constant