JAERI-M
85-128

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September 1985

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編集兼発行　日本原子力研究所
印　　刷　日立高速印刷株式会社

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(Received July 31, 1985)

This report presents the experimental results of ROSA-III small break (SB) LOCA tests RUN 922 and RUN 932. Both tests assumed 5% sprit break at the recirculation pump suction. An HPCS was also assumed to be failed to start in both tests.

The ADS flow area in RUN 932 is decreased to 50% of the scaled (1/424) BWR ADS flow area in RUN 922. The test data of RUNs 922 and 932 was compared to investigate the effect of the ADS flow area reduction on the core cooling in BWR SBLOCA.

The ADS flow area reduction caused the slow depressurization after the ADS actuation resulting in the ECCS actuation delay and the core uncovery period was extended. The PCT was increased by 116 K from 835 K in RUN 922 to 951 K in RUN 932 also because of the ECCS actuation delay.

The effect of the ADS flow area reduction on the core cooling was significant resulting in the PCT increase. However, all the heate rods were quenched with LPCS and LPCI and effectiveness of ADS and low pressure ECCS for core cooling has been confirmed.

Keywords: BWR, LOCA, ECCS, Integral Test, ROSA-III Program, 5% Split Small Break, PCT, Recirculation Pump, Reactor Safety, Core Cooling

ROSA－Ⅲ再循環ポンプ吸込側5％破断LOCA実験
（RUN 922および932，HPCS故障）

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（1985年7月31日受理）

本報は，BWR小破断LOCAを模擬したROSA－Ⅲ実験RUN922および932の実験結果をまとめたものである。両実験は，再循環ポンプ吸込側5％破断を仮定している。更に，HPCSが不作動と仮定された。

RUN 932では，ADS流路面積がRUN 922で使用された標準の面積の50％に縮小されている。これら両実験結果の比較を，BWR小破断LOCAにおけるADS流路面積縮少の炉心冷却に与える効果を検討するために実施した。

ADS流路面積の縮小により，ADS作動後の減圧が遅くなり，その結果ECCS作動が遅くなった。そして，炉心露出期間が長くなった。また，ECCS作動遅れのため，RUN 932の最高被覆管表面温度（PCT）はRUN 922の835Kより116K高い951Kに増加した。

ADS流路面積の減少は，PCTを増加させる効果を示した。しかし，全燃料棒はLPCSおよびLPCIに依りクエンチされ，低圧系ECCSに依る炉心冷却の有効性が確認された。

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ABBREVIATIONS

ADS	Automatic Depressurization System
AT	Air Tank
AV	Air Actuation Valve
(2)B	(2) inches pipe of Schedule 80
BN	Boron Nitride
BWR	Boiling Water Reactor
CA	Chromel-Alumel
CCFL	Counter Current Flow Limiting
CHV	Check Valve
CP	Conductivity Prove
CV	Control Valve
CWT	Cooling Water Tank
D	Differential Pressure
d	Diameter
DF	Density of Fluid
DL(+100)	Elevation (+100 mm) from the bottom of PV
ECCS	Emergency Core Cooling System
ESF	Engineered Safety Features
EX	Heat Exchanger
F	Flow Rate
Fig.	Figure
FS	Full Scale
FW	Feedwater
FWLF	Feedwater Line Flashing
FWP	Feedwater Pump
FWT	Feedwater Tank
HPCS	High Pressure Core Spray
HPCSP	High Pressure Core Spray Pump
HPCST	High Pressure Core Spary Tank

HPWP	High Pressure Water Pump
ID	Inner diameter
INC 600	Inconel 600
JP	Jet Pump
K	Kelvin
kg	Kilogram
kPa	Kilopascal
kW	Kilowatt
L	Liter
LB	Liquid Level in Channel Box
LBWR	Large Boiling Water Reactor
LL	Liquid Level
LOCA	Loss-of-Coolant Accident
LOCE	Loss-of-Coolant Experiment
LP	Lower Plenum
LPCI	Low Pressure Coolant Injection
LPCIP	Low Pressure Coolant Injection Pump
LPCIT	Low Pressure Coolant Injection Tank
LPCS	Low Pressure Core Spray
LPCSP	Low Pressure Core Spary Pump
LPCST	Low Pressure Core Spary Tank
LPF	Lower Plenum Flashing
LTP	Lower Tie Plate
M	Momentum Flux
m	Meter
mm	Milimeter
MLHR	Maximum Linear Heat Rate
MPa	Megapascal
MRP	Main Recirculation Pump
MSIV	Main Steam Isolation Valve
MSL	Main Steam Line

MW	Megawatt
N	Rotation Speed
OR	Orifice
P	Pressure
	Power
PCT	Peak Cladding Temperature
PV	Pressure Vessel
PWT	Pure Water Tank
QOBV	Quick Opening Blowdown Valve
QSV	Quick Shut-off Valve
RCN	Rapid Condencer
ROSA	Rig of Safety Assessment
rpm	Revolution per Minute
S	Signal
s	Second
Sch	Schedule
SUS	Stainless Steel
T	Temperature
T/C	Thermocouple
TC	Temperature of Fluid
TF	Temperature of Fuel
TS	Temperature of Structure Material
UTP	Upper Tie Plate
V	Valve
VF	Void Fraction
W	Watt
WL	Water Level
WSP	Water Supply Pump

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1. Introduction

The Rig of Safety Assessment (ROSA)-III program was initiated in 1976 to study the thermal-hydraulic behavior of a boiling water reactor (BWR) during a postulated loss of coolant accident (LOCA) with the emergency core cooling system (ECCS) actuation and to provide the data base necessary for evaluation of computer codes developed for reactor safety analysis. The ROSA-III test facility, which was completed in 1978, consists of a volumetrically scaled (1/424) primary system of a 3800 MW BWR/6-251 with an electrically heated core, a break simulator and a scaled ECCS(1).

Special emphasis has been placed on the following objectives in the ROSA-III program :

(1) To provide the system data required for improvement and evaluation of analytical methods currently used to predict the LOCA response of large BWRs. In particular, the performance of engineered safety features (ESFs), with an emphasis on ECCSs, and the quantitative margins of safety inherent in performance of the ESFs are of primary interest.

(2) To identify and investigate any unexpected event(s) or threshold(s) in the response of either the plant or the ESFs and to develop analytical techniques that adequately describe and account for such unexpected behavior.

The information acquired from loss of coolant experiments (LOCEs) is thus used for evaluation and development of LOCA analytical methods and assessment of the ESFs in response to a LOCA.

Two 5% split small break (SB) LOCA tests RUNs 922 and 932 were conducted on September 18, 1981 and December 1, 1982, respectively. The break location was the recirculation pump suction line and an HPCS was assumed to be failed to start in both tests. The flow area of the automatic depressurization system (ADS), however, was decreased to an halh in RUN 932 of that in RUN 922 to investigate the effect of the ADS flow area on the core cooling.

The specific objectives of these tests were as follows:

(1) To investigate experimentally the effect of the ADS flow area on the core cooling in a BWR SBLOCA, and

(2) To acquire test data on a 5% split SBLOCA for an evaluation of capability of a reactor safety analysis code to predict the thermal hydraulic

behavior during a BWR LOCA.

In this report, all of the data obtained in RUNs 922 and 932 was presented and the effect of the ADS flow area on the core cooling during a SBLOCA was discussed with the comparison of some primary parameters descriving the system response.

The post test analyses were performed with the THYDE-B1/MOD2 code(2) for RUNs 922 and 932 to assess the capability of the code to calculate the primary thermal hydraulic behavior during a SBLOCA, but were presented in the reference (3) with the other ROSA-III test analyses and the BWR SBLOCA analyses.

2. ROSA-III Test Facility

The ROSA-III test facility is a volumetrically scaled (1/424) BWR system with an electrically heated core designed to study the response of the primary system, the core and the ECCS during a postulated LOCA. The test facility is instrumented to measure and record various thermal-hydraulic parameters during the test. Details of the instrumentation are described in section 3.

The test facility consists of four subsystems. These subsystems are : (a) pressure vessel, (b) steam line and feedwater line, (c) recirculation loops and (d) ECCS. Figures 2.1 through 2.3 illustrate the configuration of the test facility including the pressure vessel internals and piping schematics. Table 2.1 compares the major dimensions of the ROSA-III test facility with the corresponding dimensions of the reference BWR.

The ROSA-III pressure vessel includes various components simulating the internal structures of the reactor vessel in the BWR system as shown in Fig. 2.4. The interior of the vessel is divided into the core, lower plenum, upper plenum, downcomer annulus, steam separator, steam dome and steam dryer. The core consists of four model fuel assemblies of half length and a control rod simulator. Each fuel assembly contains 62 heater rods (Fig. 2.5) and 2 water rods spaced in a 8 x 8 square array and supported by spacers and upper and lower tie plates. The heater rod is heated electrically with chopped cosine power distribution along the axis as shown in Fig. 2.6. The effective heated length is 1880 mm, one half of the active length of a BWR fuel rod. The electric power supplied to the model fuel assembly A is 1.4 times larger than the power supplied to each of the other assemblies B, C and D. The heater rods in each assembly are divided into three groups in terms of heat generation rate as shown in Fig. 2.7. The relative power generation rate of a heater rod in each group is 1.1, 1.0, and 0.875 respectively. The orifice plates are inserted at the core inlet to control the core inlet flow(1).

The steam line and the feedwater line of ROSA-III simulate those of a BWR and are shown in Figs. 4.3 and 4.4, respectively. The steamline has three branches and is located at the top of the pressure vessel. The feedwater is supplied from the feedwater tank (FWT) through the feedwater line and the sparger below the steam separator. The operation of valves in the steam line and feedwater line is described in section 4.

Figure 2.8 shows the recirculation line consisting of two loops. Each loop is furnished with a pump and two jet pumps. The jet pumps are installed outside the pressure vessel to simulate the relative volume and height with respect to the core.

The ROSA-III test facility is furnished with all types of ECCS which are available in the BWR system, i.e., High Pressure Core Spray (HPCS), Low Pressure Core Spray (LPCS), Low Pressure Coolant Injection (LPCI), and Automatic Depressurization System (ADS). The HPCS and LPCS provide the cooling water from the top of the core. The LPCI injects the cooling water into the core bypass. Each ECCS consists of a pump, a tank, piping, and a control and measurement system.

Reference (1) provides more detailed information on the ROSA-III test facility.

3. Instrumentation

The instrumentation for the ROSA-III facility has been designed to provide thermal-hydraulic data for a simulated BWR LOCA. The data obtained from the experiments are used for the assessment of analytical computer codes. Table 3.1 summarizes the instrumentation used in RUN 922.

Tables 3.2 and 3.3 show the measurement list and the core instrumentation list, respectively. Instrument locations are shown in Fig. 3.1 through Fig. 3.6.

Typical parameters measured in the ROSA-III facility are pressure, differential pressure, flow rate, electric core power, pump speed, fluid and metal temperatures, collapsed liquid level, two-phase mixture level, coolant density, on-off type signals and so on.

Pressure and differential pressure transducers are two-wire, direct-current type which convert diaphragm displacement to electric capacitance. The pressure lead lines are either the standard single, cylindrical pipes used in conjunction with condensate pots, or dual concentric cylinders capable of circulating the cooling water to prevent flashing of the fluid.

The flow rate is measured either by an orifice or a venturi type flow meter depending on the fluid condition and measurement location.

The temperatures of the fluid, structural materials and the cladding of fuel rods are measured with sheathed chromel-alumel (CA) thermocouples of 1.6mm or 0.5 mm diameter.

Liquid level is measured by either differential pressure transducers described above or needle type electrical conduction probes (CP) developed specially for the ROSA-III program. These probes are distributed in the pressure vessel to detect the presence of water or vapor at different heights.

The electric power supplied to the simulated fuel rods is controlled to follow the predetermined decay curve and measured by a fast response electric power meter.

Pump speed is measured by a pulse generator integral to the pump. On-off signals indicating the valve positions selected, core power decay and pump coastdown initiation and so on are also detected and recorded.

Fluid density in the pipe is measured by means of multi-beam gamma densitometers. Preliminary studies indicated that a three-beam densitometer should be used to determine the flow regime. Figures 3.7 and 3.8 show the beam directions of the three-beam and two-beam gamma densitometers, respectively. The gamma-ray source is ^{137}Cs and the detector is a water cooled NaI(Tl) scintillation counter.

Momentum flux is measured by a drag disk shown in Fig. 3.9. The combination of signals from a drag disk and a gamma densitometer is used to determine the two-phase flow rate as shown in Fig. 3.10.

The data acquisition system (DATAC 2000B, Iwasaki Tsushinki Co.) scans all of the 700 instrument channels at a rate of up to 30 Hz. The data recorded on magnetic tapes are processed by the FACOM M380 computer system after the experiment.

More detailed information on the instrumentation and the data processing procedure is available in reference (4).

4. Test Conditions and Procedure

Test conditions and procedures were primarily the same for two tests, RUN 922 and RUN 932, which were 5% split SBLOCA test with a break located at the MRP suction line. The difference between two tests consisted only in the inner diameter (ID) of the orifice OR-4 simulating the ADS flow area.

The break area is adjusted by inserting an break orifice shown in Fig. 4.1 upstream of the quick opening blowdown valve (QOBV). Blowdown is initiated by opening the PV side QOBV. The quick shut-off valve (QSV) between two blowdown unit is left opened in the split SBLOCA test.

The initial conditions were specified as follows: the steam dome pressure of 7.35 MPa, the lower plenum temperature of 552.6 K giving the subcooling of 10.6 K, the core inlet flow rate of 16.0 kg/s, and the core heat generation rate of 3.96 MW. The quality in the upper plenum was estimated to be 12.5%. The actual conditions are summarized in Table 4.1.

To prepare for the test, makeup water (pure water) was pumped into the primary system of the test facility and electric power was supplied to the core to heat the water in the system and to achieve saturation conditions in the upper region of the pressure vessel. The core power was maintained at 3.962 MW before the break initiation, which is 44% of the steady state power of 9.00 MW necessary to achieve the same power-to-volume ratio as in a reference BWR. The core power was decreased during the transient following the break as shown in Fig. 4.2. Here, the power is kept constant for the initial 9.0 s and reduced along the decay curve that simulates the total heat transfer rate in the core of the reference BWR (the delayed neutron fission power, the decay power of fission products and actinides and the stored heat in the nuclear fuel) neglecting the stored heat of ROSA-III heater rods(5). The maximum linear heat rate of the peak power rod before the break initiation is 16.7 kW/m.

The schematics of the main steam line and the feedwater line are shown in Figs. 4.3 and 4.4 respectively. The main steam line of the ROSA-III has three branches: (1) steady flow branch, (2) ADS branch and (3) transient branch. Before the break initiation, CV-130 in the steady flow branch controls the steam flow rate to maintain the steam dome pressure constant and CV-1 and -2 are opened to provide steam to the heat exchanger to heat the feedwater. At the break initiation, CV-130 is fully opened limiting the steam flow by an orifice OR-3 of 18.0 mm ID at the upstream of CV-130. CV-1 and -2 are closed at the break initiation. The main steam isolation valve

(MSIV) is simulated by CV-130 after the break. The transient branch was not used in the two tests. The ID of OR-4 for the ADS was 15.5 mm for RUN 922 and 11.0 mm for RUN 932 to specify the half flow area of that for RUN 922. Tables 4.2 and 4.3 respectively show the characteristics and control sequence of steam discharge line valves in the present test.

The details of the feedwater (FW) line is shown in Fig. 4.5. The FW flow is terminated at about 3.0 s after break by closing the valve AV-112 in the FW line. However, some FW remained in the piping between AV-112 and the FW sparger below the steam separator in the pressure vessel.

The coolant recirculation pumps are tripped to start coasting down at the time of break initiation.

The liquid level signal in the downcomer is used to actuate the ECCS in the ROSA-III MSL break tests. The downcomer water level during a steady state operation is set at the scram level L3 (5.00 m above the bottom of the pressure vessel). When the liquid level in the downcomer falls to the L2 level (4.76 m), HPCS is ordinarily actuated with a time delay of 27 s. However, in the present test, an HPCS failure has been assumed. When the liquid level further falls to the L1 level (4.25 m), LPCS, LPCI and ADS are actuated with a time delay of 40, 40 and 120 s, respectively. The delay times given above are used in a safety analysis of the reference BWR(6). Injection of emergency coolant by LPCS and LPCI in the reference BWR, however, occurs when the primary system pressure falls below 2.16 MPa and 1.57 MPa respectively, because of the pump characteristics used in the safety analysis of the reference BWR(7). The test was terminated after the entire core was quenched and the top of the pressure vessel was nearly filled with water.

5. Data Processing

The data sampling rate of DATAC 2000B was 10 Hz throughout the two tests. The test data were processed and a set of 1000 data points was selected for plotting. The frequency (time span) of the reduced data for plotting were 1.43 Hz (700 s) for RUN 922 and 1.25 Hz (800 s) for RUN 932. Each measurement is identified by the channel number shown in Table 3.2. The major test sequences and events observed are summarized in Table 5.1.

The test data and the derived data from the measured data are shown in Fig. 5.1 through 5.261 for RUN 922 and in Fig. 5.262 through 5.450 for RUN 932. For each test, the measured and derived data are serially presented as follows:

1) The pressure measured in the PV and the recirculation line.
2) The differential pressure measured between various locations in the PV, the recirculation line and the channel inlet orifices.
3) The liquid levels in the PV and ECCS tanks obtained from the differential pressure.
4) The flow rates measured in MSL, ECC injection, FW and recirculation lines.
5) The differential pressures measured across the orifice and venturi flow meters located in the MSL and recirculation lines.
6) The power supplied to the core.
7) The revolution speeds of the two MRPs.
8) On-off signals indicating the break initiation, the status of ECCS, pump and valve operations.
9) The fluid densities measured by the gamma densitometers.
10) The momentum fluxes measured by the drag disks.

The fluid densities and momentum fluxes are measured at the spool pieces at the JP outlets and the break units.

11) The fluid and slab temperatures at various locations in the PV, the recirculation loops and the FW.
12) The cladding surface temperatures of the fuel rods and water rods, and the inner and outer surface temperatures of the channel boxes measured at positions 1 through 7.
13) The surface temperature compared at the same position for the different fuel rods and the channel boxes.

The peak cladding temperature (PCT) distribution in the core is given in

Table 5.2 for RUN 922 and in Table 5.3 for RUN 932.

14) The fluid temperatures at the channel inlets, and below and above the upper tie plates (UTP).

15) The fluid temperatures at the lower plenum.

16) The liquid level signals measured in the core, upper and lower plena, guide tube and downcomer by the conductivity probes (CP).

17) The estimated mixture level in the pressure vessel obtained from the CP signals and differential pressure shown above.

18) The location of the dryout and quench front obtained from the fuel rod cladding temperature data.

19) The average fluid densities at the jet pump outlet and break unit, which are claculated from the three-beam and two-beam gamma densitometer data. The beam configurations of the gamma densitometers are shown in Figs. 3.7 and 3.8. The average density is calculated as an arithmetic mean of the chordal-average densities using the chord length as the weighting factors.

For the three beam densitometer at the jet pump outlet spool piece, the average fluid density is calculated using the following equation.

$$\rho_{av} = 0.3221\rho_A + 0.43\rho_B + 0.2479\rho_C \tag{5.1}$$

where,

ρ_{av} = average density obtained from the three-beam gamma densitometer,

ρ_A = density measured by beam A (bottom),

ρ_B = density measured by beam B (middle),

ρ_C = density measured by beam C (top).

For the two-beam densitometer at the break spool piece,

$$\rho_{av} = 0.5863\rho_A + 0.4137\rho_B \tag{5.2}$$

where,

ρ_{av} = average density obtained from the two-beam gamma densitometer,

ρ_A = density measured by beam A (bottom),

ρ_B = density measured by beam B (top).

20) The discharge flow rates of the JPs and the breaks calculated from the

drag disk and gamma densitometer data using the following equation.

$$G = C_D \cdot A \cdot \sqrt{\rho_{av} \cdot \rho v^2} \tag{5.3}$$

where,

G = mass flow rate,

C_D = drag coefficient (= 1.13),

A = flow area (= 1.923×10^{-3} m^2),

ρ_{av} = average density from gamma densitometer,

ρv^2 = momentum flux from drag disk.

21) The fluid flow rates calculated from the pressure drop measured across the orifice or venturi flow meters and the vapor or liquid density obtained from the temperature and pressure measurements for the main steam line. channel inlet orifices, bypass hole and jet pump outlets. The equation used for this calculation is as follows :

$$G = C_D \cdot A \cdot \sqrt{2g \cdot \rho_l \cdot \Delta P} \tag{5.4}$$

where,

G = flow rate,

C_D = discharge coefficient,

= 0.6552 (orifice to measure the steam discharge flow rate)

= 0.4761 (channel inlet orifice)

= 0.8032 (bypass hole)

= 0.7383 (orifice to measure the jet pump outlet flow rate)

= 1.1260 (venturi tube to measure the jet pump outlet flow rate)

A = flow area (m^2)

= 2.875×10^{-3} (orifice to measure the steam discharge flow rate)

= 1.521×10^{-3} (channel inlet orifice)

= 1.758×10^{-4} (bypass hole)

= 1.133×10^{-3} (orifice to measure the jet pump outlet flow rate)

= 9.095×10^{-4} (venturi tube to measure the jet pump outlet flow rate)

g = gravitational acceleration (= 9.807 m/s^2),

ρ_l = density of the single-phase liquid (kg/m^3),
ΔP = pressure drop across the orifice.

Although the above calculation method is not applicable to two-phase flow conditions after the LPF initiation, the values calculated are useful in determining a trend in two-phase flow. Total channel inlet flow rate represents the sum of four separate channel inlet flow rates.

22) The collapsed water level obtained from the differential pressure measured in the PV for outside and inside of the core shroud. The differential pressure may include the friction and acceleration effects, however, these effects are considered to become negligible after completion of the recirculation pump coastdown.

23) The fluid mass inventories in the downcomer, core shroud and pressure vessel. The fluid mass inventory is determined from the density and the volume of liquid outside and inside the core shroud as follows.

$$M = \rho_l \cdot Q \tag{5.5}$$

where,
M = fluid inventory,
ρ_l = liquid density estimated from the saturation temperature and/or pressure,
Q = liquid volume calculated from the liquid level.

The volume Q (m^3) outside the core shroud is given below as a function of height.

$$\begin{aligned}
Q &= 0.0 && (L \leqq 0.494) \\
Q &= 0.0225L - 0.0111 && (0.494 < L \leqq 1.384) \\
Q &= 0.0697L - 0.0769 && (1.384 < L \leqq 1.519) \\
Q &= 0.0225L - 0.0048 && (1.519 < L \leqq 3.355) \\
Q &= 0.0801L - 0.1980 && (3.355 < L \leqq 4.250) \\
Q &= 0.2443L - 0.8959 && (4.250 < L \leqq 4.413) \\
Q &= 0.2611L - 0.9700 && (4.413 < L \leqq 4.578) \\
Q &= 0.2504L - 0.9211 && (4.578 < L \leqq 4.654) \qquad (5.6) \\
Q &= 0.2375L - 0.8610 && (4.654 < L \leqq 4.815) \\
Q &= 0.2866L - 1.0974 && (4.815 < L \leqq 4.915)
\end{aligned}$$

$$Q = 0.3396L - 1.3580 \quad (4.915 < L \leqq 5.143)$$
$$Q = 0.3607L - 1.4665 \quad (5.143 < L \leqq 5.365)$$
$$Q = 0.3848L - 1.5960 \quad (5.365 < L \leqq 5.955)$$
$$Q = 0.7111 \quad (5.955 < L)$$

The volume Q (m^3) inside the core shroud is similarly given below as a function of height.

$$Q = 0.0 \quad (L \leqq 0.0)$$
$$Q = 0.2350L \quad (0.0 < L \leqq 0.497)$$
$$Q = 0.1245L + 0.0549 \quad (0.497 < L \leqq 1.354)$$
$$Q = 0.0698L + 0.1290 \quad (1.354 < L \leqq 3.589)$$
$$Q = 0.1648L - 0.2120 \quad (3.589 < L \leqq 3.744)$$
$$Q = 0.1963L - 0.3299 \quad (3.744 < L \leqq 4.243) \qquad (5.7)$$
$$Q = 0.0196L + 0.4199 \quad (4.243 < L \leqq 4.578)$$
$$Q = 0.0186L + 0.4244 \quad (4.578 < L \leqq 4.654)$$
$$Q = 0.0410L + 0.3201 \quad (4.654 < L \leqq 5.099)$$
$$Q = 0.0196L + 0.4292 \quad (5.099 < L \leqq 5.365)$$
$$Q = 0.5344 \quad (5.365 < L)$$

The total fluid mass inventory in the pressure vessel is given by the sum of the mass inventories inside and outside of the core shroud. The initial mass inventory before the break initiation is estimated to be at 640 kg.

24) The mass decrease by the fluid discharge from the break and the fluid mass recovery by the ECCS water and the FW injections. The variation of fluid mass inventory with time is calculated by the following equations.

$$M = \int_0^t \{G + \rho_1 \cdot (W_H + W_L + W_I) + \rho_2 \cdot W_F\} dt \qquad (5.8)$$

where,

M = mass accumulation,

G = steam gischarge flow rate,

ρ_1 = density of saturated liquid at 315 K,

ρ_2 = density of saturated liquid at 489 K,

W_H = volumatric flow rate of HPCS,

W_L = volumatric flow rate of LPCS,

W_I = volumatric flow rate of LPCI,

W_F = volumatric flow rate of FW.

25) The fluid mass gischarged from the break calculated neglecting the change of the fluid mass inventory in the recirculation loops,

$$M_B = (M_P)_i - M_P + M_F \tag{5.9}$$

where,

M_B = fluid mass discharged from the break,

$(M_P)_i$ = initial fluid mass inventory in the pressure vessel (=640 kg),

M_P = fluid mass inventory in the pressure vessel,

M_F = net fluid mass increase by the ECCS, the FW flow and the steam discharge flow.

26) The break flow calculated from the fluid mass inventory change in the PV.

$$G_B = \frac{d}{dt} M_B \tag{5.10}$$

where,

G_B = break flow,

M_B = fluid mass discharge from the break.

6. Test Results and Comparison of RUNs 922 and 932

This section presents interpretation of test results of RUN 922 and comparison with those of RUN 932. The ADS flow area in RUN 932 was reduced to a half of the rated area used in RUN 922. The effect of the ADS flow area reduction on the core cooling can be evaluated by comparing these two test results. The test conditions and sequence of events are compared in Tables 4.1 and 5.1, respectively.

6.1 Pressure Response

The lower plenum pressures are compared in Fig. 6.1. The pressure in the lower prenum represents a typical pressure response in the pressure ressel. The pressure in two tests show very similar response between the break and the ADS initiation : The pressure decreased after the break because of the large volumetric discharge flow rate from the steamline. The pressure was maintained at 6.67 MPa by controlling CV-130. After the main steam line valve (MSIV) closure the pressure began to increase until the safety/relief valve (SRV) actuation and was kept at nearly constant pressure 8.17 MPa by controlling CV-130. The pressure began to decrease gradually after the top of the core was uncovered .

When the ADS was actuated, the pressures and the times when the ADS valve opened in two tests were nearly the same. After the ADS actuation the pressure decreased rapidly due to the large volumetric discharge flow rate from the ADS. The pressure drop in RUN 932 was, however, slower than in RUN 922 and the primary events following the ADS actuation were delayed in RUN 932 than in RUN 922 as shown in table 5.1; the lower plenum flashing (LPF), the whole core uncovery, the feedwater flashing (FWF) and the LPCS and LPCI actuations. Thus, the effect of the ADS valve flow area reduction was significant espescially for the actuation time of the low pressure ECCSs.

The FWF delayed the pressure decrease temporarily and, also, the LPCI actuation. The LPCS and LPCI, however, affected the pressure transient little in spite that the whole core reflooding was completed a little after the LPCI actuation in two tests.

6.2 Differential Pressure

The diffetential pressures between the top and bottom of the pressure vessel are compared in Fig. 6.2. The differential pressure responses in two tests were the same until the ADS actuation as well as the pressure responses shown in the previous section. The differential pressure dropped rapidly with the decrease in core flow rate and core power after the break. After the core flow rate became nearly stagnated the differential pressure decreased gradually.

The trend of the differential pressure responses in two tests were similar even after the ADS actuation. However, the responses in RUN 932 delayed as a whole in RUN 922. The LPF affected the differential pressure response little but the diffetential pressure began to decrease more faster after the core dryout initiation. The differential pressure began to recover after the LPCS actuation and increased rapidly after the LPCI actuation coresponding to the whole core reflooding.

The collapsed liquid levels in the downcomer calculated from the downcomer differential pressure are shown in Fig. 6.3. The measuring range of separated at the ECC spray nozzle 3.9m above the pressure vessel bottom. The lower liquid level in RUN 932 is shifted a little higher. The collapsed level in two tests decreased monotonously to the recirculation pump (MRP) suction nozzle level. The ADS was actuated at the same time when theliquid level dropped to the MRP suction nozzle level. The liquid level was increased temporarily at the LPF only in RUN 922 because the reduced ADS valve flow area in RUN 932 restricted the LPF intensity. The liquid level began to recover when the whole core was reflooded. Therefore, the beginning of liquid level recovering in RUN 932 was delayed than in RUN 922.

The channel inlet flow rate was measured from the differential pressure across the channel inlet orifice for the four bundles. The total channel inlet flow rates obtained are compared in Fig.6.4.

6.3 Coolant flow rate

The channel inlet flowrate dropped rapidly after the break and was nearly stagnated after about 50 s probably because the mixture level in the steam separator lowered and the natural circulation through the core, steam separator, upper downcomer, jet pumps and lower plenum was terminated. After the LPF, the channel inlet flow was incrased temporarily and was oscillated thereafter because the steam generated in the lower plenum went through the channel inlet orifices. In RUN 932 the tenporal increase in the flow rate after the LPF was delayed a little and was not so significant than in RUN 922.

The steam discharge flow rates through the main steam line (MSL) are compared in Fig.6.5. The steam flow behavior of the two tests was almost the same until the ADS actuation. The steam discharge flow rate increased at the break, because of the fully opening of CV-130, began to decrease as the core power decay and by the pressure control at 6.67 MPa. The steam discharge flow was teminated between the MSIV closure and the SRV operation.

ADS flow rate in RUN 932 was fairly small compared with that in RUN 922. The ADS flow area is 34.5% for RUN 922 and 17.4% for RUN 932 of the scaled BWR recirculation suction cross-section. Therfore, the depressurization and mass dischage by the ADS was significant than by the break of which the flow area was 5%.

The ECCS injection flow rates are compared in Fig.6.6. The LPCS in RUN 932 was actuated later than in RUN 922 and the LPCI in RUN 932 was more delayed to actuate than in RUN 922. The acutuated time of the ECCS is shown in Table 5.1. The ECCS flow rates of the two tests were similar each other. The temporary termination of the LPCS flow in RUN 932 was caused by the temporary pressure increase after the feedwater flashing (FWF).

6.4 Mixture level

The mixture levels inside the core shroud are compared in Fig. 6.7. These mixture levels are estimated from signals of the conductivity probes installed inside the channel box wall AND in the lower and upper plena. The mixture levels in the channel A are compared as representatives.

The upper core was similarly uncovered befor the LPF initiation in both tests. However, the mixture level recovery after the LPF was very slow in RUN 932 compared with in RUN 922 and the mixture level formed in the lower plenum immediate after the LPF in RUN 922 was not observed in RUN 932 because of the slow depressurization speed. The mixture level drop in the core as the LPF subsidence was delayed 5 $\sim$ 30 s in RUN 932 than in RUN 922. The CCFL at the lower tie plate was observed in RUN 922 after the LPF until the whole core uncovery, however, only for short period before the whole core uncovery in RUN 932. After the whole core was uncovered, the mixture level behavior inside the core shroud presented very similar trend for the two tests, but with large delay in RUN 932; the temporary mixture level drop in the lower plenum, the gradual mixture level recovery after the LPCS actuation and the whole core recovery immediate after the LPCI actuation. The ADS flow area reduction resulted in the long term core uncovery.

6.5 Fuel rod surface temperature

Dryout and quenching behavior in channels A and C are shown in Figs. 5.231 and 5.232 for RUN 922 and in Figs. 5.420 and 5.421 for RUN 932. These behaviors are estimated from the fuel rod surface temperature histories. The mixture levels in channels A and C are also presented in the figures.

The dryout and quenching behaviors observed in RUN 932 presented essentially the same trend with those in RUN 922. The dryout front followed the falling liquid level after the LPF subsidence. However, the quenching behavior did not necessarily correspond to the mixture level. As the mixture level dropped nearly to the bottom of the core, the top-down quench was observed in the upper pert of both channels because the steam generation rate in the core decreased. After the LPCS actuation the top-down quench began in the every fuel rod and almost all the fuel rods were quenched to the bottom in the average power channels B, C and D. In the peak power channel A, the fuel rods at around the midplane of the core were not quenched until the core reflooding after the LPCI actuation.

The PCTs were compared in Fig. 6.8. The PCTs were 835 K for RUN 922 and 951 K for RUN 932, and were observed at the midplane of the core (position 4) of the peak power rods A17 for RUN 922 and A82 for RUN 932 at the core reflooding. The maximum temperature observed in every fuel rod is also summarized in Table 3.2. The temperature excurtion of the two rods initiated at nearly the same time and the temperature rise rate were also the same each other. The difference in the PCT, therefore, was caused only by the difference in the period between the temperature excurtion initiation and the temperature turnaround after the ECCS actuation. The temparature turnaround was obserbed after the LPCI actuation for RUN 922 but after the LPCS for RUN 932 provably because of the small steam flow rate in the core after the LPCS actuation compared with that in RUN 922.

6.6 Density, momentum flux and discharge flow

Density, momentum flux and discharge flow rate at the spool pieces of the break and the JP discharge nozzle obtained in RUN 922 and 932 showed nearly the same tendency each other. The area-averaged fluid densities measured at the JP outlet in the intact and broken loops and upstream the MRP side and PV side of the break are shown in Figs. 5.233 through 5.236 for RUN 922 and in Figs. 5.422 through 5.425 for RUN 932.

The densities at the JP outlet in intact and broken loops showed the same tendency each otehr : The density began to decrease after the LPF initiation and recovered temporarily when the FWF initiated. The density still decreased after the LPCS initiation and began to increase with a time delay after the LPCI initiation. The continuous flashing at the jet pump outlet was obsewed between the LPF and the density recover after the LPCI and the single steam phase was not observed.

The area-averaged fluid densities measured at the PV side and MRP side of the break were essentially the same because of the split break. The PV side density, however, began to drop earlier after the break and to increase also earlier after the FWF than the MRP side density. The density was kept at that of the single phase liquid after the break until the recirculation suction uncovery and began to drop at nearly the same time as the ADS actuation to that of the single phase steam with temporary recover after the LPF initiation. The density began to increase after the FWF (LPCS). In RUN 932 the density behavior after the LPF was delayed and the temporary density recovery after the LPF was smaller and extended in comparison with that in RUN 922.

The momentum fluxes measured at the JP outlet and the break are shown in Figs. 5.73 through 5.76 for RUN 922 and in Figs. 5.334 through 5.336 for RUN 932 eliminating those measured by the high range drag disks at the break because of the large measurement error. The momentum flux at the JP outlet dropped rapidly after the break because of the MRP coast-down and was kept at the certain value until the end of the test. The momentum flux at the break also dropped rapidly after the break because of the MRP coast-down either. The MRP side flow direction was defined as negative at the steady state and was reversed after the break. The PV side momentum flux which presented the peak at the break was larger than that of the MRP side momentum flux until the recirculaion sction uncovery.

The break flow rates obtained from the measurements with the drag disks and gamma densitometers include an error of at least ±20 %.

The total break flow rates were also calculated differentiating the vessel mass inventory with respect to time and are shown in Fig. 5.261 for RUN 922 and Fig. 5.450 for RUN 932. This estimation was affected by the acceleration effects on the measurement of differential pressure, which was used for calculation of the vessel mass inventory.

7. Conclusions

RUNs 922 and 932 simulate the BWR 5% split break LOCA at the recirculation pump suction with an HPCS failure assumption. In RUN 932 the ADS flow area was decreased to 50% of the scaled BWR ADS flow area in RUN 922. These test results are compared to clarify the effect of the ADS flow area on the core cooling during the SBLOCA test. Following conclusions have been obtained.

(1) The reduced ADS flow area caused the slow depressurization and delayed actuations of the LPCS and LPCI and initiations of the LPF and FWF.

(2) The core uncovery period was extended by 1.7 times at the midplane of the core because of the ECCS actuation delay.

(3) The PCTs were observed at the midplane of the core at the time of core mixture level recovery and after the LPCI actuation in RUN 922 with the rated ADS flow area, and after the LPCS actuation in RUN 932 with the reduced ADS flow area. The PCT in RUN 932 was 951 K and was 116 K higher than that, 835 K, in RUN 922. The higher PCT in RUN 932 was caused by the ECCS actuation delay.

(4) All the heater rods were quenched with LPCS and LPCI and the effectiveness of ADS and low pressure ECCS for core cooling has been confirmed.

(5) The intensity of the LPF was reduced by the slow depressurigation in RUN 932 and the CCFL at the lower tie plate observed in RUN 932 was much smaller than in RUN 922.

Acknowledgment

The anthors are grateful to H. Asahi, T. Odaira, T. Takayasu, S. Sekiguchi, Y. Kitano and T. Numata of Nuclear Engineering Corporation for there assistance in conducting the experiment, and H. Gotoh, K. Hiyama and Y. Hirano of Information System Laboratory Corporation for preparing the data plots, and M. Kikuchi of Nihon Computer Bureau Corporation for typing the manuscript.

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(5) ABE, N., et al., "Electric Power Transient Curve for ROSA-III Tests", JAERI-M 8728 (1980).

(6) "General Electric Standard Safety Analysis Report, BWR/6", DOCKET-STN-50531-22, General Electric Company.

(7) "BWR Blowdown Emergency Core Cooling Program, Preliminary Facility Description Report for the BT/ECCIA Test Phase", GEAP-23592, NRC-2 (1977).

Table 2.1 Primary Charecteristics of ROSA-III and BWR/6

	BWR*	ROSA-III	BWR/ROSA-III
Number of Recirc. Loops	2	2	1
Number of Jet Pumps	24	4	6
Number of Separators	251	1	251
Number of Fuel Assemblies	848	4	212
Active Fuel Length (m)	3.76	1.88	2
Total Volume (m^3)	621	1.42	437
Power (MW)	3,800	4.40	864
Pressure (MPa)	7.23	7.23	1
Core Flow (kg/s)	1.54×10^4	36.4	424
Recirculation Flow (l/s)	2,970	7.01	424
Feedwater Flow (kg/s)	2,060	4.86	424
Feedwater Temp. (K)	489	489	1

* BWR/6-251

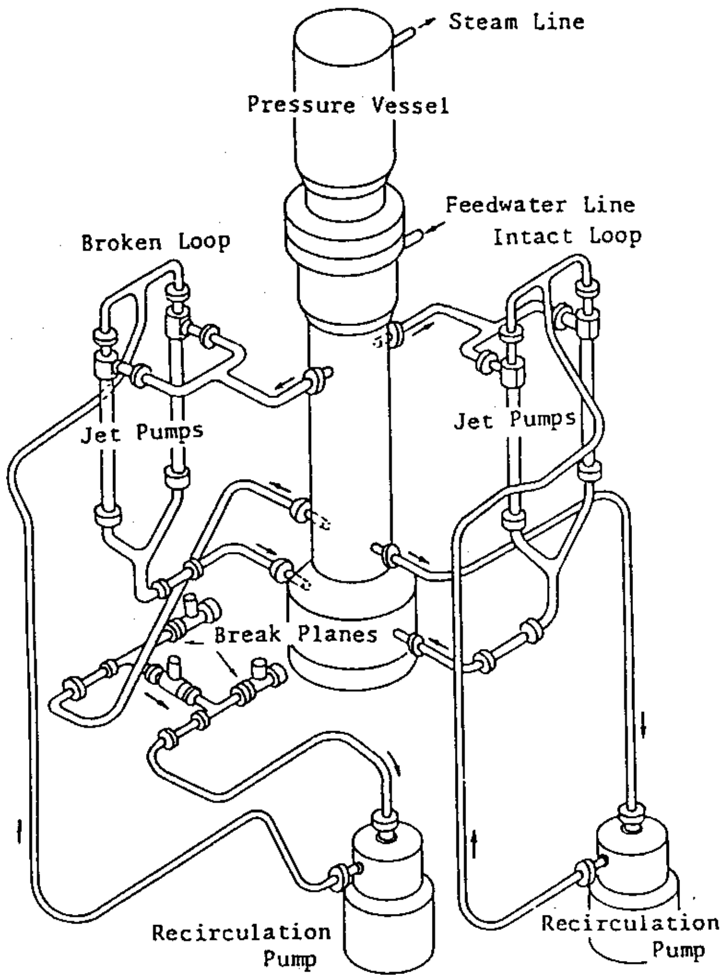


Fig. 2.1 Schematic Diagram of ROSA-III Test Facility

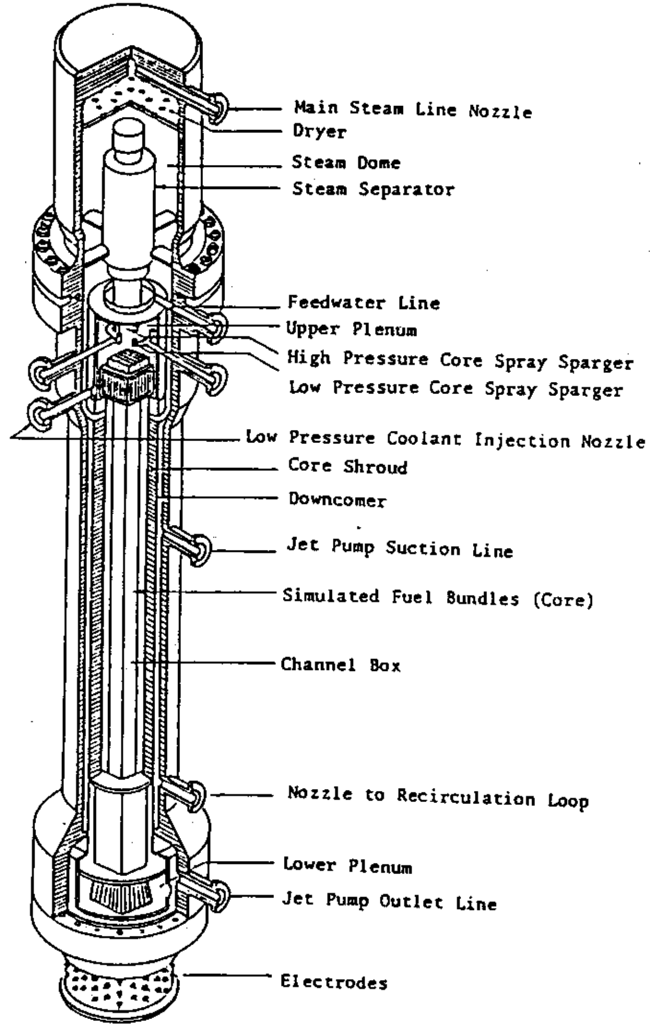


Fig. 2.2 Internal Structure of Pressure Vessel of ROSA-III

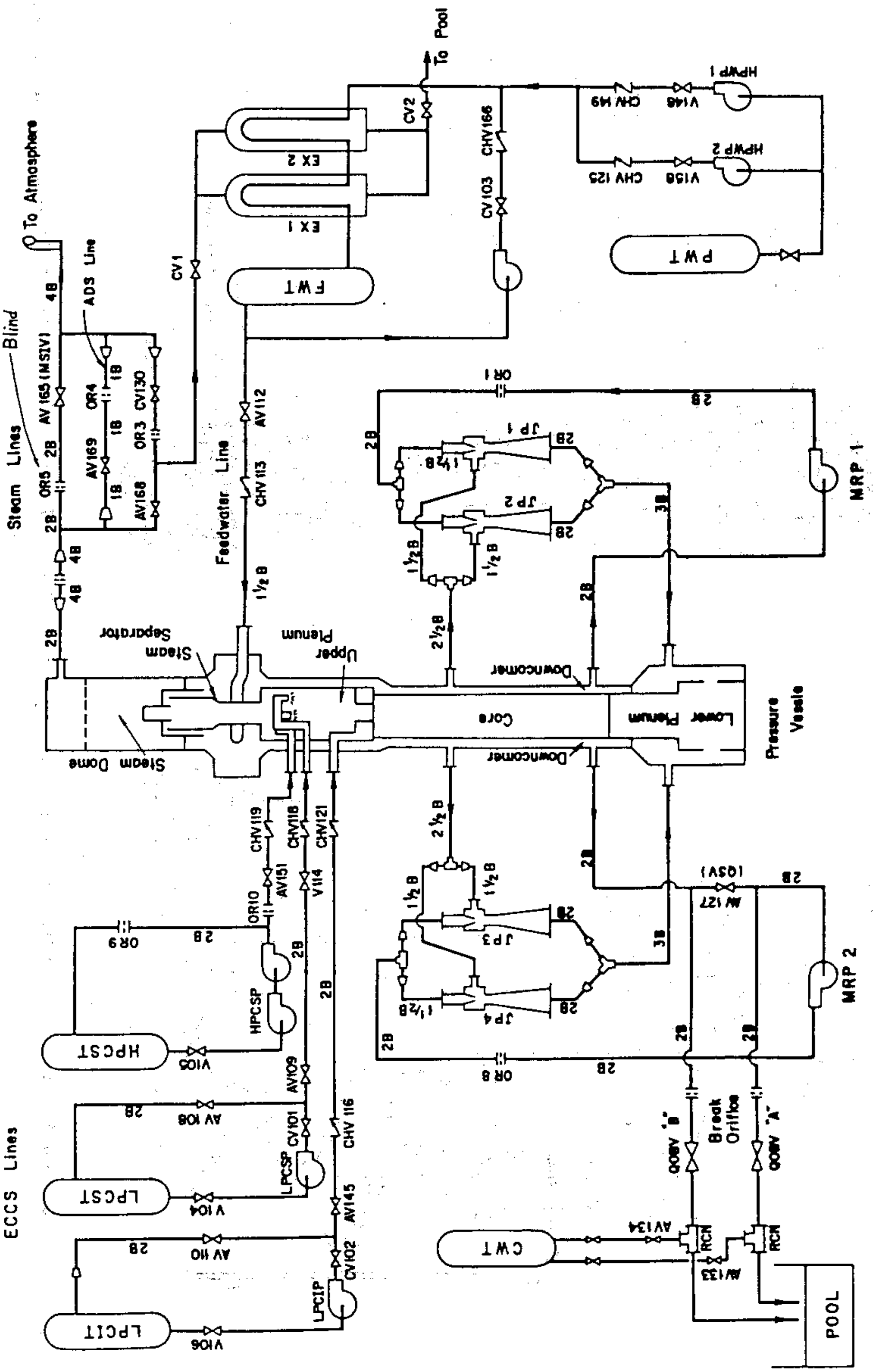


Fig. 2.3 ROSA-III Piping Schematics

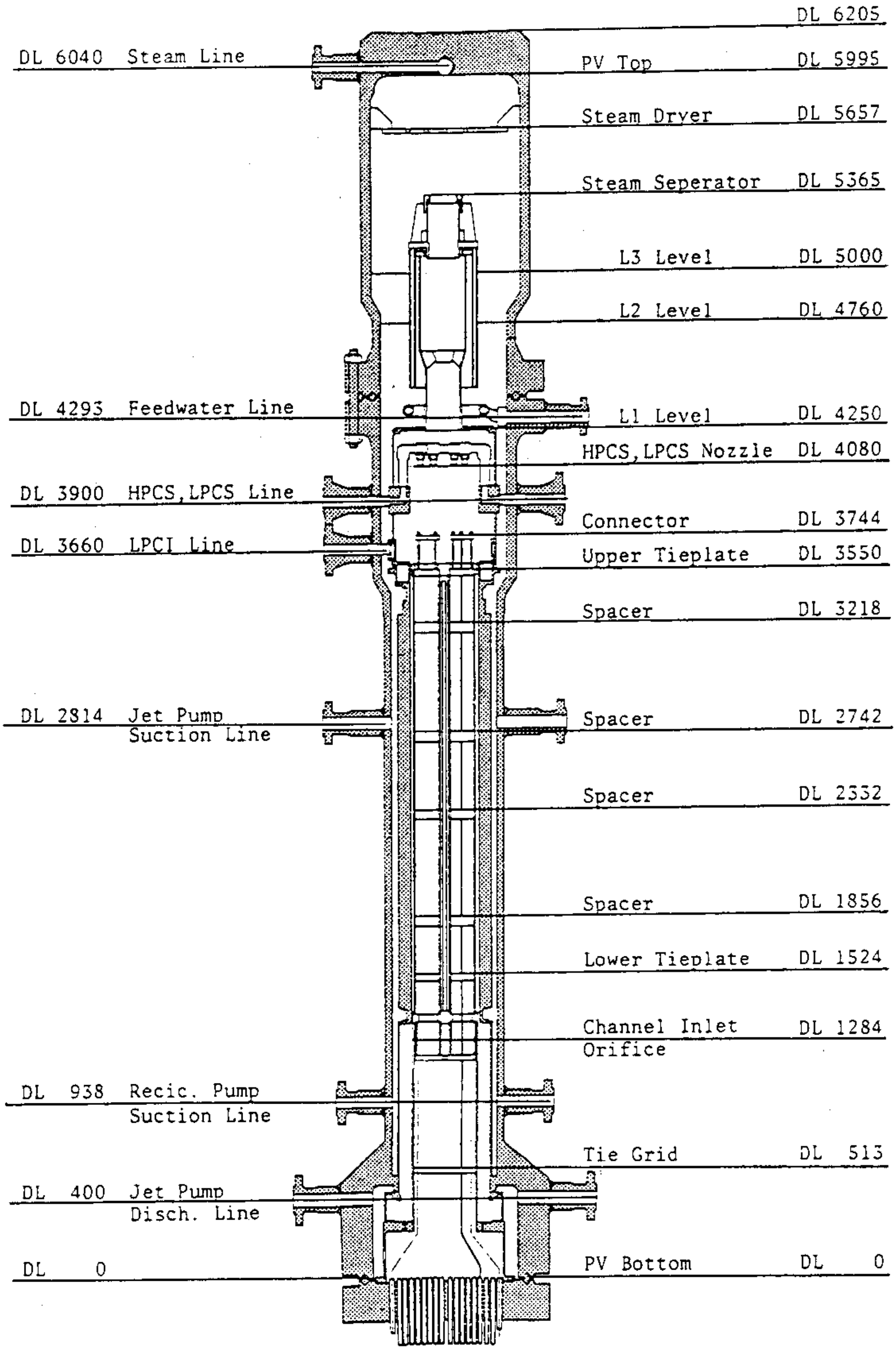
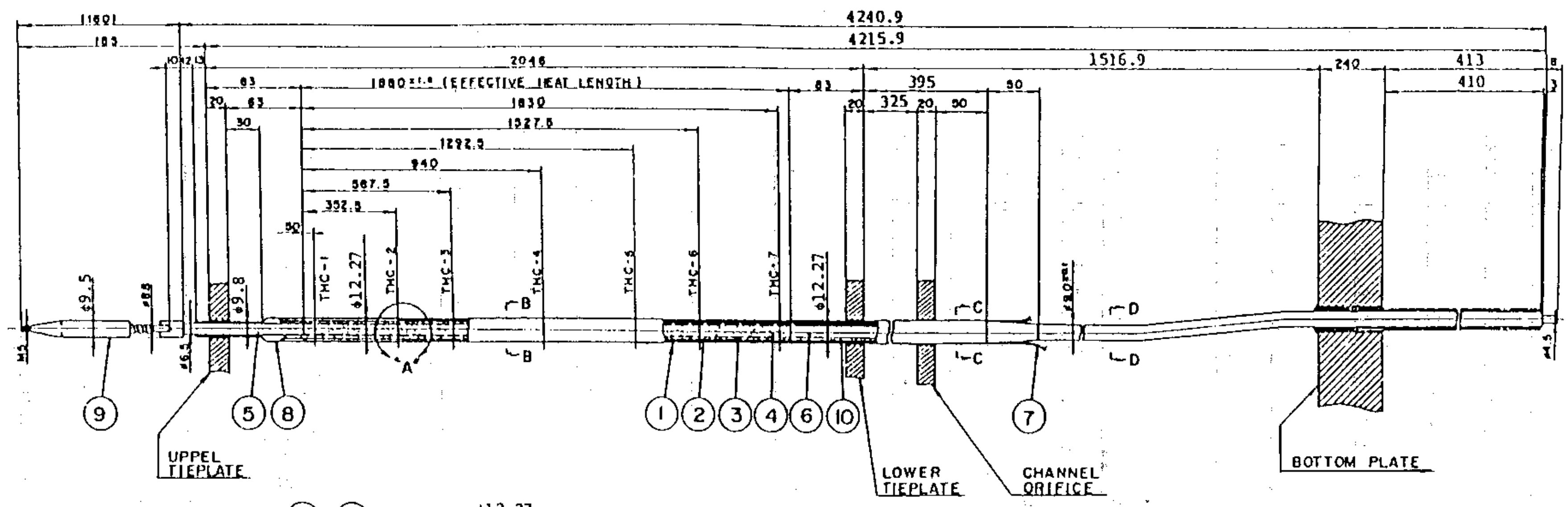
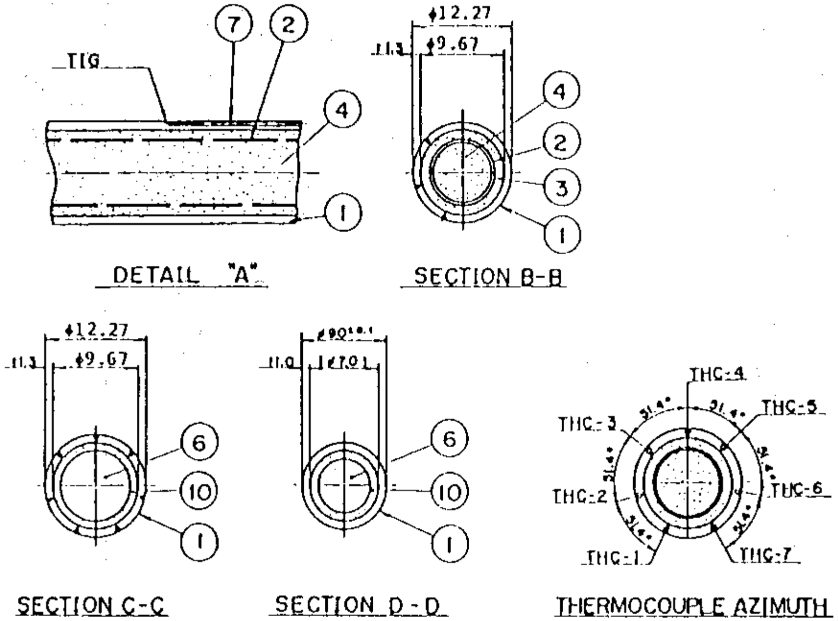


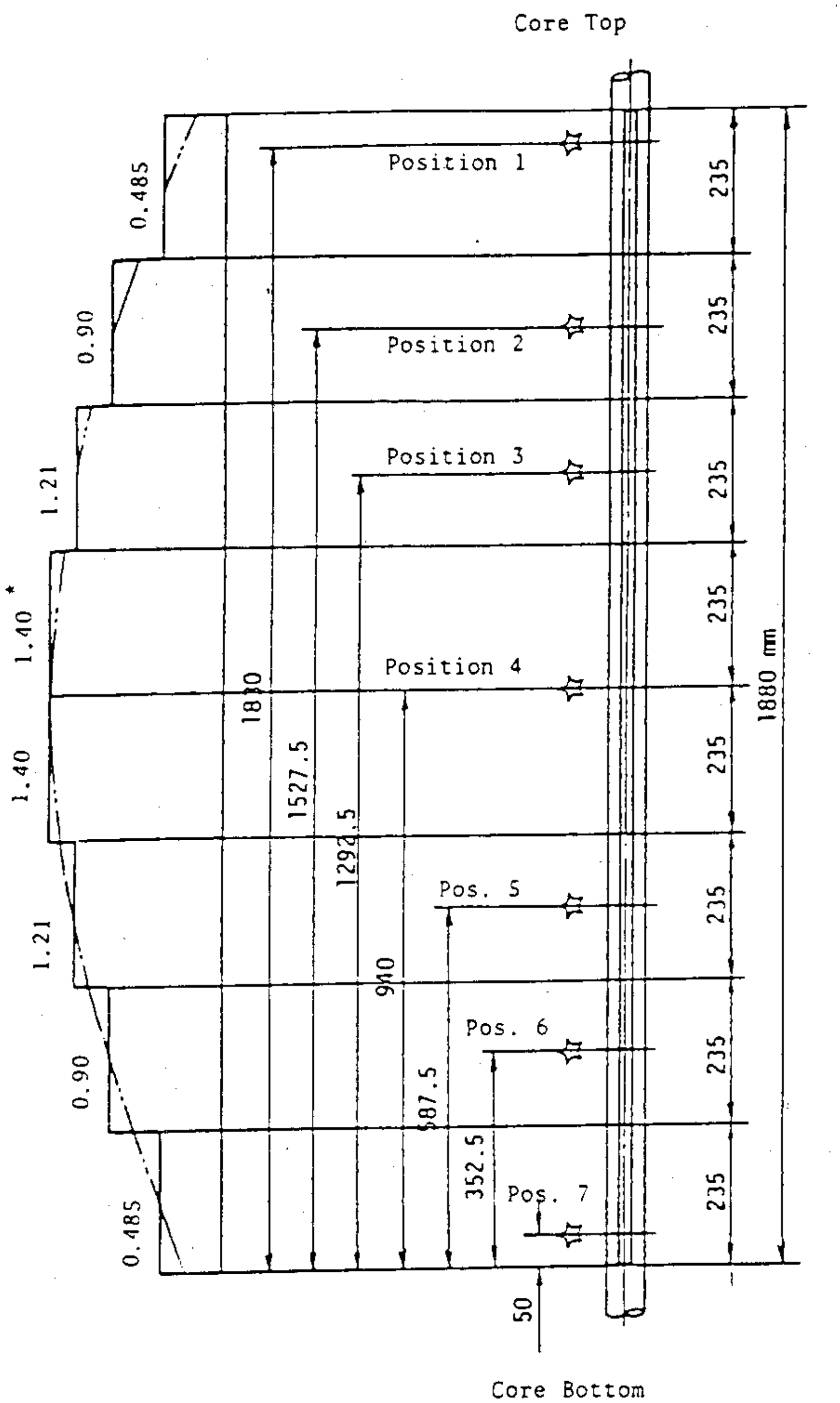
Fig. 2.4 Pressure Vessel Internals Arrangement





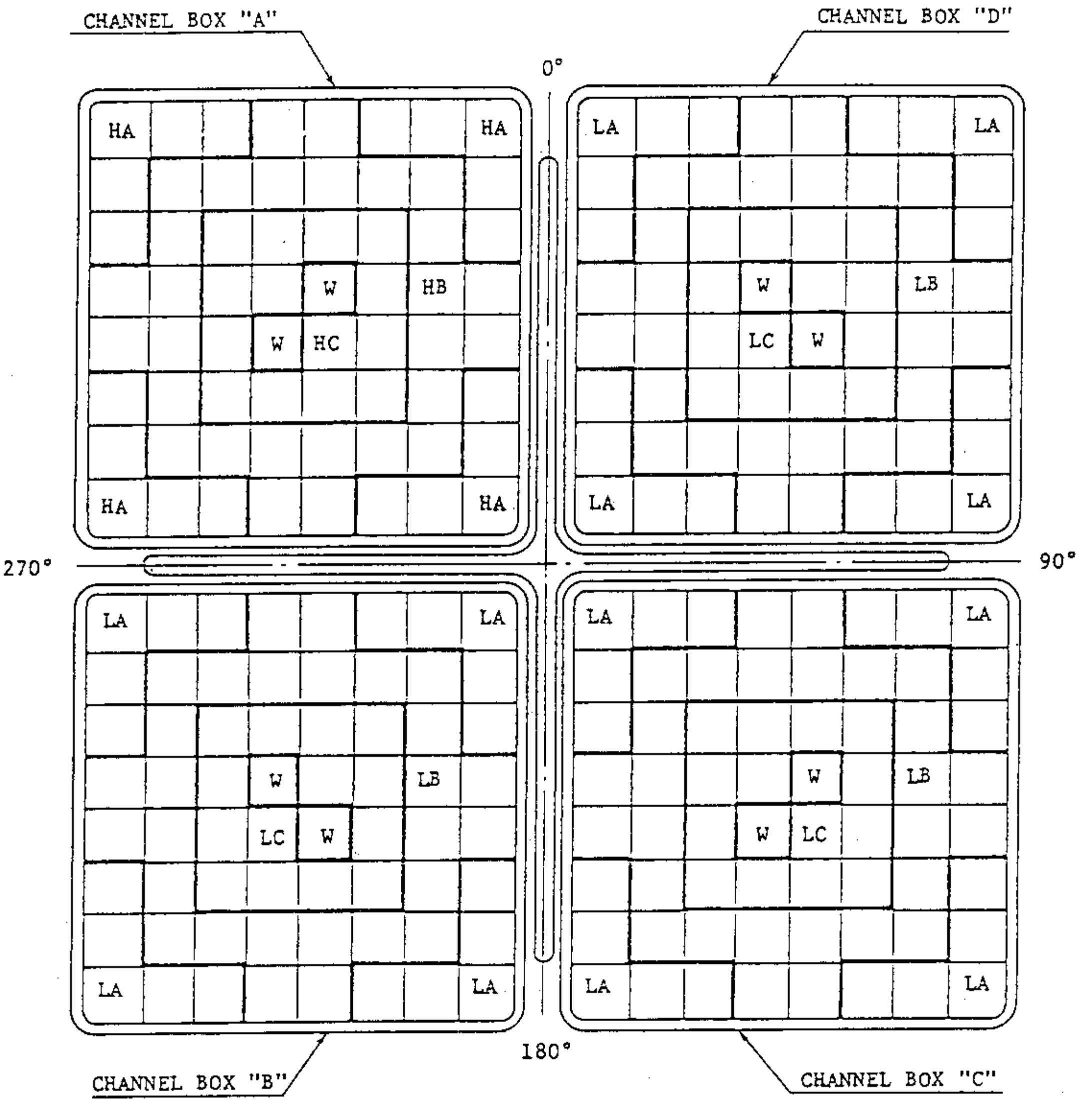
NO	PARTS	MATERITAL
1	SHEATH	INCONEL 600
2	HEATER	NICHROME
3	INSULATOR	BN
4	INSULATOR	BN
5	CONDUCTOR	Ni
6	CONDUCTOR	Cu - Ni
7	THERMOCOUPLE	CA/INC,600
8	SHEATH	SUS 316
9	TERMINAL	Cu - Ni
10	INSULATOR	MgO

Fig. 2.5 Simulated Fuel Rod of ROSA-III



☆ Indicates position of thermocouple. * Axial Peaking Factor

Fig.2.6 Axial Power Distribution of Heater Rod



Region	HA	HB	HC	LA	LB	LC	W
Lenear Heat Rate (kW/m)	18.5	16.81	14.41	13.21	12.01	10.29	0.0
Local peaking factor	1.1	1.0	0.875	1.1	1.0	0.875	0.0
No. of Rods	20	28	14	60	84	42	8

* note : Radial peaking factor is 1.4

Fig. 2.7 Radial Power Distribution of Core

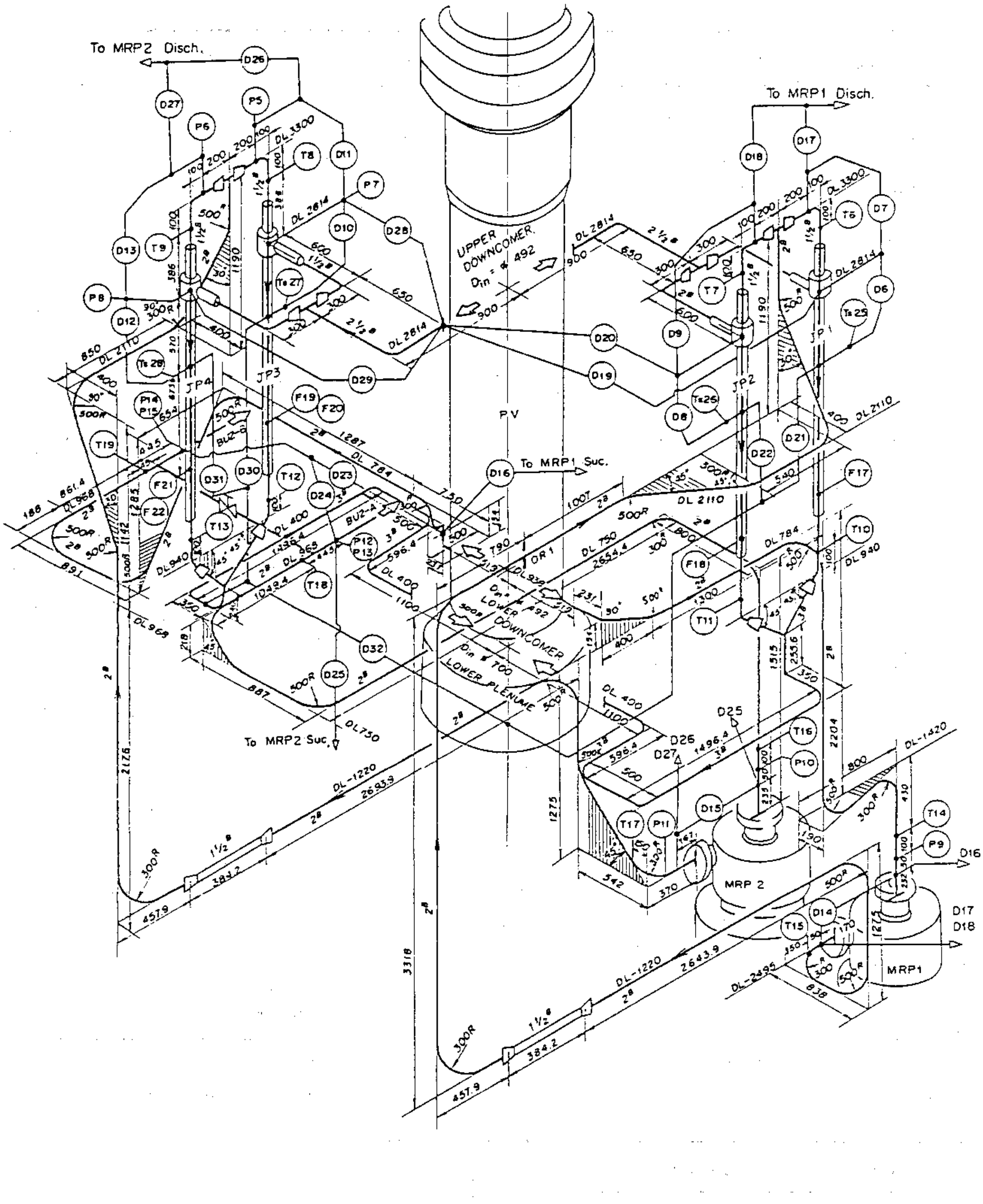


Fig. 2.8 Piping Layout of Recirculation Loops and Jet Pumps

Table 3.1 ROSA-III Instrumentation Summary List

ITEM	SENSOR	NUMBER	NOTE
Pressure	Pressure Transducer	20	
Differential Pressure	DP Cell	60	PV and Loop 44 Level Measurement 5 Flow Meter 11
Fluid Temperature	CA Thermocouple	129	Primary Loop 23 DTT 4 Tie Rod 28 Upper Plenum 10 Lower Plenum 10 Tie Plate 40 Bypass 14
Fuel Rod Temperature	CA Thermocouple	213	
Slab Surface Temperature	CA Thermocouple	70	Core Barrel 24 Pressure Vessel 3 Channel Box 35 Shroud Support 8
Slab Inner Temperature	CA Thermocouple	9	JP Diffuser 4 PV Wall 5
Volumetric Flow Rate	Turbine Flow Meter Venturi Flow Meter Orifice Flow Meter	3 4 6	ECCS Loop 3 Primary Loop 10
Mass Flow Rate	Turbine Flow Meter Orifice Flow Meter	4 3	Recirculation Loop 4 Main Steam Line 3
Liquid Level	Conductivity Probe Capacitance Probe	138 2	
Density	Gamma Densitometer	10	2 Beam GD 2 3 Beam GD 2
Momentum Flux	Drag Disk	4	JP Spool Piece 2 Break Spool Piece 4 Break Orifice 1
Signal	ON/OFF Switch	14	
Pump Speed	Revolution Counter	2	
Electric Core Power	VA Meter	2	
TOTAL		693	

Table 3.2 Measurement List for RUNs 922 and 932

1Ch.- 50Ch.

Ch.	Item	Symbol	ID.		Location	RUN 922	RUN 932	Range			Unit	Acculacy
1	Press.	P- 1	PA	1	Lower Plenum	Measured	Measured	0.100	-	10.0	MPa	1.08%FS
2	Press.	P- 2	PA	2	Upper Plenum	Measured	Measured	0.100	-	10.0	MPa	1.08%FS
3	Press.	P- 3	PA	3	Steam Dome	Measured	Measured	0.100	-	10.0	MPa	1.08%FS
4	Press.	P- 4	PA	4	Downcomer Bottom	Measured	Measured	0.100	-	10.0	MPa	1.08%FS
5	Press.	P- 5	PA	5	JP-3 Drive	Measured	Measured	0.100	-	10.0	MPa	1.08%FS
6	Press.	P- 6	PA	6	JP-4 Drive	Measured	Measured	0.100	-	10.0	MPa	1.08%FS
7	Press.	P- 7	PA	7	JP-3 Suction	Measured	Measured	0.100	-	10.0	MPa	1.08%FS
8	Press.	P- 8	PA	8	JP-4 Suction	Measured	Measured	0.100	-	10.0	MPa	1.08%FS
9	Press.	P- 9	PA	9	MRP-1 Suction	Measured	Measured	0.100	-	10.0	MPa	1.08%FS
10	Press.	P-10	PA	10	MRP-2 Suction	Measured	Measured	0.100	-	10.0	MPa	1.08%FS
11	Press.	P-11	PA	11	MRP-2 Delivery	Measured	Measured	0.100	-	10.0	MPa	1.08%FS
12	Press.	N-17	PA	12	Steam Line	Not Measured	Measured	0.100	-	10.0	MPa	1.08%FS
13	Press.	P-13	PA	13	Break A Downstream	Not Measured	Not Measured	0.100	-	10.0	MPa	1.08%FS
14	Press.	P-14	PA	14	Break B Upstream	Measured	Measured	0.100	-	10.0	MPa	1.08%FS
15	Press.	P-15	PA	15	Break B Downstream	Measured	Measured	0.100	-	10.0	MPa	1.08%FS
16	Press.	P-16	PA	16	Steam Line	Measured	Measured	0.100	-	10.0	MPa	1.08%FS
17	Press.	P-17	PA	17	JP-1,2 Outlet Spool	Measured	Measured	0.100	-	10.0	MPa	1.08%FS
18	Press.	P-18	PA	18	JP-3,4 Outlet Spool	Measured	Measured	0.100	-	10.0	MPa	1.08%FS
19	Press.	P-19	PA	19	Break A Spool Piece	Measured	Measured	0.100	-	10.0	MPa	1.08%FS
20	Press.	P-30	PA	20	Break B Spool Piece	Measured	Measured	0.100	-	10.0	MPa	1.08%FS
21	Diff.P.	D- 1	PD	21	Lower Pl.-Upper Pl.	Measured	Measured	-50.0	-	350.	kPa	0.63%FS
22	Diff.P.	D- 2	PD	22	Upper Pl.-Steam Dome	Measured	Measured	-10.0	-	90.0	kPa	0.63%FS
23	Diff.P.	D- 3	PD	23	Lower Plenum Head	Not Measured	Not Measured					
24	Diff.P.	D- 4	PD	24	Downcomer Head	Measured	Measured	0.0	-	100.	kPa	0.63%FS
25	Diff.P.	D- 5	PD	25	PV Bottom-Top	Measured	Measured	-100.	-	900.	kPa	0.63%FS
26	Diff.P.	D- 6	PD	26	JP-1 Disch.-Suction	Measured	Measured	-100.	-	300.	kPa	0.63%FS
27	Diff.P.	D- 7	PD	27	JP-1 Drive -Suction	Measured	Measured	0.0	-	2.50	MPa	0.63%FS
28	Diff.P.	D- 8	PD	28	JP-2 Disch.-Suction	Measured	Measured	-100.	-	300.	kPa	0.63%FS
29	Diff.P.	D- 9	PD	29	JP-2 Drive -Suction	Measured	Measured	0.0	-	2.50	MPa	0.63%FS
30	Diff.P.	D-10	PD	30	JP-3 Disch.-Suction	Measured	Measured	-100.	-	300.	kPa	0.63%FS
31	Diff.P.	D-11	PD	31	JP-3 Drive -Suction	Measured	Measured	-4.00	-	2.00	MPa	0.63%FS
32	Diff.P.	D-12	PD	32	JP-4 Disch.-Suction	Measured	Measured	-100.	-	300.	kPa	0.63%FS
33	Diff.P.	D-13	PD	33	JP-4 Drive -Suction	Measured	Measured	-4.00	-	2.00	MPa	0.63%FS
34	Diff.P.	D-14	PD	34	MRP-1 Deliv.-Suction	Measured	Measured	-0.100	-	2.50	MPa	0.63%FS
35	Diff.P.	D-15	PD	35	MRP-2 Deliv.-Suction	Measured	Measured	-0.100	-	2.50	MPa	0.63%FS
36	Diff.P.	D-16	PD	36	DC Bottom- MRP-1 Suc.	Measured	Measured	-50.0	-	50.0	kPa	0.63%FS
37	Diff.P.	D-17	PD	37	MRP1 Deliv.-JP1 Drive	Measured	Measured	0.0	-	250.	kPa	0.63%FS
38	Diff.P.	D-18	PD	38	MRP1 Deliv.-JP2 Drive	Measured	Measured	0.0	-	250.	kPa	0.63%FS
39	Diff.P.	D-19	PD	39	DC Middle-JP1 Suction	Measured	Measured	0.0	-	250.	kPa	0.63%FS
40	Diff.P.	D-20	PD	40	DC Middle-JP2 Suction	Measured	Measured	0.0	-	250.	kPa	0.63%FS
41	Diff.P.	D-21	PD	41	JP1 Disch.-Lower Pl.	Measured	Measured	-100.	-	100.	kPa	0.63%FS
42	Diff.P.	D-22	PD	42	JP2 Disch.-Lower Pl.	Measured	Measured	-100.	-	100.	kPa	0.63%FS
43	Diff.P.	D-23	PD	43	DC Bottom- Break B	Measured	Measured	-60.0	-	540.	kPa	0.63%FS
44	Diff.P.	D-24	PD	44	Break B- Break A	Measured	Measured	0.0	-	100.	kPa	0.63%FS
45	Diff.P.	D-25	PD	45	Break A- MRP2 Suction	Measured	Measured	-500.	-	100.	kPa	0.63%FS
46	Diff.P.	D-26	PD	46	MRP2 Deliv.-JP3 Drive	Measured	Measured	-500.	-	500.	kPa	0.63%FS
47	Diff.P.	D-27	PD	47	MRP2 Deliv.-JP4 Drive	Measured	Measured	-500.	-	500.	kPa	0.63%FS
48	Diff.P.	D-28	PD	48	DC Middle-JP3 Suction	Measured	Measured	-250.	-	250.	kPa	0.63%FS
49	Diff.P.	D-29	PD	49	DC Middle-JP4 Suction	Measured	Measured	-250.	-	250.	kPa	0.63%FS
50	Diff.P.	D-30	PD	50	JP3 Disch.-Confluence	Measured	Measured	-100.	-	100.	kPa	0.63%FS

Table 3.2 Measurement List for RUNs 922 and 932 (Continued)

51Ch.- 100Ch.

Ch.	Item	Symbol	ID.		Location	RUN 922	RUN 932	Range			Unit	Accuracy
51	Diff.P.	D-31	PD	51	JP4 Disch.-Confluence	Measured	Measured	-100.	-	100.	kPa	0.63%FS
52	Diff.P.	D-32	PD	52	Confluence -Lower Pl.	Measured	Measured	-50.0	-	50.0	kPa	0.63%FS
53	Diff.P.	D-33	PD	53	Lower Pl.-DC Middle	Measured	Measured	-250.	-	250.	kPa	0.63%FS
54	Diff.P.	D-34	PD	54	Lower Pl.-DC Bottom	Measured	Measured	-250.	-	250.	kPa	0.63%FS
55	Diff.P.	D-35	PD	55	DC Bottom-DC Middle	Measured	Measured	-50.0	-	50.0	kPa	0.63%FS
56	Diff.P.	D-36	PD	56	DC Middle-Steam Dome	Measured	Measured	-50.0	-	50.0	kPa	0.63%FS
57	Diff.P.	D-37	PD	57	Lower Pl.Mid-Upper PL	Not Measured	Not Measured					
58	Diff.P.	D-38	PD	58	Lower Pl.Bottom-Mid.	Measured	Measured	0.0	-	50.0	kPa	0.63%FS
59	Diff.P.	D-39	PD	59	Upper Pl.-DC High	Not Measured	Not Measured	-20.0	-	100.	kPa	0.63%FS
60	Diff.P.	D-40	PD	60	Channel Orifice A	Measured	Measured	-50.0	-	50.0	kPa	0.63%FS
61	Diff.P.	D-41	PD	61	Channel Orifice B	Measured	Measured	-50.0	-	50.0	kPa	0.63%FS
62	Diff.P.	D-42	PD	62	Channel Orifice C	Measured	Measured	-25.0	-	75.0	kPa	0.63%FS
63	Diff.P.	D-43	PD	63	Channel Orifice D	Measured	Measured	-50.0	-	50.0	kPa	0.63%FS
64	Diff.P.	D-44	PD	64	Lower Plenum Head	Measured	Measured	-100.	-	100.	kPa	0.63%FS
65	Level	WL- 1	LM	65	HPCS Tank	Measured	Measured	0.0	-	2.30	m	1.00%FS
66	Level	WL- 2	LM	66	LPCS Tank	Measured	Measured	0.0	-	2.30	m	1.00%FS
67	Level	WL- 3	LM	67	LPCI Tank	Measured	Measured	0.0	-	4.25	m	1.00%FS
68	Level	WL- 4	LM	68	Upper Downcomer	Measured	Measured	3.90	-	6.04	m	1.00%FS
69	Level	WL- 5	LM	69	Lower Downcomer	Measured	Measured	0.938	-	3.90	m	1.00%FS
70	Mass.F.	F- 1	FM	70	Steam Line (Low Range)	Measured	Measured	0.0	-	1.13	kg/s	0.92%FS
71	Mass.F.	F- 2	FM	71	Steam Line(High Range)	Measured	Measured	0.0	-	3.00	kg/s	0.92%FS
72	Mass.F.	F- 3	FM	72	Steam Line (Mid Range)	Measured	Measured	0.0	-	1.94	kg/s	1.40%FS
73	Vol.F.	F- 7	FV	73	HPCS (Upper Plenum)	Measured	Measured	0.0	-	0.250E-02	m3/s	0.79%FS
74	Vol.F.	F- 9	FV	74	LPCS (Upper Plenum)	Measured	Measured	0.0	-	0.250E-02	m3/s	0.79%FS
75	Vol.F.	F-11	FV	75	LPCI (Core Bypass)	Measured	Measured	0.0	-	0.830E-02	m3/s	0.79%FS
76	Vol.F.	F-15	FV	76	Feedwater	Measured	Measured	0.0	-	0.100E-01	m3/s	0.79%FS
77	Vol.F.	F-16	FV	77	PWT Flow	Measured	Measured	0.0	-	0.420E-02	m3/s	0.79%FS
78	Vol.F.	F-17	FV	78	JP1 Discharge	Measured	Measured	0.0	-	0.170E-01	m3/s	0.88%FS
79	Vol.F.	F-18	FV	79	JP2 Discharge	Measured	Measured	0.0	-	0.170E-01	m3/s	0.88%FS
80	Vol.F.	F-19	FV	80	JP3 Disch. Positive	Measured	Measured	0.0	-	0.170E-01	m3/s	0.92%FS
81	Vol.F.	F-20	FV	81	JP3 Disch. Negative	Measured	Measured	0.0	-	0.500E-02	m3/s	0.92%FS
82	Vol.F.	F-21	FV	82	JP4 Disch. Positive	Measured	Measured	0.0	-	0.170E-01	m3/s	0.92%FS
83	Vol.F.	F-22	FV	83	JP4 Disch. Negative	Measured	Measured	0.0	-	0.500E-02	m3/s	0.92%FS
84	Mass.F.	F-23	FM	84	JP1,2 Outlet Spool	Not Measured	Not Measured	0.0	-	30.0	kg/s	1.40%FS
85	Mass.F.	F-24	FM	85	JP3,4 Outlet Spool	Not Measured	Not Measured	0.0	-	30.0	kg/s	1.40%FS
86	Mass.F.	F-25	FM	86	Break A Spool Piece	Not Measured	Not Measured	0.0	-	30.0	kg/s	1.40%FS
87	Mass.F.	F-26	FM	87	Break B Spool Piece	Not Measured	Not Measured	0.0	-	30.0	kg/s	1.40%FS
88	Vol.F.	F-27	FV	88	MRP-1	Measured	Measured	0.0	-	0.120E-01	m3/s	0.88%FS
89	Vol.F.	F-28	FV	89	MRP-2	Measured	Measured	0.0	-	0.120E-01	m3/s	0.63%FS
90	Diff.P.	D-F1	PD	90	F1 Orifice	Measured	Measured	0.0	-	4.90	kPa	0.63%FS
91	Diff.P.	D-F2	PD	91	F2 Orifice	Measured	Measured	0.0	-	34.9	kPa	0.63%FS
92	Diff.P.	D-F3	PD	92	F3 Orifice	Measured	Measured	0.0	-	14.6	kPa	0.63%FS
93	Diff.P.	D-F17	PD	93	F17 Venturi	Measured	Measured	0.0	-	98.1	kPa	0.63%FS
94	Diff.P.	D-F18	PD	94	F18 Venturi	Measured	Measured	0.0	-	98.1	kPa	0.63%FS
95	Diff.P.	D-F19	PD	95	F19 Orifice	Measured	Measured	0.0	-	147.	kPa	0.63%FS
96	Diff.P.	D-F20	PD	96	F20 Orifice	Measured	Measured	0.0	-	13.2	kPa	0.63%FS
97	Diff.P.	D-F21	PD	97	F21 Orifice	Measured	Measured	0.0	-	147.	kPa	0.63%FS
98	Diff.P.	D-F22	PD	98	F22 Orifice	Measured	Measured	0.0	-	13.2	kPa	0.63%FS
99	Diff.P.	D-F27	PD	99	F27 Venturi	Measured	Measured	0.0	-	200.	kPa	0.63%FS
100	Diff.P.	D-F28	PD	100	F28 Venturi	Measured	Measured	0.0	-	200.	kPa	0.63%FS

Table 3.2 Measurement List for RUNs 922 and 932 (Continued)

101Ch.- 150Ch.

Ch.	Item	Symbol	ID.		Location	RUN 922	RUN 932	Range			Unit	Accuracy
101	Power	W- 1	WE	101	2100 kW Power Supplier	Measured	Measured	0.0	-	0.210E+04	kW	1.00%FS
102	Power	W- 2	WE	102	3150 kW Power Supplier	Measured	Measured	0.0	-	0.315E+04	kW	1.00%FS
103						Not Measured	Not Measured					
104	Rev.	N- 1	SR	104	MRP-1 Revolution	Failure	Measured	0.0	-	0.500E+04	RPM	1.08%FS
105	Rev.	N- 2	SR	105	MRP-2 Revolution	Measured	Measured	0.0	-	0.500E+04	RPM	1.08%FS
106	Signal	S- 1	EV	106	Break Signal A	Measured	Measured	0.0	-	500.	Volt	
107	Signal	S- 2	EV	107	Break Signal B	Measured	Measured	0.0	-	500.	Volt	
108	Signal	S- 3	EV	108	QSV Signal	Measured	Measured	0.0	-	500.	Volt	
109	Signal	S- 6	EV	109	HPCS Valve	Measured	Measured	0.0	-	500.	Volt	
110	Signal	S- 7	EV	110	LPCS Valve	Measured	Measured	0.0	-	500.	Volt	
111	Signal	S- 8	EV	111	LPCI Valve	Measured	Measured	0.0	-	500.	Volt	
112	Signal	S- 9	EV	112	Feedwater Control	Measured	Measured	0.0	-	500.	Volt	
113	Signal	S-10	EV	113	MSIV Signal	Measured	Measured	0.0	-	500.	Volt	
114	Signal	S-11	EV	114	Steam Line Valve	Measured	Measured	0.0	-	500.	Volt	
115	Signal	S-12	EV	115	ADS Valve	Measured	Measured	0.0	-	500.	Volt	
116	Signal	S-13	EV	116	MRP-1 Power OFF	Measured	Measured	0.0	-	500.	Volt	
117	Signal	S-14	EV	117	MRP-2 Power OFF	Measured	Measured	0.0	-	500.	Volt	
118	Signal	RD- 1	EV	118	MRP-1 Rev. Direction	Measured	Measured	0.0	-	500.	Volt	
119	Signal	RD- 2	EV	119	MRP-2 Rev. Direction	Measured	Measured	0.0	-	500.	Volt	
120	Density	DF- 1	DE	120	JP1,2 Outlet Beam A	Measured	Measured	0.0	-	0.100E+04	kg/m3	1.00%FS
121	Density	DF- 2	DE	121	JP1,2 Outlet Beam B	Measured	Measured	0.0	-	0.100E+04	kg/m3	1.00%FS
122	Density	DF- 3	DE	122	JP1,2 Outlet Beam C	Measured	Measured	0.0	-	0.100E+04	kg/m3	1.00%FS
123	Density	DF- 4	DE	123	JP3,4 Outlet Beam A	Measured	Measured	0.0	-	0.100E+04	kg/m3	1.00%FS
124	Density	DF- 5	DE	124	JP3,4 Outlet Beam B	Measured	Measured	0.0	-	0.100E+04	kg/m3	1.00%FS
125	Density	DF- 6	DE	125	JP3,4 Outlet Beam C	Measured	Measured	0.0	-	0.100E+04	kg/m3	1.00%FS
126	Density	DF- 7	DE	126	Break A Beam A	Measured	Measured	0.0	-	0.100E+04	kg/m3	1.00%FS
127	Density	DF- 8	DE	127	Break A Beam B	Measured	Measured	0.0	-	0.100E+04	kg/m3	1.00%FS
128	Density	DF- 9	DE	128	Break B Beam A	Measured	Failure	0.0	-	0.100E+04	kg/m3	1.00%FS
129	Density	DF-10	DE	129	Break B Beam B	Measured	Measured	0.0	-	0.100E+04	kg/m3	1.00%FS
130	Mo.Flux	M- 1	MF	130	JP1,2 Outlet Spool	Measured	Measured	0.0	-	0.220E+05	kg/ms2	1.00%FS
131	Mo.Flux	M- 2	MF	131	JP3,4 Outlet Spool	Measured	Measured	0.0	-	0.220E+05	kg/ms2	1.00%FS
132	Mo.Flux	M- 3	MF	132	Break A (Low Range)	Measured	Measured	0.0	-	0.220E+05	kg/ms2	1.00%FS
133	Mo.Flux	M- 4	MF	133	Break B (Low Range)	Measured	Measured	0.0	-	0.220E+05	kg/ms2	1.00%FS
134	Mo.Flux	M- 5	MF	134	Break A (High Range)	Measured	Measured	0.0	-	0.220E+06	kg/ms2	1.00%FS
135	Mo.Flux	M- 6	MF	135	Break B (High Range)	Measured	Measured	0.0	-	0.220E+06	kg/ms2	1.00%FS
136	Mo.Flux	M- 7	MF	136	Break Orifice	Not Measured	Not Measured	0.0	-	0.220E+05	kg/ms2	1.00%FS
137						Not Measured	Not Measured					
138	Fluid T.	T- 1	TE	138	Lower Plenum	Measured	Measured	273.	-	673.	K	0.64%FS
139	Fluid T.	T- 2	TE	139	Upper Plenum	Measured	Measured	273.	-	673.	K	0.64%FS
140	Fluid T.	T- 3	TE	140	Steam Dome	Measured	Measured	273.	-	673.	K	0.64%FS
141	Fluid T.	T- 4	TE	141	Upper Downcomer	Measured	Measured	273.	-	673.	K	0.64%FS
142	Fluid T.	T- 5	TE	142	Lower Downcomer	Measured	Measured	273.	-	673.	K	0.64%FS
143	Fluid T.	T- 6	TE	143	JP-1 Drive	Measured	Measured	273.	-	673.	K	0.64%FS
144	Fluid T.	T- 7	TE	144	JP-2 Drive	Measured	Measured	273.	-	673.	K	0.64%FS
145	Fluid T.	T- 8	TE	145	JP-3 Drive	Measured	Measured	273.	-	673.	K	0.64%FS
146	Fluid T.	T- 9	TE	146	JP-4 Drive	Measured	Measured	273.	-	673.	K	0.64%FS
147	Fluid T.	T-10	TE	147	JP-1 Discharge	Measured	Measured	273.	-	673.	K	0.64%FS
148	Fluid T.	T-11	TE	148	JP-2 Discharge	Measured	Measured	273.	-	673.	K	0.64%FS
149	Fluid T.	T-12	TE	149	JP-3 Discharge	Measured	Measured	273.	-	673.	K	0.64%FS
150	Fluid T.	T-13	TE	150	JP-4 Discharge	Measured	Measured	273.	-	673.	K	0.64%FS

Table 3.2 Measurement List for RUNs 922 and 932 (Continued)

151Ch.- 200Ch.

Ch.	Item	Symbol	ID.	Location	RUN 922	RUN 932	Range	Unit	Accuracy
151	Fluid T.	T-14	TE 151	MRP-1 Suction	Measured	Measured	273. - 673.	K	0.64%FS
152	Fluid T.	T-15	TE 152	MRP-1 Delivery	Measured	Measured	273. - 673.	K	0.64%FS
153	Fluid T.	T-16	TE 153	MRP-2 Suction	Measured	Measured	273. - 673.	K	0.64%FS
154	Fluid T.	T-17	TE 154	MRP-2 Delivery	Measured	Measured	273. - 673.	K	0.64%FS
155	Fluid T.	T-18	TE 155	Break A Upstream	Measured	Measured	273. - 673.	K	0.64%FS
156	Fluid T.	T-19	TE 156	Break B Upstream	Measured	Measured	273. - 673.	K	0.64%FS
157	Fluid T.	T-20	TE 157	RCN A Condenced Water	Not Measured	Not Measured	273. - 698.	K	0.64%FS
158	Fluid T.	T-21	TE 158	RCN B Condenced Water	Not Measured	Not Measured	273. - 698.	K	0.64%FS
159	Fluid T.	T-22	TE 159	Discharged Steam	Measured	Measured	273. - 673.	K	0.64%FS
160	Fluid T.	T-24	TE 160	JP-1,2 Outlet Spool	Measured	Measured	273. - 763.	K	0.64%FS
161	Fluid T.	T-25	TE 161	JP-3,4 Outlet Spool	Measured	Measured	273. - 763.	K	0.64%FS
162	Fluid T.	T-26	TE 162	Break A Spool Piece	Measured	Measured	273. - 763.	K	0.64%FS
163	Fluid T.	T-27	TE 163	Break B Spool Piece	Measured	Measured	273. - 763.	K	0.64%FS
164	Fluid T.	T-28	TE 164	Feedwater	Measured	Measured	273. - 673.	K	0.64%FS
165	Slab T.	T-29	TE 165	Break Orifice	Measured	Measured	273. - 673.	K	0.64%FS
166	Slab T.	T-30	TE 166	Break Orifice	Measured	Measured	273. - 673.	K	0.64%FS
167	Slab T.	T-31	TE 167	Break A Drag Disk (L)	Not Measured	Not Measured	273. - 673.	K	0.64%FS
168	Slab T.	T-32	TE 168	Break B Drag Disk (L)	Not Measured	Not Measured	273. - 673.	K	0.64%FS
169	Slab T.	T-33	TE 169	Break A Drag Disk (H)	Not Measured	Measured	273. - 673.	K	0.64%FS
170	Slab T.	T-34	TE 170	Break B Drag Disk (H)	Not Measured	Measured	273. - 673.	K	0.64%FS
171	Slab T.	T-F17	TE 171	JP-1 Diffuser Wall	Not Measured	Measured	273. - 673.	K	0.64%FS
172	Slab T.	T-F18	TE 172	JP-2 Diffuser Wall	Not Measured	Measured	273. - 673.	K	0.64%FS
173	Slab T.	T-F19	TE 173	JP-3 Diffuser Wall	Not Measured	Measured	273. - 673.	K	0.64%FS
174	Slab T.	T-F20	TE 174	JP-4 Diffuser Wall	Not Measured	Measured	273. - 673.	K	0.64%FS
175	Slab T.	T-35	TE 175	Feedwater No. 2	Not Measured	Measured	273. - 673.	K	0.64%FS
176	Slab T.	T-36	TE 176	Discharged Steam	Not Measured	Measured	273. - 673.	K	0.64%FS
177	Slab T.	TS-13	TE 177	Filler Block C Pos.1	Not Measured	Not Measured	273. - 673.	K	0.64%FS
178	Slab T.	TS-14	TE 178	Filler Block C Pos.2	Not Measured	Not Measured	273. - 673.	K	0.64%FS
179	Slab T.	TS-15	TE 179	Filler Block C Pos.3	Not Measured	Measured	273. - 673.	K	0.64%FS
180	Slab T.	TS-16	TE 180	Filler Block C Pos.4	Not Measured	Not Measured	273. - 673.	K	0.64%FS
181	Slab T.	TS-17	TE 181	Filler Block C Pos.5	Not Measured	Not Measured	273. - 673.	K	0.64%FS
182	Slab T.	TS-18	TE 182	Filler Block C Pos.6	Not Measured	Measured	273. - 673.	K	0.64%FS
183	Slab T.	TS-19	TE 183	Filler Block A Pos.1	Not Measured	Not Measured	273. - 673.	K	0.64%FS
184	Slab T.	TS-20	TE 184	Filler Block A Pos.2	Not Measured	Not Measured	273. - 673.	K	0.64%FS
185	Slab T.	TS-21	TE 185	Filler Block A Pos.3	Not Measured	Not Measured	273. - 673.	K	0.64%FS
186	Slab T.	TS-22	TE 186	Filler Block A Pos.4	Not Measured	Not Measured	273. - 673.	K	0.64%FS
187	Slab T.	TS-23	TE 187	Filler Block A Pos.5	Not Measured	Not Measured	273. - 673.	K	0.64%FS
188	Slab T.	TS-24	TE 188	Filler Block A Pos.6	Not Measured	Not Measured	273. - 673.	K	0.64%FS
189	Slab T.	TS-25	TE 189	JP-1 Diffuser Wall	Not Measured	Not Measured	273. - 673.	K	0.64%FS
190	Slab T.	TS-26	TE 190	JP-2 Diffuser Wall	Not Measured	Not Measured	273. - 673.	K	0.64%FS
191	Slab T.	TS-27	TE 191	JP-3 Diffuser Wall	Not Measured	Not Measured	273. - 673.	K	0.64%FS
192	Slab T.	TS-28	TE 192	JP-4 Diffuser Wall	Not Measured	Not Measured	273. - 673.	K	0.64%FS
193	Slab T.	TS-29	TE 193	PV Wall Inside 1-1	Not Measured	Measured	273. - 673.	K	0.64%FS
194	Slab T.	TS-30	TE 194	PV Inner Surface 1-2	Not Measured	Not Measured	273. - 673.	K	0.64%FS
195	Slab T.	TS-31	TE 195	PV Inner Surface 1-3	Not Measured	Measured	273. - 673.	K	0.64%FS
196	Slab T.	TS-32	TE 196	PV Wall Inside 2	Not Measured	Measured	273. - 673.	K	0.64%FS
197	Slab T.	TS-33	TE 197	PV Wall Inside 3	Not Measured	Measured	273. - 673.	K	0.64%FS
198	Slab T.	TS-34	TE 198	PV Wall Inside 4	Not Measured	Measured	273. - 673.	K	0.64%FS
199	Slab T.	TS-35	TE 199	L.P. Inner Surface	Not Measured	Not Measured	273. - 673.	K	0.64%FS
200	Slab T.	TS-36	TE 200	L.P. Wall Inside	Not Measured	Failure	273. - 673.	K	0.64%FS

Table 3.2 Measurement List for RUNs 922 and 932 (Continued)

201Ch.- 250Ch.

Ch.	Item	Symbol	ID.	Location	RUN 922	RUN 932	Range	Unit	Accuracy
201	Temp.	TF- 1	TE 201	A11 Fuel Rod Pos.1	Measured	Measured	273. - 0.147E+04	K	0.64%FS
202	Temp.	TF- 2	TE 202	A11 Fuel Rod Pos.2	Measured	Measured	273. - 0.147E+04	K	0.64%FS
203	Temp.	TF- 3	TE 203	A11 Fuel Rod Pos.3	Measured	Measured	273. - 0.147E+04	K	0.64%FS
204	Temp.	TF- 4	TE 204	A11 Fuel Rod Pos.4	Measured	Measured	273. - 0.147E+04	K	0.64%FS
205	Temp.	TF- 5	TE 205	A11 Fuel Rod Pos.5	Measured	Measured	273. - 0.147E+04	K	0.64%FS
206	Temp.	TF- 6	TE 206	A11 Fuel Rod Pos.6	Measured	Measured	273. - 0.147E+04	K	0.64%FS
207	Temp.	TF- 7	TE 207	A11 Fuel Rod Pos.7	Measured	Measured	273. - 0.147E+04	K	0.64%FS
208	Temp.	TF- 8	TE 208	A12 Fuel Rod Pos.1	Measured	Measured	273. - 0.147E+04	K	0.64%FS
209	Temp.	TF- 9	TE 209	A12 Fuel Rod Pos.2	Measured	Measured	273. - 0.147E+04	K	0.64%FS
210	Temp.	TF- 10	TE 210	A12 Fuel Rod Pos.3	Measured	Measured	273. - 0.147E+04	K	0.64%FS
211	Temp.	TF- 11	TE 211	A12 Fuel Rod Pos.4	Measured	Measured	273. - 0.147E+04	K	0.64%FS
212	Temp.	TF- 12	TE 212	A12 Fuel Rod Pos.5	Measured	Measured	273. - 0.147E+04	K	0.64%FS
213	Temp.	TF- 13	TE 213	A12 Fuel Rod Pos.6	Measured	Measured	273. - 0.147E+04	K	0.64%FS
214	Temp.	TF- 14	TE 214	A12 Fuel Rod Pos.7	Measured	Measured	273. - 0.147E+04	K	0.64%FS
215	Temp.	TF- 15	TE 215	A13 Fuel Rod Pos.1	Measured	Measured	273. - 0.147E+04	K	0.64%FS
216	Temp.	TF- 16	TE 216	A13 Fuel Rod Pos.2	Measured	Measured	273. - 0.147E+04	K	0.64%FS
217	Temp.	TF- 17	TE 217	A13 Fuel Rod Pos.3	Measured	Measured	273. - 0.147E+04	K	0.64%FS
218	Temp.	TF- 18	TE 218	A13 Fuel Rod Pos.4	Measured	Measured	273. - 0.147E+04	K	0.64%FS
219	Temp.	TF- 19	TE 219	A13 Fuel Rod Pos.5	Measured	Measured	273. - 0.147E+04	K	0.64%FS
220	Temp.	TF- 20	TE 220	A13 Fuel Rod Pos.6	Measured	Measured	273. - 0.147E+04	K	0.64%FS
221	Temp.	TF- 21	TE 221	A13 Fuel Rod Pos.7	Measured	Measured	273. - 0.147E+04	K	0.64%FS
222	Temp.	TF- 22	TE 222	A14 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.147E+04	K	0.64%FS
223	Temp.	TF- 23	TE 223	A14 Fuel Rod Pos.2	Measured	Not Measured	273. - 0.147E+04	K	0.64%FS
224	Temp.	TF- 24	TE 224	A14 Fuel Rod Pos.3	Measured	Not Measured	273. - 0.147E+04	K	0.64%FS
225	Temp.	TF- 25	TE 225	A14 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.147E+04	K	0.64%FS
226	Temp.	TF- 26	TE 226	A14 Fuel Rod Pos.5	Measured	Not Measured	273. - 0.147E+04	K	0.64%FS
227	Temp.	TF- 27	TE 227	A14 Fuel Rod Pos.6	Measured	Not Measured	273. - 0.147E+04	K	0.64%FS
228	Temp.	TF- 28	TE 228	A14 Fuel Rod Pos.7	Measured	Not Measured	273. - 0.147E+04	K	0.64%FS
229	Temp.	TF- 29	TE 229	A15 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.147E+04	K	0.64%FS
230	Temp.	TF- 30	TE 230	A15 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.147E+04	K	0.64%FS
231	Temp.	TF- 31	TE 231	A17 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.147E+04	K	0.64%FS
232	Temp.	TF- 32	TE 232	A17 Fuel Rod Pos.4	Measured	Measured	273. - 0.147E+04	K	0.64%FS
233	Temp.	TF- 33	TE 233	A22 Fuel Rod Pos.1	Measured	Measured	273. - 0.147E+04	K	0.64%FS
234	Temp.	TF- 34	TE 234	A22 Fuel Rod Pos.2	Measured	Measured	273. - 0.147E+04	K	0.64%FS
235	Temp.	TF- 35	TE 235	A22 Fuel Rod Pos.3	Measured	Measured	273. - 0.147E+04	K	0.64%FS
236	Temp.	TF- 36	TE 236	A22 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
237	Temp.	TF- 37	TE 237	A22 Fuel Rod Pos.5	Measured	Measured	273. - 0.125E+04	K	0.64%FS
238	Temp.	TF- 38	TE 238	A22 Fuel Rod Pos.6	Measured	Measured	273. - 0.125E+04	K	0.64%FS
239	Temp.	TF- 39	TE 239	A22 Fuel Rod Pos.7	Measured	Measured	273. - 0.125E+04	K	0.64%FS
240	Temp.	TF- 40	TE 240	A24 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
241	Temp.	TF- 41	TE 241	A24 Fuel Rod Pos.2	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
242	Temp.	TF- 42	TE 242	A24 Fuel Rod Pos.3	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
243	Temp.	TF- 43	TE 243	A24 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
244	Temp.	TF- 44	TE 244	A24 Fuel Rod Pos.5	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
245	Temp.	TF- 45	TE 245	A24 Fuel Rod Pos.6	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
246	Temp.	TF- 46	TE 246	A24 Fuel Rod Pos.7	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
247	Temp.	TF- 47	TE 247	A26 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
248	Temp.	TF- 48	TE 248	A26 Fuel Rod Pos.2	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
249	Temp.	TF- 49	TE 249	A28 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
250	Temp.	TF- 50	TE 250	A28 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS

Table 3.2 Measurement List for RUNs 922 and 932 (Continued)

251Ch.- 300Ch.

Ch.	Item	Symbol	ID.	Location	RUN 922	RUN 932	Range	Unit	Accuracy
251	Temp.	TF- 51	TE 251	A31 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
252	Temp.	TF- 52	TE 252	A31 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
253	Temp.	TF- 53	TE 253	A33 Fuel Rod Pos.1	Measured	Measured	273. - 0.125E+04	K	0.64%FS
254	Temp.	TF- 54	TE 254	A33 Fuel Rod Pos.2	Measured	Measured	273. - 0.125E+04	K	0.64%FS
255	Temp.	TF- 55	TE 255	A33 Fuel Rod Pos.3	Measured	Measured	273. - 0.125E+04	K	0.64%FS
256	Temp.	TF- 56	TE 256	A33 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
257	Temp.	TF- 57	TE 257	A33 Fuel Rod Pos.5	Measured	Measured	273. - 0.125E+04	K	0.64%FS
258	Temp.	TF- 58	TE 258	A33 Fuel Rod Pos.6	Measured	Measured	273. - 0.125E+04	K	0.64%FS
259	Temp.	TF- 59	TE 259	A33 Fuel Rod Pos.7	Measured	Measured	273. - 0.125E+04	K	0.64%FS
260	Temp.	TF- 60	TE 260	A34 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
261	Temp.	TF- 61	TE 261	A34 Fuel Rod Pos.2	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
262	Temp.	TF- 62	TE 262	A34 Fuel Rod Pos.3	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
263	Temp.	TF- 63	TE 263	A34 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
264	Temp.	TF- 64	TE 264	A34 Fuel Rod Pos.5	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
265	Temp.	TF- 65	TE 265	A34 Fuel Rod Pos.6	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
266	Temp.	TF- 66	TE 266	A34 Fuel Rod Pos.7	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
267	Temp.	TF- 67	TE 267	A37 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
268	Temp.	TF- 68	TE 268	A37 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
269	Temp.	TF- 69	TE 269	A42 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
270	Temp.	TF- 70	TE 270	A42 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
271	Temp.	TF- 71	TE 271	A44 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
272	Temp.	TF- 72	TE 272	A44 Fuel Rod Pos.2	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
273	Temp.	TF- 73	TE 273	A44 Fuel Rod Pos.3	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
274	Temp.	TF- 74	TE 274	A44 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
275	Temp.	TF- 75	TE 275	A44 Fuel Rod Pos.5	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
276	Temp.	TF- 76	TE 276	A44 Fuel Rod Pos.6	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
277	Temp.	TF- 77	TE 277	A44 Fuel Rod Pos.7	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
278	Temp.	TF- 78	TE 278	A48 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
279	Temp.	TF- 79	TE 279	A48 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
280	Temp.	TF- 80	TE 280	A51 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
281	Temp.	TF- 81	TE 281	A51 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
282	Temp.	TF- 82	TE 282	A53 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
283	Temp.	TF- 83	TE 283	A53 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
284	Temp.	TF- 84	TE 284	A57 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
285	Temp.	TF- 85	TE 285	A57 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
286	Temp.	TF- 86	TE 286	A62 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
287	Temp.	TF- 87	TE 287	A62 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
288	Temp.	TF- 88	TE 288	A66 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
289	Temp.	TF- 89	TE 289	A66 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
290	Temp.	TF- 90	TE 290	A68 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
291	Temp.	TF- 91	TE 291	A68 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
292	Temp.	TF- 92	TE 292	A71 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
293	Temp.	TF- 93	TE 293	A71 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
294	Temp.	TF- 94	TE 294	A73 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
295	Temp.	TF- 95	TE 295	A73 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
296	Temp.	TF- 96	TE 296	A75 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
297	Temp.	TF- 97	TE 297	A75 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
298	Temp.	TF- 98	TE 298	A77 Fuel Rod Pos.1	Measured	Measured	273. - 0.125E+04	K	0.64%FS
299	Temp.	TF- 99	TE 299	A77 Fuel Rod Pos.2	Measured	Measured	273. - 0.125E+04	K	0.64%FS
300	Temp.	TF-100	TE 300	A77 Fuel Rod Pos.3	Measured	Measured	273. - 0.125E+04	K	0.64%FS

Table 3.2 Measurement List for RUNs 922 and 932 (Continued)

301Ch.- 350Ch.

Ch.	Item	Symbol	ID.	Location	RUN 922	RUN 932	Range	Unit	Accuracy
301	Temp.	TF-101	TE 301	A77 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
302	Temp.	TF-102	TE 302	A77 Fuel Rod Pos.5	Measured	Measured	273. - 0.125E+04	K	0.64%FS
303	Temp.	TF-103	TE 303	A77 Fuel Rod Pos.6	Measured	Measured	273. - 0.125E+04	K	0.64%FS
304	Temp.	TF-104	TE 304	A77 Fuel Rod Pos.7	Failure	Not Measured	273. - 0.125E+04	K	0.64%FS
305	Temp.	TF-105	TE 305	A82 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
306	Temp.	TF-106	TE 306	A82 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
307	Temp.	TF-107	TE 307	A84 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
308	Temp.	TF-108	TE 308	A84 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
309	Temp.	TF-109	TE 309	A85 Fuel Rod Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
310	Temp.	TF-110	TE 310	A85 Fuel Rod Pos.2	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
311	Temp.	TF-111	TE 311	A85 Fuel Rod Pos.3	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
312	Temp.	TF-112	TE 312	A85 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
313	Temp.	TF-113	TE 313	A85 Fuel Rod Pos.5	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
314	Temp.	TF-114	TE 314	A85 Fuel Rod Pos.6	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
315	Temp.	TF-115	TE 315	A85 Fuel Rod Pos.7	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
316	Temp.	TF-116	TE 316	A87 Fuel Rod Pos.1	Measured	Measured	273. - 0.125E+04	K	0.64%FS
317	Temp.	TF-117	TE 317	A87 Fuel Rod Pos.2	Measured	Measured	273. - 0.125E+04	K	0.64%FS
318	Temp.	TF-118	TE 318	A87 Fuel Rod Pos.3	Measured	Measured	273. - 0.125E+04	K	0.64%FS
319	Temp.	TF-119	TE 319	A87 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
320	Temp.	TF-120	TE 320	A87 Fuel Rod Pos.5	Measured	Measured	273. - 0.125E+04	K	0.64%FS
321	Temp.	TF-121	TE 321	A87 Fuel Rod Pos.6	Measured	Measured	273. - 0.125E+04	K	0.64%FS
322	Temp.	TF-122	TE 322	A87 Fuel Rod Pos.7	Measured	Measured	273. - 0.125E+04	K	0.64%FS
323	Temp.	TF-123	TE 323	A88 Fuel Rod Pos.1	Measured	Measured	273. - 0.125E+04	K	0.64%FS
324	Temp.	TF-124	TE 324	A88 Fuel Rod Pos.2	Measured	Measured	273. - 0.125E+04	K	0.64%FS
325	Temp.	TF-125	TE 325	A88 Fuel Rod Pos.3	Measured	Measured	273. - 0.125E+04	K	0.64%FS
326	Temp.	TF-126	TE 326	A88 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
327	Temp.	TF-127	TE 327	A88 Fuel Rod Pos.5	Measured	Measured	273. - 0.125E+04	K	0.64%FS
328	Temp.	TF-128	TE 328	A88 Fuel Rod Pos.6	Measured	Measured	273. - 0.125E+04	K	0.64%FS
329	Temp.	TF-129	TE 329	A88 Fuel Rod Pos.7	Measured	Measured	273. - 0.125E+04	K	0.64%FS
330	Temp.	TF-130	TE 330	B11 Fuel Rod Pos.1	Measured	Measured	273. - 0.125E+04	K	0.64%FS
331	Temp.	TF-131	TE 331	B11 Fuel Rod Pos.2	Measured	Measured	273. - 0.125E+04	K	0.64%FS
332	Temp.	TF-132	TE 332	B11 Fuel Rod Pos.3	Measured	Measured	273. - 0.125E+04	K	0.64%FS
333	Temp.	TF-133	TE 333	B11 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
334	Temp.	TF-134	TE 334	B11 Fuel Rod Pos.5	Measured	Measured	273. - 0.125E+04	K	0.64%FS
335	Temp.	TF-135	TE 335	B11 Fuel Rod Pos.6	Measured	Measured	273. - 0.125E+04	K	0.64%FS
336	Temp.	TF-136	TE 336	B11 Fuel Rod Pos.7	Not Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
337	Temp.	TF-137	TE 337	B13 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
338	Temp.	TF-138	TE 338	B22 Fuel Rod Pos.1	Measured	Measured	273. - 0.125E+04	K	0.64%FS
339	Temp.	TF-139	TE 339	B22 Fuel Rod Pos.2	Measured	Measured	273. - 0.125E+04	K	0.64%FS
340	Temp.	TF-140	TE 340	B22 Fuel Rod Pos.3	Measured	Measured	273. - 0.125E+04	K	0.64%FS
341	Temp.	TF-141	TE 341	B22 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
342	Temp.	TF-142	TE 342	B22 Fuel Rod Pos.5	Measured	Measured	273. - 0.125E+04	K	0.64%FS
343	Temp.	TF-143	TE 343	B22 Fuel Rod Pos.6	Measured	Measured	273. - 0.125E+04	K	0.64%FS
344	Temp.	TF-144	TE 344	B22 Fuel Rod Pos.7	Measured	Measured	273. - 0.125E+04	K	0.64%FS
345	Temp.	TF-145	TE 345	B31 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
346	Temp.	TF-146	TE 346	B33 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
347	Temp.	TF-147	TE 347	B51 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
348	Temp.	TF-148	TE 348	B53 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
349	Temp.	TF-149	TE 349	B66 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
350	Temp.	TF-150	TE 350	B77 Fuel Rod Pos.1	Measured	Measured	273. - 0.125E+04	K	0.64%FS

Table 3.2 Measurement List for RUNs 922 and 932 (Continued)

351Ch.- 400Ch.

Ch.	Item	Symbol	ID.	Location	RUN 922	RUN 932	Range	Unit	Accuracy
351	Temp.	TF-151	TE 351	B77 Fuel Rod Pos.2	Measured	Measured	273. - 0.125E+04	K	0.64%FS
352	Temp.	TF-152	TE 352	B77 Fuel Rod Pos.3	Measured	Measured	273. - 0.125E+04	K	0.64%FS
353	Temp.	TF-153	TE 353	B77 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
354	Temp.	TF-154	TE 354	B77 Fuel Rod Pos.5	Measured	Measured	273. - 0.125E+04	K	0.64%FS
355	Temp.	TF-155	TE 355	B77 Fuel Rod Pos.6	Measured	Measured	273. - 0.125E+04	K	0.64%FS
356	Temp.	TF-156	TE 356	B77 Fuel Rod Pos.7	Measured	Measured	273. - 0.125E+04	K	0.64%FS
357	Temp.	TF-157	TE 357	B86 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
358	Temp.	TF-158	TE 358	C11 Fuel Rod Pos.1	Measured	Measured	273. - 0.125E+04	K	0.64%FS
359	Temp.	TF-159	TE 359	C11 Fuel Rod Pos.2	Measured	Measured	273. - 0.125E+04	K	0.64%FS
360	Temp.	TF-160	TE 360	C11 Fuel Rod Pos.3	Measured	Measured	273. - 0.125E+04	K	0.64%FS
361	Temp.	TF-161	TE 361	C11 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
362	Temp.	TF-162	TE 362	C11 Fuel Rod Pos.5	Measured	Measured	273. - 0.125E+04	K	0.64%FS
363	Temp.	TF-163	TE 363	C11 Fuel Rod Pos.6	Measured	Measured	273. - 0.125E+04	K	0.64%FS
364	Temp.	TF-164	TE 364	C11 Fuel Rod Pos.7	Measured	Measured	273. - 0.125E+04	K	0.64%FS
365	Temp.	TF-165	TE 365	C13 Fuel Rod Pos.1	Measured	Measured	273. - 0.125E+04	K	0.64%FS
366	Temp.	TF-166	TE 366	C13 Fuel Rod Pos.2	Measured	Measured	273. - 0.125E+04	K	0.64%FS
367	Temp.	TF-167	TE 367	C13 Fuel Rod Pos.3	Measured	Measured	273. - 0.125E+04	K	0.64%FS
368	Temp.	TF-168	TE 368	C13 Fuel Rod Pos.4	Failure	Measured	273. - 0.125E+04	K	0.64%FS
369	Temp.	TF-169	TE 369	C13 Fuel Rod Pos.5	Measured	Measured	273. - 0.125E+04	K	0.64%FS
370	Temp.	TF-170	TE 370	C13 Fuel Rod Pos.6	Measured	Measured	273. - 0.125E+04	K	0.64%FS
371	Temp.	TF-171	TE 371	C13 Fuel Rod Pos.7	Measured	Measured	273. - 0.125E+04	K	0.64%FS
372	Temp.	TF-172	TE 372	C15 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
373	Temp.	TF-173	TE 373	C22 Fuel Rod Pos.1	Measured	Measured	273. - 0.125E+04	K	0.64%FS
374	Temp.	TF-174	TE 374	C22 Fuel Rod Pos.2	Measured	Measured	273. - 0.125E+04	K	0.64%FS
375	Temp.	TF-175	TE 375	C22 Fuel Rod Pos.3	Measured	Measured	273. - 0.125E+04	K	0.64%FS
376	Temp.	TF-176	TE 376	C22 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
377	Temp.	TF-177	TE 377	C22 Fuel Rod Pos.5	Measured	Measured	273. - 0.125E+04	K	0.64%FS
378	Temp.	TF-178	TE 378	C22 Fuel Rod Pos.6	Measured	Measured	273. - 0.125E+04	K	0.64%FS
379	Temp.	TF-179	TE 379	C22 Fuel Rod Pos.7	Measured	Measured	273. - 0.125E+04	K	0.64%FS
380	Temp.	TF-180	TE 380	C31 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
381	Temp.	TF-181	TE 381	C33 Fuel Rod Pos.1	Measured	Measured	273. - 0.125E+04	K	0.64%FS
382	Temp.	TF-182	TE 382	C33 Fuel Rod Pos.2	Measured	Measured	273. - 0.125E+04	K	0.64%FS
383	Temp.	TF-183	TE 383	C33 Fuel Rod Pos.3	Measured	Measured	273. - 0.125E+04	K	0.64%FS
384	Temp.	TF-184	TE 384	C33 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
385	Temp.	TF-185	TE 385	C33 Fuel Rod Pos.5	Measured	Measured	273. - 0.125E+04	K	0.64%FS
386	Temp.	TF-186	TE 386	C33 Fuel Rod Pos.6	Measured	Measured	273. - 0.125E+04	K	0.64%FS
387	Temp.	TF-187	TE 387	C33 Fuel Rod Pos.7	Measured	Measured	273. - 0.125E+04	K	0.64%FS
388	Temp.	TF-188	TE 388	C35 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
389	Temp.	TF-189	TE 389	C66 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
390	Temp.	TF-190	TE 390	C68 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
391	Temp.	TF-191	TE 391	C77 Fuel Rod Pos.1	Measured	Measured	273. - 0.125E+04	K	0.64%FS
392	Temp.	TF-192	TE 392	C77 Fuel Rod Pos.2	Measured	Measured	273. - 0.125E+04	K	0.64%FS
393	Temp.	TF-193	TE 393	C77 Fuel Rod Pos.3	Measured	Measured	273. - 0.125E+04	K	0.64%FS
394	Temp.	TF-194	TE 394	C77 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
395	Temp.	TF-195	TE 395	C77 Fuel Rod Pos.5	Measured	Measured	273. - 0.125E+04	K	0.64%FS
396	Temp.	TF-196	TE 396	C77 Fuel Rod Pos.6	Measured	Measured	273. - 0.125E+04	K	0.64%FS
397	Temp.	TF-197	TE 397	C77 Fuel Rod Pos.7	Measured	Measured	273. - 0.125E+04	K	0.64%FS
398	Temp.	TF-198	TE 398	D11 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
399	Temp.	TF-199	TE 399	D13 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
400	Temp.	TF-200	TE 400	D22 Fuel Rod Pos.1	Measured	Measured	273. - 0.125E+04	K	0.64%FS

Table 3.2 Measurement List for RUNs 922 and 932 (Continued)

401Ch.- 450Ch.

Ch.	Item	Symbol	ID.	Location	RUN 922	RUN 932	Range	Unit	Accuracy
401	Temp.	TF-201	TE 401	D22 Fuel Rod Pos.2	Measured	Measured	273. - 0.125E+04	K	0.64%FS
402	Temp.	TF-202	TE 402	D22 Fuel Rod Pos.3	Measured	Measured	273. - 0.125E+04	K	0.64%FS
403	Temp.	TF-203	TE 403	D22 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
404	Temp.	TF-204	TE 404	D22 Fuel Rod Pos.5	Measured	Measured	273. - 0.125E+04	K	0.64%FS
405	Temp.	TF-205	TE 405	D22 Fuel Rod Pos.6	Measured	Measured	273. - 0.125E+04	K	0.64%FS
406	Temp.	TF-206	TE 406	D22 Fuel Rod Pos.7	Measured	Measured	273. - 0.125E+04	K	0.64%FS
407	Temp.	TF-207	TE 407	D31 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
408	Temp.	TF-208	TE 408	D33 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
409	Temp.	TF-209	TE 409	D51 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
410	Temp.	TF-210	TE 410	D53 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
411	Temp.	TF-211	TE 411	D66 Fuel Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
412	Temp.	TF-212	TE 412	D77 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
413	Temp.	TF-213	TE 413	D86 Fuel Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
414	Fluid T.	TW- 1	TE 414	A45 Tie Rod Pos.1	Measured	Measured	273. - 0.125E+04	K	0.64%FS
415	Fluid T.	TW- 2	TE 415	A45 Tie Rod Pos.2	Measured	Measured	273. - 0.125E+04	K	0.64%FS
416	Fluid T.	TW- 3	TE 416	A45 Tie Rod Pos.3	Measured	Measured	273. - 0.125E+04	K	0.64%FS
417	Fluid T.	TW- 4	TE 417	A45 Tie Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
418	Fluid T.	TW- 5	TE 418	A45 Tie Rod Pos.5	Measured	Measured	273. - 0.125E+04	K	0.64%FS
419	Fluid T.	TW- 6	TE 419	A45 Tie Rod Pos.6	Measured	Measured	273. - 0.125E+04	K	0.64%FS
420	Fluid T.	TW- 7	TE 420	A45 Tie Rod Pos.7	Measured	Measured	273. - 0.125E+04	K	0.64%FS
421	Fluid T.	TW- 8	TE 421	B45 Tie Rod Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
422	Fluid T.	TW- 9	TE 422	B45 Tie Rod Pos.2	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
423	Fluid T.	TW-10	TE 423	B45 Tie Rod Pos.3	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
424	Fluid T.	TW-11	TE 424	B45 Tie Rod Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
425	Fluid T.	TW-12	TE 425	B45 Tie Rod Pos.5	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
426	Fluid T.	TW-13	TE 426	B45 Tie Rod Pos.6	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
427	Fluid T.	TW-14	TE 427	B45 Tie Rod Pos.7	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
428	Fluid T.	TW-15	TE 428	C45 Tie Rod Pos.1	Measured	Measured	273. - 0.125E+04	K	0.64%FS
429	Fluid T.	TW-16	TE 429	C45 Tie Rod Pos.2	Measured	Measured	273. - 0.125E+04	K	0.64%FS
430	Fluid T.	TW-17	TE 430	C45 Tie Rod Pos.3	Measured	Measured	273. - 0.125E+04	K	0.64%FS
431	Fluid T.	TW-18	TE 431	C45 Tie Rod Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
432	Fluid T.	TW-19	TE 432	C45 Tie Rod Pos.5	Measured	Measured	273. - 0.125E+04	K	0.64%FS
433	Fluid T.	TW-20	TE 433	C45 Tie Rod Pos.6	Measured	Measured	273. - 0.125E+04	K	0.64%FS
434	Fluid T.	TW-21	TE 434	C45 Tie Rod Pos.7	Measured	Measured	273. - 0.125E+04	K	0.64%FS
435	Fluid T.	TW-22	TE 435	D45 Tie Rod Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
436	Fluid T.	TW-23	TE 436	D45 Tie Rod Pos.2	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
437	Fluid T.	TW-24	TE 437	D45 Tie Rod Pos.3	Failure	Not Measured	273. - 0.125E+04	K	0.64%FS
438	Fluid T.	TW-25	TE 438	D45 Tie Rod Pos.4	Failure	Not Measured	273. - 0.125E+04	K	0.64%FS
439	Fluid T.	TW-26	TE 439	D45 Tie Rod Pos.5	Failure	Not Measured	273. - 0.125E+04	K	0.64%FS
440	Fluid T.	TW-27	TE 440	D45 Tie Rod Pos.6	Failure	Not Measured	273. - 0.125E+04	K	0.64%FS
441	Fluid T.	TW-28	TE 441	D45 Tie Rod Pos.7	Failure	Not Measured	273. - 0.125E+04	K	0.64%FS
442	Fluid T.	TC- 1	TE 442	Channel Box A Inlet	Measured	Measured	273. - 0.125E+04	K	0.64%FS
443	Fluid T.	TC- 2	TE 443	Channel Box B Inlet	Measured	Measured	273. - 0.125E+04	K	0.64%FS
444	Fluid T.	TC- 3	TE 444	Channel Box C Inlet	Measured	Measured	273. - 0.125E+04	K	0.64%FS
445	Fluid T.	TC- 4	TE 445	Channel Box D Inlet	Measured	Measured	273. - 0.125E+04	K	0.64%FS
446	Fluid T.	TC- 5	TE 446	Channel Box Outlet A-1	Measured	Measured	273. - 0.125E+04	K	0.64%FS
447	Fluid T.	TC- 6	TE 447	Channel Box Outlet A-2	Measured	Measured	273. - 0.125E+04	K	0.64%FS
448	Fluid T.	TC- 7	TE 448	Channel Box Outlet A-3	Measured	Measured	273. - 0.125E+04	K	0.64%FS
449	Fluid T.	TC- 8	TE 449	Channel Box Outlet A-4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
450	Fluid T.	TC- 9	TE 450	Channel Box Outlet A-6	Measured	Measured	273. - 0.125E+04	K	0.64%FS

Table 3.2 Measurement List for RUNs 922 and 932 (Continued)

451Ch.- 500Ch.

Ch.	Item	Symbol	ID.	Location	RUN 922	RUN 932	Range	Unit	Accuracy
451	Fluid T.	TC-10	TE 451	Channel Box Outlet C-1	Measured	Measured	273. - 0.125E+04	K	0.64%FS
452	Fluid T.	TC-11	TE 452	Channel Box Outlet C-2	Measured	Measured	273. - 0.125E+04	K	0.64%FS
453	Fluid T.	TC-12	TE 453	Channel Box Outlet C-3	Measured	Measured	273. - 0.125E+04	K	0.64%FS
454	Fluid T.	TC-13	TE 454	Channel Box Outlet C-4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
455	Fluid T.	TC-14	TE 455	Channel Box Outlet C-6	Measured	Measured	273. - 0.125E+04	K	0.64%FS
456	Fluid T.	TG- 1	TE 456	Upper Tieplate A Up.1	Measured	Measured	273. - 0.125E+04	K	0.64%FS
457	Fluid T.	TG- 2	TE 457	Upper Tieplate A Up.2	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
458	Fluid T.	TG- 3	TE 458	Upper Tieplate A Up.3	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
459	Fluid T.	TG- 4	TE 459	Upper Tieplate A Up.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
460	Fluid T.	TG- 5	TE 460	Upper Tieplate A Up.5	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
461	Fluid T.	TG- 6	TE 461	Upper Tieplate A Up.6	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
462	Fluid T.	TG- 7	TE 462	Upper Tieplate A Up.7	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
463	Fluid T.	TG- 8	TE 463	Upper Tieplate A Up.8	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
464	Fluid T.	TG- 9	TE 464	Upper Tieplate A Up.9	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
465	Fluid T.	TG-10	TE 465	Upper Tieplate A Up.10	Measured	Measured	273. - 0.125E+04	K	0.64%FS
466	Fluid T.	TG-11	TE 466	Upper Tieplate A Lo.1	Measured	Measured	273. - 0.125E+04	K	0.64%FS
467	Fluid T.	TG-12	TE 467	Upper Tieplate A Lo.2	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
468	Fluid T.	TG-13	TE 468	Upper Tieplate A Lo.3	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
469	Fluid T.	TG-14	TE 469	Upper Tieplate A Lo.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
470	Fluid T.	TG-15	TE 470	Upper Tieplate A Lo.5	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
471	Fluid T.	TG-16	TE 471	Upper Tieplate A Lo.6	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
472	Fluid T.	TG-17	TE 472	Upper Tieplate A Lo.7	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
473	Fluid T.	TG-18	TE 473	Upper Tieplate A Lo.8	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
474	Fluid T.	TG-19	TE 474	Upper Tieplate A Lo.9	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
475	Fluid T.	TG-20	TE 475	Upper Tieplate A Lo.10	Measured	Measured	273. - 0.125E+04	K	0.64%FS
476	Fluid T.	TG-21	TE 476	Upper Tieplate C Up.1	Measured	Measured	273. - 0.125E+04	K	0.64%FS
477	Fluid T.	TG-22	TE 477	Upper Tieplate C Up.2	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
478	Fluid T.	TG-23	TE 478	Upper Tieplate C Up.3	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
479	Fluid T.	TG-24	TE 479	Upper Tieplate C Up.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
480	Fluid T.	TG-25	TE 480	Upper Tieplate C Up.5	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
481	Fluid T.	TG-26	TE 481	Upper Tieplate C Up.6	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
482	Fluid T.	TG-27	TE 482	Upper Tieplate C Up.7	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
483	Fluid T.	TG-28	TE 483	Upper Tieplate C Up.8	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
484	Fluid T.	TG-29	TE 484	Upper Tieplate C Up.9	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
485	Fluid T.	TG-30	TE 485	Upper Tieplate C Up.10	Measured	Measured	273. - 0.125E+04	K	0.64%FS
486	Fluid T.	TG-31	TE 486	Upper Tieplate C Lo.1	Failure	Measured	273. - 0.125E+04	K	0.64%FS
487	Fluid T.	TG-32	TE 487	Upper Tieplate C Lo.2	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
488	Fluid T.	TG-33	TE 488	Upper Tieplate C Lo.3	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
489	Fluid T.	TG-34	TE 489	Upper Tieplate C Lo.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
490	Fluid T.	TG-35	TE 490	Upper Tieplate C Lo.5	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
491	Fluid T.	TG-36	TE 491	Upper Tieplate C Lo.6	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
492	Fluid T.	TG-37	TE 492	Upper Tieplate C Lo.7	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
493	Fluid T.	TG-38	TE 493	Upper Tieplate C Lo.8	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
494	Fluid T.	TG-39	TE 494	Upper Tieplate C Lo.9	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
495	Fluid T.	TG-40	TE 495	Upper Tieplate C Lo.10	Measured	Measured	273. - 0.125E+04	K	0.64%FS
496	Slab T.	TB- 1	TE 496	C.B. A1 Inner ,Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
497	Slab T.	TB- 2	TE 497	C.B. A1 Inner ,Pos.2	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
498	Slab T.	TB- 3	TE 498	C.B. A1 Inner ,Pos.3	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
499	Slab T.	TB- 4	TE 499	C.B. A1 Inner ,Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
500	Slab T.	TB- 5	TE 500	C.B. A1 Inner ,Pos.5	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS

Table 3.2 Measurement List for RUNs 922 and 932 (Continued)

501Ch.- 550Ch.

Ch.	Item	Symbol	ID.		Location	RUN 922	RUN 932	Range	Unit	Accuracy
501	Slab T.	TB- 6	TE	501	C.B. A1 Inner ,Pos.6	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
502	Slab T.	TB- 7	TE	502	C.B. A1 Inner ,Pos.7	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
503	Slab T.	TB- 8	TE	503	C.B. A2 Inner ,Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
504	Slab T.	TB- 9	TE	504	C.B. A2 Inner ,Pos.2	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
505	Slab T.	TB-10	TE	505	C.B. A2 Inner ,Pos.3	Failure	Not Measured	273. - 0.125E+04	K	0.64%FS
506	Slab T.	TB-11	TE	506	C.B. A2 Inner ,Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
507	Slab T.	TB-12	TE	507	C.B. A2 Inner ,Pos.5	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
508	Slab T.	TB-13	TE	508	C.B. A2 Inner ,Pos.6	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
509	Slab T.	TB-14	TE	509	C.B. A2 Inner ,Pos.7	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
510	Slab T.	TB-15	TE	510	C.B. B Inner ,Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
511	Slab T.	TB-16	TE	511	C.B. B Inner ,Pos.2	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
512	Slab T.	TB-17	TE	512	C.B. B Inner ,Pos.3	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
513	Slab T.	TB-18	TE	513	C.B. B Inner ,Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
514	Slab T.	TB-19	TE	514	C.B. B Inner ,Pos.5	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
515	Slab T.	TB-20	TE	515	C.B. B Inner ,Pos.6	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
516	Slab T.	TB-21	TE	516	C.B. B Inner ,Pos.7	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
517	Slab T.	TB-22	TE	517	C.B. C Inner ,Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
518	Slab T.	TB-23	TE	518	C.B. C Inner ,Pos.2	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
519	Slab T.	TB-24	TE	519	C.B. C Inner ,Pos.3	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
520	Slab T.	TB-25	TE	520	C.B. C Inner ,Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
521	Slab T.	TB-26	TE	521	C.B. C Inner ,Pos.5	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
522	Slab T.	TB-27	TE	522	C.B. C Inner ,Pos.6	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
523	Slab T.	TB-28	TE	523	C.B. C Inner ,Pos.7	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
524	Slab T.	TB-29	TE	524	C.B. D Inner ,Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
525	Slab T.	TB-30	TE	525	C.B. D Inner ,Pos.2	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
526	Slab T.	TB-31	TE	526	C.B. D Inner ,Pos.3	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
527	Slab T.	TB-32	TE	527	C.B. D Inner ,Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
528	Slab T.	TB-33	TE	528	C.B. D Inner ,Pos.5	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
529	Slab T.	TB-34	TE	529	C.B. D Inner ,Pos.6	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
530	Slab T.	TB-35	TE	530	C.B. D Inner ,Pos.7	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
531	Fluid T.	TB-36	TE	531	C.B. A Outer ,Pos.1	Measured	Measured	273. - 0.125E+04	K	0.64%FS
532	Fluid T.	TB-37	TE	532	C.B. A Outer ,Pos.2	Measured	Measured	273. - 0.125E+04	K	0.64%FS
533	Fluid T.	TB-38	TE	533	C.B. A Outer ,Pos.3	Measured	Measured	273. - 0.125E+04	K	0.64%FS
534	Fluid T.	TB-39	TE	534	C.B. A Outer ,Pos.4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
535	Fluid T.	TB-40	TE	535	C.B. A Outer ,Pos.5	Measured	Measured	273. - 0.125E+04	K	0.64%FS
536	Fluid T.	TB-41	TE	536	C.B. A Outer ,Pos.6	Measured	Measured	273. - 0.125E+04	K	0.64%FS
537	Fluid T.	TB-42	TE	537	C.B. A Outer ,Pos.7	Measured	Measured	273. - 0.125E+04	K	0.64%FS
538	Fluid T.	TB-43	TE	538	C.B. C Outer ,Pos.1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
539	Fluid T.	TB-44	TE	539	C.B. C Outer ,Pos.2	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
540	Fluid T.	TB-45	TE	540	C.B. C Outer ,Pos.3	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
541	Fluid T.	TB-46	TE	541	C.B. C Outer ,Pos.4	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
542	Fluid T.	TB-47	TE	542	C.B. C Outer ,Pos.5	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
543	Fluid T.	TB-48	TE	543	C.B. C Outer ,Pos.6	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
544	Fluid T.	TB-49	TE	544	C.B. C Outer ,Pos.7	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
545	Fluid T.	TP- 1	TE	545	Lower Pl. Center 1	Measured	Measured	273. - 0.125E+04	K	0.64%FS
546	Fluid T.	TP- 2	TE	546	Lower Pl. Center 2	Measured	Measured	273. - 0.125E+04	K	0.64%FS
547	Fluid T.	TP- 3	TE	547	Lower Pl. Center 3	Measured	Measured	273. - 0.125E+04	K	0.64%FS
548	Fluid T.	TP- 4	TE	548	Lower Pl. Center 4	Measured	Measured	273. - 0.125E+04	K	0.64%FS
549	Fluid T.	TP- 5	TE	549	Lower Pl. Center 5	Measured	Measured	273. - 0.125E+04	K	0.64%FS
550	Fluid T.	TP- 6	TE	550	Lower Pl. Center 7	Measured	Measured	273. - 0.125E+04	K	0.64%FS

Table 3.2 Measurement List for RUNs 922 and 932 (Continued)

551Ch.- 600Ch.

Ch.	Item	Symbol	ID.	Location	RUN 922	RUN 932	Range	Unit	Accuracy
551	Slab T.	TP- 7	TE 551	Lower Pl. North 1	Measured	Not Measured	273. - 0.125E+04	K	0.64%FS
552	Slab T.	TP- 8	TE 552	Lower Pl. North 2	Measured	Not Measured	273. - 673.	K	0.64%FS
553	Slab T.	TP- 9	TE 553	Lower Pl. North 4	Measured	Not Measured	273. - 673.	K	0.64%FS
554	Slab T.	TP-10	TE 554	Lower Pl. North 6	Measured	Not Measured	273. - 673.	K	0.64%FS
555	Slab T.	TP-11	TE 555	Lower Pl. South 1	Measured	Not Measured	273. - 673.	K	0.64%FS
556	Slab T.	TP-12	TE 556	Lower Pl. South 2	Measured	Not Measured	273. - 673.	K	0.64%FS
557	Slab T.	TP-13	TE 557	Lower Pl. South 4	Measured	Not Measured	273. - 673.	K	0.64%FS
558	Slab T.	TP-14	TE 558	Lower Pl. South 6	Measured	Not Measured	273. - 673.	K	0.64%FS
559	Level	LB- 1	LM 559	C.B.Liquid Level A1-1	Measured	Not Measured	0.0 - 1.00	Arb.	
560	Level	LB- 2	LM 560	C.B.Liquid Level A1-2	Failure	Not Measured	0.0 - 1.00	Arb.	
561	Level	LB- 3	LM 561	C.B.Liquid Level A1-3	Measured	Not Measured	0.0 - 1.00	Arb.	
562	Level	LB- 4	LM 562	C.B.Liquid Level A1-4	Measured	Not Measured	0.0 - 1.00	Arb.	
563	Level	LB- 5	LM 563	C.B.Liquid Level A1-5	Measured	Not Measured	0.0 - 1.00	Arb.	
564	Level	LB- 6	LM 564	C.B.Liquid Level A1-6	Measured	Not Measured	0.0 - 1.00	Arb.	
565	Level	LB- 7	LM 565	C.B.Liquid Level A1-7	Failure	Not Measured	0.0 - 1.00	Arb.	
566	Level	LB- 8	LM 566	C.B.Liquid Level A2-1	Measured	Measured	0.0 - 1.00	Arb.	
567	Level	LB- 9	LM 567	C.B.Liquid Level A2-2	Measured	Measured	0.0 - 1.00	Arb.	
568	Level	LB-10	LM 568	C.B.Liquid Level A2-3	Measured	Measured	0.0 - 1.00	Arb.	
569	Level	LB-11	LM 569	C.B.Liquid Level A2-4	Measured	Measured	0.0 - 1.00	Arb.	
570	Level	LB-12	LM 570	C.B.Liquid Level A2-5	Measured	Measured	0.0 - 1.00	Arb.	
571	Level	LB-13	LM 571	C.B.Liquid Level A2-6	Measured	Measured	0.0 - 1.00	Arb.	
572	Level	LB-14	LM 572	C.B.Liquid Level A2-7	Measured	Measured	0.0 - 1.00	Arb.	
573	Level	LB-15	LM 573	C.B.Liquid Level B-1	Measured	Measured	0.0 - 1.00	Arb.	
574	Level	LB-16	LM 574	C.B.Liquid Level B-2	Measured	Measured	0.0 - 1.00	Arb.	
575	Level	LB-17	LM 575	C.B.Liquid Level B-3	Measured	Measured	0.0 - 1.00	Arb.	
576	Level	LB-18	LM 576	C.B.Liquid Level B-4	Measured	Measured	0.0 - 1.00	Arb.	
577	Level	LB-19	LM 577	C.B.Liquid Level B-5	Measured	Measured	0.0 - 1.00	Arb.	
578	Level	LB-20	LM 578	C.B.Liquid Level B-6	Measured	Measured	0.0 - 1.00	Arb.	
579	Level	LB-21	LM 579	C.B.Liquid Level B-7	Measured	Measured	0.0 - 1.00	Arb.	
580	Level	LB-22	LM 580	C.B.Liquid Level C-1	Measured	Measured	0.0 - 1.00	Arb.	
581	Level	LB-23	LM 581	C.B.Liquid Level C-2	Measured	Measured	0.0 - 1.00	Arb.	
582	Level	LB-24	LM 582	C.B.Liquid Level C-3	Measured	Measured	0.0 - 1.00	Arb.	
583	Level	LB-25	LM 583	C.B.Liquid Level C-4	Measured	Failure	0.0 - 1.00	Arb.	
584	Level	LB-26	LM 584	C.B.Liquid Level C-5	Measured	Measured	0.0 - 1.00	Arb.	
585	Level	LB-27	LM 585	C.B.Liquid Level C-6	Measured	Failure	0.0 - 1.00	Arb.	
586	Level	LB-28	LM 586	C.B.Liquid Level C-7	Measured	Measured	0.0 - 1.00	Arb.	
587	Level	LB-29	LM 587	C.B.Liquid Level D-1	Measured	Not Measured	0.0 - 1.00	Arb.	
588	Level	LB-30	LM 588	C.B.Liquid Level D-2	Measured	Not Measured	0.0 - 1.00	Arb.	
589	Level	LB-31	LM 589	C.B.Liquid Level D-3	Measured	Not Measured	0.0 - 1.00	Arb.	
590	Level	LB-32	LM 590	C.B.Liquid Level D-4	Measured	Not Measured	0.0 - 1.00	Arb.	
591	Level	LB-33	LM 591	C.B.Liquid Level D-5	Measured	Not Measured	0.0 - 1.00	Arb.	
592	Level	LB-34	LM 592	C.B.Liquid Level D-6	Measured	Not Measured	0.0 - 1.00	Arb.	
593	Level	LB-35	LM 593	C.B.Liquid Level D-7	Measured	Not Measured	0.0 - 1.00	Arb.	
594	Level	LL- 1	LM 594	Ch.Box Outlet A1-5	Measured	Not Measured	0.0 - 1.00	Arb.	
595	Level	LL- 2	LM 595	Ch.Box Outlet A1-6	Measured	Not Measured	0.0 - 1.00	Arb.	
596	Level	LL- 3	LM 596	Ch.Box Outlet A1-7	Failure	Not Measured	0.0 - 1.00	Arb.	
597	Level	LL- 4	LM 597	Ch.Box Outlet A2-5	Measured	Failure	0.0 - 1.00	Arb.	
598	Level	LL- 5	LM 598	Ch.Box Outlet A2-6	Measured	Measured	0.0 - 1.00	Arb.	
599	Level	LL- 6	LM 599	Ch.Box Outlet A2-7	Measured	Measured	0.0 - 1.00	Arb.	
600	Level	LL- 7	LM 600	Ch.Box Outlet A-1	Measured	Measured	0.0 - 1.00	Arb.	

Table 3.2 Measurement List for RUNs 922 and 932 (Continued)

601Ch.- 650Ch.

Ch.	Item	Symbol	ID.	Location	RUN 922	RUN 932	Range			Unit	Accuracy
601	Level	LL- 8	LM 601	Ch.Box Outlet A-2	Failure	Failure	0.0	-	1.00	Arb.	
602	Level	LL- 9	LM 602	Ch.Box Outlet A-3	Measured	Measured	0.0	-	1.00	Arb.	
603	Level	LL-10	LM 603	Ch.Box Outlet A-4	Measured	Measured	0.0	-	1.00	Arb.	
604	Level	LL-11	LM 604	Ch.Box Outlet A-6	Measured	Failure	0.0	-	1.00	Arb.	
605	Level	LL-12	LM 605	Ch.Box Outlet C1-5	Measured	Failure	0.0	-	1.00	Arb.	
606	Level	LL-13	LM 606	Ch.Box Outlet C1-6	Measured	Measured	0.0	-	1.00	Arb.	
607	Level	LL-14	LM 607	Ch.Box Outlet C1-7	Measured	Measured	0.0	-	1.00	Arb.	
608	Level	LL-15	LM 608	Ch.Box Outlet C2-5	Measured	Not Measured	0.0	-	1.00	Arb.	
609	Level	LL-16	LM 609	Ch.Box Outlet C2-6	Measured	Not Measured	0.0	-	1.00	Arb.	
610	Level	LL-17	LM 610	Ch.Box Outlet C2-7	Measured	Not Measured	0.0	-	1.00	Arb.	
611	Level	LL-18	LM 611	Ch.Box Outlet C-1	Measured	Measured	0.0	-	1.00	Arb.	
612	Level	LL-19	LM 612	Ch.Box Outlet C-2	Measured	Failure	0.0	-	1.00	Arb.	
613	Level	LL-20	LM 613	Ch.Box Outlet C-3	Measured	Measured	0.0	-	1.00	Arb.	
614	Level	LL-21	LM 614	Ch.Box Outlet C-4	Measured	Measured	0.0	-	1.00	Arb.	
615	Level	LL-22	LM 615	Ch.Box Outlet C-6	Measured	Measured	0.0	-	1.00	Arb.	
616	Level	LL-23	LM 616	Ch.Box Inlet A-1	Measured	Measured	0.0	-	1.00	Arb.	
617	Level	LL-24	LM 617	Ch.Box Inlet A-2	Measured	Measured	0.0	-	1.00	Arb.	
618	Level	LL-25	LM 618	Ch.Box Inlet B-1	Measured	Not Measured	0.0	-	1.00	Arb.	
619	Level	LL-26	LM 619	Ch.Box Inlet B-2	Failure	Not Measured	0.0	-	1.00	Arb.	
620	Level	LL-27	LM 620	Ch.Box Inlet C-1	Measured	Measured	0.0	-	1.00	Arb.	
621	Level	LL-28	LM 621	Ch.Box Inlet C-2	Measured	Measured	0.0	-	1.00	Arb.	
622	Level	LL-29	LM 622	Ch.Box Inlet D-1	Measured	Not Measured	0.0	-	1.00	Arb.	
623	Level	LL-30	LM 623	Ch.Box Inlet D-2	Measured	Not Measured	0.0	-	1.00	Arb.	
624	Level	LL-31	LM 624	Lower Pl. North 1	Measured	Measured	0.0	-	1.00	Arb.	
625	Level	LL-32	LM 625	Lower Pl. North 2	Measured	Measured	0.0	-	1.00	Arb.	
626	Level	LL-33	LM 626	Lower Pl. North 3	Measured	Measured	0.0	-	1.00	Arb.	
627	Level	LL-34	LM 627	Lower Pl. North 4	Measured	Measured	0.0	-	1.00	Arb.	
628	Level	LL-35	LM 628	Lower Pl. North 5	Measured	Measured	0.0	-	1.00	Arb.	
629	Level	LL-36	LM 629	Lower Pl. North 6	Measured	Failure	0.0	-	1.00	Arb.	
630	Level	LL-37	LM 630	Lower Pl. South 1	Measured	Not Measured	0.0	-	1.00	Arb.	
631	Level	LL-38	LM 631	Lower Pl. South 2	Measured	Not Measured	0.0	-	1.00	Arb.	
632	Level	LL-39	LM 632	Lower Pl. South 3	Measured	Not Measured	0.0	-	1.00	Arb.	
633	Level	LL-40	LM 633	Lower Pl. South 4	Measured	Not Measured	0.0	-	1.00	Arb.	
634	Level	LL-41	LM 634	Lower Pl. South 5	Measured	Not Measured	0.0	-	1.00	Arb.	
635	Level	LL-42	LM 635	Lower Pl. South 6	Measured	Not Measured	0.0	-	1.00	Arb.	
636	Level	LL-43	LM 636	Guide Tube North 0	Measured	Measured	0.0	-	1.00	Arb.	
637	Level	LL-44	LM 637	Guide Tube North 1	Measured	Measured	0.0	-	1.00	Arb.	
638	Level	LL-45	LM 638	Guide Tube North 3	Measured	Measured	0.0	-	1.00	Arb.	
639	Level	LL-46	LM 639	Guide Tube North 6	Measured	Measured	0.0	-	1.00	Arb.	
640	Level	LL-47	LM 640	Guide Tube South 0	Measured	Not Measured	0.0	-	1.00	Arb.	
641	Level	LL-48	LM 641	Guide Tube South 1	Measured	Not Measured	0.0	-	1.00	Arb.	
642	Level	LL-49	LM 642	Guide Tube South 3	Measured	Not Measured	0.0	-	1.00	Arb.	
643	Level	LL-50	LM 643	Guide Tube South 6	Measured	Not Measured	0.0	-	1.00	Arb.	
644	Level	L- 1	LM 644	Downcomer D-Side 1	Measured	Measured	0.0	-	1.00	Arb.	
645	Level	L- 2	LM 645	Downcomer D-Side 2	Measured	Measured	0.0	-	1.00	Arb.	
646	Level	L- 3	LM 646	Downcomer D-Side 3	Failure	Measured	0.0	-	1.00	Arb.	
647	Level	L- 4	LM 647	Downcomer D-Side 4	Measured	Measured	0.0	-	1.00	Arb.	
648	Level	L- 5	LM 648	Downcomer D-Side 5	Failure	Failure	0.0	-	1.00	Arb.	
649	Level	L- 6	LM 649	Downcomer B-Side 1	Measured	Not Measured	0.0	-	1.00	Arb.	
650	Level	L- 7	LM 650	Downcomer B-Side 2	Measured	Not Measured	0.0	-	1.00	Arb.	

Table 3.2 Measurement List for RUNs 922 and 932 (Continued)

651Ch.- 700Ch.

Ch.	Item	Symbol	ID.	Location	RUN 922	RUN 932	Range	Unit	Accuracy
651	Level	L- 8	LM 651	Downcomer B-Side 3	Measured	Not Measured	0.0 - 1.00	Arb.	
652	Level	L- 9	LM 652	Downcomer B-Side 4	Measured	Not Measured	0.0 - 1.00	Arb.	
653	Level	L-10	LM 653	Downcomer B-Side 5	Failure	Not Measured	0.0 - 1.00	Arb.	
654	Void	VF- 1	VD 654	A54 Tie Rod Pos.1	Not Measured	Not Measured	0.0 - 1.00	Arb.	
655	Void	VF- 2	VD 655	A54 Tie Rod Pos.2	Not Measured	Not Measured	0.0 - 1.00	Arb.	
656	Void	VF- 3	VD 656	A54 Tie Rod Pos.3	Not Measured	Not Measured	0.0 - 1.00	Arb.	
657	Void	VF- 4	VD 657	A54 Tie Rod Pos.4	Not Measured	Not Measured	0.0 - 1.00	Arb.	
658	Void	VF- 5	VD 658	A54 Tie Rod Pos.5	Not Measured	Not Measured	0.0 - 1.00	Arb.	
659	Void	VF- 6	VD 659	A54 Tie Rod Pos.6	Not Measured	Not Measured	0.0 - 1.00	Arb.	
660	Void	VF- 7	VD 660	A54 Tie Rod Pos.7	Not Measured	Not Measured	0.0 - 1.00	Arb.	
661	Void	VF- 8	VD 661	B54 Tie Rod Pos.1	Not Measured	Not Measured	0.0 - 1.00	Arb.	
662	Void	VF- 9	VD 662	B54 Tie Rod Pos.2	Not Measured	Not Measured	0.0 - 1.00	Arb.	
663	Void	VF-10	VD 663	B54 Tie Rod Pos.3	Not Measured	Not Measured	0.0 - 1.00	Arb.	
664	Void	VF-11	VD 664	B54 Tie Rod Pos.4	Not Measured	Not Measured	0.0 - 1.00	Arb.	
665	Void	VF-12	VD 665	B54 Tie Rod Pos.5	Not Measured	Not Measured	0.0 - 1.00	Arb.	
666	Void	VF-13	VD 666	B54 Tie Rod Pos.6	Not Measured	Not Measured	0.0 - 1.00	Arb.	
667	Void	VF-14	VD 667	B54 Tie Rod Pos.7	Not Measured	Not Measured	0.0 - 1.00	Arb.	
668	Void	VF-15	VD 668	C54 Tie Rod Pos.1	Not Measured	Not Measured	0.0 - 1.00	Arb.	
669	Void	VF-16	VD 669	C54 Tie Rod Pos.2	Not Measured	Not Measured	0.0 - 1.00	Arb.	
670	Void	VF-17	VD 670	C54 Tie Rod Pos.3	Not Measured	Not Measured	0.0 - 1.00	Arb.	
671	Void	VF-18	VD 671	C54 Tie Rod Pos.4	Not Measured	Not Measured	0.0 - 1.00	Arb.	
672	Void	VF-19	VD 672	C54 Tie Rod Pos.5	Not Measured	Not Measured	0.0 - 1.00	Arb.	
673	Void	VF-20	VD 673	C54 Tie Rod Pos.6	Not Measured	Not Measured	0.0 - 1.00	Arb.	
674	Void	VF-21	VD 674	C54 Tie Rod Pos.7	Not Measured	Not Measured	0.0 - 1.00	Arb.	
675	Void	VF-22	VD 675	D54 Tie Rod Pos.7	Not Measured	Not Measured	0.0 - 1.00	Arb.	
676	Void	VF-23	VD 676	D54 Tie Rod Pos.7	Not Measured	Not Measured	0.0 - 1.00	Arb.	
677	Void	VF-24	VD 677	D54 Tie Rod Pos.7	Not Measured	Not Measured	0.0 - 1.00	Arb.	
678	Void	VF-25	VD 678	D54 Tie Rod Pos.7	Not Measured	Not Measured	0.0 - 1.00	Arb.	
679	Void	VF-26	VD 679	D54 Tie Rod Pos.7	Not Measured	Not Measured	0.0 - 1.00	Arb.	
680	Void	VF-27	VD 680	D54 Tie Rod Pos.7	Not Measured	Not Measured	0.0 - 1.00	Arb.	
681	Void	VF-28	VD 681	D54 Tie Rod Pos.7	Not Measured	Not Measured	0.0 - 1.00	Arb.	
682	Void	VE- 1	VD 682	Channel A Outlet 1	Not Measured	Not Measured	0.0 - 1.00	Arb.	
683	Void	VE- 2	VD 683	Channel A Outlet 2	Not Measured	Not Measured	0.0 - 1.00	Arb.	
684	Void	VE- 3	VD 684	Channel A Outlet 3	Not Measured	Not Measured	0.0 - 1.00	Arb.	
685	Void	VE- 4	VD 685	Channel B Outlet 1	Not Measured	Not Measured	0.0 - 1.00	Arb.	
686	Void	VE- 5	VD 686	Channel B Outlet 2	Not Measured	Not Measured	0.0 - 1.00	Arb.	
687	Void	VE- 6	VD 687	Channel B Outlet 3	Not Measured	Not Measured	0.0 - 1.00	Arb.	
688	Void	VE- 7	VD 688	Channel C Outlet 1	Not Measured	Not Measured	0.0 - 1.00	Arb.	
689	Void	VE- 8	VD 689	Channel C Outlet 2	Not Measured	Not Measured	0.0 - 1.00	Arb.	
690	Void	VE- 9	VD 690	Channel C Outlet 3	Not Measured	Not Measured	0.0 - 1.00	Arb.	
691	Void	VE-10	VD 691	Channel D Outlet 1	Not Measured	Not Measured	0.0 - 1.00	Arb.	
692	Void	VE-11	VD 692	Channel D Outlet 2	Not Measured	Not Measured	0.0 - 1.00	Arb.	
693	Void	VE-12	VD 693	Channel D Outlet 3	Not Measured	Not Measured	0.0 - 1.00	Arb.	
694	Void	VE-13	VD 694	Lower Plenum Bottom 1	Not Measured	Not Measured	0.0 - 1.00	Arb.	
695	Void	VE-14	VD 695	Lower Plenum Bottom 2	Not Measured	Not Measured	0.0 - 1.00	Arb.	
696	Void	VE-15	VD 696	Lower Plenum Bottom 3	Not Measured	Not Measured	0.0 - 1.00	Arb.	
697	Void	VP- 1	VD 697	Lower Plenum Inlet	Not Measured	Not Measured	0.0 - 1.00	Arb.	
698	Void	VP- 2	VD 698	Lower Plenum Inlet	Not Measured	Not Measured	0.0 - 1.00	Arb.	

Table 3.3 Core Instrumentation Map

Item	Rod NO. \ Pos. DL	Core Outlet	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6	Pos.7	Core Inlet
		3660	3417	3114.5	2879.5	2527	2174.5	1939.5	1637	1454
Surface Temp.	A11		TF 1	TF 2	TF 3	TF 4	TF 5	TF 6	TF 7	
	A12		TF 8	TF 9	TF 10	TF 11	TF 12	TF 13	TF 14	
	A13		TF 15	TF 16	TF 17	TF 18	TF 19	TF 20	TF 21	
	A14		TF 22	TF 23	TF 24	TF 25	TF 26	TF 27	TF 28	
	A15		TF 29			TF 30				
	A17		TF 31			TF 32				
	A22		TF 33	TF 34	TF 35	TF 36	TF 37	TF 38	TF 39	
	A23		TF 40	TF 41	TF 42	TF 43	TF 44	TF 45	TF 46	
	A24		TF 47	TF 48	TF 49	TF 50	TF.51	TF 52	TF 53	
	A26		TF 54			TF 55				
	A28		TF 56			TF 57				
	A31		TF 58			TF 59				
	A33		TF 60	TF 61	TF 62	TF 63	TF 64	TF 65	TF 66	
	A34		TF 67	TF 68	TF 69	TF 70	TF 71	TF 72	TF 73	
	A35		TF 74			TF 75				
	A37		TF 76			TF 77				
	A42		TF 78			TF 79				
Fluid Temp.	A44	TC 1	TF180	TF181	TF182	TF183	TF184	TF185	TF186	TC 2
Surface Temp.	A45		TF 80			TF 81				
	A46		TF 82			TF 83				
	A48		TF 84			TF 85				
	A51		TF 86			TF 87				
	A53		TF 88			TF 89				
	A54		TF 90							
	A57		TF 91			TF 92				
	A62		TF 93			TF 94				
	A64		TF 95			TF 96				
	A66		TF 97			TF 98				
	A68		TF 99			TF100				
	A71		TF101			TF102				
	A73		TF103			TF104				
	A75		TF105			TF106				
	A77		TF107			TF108				

Table 3.3 Core Instrumentation Map (Continued)

Item	Pos. / Rod NO. \ DL	Core Outlet	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6	Pos.7	Core Inlet
		3660	3417	3114.5	2879.5	2527	2174.5	1939.5	1637	1454
Surface Temp.	A82		TF109			TF110				
	A84		TF111			TF112				
	A86		TF113			TF114				
	A88		TF115			TF116				
	B11					TF117				
	B13					TF118				
	B15		TF119	TF120	TF121	TF122	TF123	TF124	TF125	
	B31					TF126				
	B33					TF127				
	B35					TF128				
Fluid Temp.	B44	TC 3	TF187	TF188	TF189	TF190	TF191	TF192	TF193	TC 4
Surface Temp.	B51					TF129				
	B53					TF130				
	B85		TF131	TF132	TF133	TF134	TF135	TF136	TF137	
	C11					TF138				
	C13					TF139				
	C15					TF140				
	C31					TF141				
	C33		TF142	TF143	TF144	TF145	TF146	TF147	TF148	
	C35					TF149				
Fluid Temp.	C44	TC 5	TF194	TF195	TF196	TF197	TF198	TF199	TF200	TC 6
Surface Temp.	C51					TF150				
	C53					TF151				
	C77		TF152	TF153	TF154	TF155	TF156	TF157	TF158	
	D11					TF159				
	D13					TF160				
	D27		TF161	TF162	TF163	TF164	TF165	TF166	TF167	
	D31					TF168				
	D33					TF169				
	D35					TF170				
Fluid Temp.	D44	TC 7	TF201	TF202	TF203	TF204	TF205	TF206	TF207	TC 8
Surface Temp.	D51					TF171				
	D53					TF172				
	D88		TF173	TF174	TF175	TF176	TF177	TF178	TF179	

Table 3.3 Core Instrumentation Map (Continued)

Item	Pos. / Rod NO. \ DL	Core Outlet	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6	Pos.7	Core Inlet
		3660	3417	3114.5	2879.5	2527	2174.5	1939.5	1673	1454
Void	A55		VF 1	VF 2	VF 3	VF 4	VF 5	VF 6	VF 7	
	B55		VF 8	VF 9	VF 10	VF 11	VF 12	VF 13	VF 14	
	C55		VF 15	VF 16	VF 17	VF 18	VF 19	VF 20	VF 21	
	D55		VF 22	VF 23	VF 24	VF 25	VF 26	VF 27	VF 28	
Channel Box Surface Temp.	A1*		TB 1	TB 2	TB 3	TB 4	TB 5	TB 6	TB 7	
	A2*		TB 8	TB 9	TB 10	TB 11	TB 12	TB 13	TB 14	
	B*		TB 15	TB 16	TB 17	TB 18	TB 19	TB 20	TB 21	
	C*		TB 22	TB 23	TB 24	TB 25	TB 26	TB 27	TB 28	
	D*		TB 29	TB 30	TB 31	TB 32	TB 33	TB 34	TB 35	
Liquid Level in the Channel Box	A1*		LB 1	LB 2	LB 3	LB 4	LB 5	LB 6	LB 7	
	A2*		LB 8	LB 9	LB 10	LB 11	LB 12	LB 13	LB 14	
	B*		LB 15	LB 16	LB 17	LB 18	LB 19	LB 20	LB 21	
	C*		LB 22	LB 23	LB 24	LB 25	LB 26	LB 27	LB 28	
	D*		LB 29	LB 30	LB 31	LB 32	LB 33	LB 34	LB 35	

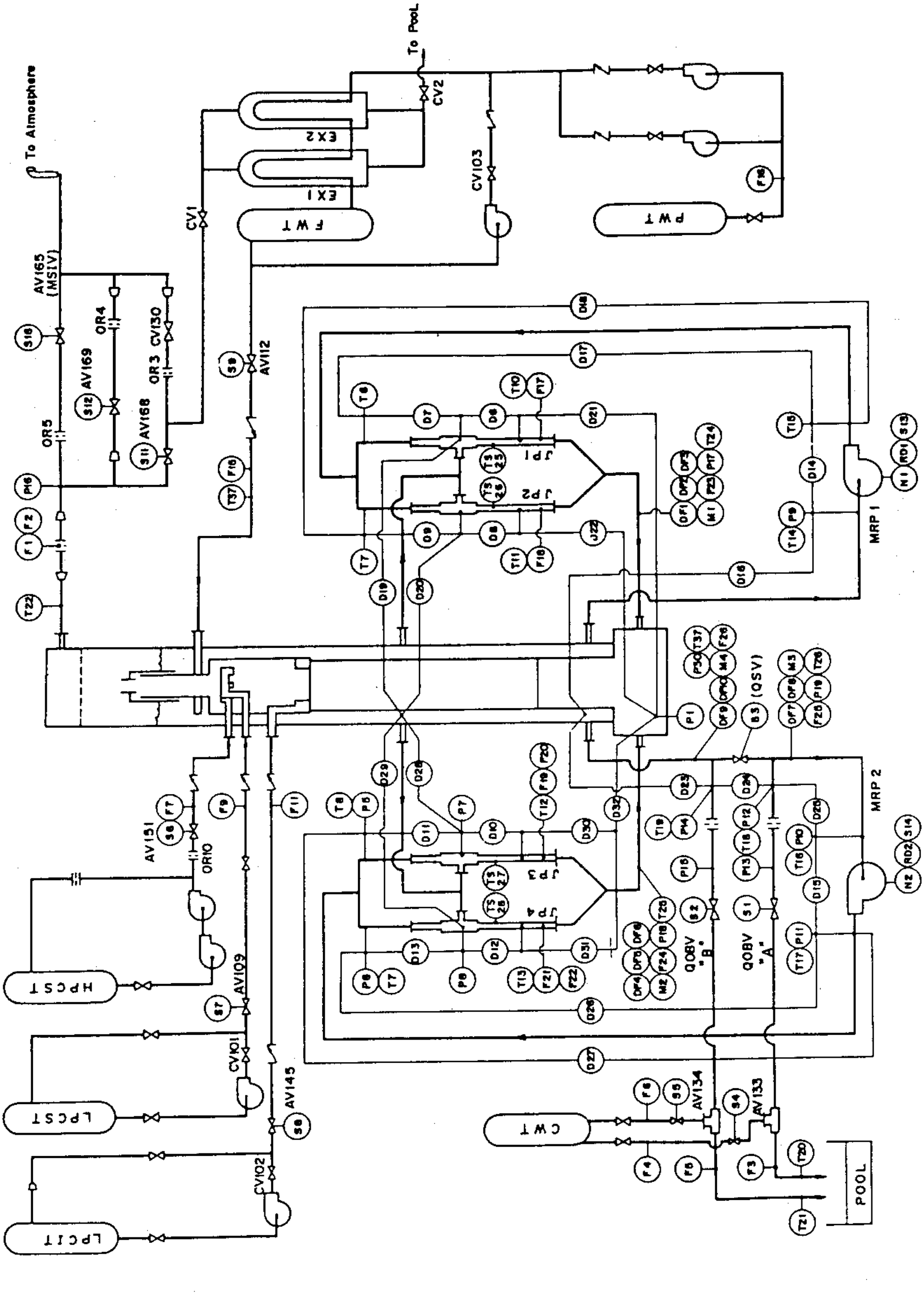


Fig. 3.1 Instrumentation Location of ROSA-III Test Facility

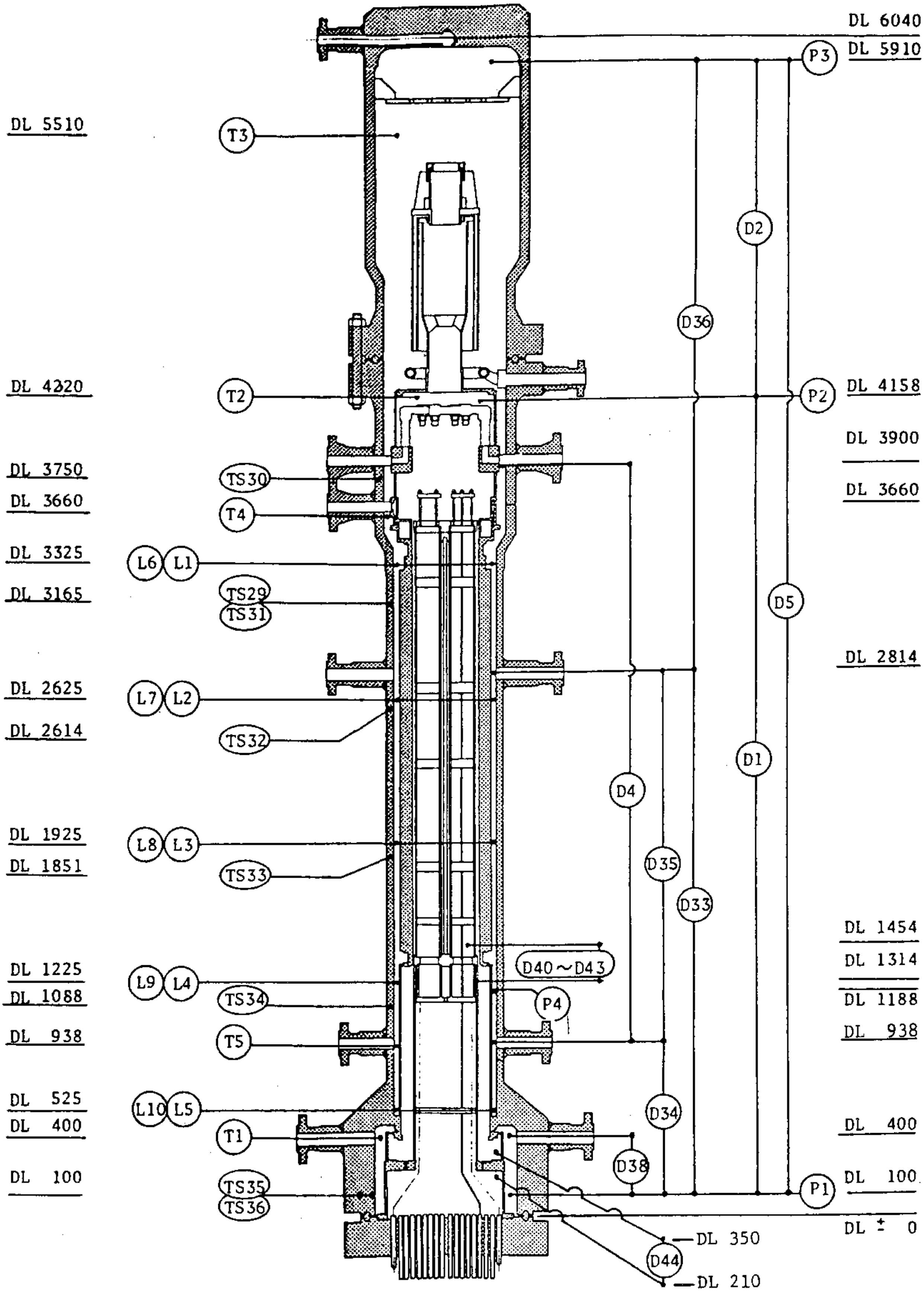


Fig. 3.2 Instrumentation Location in Pressure Vessel

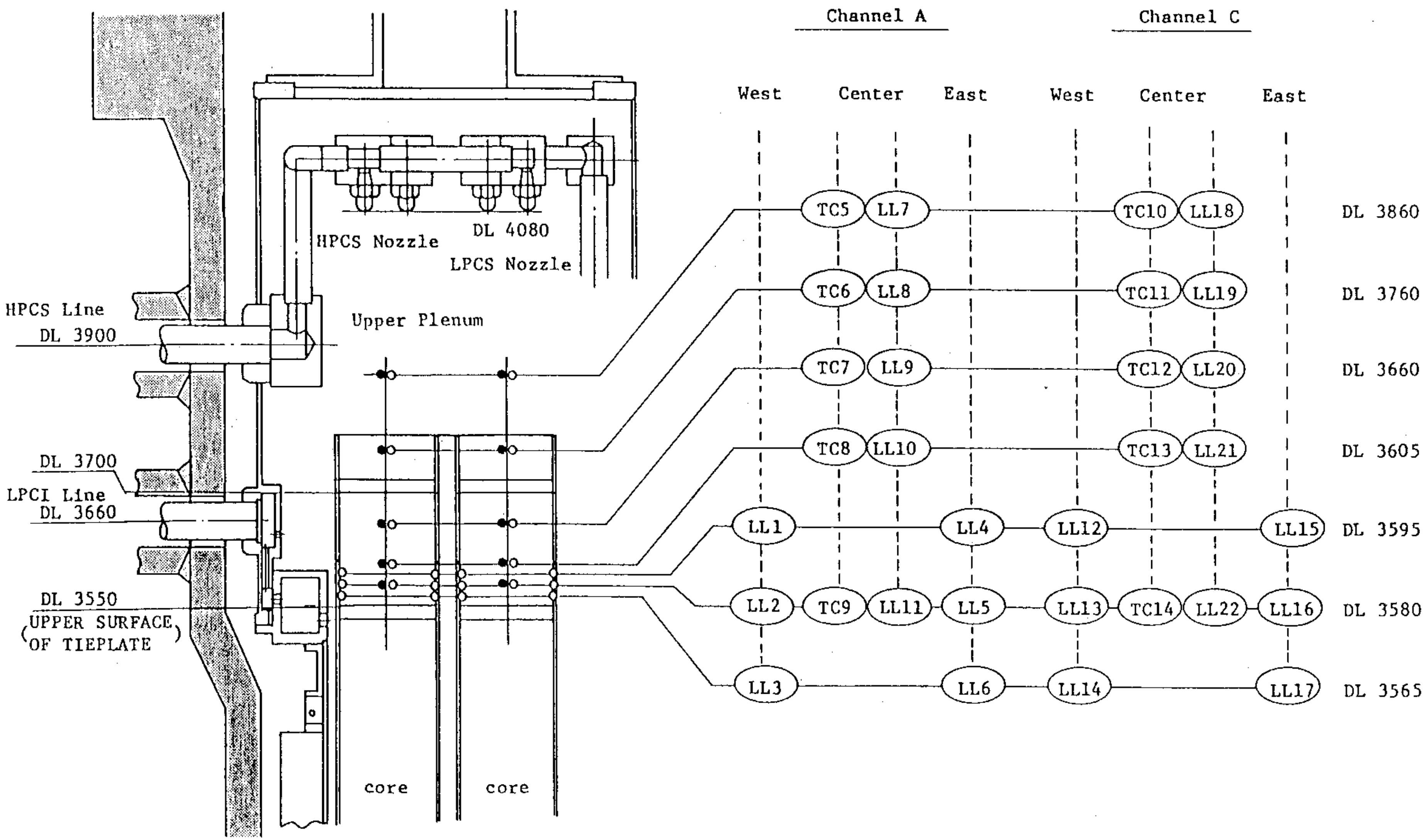
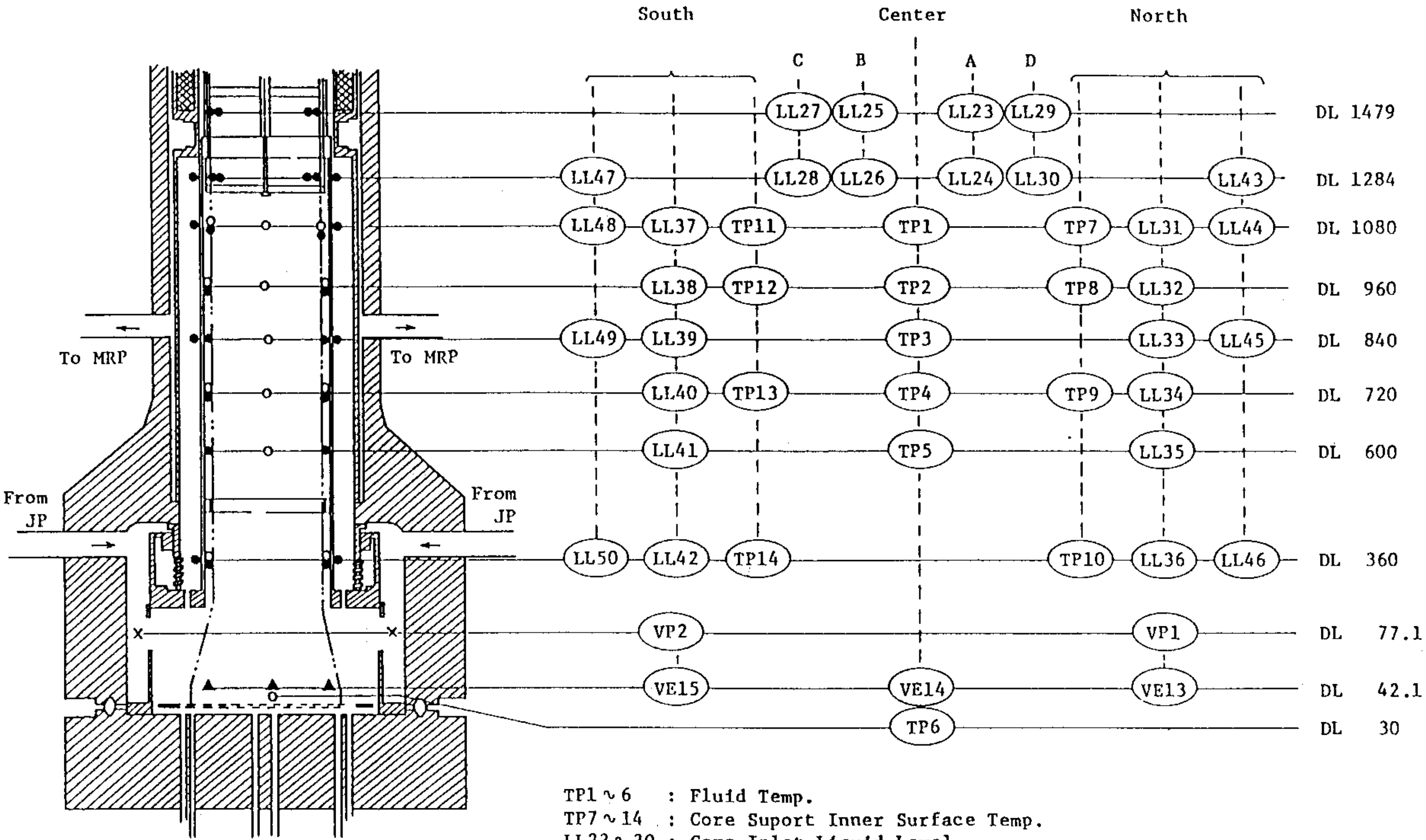
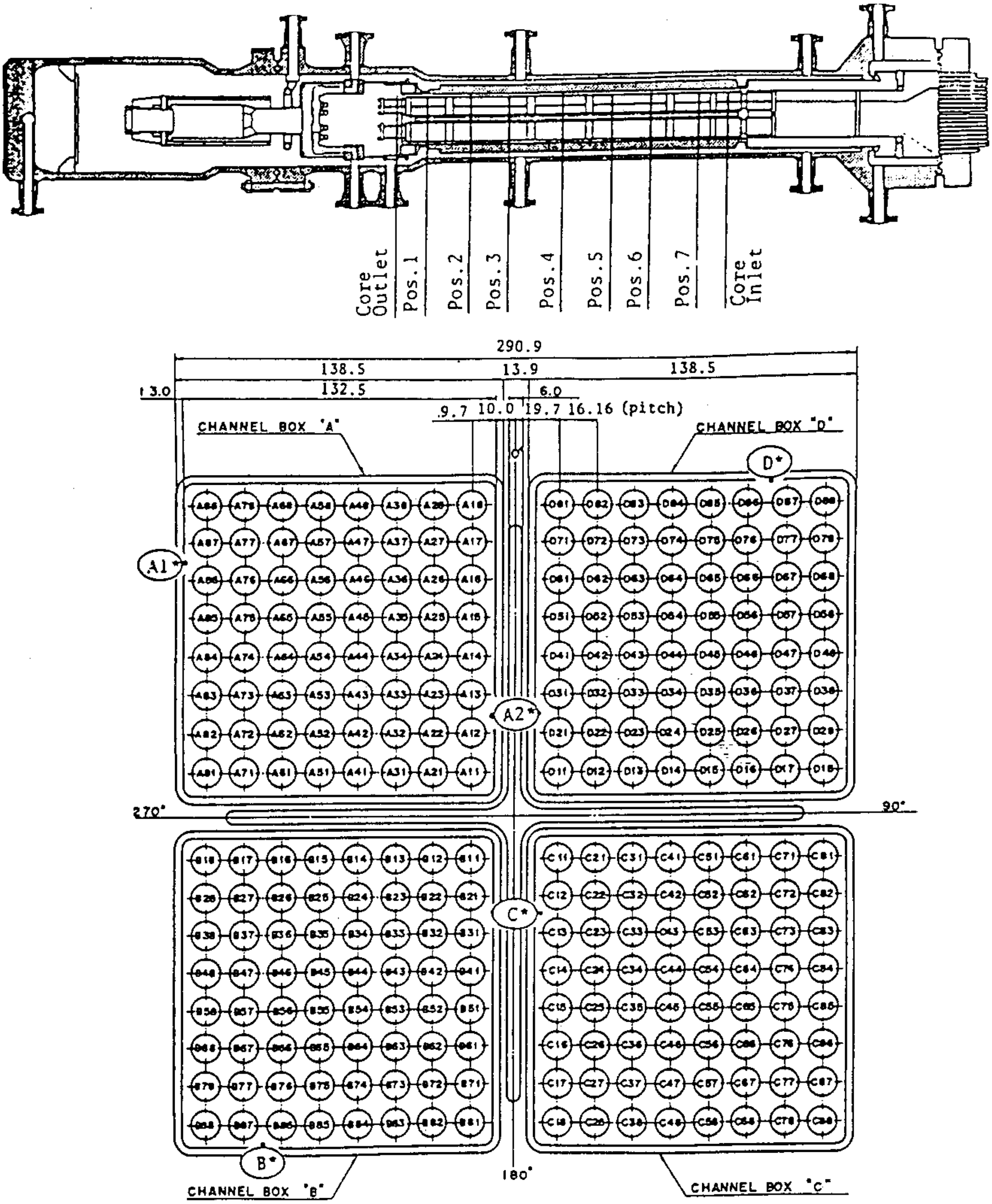


Fig. 3.3 Upper Plenum Instrumentation



TP1 ~ 6 : Fluid Temp.
TP7 ~ 14 : Core Suport Inner Surface Temp.
LL23 ~ 30 : Core Inlet Liquid Level
LL31 ~ 42 : Lower Plenum Liquid Level
LL43 ~ 50 : Guide Tube Liquid Level

Fig. 3.4 Lower Plenum Instrumentation

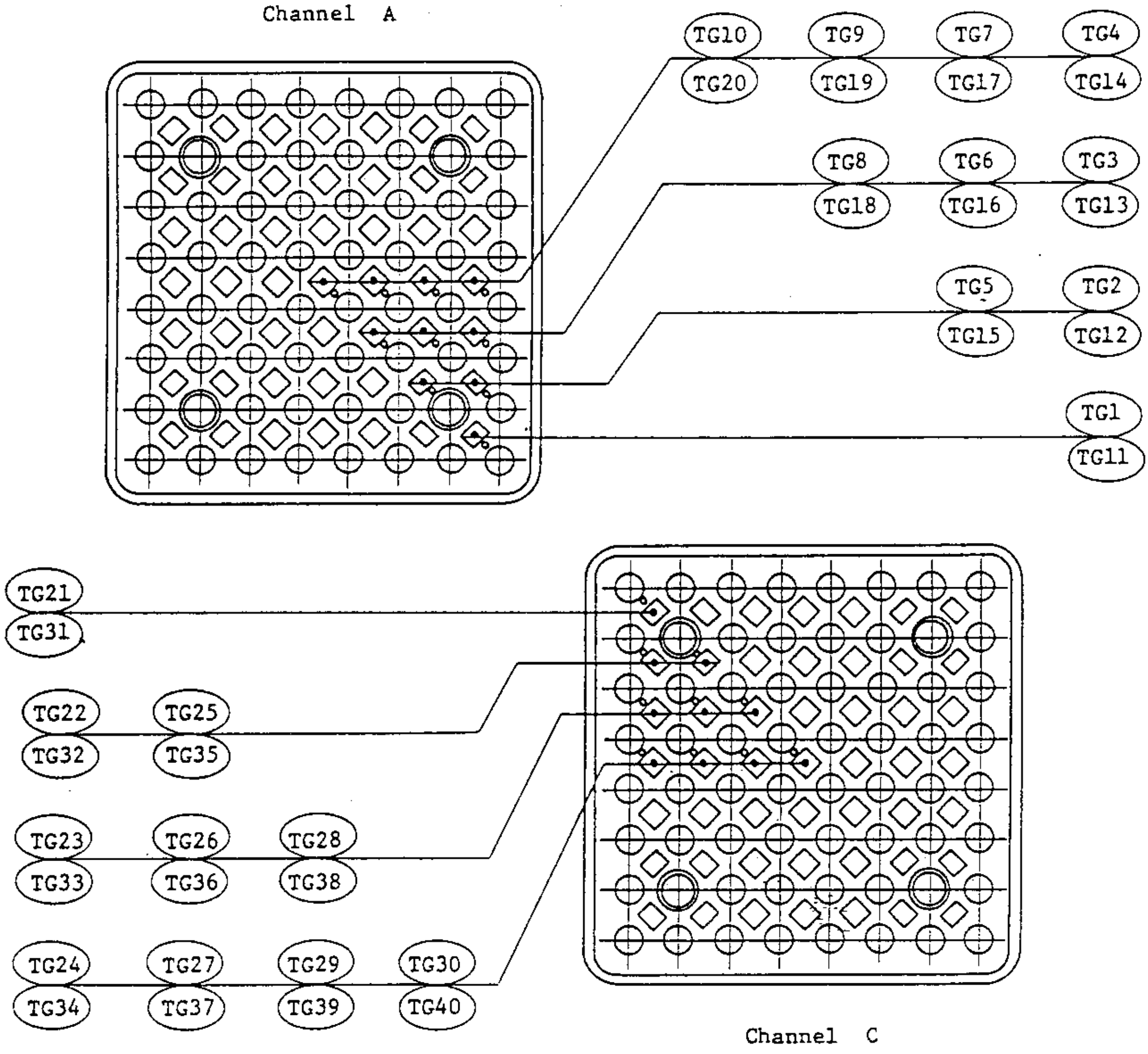


Heater rod O.D. is 12.27mm

A54,B54,C54 and D54 are water rod simulators with void probes, O.D.= 15.01mm

A45,B45,C45 and D45 are water rod simulators with thermocouples, O.D.= 15.01mm

Fig. 3.5 Core Instrumentation (cf. Table 3.3)



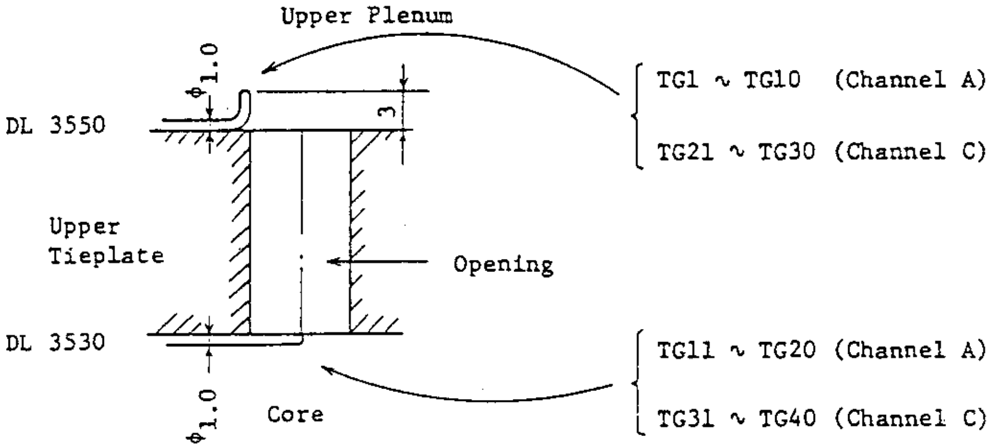


Fig. 3.6 Upper Tieplate Instrumentation

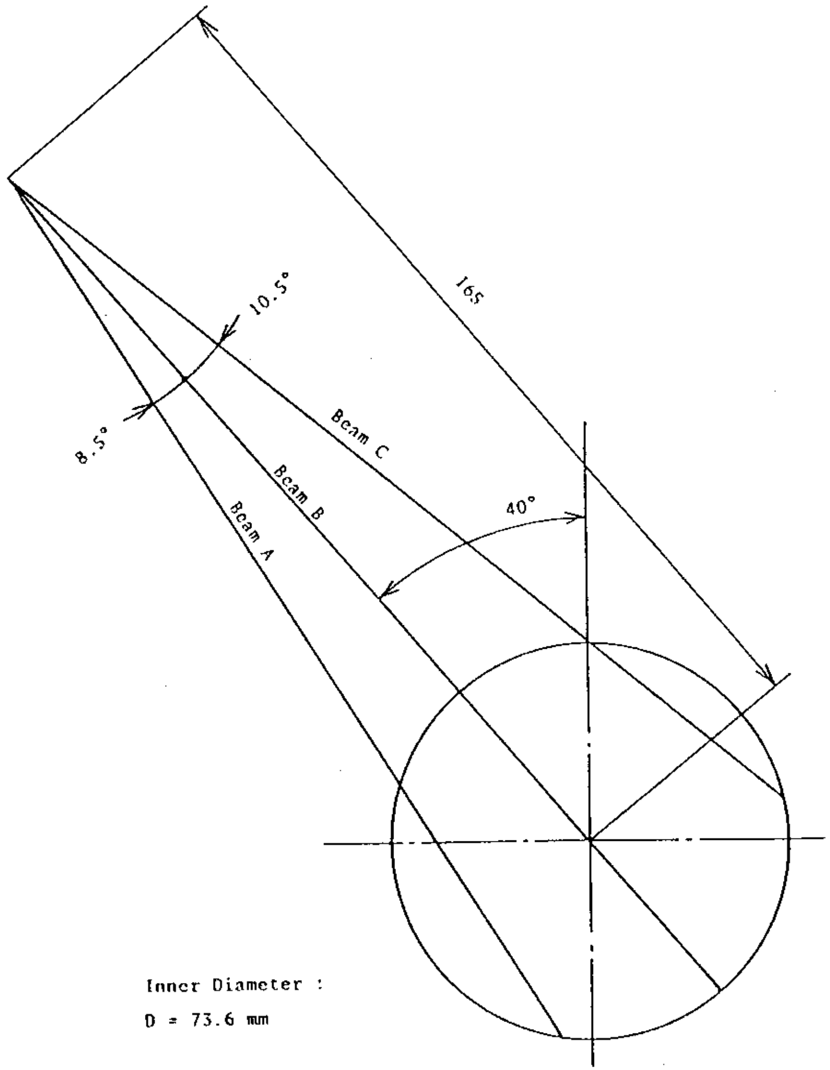


Fig. 3.7 Beam Directions of Three-Beam Gamma Densitometer

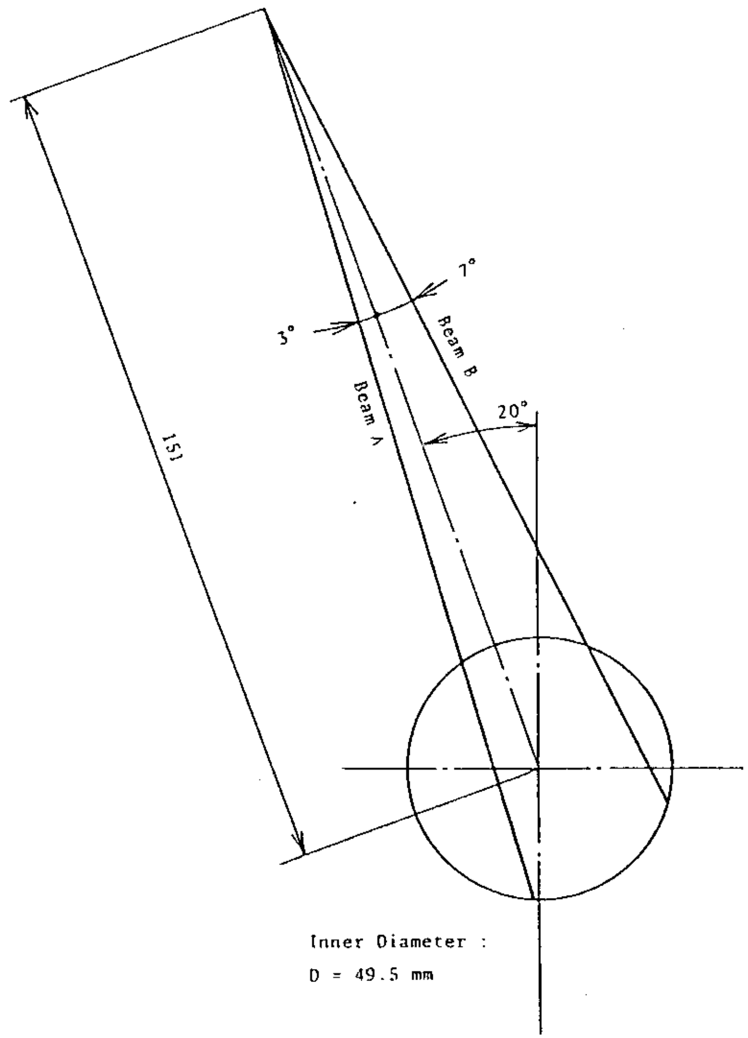


Fig. 3.8 Beam Directions of Two-Beam Gamma Densitometer

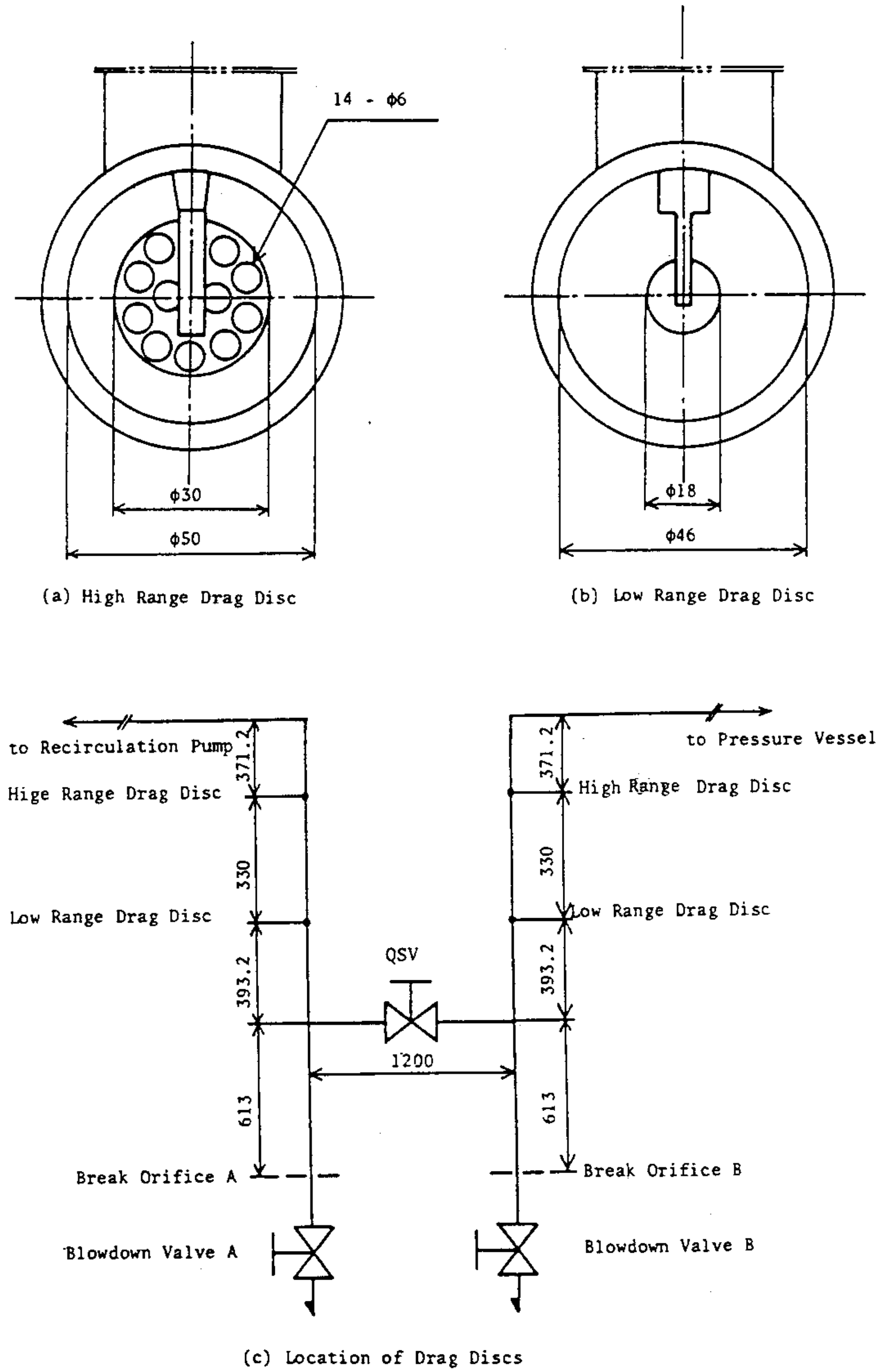


Fig. 3.9 Arrangement and Location of Drag Disks

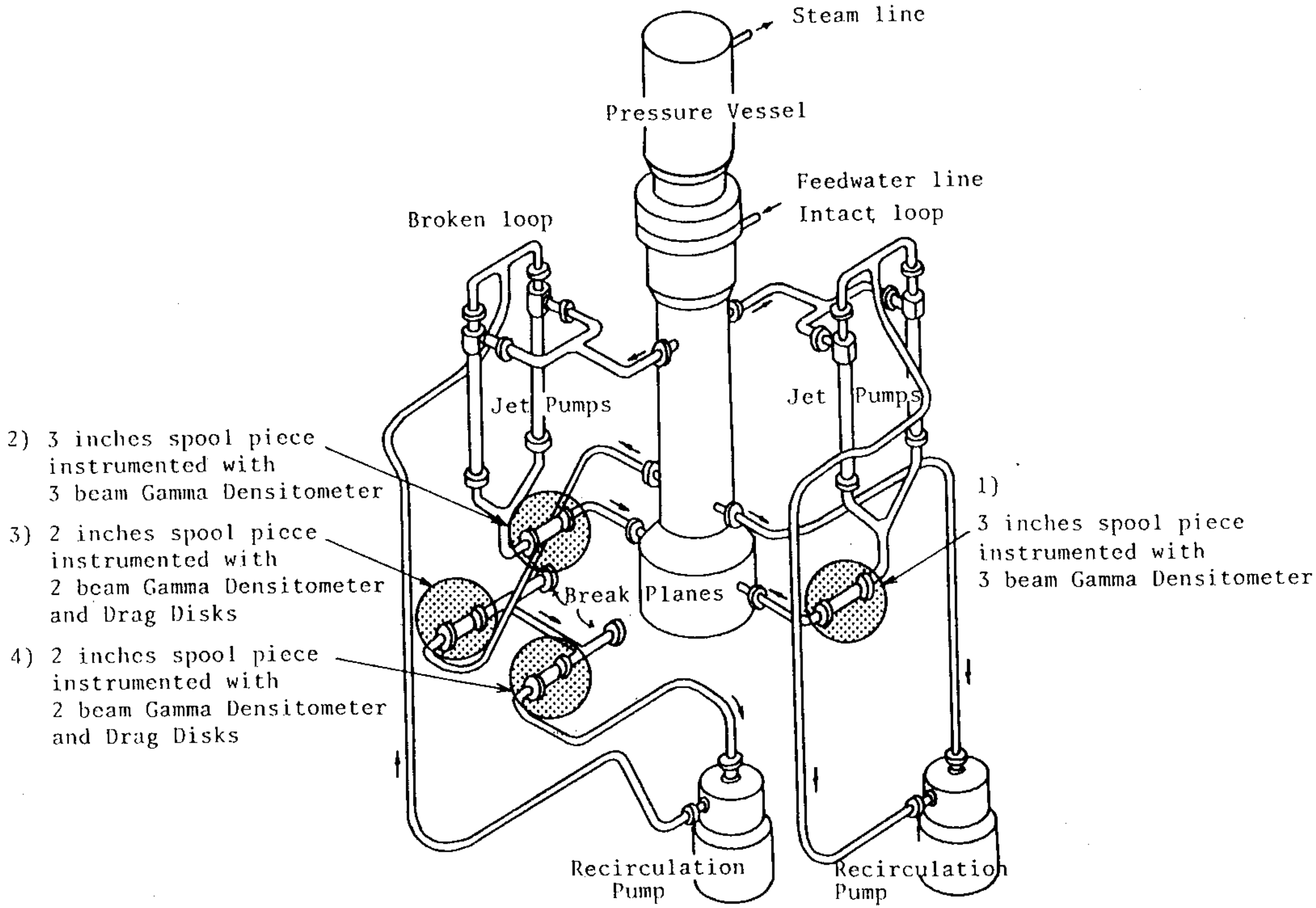


Fig. 3.10 Location of Two-Phase Flow Measurement Spool Pieces

Table 4.1 Test Conditions of RUNs 922 and 932

Parameters	Specified Value	Measured Value	
		RUN 922	RUN 932
Break Conditions			
Location	MRP Suction	←	←
Type	Split	←	←
Break Orifice Diameter (mm)	5.9	←	←
Initial System Conditions			
Steam Dome Pressure (MPa)	7.35	7.35	7.35
Lower Plenum Temperature (K)	551.7	552.4	552.7
Lower Plenum Subcooling (K)	10.5	9.8	9.5
Core Inlet Flow Rate (kg/s)	16.0	16.4	18.1
Core Outlet Quality*	13.8	14.1	
Electric Core Power (kW) (Channel A + (B+C+D))	1260 + 2700	1262 + 2700	1273 + 2704
Maximum Linear Heat Rate(kW/m)			
Channel A P.F.=1.1	16.65	16.65	16.82
P.F.=1.0	15.13	15.13	15.29
P.F.=0.875	13.24	13.24	13.38
Channel B,C,D P.F.=1.1	11.89	11.89	12.01
P.F.=1.0	10.81	10.81	10.92
P.F.=0.875	9.46	9.46	9.56
Water Level in PV (m)	5.0	5.0	5.04
Feedwater Conditions			
Temperature (K)	489.0	490.0	489.0
Flow Rate (kg/s)	2.39	Fig.5.1. 40	Fig.5.1. 40
Initiation of Line Closure (s)	2.0	1.4	1.4

* include core bypass flow

Table 4.1 Test Conditions of RUNs 922 and 932 (contd.)

Parameters	Specified Value	Measured Value	
		RUN 922	RUN 932
Steam Discharge Conditions			
Steady State Flow Rate (kg/s)	2.39	2.06	2.07
Transient Flow Rate (kg/s)		Fig.5.1. 38	Fig.5.1. 38
Orifice Diameter (mm)	18.0	←	←
Initiation of Line Closure* (s)	L2 + 3	23.1	29.2
Valve Setting Pressure (MPa) System Pressure Control Valve Safety Relief Valve (S/RV)	 6.67 8.14	 6.62 8.16	 6.6 8.1
ECCS Conditions			
HPCS	not used	←	←
LPCS			
Initiation Conditions*	L1 + 40 s and P < 2.16 MPa	2.27 MPa (at 330 s)	2.18 MPa (at 426 s)
Coolant Temperature (K)	313	313	313
Injection Flow Rate (m /s)	1.13 x 10	Fig.5.1. 39	Fig.5.1. 39
LPCI			
Initiation Conditions*	L1 + 40 s and P < 1.57 MPa	1.72 MPa (at 426 s)	1.66 MPa (at 592 s)
Coolant Temperature (K)	313	313	313
Injection Flow Rate (m /s)	3.50 x 10	Fig.5.1. 39	Fig.5.1. 39
ADS			
Initiation Condition*	L1 + 120 s	131 s	164 s
Flow Rate	BWR Scaled Flow	Fig.5.1. 38	Fig.5.1. 38
Orifice Diameter (mm)	15.5	15.5	11.0

* Each trip level is as follows;

L3 Level for Scram (Initial Level) : 5.0 m from PV Bottom
L2 Level for MSIV and HPCS : 4.76 m from PV Bottom
L1 Level for LPCS, LPCI and ADS : 4.25 m from PV Bottom

Table 4.2 Characteristics of Steam Discharge Line Valves

Valve	Close to Open (sec)	Open to Close (sec)
AV165	Not Used	Not Used
AV168	-	0.1
AV169	0.3	2.0

Orifice	Diameter (mm)	Area (mm^2)
OR3	18.0	254.5
OR4	15.5 *	188.7
OR5	Not Used (Blind)	Not Used (Blind)

* 11.0 in RUN 932

Table 4.3 Control Sequence for Steam Discharge Line Valves

Time	$t < 0$ s	$t = 0$ s (Break)	$P \leqq 6.67$MPa	L2 + 3 s	---	$P \geqq 8.14$MPa	---	L1 + 120 s
CV-1	Open	Close (Manual)	Closed	Closed		Closed		Closed
CV-2 (see Fig.2.3)	Open	Close (Manual)	Closed	Closed		Closed		Closed
CV-130	Control to maintain steady state pressure	Open (Manual)	Control to maintain system pressure at 6.67MPa (Auto)	Close (Manual)		Control to maintain system pressure at 8.14MPa (Auto)		Closed
AV-168	Open	Open	Open	Open		Open		Close (Auto)
AV-169 (ADS Line)	Closed	Closed	Closed	Closed		Closed		Open (Auto)

t = 0 s : Break

t = L2 + 3 s : MSIV closure

t = L1 + 120 s : ADS valve opening

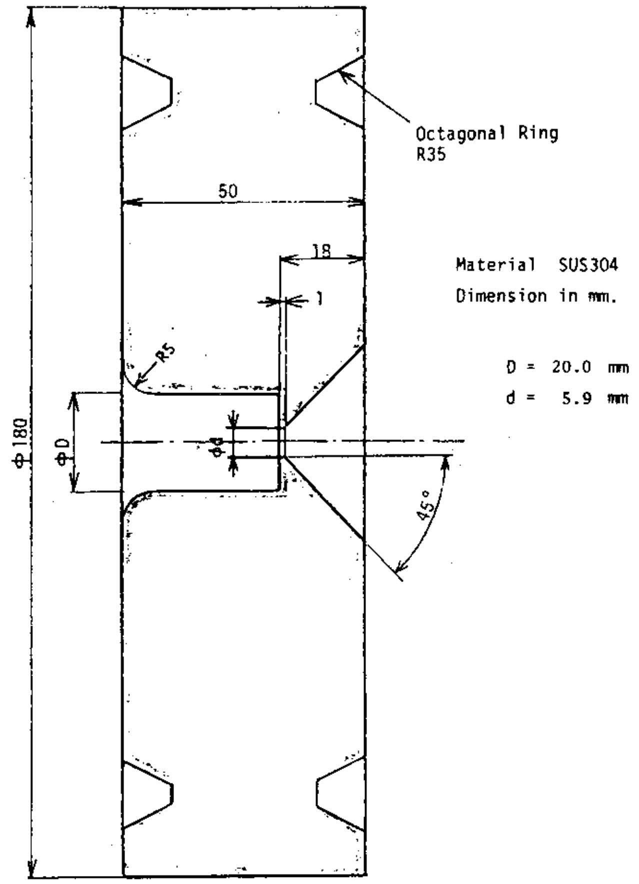


Fig. 4.1 Break orifice details

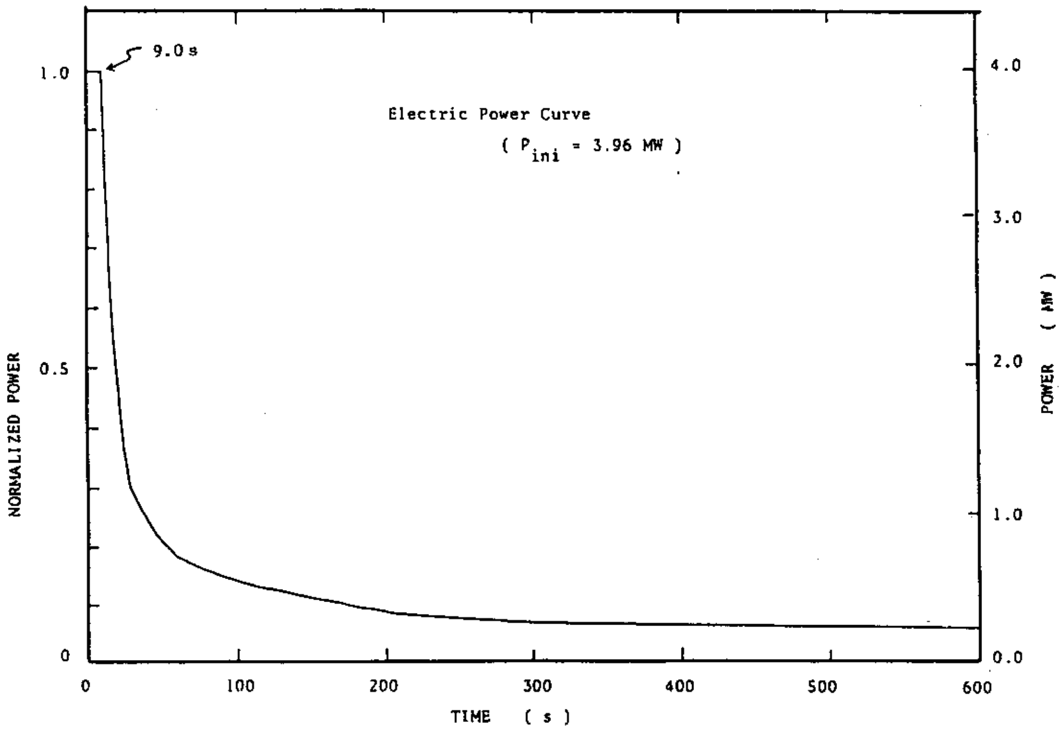


Fig. 4.2 Normalized Power Transient for ROSA-III Test

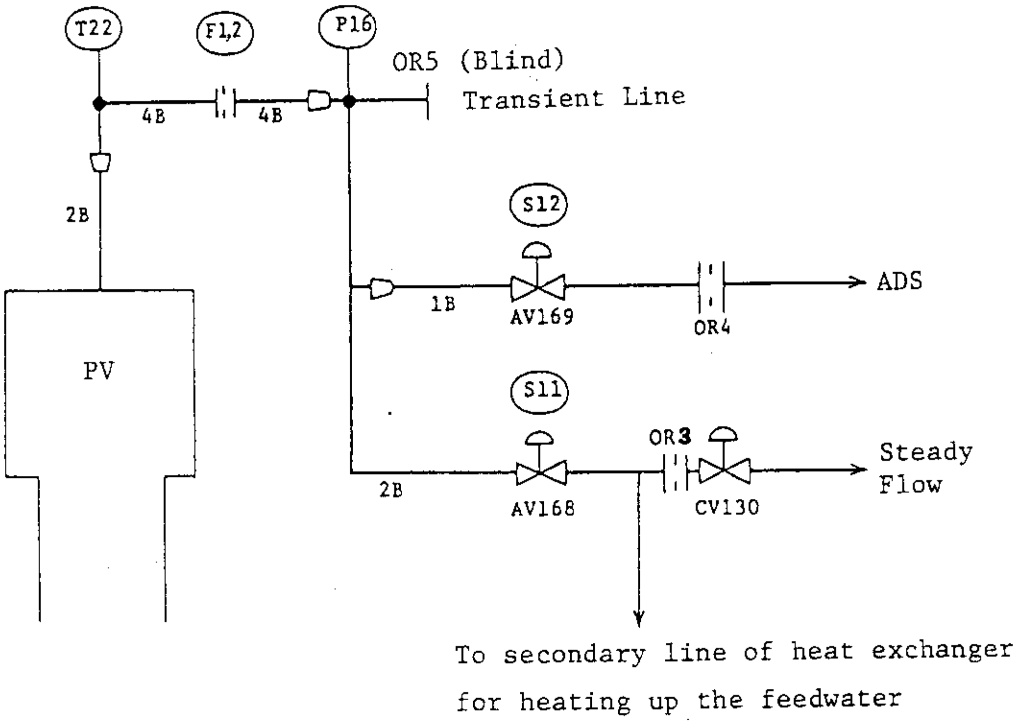


Fig. 4.3 Main Steam Line Schematic

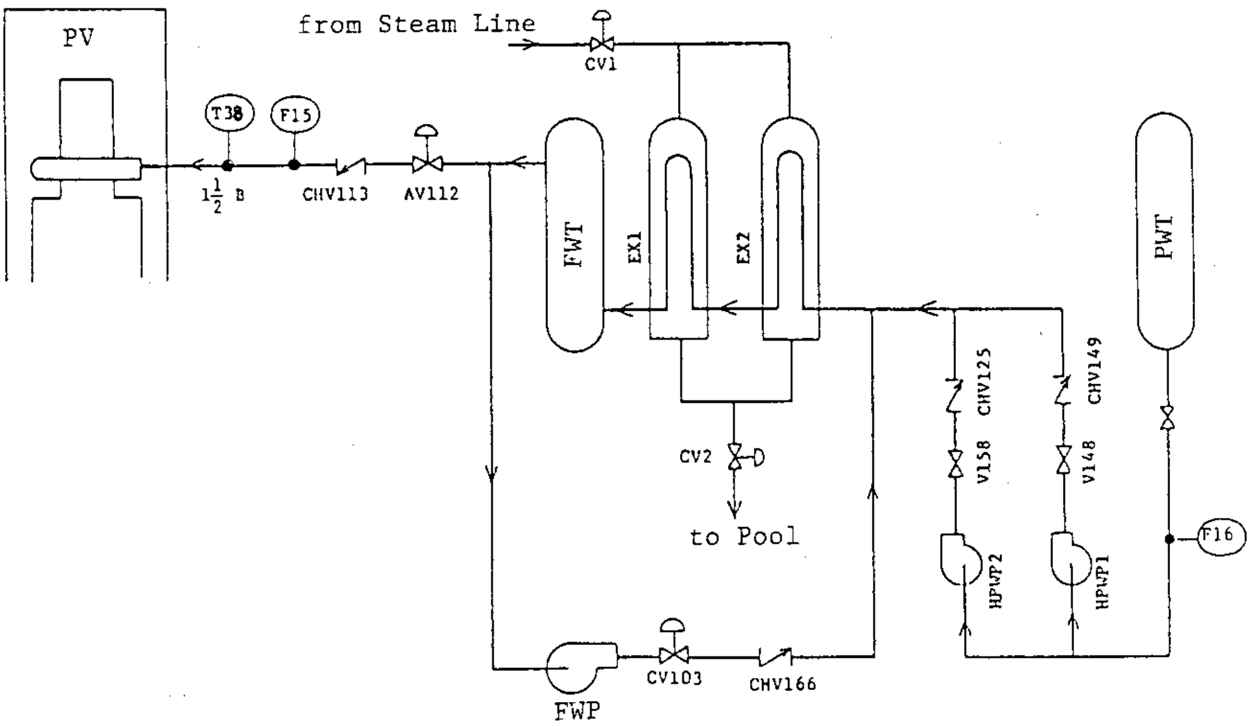


Fig. 4.4 Feedwater Line Schematic

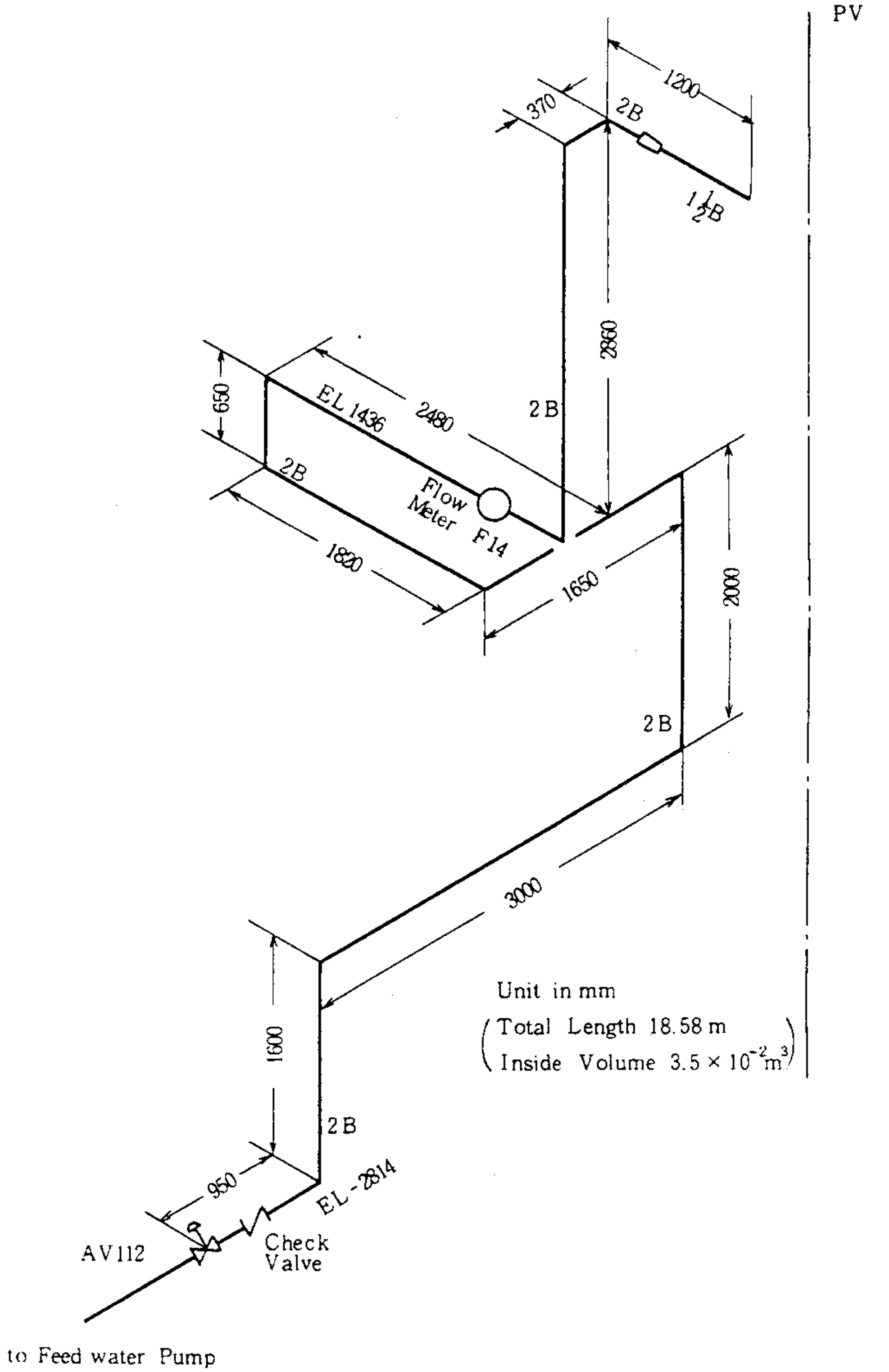


Fig. 4.5 Feedwater Line between Valve AV-112 and Pressure Vessel

Table 5.1 Test Procedure and Sequence of Events in RUNs 922 and 932

Time (s)		Events and Procedures
RUN 922	RUN 932	
-121	-109	Initiation of data recording with DATAC 2000B System
0.0	0.0	Initiation of break
		Initiation of core power control
		MRP1 and MRP2 coast-down
1.4	1.4	Feedwater began to stop
2.8	4.6	Closure of feedwater line
8.4	9.2	Initiation of core power decrease
21.0	27.0	L2 level signal
	22.5	Initiation of pressure control to maintain at 6.67 MPa
25.2	30.8	Closure of steam discharge line (MSIV closure)
41.6	46.1	L1 level signal
75.0	86.9	Initiation of pressure control to maintain at 8.14 MPa (SRV)
111	121	Jet pump suction nozzle uncovery
117	133	Dryout at the top of the core
162	167	Recirculation pump suction nozzle uncovery
	168	ADS valve opens
171	181	Initiation of Lower Plenum Flashing (LPF)
200	213	Dryout at the top of the core
270	309	Whole core uncovery
330	426	Initiation of Feedwater flashing
		LPCS actuation
431	458	PCT detected
426	592	LPCI actuation
438	614	Completion of core reflooding
456	612	All heater rods quenched
959	1097	Termination of data recording

Table 5.2 Maximum Cladding Temperature Distribution in the Core of RUN 922

	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6	Pos.7
A-11 rod	TE 201	TE 202	TE 203	TE 204	TE 205	TE 206	TE 207
PCT (K)	603.1	727.9	790.3	826.3	779.5	682.3	571.2
Time (s)	163.1	336.7	360.5	431.2	424.9	411.6	65.8
A-12 rod	TE 208	TE 209	TE 210	TE 211	TE 212	TE 213	TE 214
PCT (K)	603.1	718.3	775.9	795.1	745.9	672.7	571.9
Time (s)	161.7	335.3	349.3	387.8	409.5	401.8	82.6
A-13 rod	TE 215	TE 216	TE 217	TE 218	TE 219	TE 220	TE 221
PCT (K)	600.7	720.7	771.1	785.5	736.3	673.9	570.7
Time (s)	163.1	340.9	342.3	373.8	398.3	404.6	107.8
A-14 rod	TE 222	TE 223	TE 224	TE 225	TE 226	TE 227	TE 228
PCT (K)	597.1	709.9	756.7	773.5	729.1	663.1	570.7
Time (s)	162.4	341.6	350.7	375.2	404.6	399.0	95.9
A-15 rod	TE 229			TE 230			
PCT (K)	595.9			784.3			
Time (s)	163.1			382.2			
A-17 rod	TE 231			TE 232			
PCT (K)	637.9			830.3			
Time (s)	335.3			430.5			
A-22 rod	TE 233	TE 234	TE 235	TE 236	TE 237	TE 238	TE 239
PCT (K)	636.7	738.7	785.5	791.9	745.0	672.3	570.1
Time (s)	335.3	339.5	347.2	373.1	408.1	393.4	72.8
A-24 rod	TE 240	TE 241	TE 242	TE 243	TE 244	TE 245	TE 246
PCT (K)	600.8	723.3	768.5	777.8	730.8	664.7	571.0
Time (s)	163.8	339.5	350.0	374.5	397.6	399.0	85.4

	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6	Pos.7
A-26 rod	TE 247			TE 248			
PCT (K)	649.5			805.0			
Time (s)	336.0			429.1			
A-28 rod	TE 249			TE 250			
PCT (K)	649.5			818.2			
Time (s)	336.0			428.4			
A-31 rod	TE 251			TE 252			
PCT (K)	650.5			828.5			
Time (s)	336.0			424.2			
A-33 rod	TE 253	TE 254	TE 255	TE 256	TE 257	TE 258	TE 259
PCT (K)	622.9	708.2	745.9	746.8	683.7	628.6	570.1
Time (s)	335.3	340.2	341.6	359.8	345.8	352.8	89.6
A-34 rod	TE 260	TE 261	TE 262	TE 263	TE 264	TE 265	TE 266
PCT (K)	636.2	705.4	744.0	751.5	696.9	635.2	570.1
Time (s)	332.5	340.2	350.0	374.5	395.5	382.9	88.2
A-37 rod	TE 267			TE 268			
PCT (K)	798.5			657.1			
Time (s)	393.4			336.0			
A-42 rod	TE 269			TE 270			
PCT (K)	658.1			791.0			
Time (s)	336.0			371.0			
A-44 rod	TE 271	TE 272	TE 273	TE 274	TE 275	TE 276	TE 277
PCT (K)	636.2	696.9	734.6	744.0	688.4	625.7	569.1
Time (s)	336.0	338.8	340.9	380.1	413.7	359.8	105.7

Table 5.2 (Continued)

	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6	Pos.7
A-48 rod	TE 278			TE 279			
PCT (K)	647.6			789.1			
Time (s)	335.3			428.4			
A-51 rod	TE 280			TE 281			
PCT (K)	655.2			796.6			
Time (s)	336.7			379.4			
A-53 rod	TE 282			TE 283			
PCT (K)	643.8			749.7			
Time (s)	336.0			374.5			
A-57 rod	TE 284			TE 285			
PCT (K)	696.9			828.5			
Time (s)	435.4			431.9			
A-62 rod	TE 286			TE 287			
PCT (K)	669.5			811.6			
Time (s)	337.4			378.0			
A-66 rod	TE 288			TE 289			
PCT (K)	652.4			786.3			
Time (s)	355.6			420.0			
A-68 rod	TE 290			TE 291			
PCT (K)	669.5			819.1			
Time (s)	352.1			428.4			
A-71 rod	TE 292			TE 293			
PCT (K)	668.5			828.5			
Time (s)	344.4			388.5			

	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6	Pos.7
A-73 rod	TE 294			TE 295			
PCT (K)	673.3			827.6			
Time (s)	347.9			427.0			
A-75 rod	TE 296			TE 297			
PCT (K)	660.9			792.8			
Time (s)	343.0			386.4			
A-77 rod	TE 298	TE 299	TE 300	TE 301	TE 302	TE 303	TE 304
PCT (K)	678.0	749.7	789.1	801.3	745.0	655.2	------
Time (s)	351.4	358.4	370.3	397.6	426.3	388.5	------
A-82 rod	TE 305			TE 306			
PCT (K)	680.8			828.5			
Time (s)	344.4			399.0			
A-84 rod	TE 307			TE 308			
PCT (K)	667.6			816.3			
Time (s)	342.3			413.7			
A-85 rod	TE 309	TE 310	TE 311	TE 312	TE 313	TE 314	TE 315
PCT (K)	664.7	745.9	792.8	800.4	747.8	674.2	571.0
Time (s)	344.4	352.1	354.9	389.2	406.7	409.5	72.1
A-87 rod	TE 316	TE 317	TE 318	TE 319	TE 320	TE 321	TE 322
PCT (K)	674.2	745.9	795.7	799.4	740.3	665.7	569.1
Time (s)	351.4	352.8	351.4	382.9	427.7	391.3	74.2
A-88 rod	TE 323	TE 324	TE 325	TE 326	TE 327	TE 328	TE 329
PCT (K)	662.8	738.4	787.2	797.5	738.4	664.7	570.1
Time (s)	348.6	351.4	352.1	383.6	378.7	390.6	72.8

Table 5.2 (Continued)

	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6	Pos.7
B-11 rod	TE 330	TE 331	TE 332	TE 333	TE 334	TE 335	TE 336
PCT (K)	601.8	682.7	720.5	727.1	684.6	624.8	------
Time (s)	163.8	344.4	357.0	372.4	392.0	384.3	------
B-13 rod				TE 337			
PCT (K)				717.7			
Time (s)				358.4			
B-22 rod	TE 338	TE 339	TE 340	TE 341	TE 342	TE 343	TE 344
PCT (K)	611.4	679.9	709.2	713.0	661.9	611.4	570.1
Time (s)	333.2	337.4	345.8	353.5	367.5	364.7	95.9
B-31 rod				TE 345			
PCT (K)				710.1			
Time (s)				350.0			
B-33 rod				TE 346			
PCT (K)				678.0			
Time (s)				343.7			
B-51 rod				TE 347			
PCT (K)				693.1			
Time (s)				345.8			
B-53 rod				TE 348			
PCT (K)				671.4			
Time (s)				343.0			
B-66 rod				TE 349			
PCT (K)				701.6			
Time (s)				428.4			

	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6	Pos.7
B-77 rod	TE 350	TE 351	TE 352	TE 353	TE 354	TE 355	TE 356
PCT (K)	646.7	710.1	738.4	747.8	692.2	619.0	571.0
Time (s)	368.2	401.8	406.7	421.4	427.0	392.7	92.4
B-86 rod				TE 357			
PCT (K)				758.1			
Time (s)				424.9			
C-11 rod	TE 358	TE 359	TE 360	TE 361	TE 362	TE 363	TE 364
PCT (K)	601.8	605.6	628.6	698.8	667.6	619.0	570.1
Time (s)	163.1	258.3	269.5	345.1	358.4	370.3	71.4
C-13 rod	TE 365	TE 366	TE 367	TE 368	TE 369	TE 370	TE 371
PCT (K)	601.8	608.5	656.2	------	673.3	621.9	570.1
Time (s)	164.5	260.4	326.2	------	423.5	364.0	100.1
C-15 rod				TE 372			
PCT (K)				706.4			
Time (s)				353.5			
C-22 rod	TE 373	TE 374	TE 375	TE 376	TE 377	TE 378	TE 379
PCT (K)	573.9	626.7	656.2	701.6	660.9	613.3	571.0
Time (s)	325.5	331.8	337.4	347.2	355.6	360.5	94.5
C-31 rod				TE 380			
PCT (K)				706.4			
Time (s)				347.2			
C-33 rod	TE 381	TE 382	TE 383	TE 384	TE 385	TE 386	TE 387
PCT (K)	594.1	586.4	633.3	668.5	634.3	590.3	------
Time (s)	164.5	163.1	333.2	341.6	347.9	347.2	------

Table 5.2 (Continued)

	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6	Pos.7
C-35 rod				TE 388			
PCT (K)				684.6			
Time (s)				344.4			
C-66 rod				TE 389			
PCT (K)				700.7			
Time (s)				424.2			
C-68 rod				TE 390			
PCT (K)				749.7			
Time (s)				395.5			
C-77 rod	TE 391	TE 392	TE 393	TE 394	TE 395	TE 396	TE 397
PCT (K)	641.0	698.8	720.5	729.9	681.8	612.3	570.1
Time (s)	350.7	364.7	366.8	384.3	397.6	362.6	91.0
D-11 rod				TE 398			
PCT (K)				723.3			
Time (s)				380.1			
D-13 rod				TE 399			
PCT (K)				725.2			
Time (s)				352.1			
D-22 rod	TE 400	TE 401	TE 402	TE 403	TE 404	TE 405	TE 406
PCT (K)	583.6	649.5	694.1	717.7	677.1	620.0	569.1
Time (s)	335.3	333.2	337.4	350.7	366.1	369.6	74.2
D-31 rod				TE 407			
PCT (K)				722.4			
Time (s)				348.6			

	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6	Pos.7
D-33 rod				TE 408			
PCT (K)				672.3			
Time (s)				347.9			
D-51 rod				TE 409			
PCT (K)				710.1			
Time (s)				365.4			
D-53 rod				TE 410			
PCT (K)				681.8			
Time (s)				386.4			
D-66 rod				TE 411			
PCT (K)				700.9			
Time (s)				427.0			
D-77 rod				TE 412			
PCT (K)				727.9			
Time (s)				434.7			
D-86 rod				TE 413			
PCT (K)				726.1			
Time (s)				368.9			

Table 5.2 (Continued)

** Order of PCT (RUN 922) **

No. 1	A-17 rod	Pos. 4	PCT = 830.3 (K)	Time = 430.5 (s)
No. 2	A-31 rod	Pos. 4	PCT = 828.5 (K)	Time = 424.2 (s)
No. 3	A-57 rod	Pos. 4	PCT = 828.5 (K)	Time = 431.9 (s)
No. 4	A-71 rod	Pos. 4	PCT = 828.5 (K)	Time = 388.5 (s)
No. 5	A-82 rod	Pos. 4	PCT = 828.5 (K)	Time = 399.0 (s)
No. 6	A-73 rod	Pos. 4	PCT = 827.6 (K)	Time = 427.0 (s)
No. 7	A-11 rod	Pos. 4	PCT = 826.3 (K)	Time = 431.2 (s)
No. 8	A-68 rod	Pos. 4	PCT = 819.1 (K)	Time = 428.4 (s)
No. 9	A-28 rod	Pos. 4	PCT = 818.2 (K)	Time = 428.4 (s)
No.10	A-84 rod	Pos. 4	PCT = 816.3 (K)	Time = 413.7 (s)

Table 5.3 Maximum Cladding Temperature Distribution in the Core of RUN 932

	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6	Pos.7
A-11 rod	TE 201	TE 202	TE 203	TE 204	TE 205	TE 206	TE 207
PCT (K)	720.7	857.5	911.5	922.3	839.5	738.7	605.5
Time (s)	427.2	452.8	452.8	453.6	453.6	464.0	458.4
A-12 rod	TE 208	TE 209	TE 210	TE 211	TE 212	TE 213	TE 214
PCT (K)	703.9	827.5	882.7	888.7	802.3	713.5	580.3
Time (s)	424.0	452.0	454.4	454.4	453.6	468.0	455.2
A-13 rod	TE 215	TE 216	TE 217	TE 218	TE 219	TE 220	TE 221
PCT (K)	701.5	817.9	877.9	881.5	799.9	709.9	581.5
Time (s)	425.6	430.4	454.4	454.4	452.8	483.2	433.6
A-14 rod	TE 222	TE 223	TE 224	TE 225	TE 226	TE 227	TE 228
PCT (K)	------	------	------	------	------	------	------
Time (s)	------	------	------	------	------	------	------
A-15 rod	TE 229			TE 230			
PCT (K)	------			------			
Time (s)	------			------			
A-17 rod	TE 231			TE 232			
PCT (K)	------			887.5			
Time (s)	------			456.0			
A-22 rod	TE 233	TE 234	TE 235	TE 236	TE 237	TE 238	TE 239
PCT (K)	748.3	871.9	927.1	910.9	835.1	733.7	595.0
Time (s)	427.2	453.6	453.6	453.6	453.6	480.8	458.4
A-24 rod	TE 240	TE 241	TE 242	TE 243	TE 244	TE 245	TE 246
PCT (K)	------	------	------	------	------	------	------
Time (s)	------	------	------	------	------	------	------

	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6	Pos.7
A-26 rod	TE 247			TE 248			
PCT (K)	------			------			
Time (s)	------			------			
A-28 rod	TE 249			TE 250			
PCT (K)	------			897.2			
Time (s)	------			453.6			
A-31 rod	TE 251			TE 252			
PCT (K)	------			925.9			
Time (s)	------			454.4			
A-33 rod	TE 253	TE 254	TE 255	TE 256	TE 257	TE 258	TE 259
PCT (K)	717.6	809.1	852.5	841.1	766.6	697.9	570.1
Time (s)	433.6	453.6	453.6	453.6	452.8	506.4	85.6
A-34 rod	TE 260	TE 261	TE 262	TE 263	TE 264	TE 265	TE 266
PCT (K)	------	------	------	------	------	------	------
Time (s)	------	------	------	------	------	------	------
A-37 rod	TE 267			TE 268			
PCT (K)	------			------			
Time (s)	------			------			
A-42 rod	TE 269			TE 270			
PCT (K)	------			------			
Time (s)	------			------			
A-44 rod	TE 271	TE 272	TE 273	TE 274	TE 275	TE 276	TE 277
PCT (K)	------	------	------	------	------	------	------
Time (s)	------	------	------	------	------	------	------

Table 5.3 (Continued)

	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6	Pos.7
A-48 rod	TE 278			TE 279			
PCT (K)	------			------			
Time (s)	------			------			
A-51 rod	TE 280			TE 281			
PCT (K)	------			------			
Time (s)	------			------			
A-53 rod	TE 282			TE 283			
PCT (K)	------			------			
Time (s)	------			------			
A-57 rod	TE 284			TE 285			
PCT (K)	------			913.2			
Time (s)	------			496.0			
A-62 rod	TE 286			TE 287			
PCT (K)	------			------			
Time (s)	------			------			
A-66 rod	TE 288			TE 289			
PCT (K)	------			------			
Time (s)	------			------			
A-68 rod	TE 290			TE 291			
PCT (K)	------			917.9			
Time (s)	------			488.0			
A-71 rod	TE 292			TE 293			
PCT (K)	------			942.5			
Time (s)	------			455.2			

	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6	Pos.7
A-73 rod	TE 294			TE 295			
PCT (K)	------			933.0			
Time (s)	------			464.8			
A-75 rod	TE 296			TE 297			
PCT (K)	------			------			
Time (s)	------			------			
A-77 rod	TE 298	TE 299	TE 300	TE 301	TE 302	TE 303	TE 304
PCT (K)	791.0	888.6	928.3	911.3	819.1	715.8	------
Time (s)	464.0	475.2	476.0	468.8	466.4	468.0	------
A-82 rod	TE 305			TE 306			
PCT (K)	------			943.5			
Time (s)	------			457.6			
A-84 rod	TE 307			TE 308			
PCT (K)	943.5			920.7			
Time (s)	457.6			456.0			
A-85 rod	TE 309	TE 310	TE 311	TE 312	TE 313	TE 314	TE 315
PCT (K)	------	------	------	------	------	------	------
Time (s)	------	------	------	------	------	------	------
A-87 rod	TE 316	TE 317	TE 318	TE 319	TE 320	TE 321	TE 322
PCT (K)	773.1	870.8	917.9	913.2	824.7	728.0	594.1
Time (s)	464.8	464.8	464.8	464.0	460.0	469.6	457.6
A-88 rod	TE 323	TE 324	TE 325	TE 326	TE 327	TE 328	TE 329
PCT (K)	747.8	854.8	903.7	910.3	826.6	729.9	596.1
Time (s)	460.0	465.6	465.6	471.2	464.8	467.2	455.2

Table 5.3 (Continued)

	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6	Pos.7
B-11 rod	TE 330	TE 331	TE 332	TE 333	TE 334	TE 335	TE 336
PCT (K)	672.3	766.6	811.6	808.8	745.9	671.4	------
Time (s)	427.2	452.0	453.6	454.4	455.2	453.6	------
B-13 rod				TE 337			
PCT (K)				816.3			
Time (s)				452.8			
B-22 rod	TE 338	TE 339	TE 340	TE 341	TE 342	TE 343	TE 344
PCT (K)	689.3	776.9	822.9	818.2	742.1	665.7	574.9
Time (s)	426.4	452.8	452.8	453.6	454.4	460.0	85.6
B-31 rod				TE 345			
PCT (K)				------			
Time (s)				------			
B-33 rod				TE 346			
PCT (K)				------			
Time (s)				------			
B-51 rod				TE 347			
PCT (K)				------			
Time (s)				------			
B-53 rod				TE 348			
PCT (K)				------			
Time (s)				------			
B-66 rod				TE 349			
PCT (K)				------			
Time (s)				------			

	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6	Pos.7
B-77 rod	TE 350	TE 351	TE 352	TE 353	TE 354	TE 355	TE 356
PCT (K)	723.3	788.1	817.1	829.4	748.7	670.4	573.0
Time (s)	456.0	456.0	454.4	456.0	456.8	459.2	114.4
B-86 rod				TE 357			
PCT (K)				------			
Time (s)				------			
C-11 rod	TE 358	TE 359	TE 360	TE 361	TE 362	TE 363	TE 364
PCT (K)	619.0	674.2	735.5	795.7	742.1	674.2	568.1
Time (s)	317.6	336.0	426.4	468.8	460.0	457.6	88.8
C-13 rod	TE 365	TE 366	TE 367	TE 368	TE 369	TE 370	TE 371
PCT (K)	601.8	673.3	764.7	804.1	750.6	673.3	570.1
Time (s)	305.6	335.2	427.2	454.4	452.8	457.6	87.2
C-15 rod				TE 372			
PCT (K)				------			
Time (s)				------			
C-22 rod	TE 373	TE 374	TE 375	TE 376	TE 377	TE 378	TE 379
PCT (K)	607.6	676.1	760.9	811.6	746.8	669.5	571.0
Time (s)	422.4	336.0	427.2	456.0	457.6	483.2	88.0
C-31 rod				TE 380			
PCT (K)				------			
Time (s)				------			
C-33 rod	TE 381	TE 382	TE 383	TE 384	TE 385	TE 386	TE 387
PCT (K)	594.1	642.9	714.8	767.5	709.2	643.8	569.1
Time (s)	172.8	326.4	391.2	454.4	452.8	474.4	90.4

Table 5.3 (Continued)

	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6	Pos.7
C-35 rod				TE 388			
PCT (K)				------			
Time (s)				------			
C-66 rod				TE 389			
PCT (K)				------			
Time (s)				------			
C-68 rod				TE 390			
PCT (K)				------			
Time (s)				------			
C-77 rod	TE 391	TE 392	TE 393	TE 394	TE 395	TE 396	TE 397
PCT (K)	728.0	795.7	825.7	826.6	753.4	667.6	570.1
Time (s)	476.0	477.6	483.2	468.0	468.0	459.2	84.0
D-11 rod				TE 398			
PCT (K)				818.2			
Time (s)				457.6			
D-13 rod				TE 399			
PCT (K)				820.1			
Time (s)				452.8			
D-22 rod	TE 400	TE 401	TE 402	TE 403	TE 404	TE 405	TE 406
PCT (K)	606.6	704.5	791.0	822.9	755.3	674.2	570.1
Time (s)	307.2	426.4	429.6	455.2	461.6	480.0	84.8
D-31 rod				TE 407			
PCT (K)				------			
Time (s)				------			

	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6	Pos.7
D-33 rod				TE 408			
PCT (K)				------			
Time (s)				------			
D-51 rod				TE 409			
PCT (K)				------			
Time (s)				------			
D-53 rod				TE 410			
PCT (K)				------			
Time (s)				------			
D-66 rod				TE 411			
PCT (K)				------			
Time (s)				------			
D-77 rod				TE 412			
PCT (K)				------			
Time (s)				------			
D-86 rod				TE 413			
PCT (K)				822.9			
Time (s)				464.0			

Table 5.3 (Continued)

** Order of PCT (RUN 932) **

No. 1	A-82 rod	Pos. 4	PCT = 943.5 (K)	Time = 457.6 (s)
No. 2	A-84 rod	Pos. 1	PCT = 943.5 (K)	Time = 457.6 (s)
No. 3	A-71 rod	Pos. 4	PCT = 942.5 (K)	Time = 455.2 (s)
No. 4	A-73 rod	Pos. 4	PCT = 933.0 (K)	Time = 464.8 (s)
No. 5	A-77 rod	Pos. 3	PCT = 928.3 (K)	Time = 476.0 (s)
No. 6	A-22 rod	Pos. 3	PCT = 927.1 (K)	Time = 453.6 (s)
No. 7	A-31 rod	Pos. 4	PCT = 925.9 (K)	Time = 454.4 (s)
No. 8	A-11 rod	Pos. 4	PCT = 922.3 (K)	Time = 453.6 (s)
No. 9	A-84 rod	Pos. 4	PCT = 920.7 (K)	Time = 456.0 (s)
No.10	A-68 rod	Pos. 4	PCT = 917.9 (K)	Time = 488.0 (s)

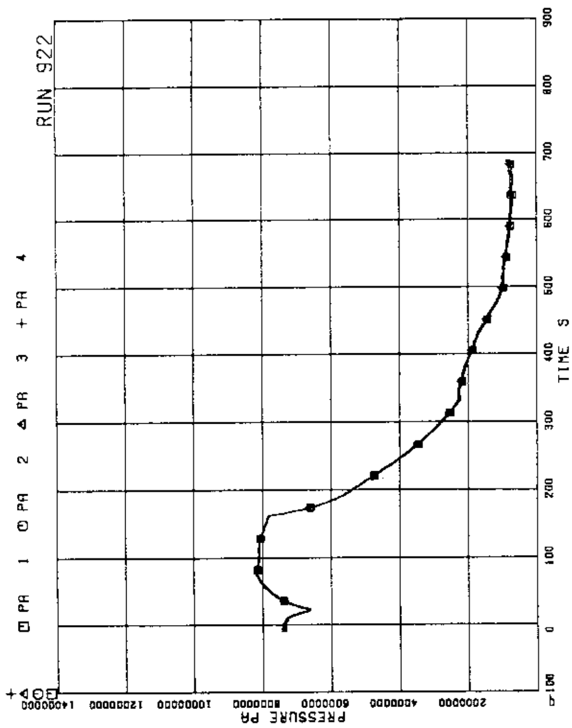


FIG.5. 1 PRESSURE IN PV (PRESSURE VESSEL)

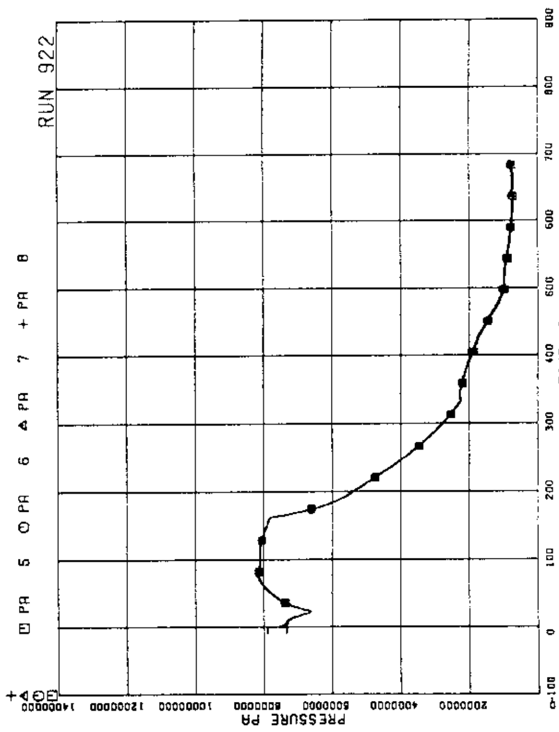


FIG.5. 2 PRESSURE IN BROKEN LOOP JP (JET PUMP)

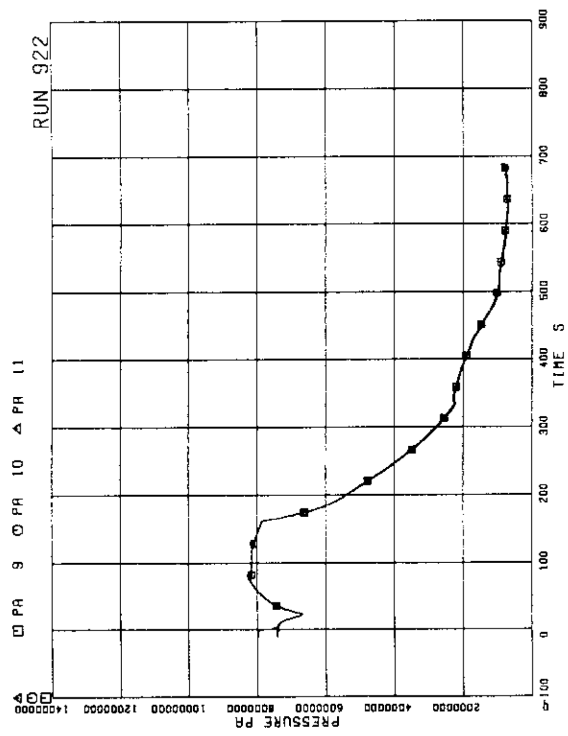


FIG.5. 3 PRESSURE NEAR MRP (MAIN RECIRCULATION PUMP)

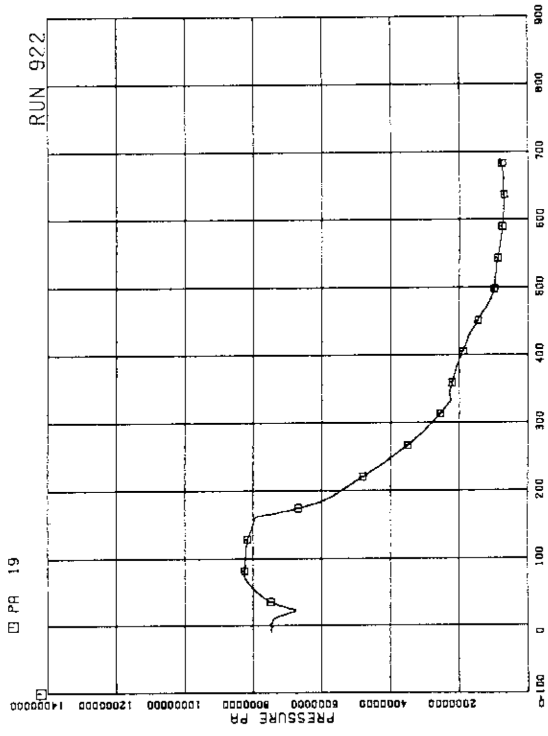


FIG.5. 4 PRESSURE AT MRP SIDE OF BREAK

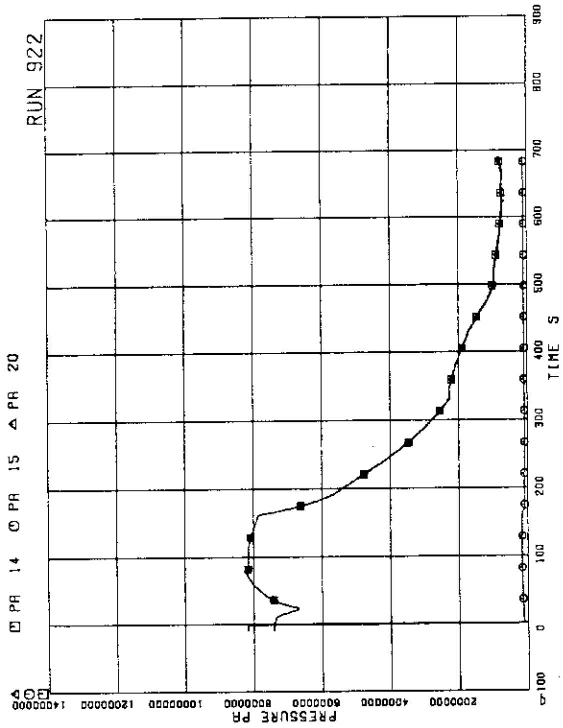


FIG.5. 5 PRESSURE AT PV SIDE OF BREAK

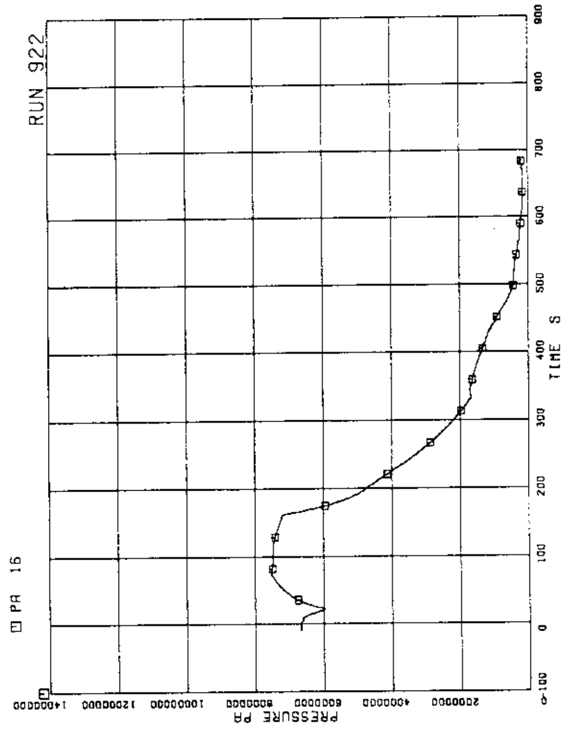


FIG.5. 6 PRESSURE IN MSL (MAIN STEAM LINE)

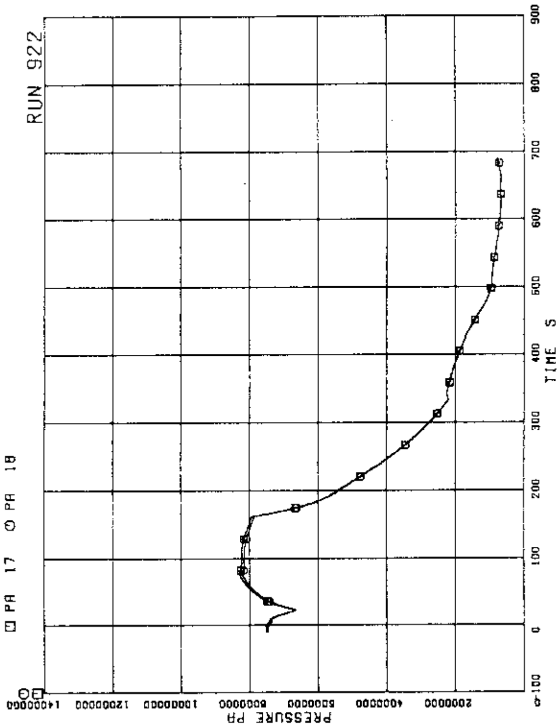


FIG.5. 7 PRESSURE IN JP OUTLET SPOOL

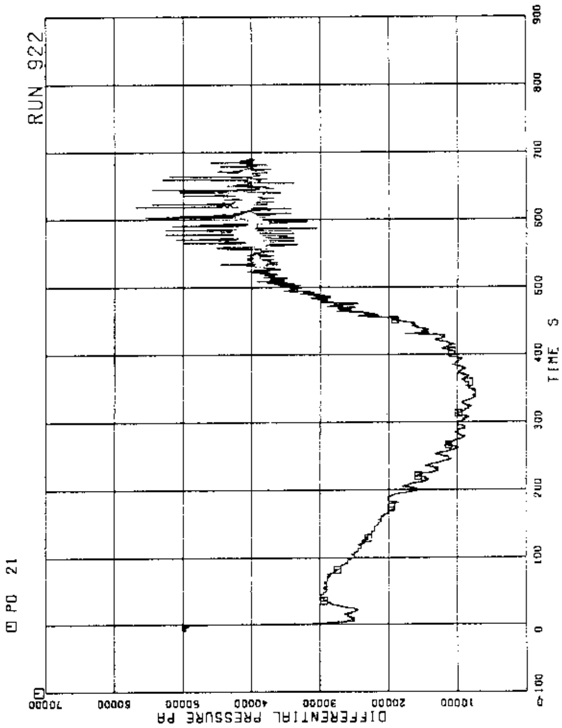


FIG.5. 8 DIFFERENTIAL PRESSURE BETWEEN LOWER PLENUM AND UPPER PLENUM

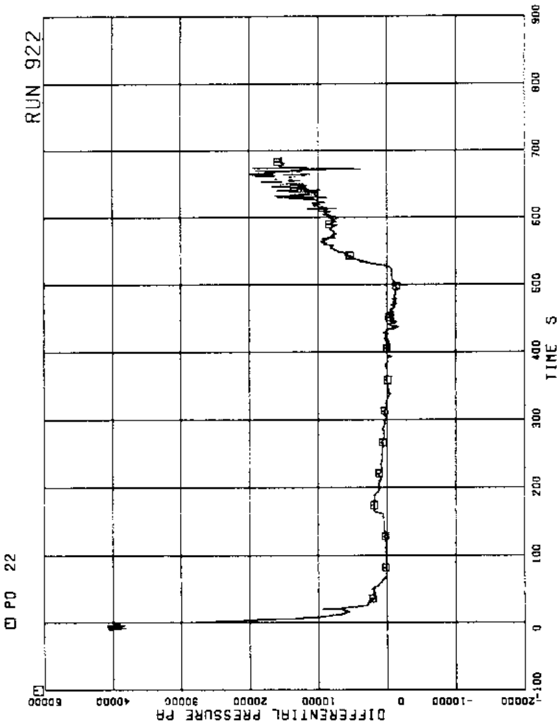


FIG.5. 9 DIFFERENTIAL PRESSURE BETWEEN UPPER PLENUM AND STEAM DOME

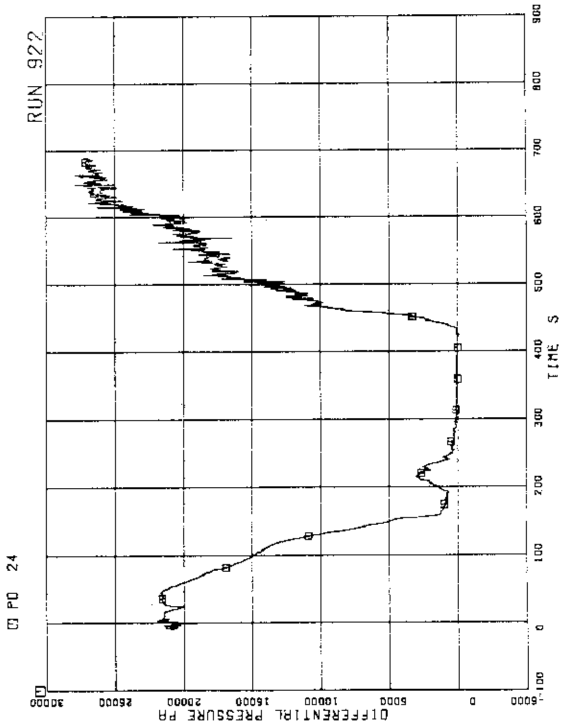


FIG.5. 10 DC (DOWNCOMER) HEAD

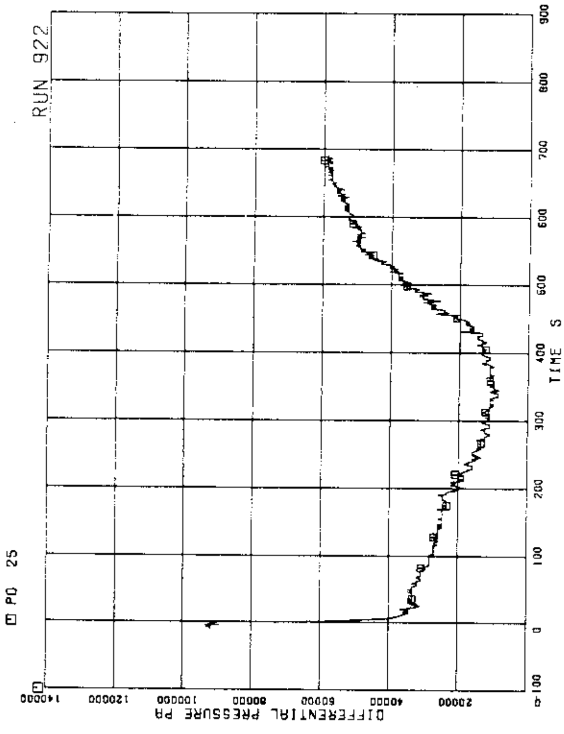


FIG.5. 11 DIFFERENTIAL PRESSURE BETWEEN PV BOTTOM AND TOP

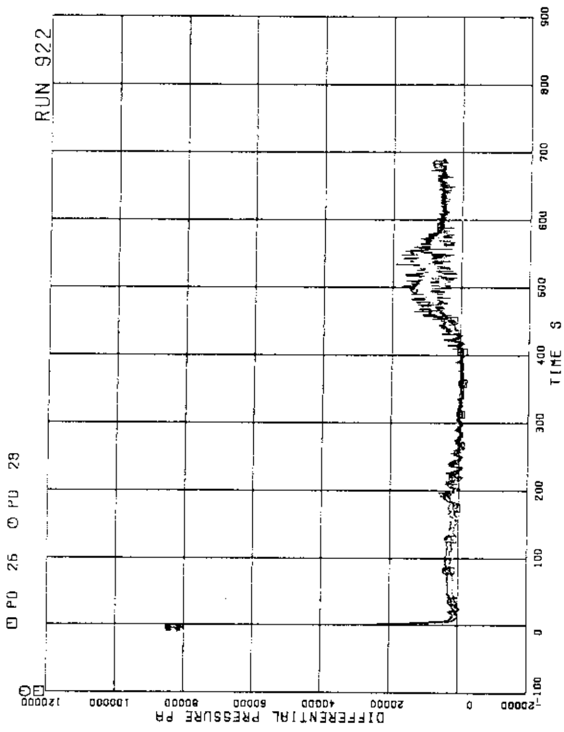


FIG.5. 12 DIFFERENTIAL PRESSURE BETWEEN JP-1,2 DISCHARGE AND SUCTION

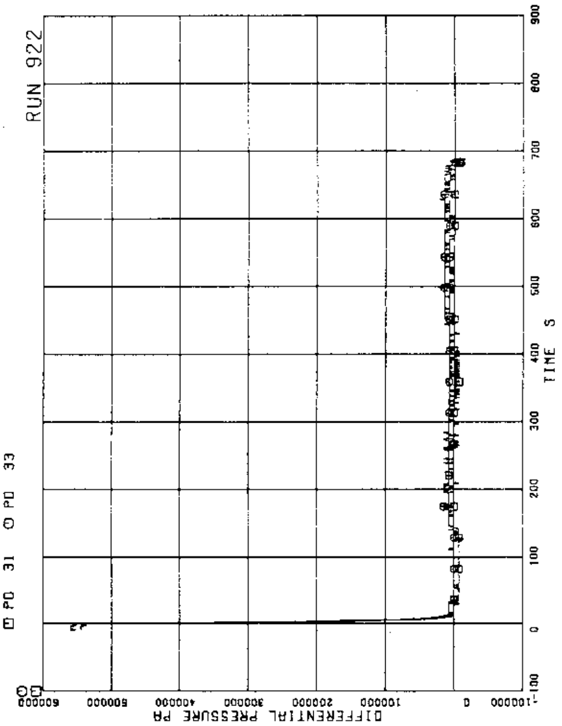


FIG.5. 15 DIFFERENTIAL PRESSURE BETWEEN JP-3.4 DRIVE AND SUCTION

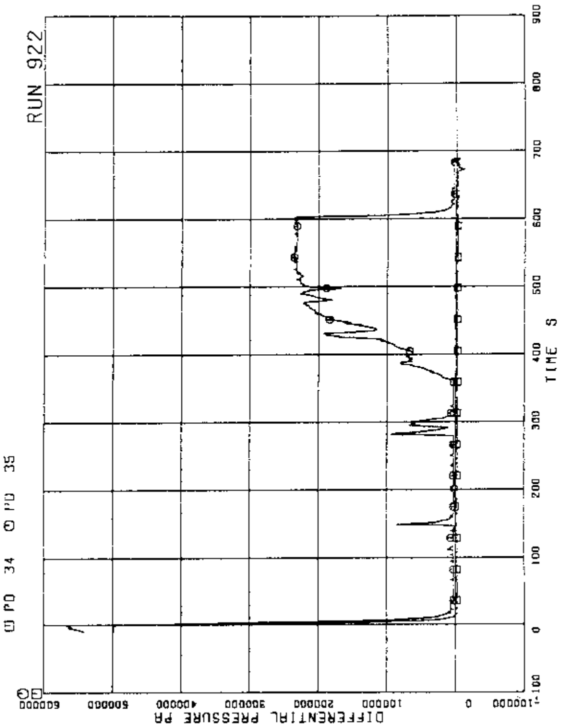


FIG.5. 16 DIFFERENTIAL PRESSURE BETWEEN MRP DELIVERY AND SUCTION

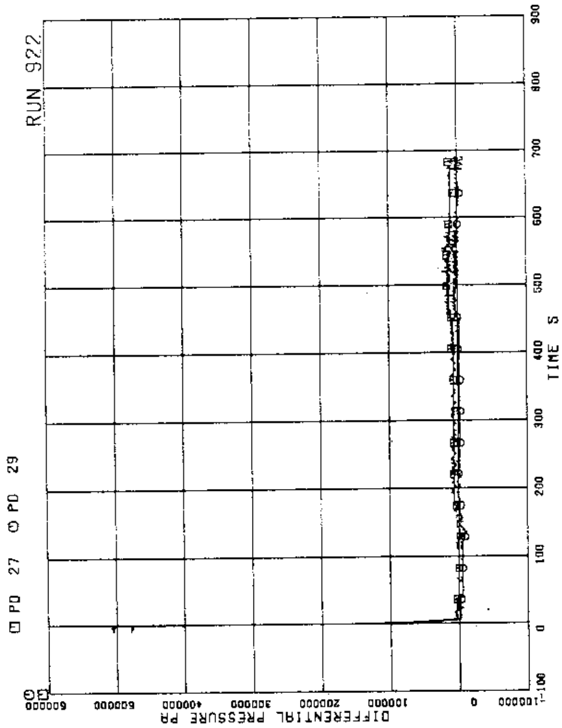


FIG.5. 13 DIFFERENTIAL PRESSURE BETWEEN JP-1.2 DRIVE AND SUCTION

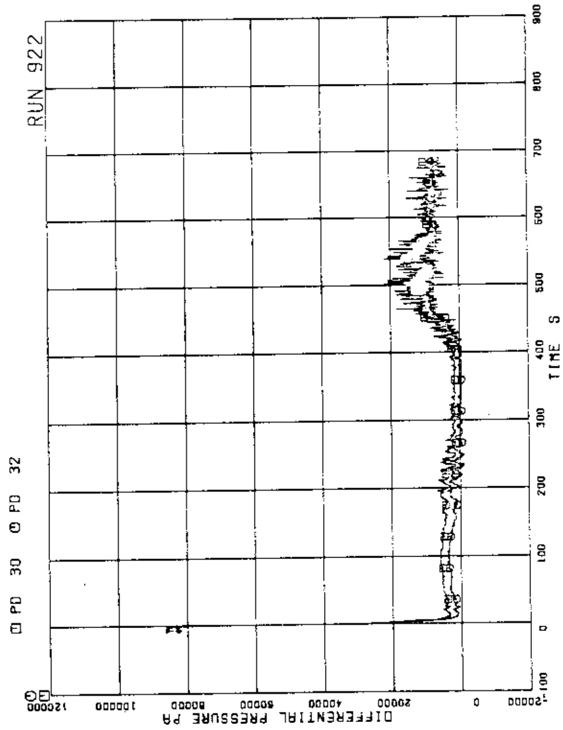


FIG.5. 14 DIFFERENTIAL PRESSURE BETWEEN JP-3.4 DISCHARGE AND SUCTION

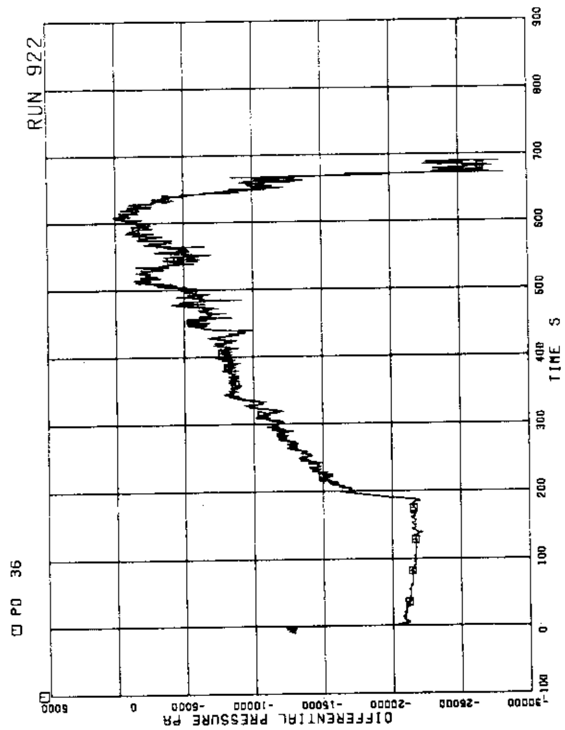


FIG.5. 17 DIFFERENTIAL PRESSURE BETWEEN DOWNCOMER BOTTOM AND MRP1 SUCTION

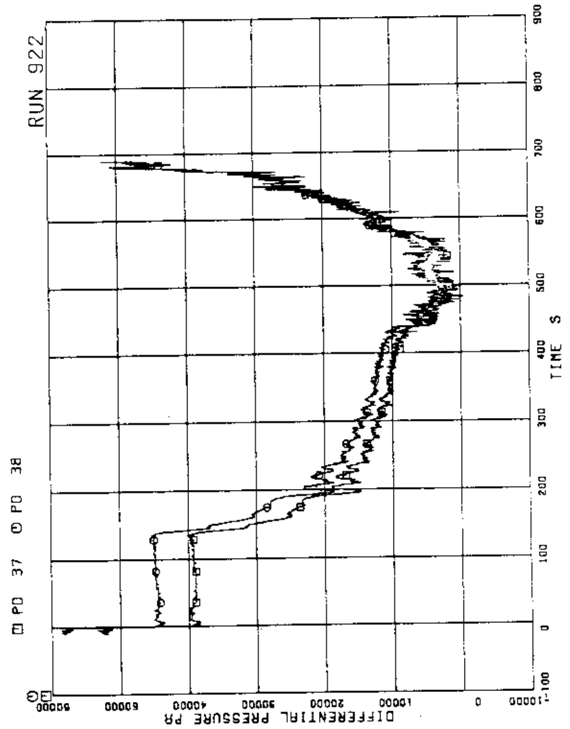


FIG.5. 18 DIFFERENTIAL PRESSURE BETWEEN MRP DELIVERY AND JP-1,2 SUCTION

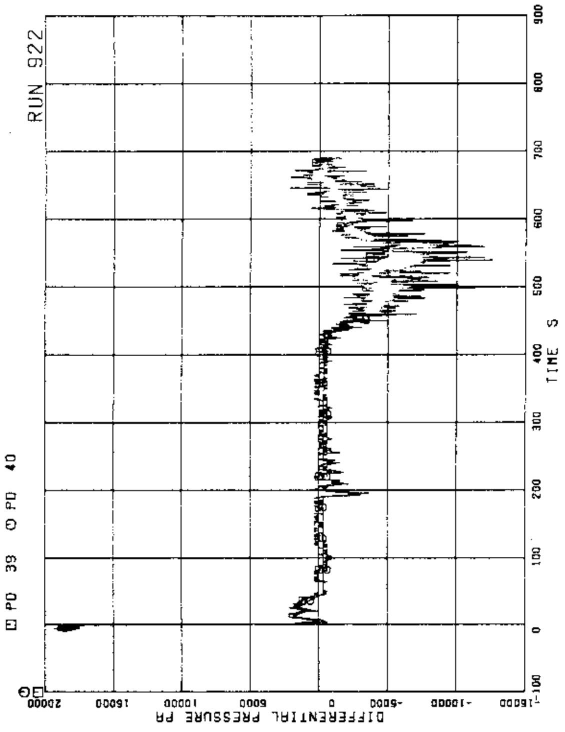


FIG.5. 19 DIFFERENTIAL PRESSURE BETWEEN DOWNCOMER MIDDLE AND JP-1,2 SUCTION

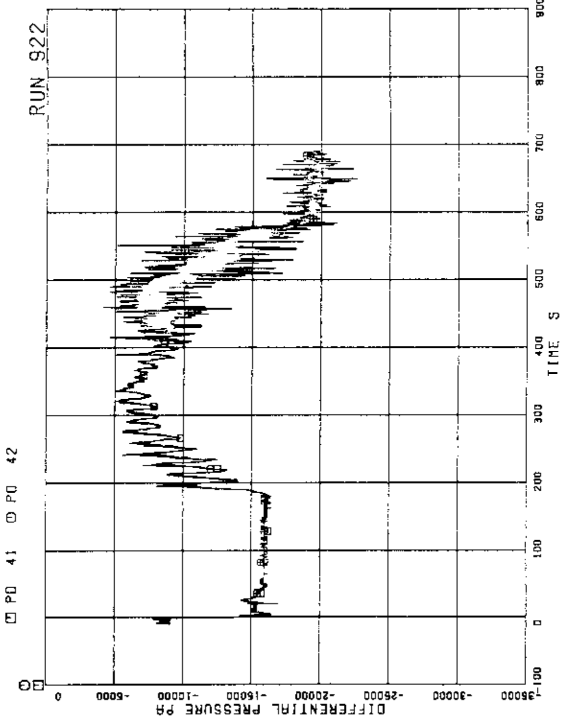


FIG.5. 20 DIFFERENTIAL PRESSURE BETWEEN JP-1,2 DISCHARGE AND LOWER PLENUM

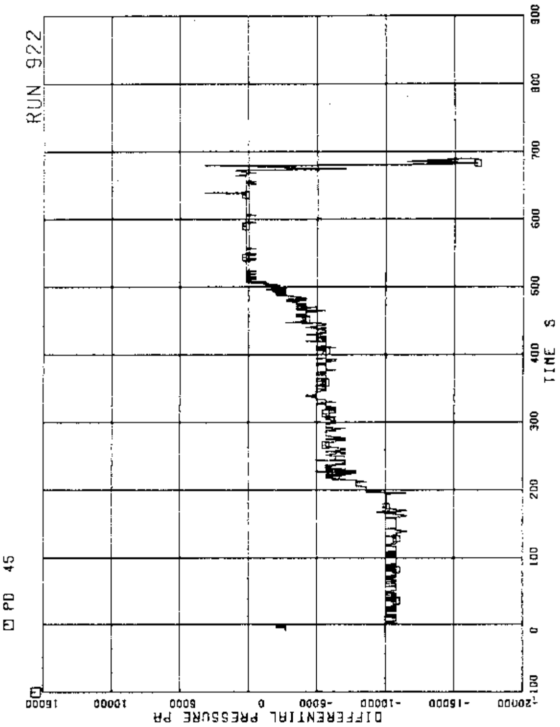


FIG.5. 23 DIFFERENTIAL PRESSURE BETWEEN BREAK A AND MRP2 SUCTION

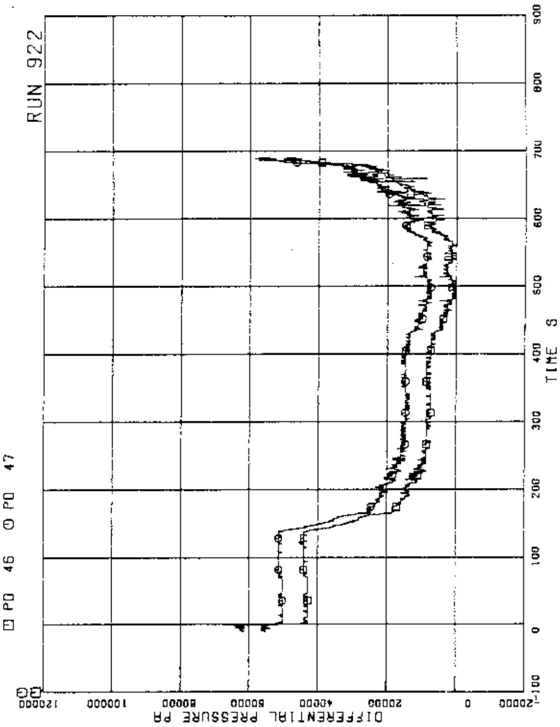


FIG.5. 24 DIFFERENTIAL PRESSURE BETWEEN MRP DELIVERY AND JP-3.4 DRIVE

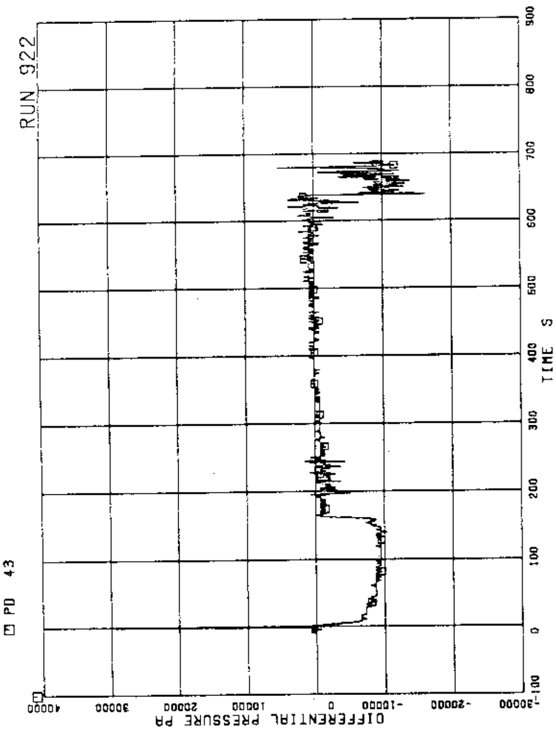


FIG.5. 21 DIFFERENTIAL PRESSURE BETWEEN DOWNCOMER BOTTOM AND BREAK B

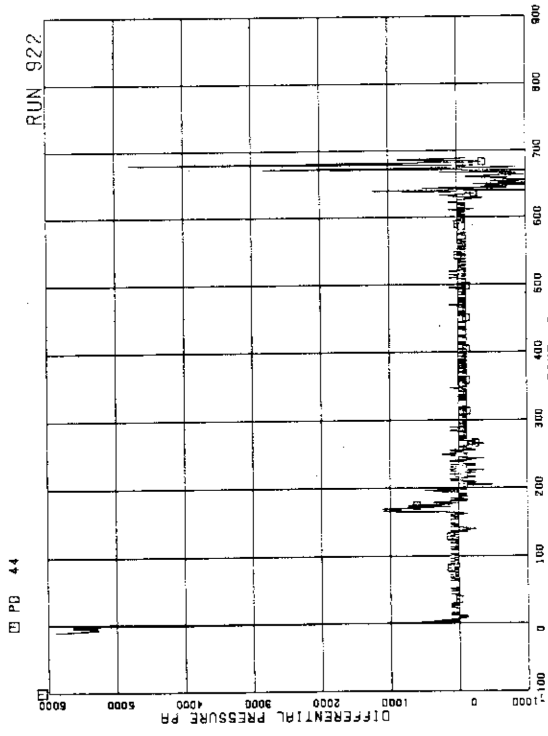


FIG.5. 22 DIFFERENTIAL PRESSURE BETWEEN BREAKS A AND B

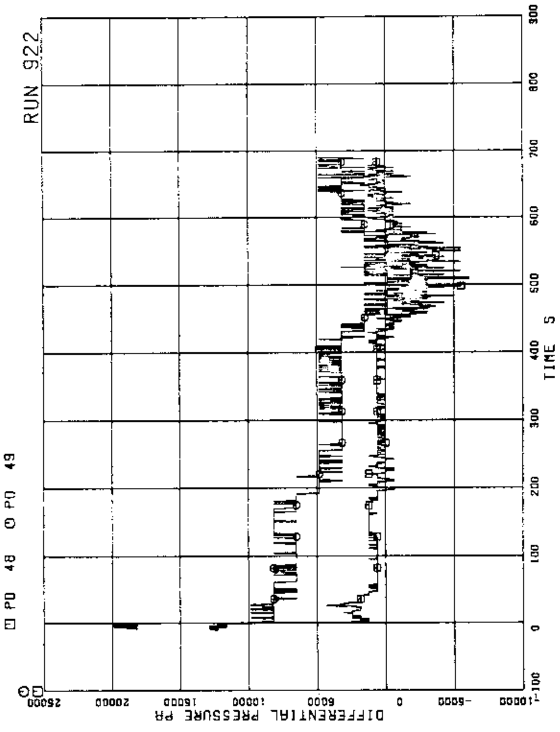


FIG.5. 25 DIFFERENTIAL PRESSURE BETWEEN DOWNCOMER MIDDLE AND JP-3,4 SUCTION

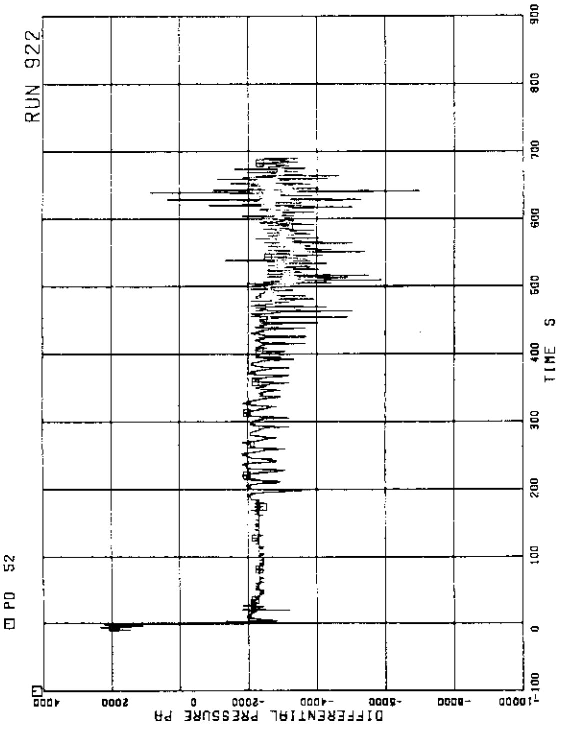


FIG.5. 27 DIFFERENTIAL PRESSURE BETWEEN JP-3,4 CONFLUENCE IN BROKEN LOOP AND LP

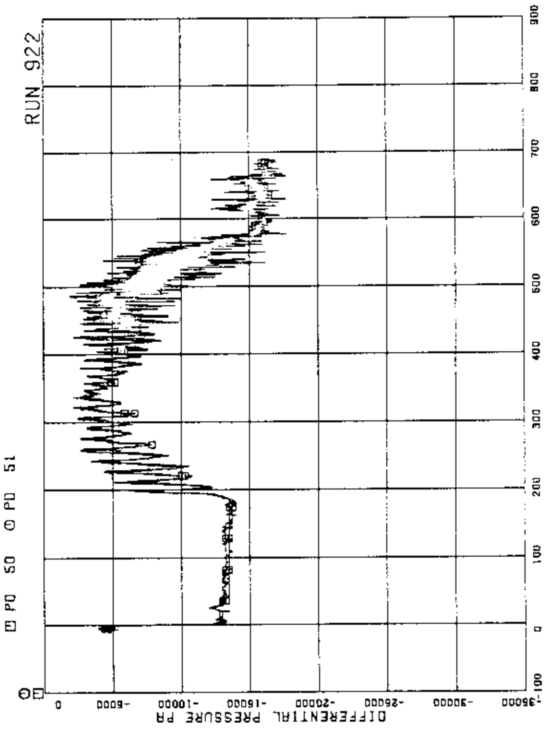


FIG.5. 26 DIFFERENTIAL PRESSURE BETWEEN JP-3,4 DISCHARGE AND CONFLURNCE

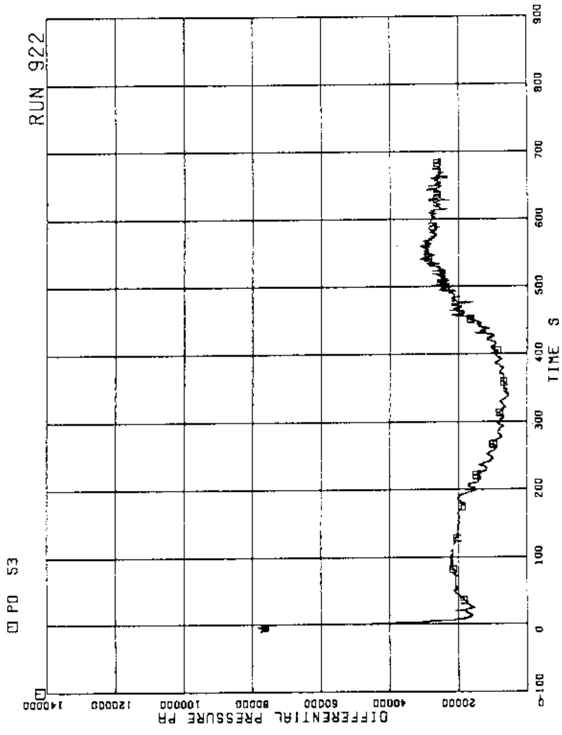


FIG.5. 28 DIFFERENTIAL PRESSURE BETWEEN LOWER PLENUM AND DOWNCOMER MIDDLE

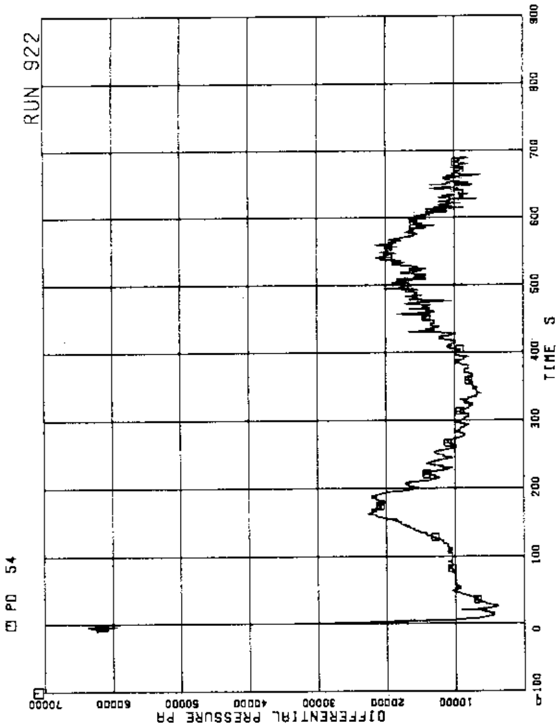


FIG.5. 29 DIFFERENTIAL PRESSURE BETWEEN LOWER PLENUM AND DOWNCOMER BOTTOM

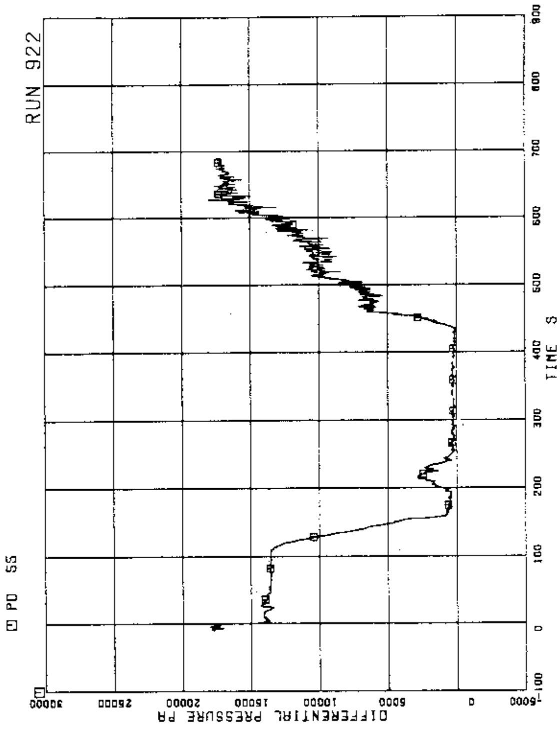


FIG.5. 30 DIFFERENTIAL PRESSURE BETWEEN DOWNCOMER BOTTOM AND DOWNCOMER MIDDLE

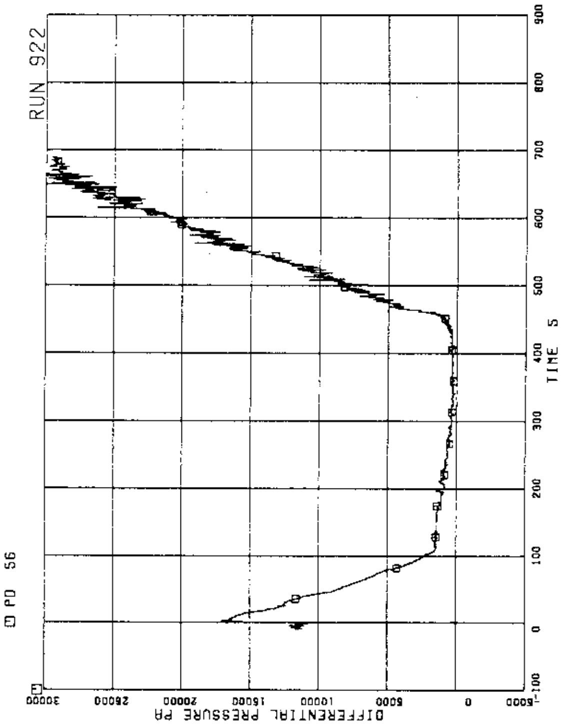


FIG.5. 31 DIFFERENTIAL PRESSURE BETWEEN DOWNCOMER MIDDLE AND STEAM DOME

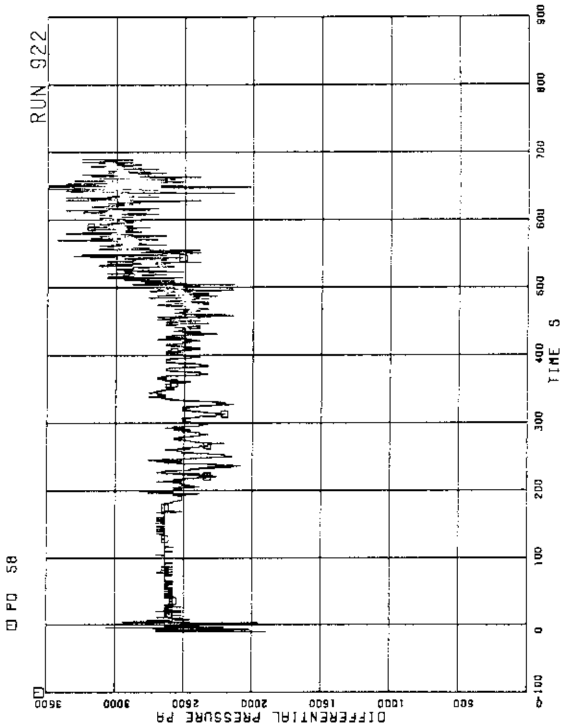


FIG.5. 32 DIFFERENTIAL PRESSURE BETWEEN LP BOTTOM AND LP MIDDLE

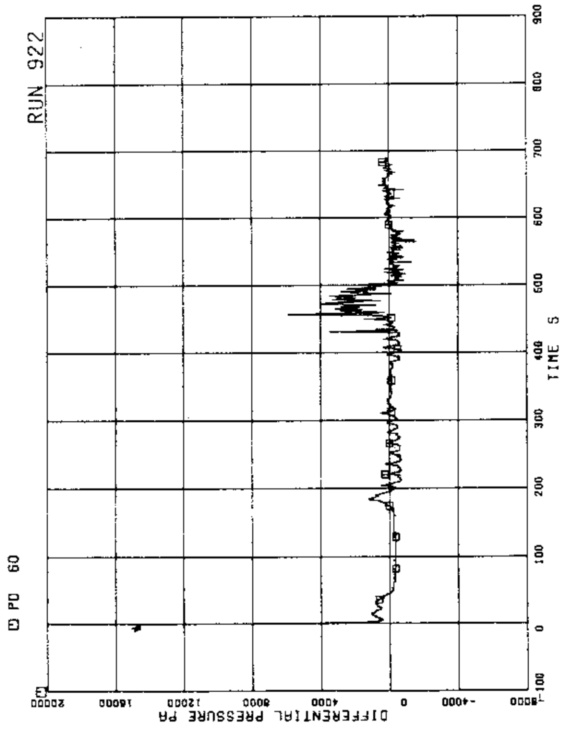


FIG.5. 33 DIFFERENTIAL PRESSURE ACROSS CHANNEL INLET ORIFICE A

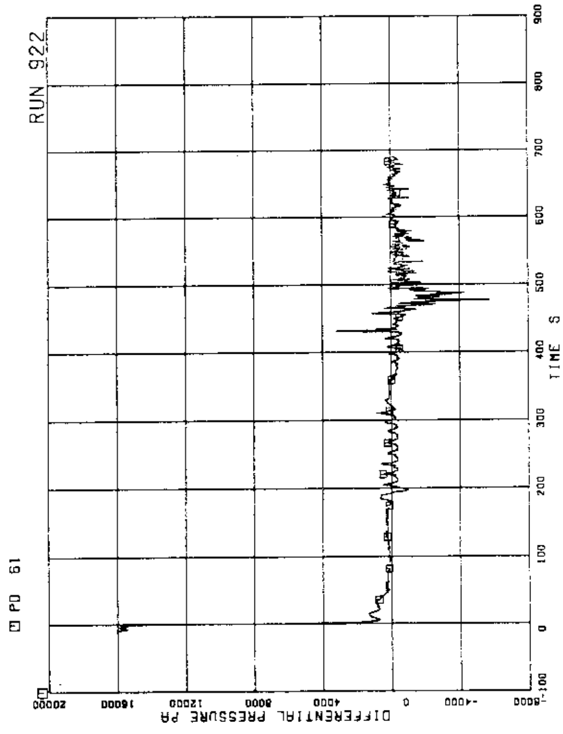


FIG.5. 34 DIFFERENTIAL PRESSURE ACROSS CHANNEL INLET ORIFICE B

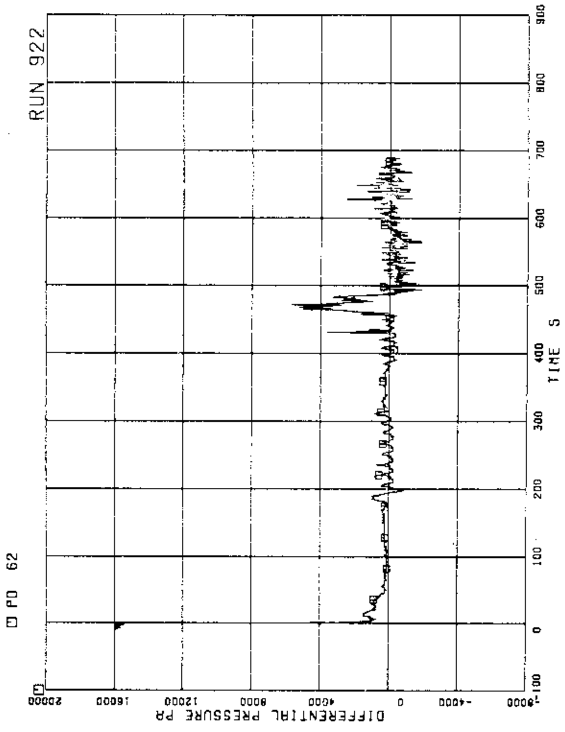


FIG.5. 35 DIFFERENTIAL PRESSURE ACROSS CHANNEL INLET ORIFICE C

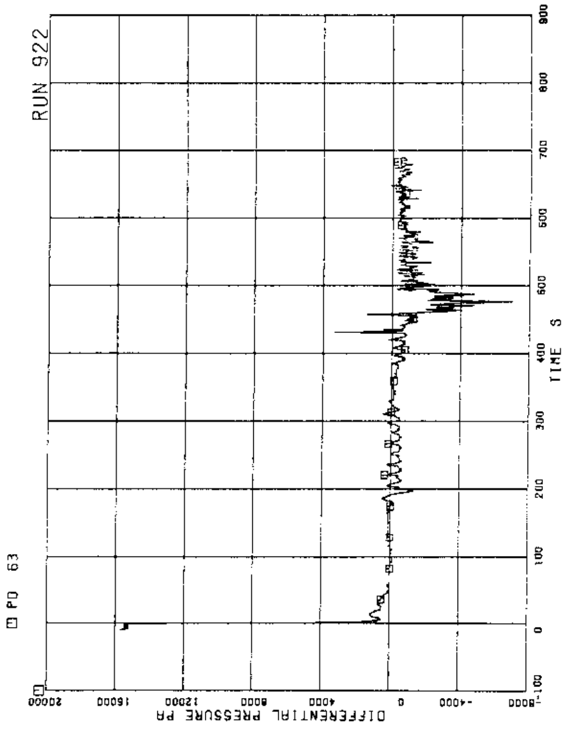


FIG.5. 36 DIFFERENTIAL PRESSURE ACROSS CHANNEL INLET ORIFICE D

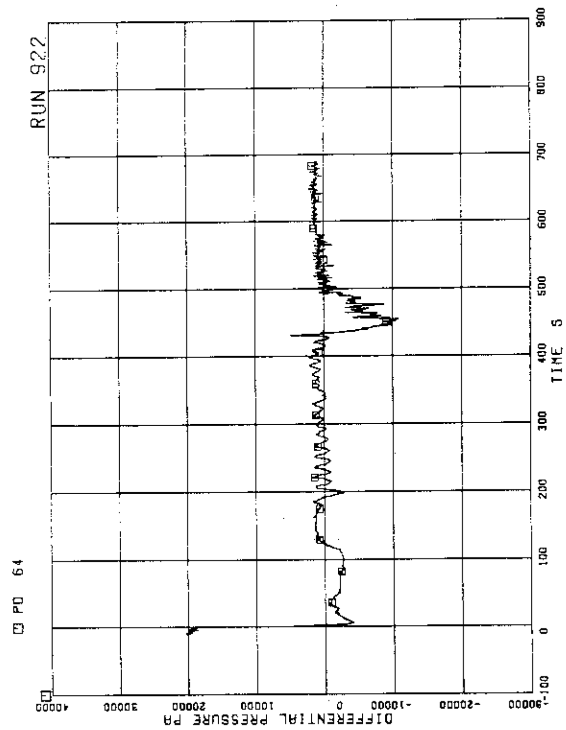


FIG.5. 37 DIFFERENTIAL PRESSURE ACROSS BYPASS HOLE

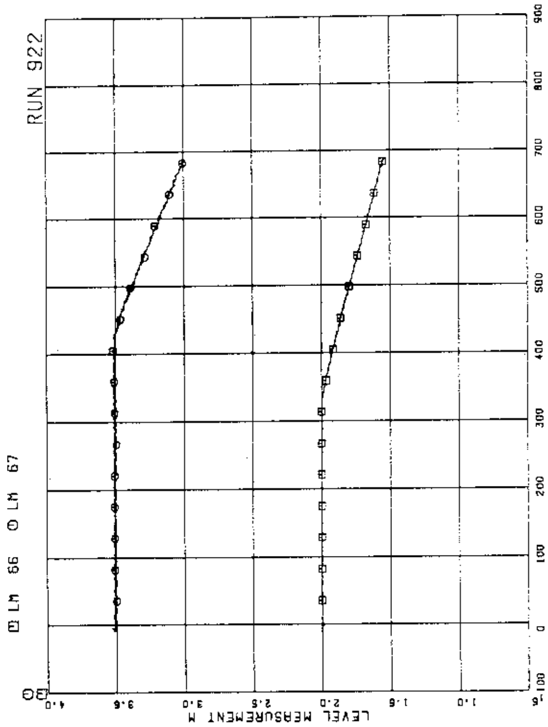


FIG.5. 38 LIQUID LEVEL IN ECCS TANKS

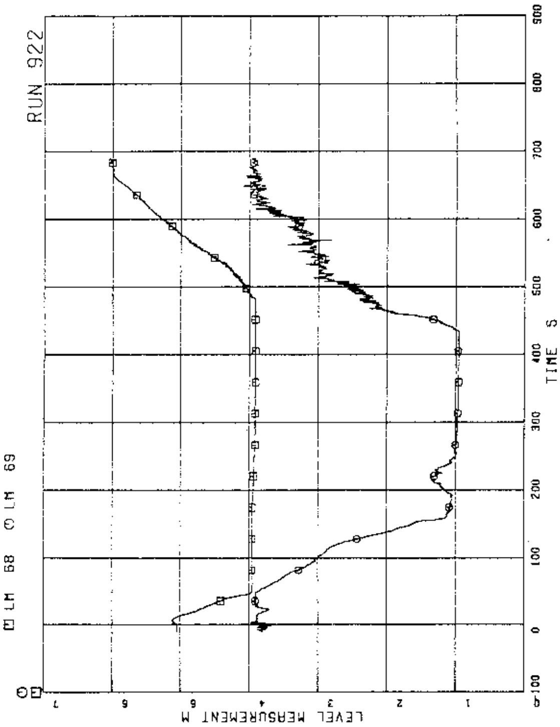


FIG.5. 39 LIQUID LEVEL IN DOWNCOMER

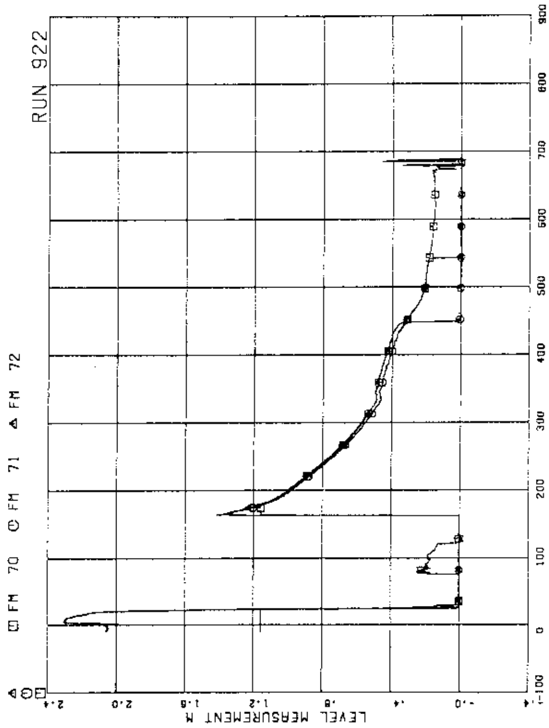


FIG.5. 40 MASS FLOW RATE IN MSL

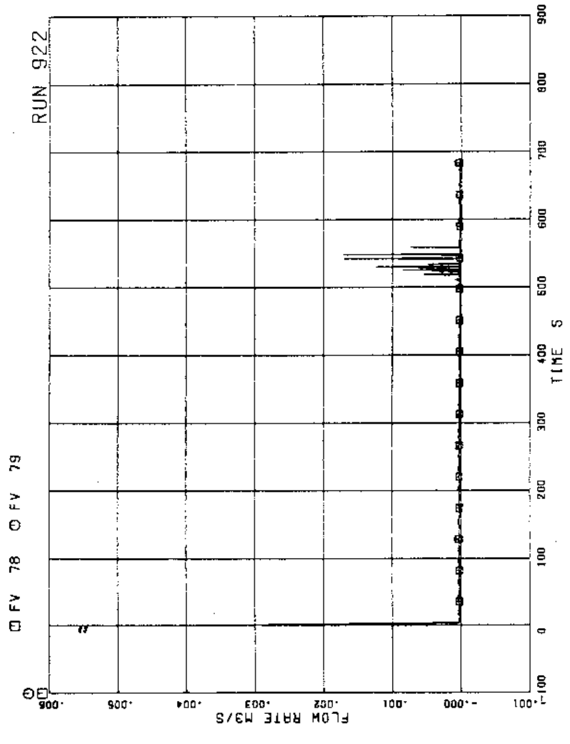


FIG.5. 43 JP-1,2 DISCHARGE FLOW RATE (HIGH RANGE)

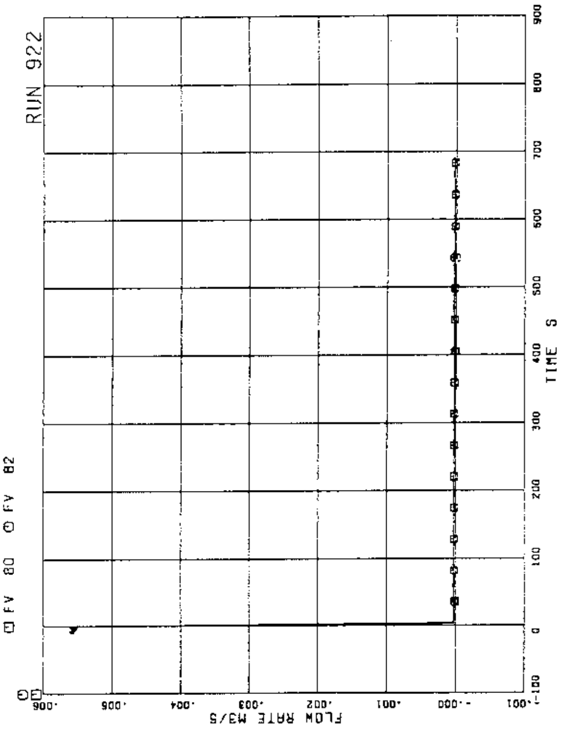


FIG.5. 44 JP-3,4 DISCHARGE FLOW RATE (HIGH RANGE)

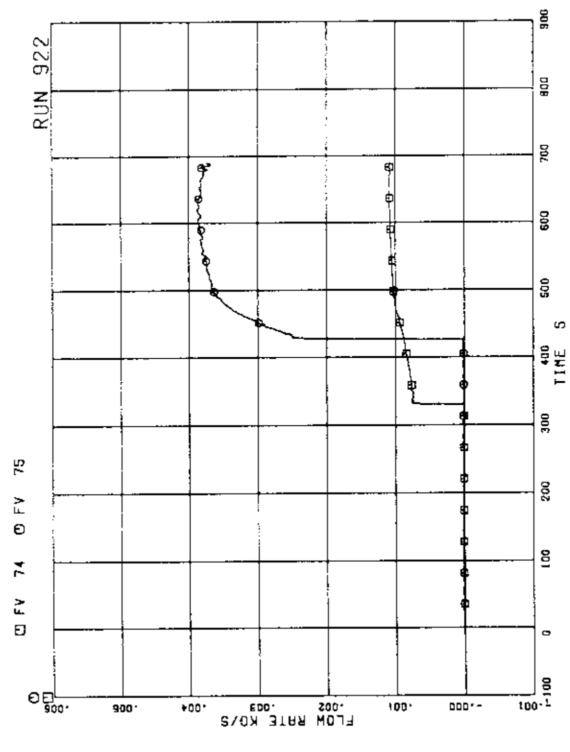


FIG.5. 41 ECC INJECTION FLOW RATE

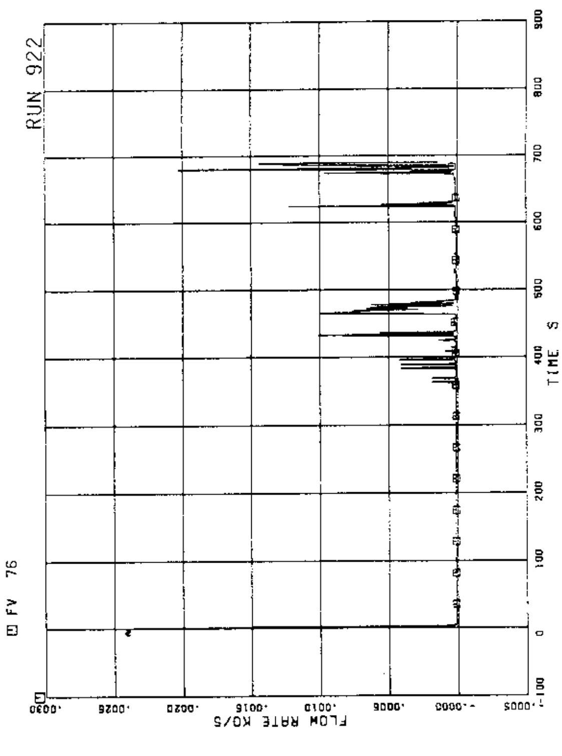


FIG.5. 42 FEEDWATER FLOW RATE

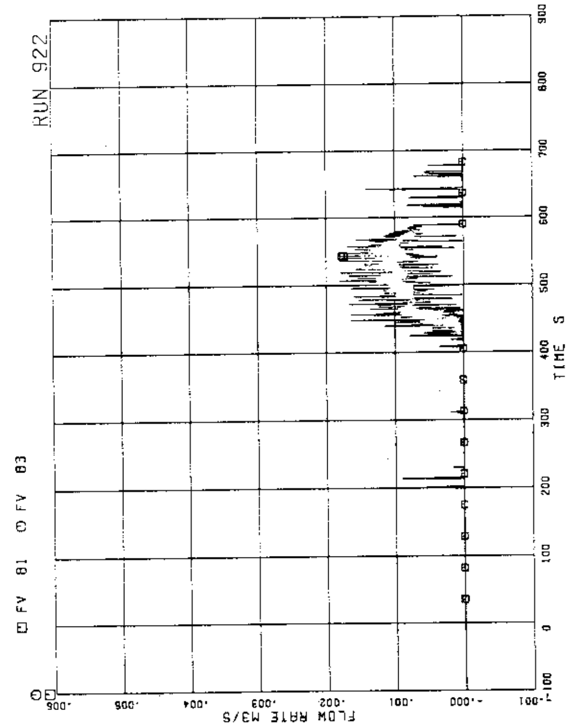


FIG.5. 45 JP-3,4 DISCHARGE FLOW RATE (LOW RANGE)

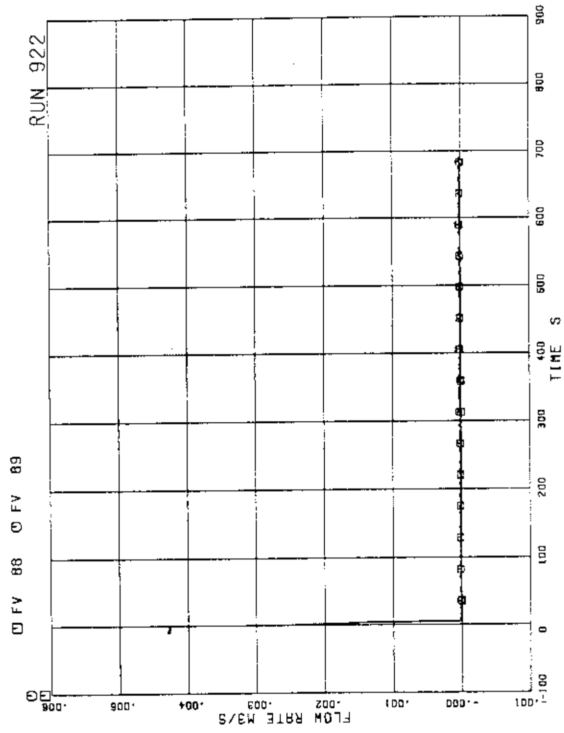


FIG.5. 46 MRP DISCHARGE FLOW RATE

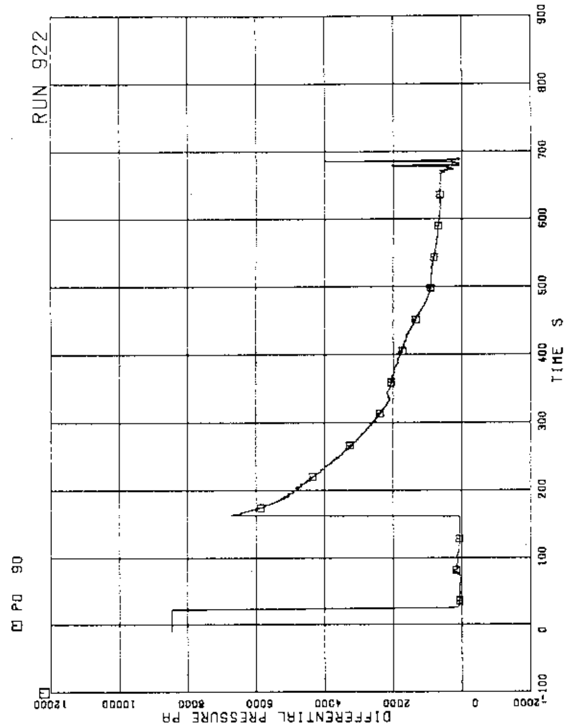


FIG.5. 47 DIFFERENTIAL PRESSURE ACROSS ORIFICE FLOWMETER F-1

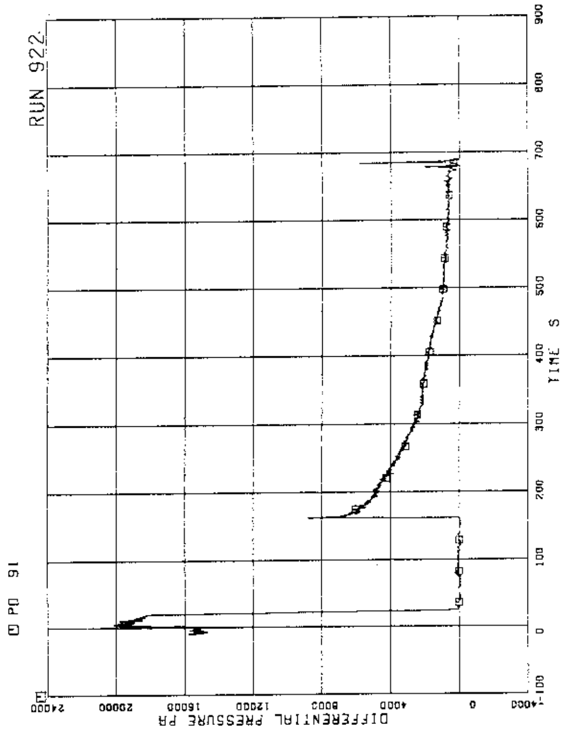


FIG.5. 48 DIFFERENTIAL PRESSURE ACROSS ORIFICE FLOWMETER F-2

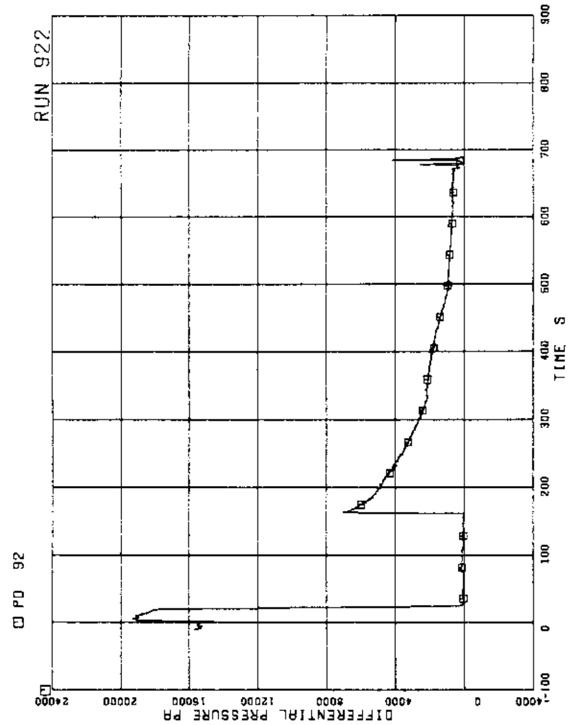


FIG.5. 49 DIFFERENTIAL PRESSURE ACROSS ORIFICE FLOWMETER F-3

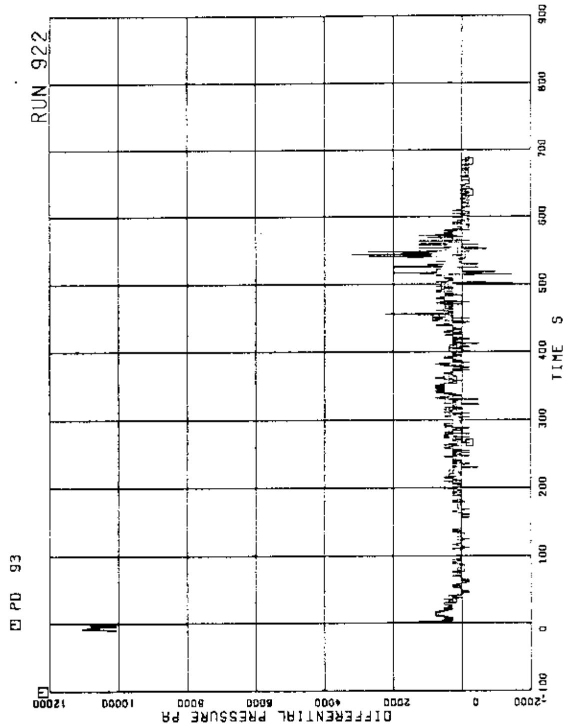


FIG.5. 50 DIFFERENTIAL PRESSURE ACROSS VENTURI FLOWMETER F-17

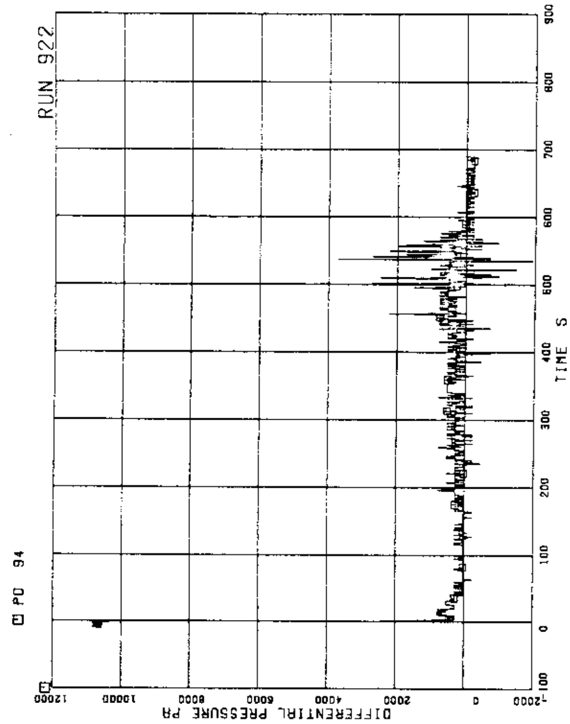


FIG.5. 51 DIFFERENTIAL PRESSURE ACROSS VENTURI FLOWMETER F-18

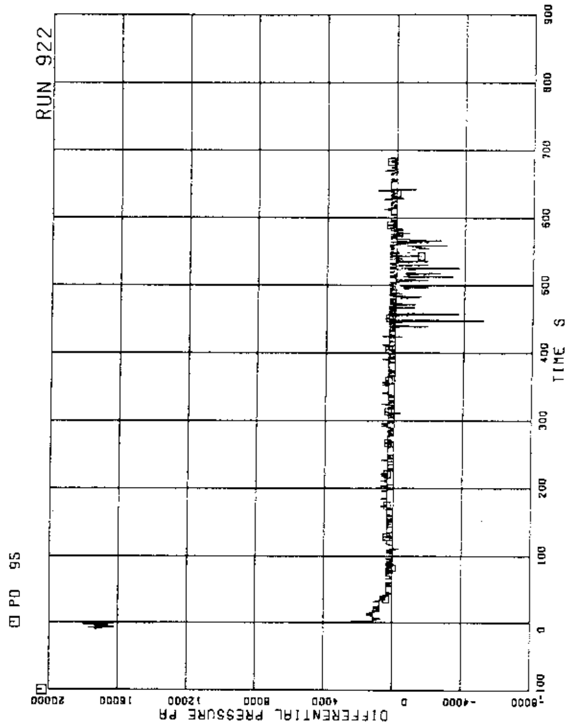


FIG.5. 52 DIFFERENTIAL PRESSURE ACROSS ORIFICE FLOWMETER F-19

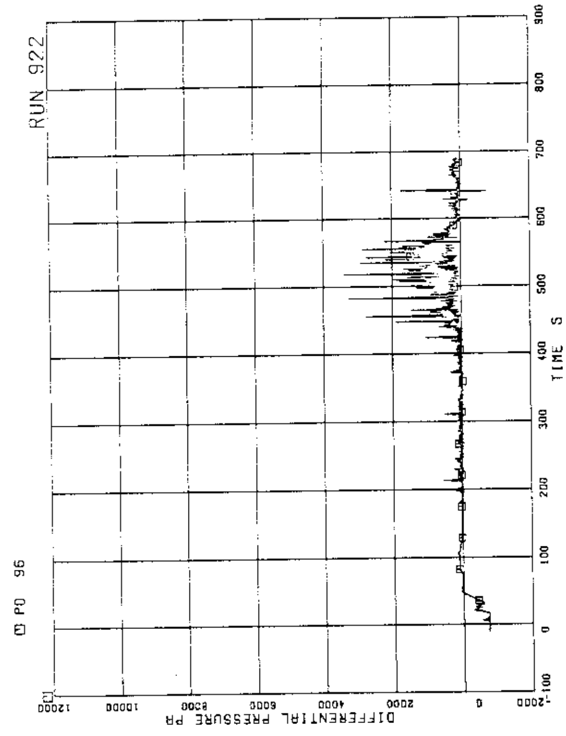


FIG.5. 53 DIFFERENTIAL PRESSURE ACROSS ORIFICE FLOWMETER F-20

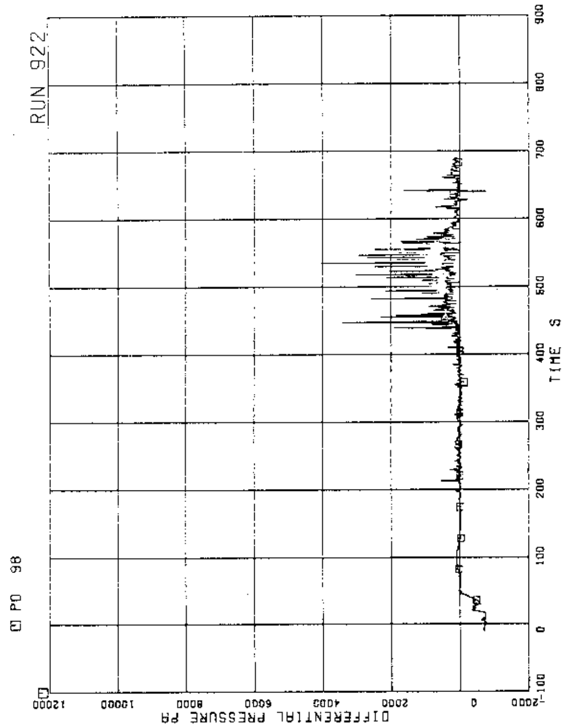


FIG.5. 55 DIFFERENTIAL PRESSURE ACROSS ORIFICE FLOWMETER F-22

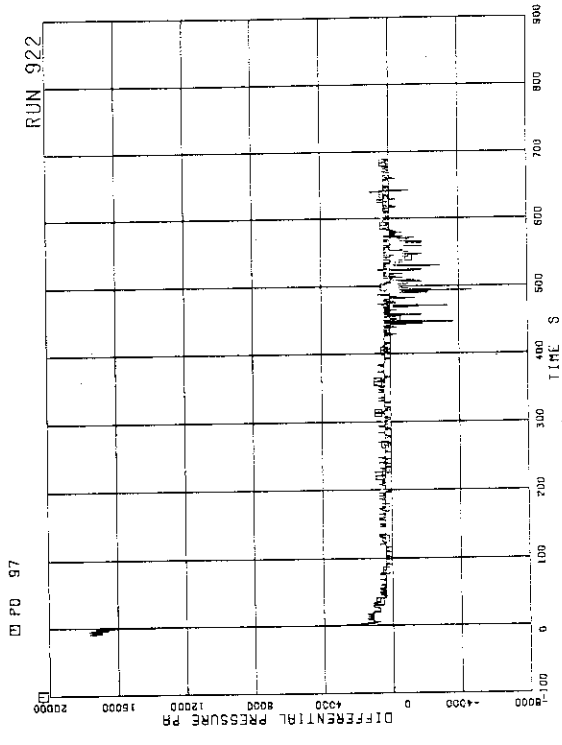


FIG.5. 54 DIFFERENTIAL PRESSURE ACROSS ORIFICE FLOWMETER F-21

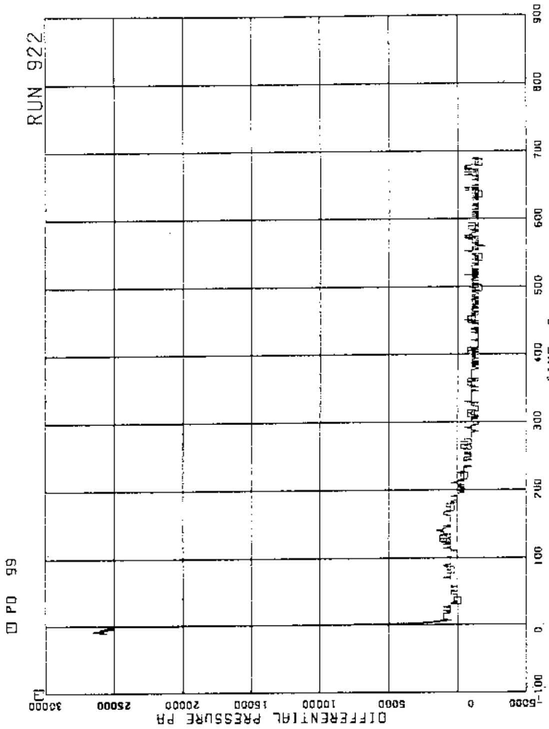


FIG.5. 56 DIFFERENTIAL PRESSURE ACROSS VENTURI FLOWMETER F-27

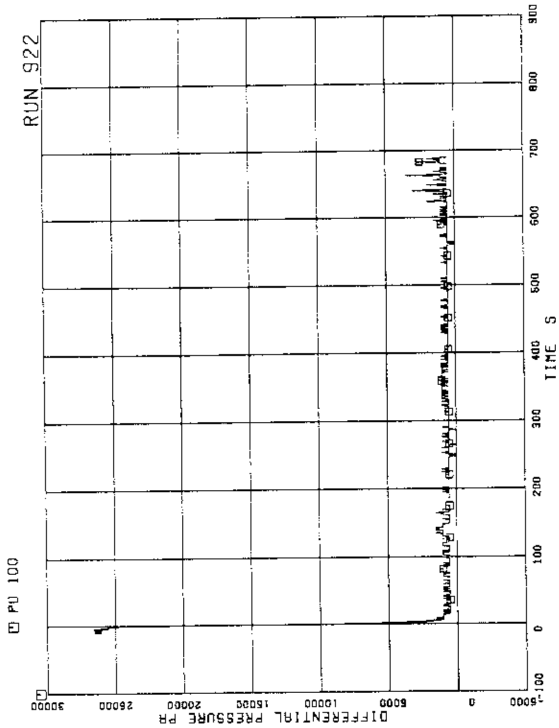


FIG.5. 57 DIFFERENTIAL PRESSURE ACROSS VENTURI FLOWMETER F-28

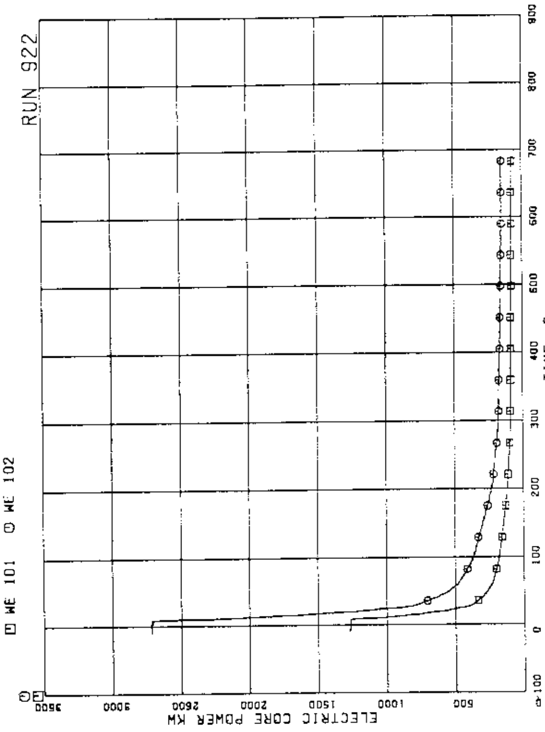


FIG.5. 58 ELECTRIC CORE POWER

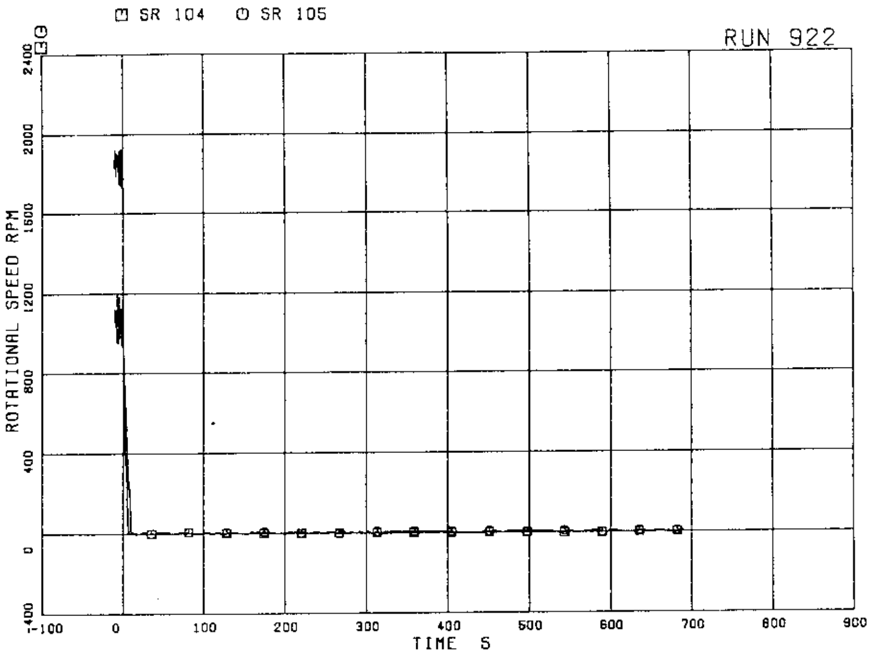


FIG.5. 59 MRP REVOLUTION

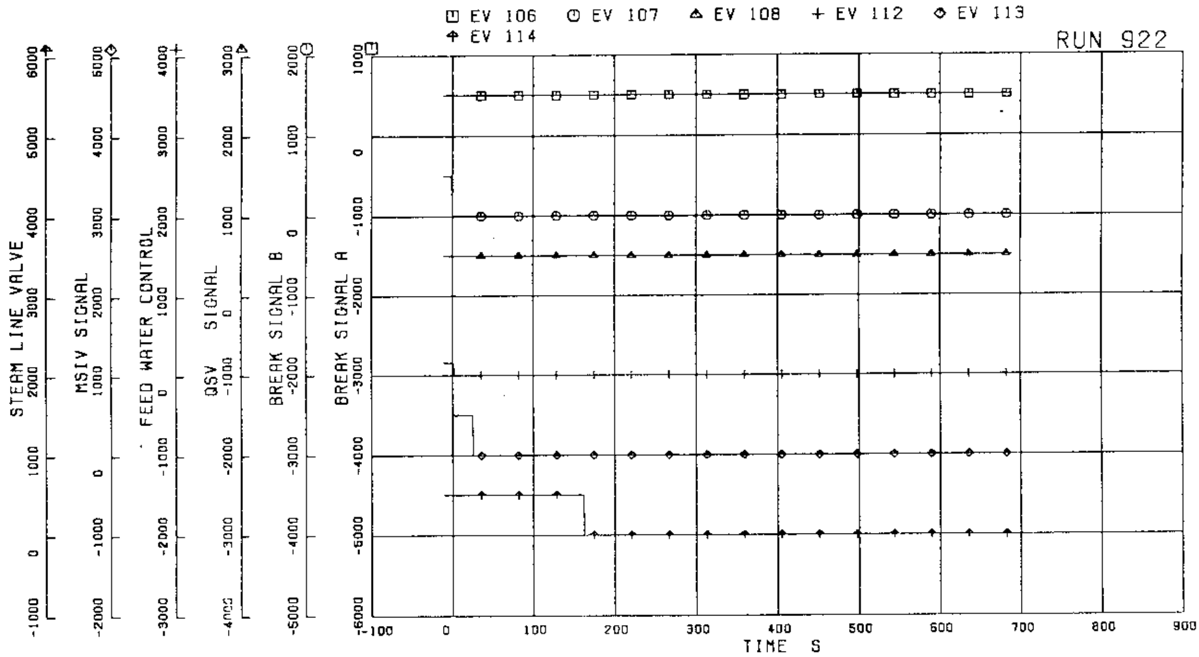


FIG.5. 60 VALVE OPERATION SIGNALS

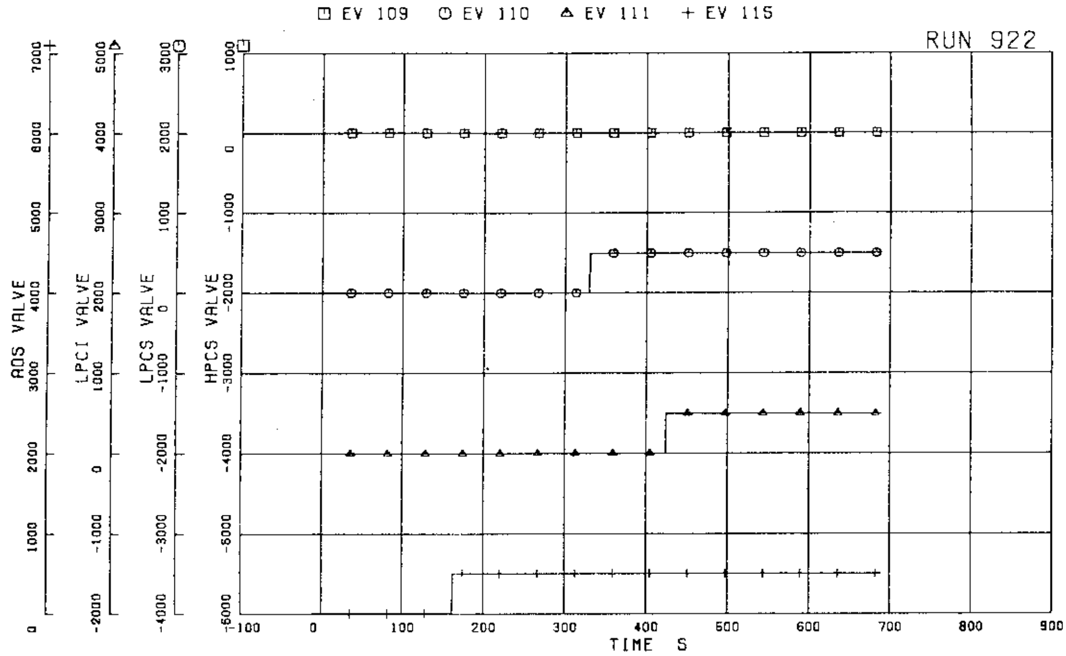


FIG.5. 61 ECCS OPERATION SIGNALS

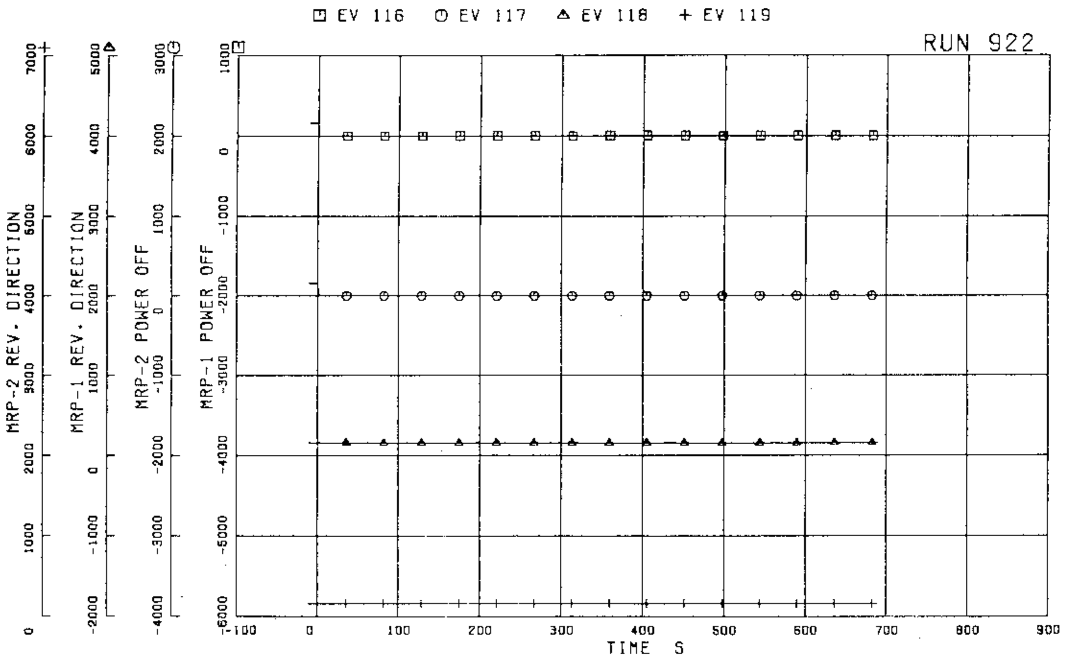


FIG.5. 62 MRP OPERATION SIGNALS

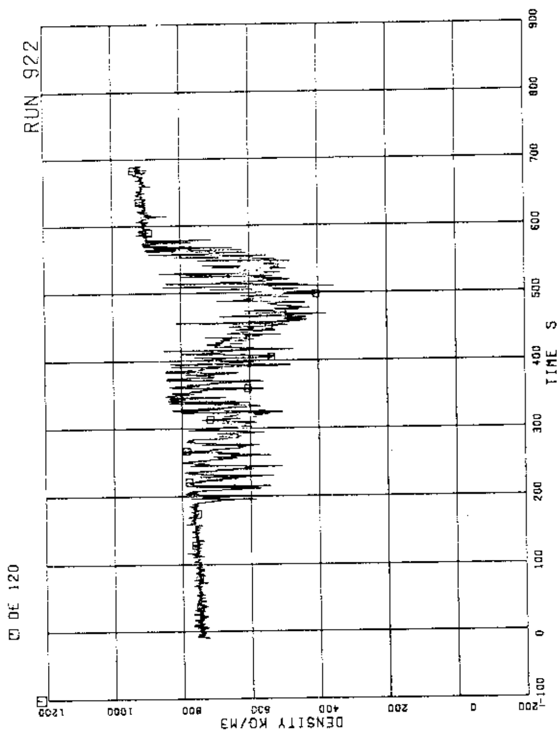


FIG.5. 63 FLUID DENSITY AT JP-1,2 OUTLET, BEAM A

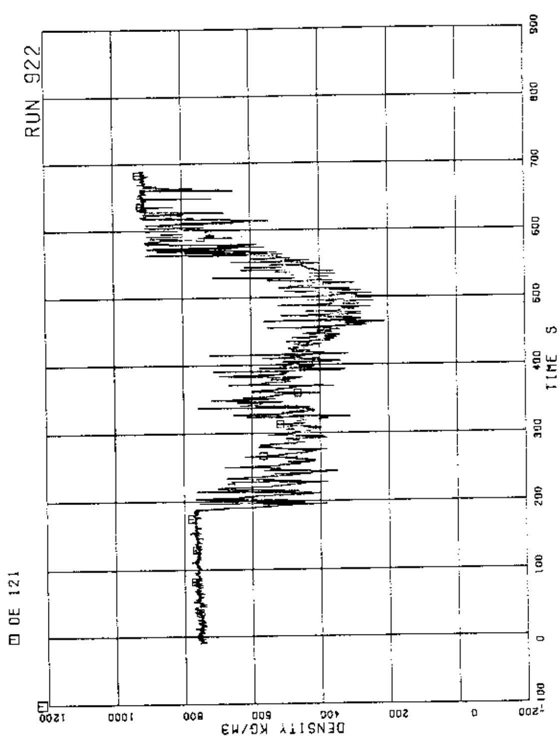


FIG.5. 64 FLUID DENSITY AT JP-1,2 OUTLET, BEAM B

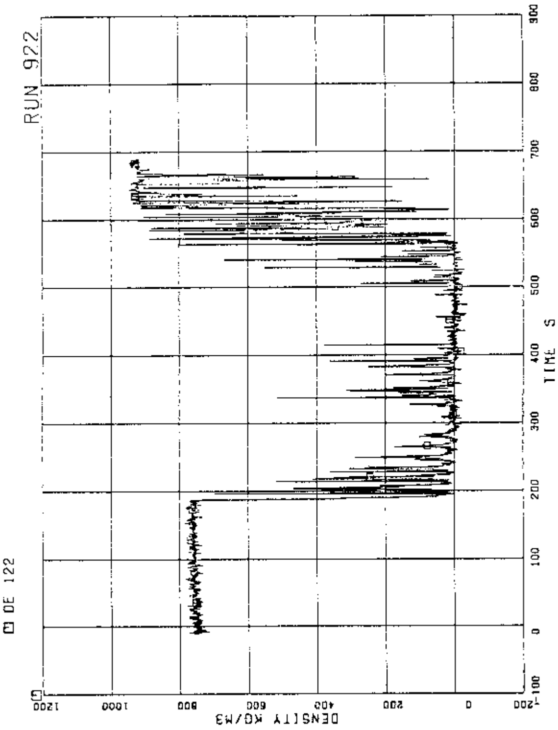


FIG.5. 65 FLUID DENSITY AT JP-1,2 OUTLET, BEAM C

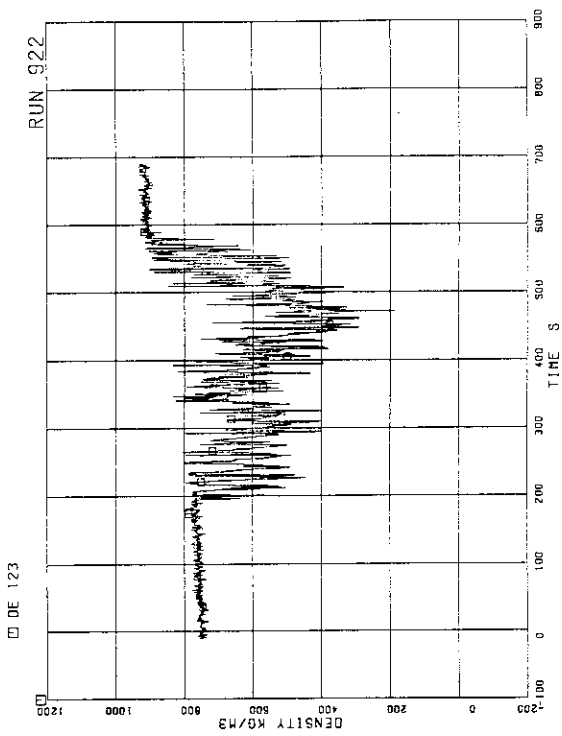


FIG.5. 66 FLUID DENSITY AT JP-3,4 OUTLET, BEAM A

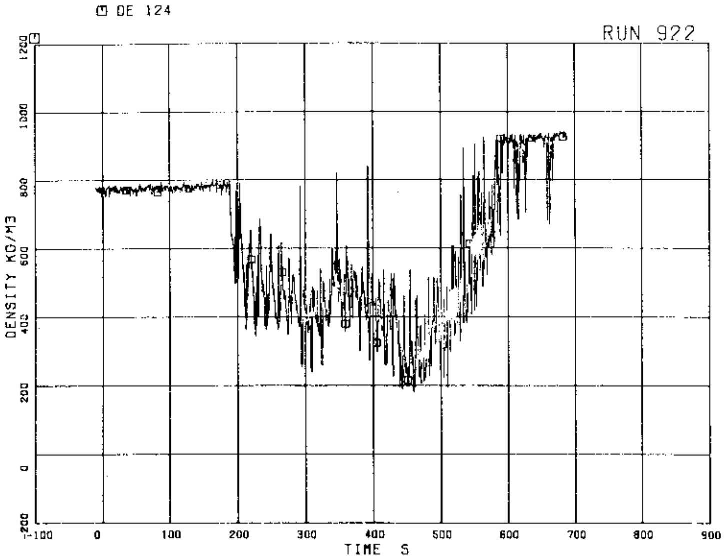


FIG.5. 67 FLUID DENSITY AT JP-3,4 OUTLET, BEAM B

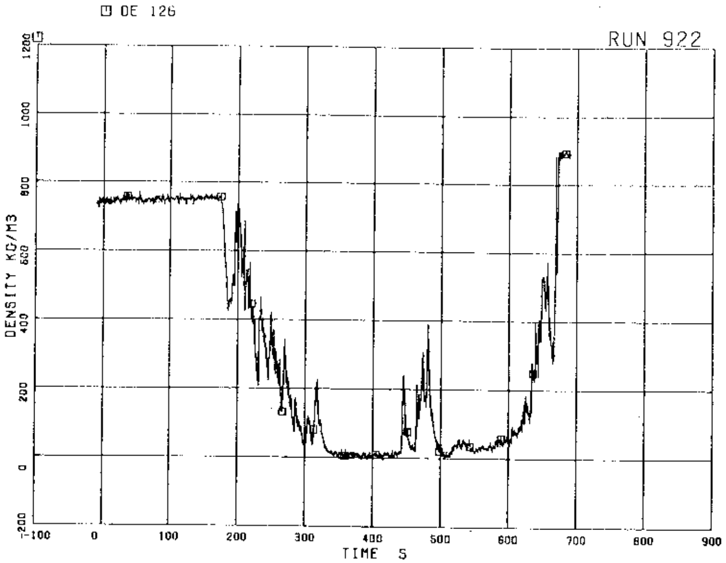


FIG.5. 69 FLUID DENSITY AT MRP SIDE OF BREAK, BEAM A

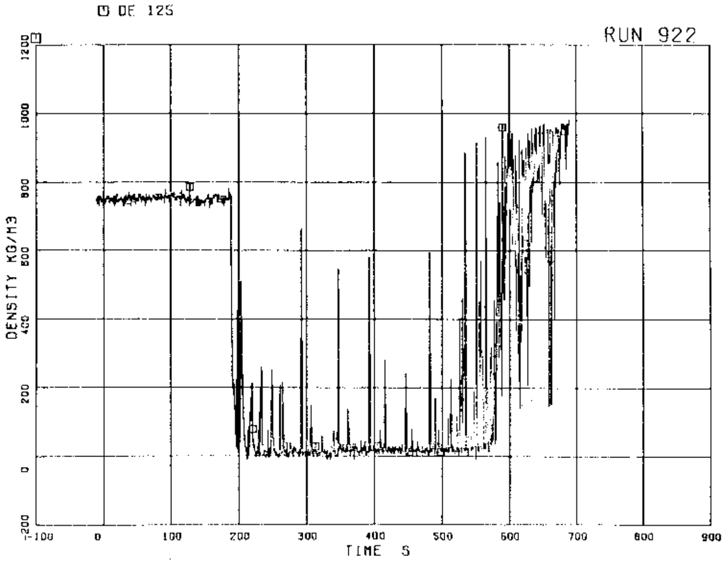


FIG.5. 68 FLUID DENSITY AT JP-3,4 OUTLET, BEAM C

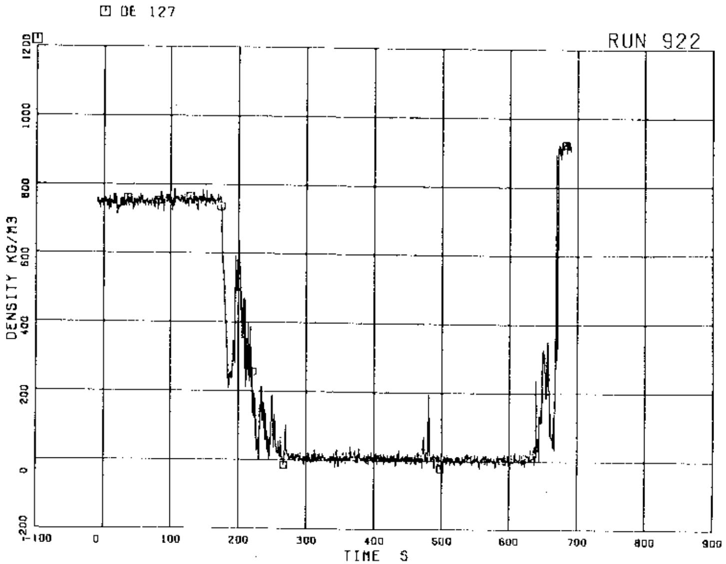


FIG.5. 70 FLUID DENSITY AT MRP SIDE OF BREAK, BEAM B

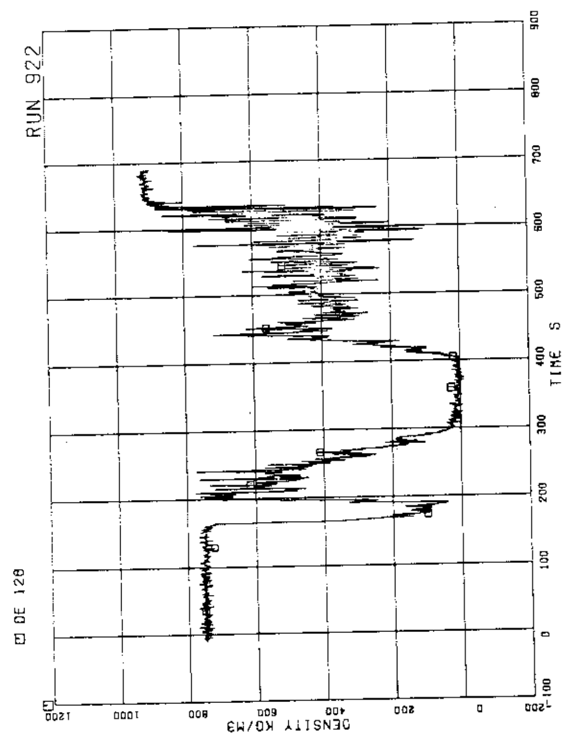


FIG.5. 71 FLUID DENSITY AT PV SIDE OF BREAK, BEAM A

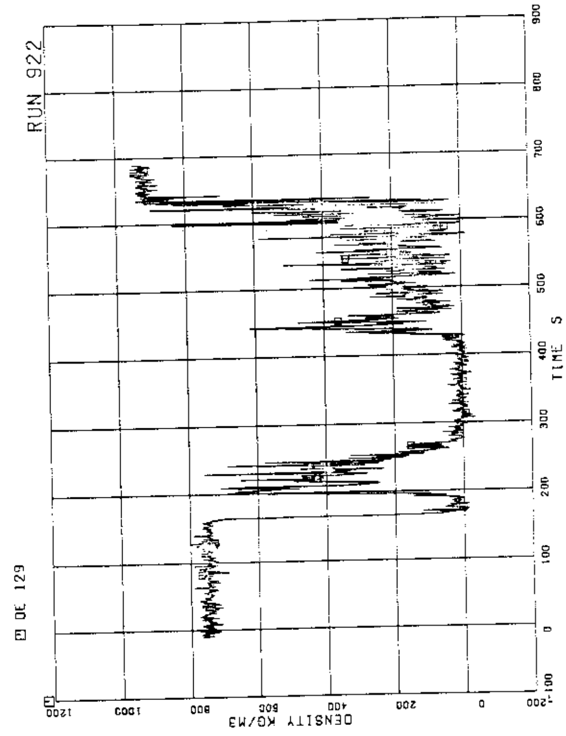


FIG.5. 72 FLUID DENSITY AT PV SIDE OF BREAK, BEAM B

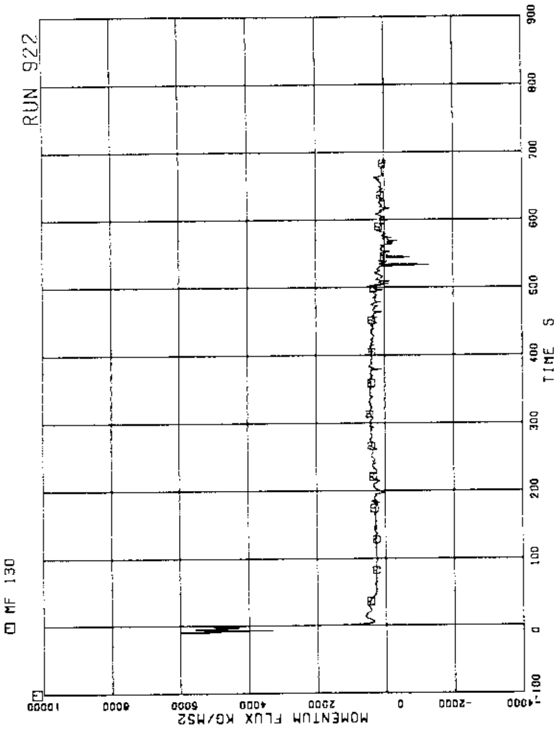


FIG.5. 73 MOMENTUM FLUX AT JP-1,2 OUTLET SPOOL

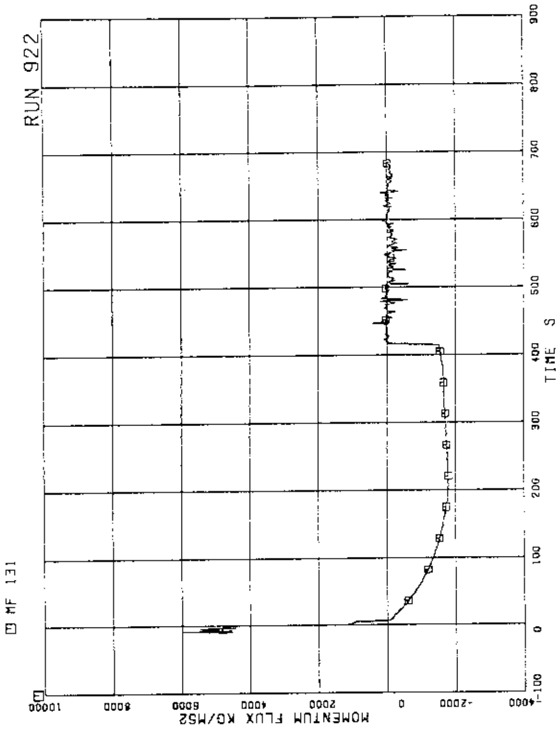


FIG.5. 74 MOMENTUM FLUX AT JP-3,4 OUTLET SPOOL

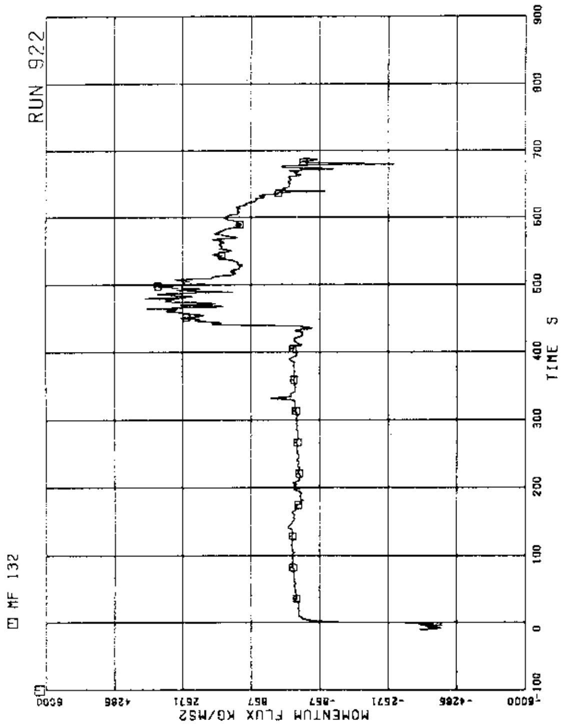


FIG.5. 75 MOMENTUM FLUX AT BREAK A SPOOL PIECE (LOW RANGE)

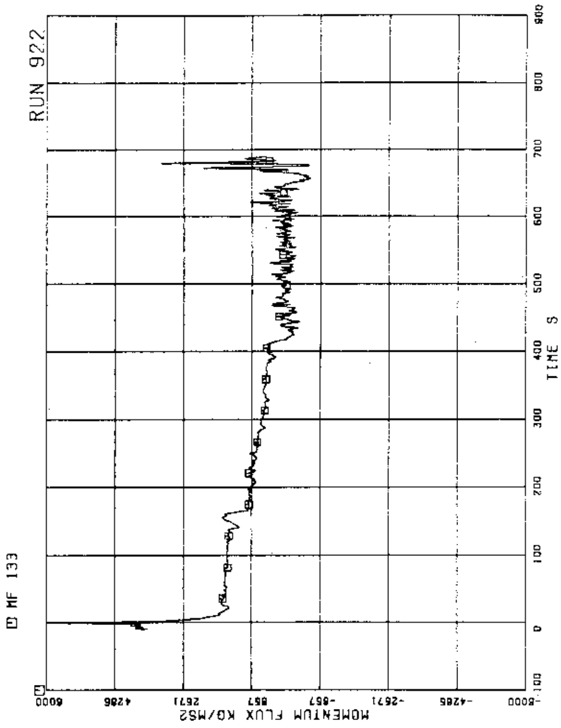


FIG.5. 76 MOMENTUM FLUX AT BREAK B SPOOL PIECE (LOW RANGE)

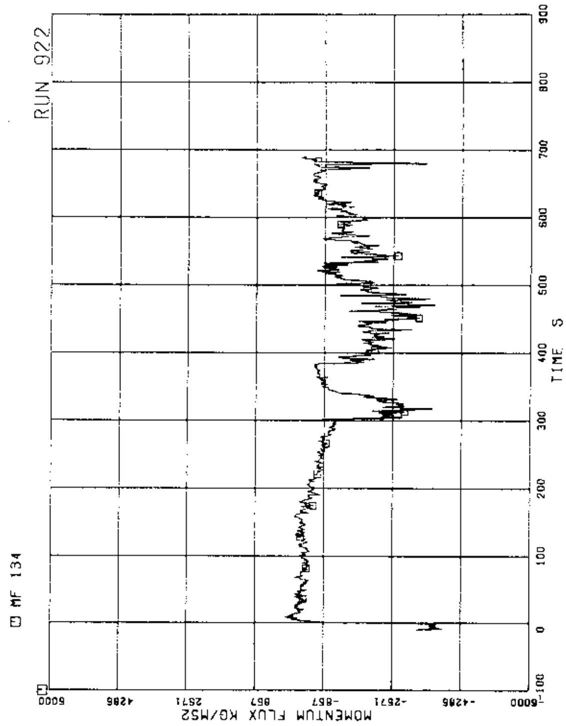


FIG.5. 77 MOMENTUM FLUX AT BREAK A SPOOL PIECE (HIGH RANGE)

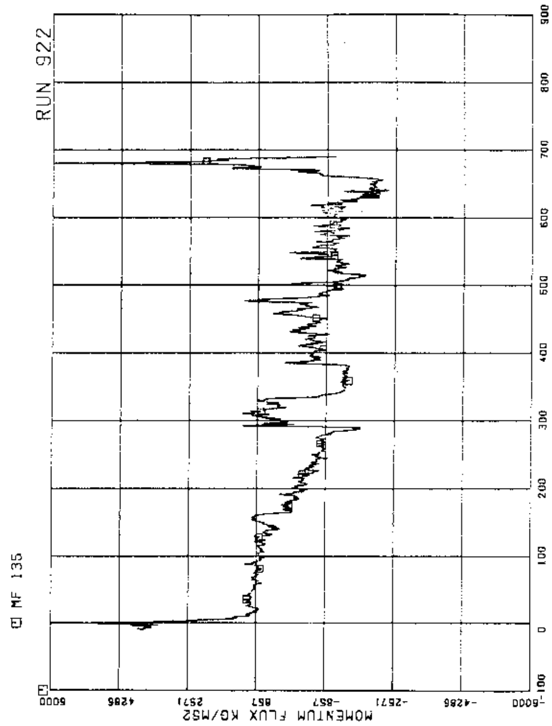


FIG.5. 78 MOMENTUM FLUX AT BREAK B SPOOL PIECE (HIGH RANGE)

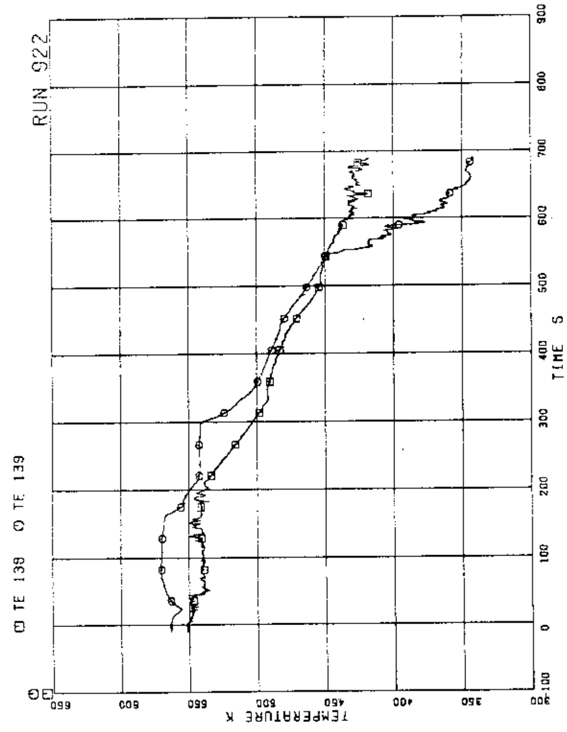


FIG.5. 79 FLUID TEMPERATURES IN LOWER PLENUM AND UPPER PLENUM

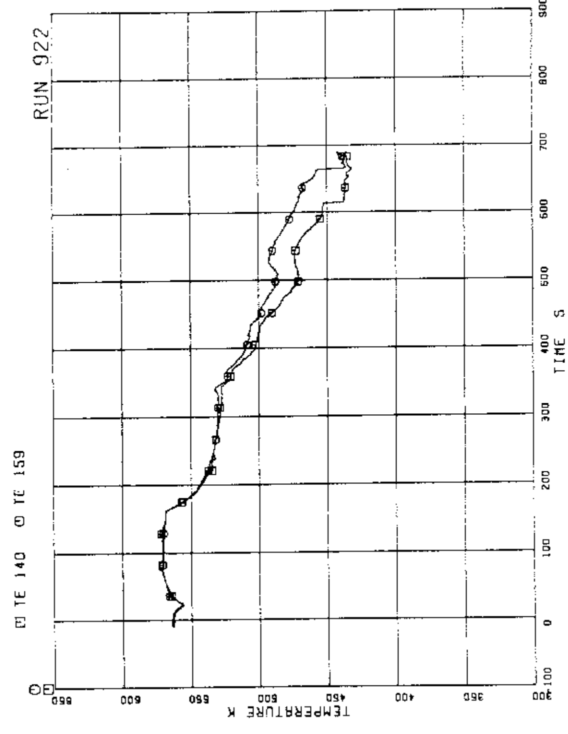


FIG.5. 80 FLUID TEMPERATURES IN STEAM DOME AND MSL

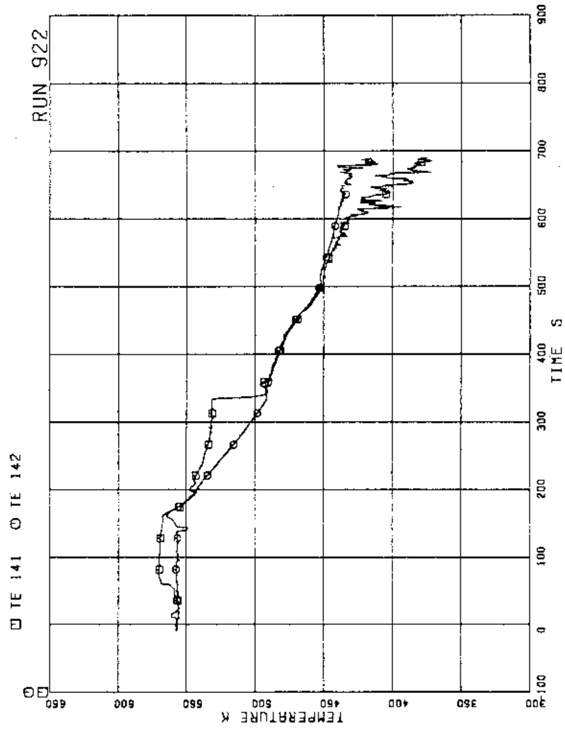


FIG.5. 81 FLUID TEMPERATURES IN DOWNCOMER

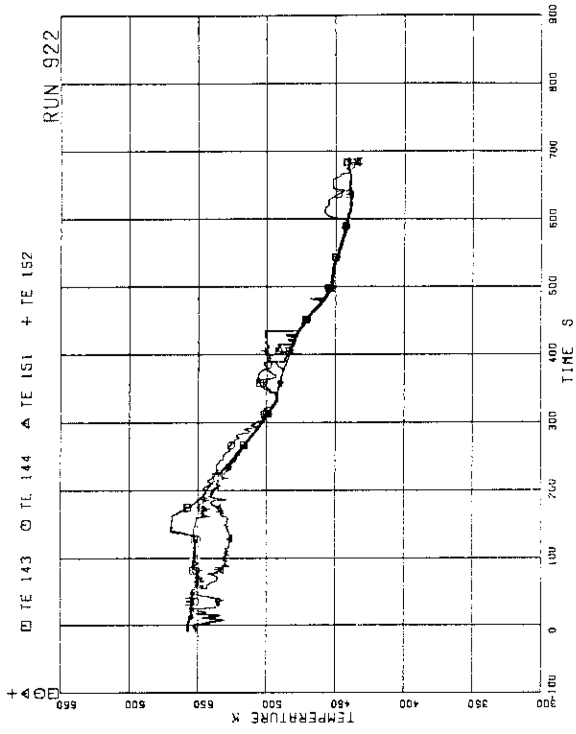


FIG.5. 82 FLUID TEMPERATURES IN INTACT RECIRCULATION LOOP

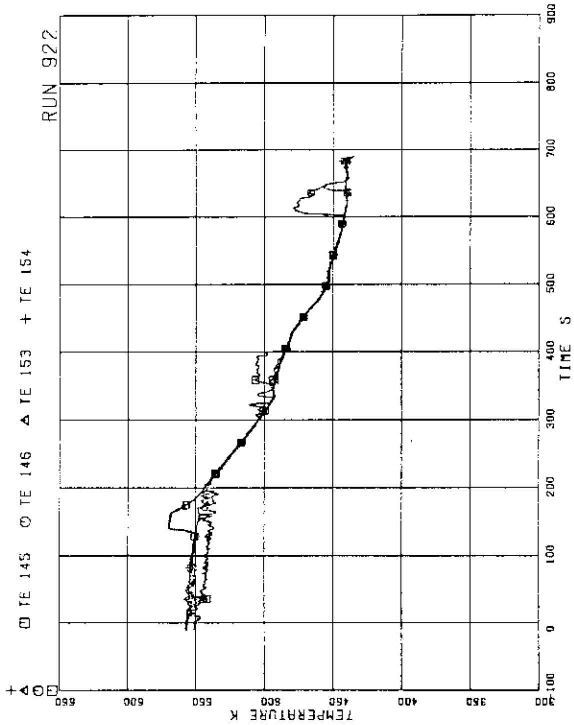


FIG.5. 83 FLUID TEMPERATURES IN BROKEN RECIRCULATION LOOP

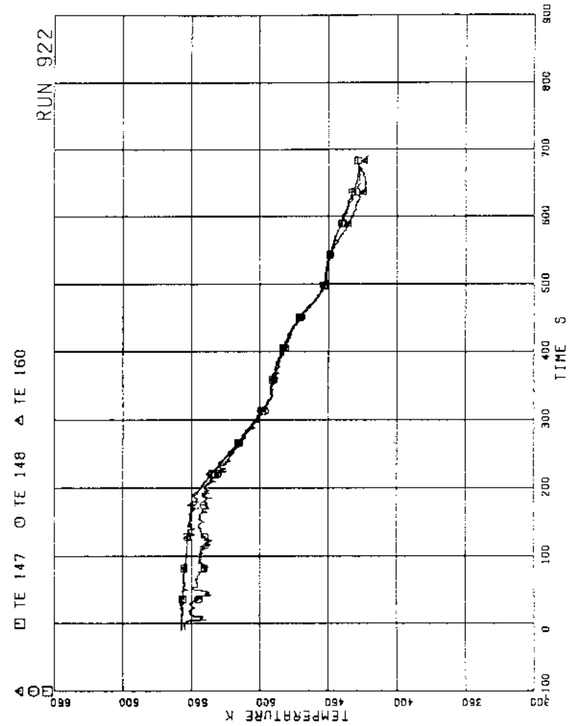


FIG.5. 84 FLUID TEMPERATURES AT JP-1.2 OUTLET

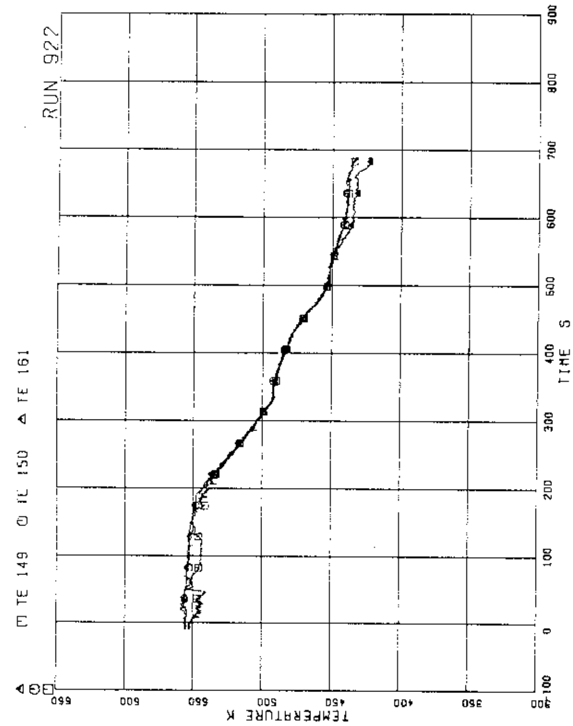


FIG.5. 85 FLUID TEMPERATURES AT JP-3.4 OUTLET

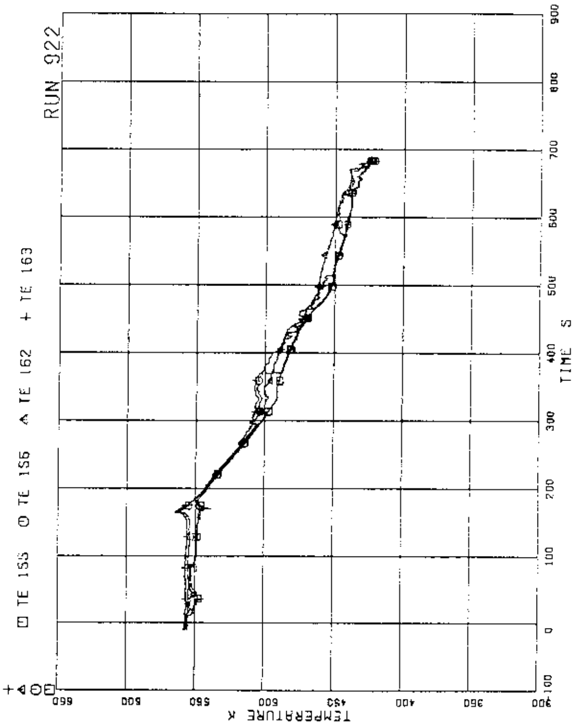


FIG.5. 86 FLUID TEMPERATURES NEAR BREAKS A AND B

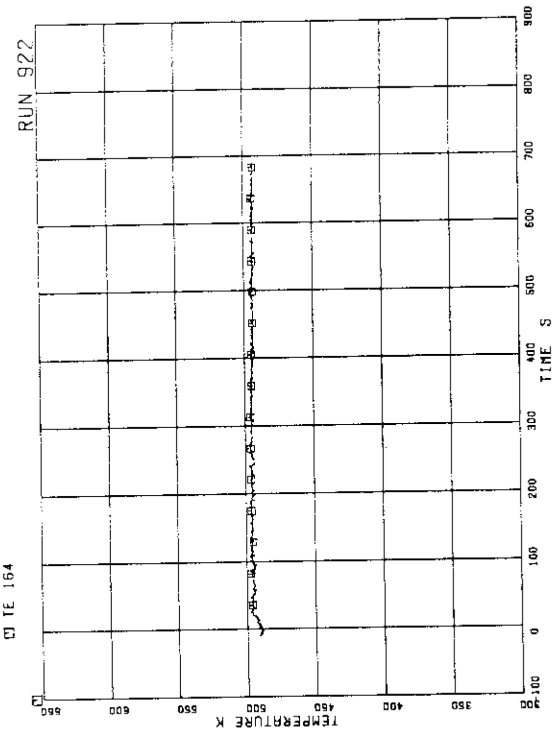


FIG.5. 87 FEEDWATER TEMPERATURE

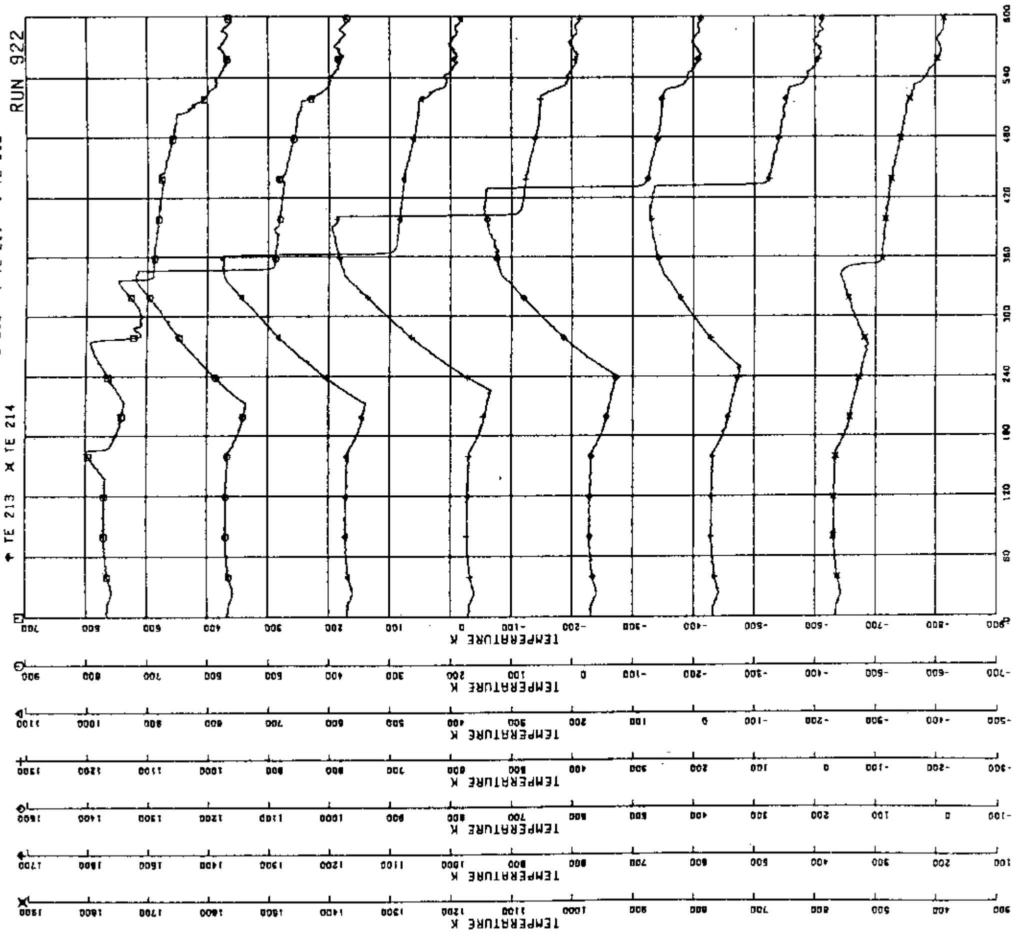


FIG.5. 89 SURFACE TEMPERATURES OF FUEL ROD A12

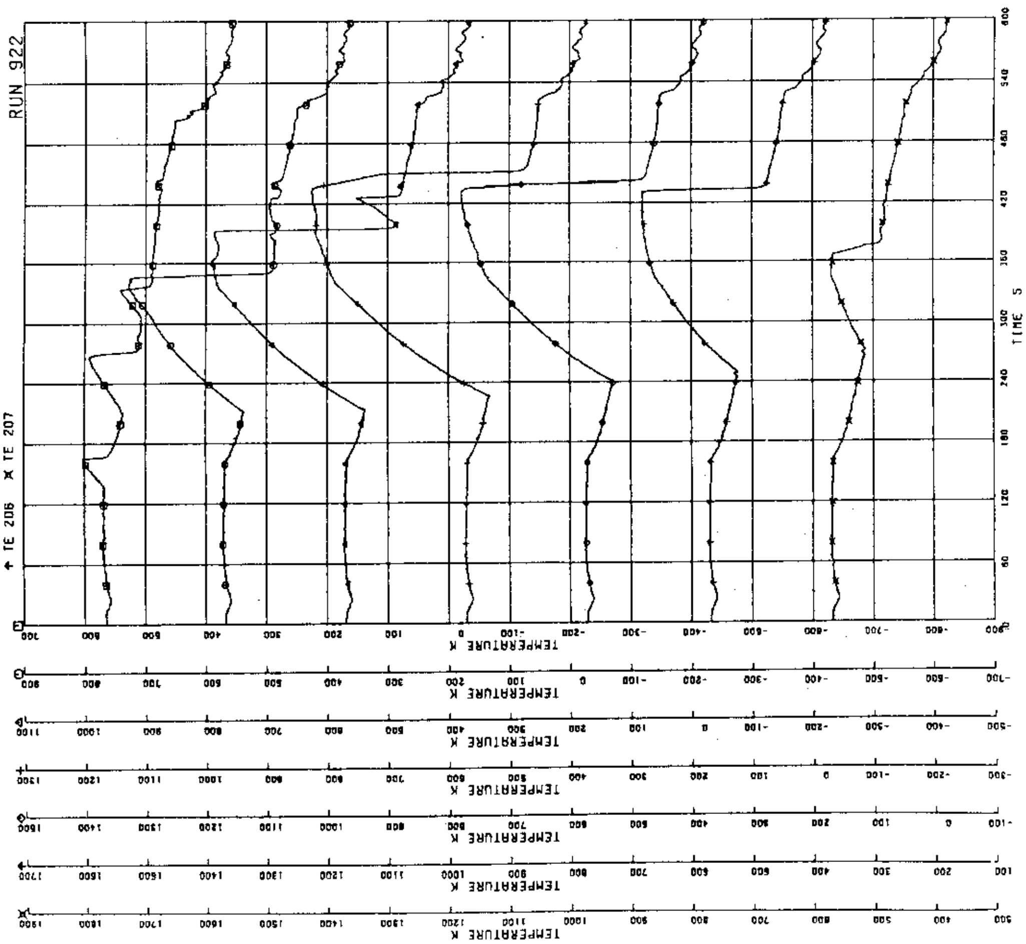


FIG.5. 88 SURFACE TEMPERATURES OF FUEL ROD A11

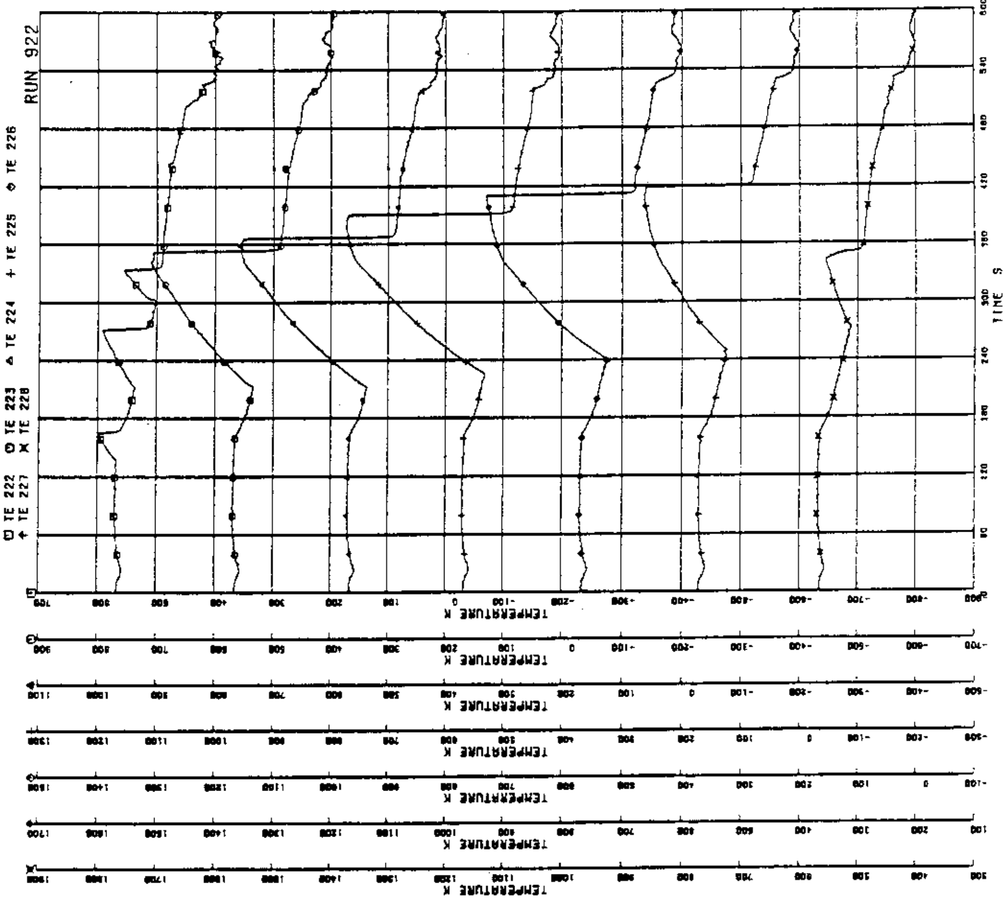


FIG.5. 91 SURFACE TEMPERATURES OF FUEL ROD A14

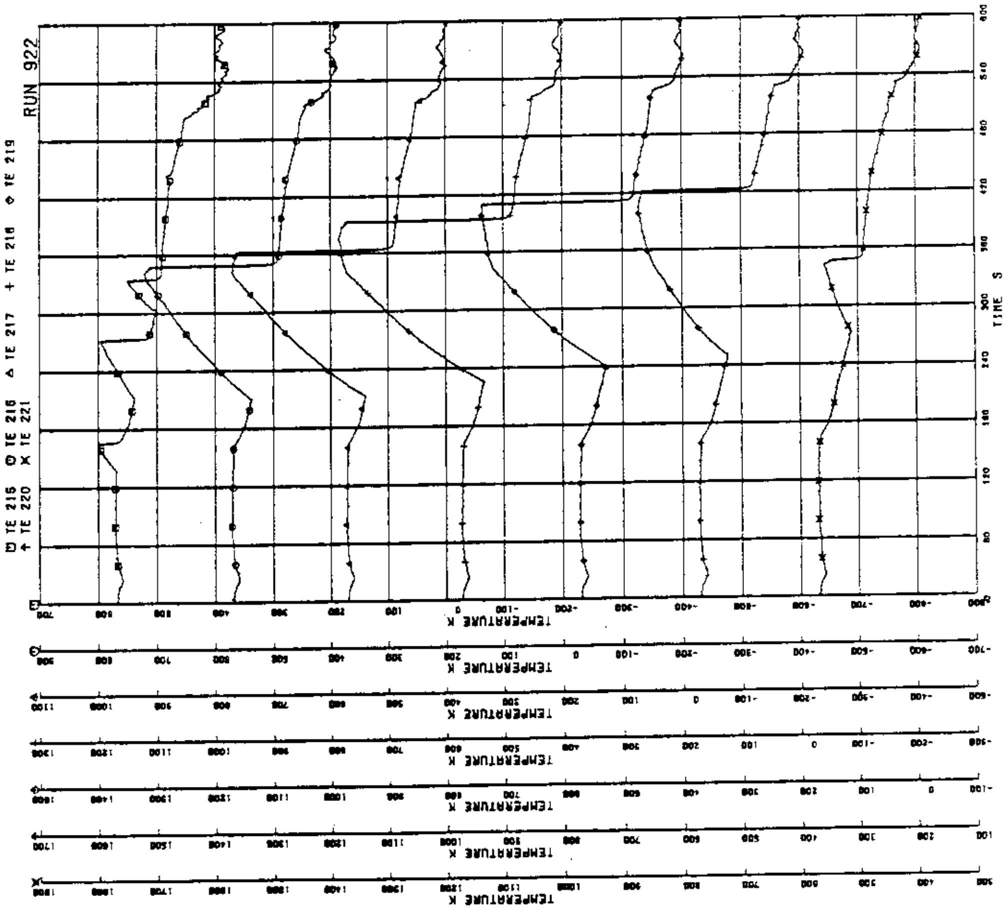


FIG.5. 90 SURFACE TEMPERATURES OF FUEL ROD A13

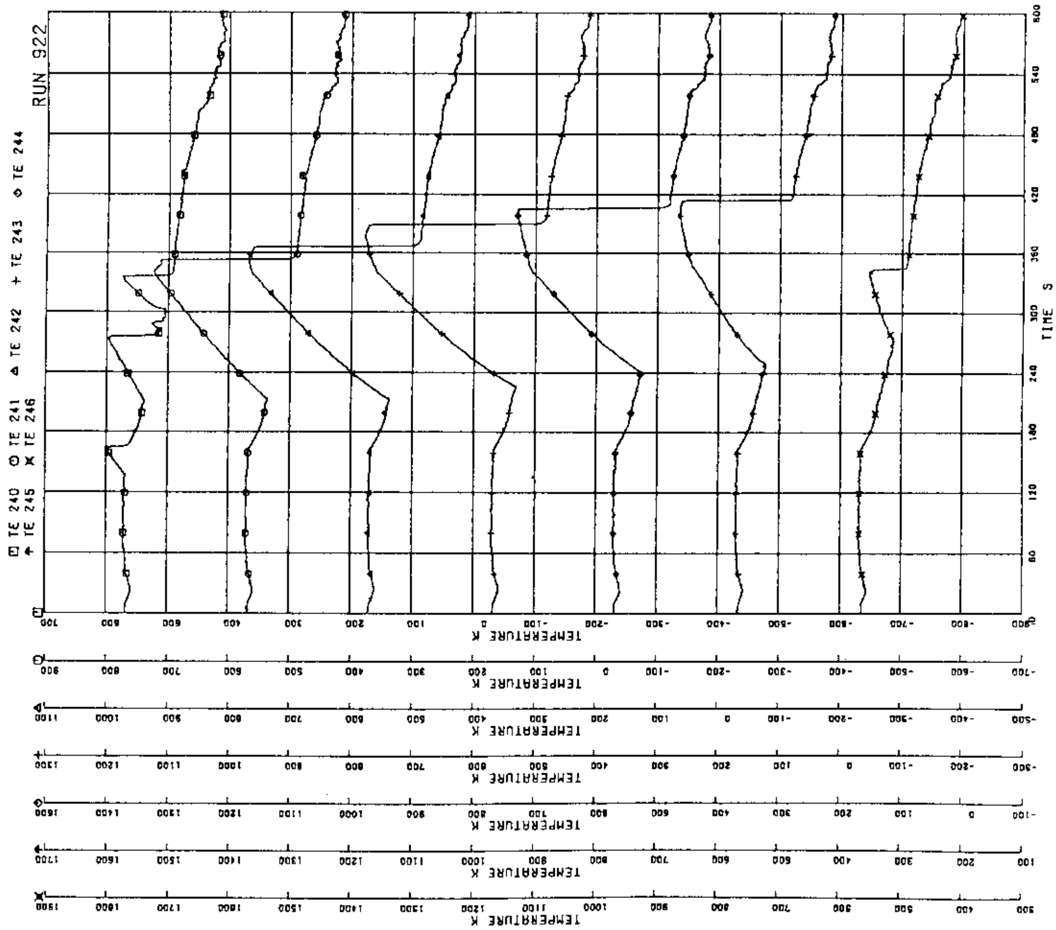


FIG.5. 93 SURFACE TEMPERATURES OF FUEL ROD A24

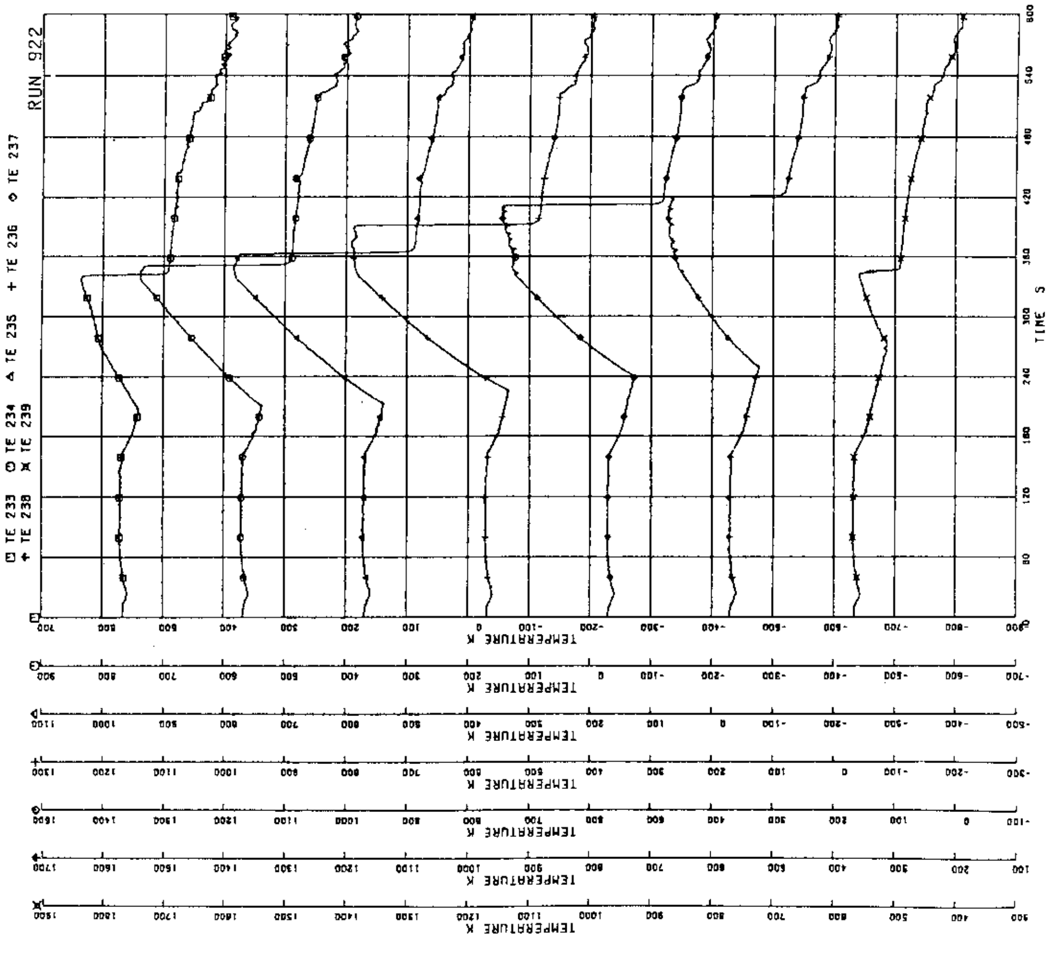


FIG.5. 92 SURFACE TEMPERATURES OF FUEL ROD A22

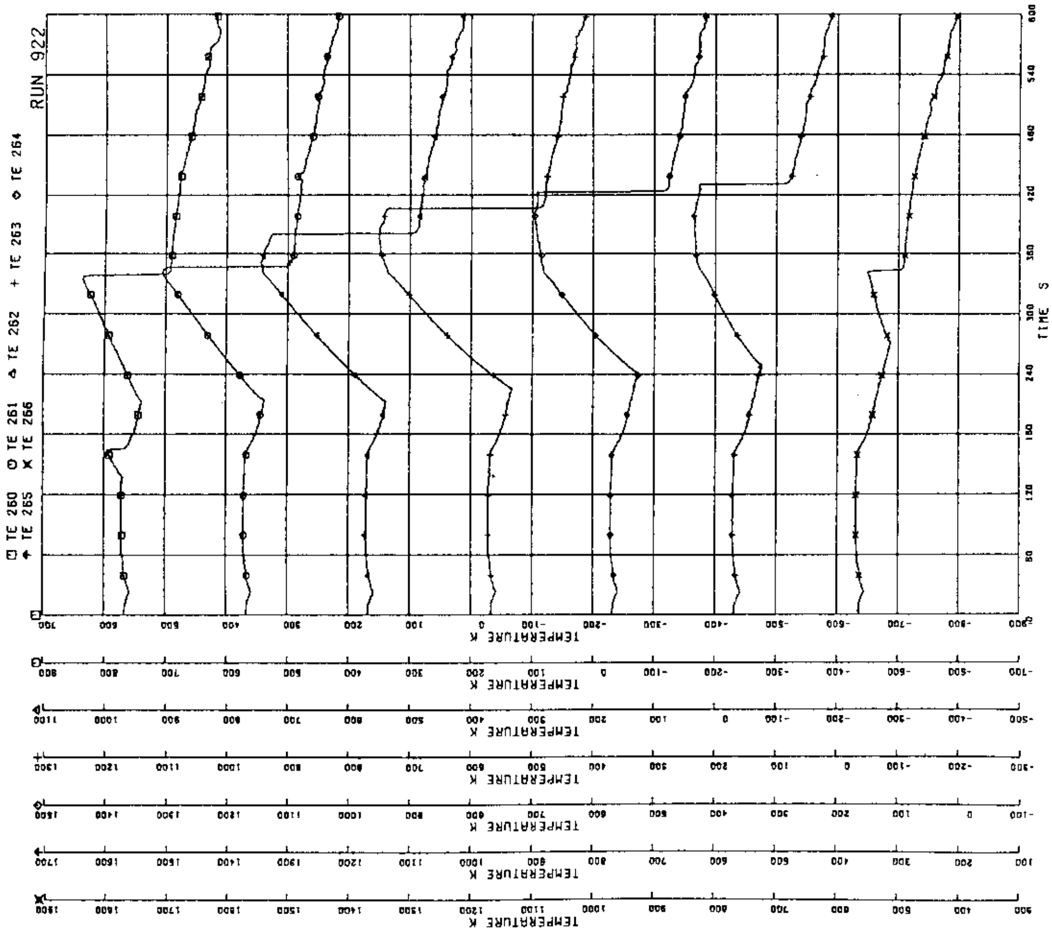


FIG.S. 95 SURFACE TEMPERATURES OF FUEL ROD A34

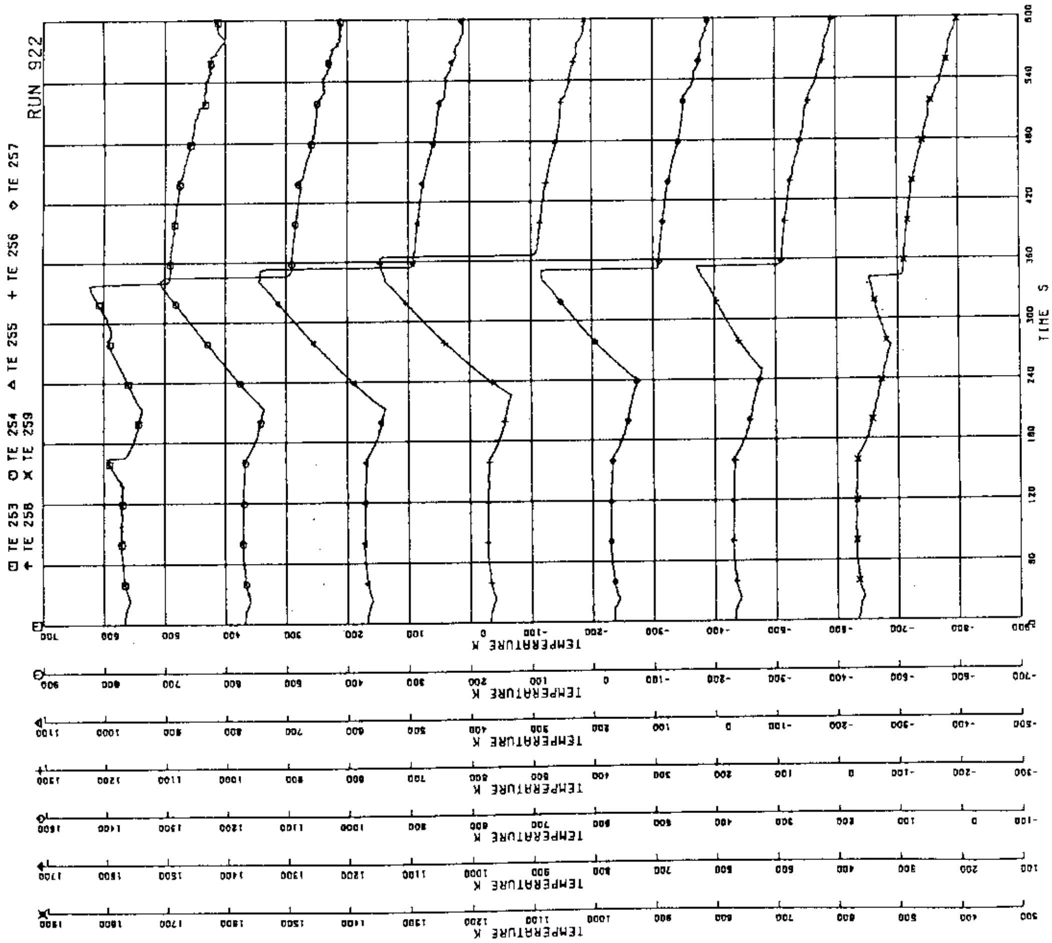


FIG.S. 94 SURFACE TEMPERATURES OF FUEL ROD A33

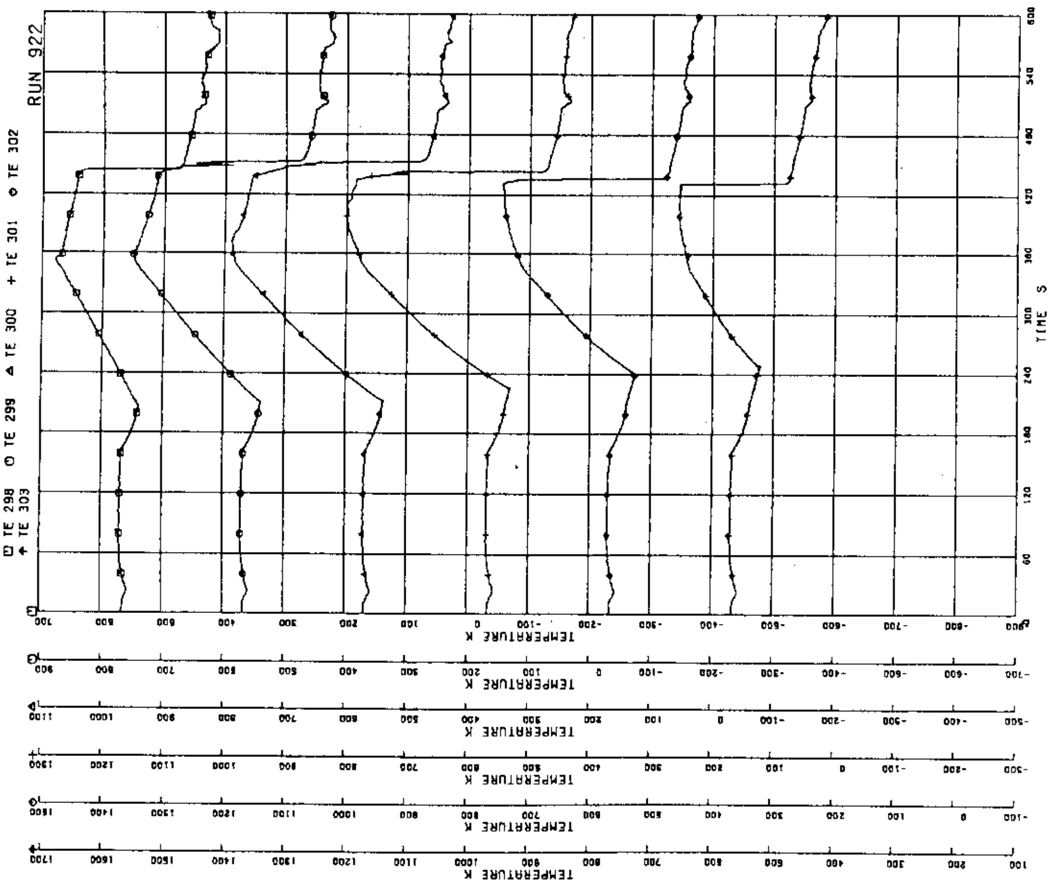


FIG.5. 97 SURFACE TEMPERATURES OF FUEL ROD A77

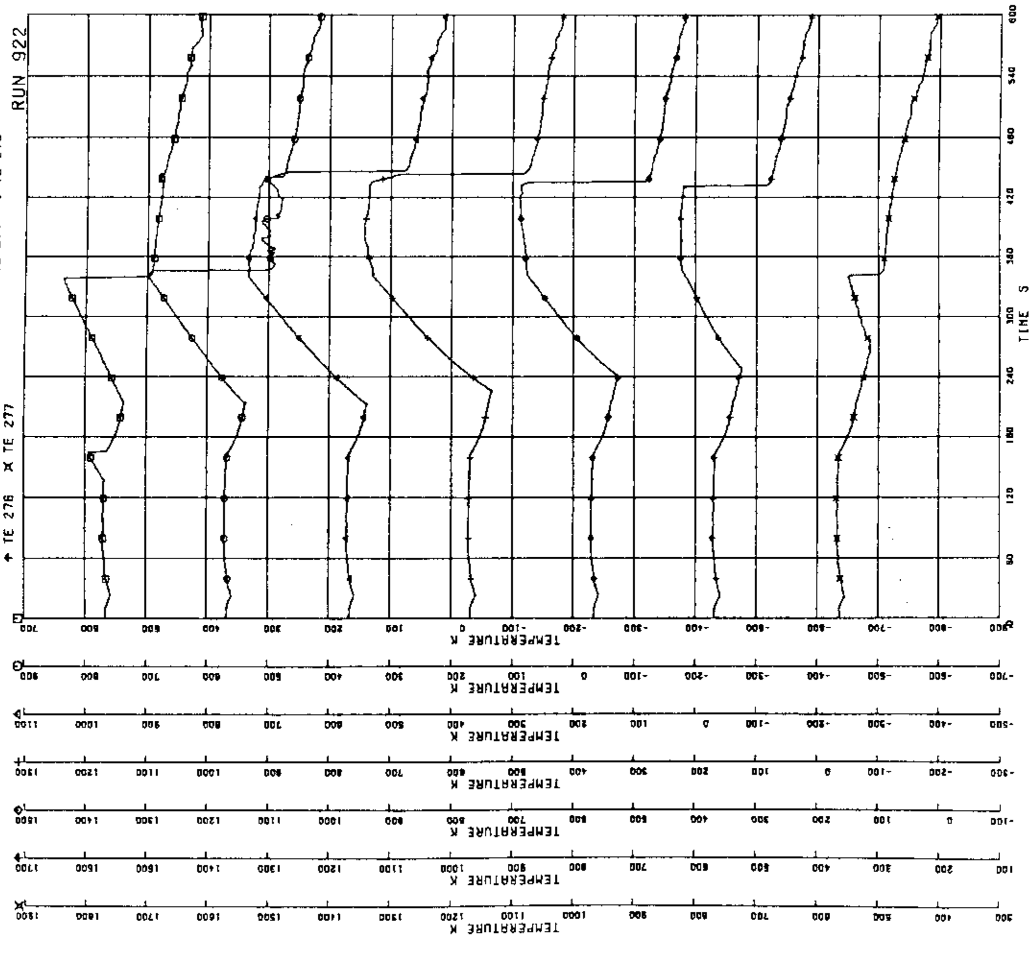


FIG.5. 96 SURFACE TEMPERATURES OF FUEL ROD A44

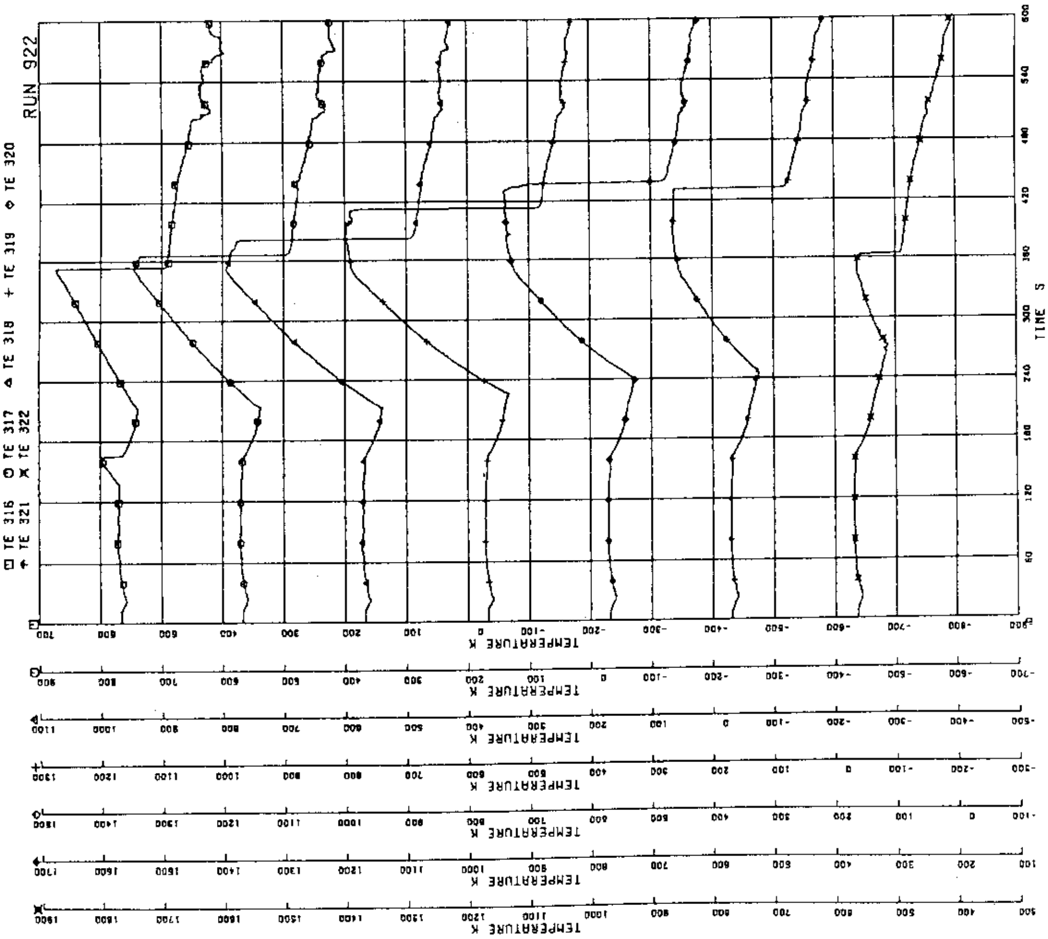


FIG.5. 99 SURFACE TEMPERATURES OF FUEL ROD A87

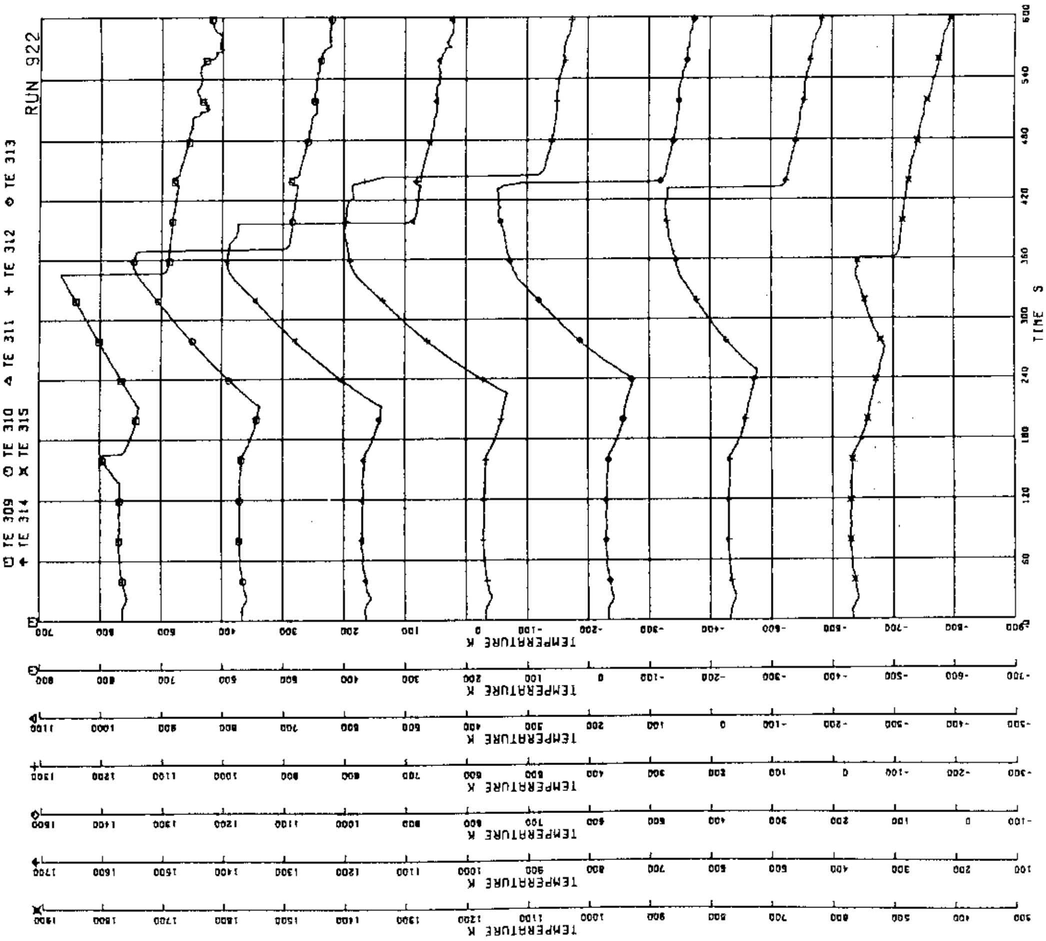


FIG.5. 98 SURFACE TEMPERATURES OF FUEL ROD A85

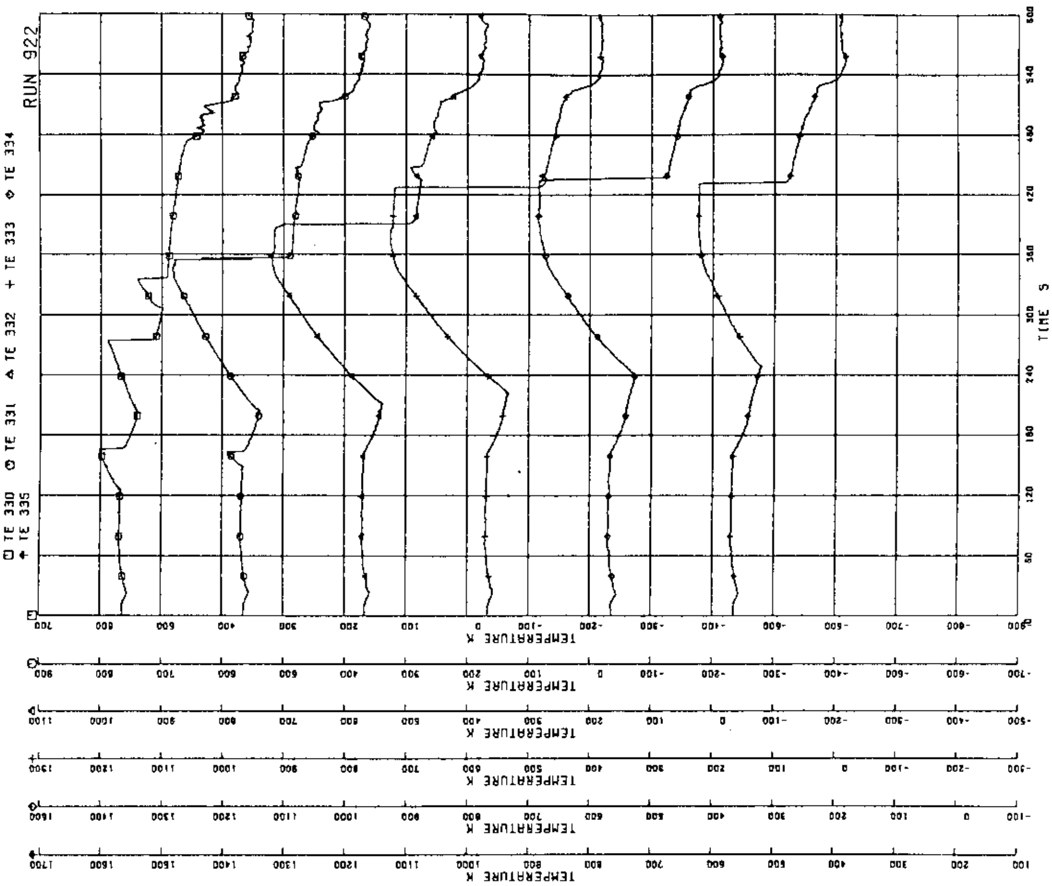


FIG.5.101 SURFACE TEMPERATURES OF FUEL ROD B11

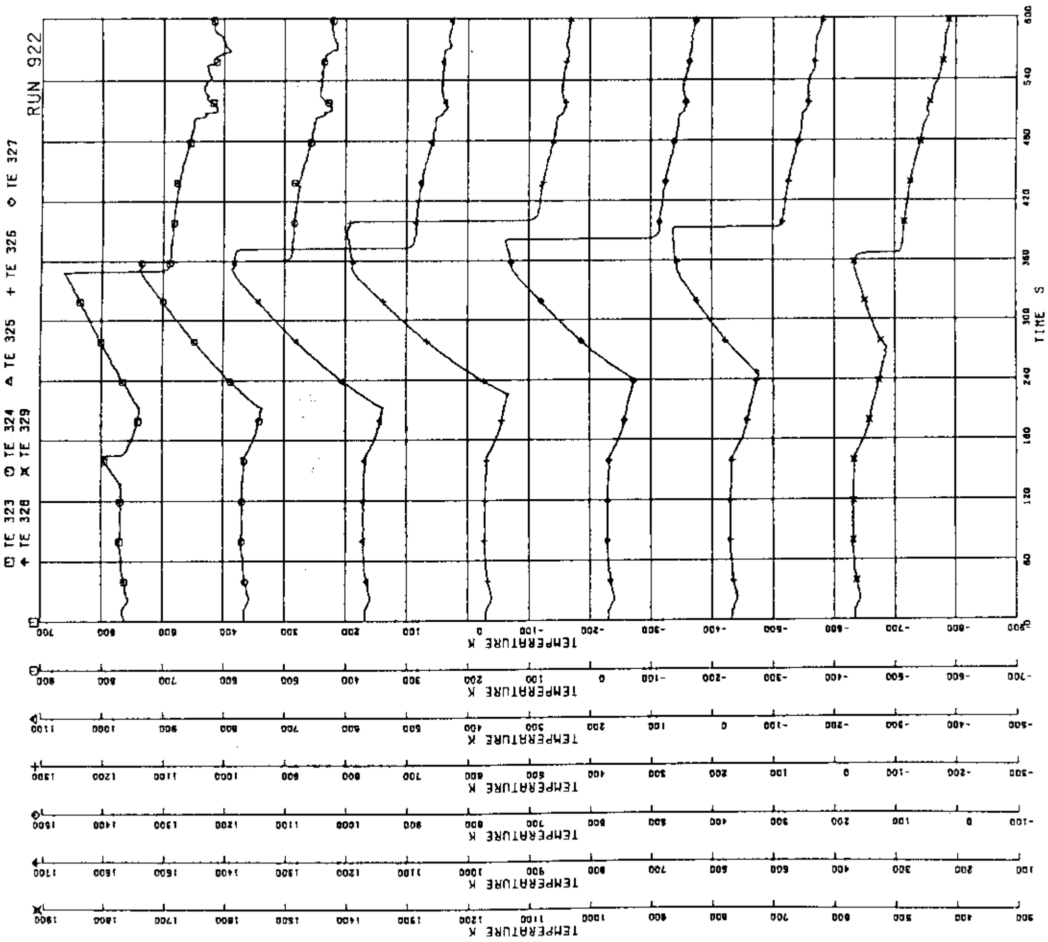


FIG.5.100 SURFACE TEMPERATURES OF FUEL ROD A88

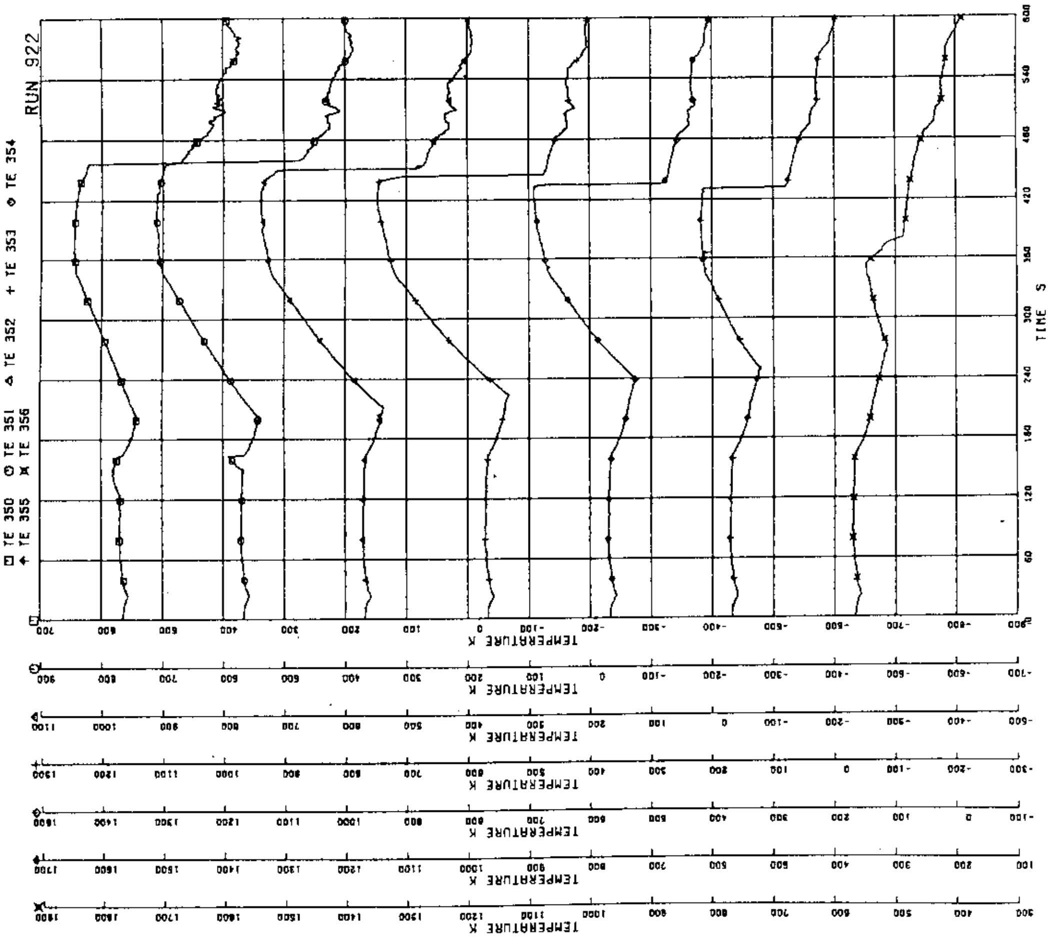


FIG.S.103 SURFACE TEMPERATURES OF FUEL ROD B77

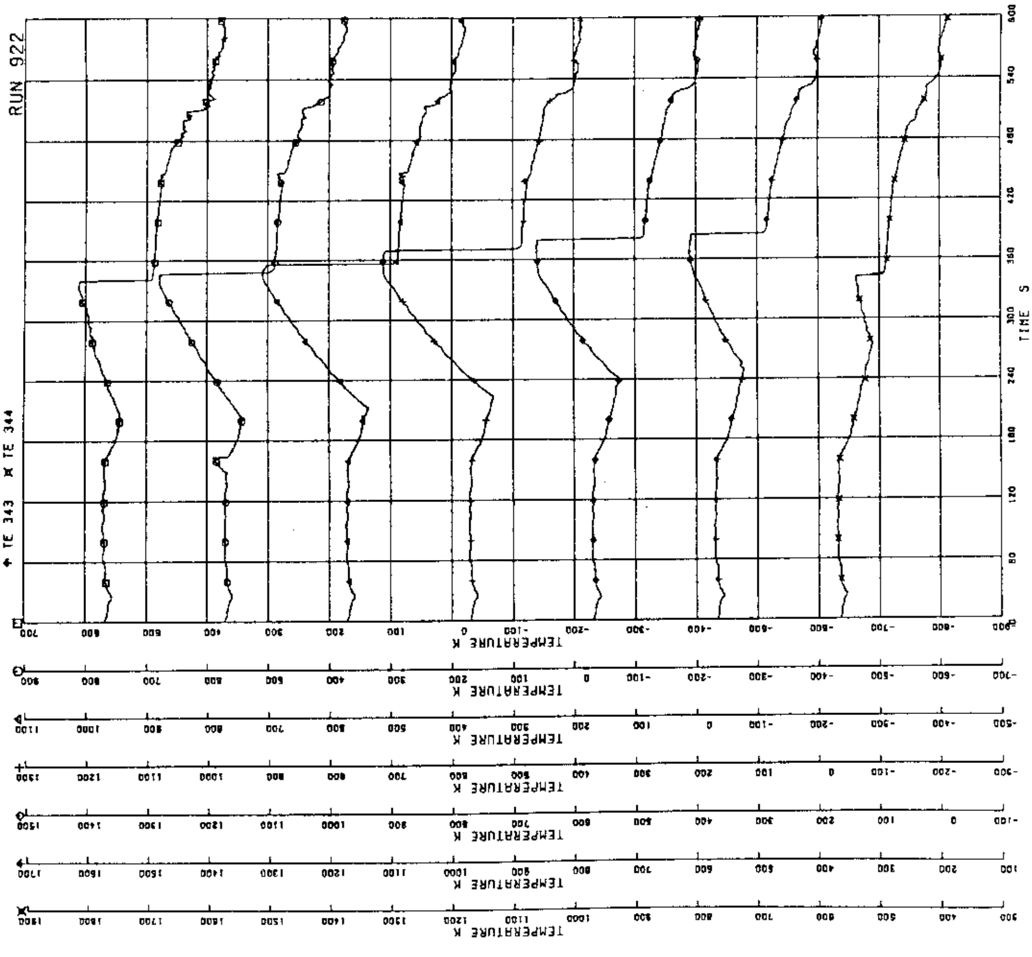


FIG.S.102 SURFACE TEMPERATURES OF FUEL ROD B22

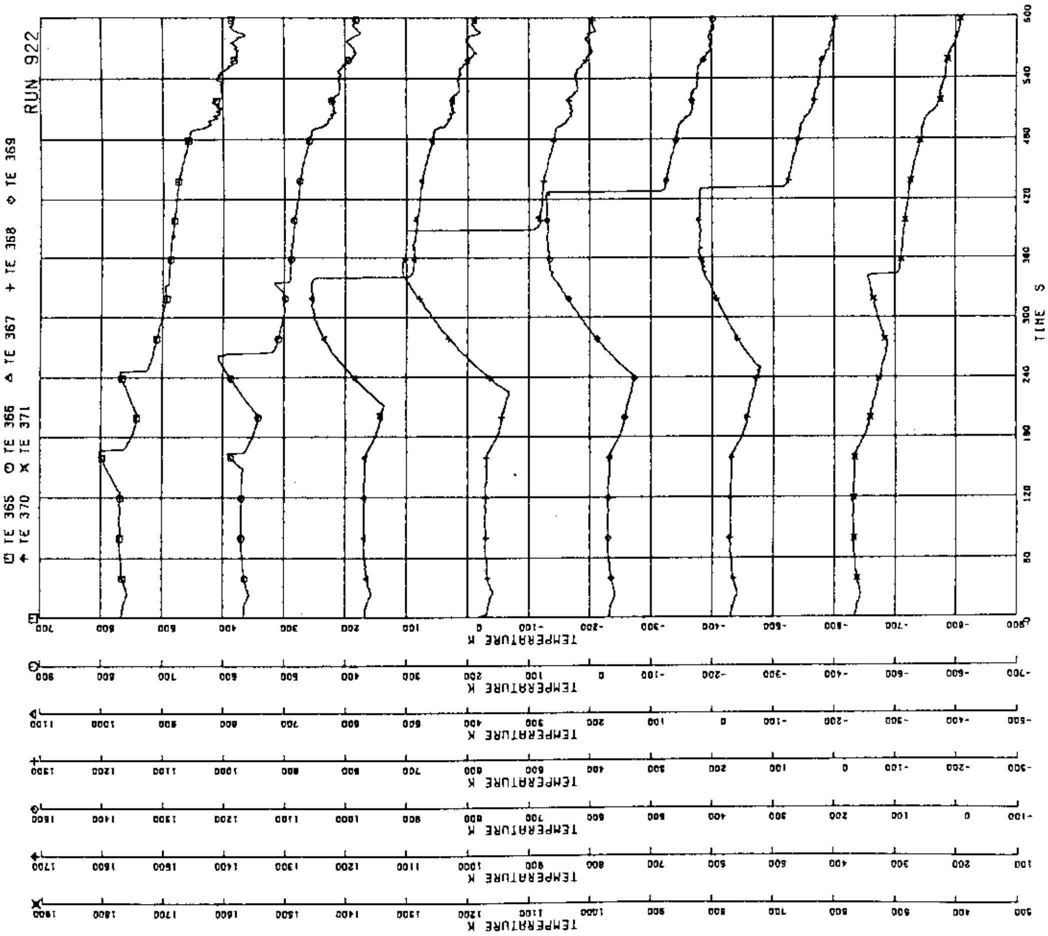


FIG.5.105 SURFACE TEMPERATURES OF FUEL ROD C13

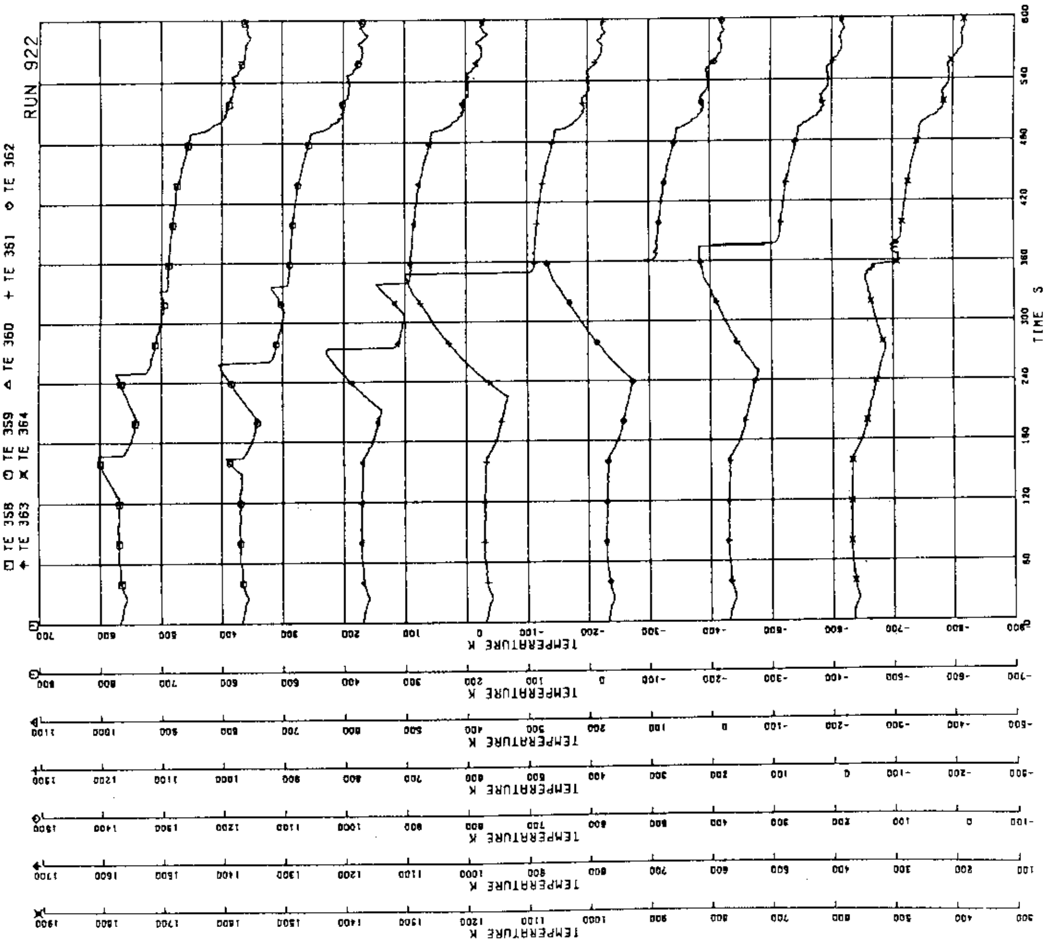


FIG.5.104 SURFACE TEMPERATURES OF FUEL ROD C11

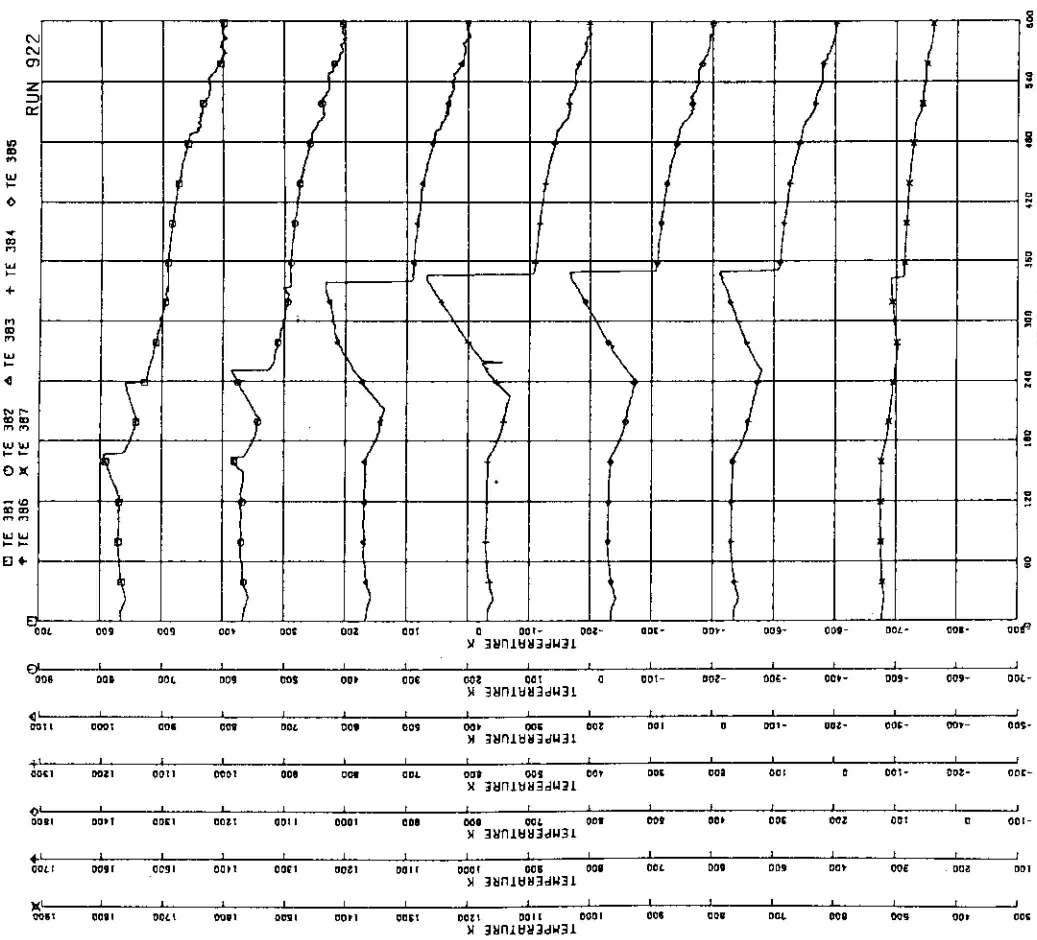


FIG.5.107 SURFACE TEMPERATURES OF FUEL ROD C33

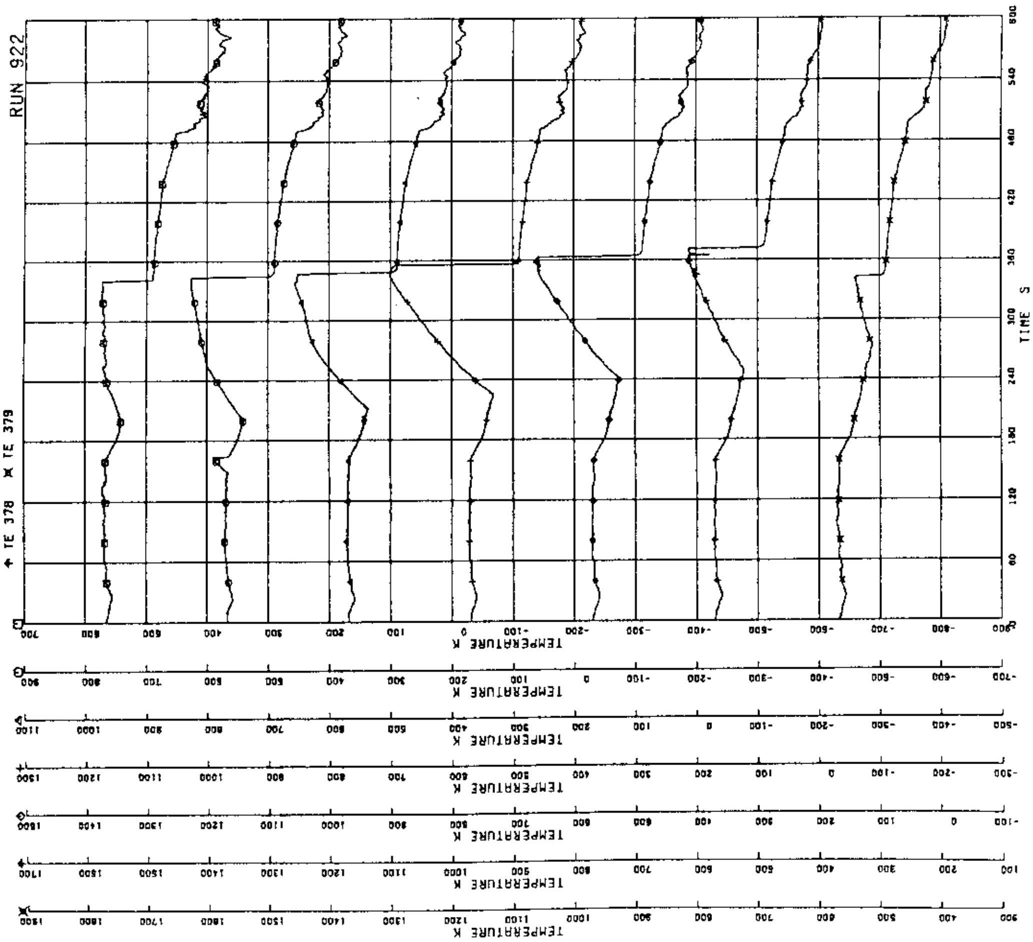


FIG.5.106 SURFACE TEMPERATURES OF FUEL ROD C22

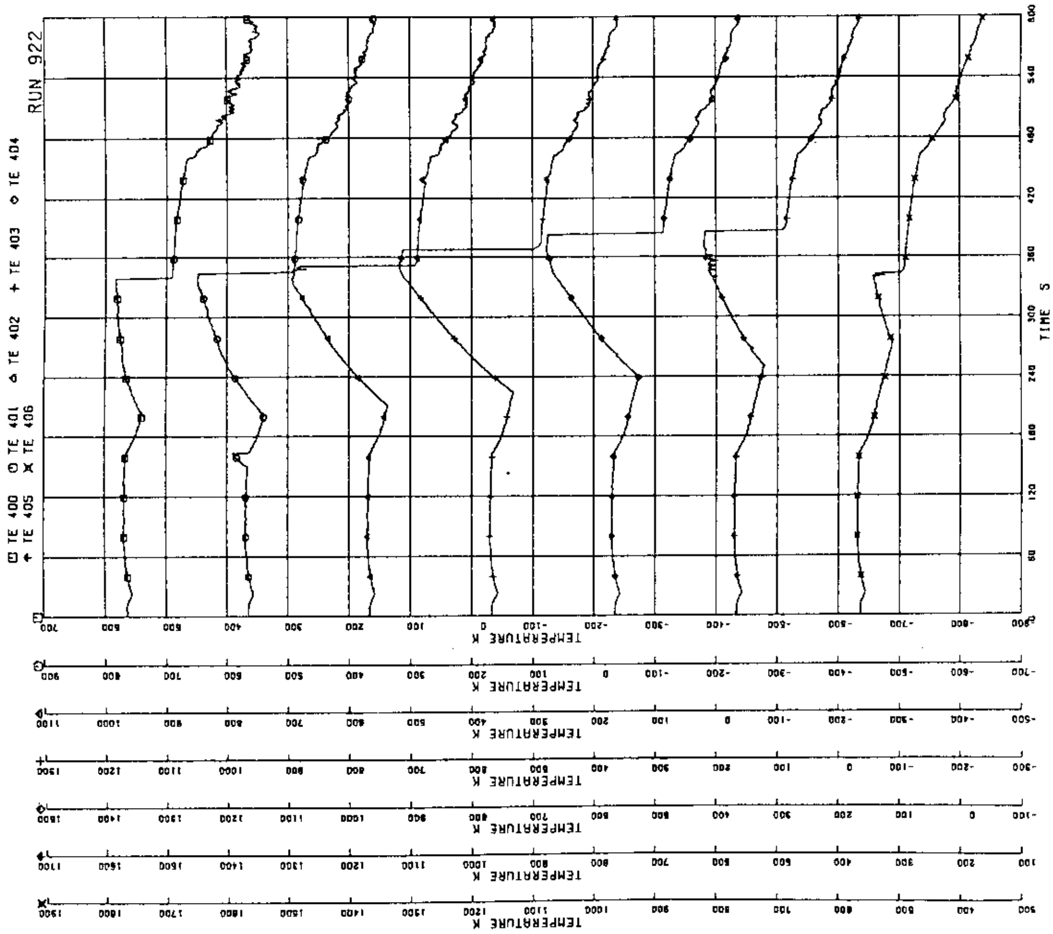


FIG.5.109 SURFACE TEMPERATURES OF FUEL ROD D22

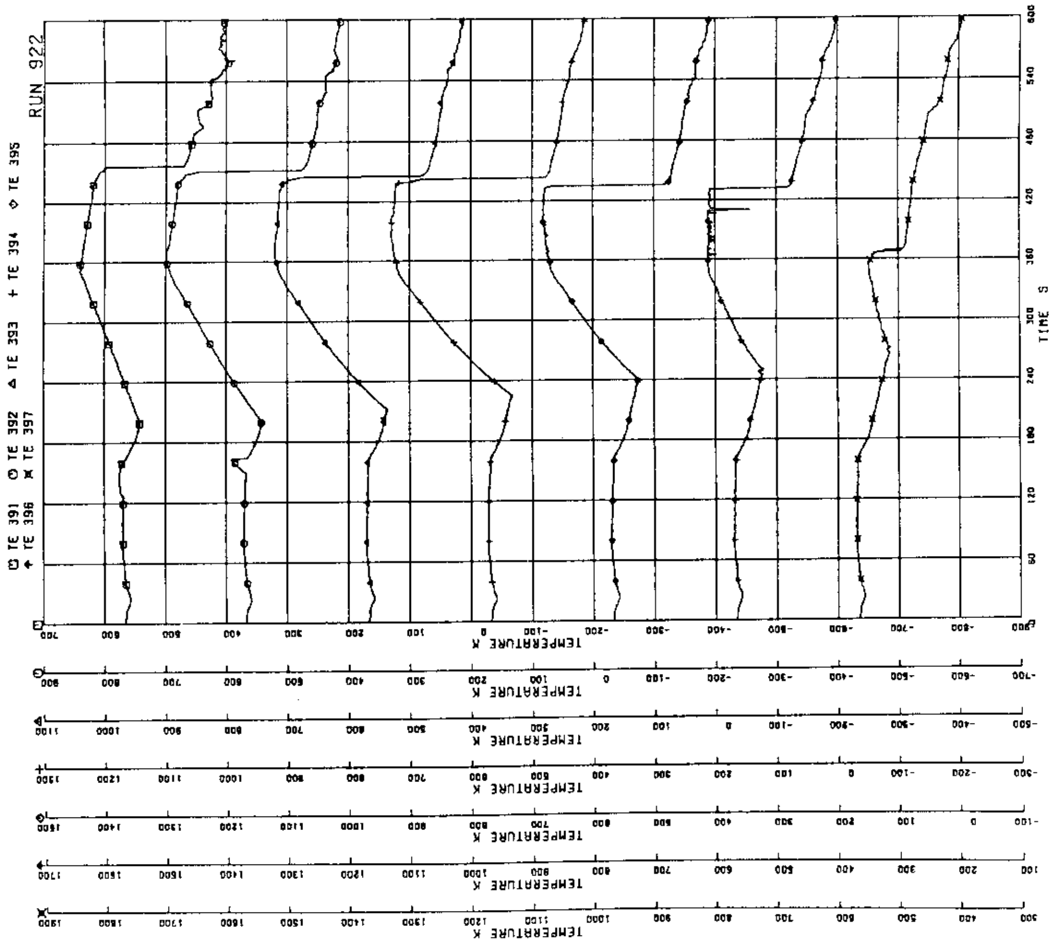


FIG.5.108 SURFACE TEMPERATURES OF FUEL ROD C77

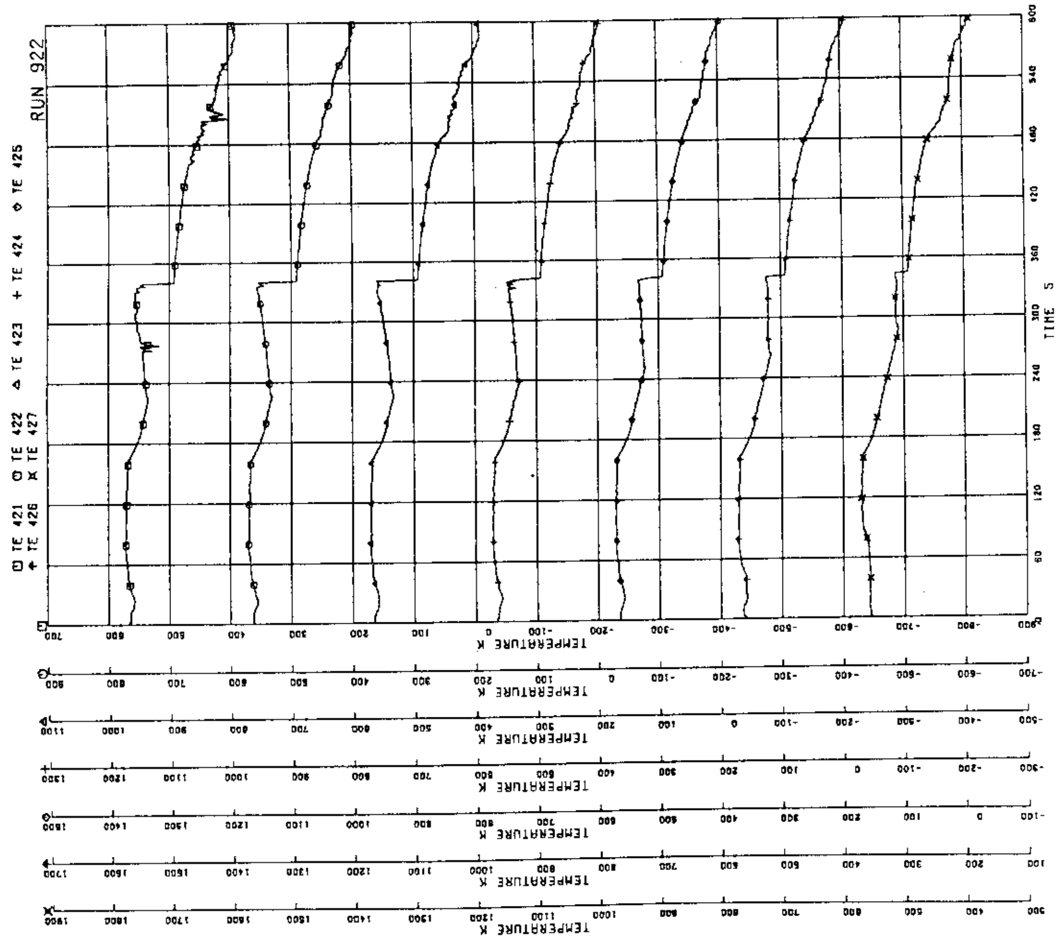


FIG.5.111 SURFACE TEMPERATURES OF WATER ROD SIMULATOR B45

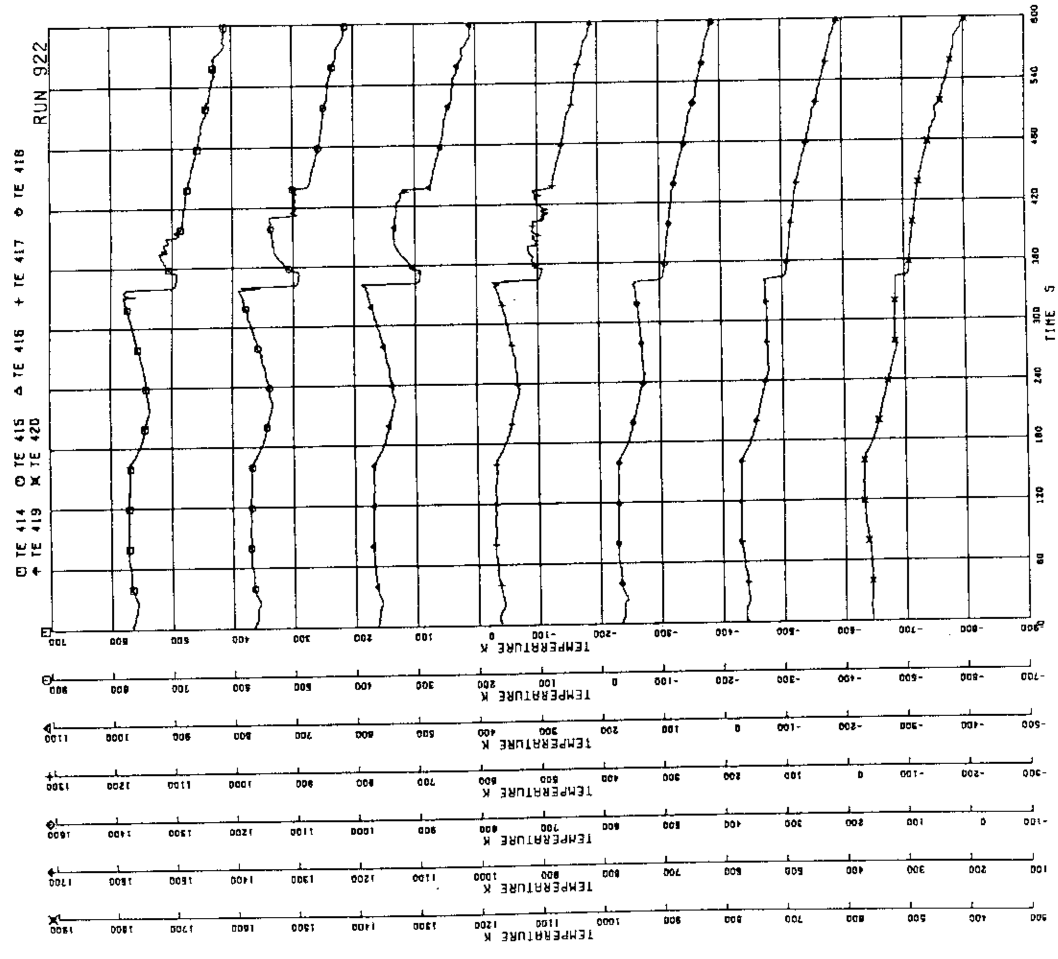


FIG.5.110 SURFACE TEMPERATURES OF WATER ROD SIMULATOR A45

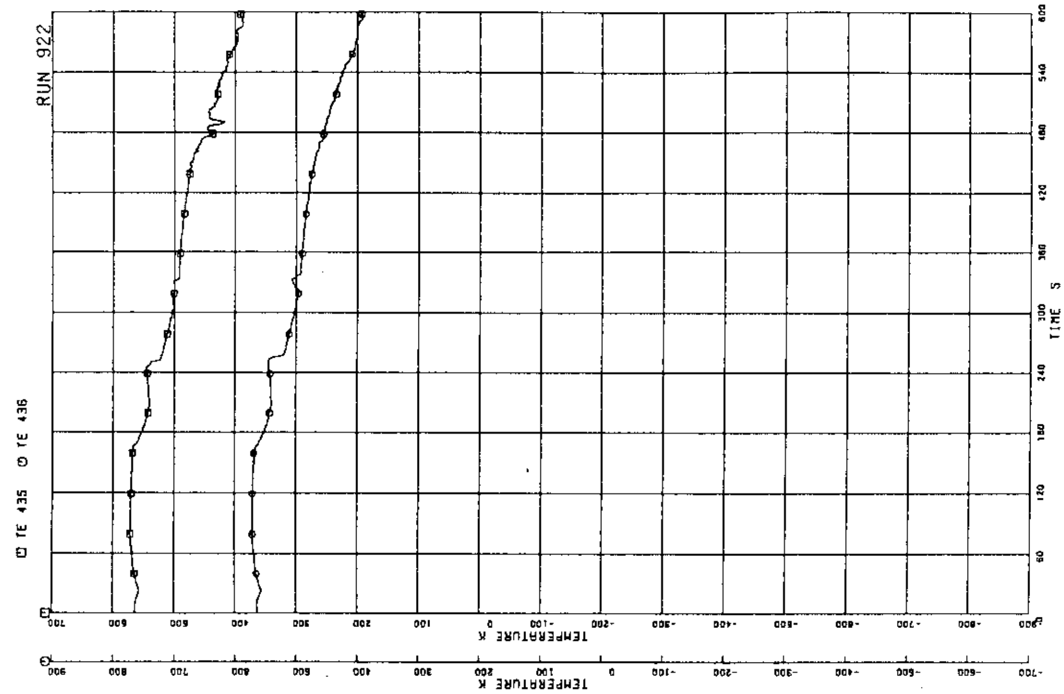


FIG.5.113 SURFACE TEMPERATURES OF WATER ROD SIMULATOR D45

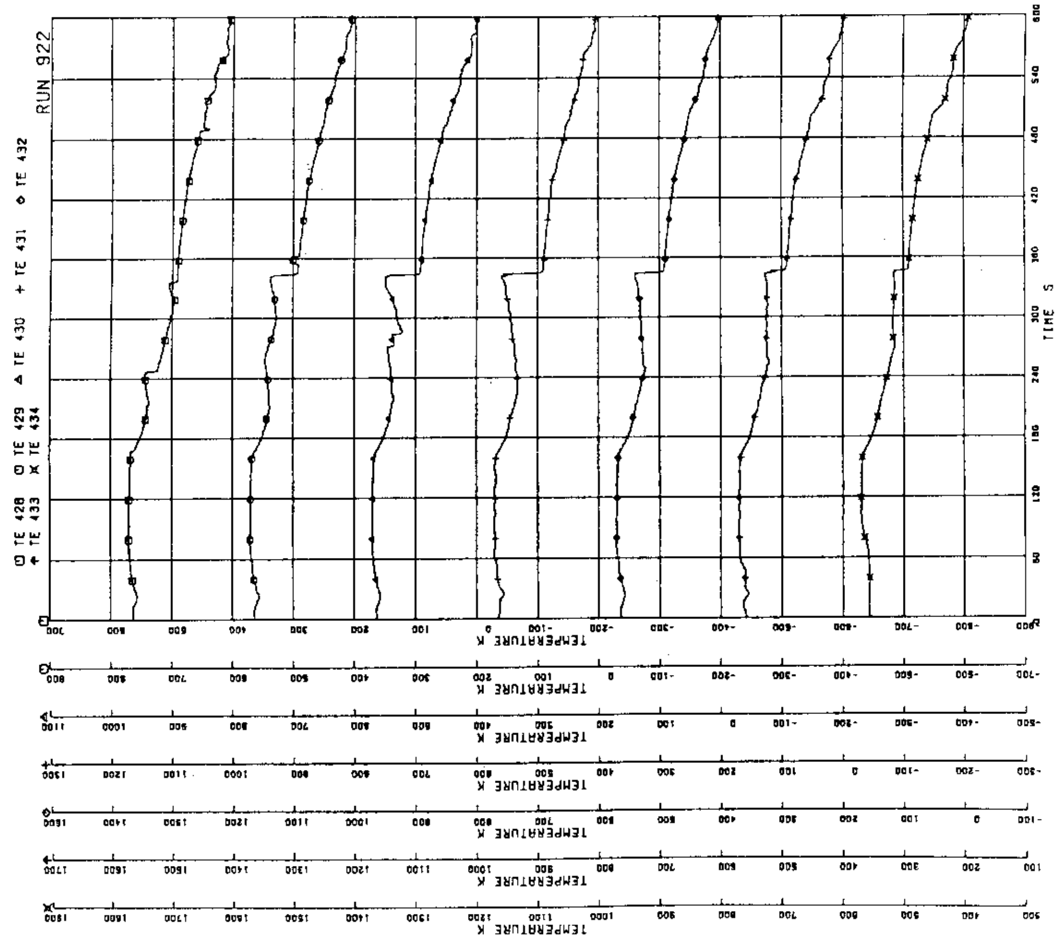


FIG.5.112 SURFACE TEMPERATURES OF WATER ROD SIMULATOR C45

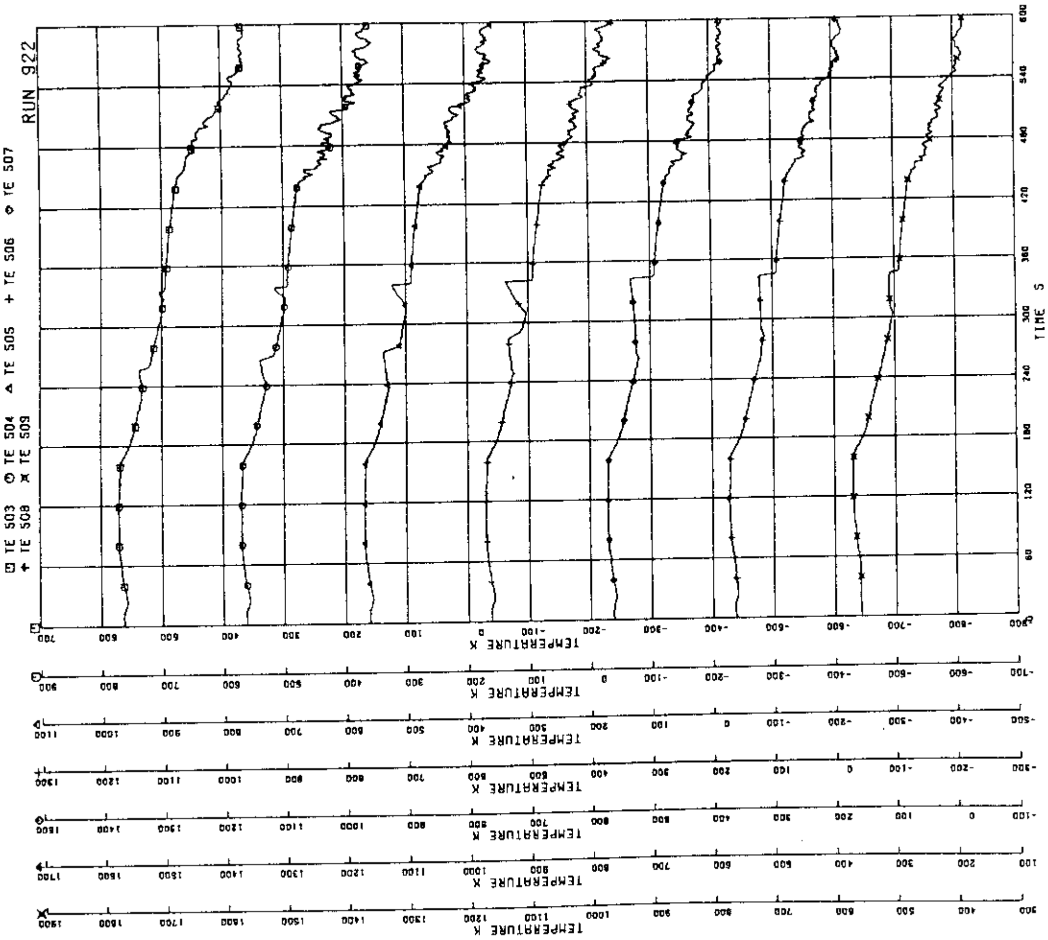


FIG.5.115 INNER SURFACE TEMPERATURES OF CHANNEL BOX A, LOCATION A2

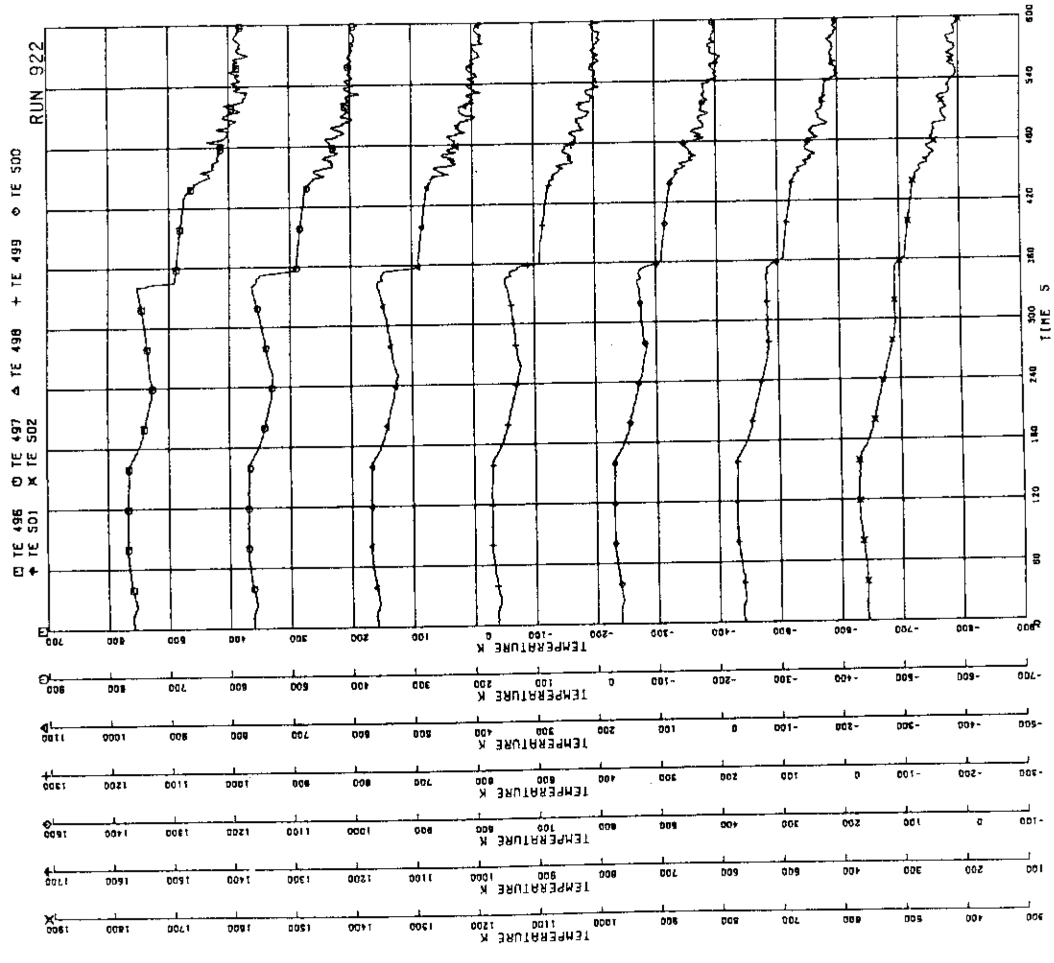


FIG.5.114 INNER SURFACE TEMPERATURES OF CHANNEL BOX A, LOCATION A1

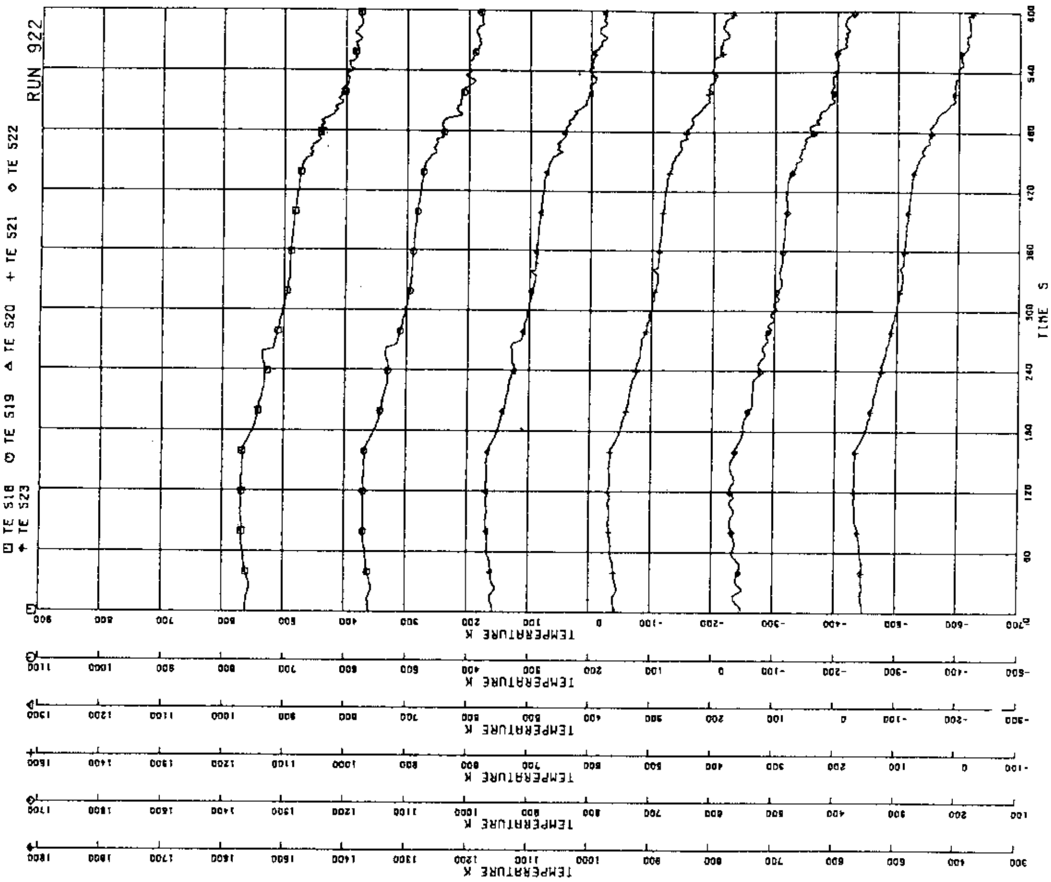


FIG.5.117 INNER SURFACE TEMPERATURES OF CHANNEL BOX C

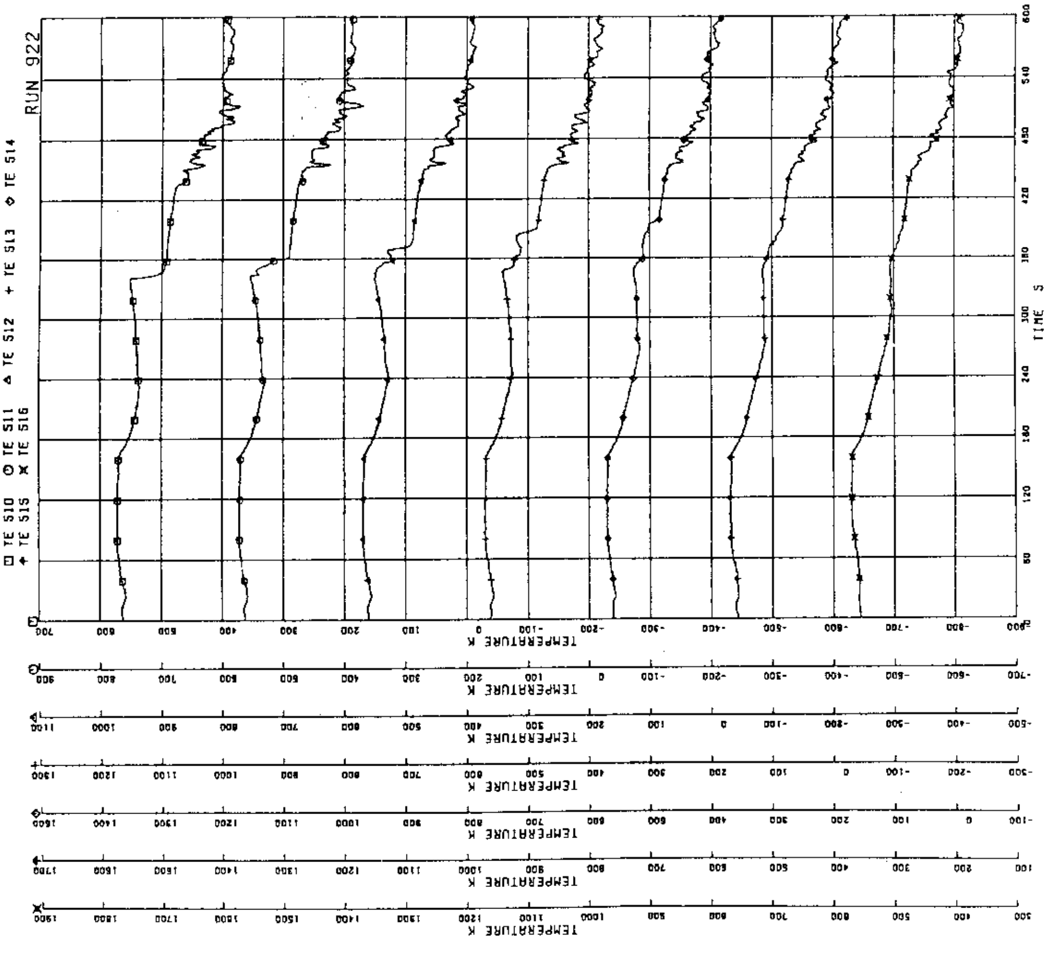


FIG.5.116 INNER SURFACE TEMPERATURES OF CHANNEL BOX B

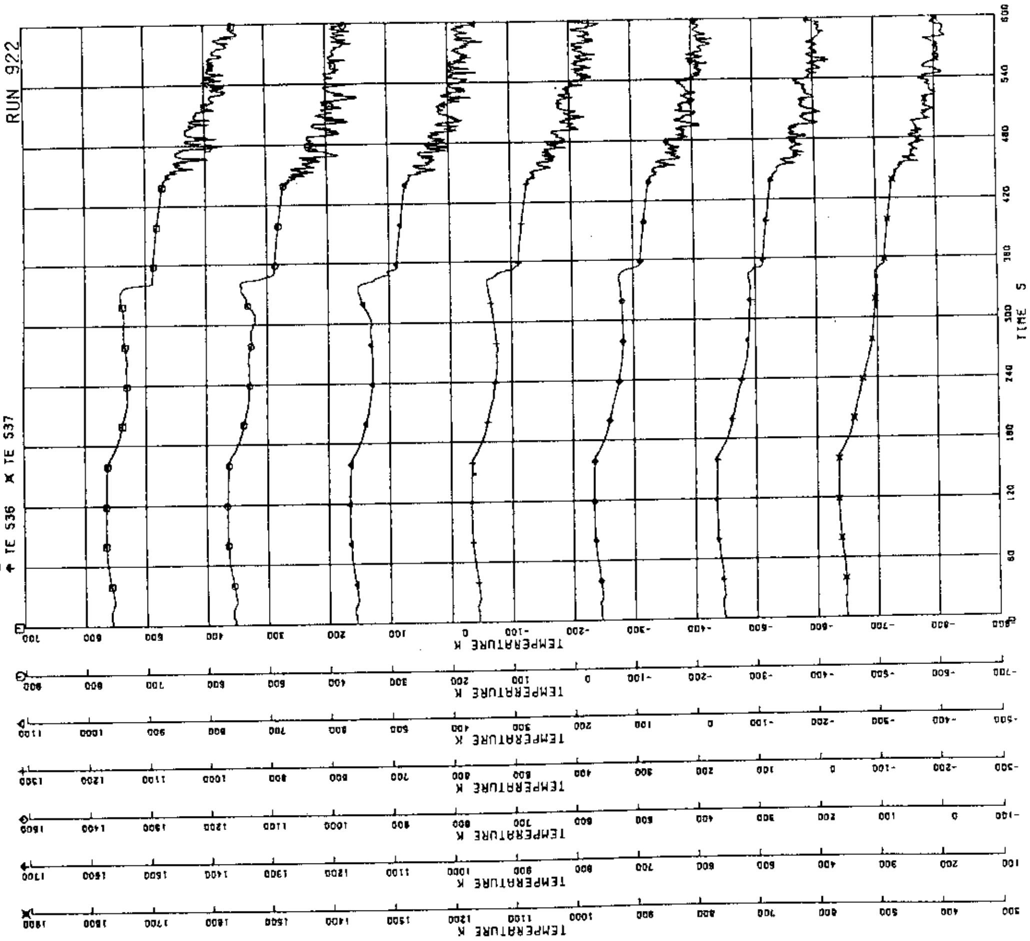


FIG.5.119 OUTER SURFACE TEMPERATURES OF CHANNEL BOX A

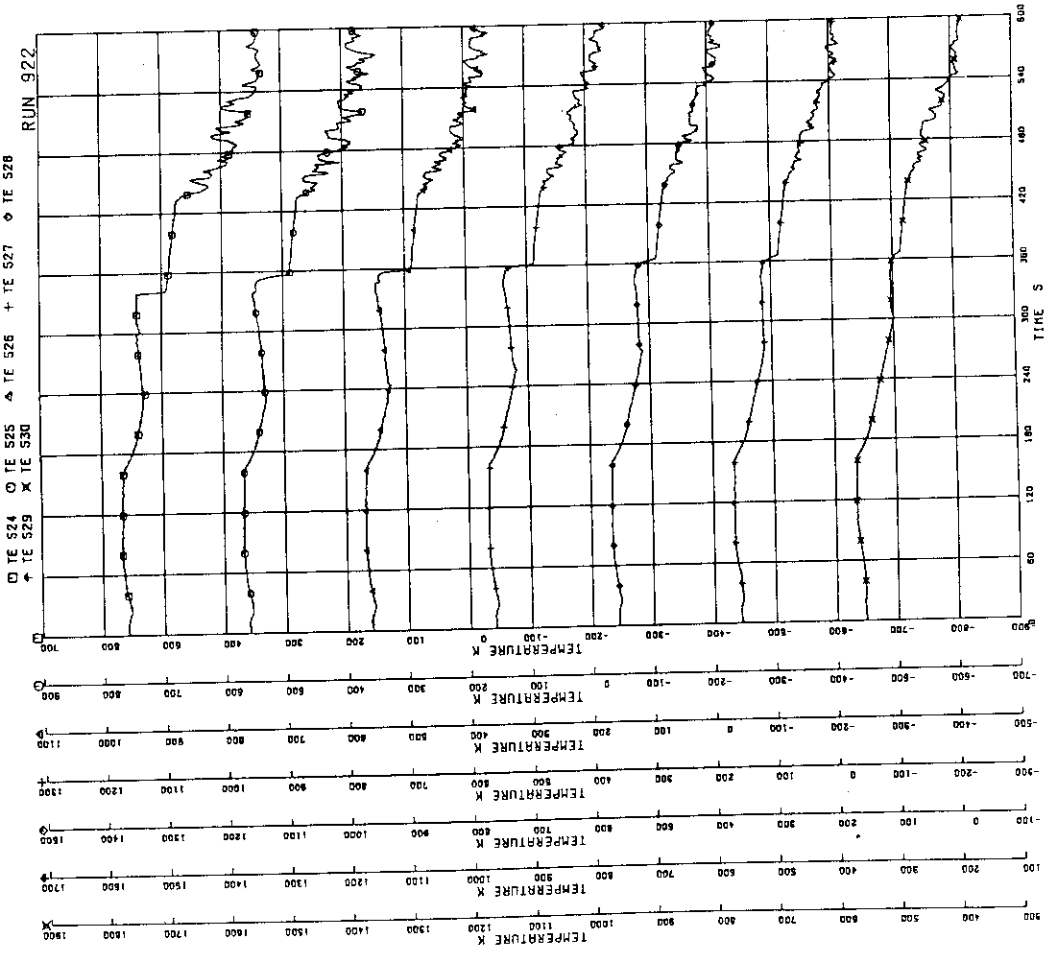


FIG.5.118 INNER SURFACE TEMPERATURES OF CHANNEL BOX D

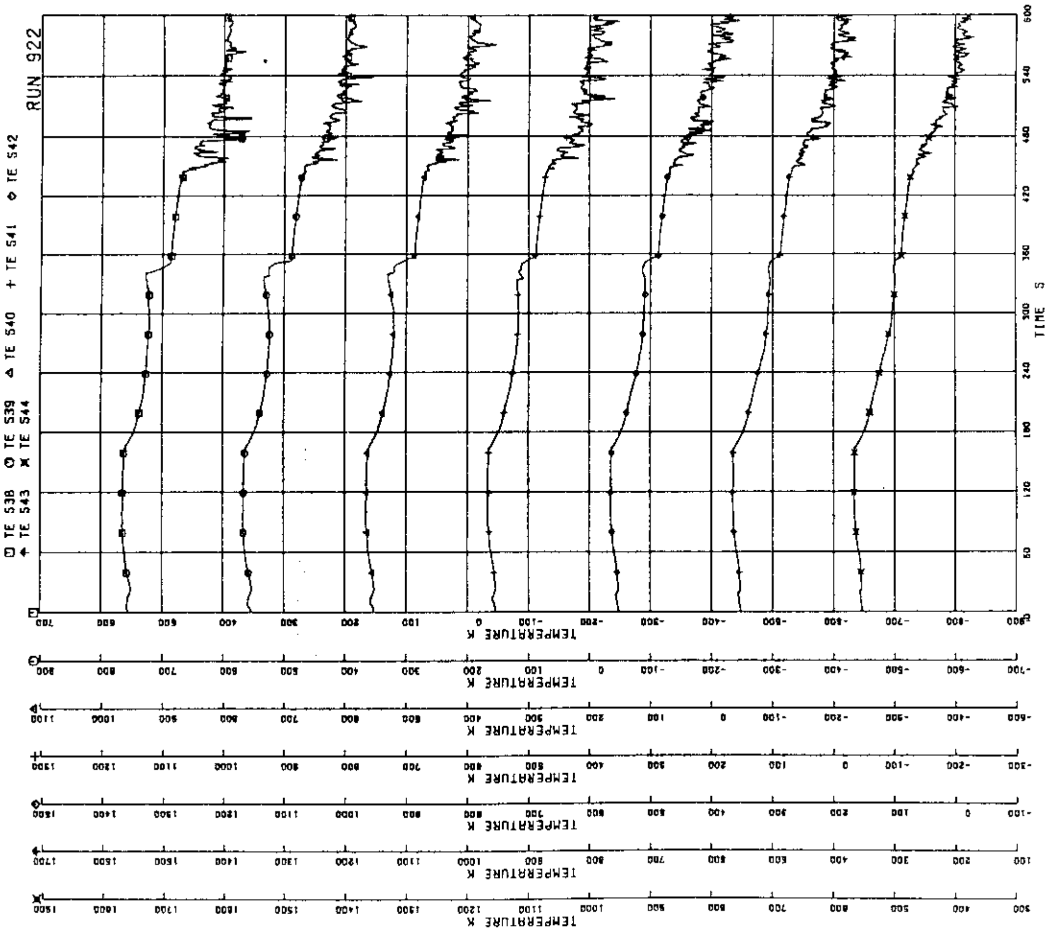


FIG.5.120 OUTER SURFACE TEMPERATURES OF CHANNEL BOX C

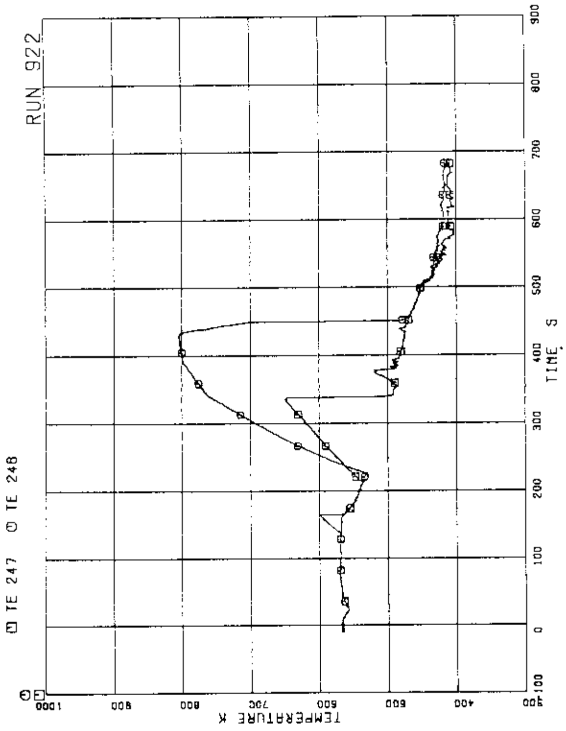


FIG.5.123 SURFACE TEMPERATURES OF FUEL ROD A26 AT POSITIONS 1 AND 4

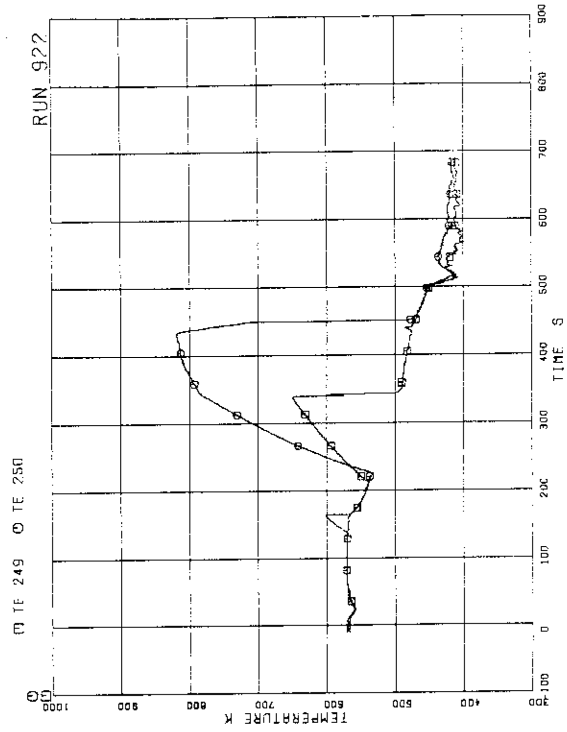


FIG.5.124 SURFACE TEMPERATURES OF FUEL ROD A28 AT POSITIONS 1 AND 4

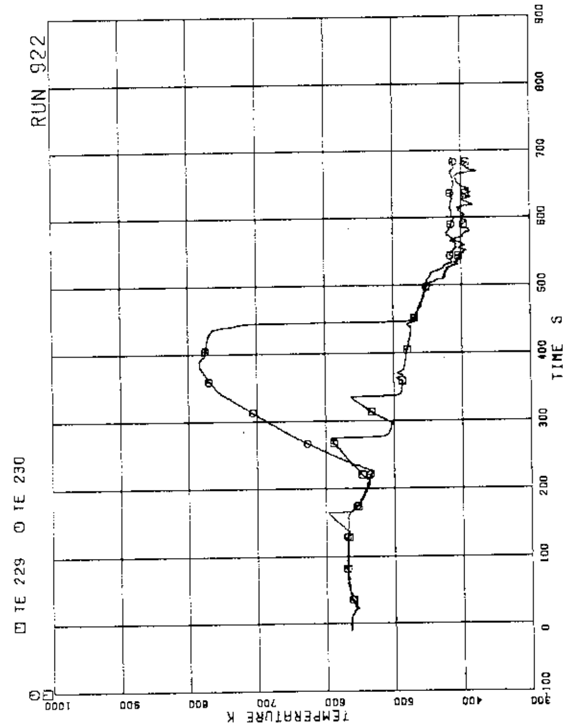


FIG.5.121 SURFACE TEMPERATURES OF FUEL ROD A15 AT POSITIONS 1 AND 4

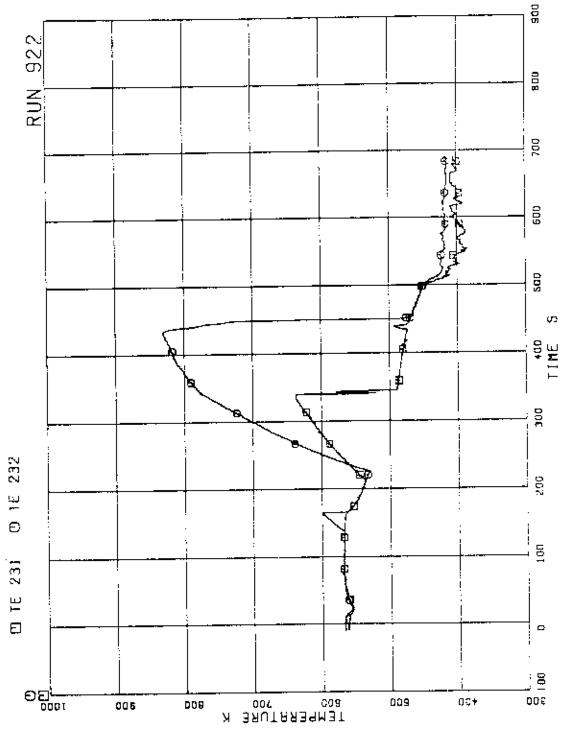


FIG.5.122 SURFACE TEMPERATURES OF FUEL ROD A17 AT POSITIONS 1 AND 4

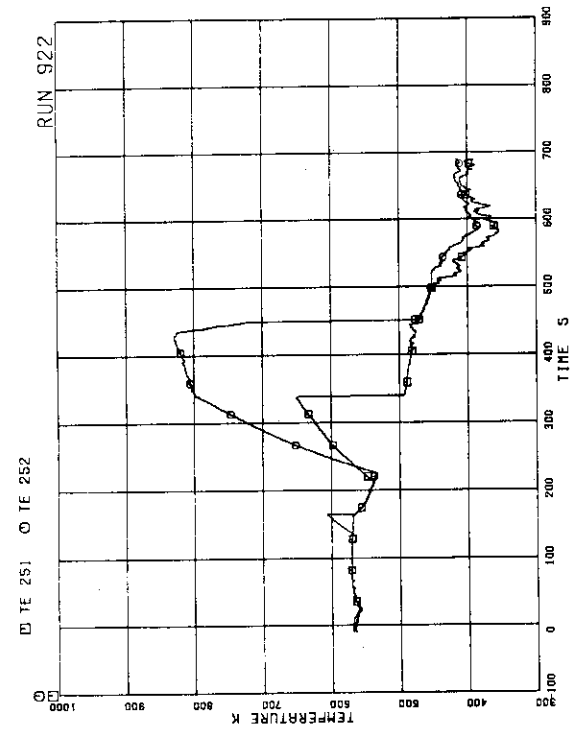


FIG.5.125 SURFACE TEMPERATURES OF FUEL ROD A31 AT POSITIONS 1 AND 4

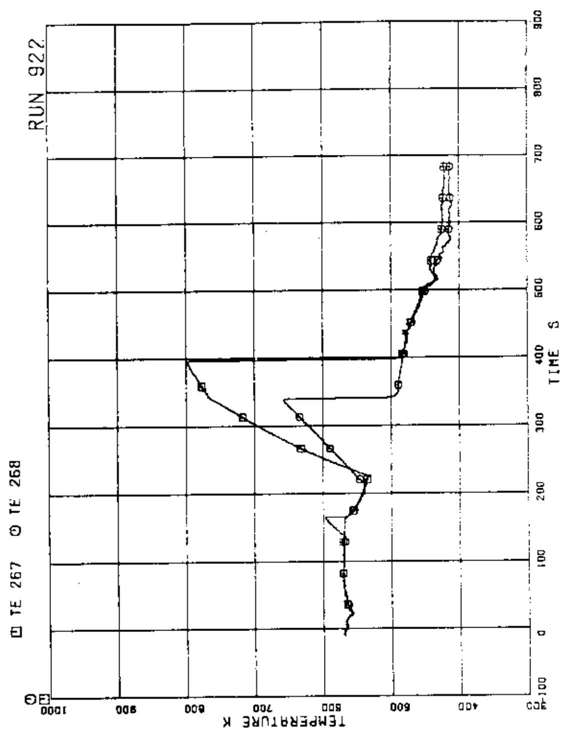


FIG.5.126 SURFACE TEMPERATURES OF FUEL ROD A37 AT POSITIONS 1 AND 4

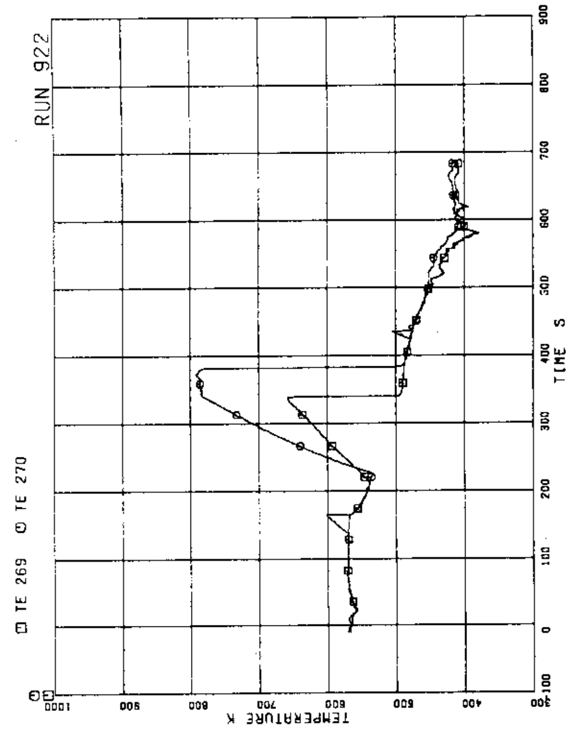


FIG.5.127 SURFACE TEMPERATURES OF FUEL ROD A42 AT POSITIONS 1 AND 4

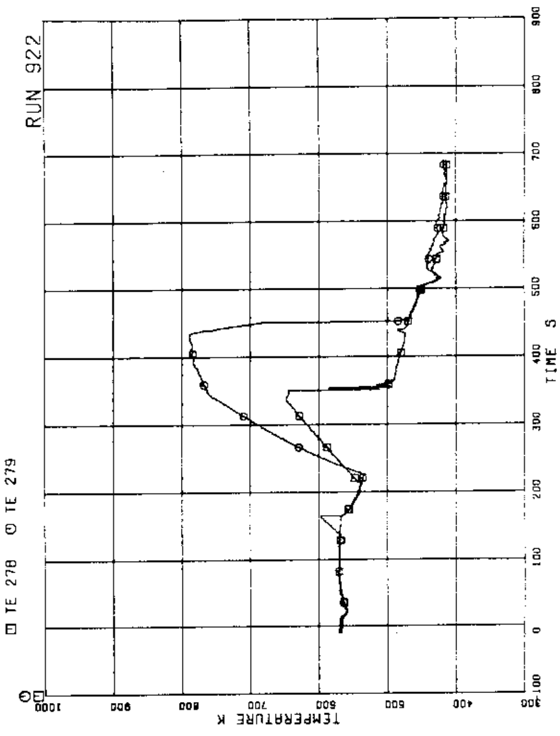


FIG.5.128 SURFACE TEMPERATURES OF FUEL ROD A48 AT POSITIONS 1 AND 4

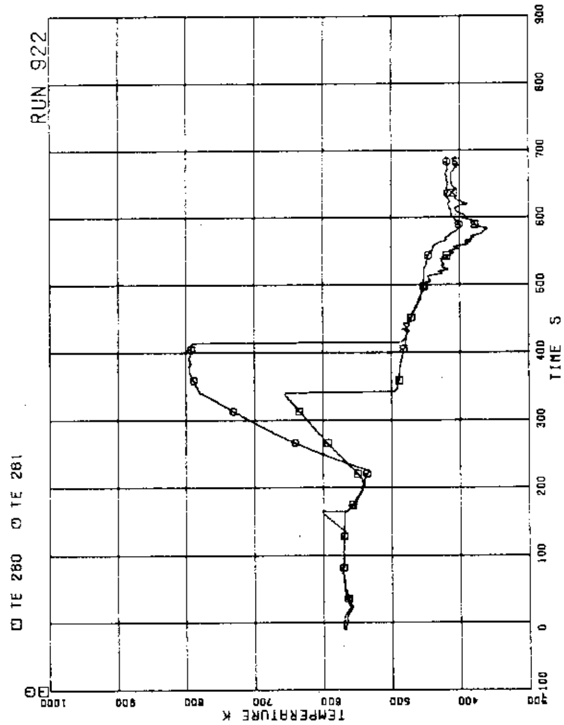


FIG.5.129 SURFACE TEMPERATURES OF FUEL ROD A51 AT POSITIONS 1 AND 4

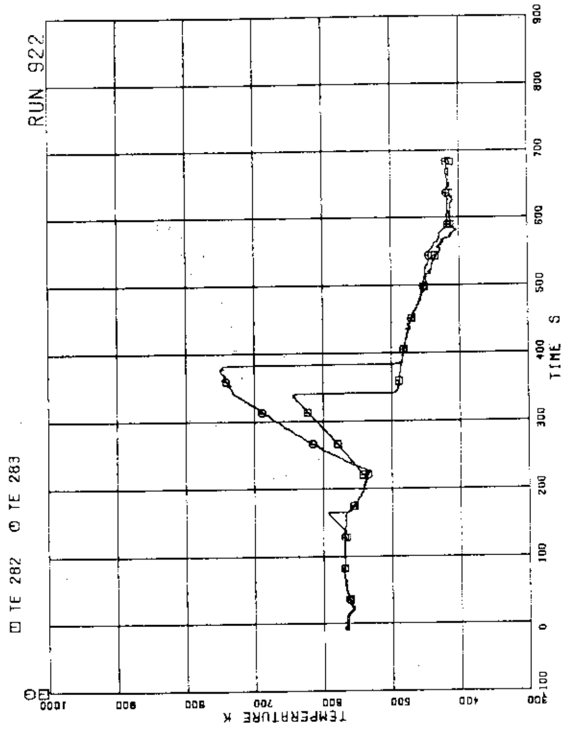


FIG.5.130 SURFACE TEMPERATURES OF FUEL ROD A53 AT POSITIONS 1 AND 4

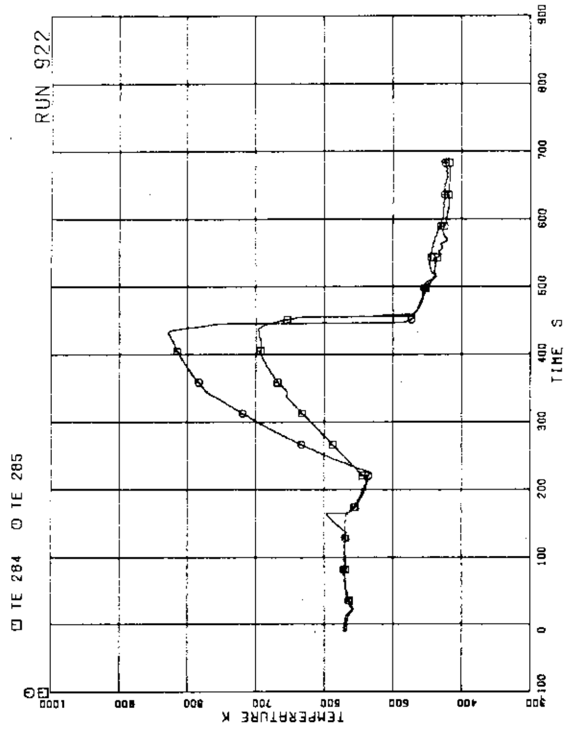


FIG.5.131 SURFACE TEMPERATURES OF FUEL ROD A57 AT POSITIONS 1 AND 4

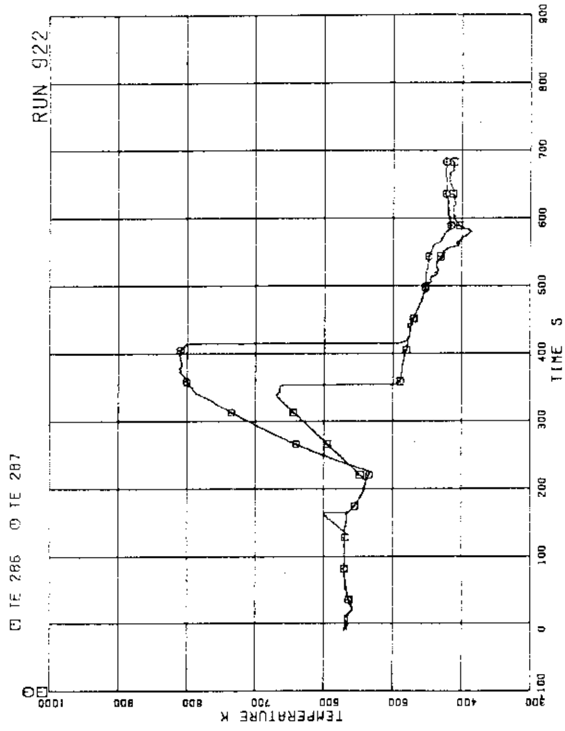


FIG.5.132 SURFACE TEMPERATURES OF FUEL ROD A62 AT POSITIONS 1 AND 4

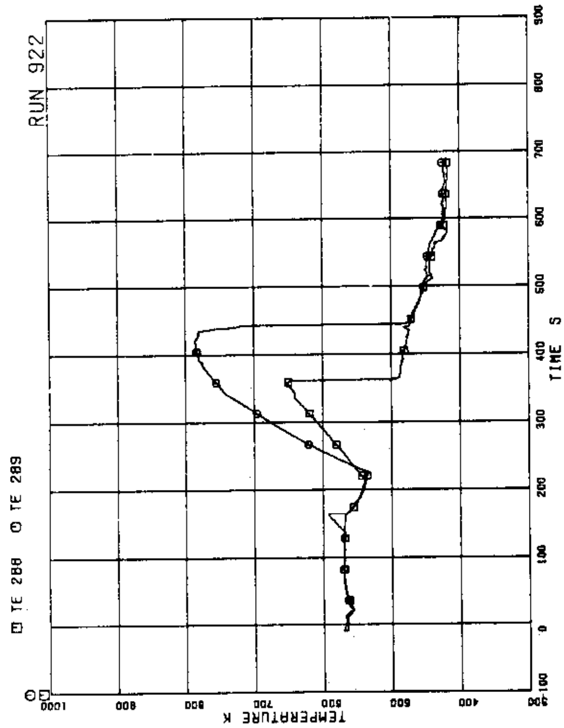


FIG.5.133 SURFACE TEMPERATURES OF FUEL ROD A66 AT POSITIONS 1 AND 4

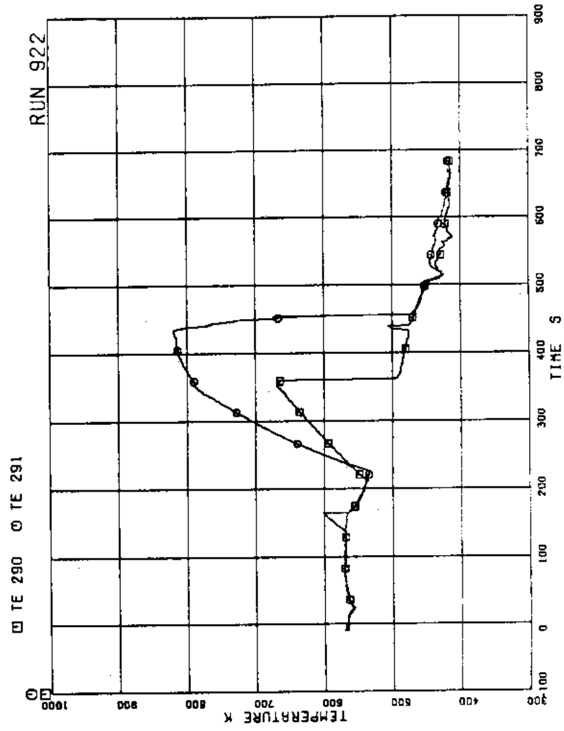


FIG.5.134 SURFACE TEMPERATURES OF FUEL ROD A68 AT POSITIONS 1 AND 4

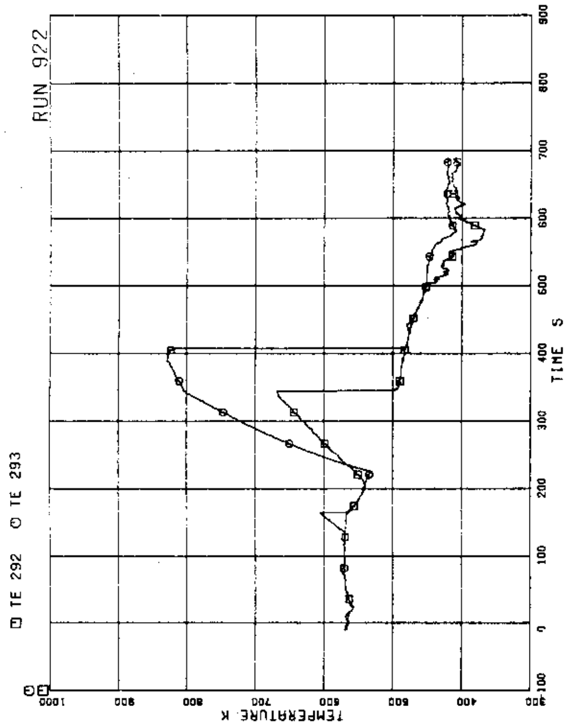


FIG.5.135 SURFACE TEMPERATURES OF FUEL ROD A71 AT POSITIONS 1 AND 4

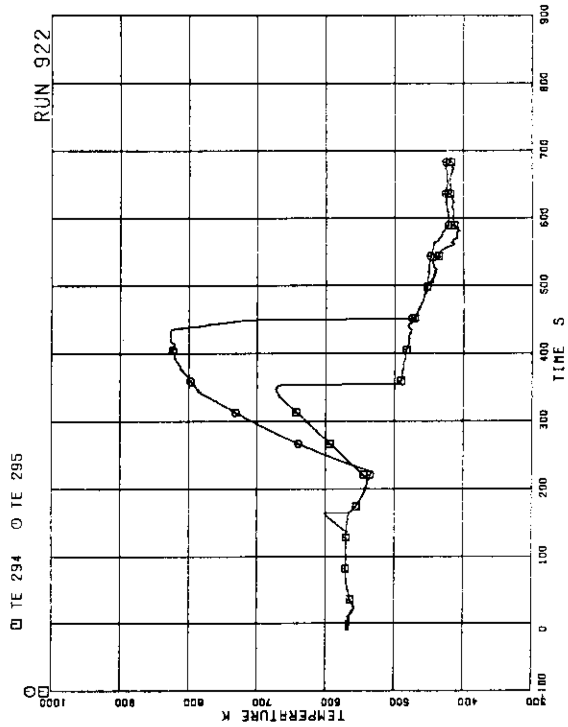


FIG.5.136 SURFACE TEMPERATURES OF FUEL ROD A73 AT POSITIONS 1 AND 4

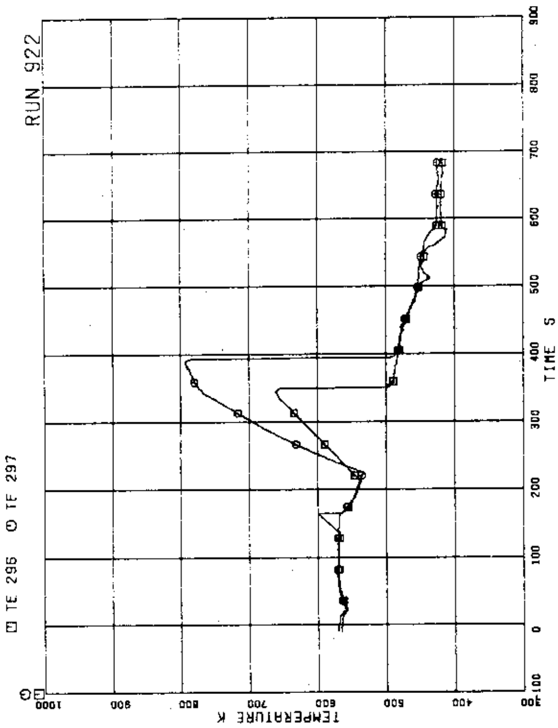


FIG.5.137 SURFACE TEMPERATURES OF FUEL ROD A75 AT POSITIONS 1 AND 4

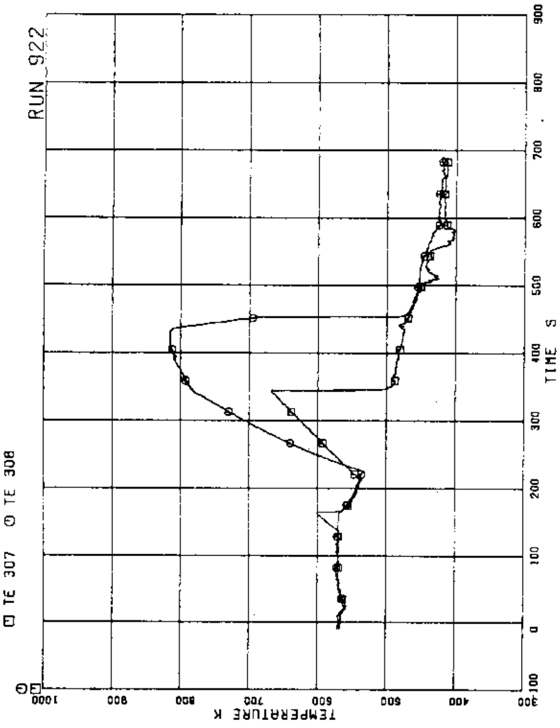


FIG.5.139 SURFACE TEMPERATURES OF FUEL ROD A84 AT POSITIONS 1 AND 4

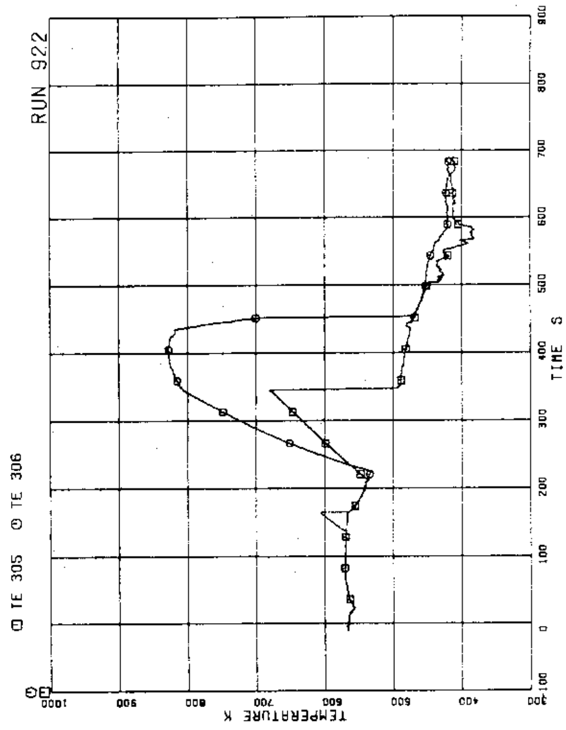


FIG.5.138 SURFACE TEMPERATURES OF FUEL ROD A82 AT POSITIONS 1 AND 4

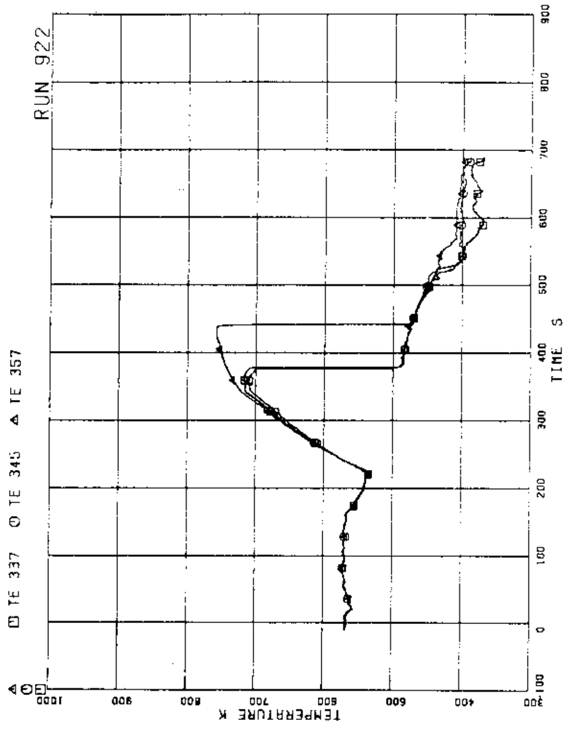


FIG.5.140 SURFACE TEMPERATURES OF FUEL RODS B13,B31,B86 AT POSITION 4

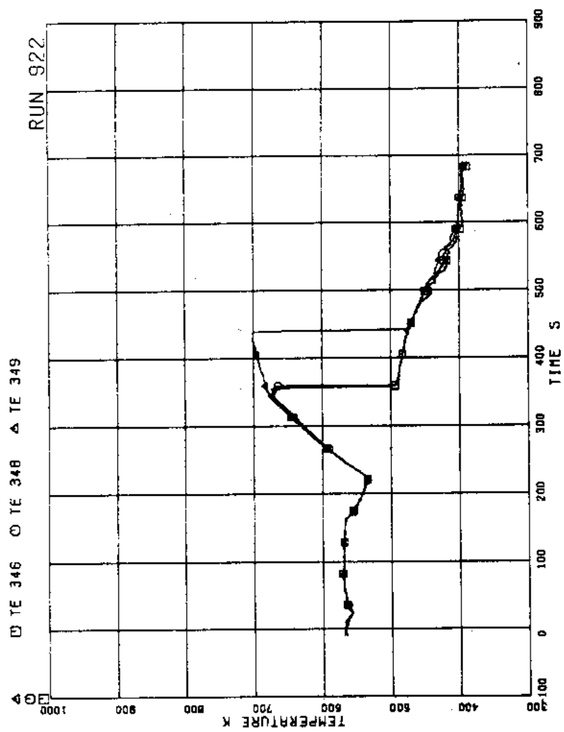


FIG.5.141 SURFACE TEMPERATURES OF FUEL RODS B33.B53.B66 AT POSITION 4

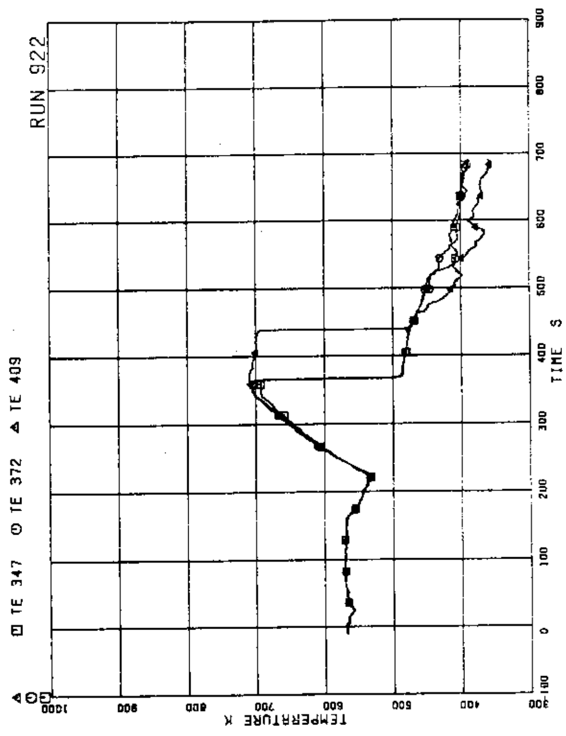


FIG.5.142 SURFACE TEMPERATURES OF FUEL RODS B51.C15.D51 AT POSITION 4

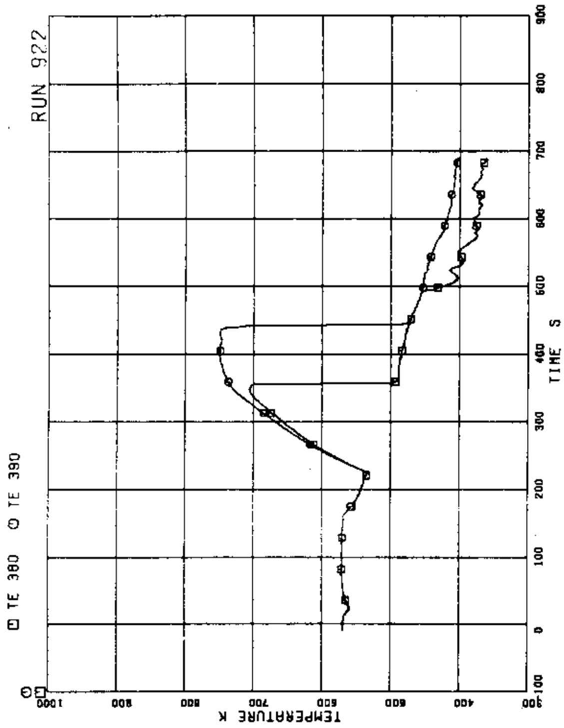


FIG.5.143 SURFACE TEMPERATURES OF FUEL RODS C31.C68 AT POSITION 4

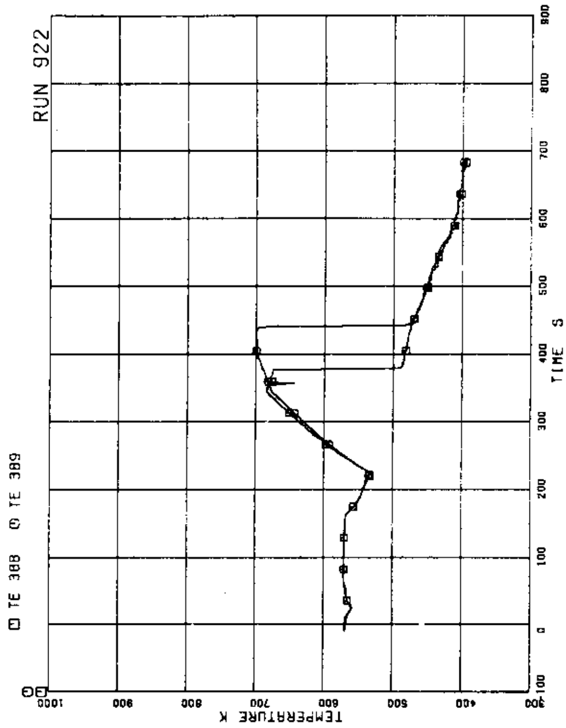


FIG.5.144 SURFACE TEMPERATURES OF FUEL RODS C35.C66 AT POSITION 4

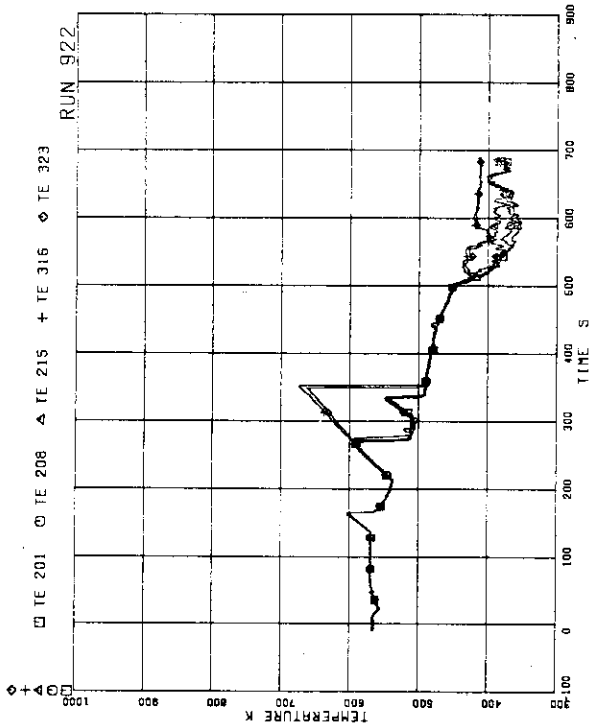


FIG.5.147 SURFACE TEMPERATURES OF FUEL RODS
A11,A12,A13,A87,A88 AT POSITION 1

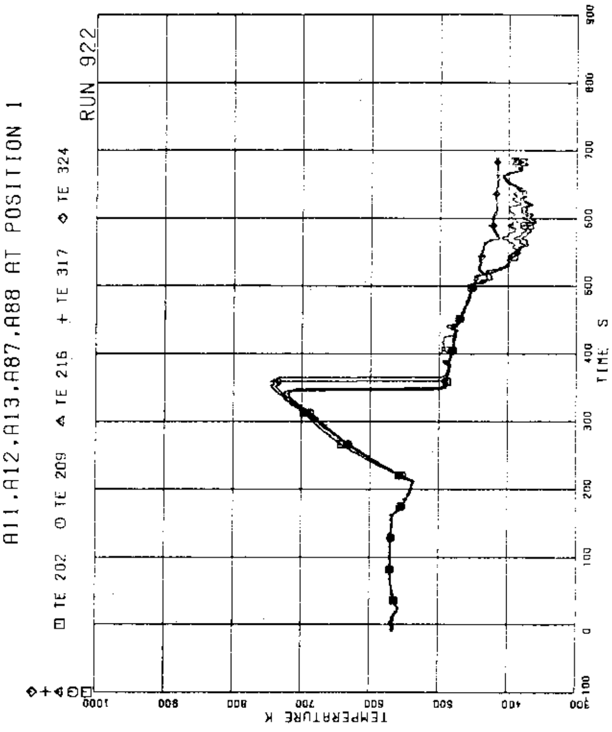


FIG.5.148 SURFACE TEMPERATURES OF FUEL RODS
A11,A12,A13,A87,A88 AT POSITION 2

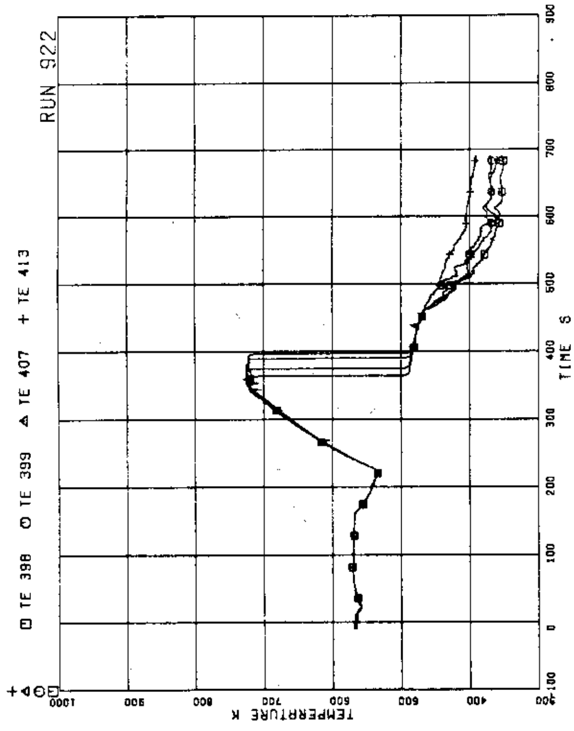


FIG.5.145 SURFACE TEMPERATURES OF FUEL RODS
D11,D13,D31,D86 AT POSITION 4

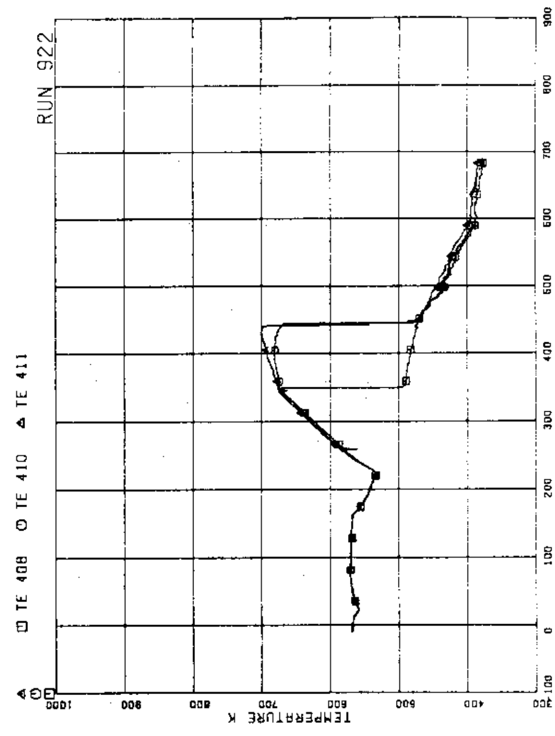


FIG.5.146 SURFACE TEMPERATURES OF FUEL RODS
D33,D53,D66 AT POSITION 4

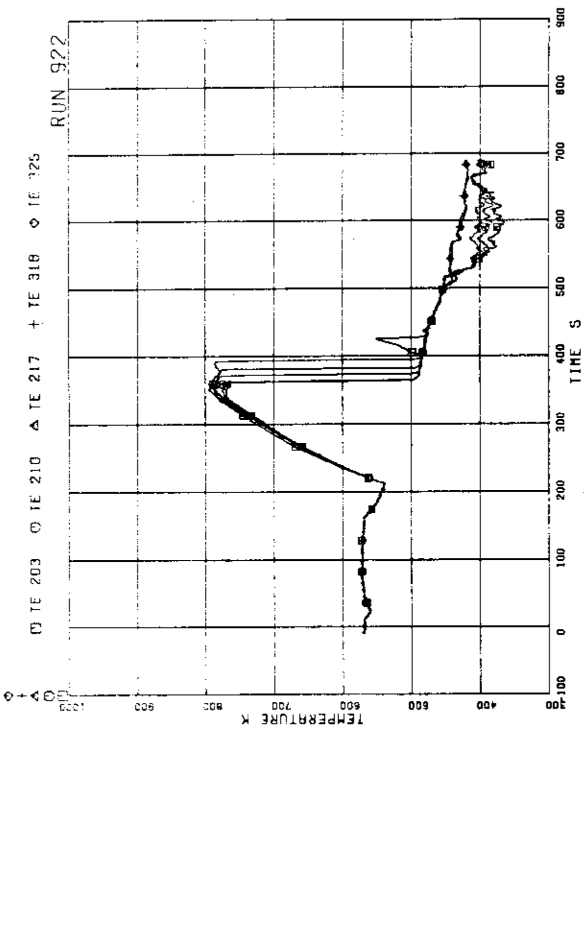


FIG.5.149 SURFACE TEMPERATURES OF FUEL RODS A11,A12,A13,A87,A88 AT POSITION 3

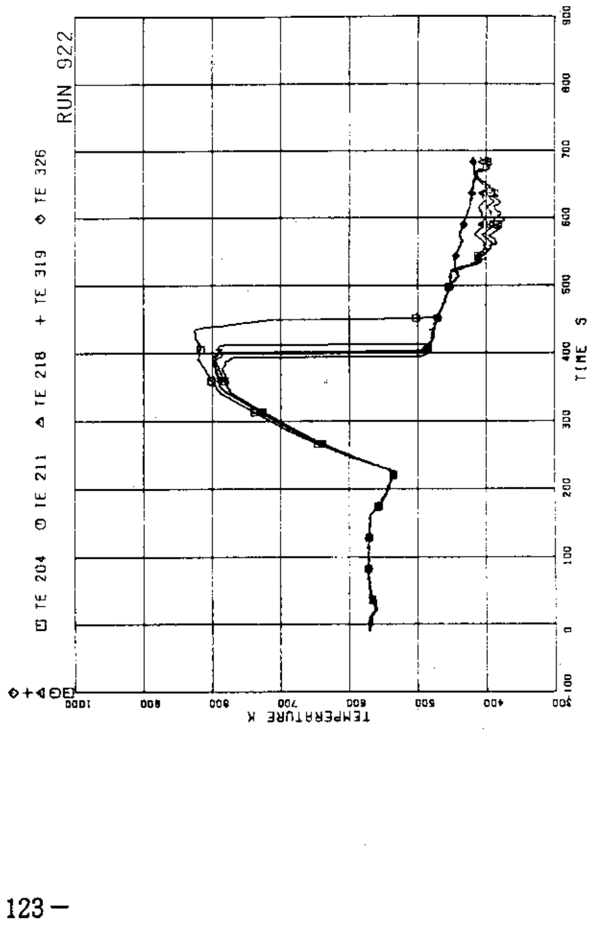


FIG.5.150 SURFACE TEMPERATURES OF FUEL RODS A11,A12,A13,A87,A88 AT POSITION 4

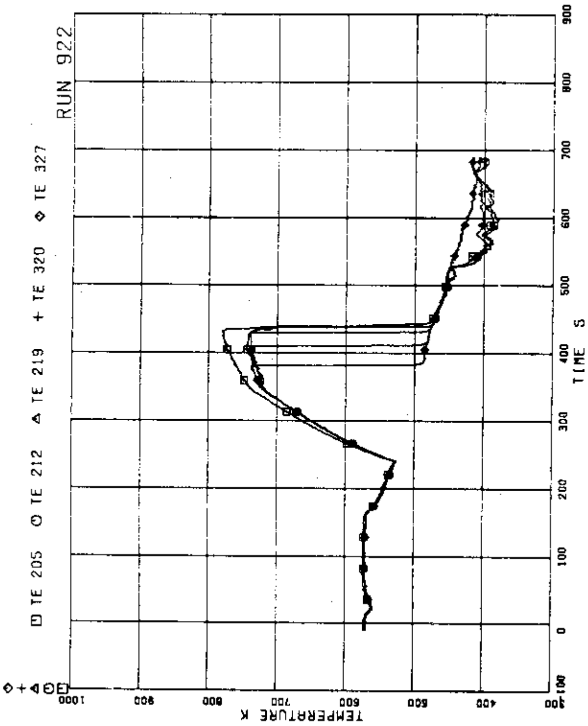


FIG.5.151 SURFACE TEMPERATURE OF FUEL RODS A11,A12,A13,A87,A88 AT POSITION 5

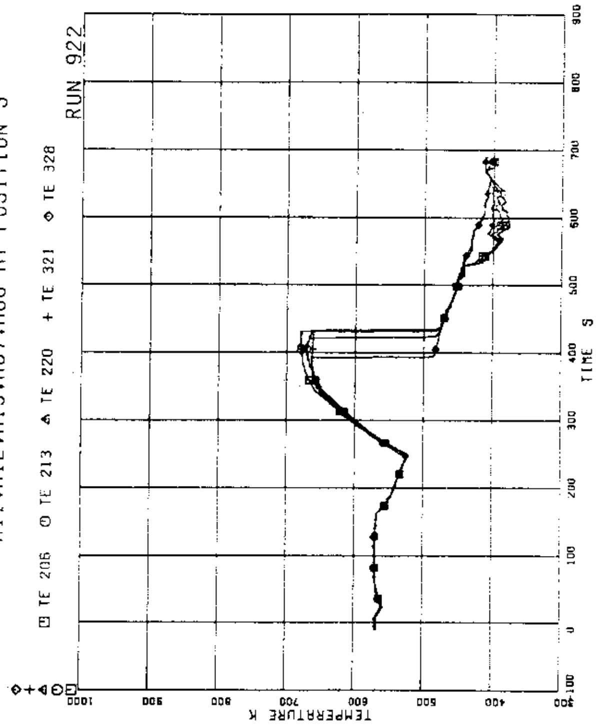


FIG.5.152 SURFACE TEMPERATURES OF FUEL RODS A11,A12,A13,A87,A88 AT POSITION 6

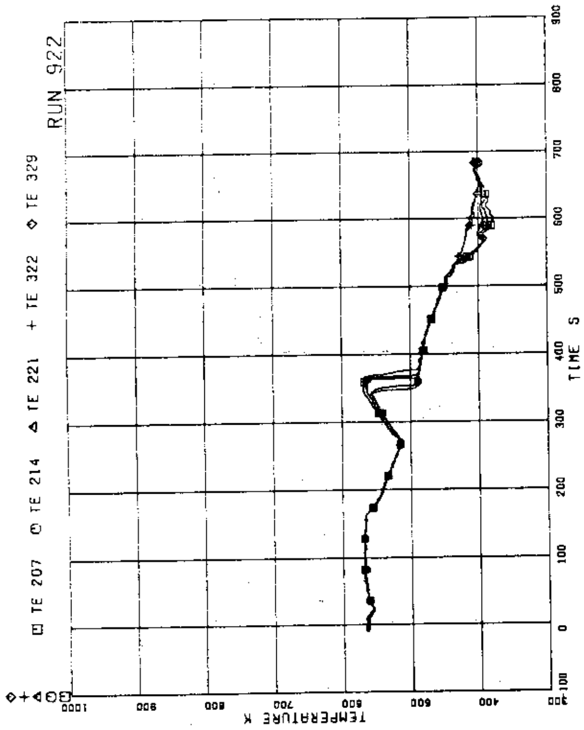


FIG.5.153 SURFACE TEMPERATURES OF FUEL RODS A11,A12,A13,A87,A88 AT POSITION 7

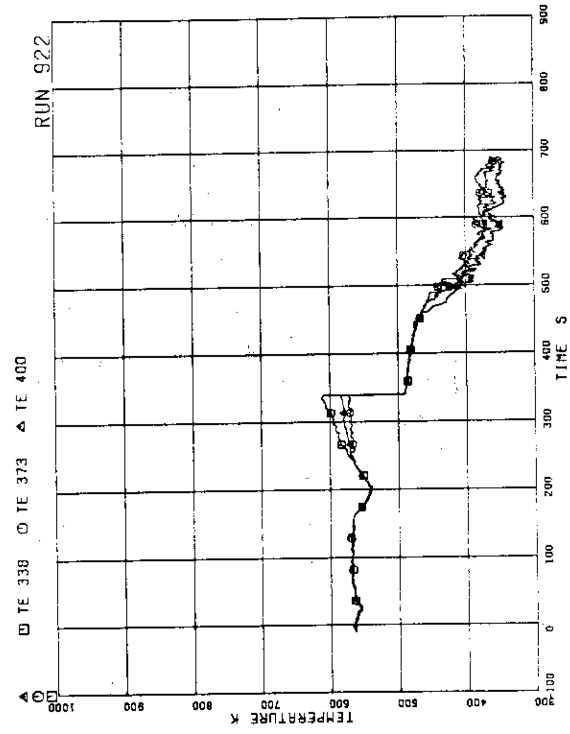


FIG.5.154 SURFACE TEMPERATURES OF FUEL RODS B22,C22,D22 AT POSITION 1

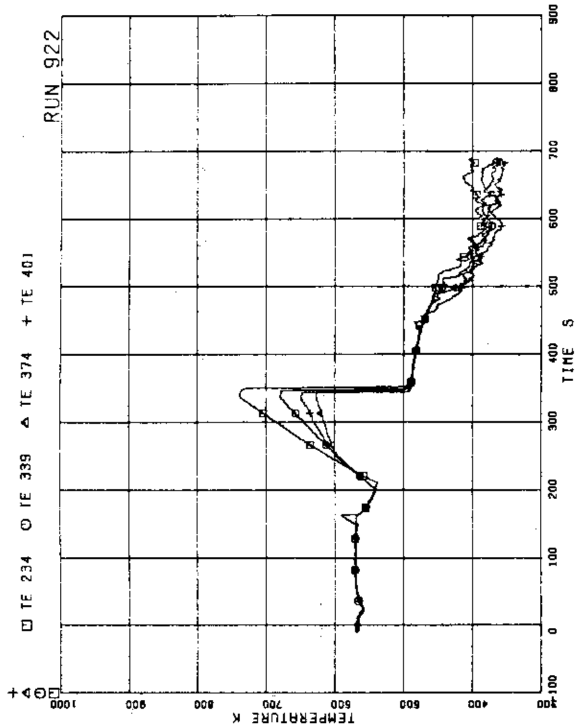


FIG.5.155 SURFACE TEMPERATURES OF FUEL RODS A22,B22,C22,D22 AT POSITION 2

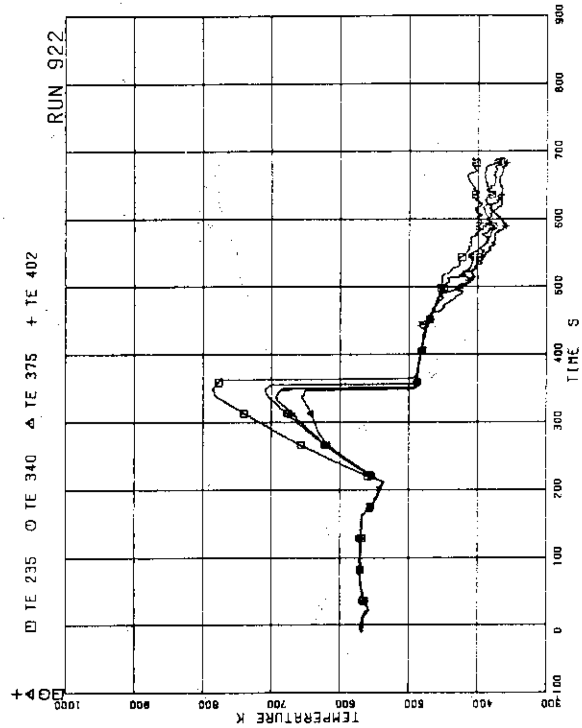


FIG.5.156 SURFACE TEMPERATURES OF FUEL RODS A22,B22,C22,D22 AT POSITION 3

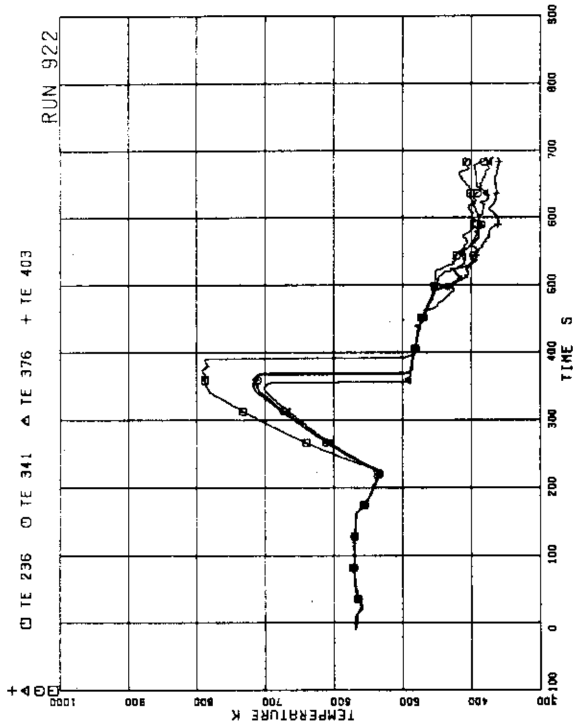


FIG.5.157 SURFACE TEMPERATURES OF FUEL RODS A22,B22,C22,D22 RODS AT POSITION 4

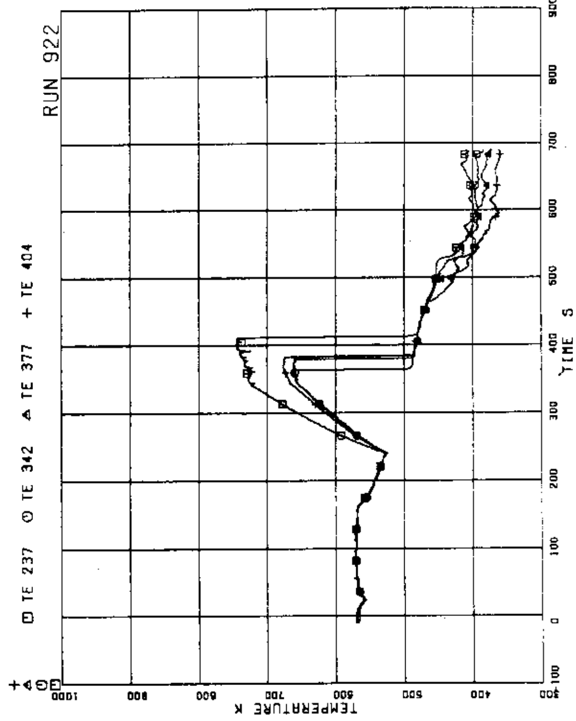


FIG.5.158 SURFACE TEMPERATURES OF FUEL RODS A22,B22,C22,D22 AT POSITION 5

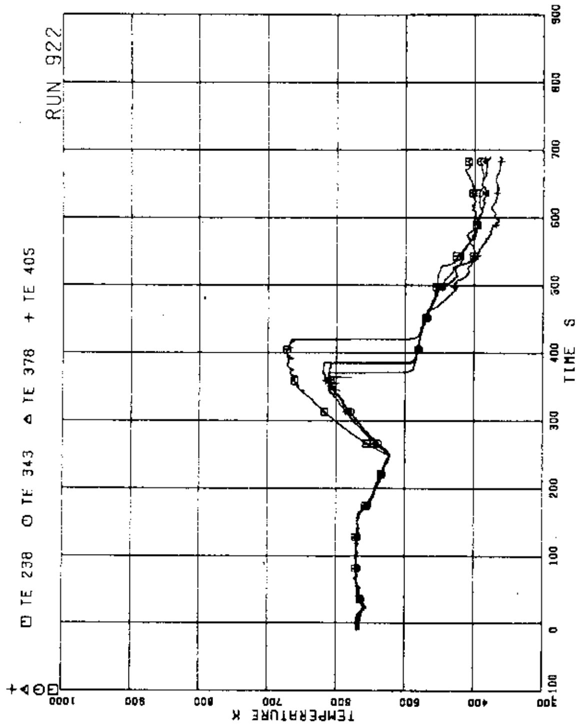


FIG.5.159 SURFACE TEMPERATURES OF FUEL RODS A22,B22,C22,D22 AT POSITION 6

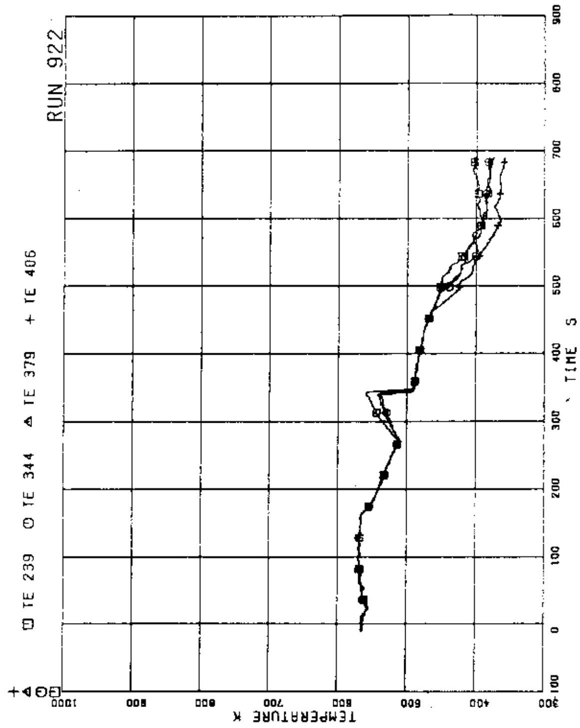


FIG.5.160 SURFACE TEMPERATURES OF FUEL RODS A22,B22,C22,D22 AT POSITION 7

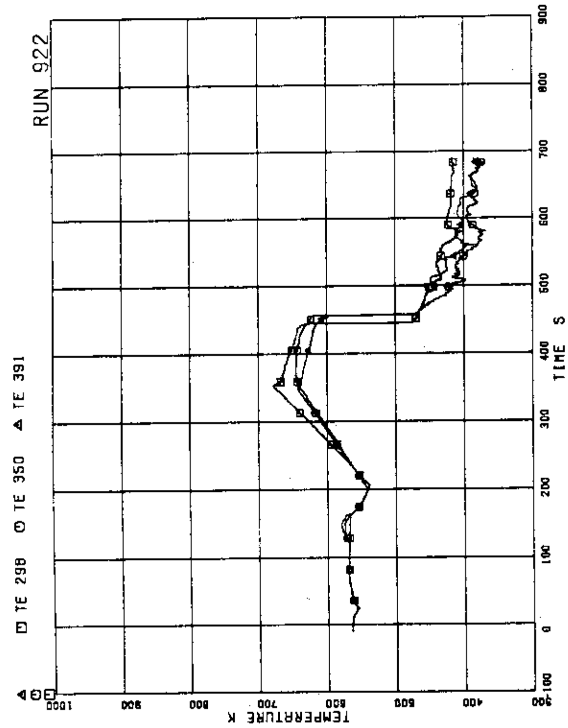


FIG.5.161 SURFACE TEMPERATURES OF FUEL RODS A77,B77,C77 AT POSITION 1

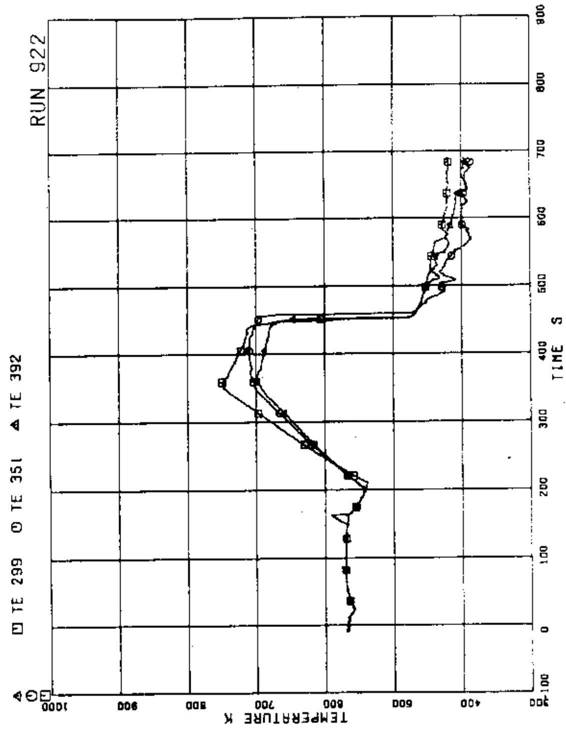


FIG.5.162 SURFACE TEMPERATURES OF FUEL RODS A77,B77,C77 AT POSITION 2

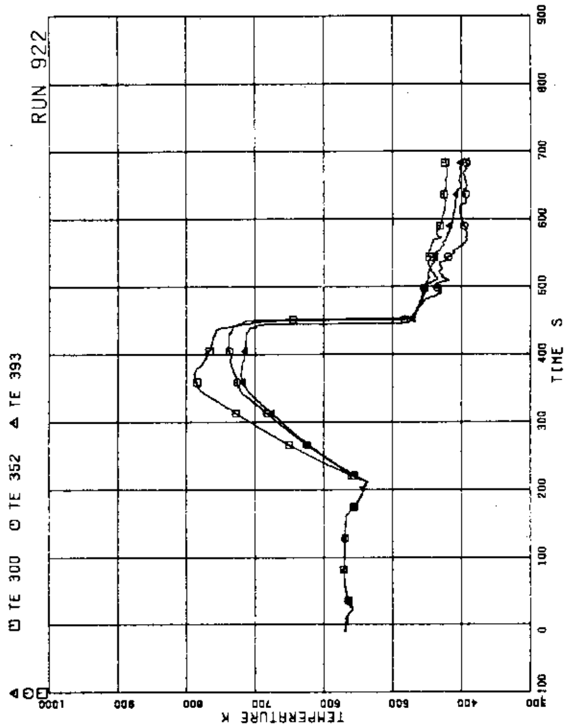


FIG.5.163 SURFACE TEMPERATURES OF FUEL RODS A77,B77,C77 AT POSITION 3

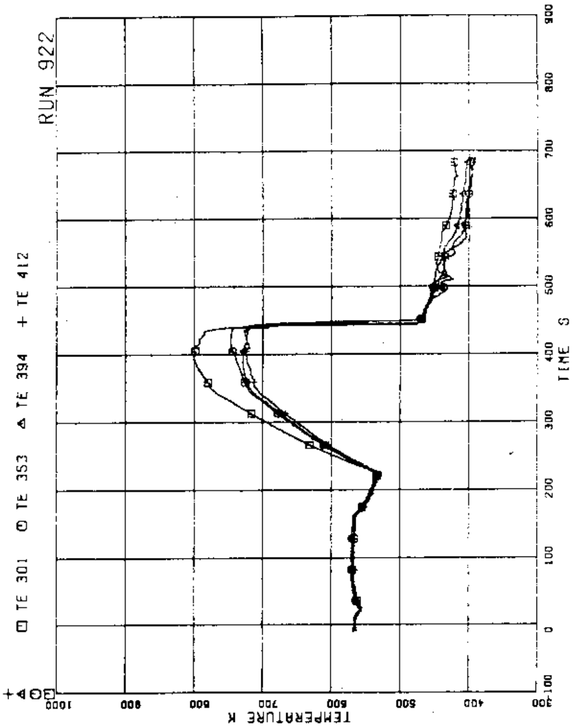


FIG.5.164 SURFACE TEMPERATURES OF FUEL RODS A77,B77,C77 AT POSITION 4

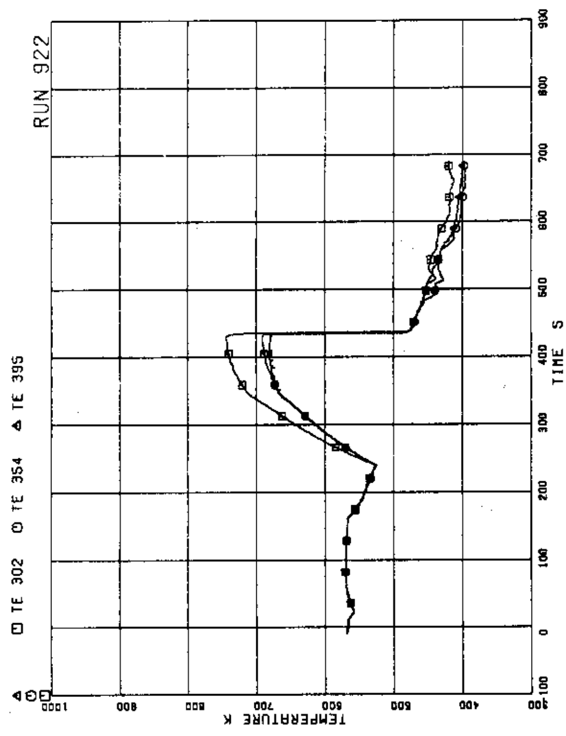


FIG.5.165 SURFACE TEMPERATURES OF FUEL RODS A77.B77.C77 AT POSITION 5

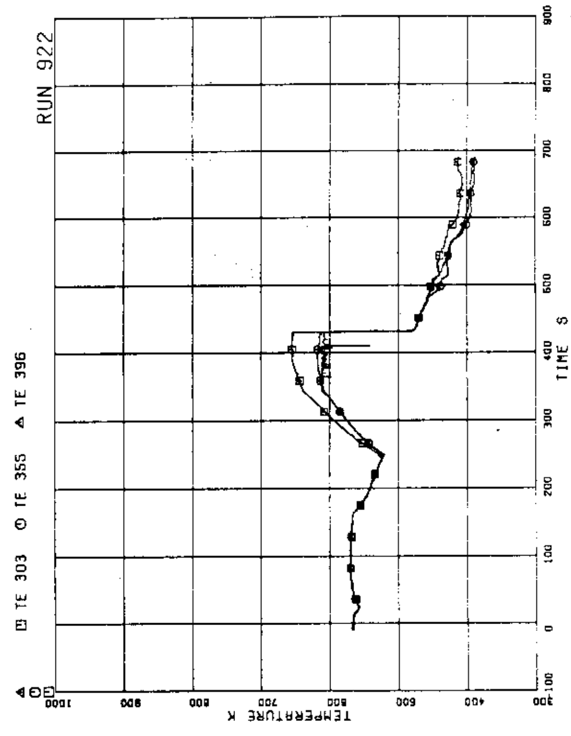


FIG.5.166 SURFACE TEMPERATURES OF FUEL RODS A77.B77.C77 AT POSITION 6

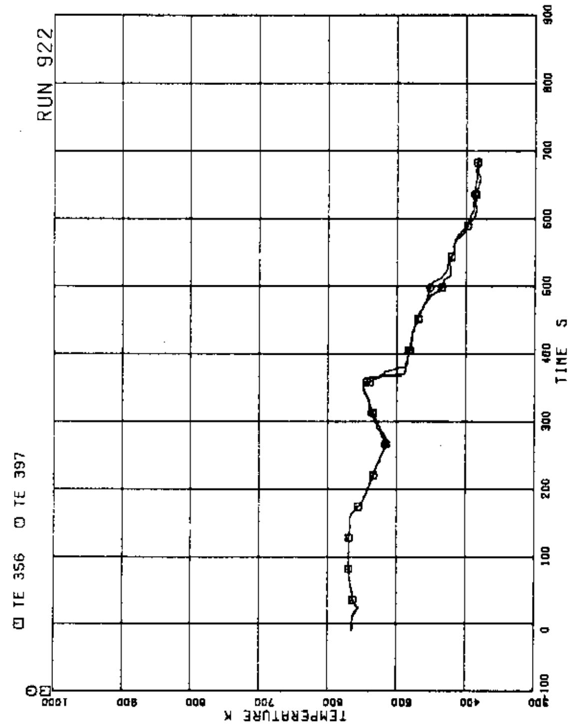


FIG.5.167 SURFACE TEMPERATURES OF FUEL RODS B77.C77 RODS AT POSITION 7

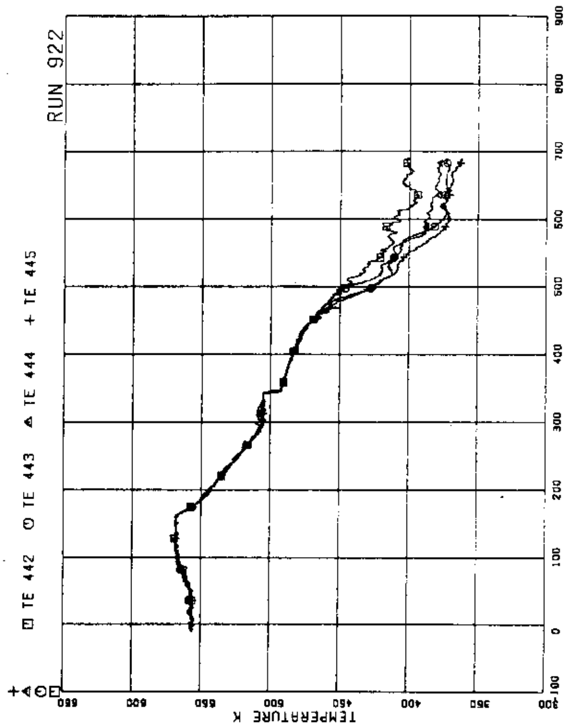


FIG.5.168 FLUID TEMPERATURES AT CHANNEL INLET

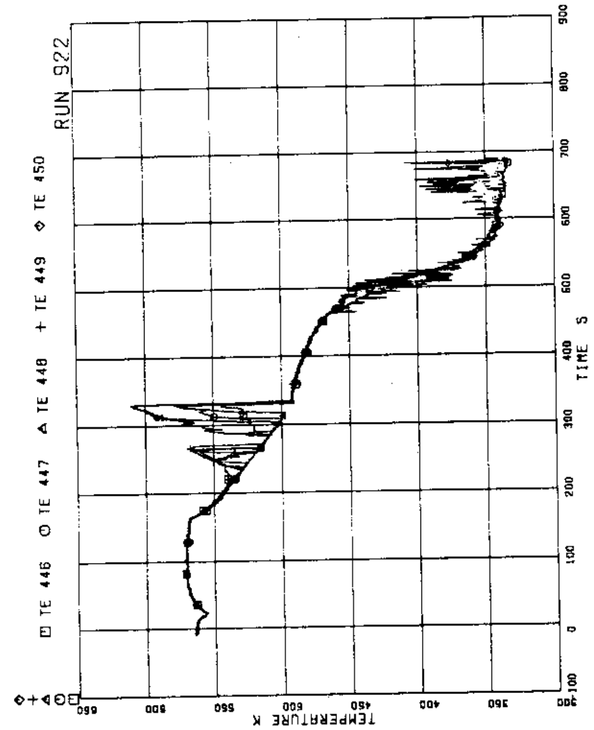


FIG.5.169 FLUID TEMPERATURES AT CHANNEL A OUTLET

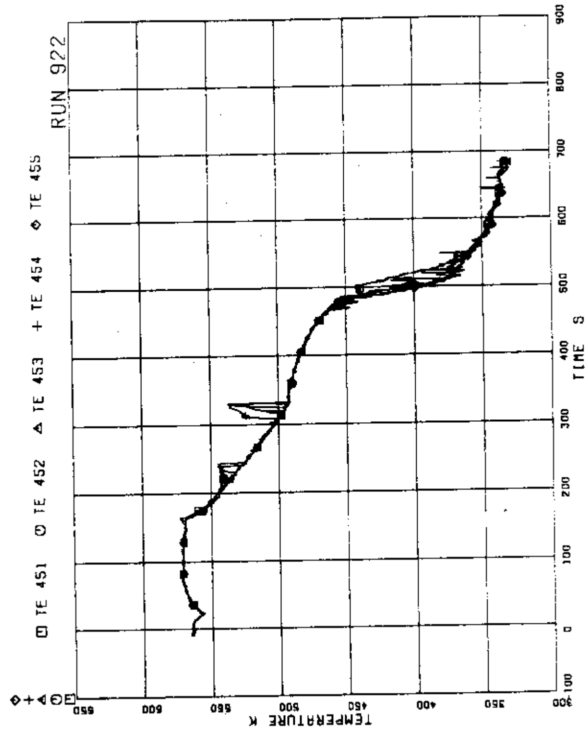


FIG.5.170 FLUID TEMPERATURES AT CHANNEL C OUTLET

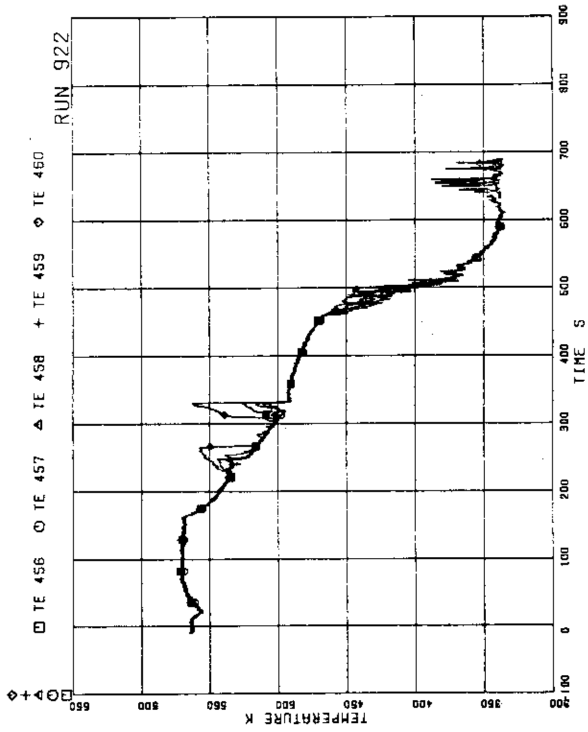


FIG.5.171 FLUID TEMPERATURES ABOVE UTP OF CHANNEL A, OPENINGS 1 TO 5

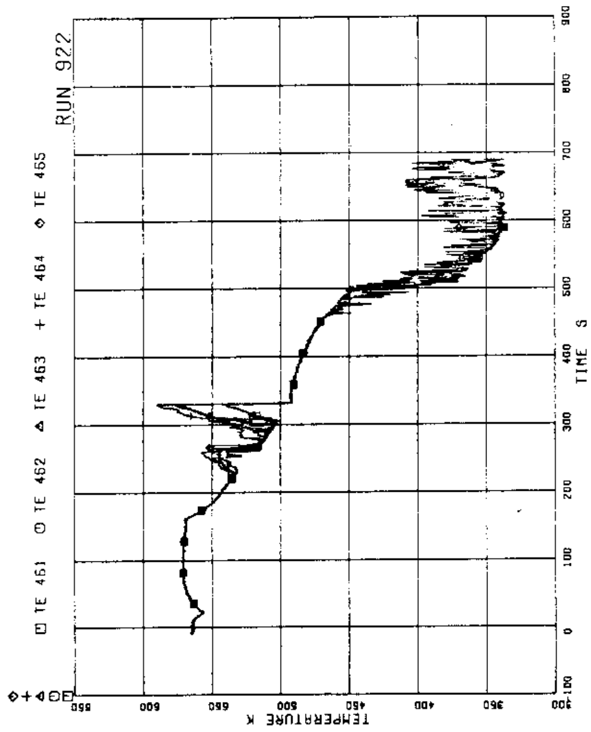


FIG.5.172 FLUID TEMPERATURES ABOVE UTP OF CHANNEL A, OPENINGS 6 TO 10

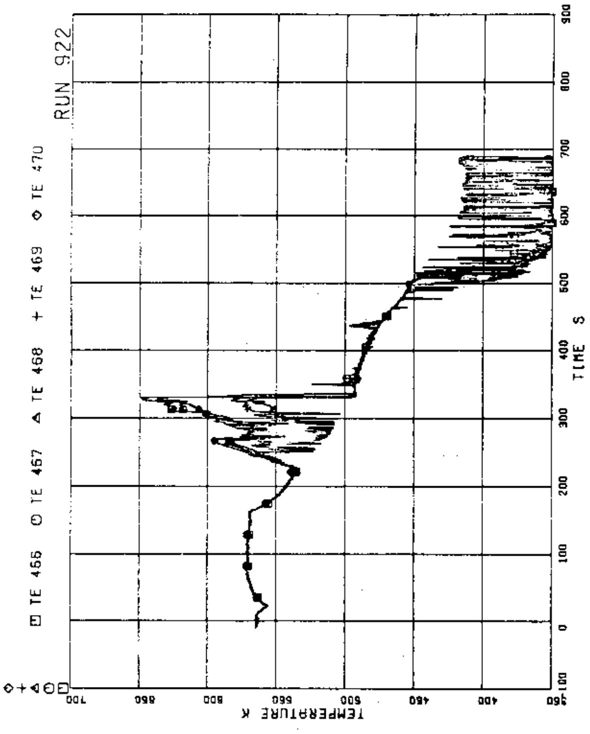


FIG.5.173 FLUSD TEMPERATURES BELOW UTP OF CHANNEL A. OPENINGS 1 TO 5

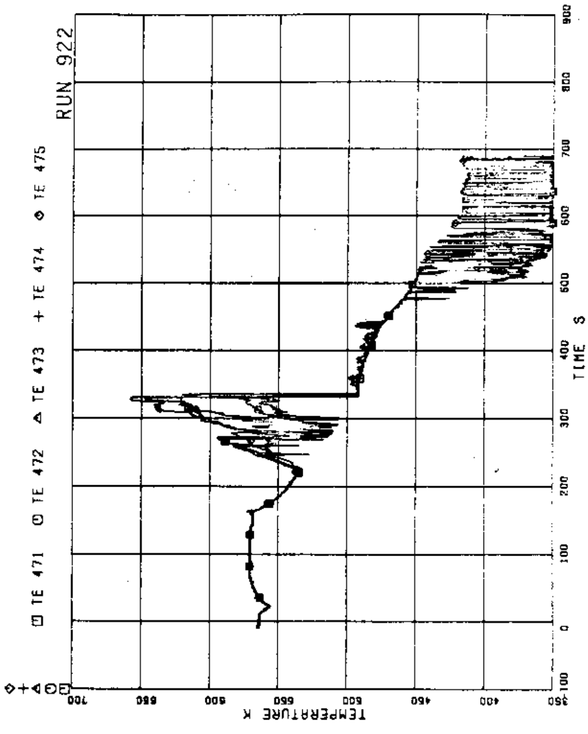


FIG.5.174 FLUIS TEMPERATURES BELOW UTP OF CHANNEL A. OPENINGS 6 TO 10

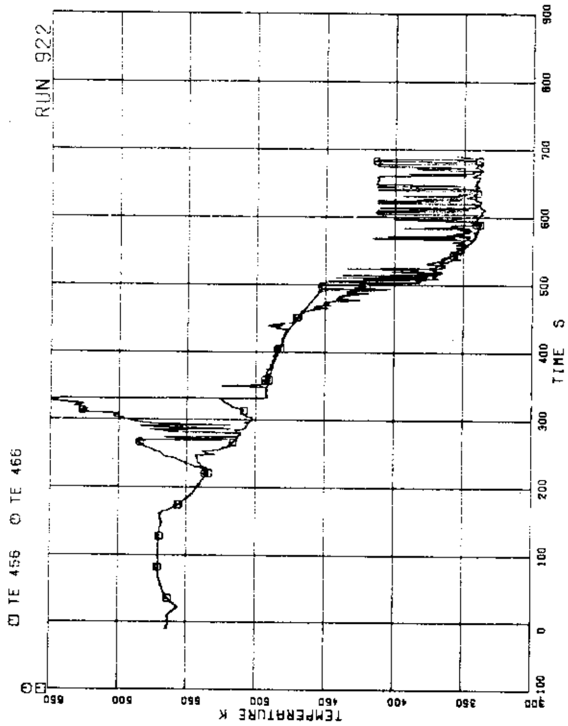


FIG.5.175 FLUID TEMPERATURES AT UTP IN CHANNEL A. OPENING 1

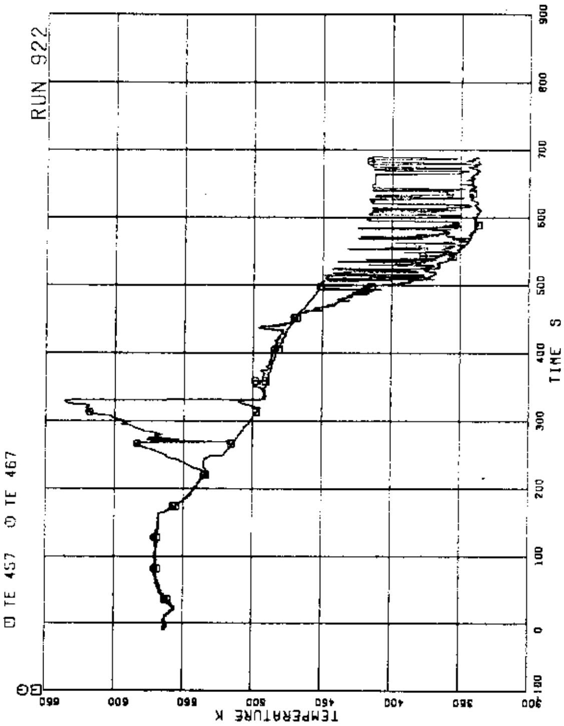


FIG.5.176 FLUID TEMPERATURES AT UTP IN CHANNEL A. OPENING 2

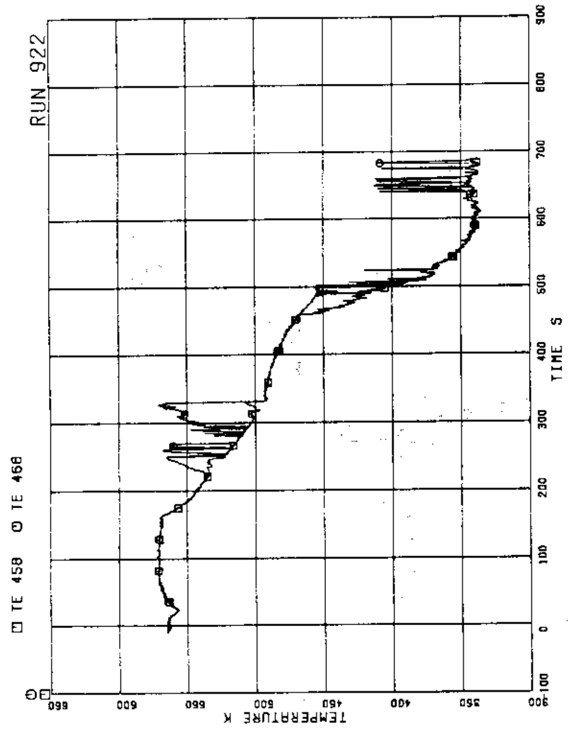


FIG.5.177 FLUID TEMPERATURES AT UTP IN CHANNEL A, OPENING 3

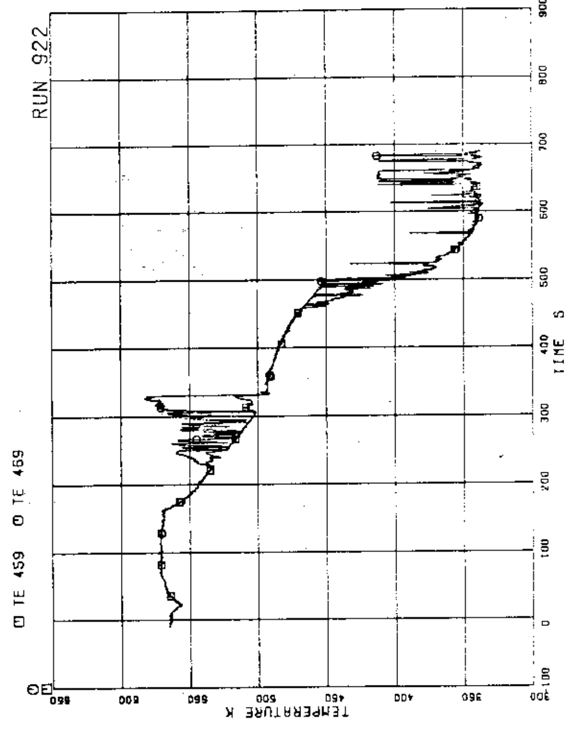


FIG.5.178 FLUID TEMPERATURES AT UTP IN CHANNEL A, OPENING 4

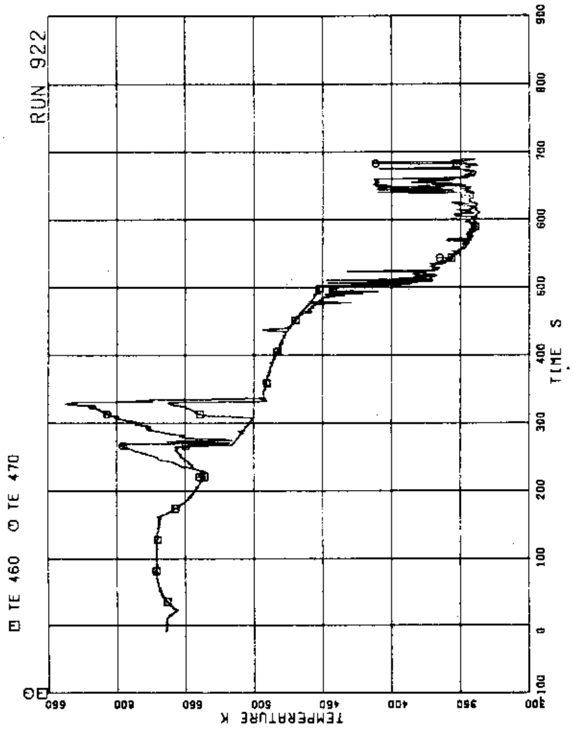


FIG.5.179 FLUID TEMPERATURES AT UTP IN CHANNEL A, OPENING 5

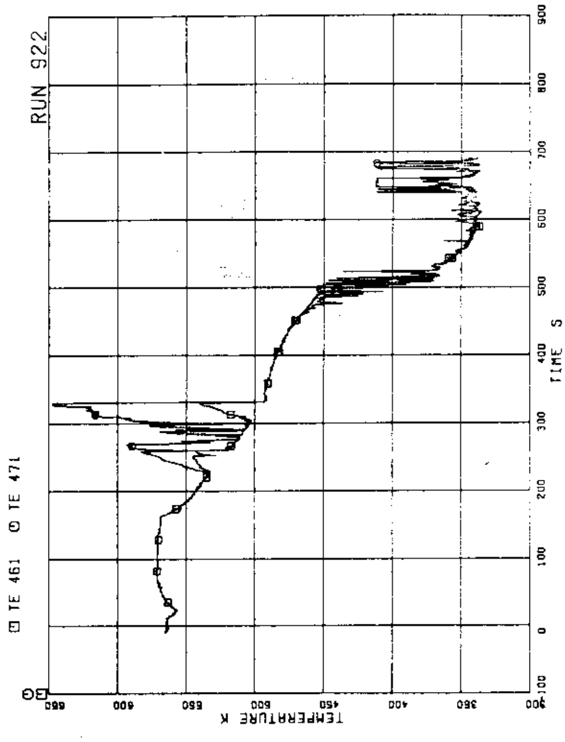


FIG.5.180 FLUID TEMPERATURES AT UTP IN CHANNEL A, OPENING 6

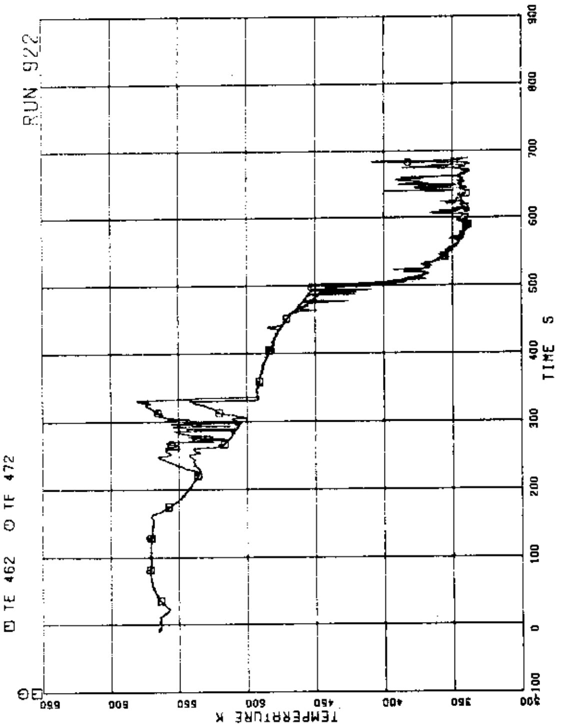


FIG.5.181 FLUID TEMPERATURES AT UTP IN CHANNEL A. OPENING 7

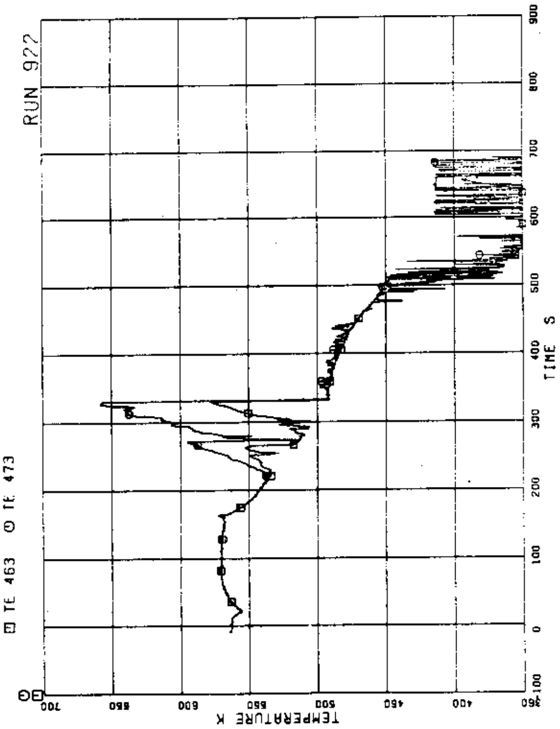


FIG.5.182 FLUID TEMPERATURES AT UTP IN CHANNEL A. OPENING 8

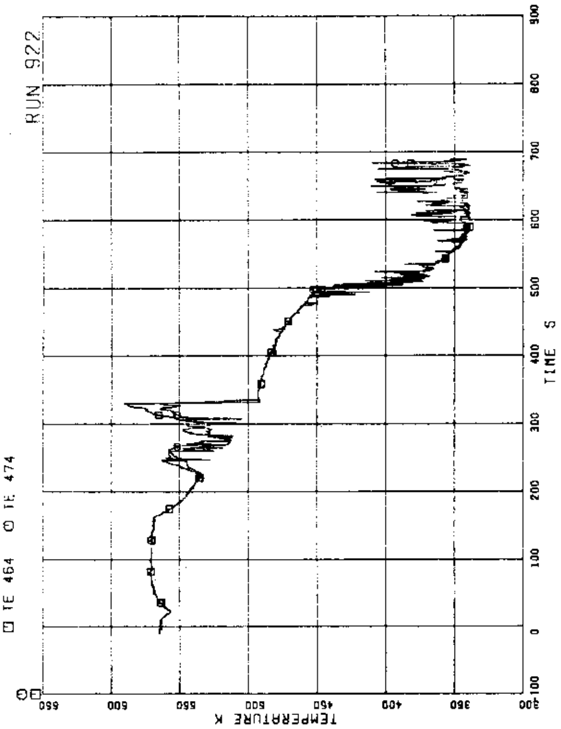


FIG.5.183 FLUID TEMPERATURES AT UTP IN CHANNEL A. OPENING 9

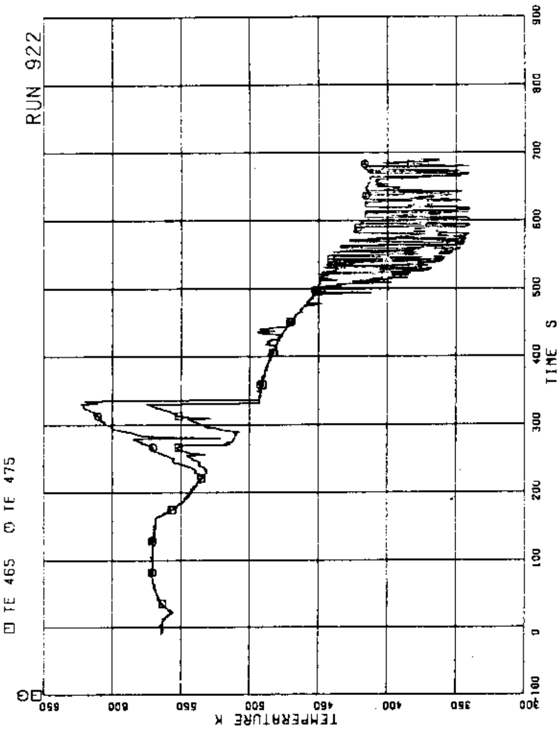


FIG.5.184 FLUID TEMPERATURES AT UTP IN CHANNEL A. OPENING 10

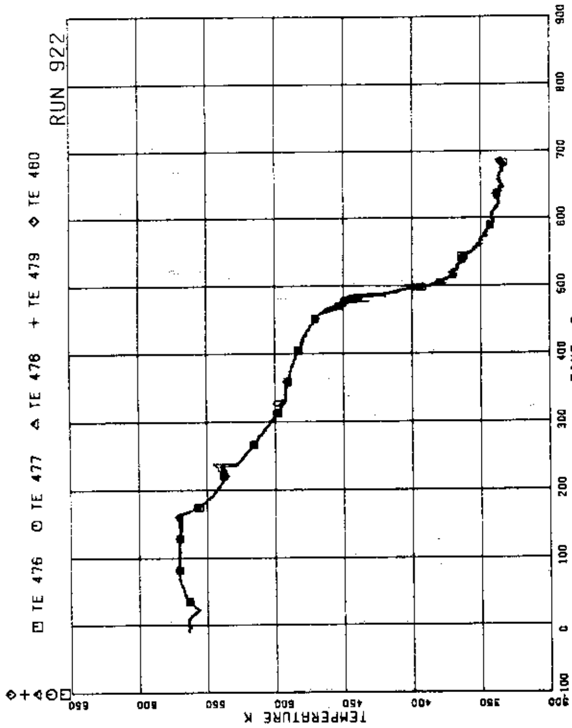


FIG.5.185 FLUID TEMPERATURES ABOVE UTP OF CHANNEL C. OPENINGS 1 TO 5

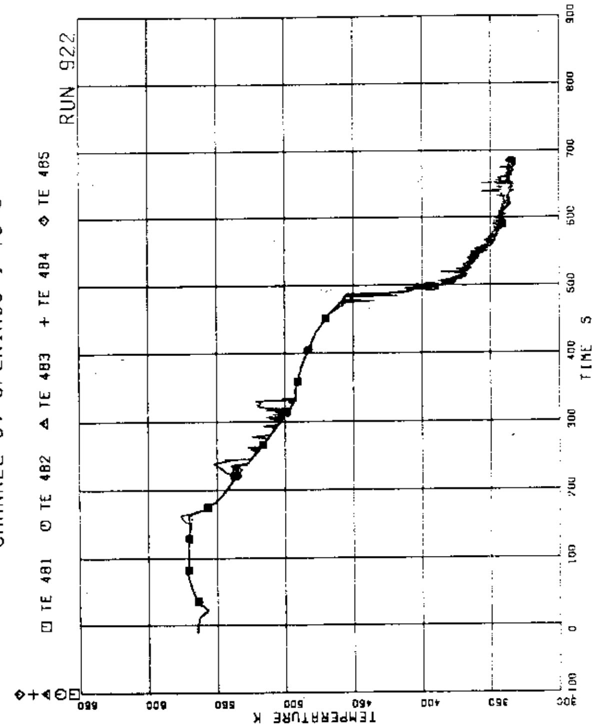


FIG.5.186 FLUID TEMPERATURES ABOVE UTP OF CHANNEL C. OPENINGS 6 TO 10

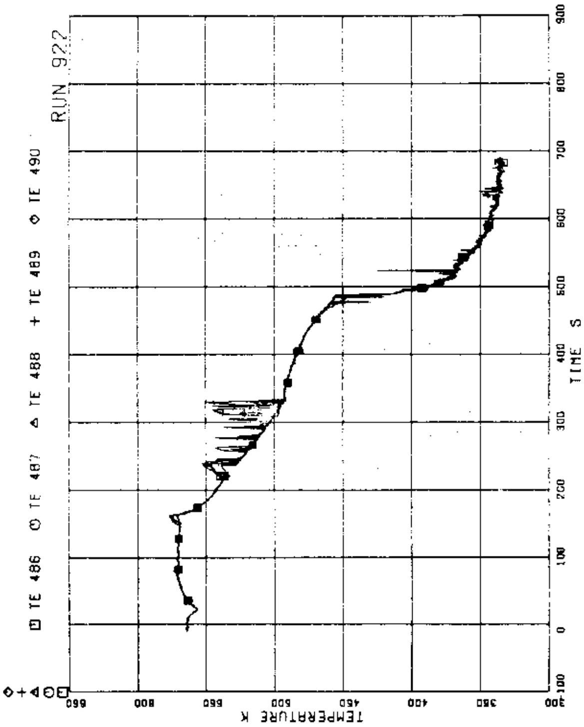


FIG.5.187 FLUID TEMPERATURES BELOW UTP OF CHANNEL C. OPENINGS 1 TO 5

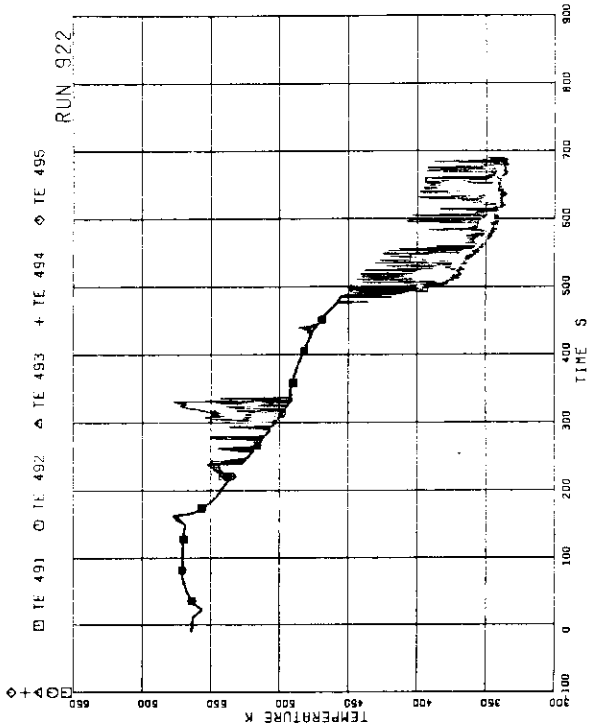


FIG.5.188 FLUID TEMPERATURES BELOW UTP OF CHANNEL C. OPENINGS 6 TO 10

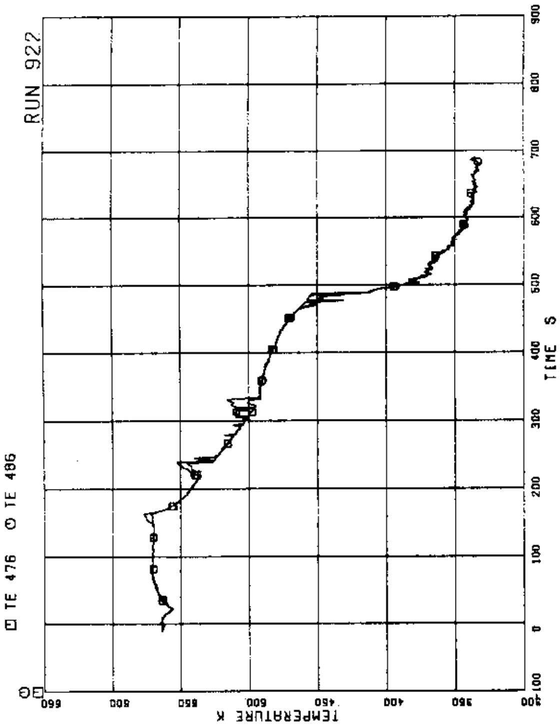


FIG.5.189 FLUID TEMPERATURES AT UTP IN CHANNEL C, OPENING 1

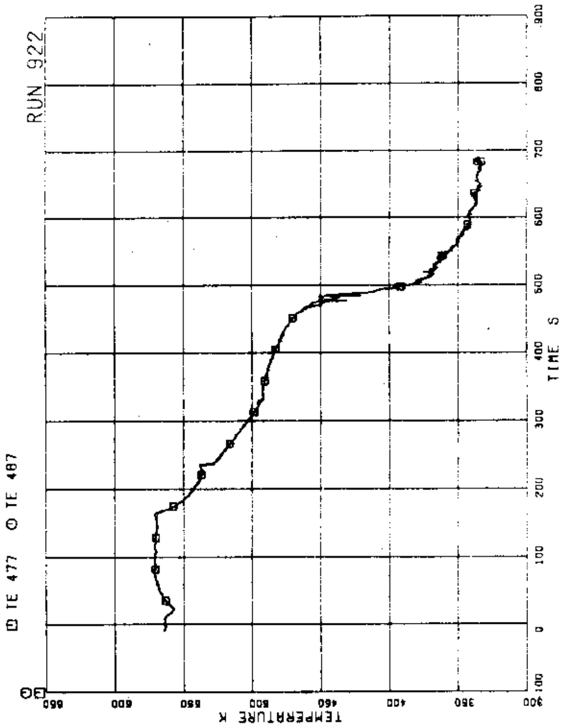


FIG.5.190 FLUID TEMPERATURES AT UTP IN CHANNEL C, OPENING 2

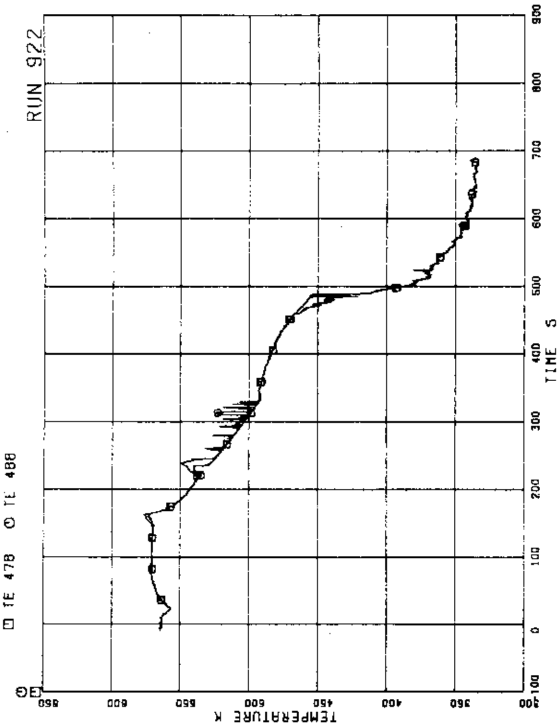


FIG.5.191 FLUID TEMPERATURES AT UTP IN CHANNEL C, OPENING 3

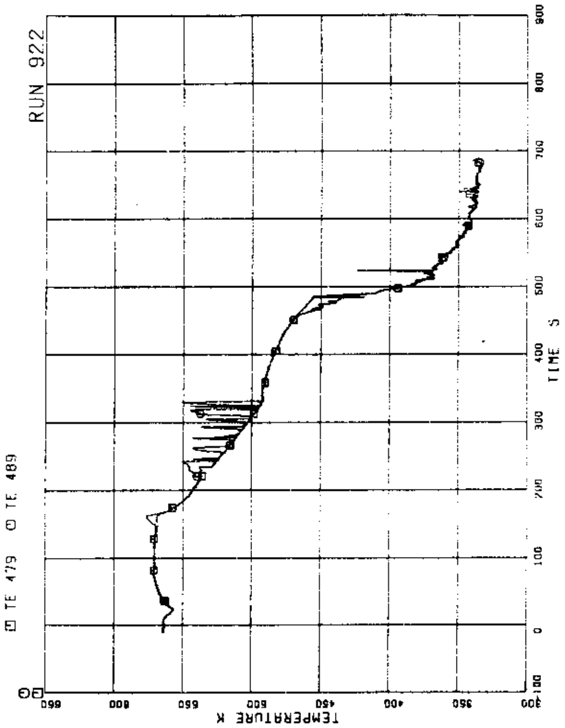


FIG.5.192 FLUID TEMPERATURES AT UTP IN CHANNEL C, OPENING 4

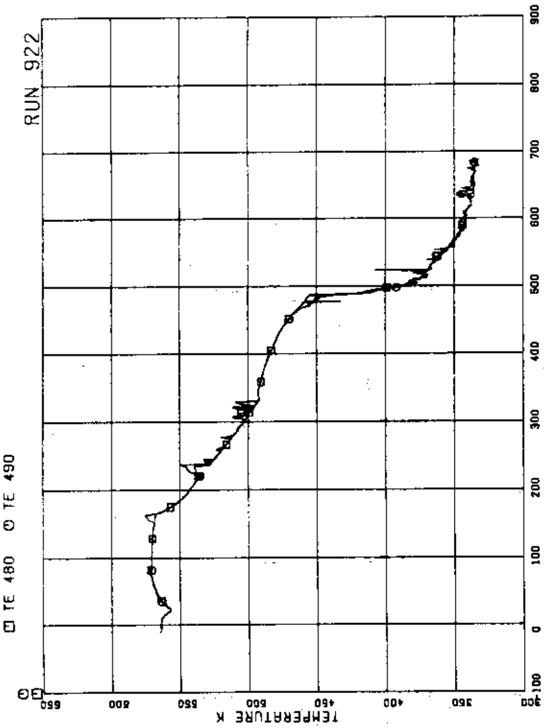


FIG.5.193 FLUID TEMPERATURES AT UTP IN CHANNEL C, OPENING 5

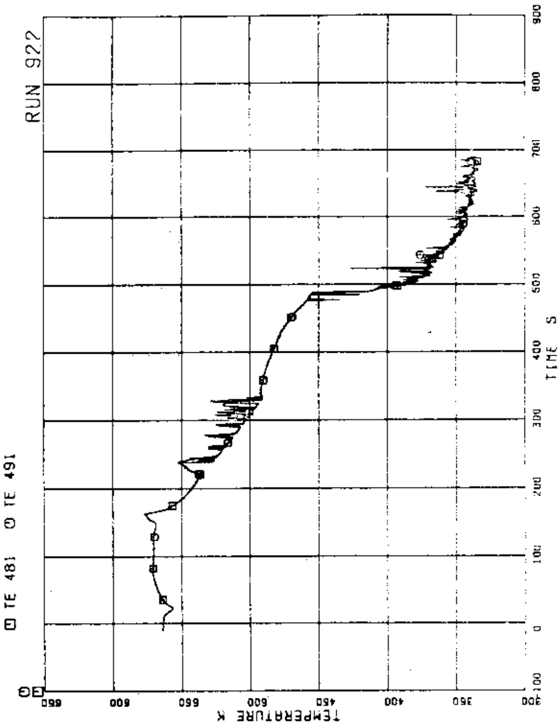


FIG.5.194 FLUID TEMPERATURES AT UTP IN CHANNEL C, OPENING 6

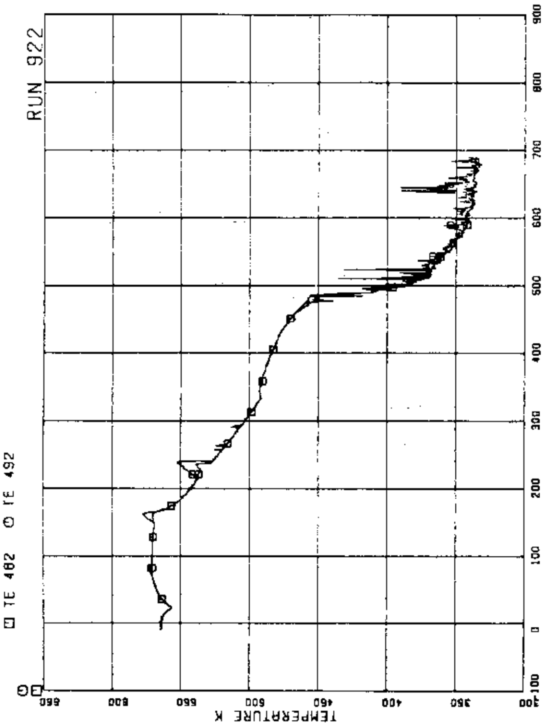


FIG.5.195 FLUID TEMPERATURES AT UTP IN CHANNEL C, OPENING 7

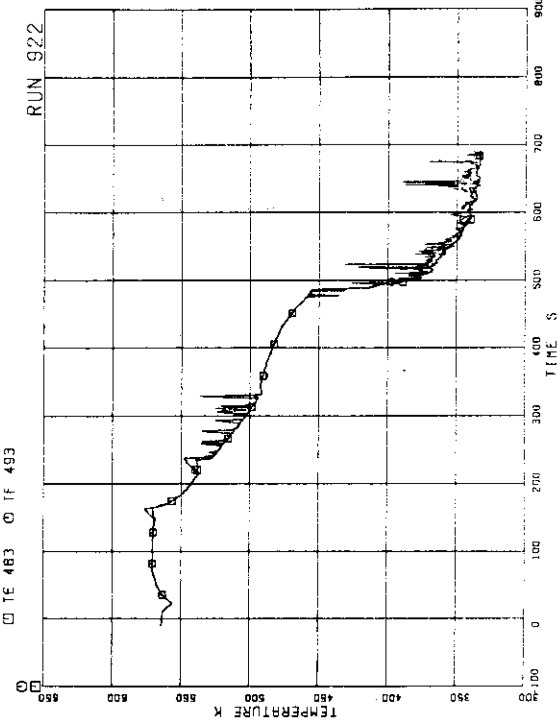


FIG.5.196 FLUID TEMPERATURES AT UTP IN CHANNEL C, OPENING 8

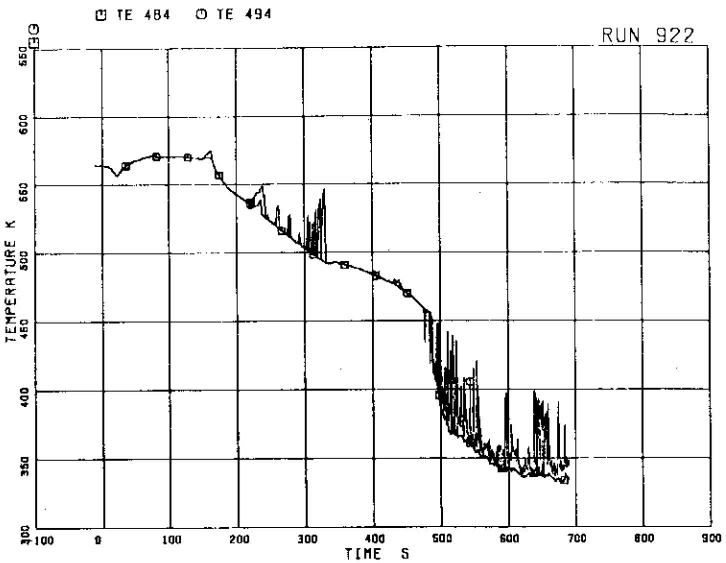


FIG.5.197 FLUID TEMPERATURES AT UTP IN CHANNEL C. OPENING 9

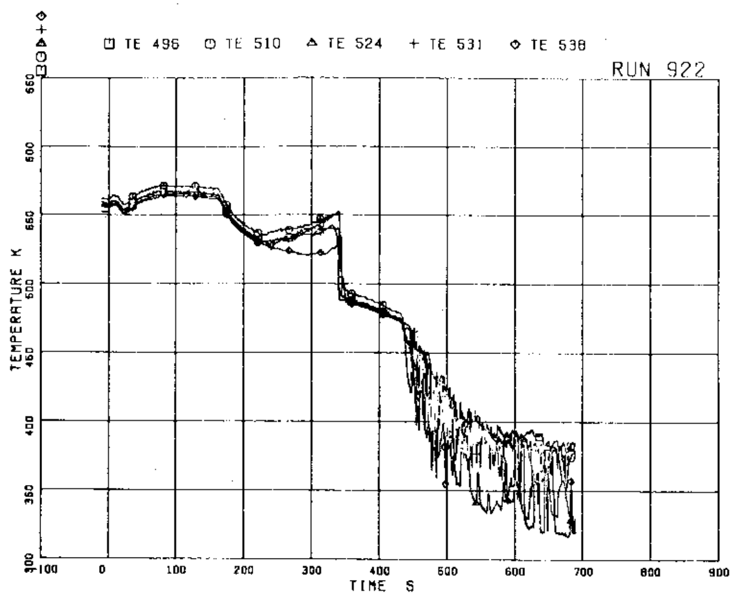


FIG.5.199 INNER AND OUTER SURFACE TEMPERATURES OF CHANNEL BOX AT POS.1

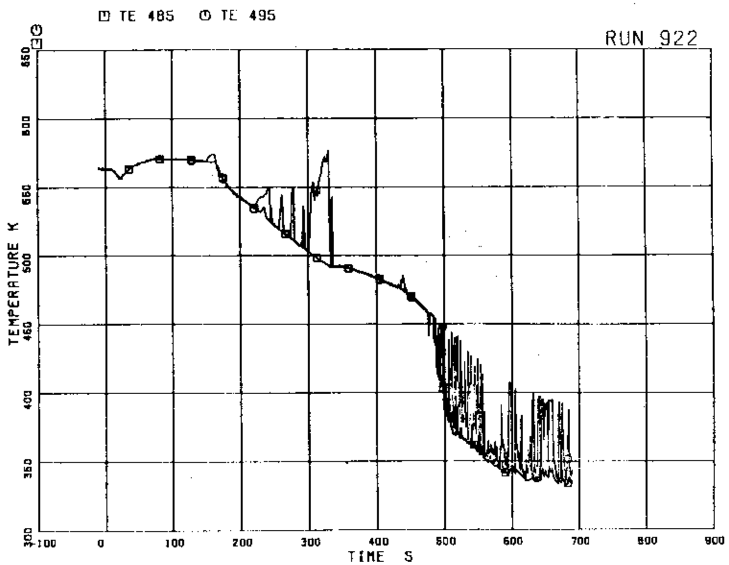


FIG.5.198 FLUID TEMPERATURES AT UTP IN CHANNEL C. OPENING 10

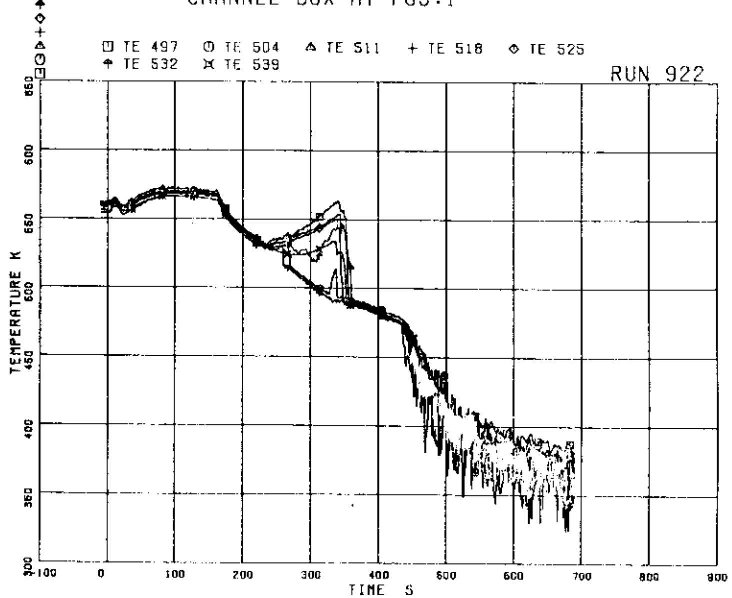


FIG.5.200 INNER AND OUTER SURFACE TEMPERATURES OF CHANNEL BOX AT POS.2

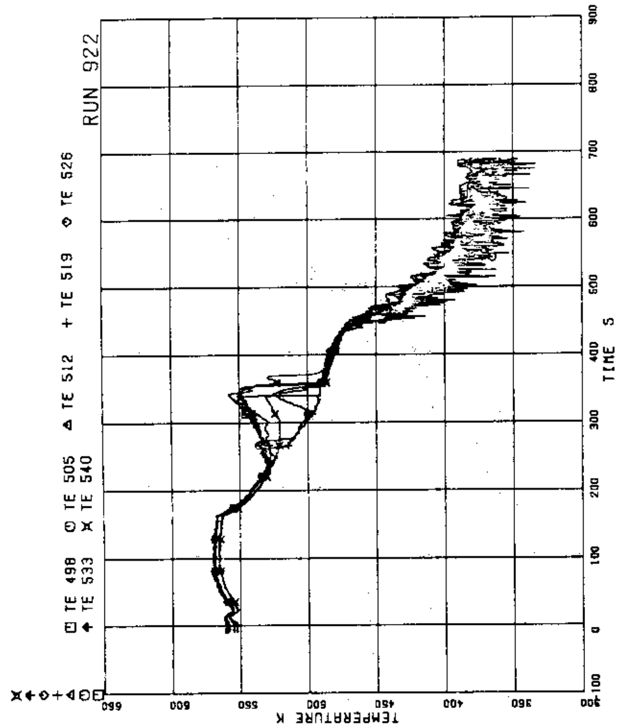


FIG.5.201 INNER AND OUTER SURFACE TEMPERATURES OF CHANNEL BOX AT POS.3

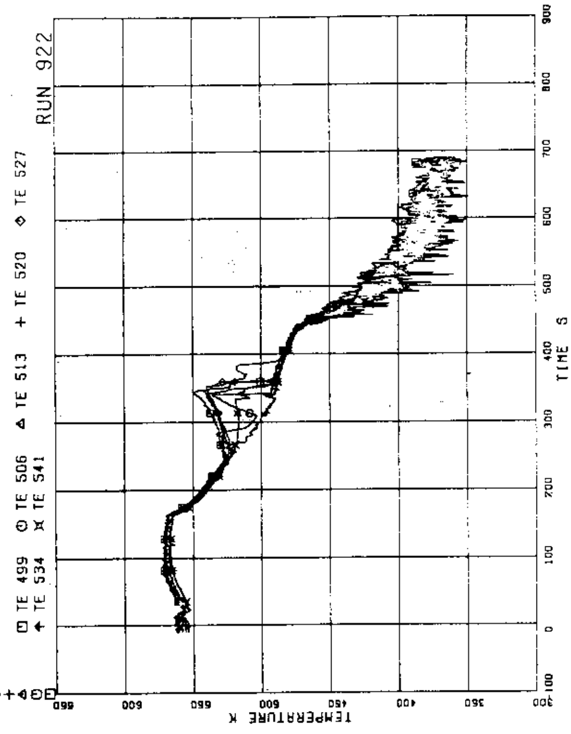


FIG.5.202 INNER AND OUTER SURFACE TEMPERATURES OF CHANNEL BOX AT POS.4

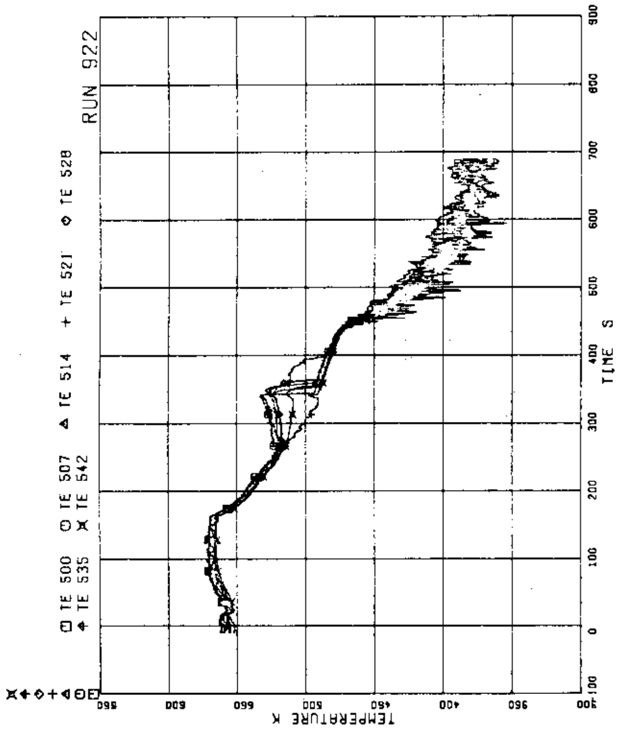


FIG.5.203 INNER AND OUTER SURFACE TEMPERATURES OF CHANNEL BOX AT POS.5

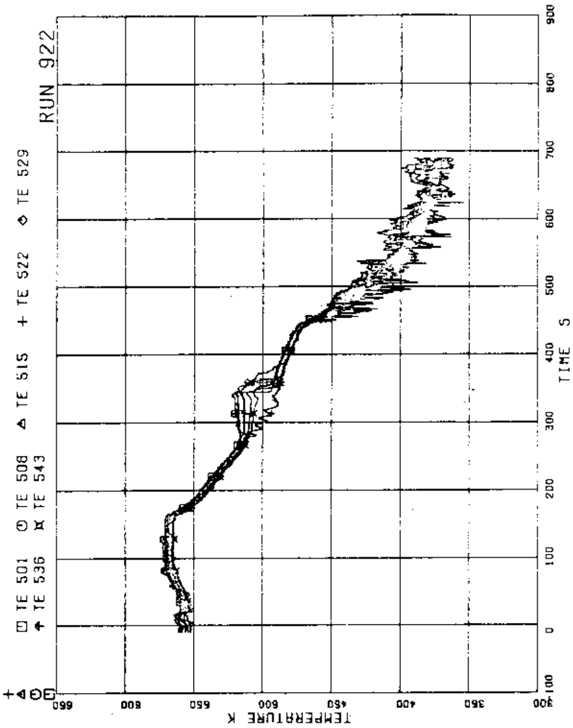


FIG.5.204 INNER AND OUTER SURFACE TEMPERATURES OF CHANNEL BOX AT POS.6

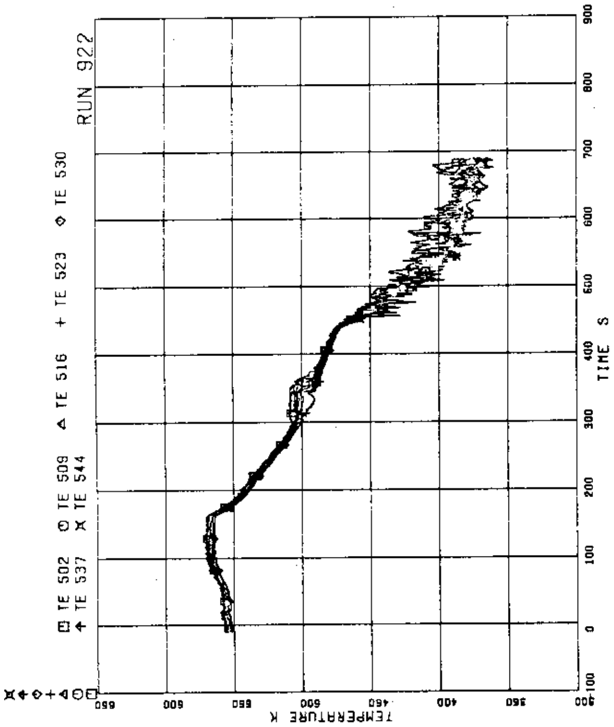


FIG.5.205 INNER AND OUTER SURFACE TEMPERATURES OF CHANNEL BOX AT POS.7

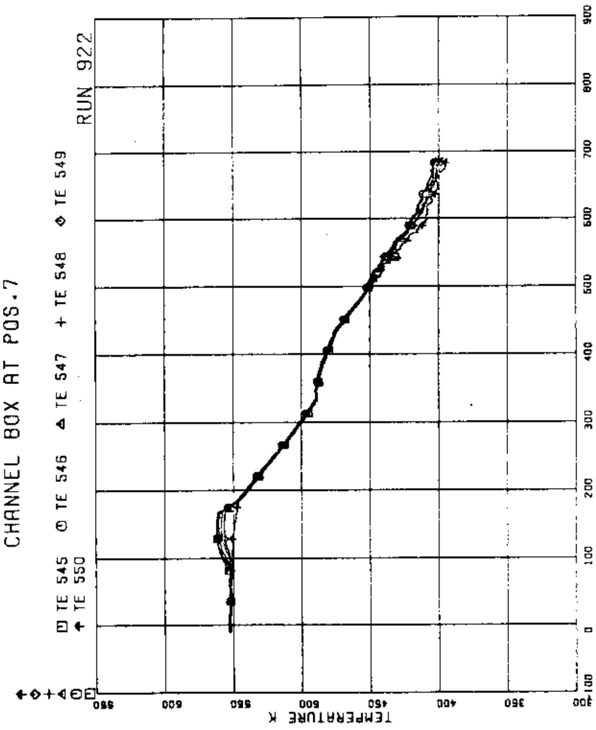


FIG.5.206 FLUID TEMPERTURES IN LOWER PLENUM, CENTER

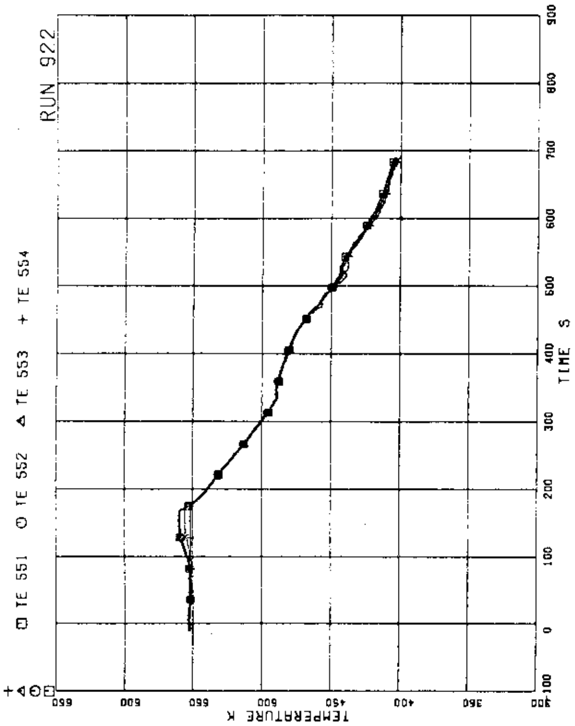


FIG.5.207 FLUID TEMPERTURES IN LOWER PLENUM, NORTH

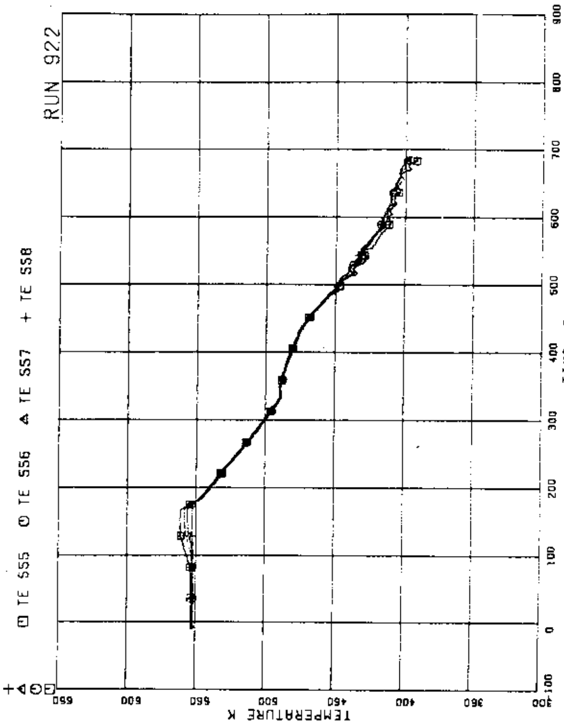


FIG.5.208 FLUID TEMPERTURES IN LOWER PLENUM, SOUTH

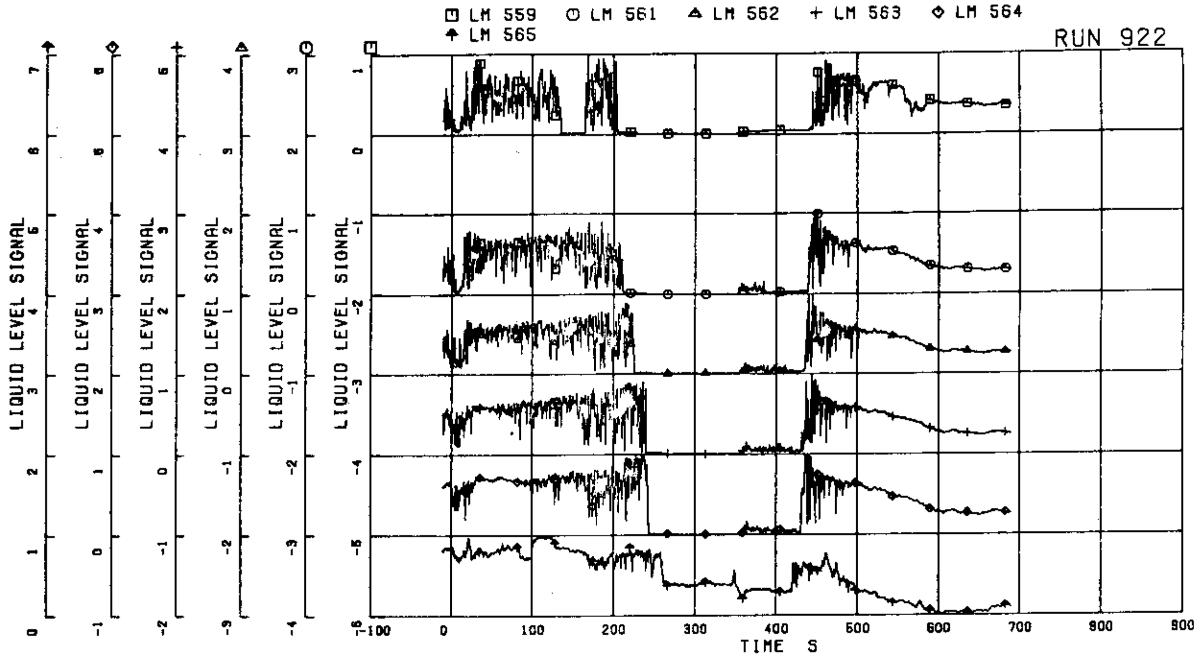


FIG.5.209 LIQUID LEVEL SIGNALS IN CHANNEL BOX A, LOCATION A1

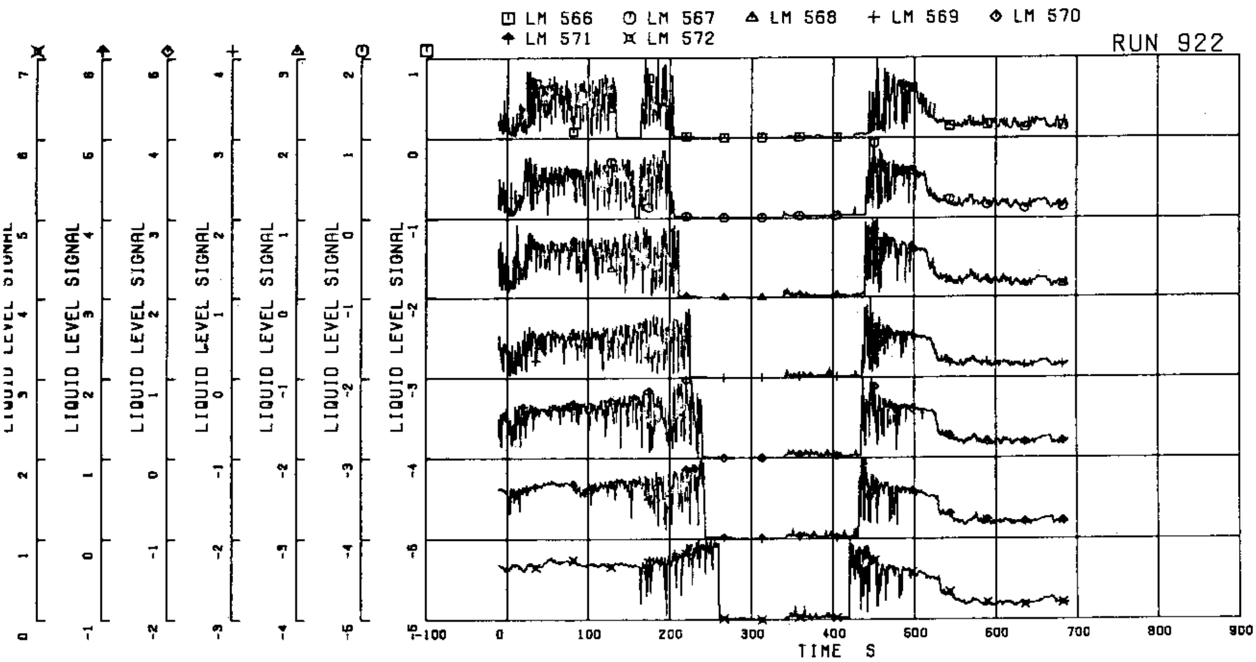


FIG.5.210 LIQUID LEVEL SIGNALS IN CHANNEL BOX A, LOCATION A2

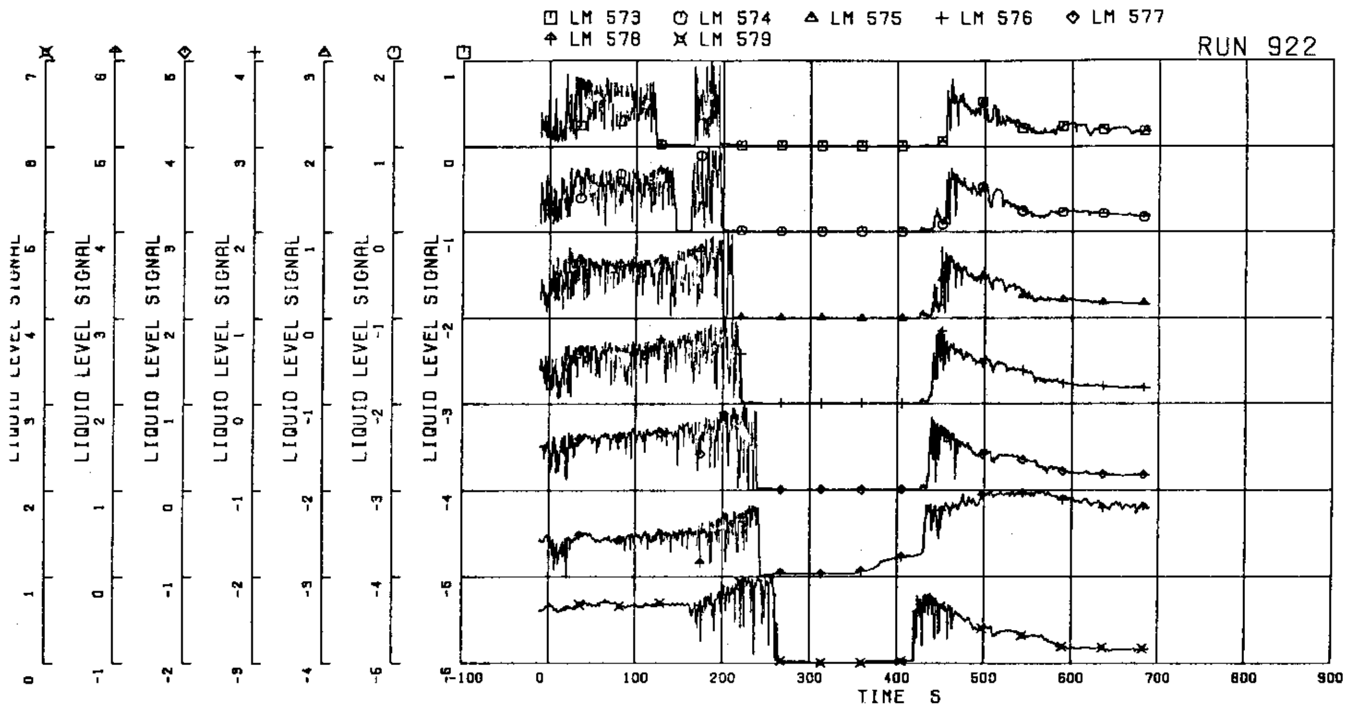


FIG.5.211 LIQUID LEVEL SIGNALS IN CHANNEL BOX B

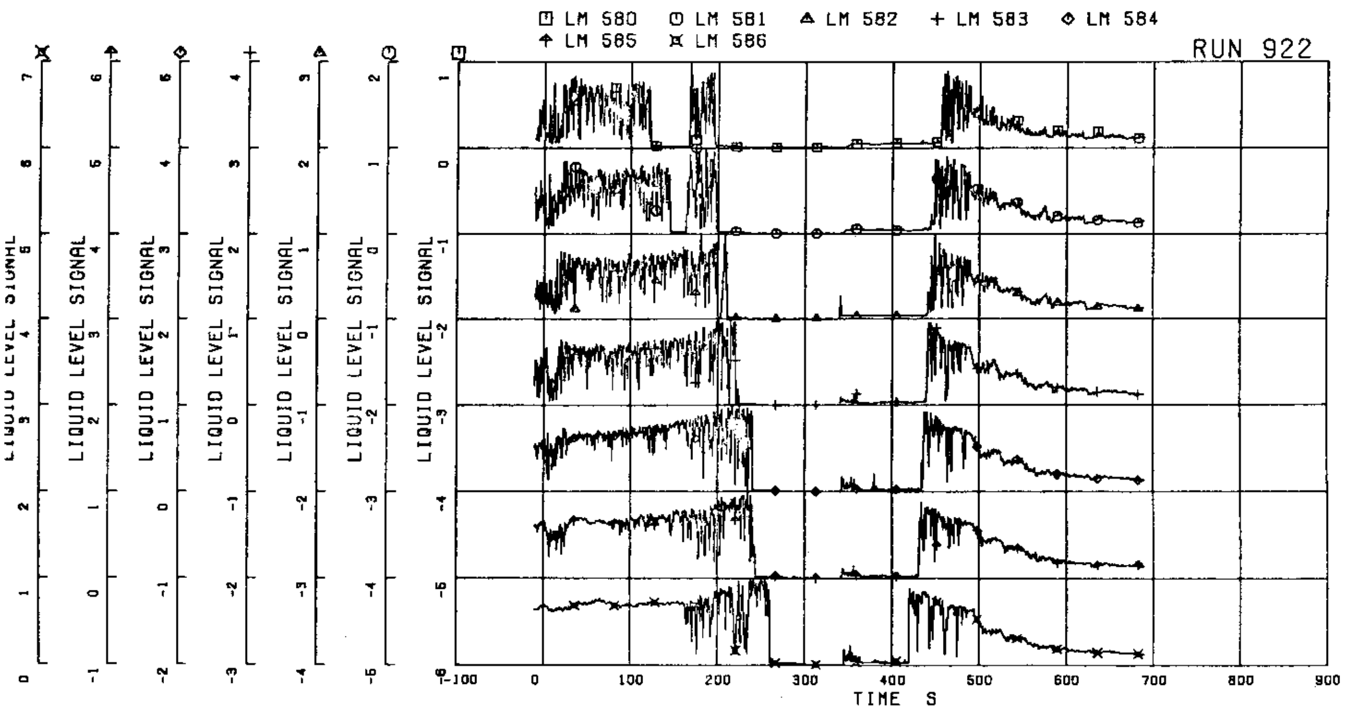


FIG.5.212 LIQUID LEVEL SIGNALS IN CHANNEL BOX C

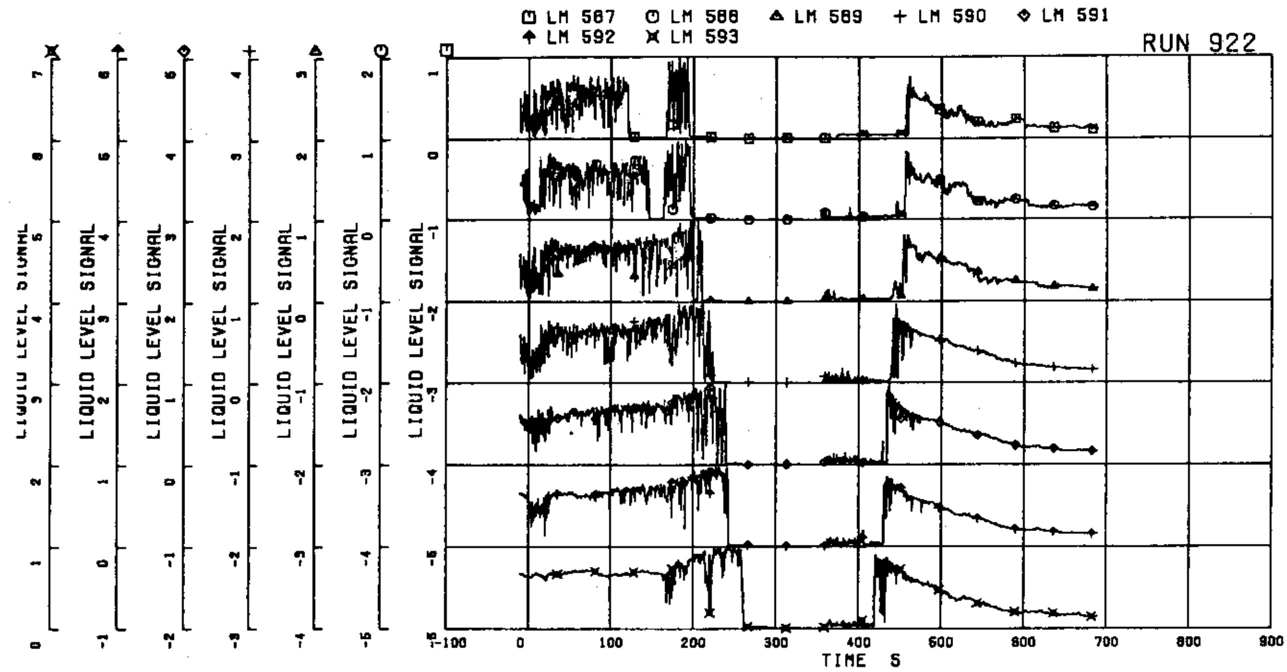


FIG.5.213 LIQUID LEVEL SIGNALS IN CHANNEL BOX D

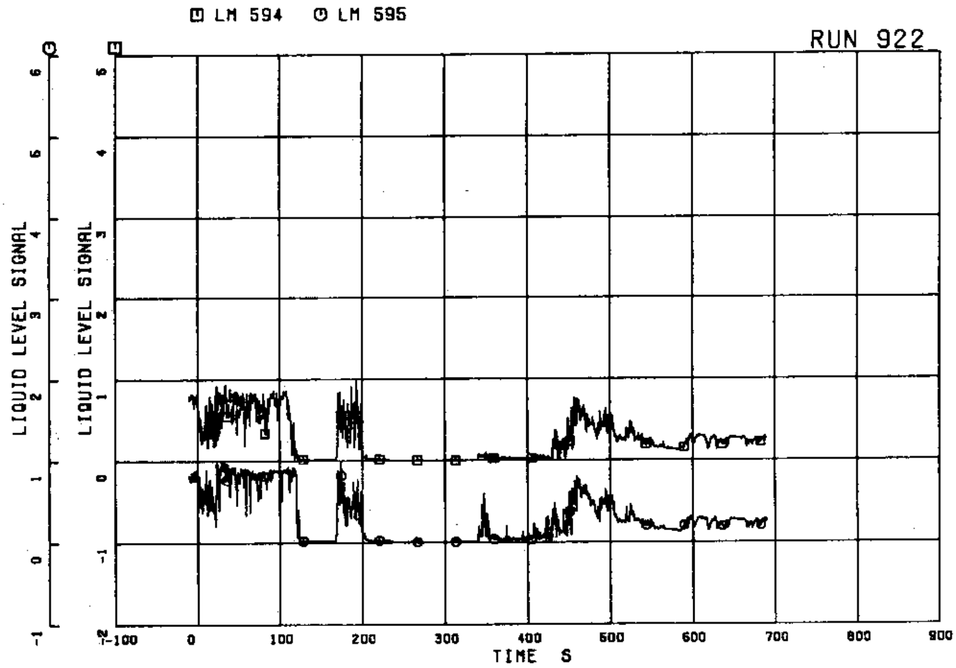


FIG.5.214 LIQUID LEVEL SIGNALS IN CHANNEL A OUTLET LOCATION A1

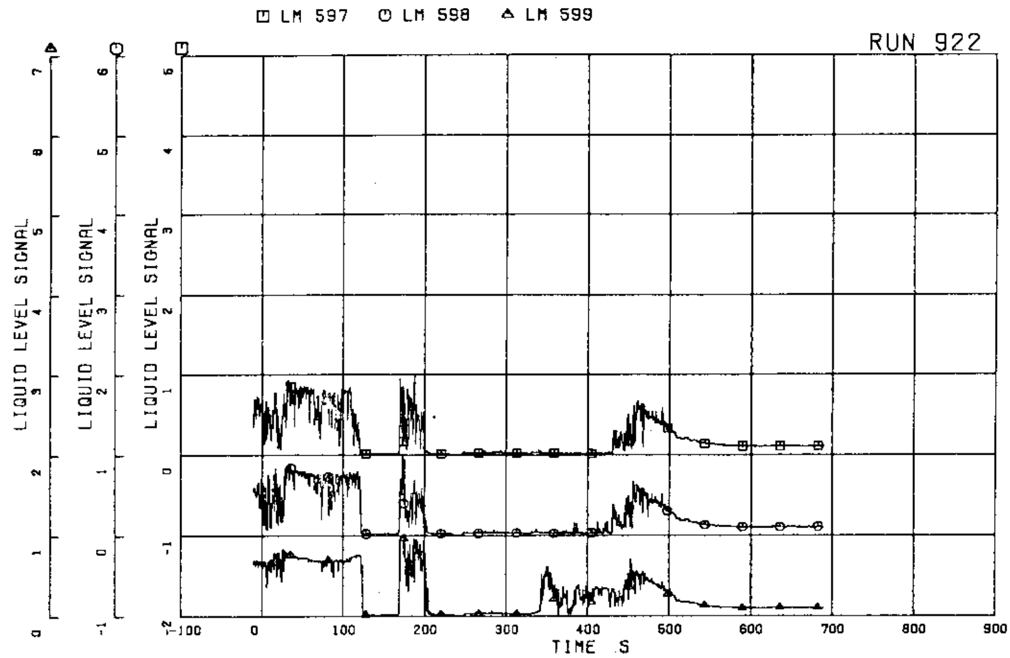


FIG.5.215 LIQUID LEVEL SIGNALS IN CHANNEL A OUTLET LOCATION A2

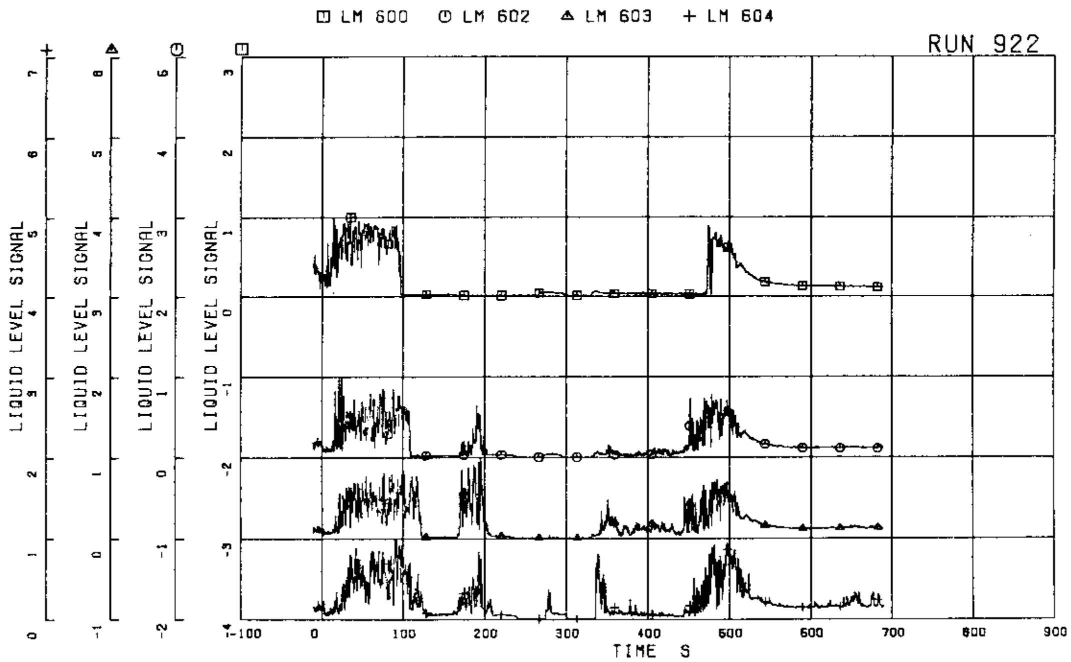


FIG.5.216 LIQUID LEVEL SIGNALS IN CHANNEL A OUTLET CENTER

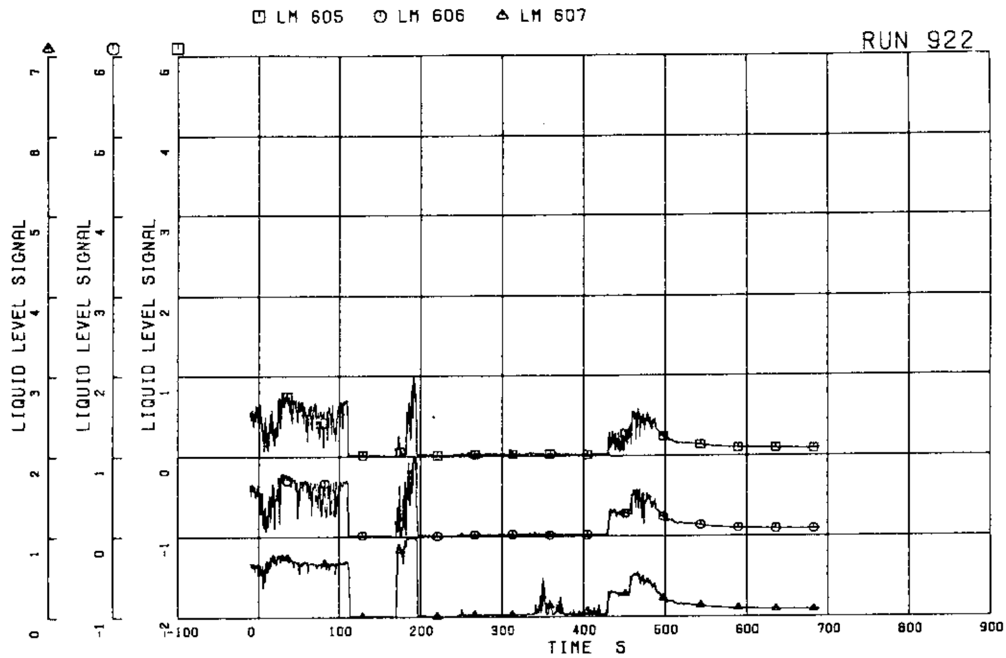


FIG.5.217 LIQUID LEVEL SIGNALS IN CHANNEL C OUTLET LOCATION C1

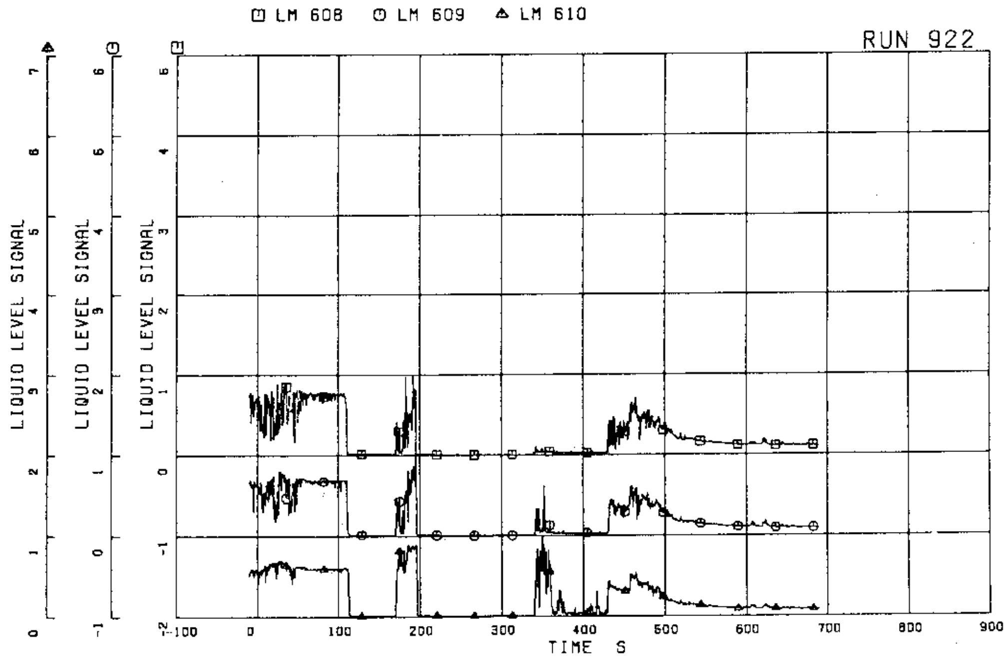


FIG.5.218 LIQUID LEVEL SIGNALS IN CHANNEL C OUTLET LOCATION C2

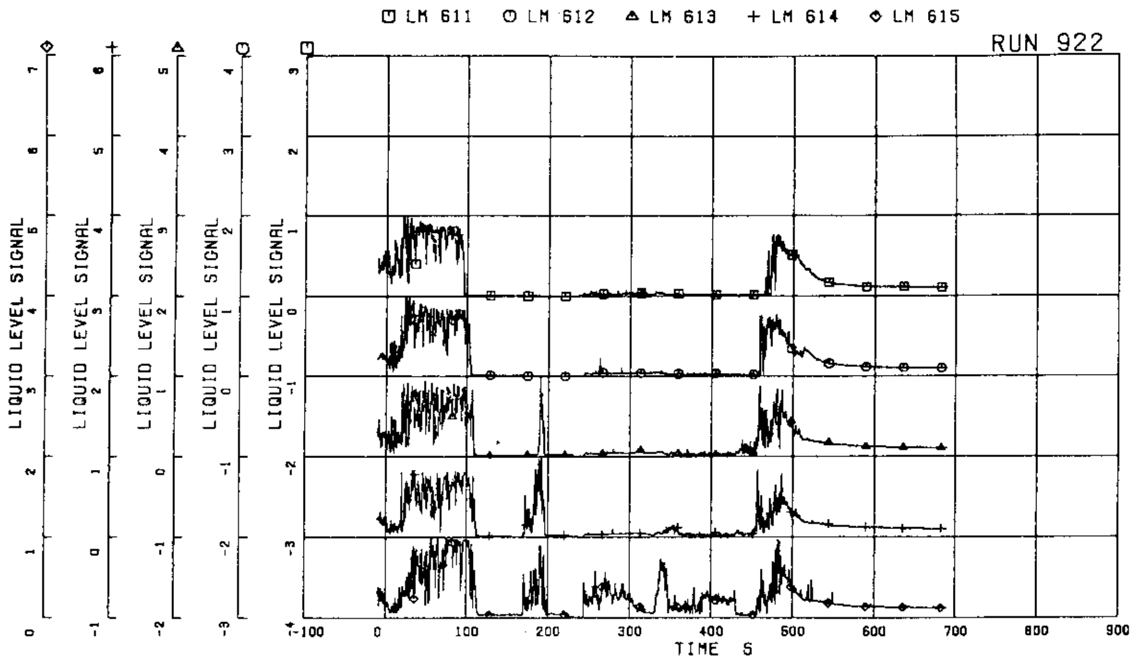


FIG.5.219 LIQUID LEVEL SIGNALS IN CHANNEL C OUTLET CENTER

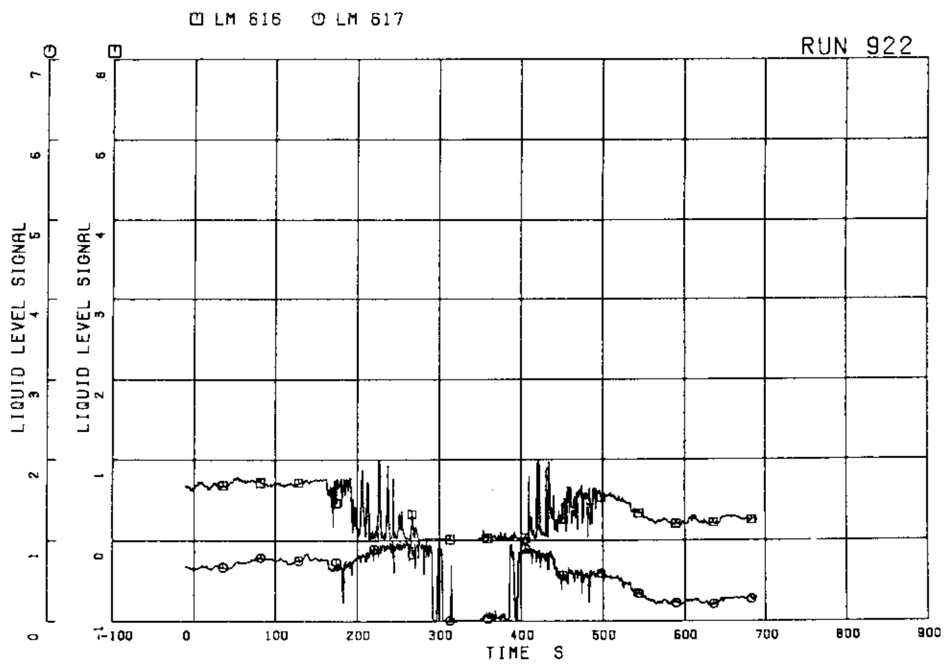


FIG.5.220 LIQUID LEVEL SIGNALS IN CHANNEL A INLET

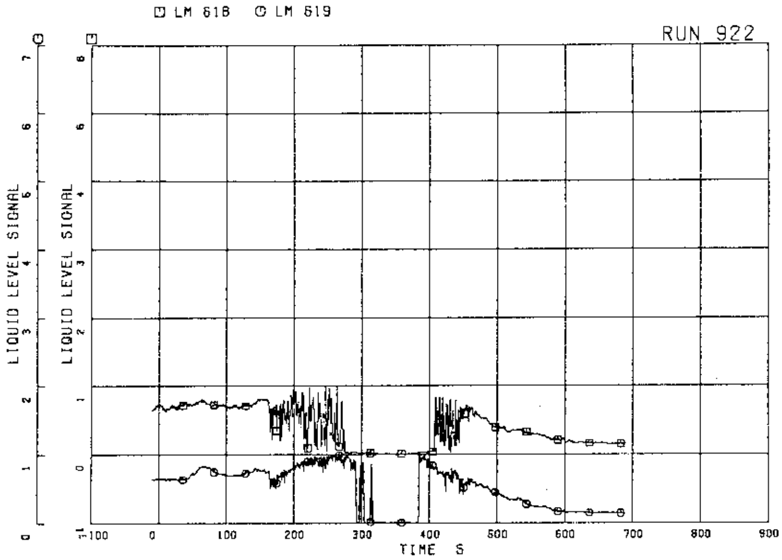


FIG.5.221 LIQUID LEVEL SIGNALS IN CHANNEL B INLET

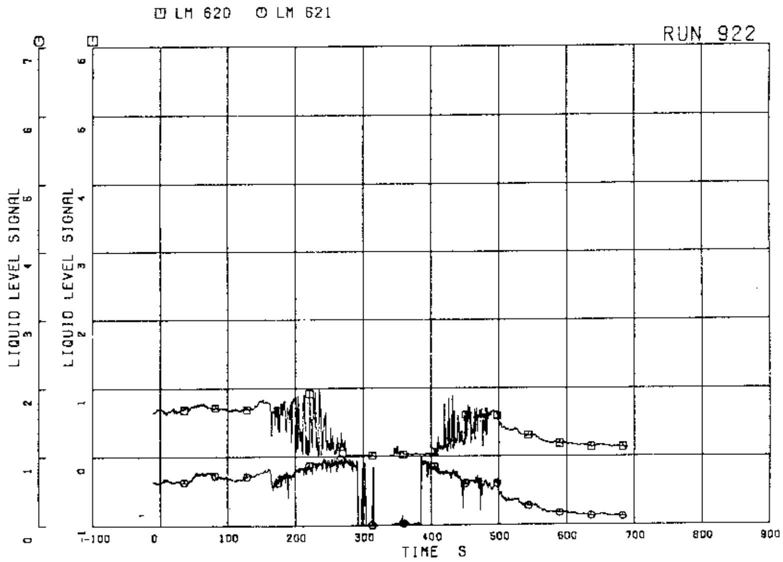


FIG.5.222 LIQUID LEVEL SIGNALS IN CHANNEL C INLET

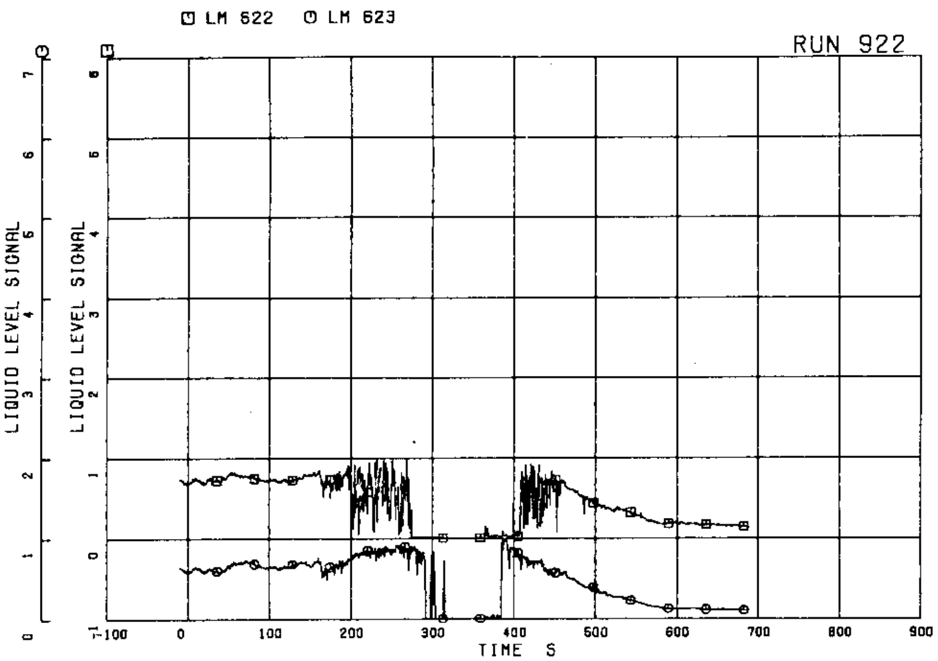


FIG.5.223 LIQUID LEVEL SIGNALS IN CHANNEL D INLET

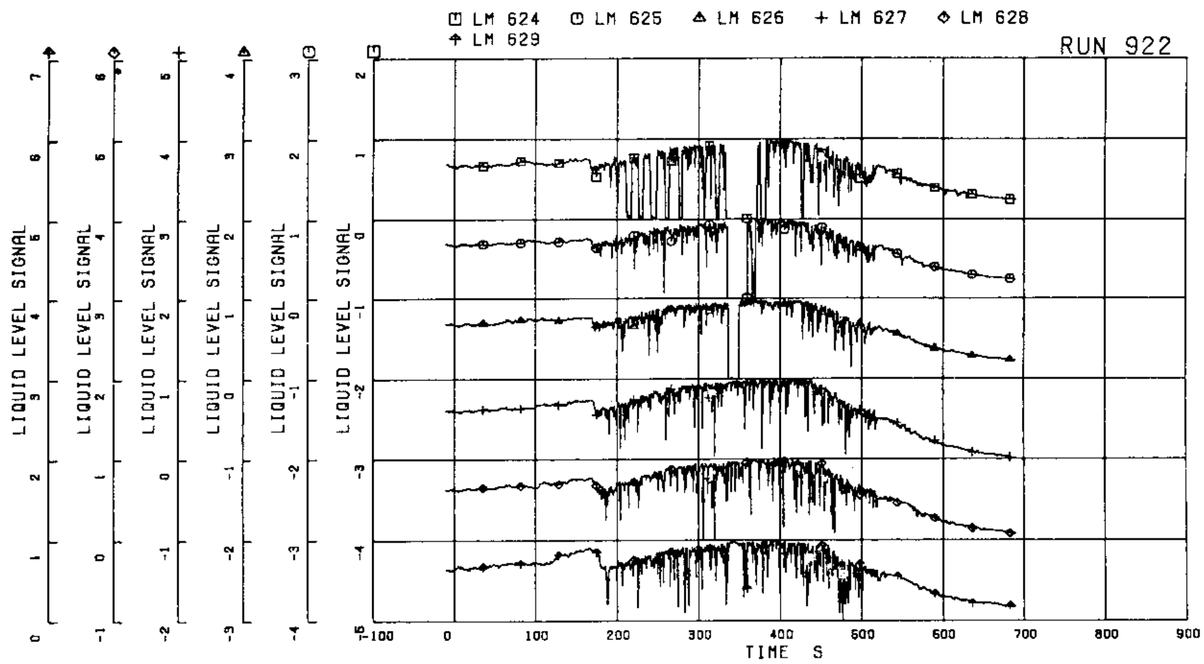


FIG.5.224 LIQUID LEVEL SIGNALS IN LOWER PLENUM, NORTH

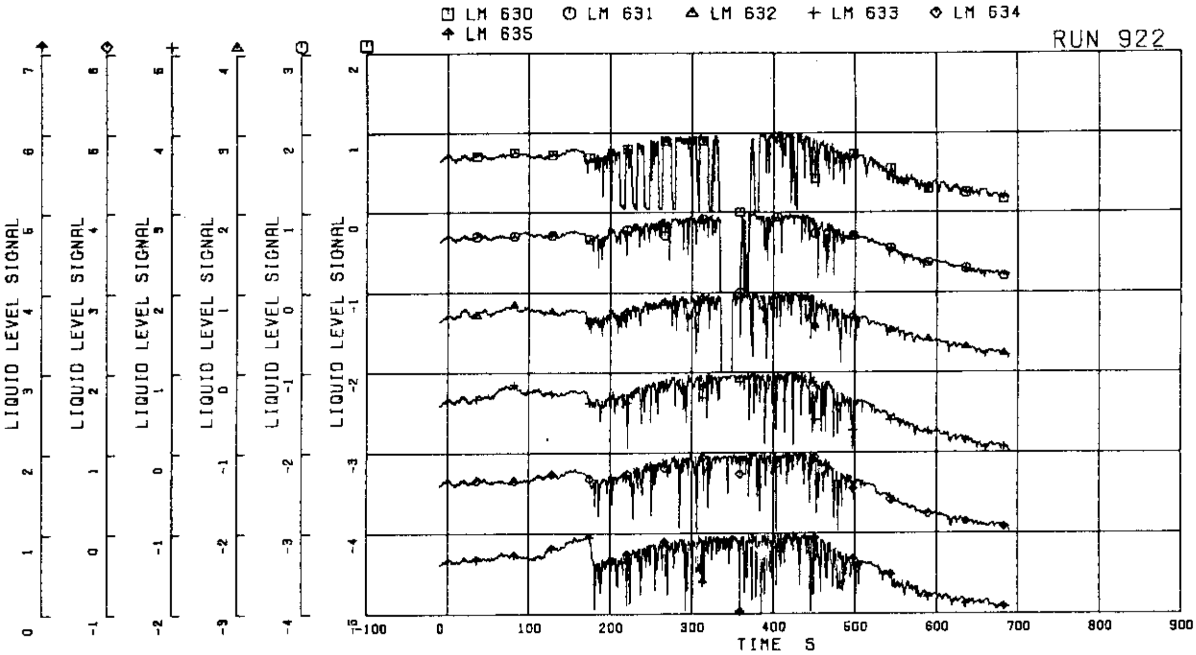


FIG.5.225 LIQUID LEVEL SIGNALS IN LOWER PLENUM, SOUTH

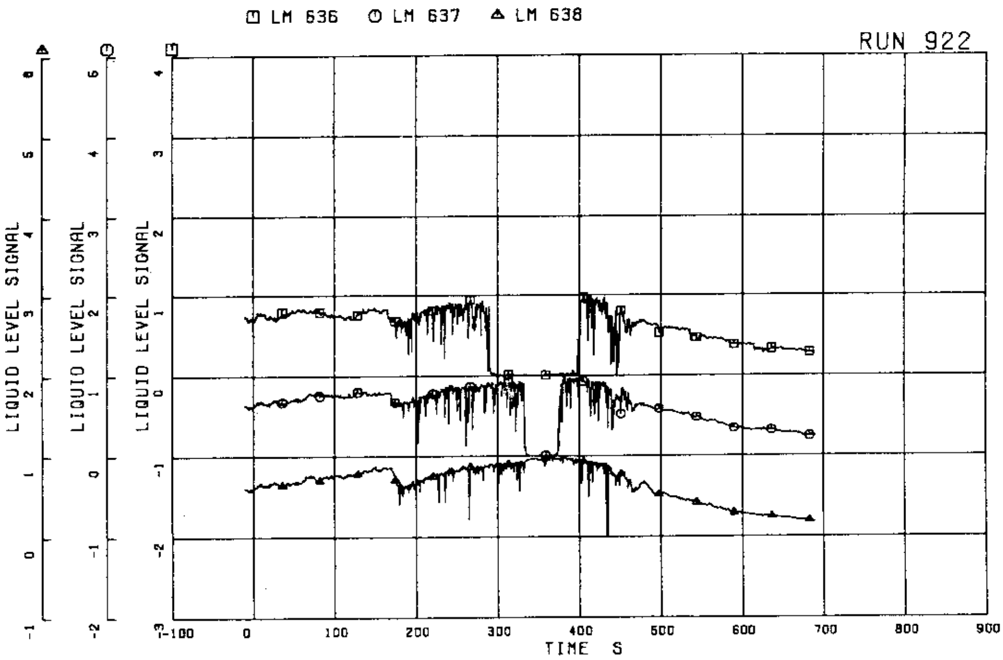


FIG.5.226 LIQUID LEVEL SIGNALS IN GUIDE TUBE, NORTH

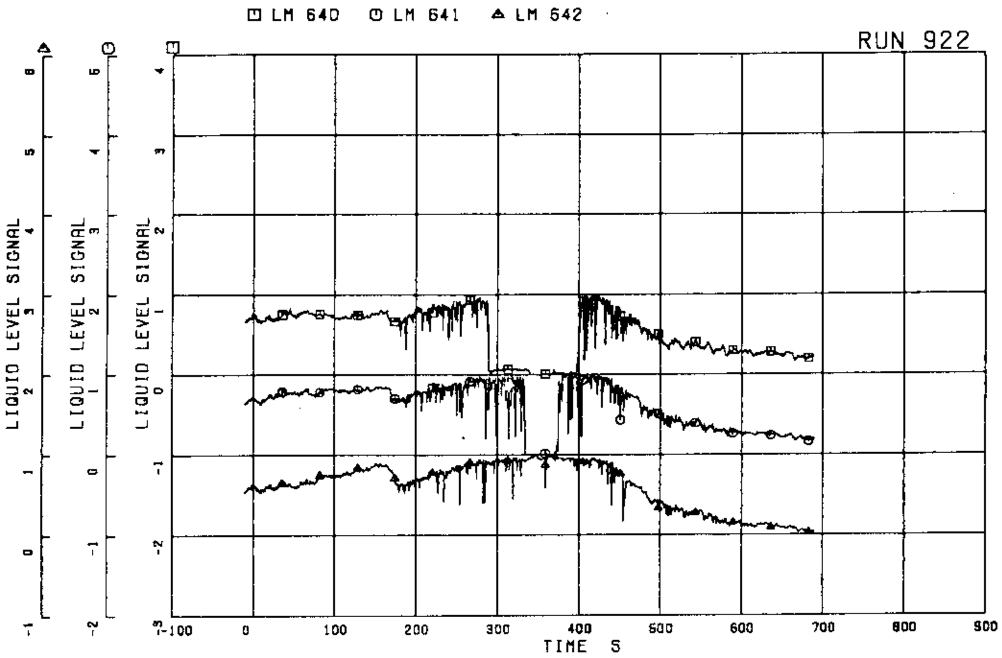


FIG.5.227 LIQUID LEVEL SIGNALS IN GUIDE TUBE, SOUTH

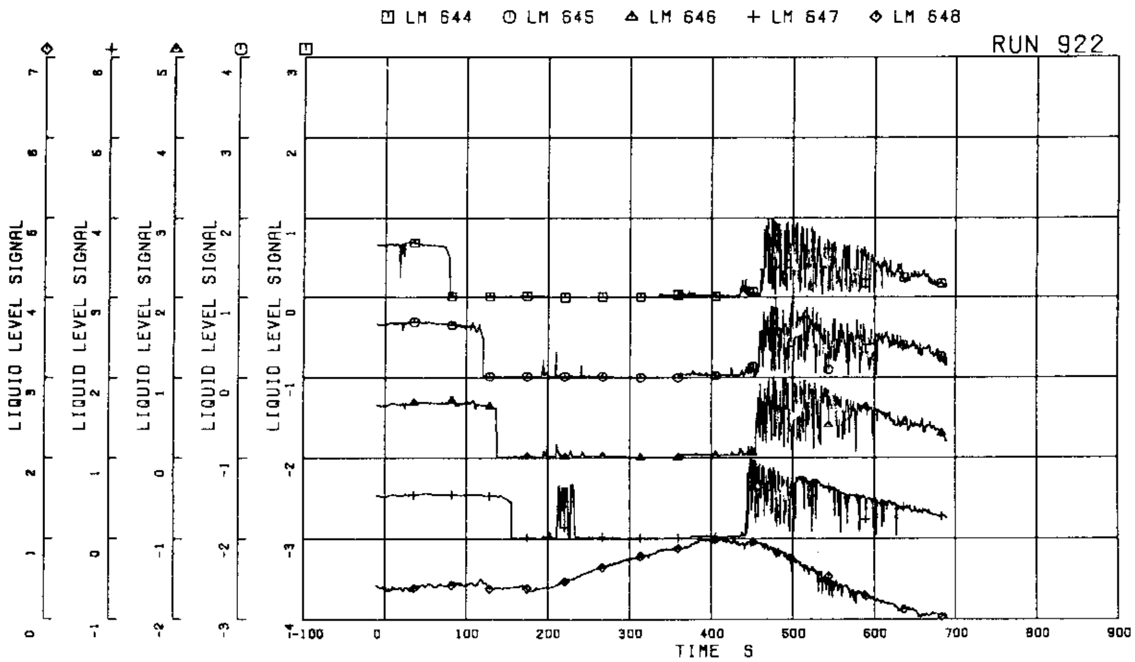


FIG.5.228 LIQUID LEVEL SIGNALS IN DOWNCOMER, D SIDE

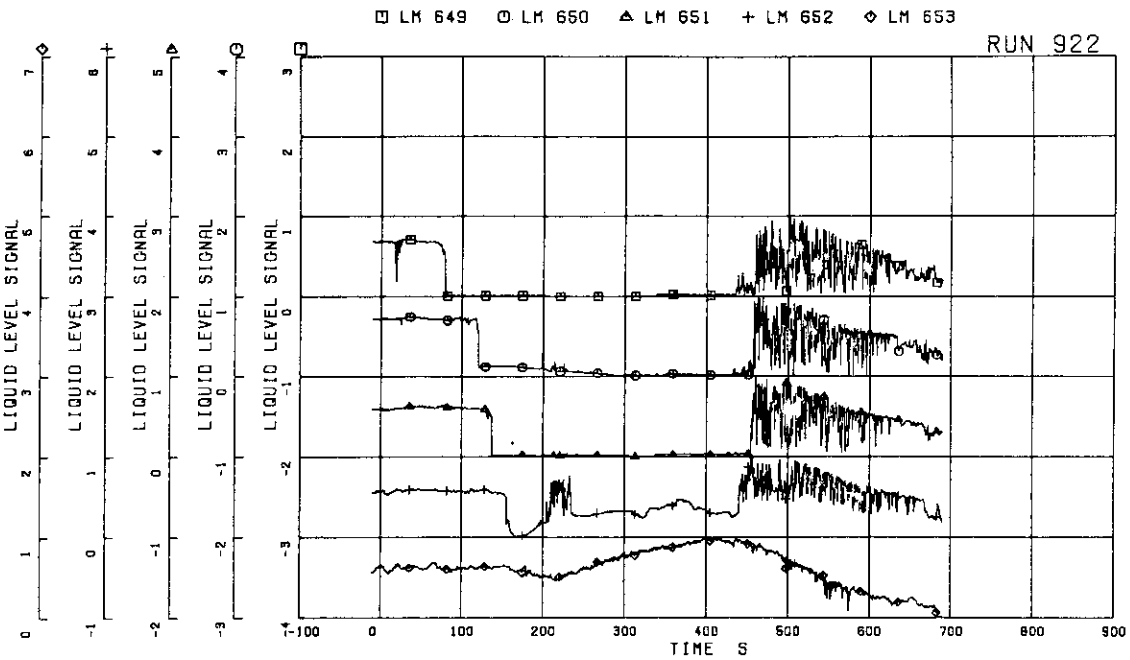


FIG.5.229 LIQUID LEVEL SIGNALS IN DOWNCOMER, B SIDE

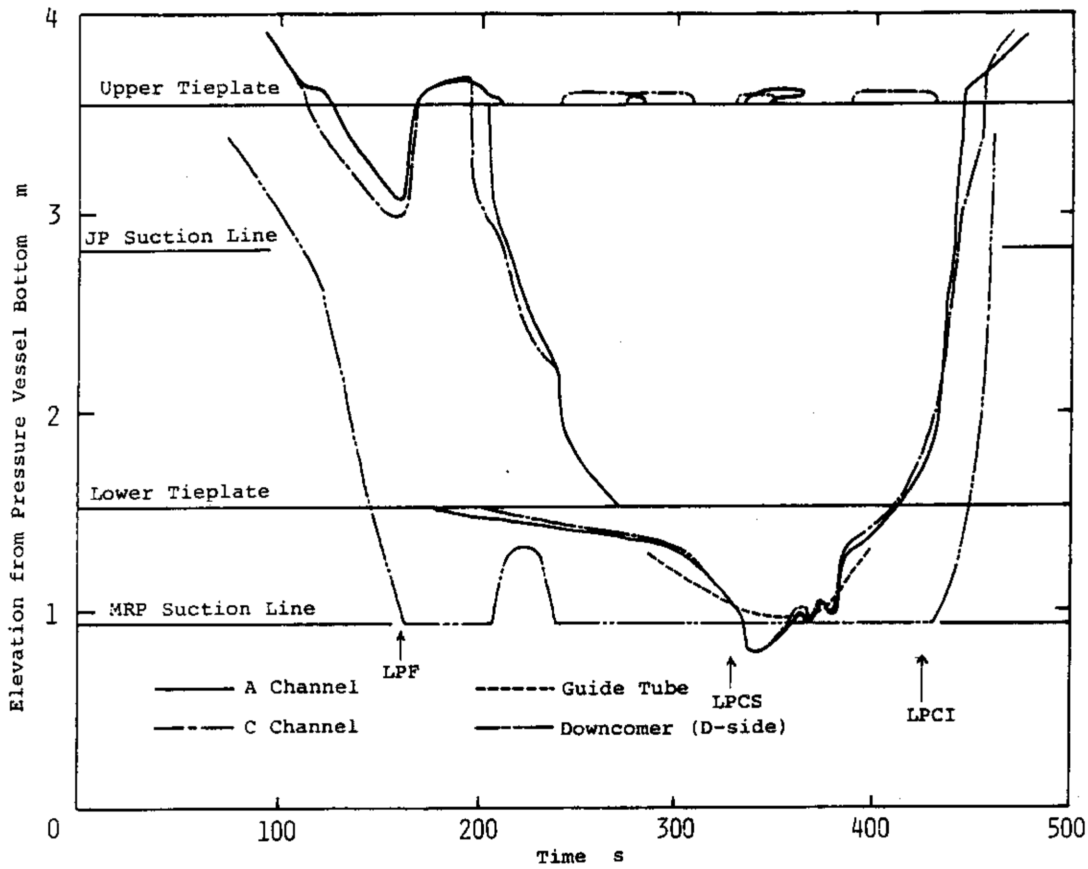


Fig. 5.230 Liquid level in core and downcomer

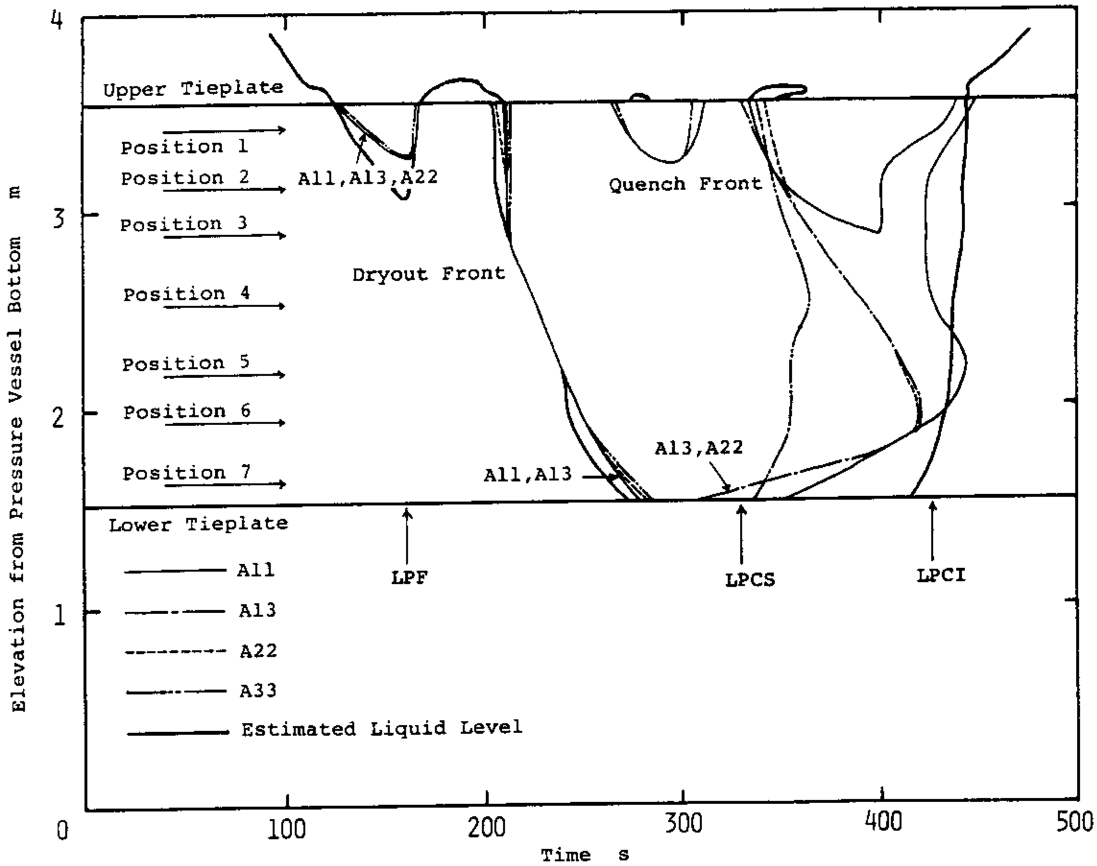


Fig. 5.231 Dryout and quench front transients in channel A

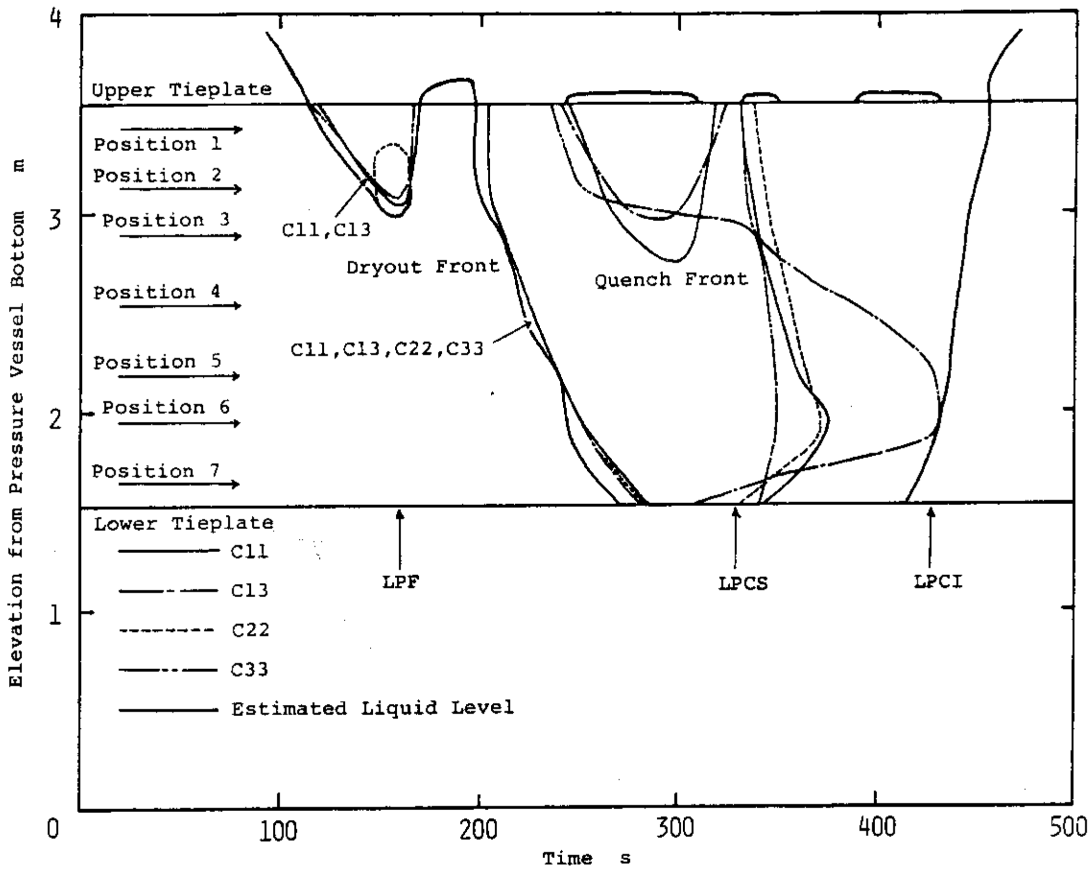


Fig. 5.232 Dryout and quench front transients in channel C

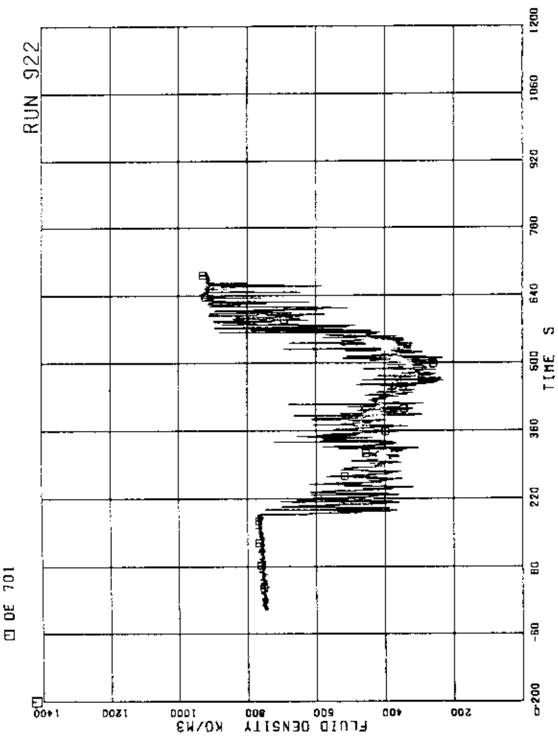


FIG.5.233 AVERAGE DENSITY AT JP-1.2 OUTLET

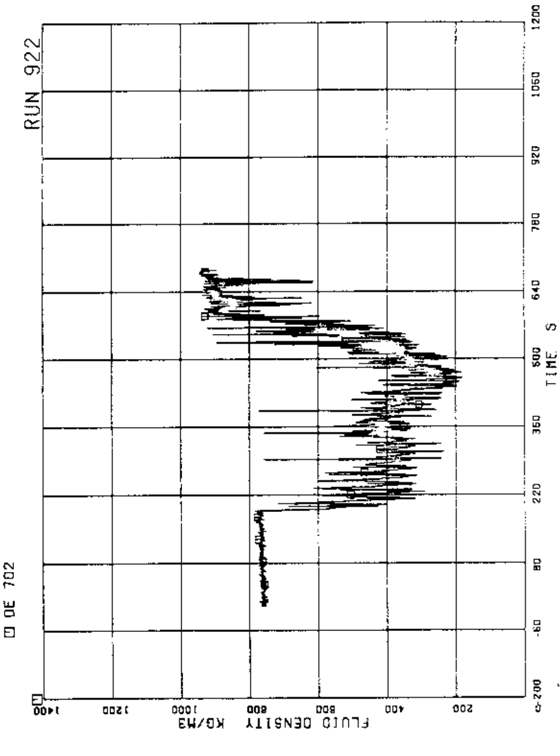


FIG.5.234 AVERAGE DENSITY AT JP-3.4 OUTLET

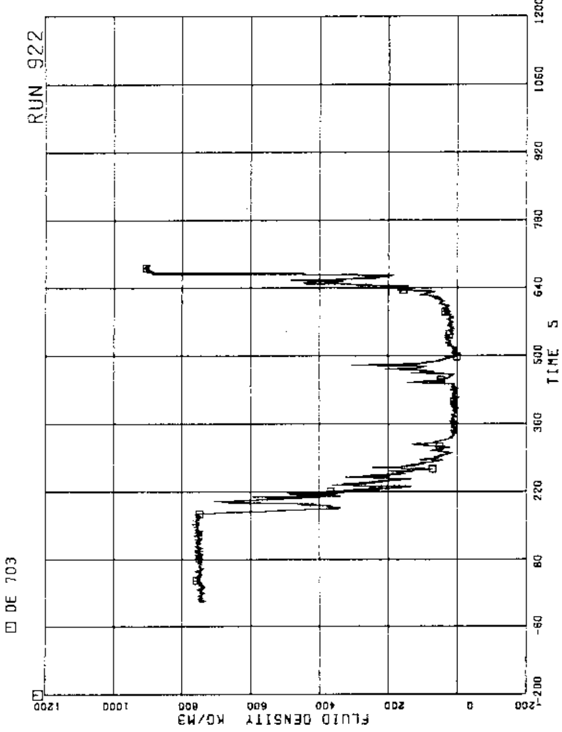


FIG.5.235 AVERAGE DENSITY AT MRP SIDE OF BREAK

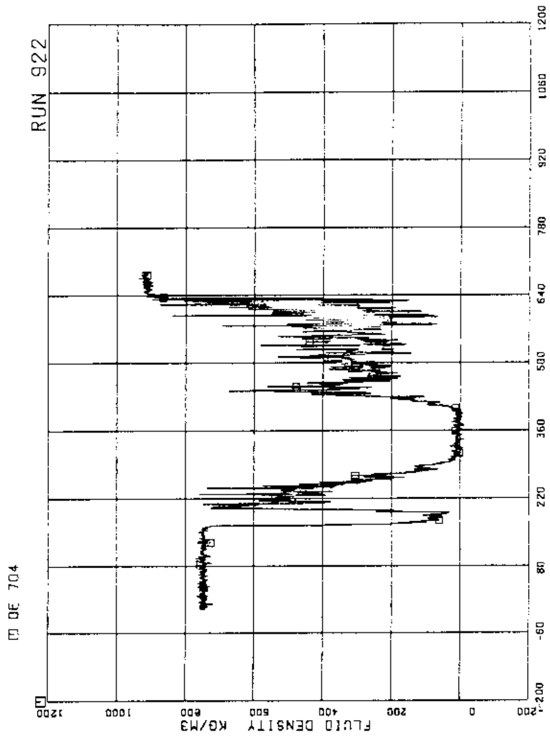


FIG.5.236 AVERAGE DENSITY AT PV SIDE OF BREAK

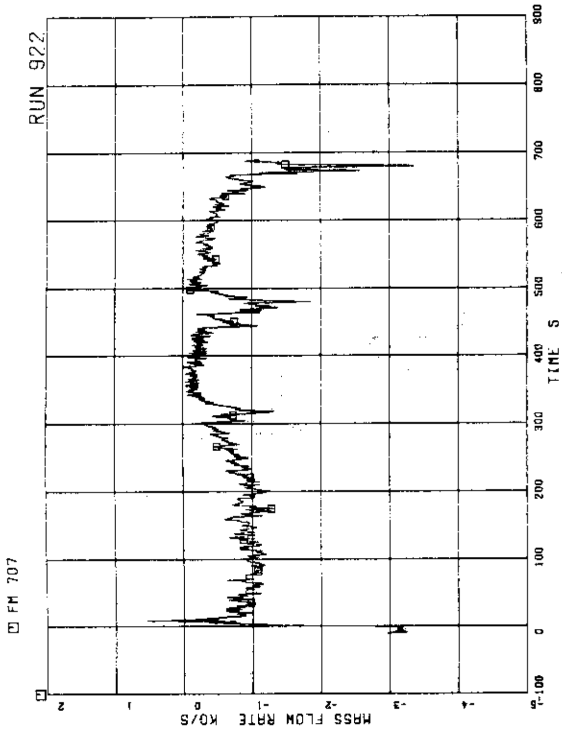


FIG.5.239 FLOW RATE AT MRP SIDE OF BREAK
(BASED ON HIGH RANGE DRAG DISK DATA)

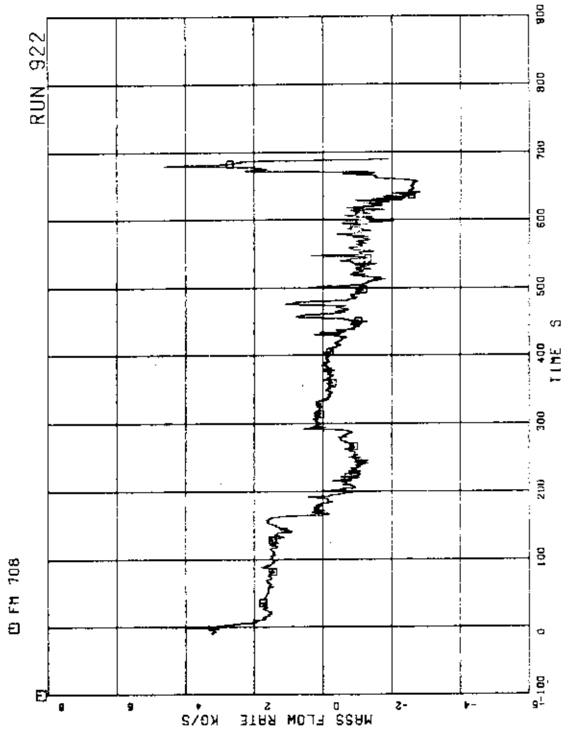


FIG.5.240 FLOW RATE AT PV SIDE OF BREAK
(BASED ON HIGH RANGE DRAG DISK DATA)

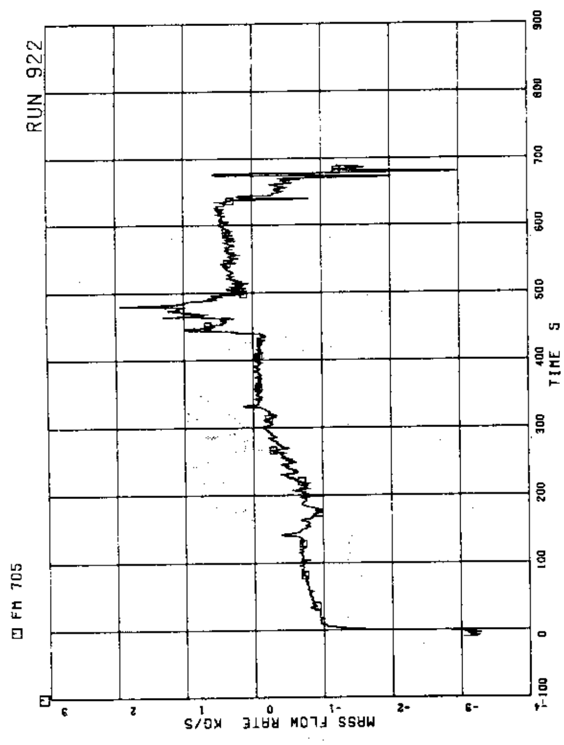


FIG.5.237 FLOW RATE AT MRP SIDE OF BREAK
(BASED ON LOW RANGE DRAG DISK DATA)

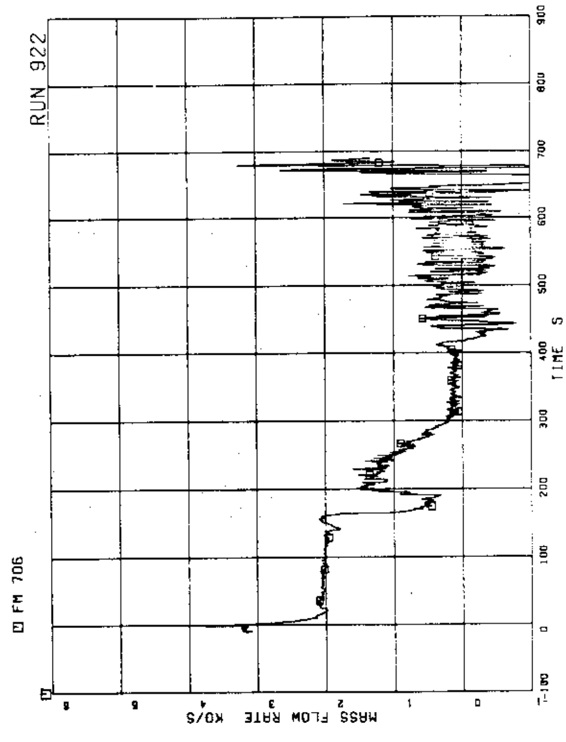


FIG.5.238 FLOW RATE AT PV SIDE OF BREAK
(BASED ON LOW RANGE DRAG DISK DATA)

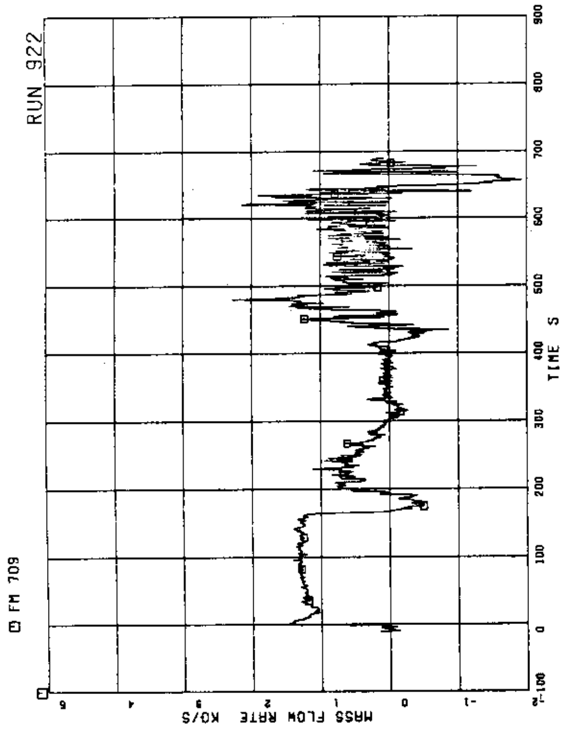


FIG.5.241 TOTAL DISCHARGE FLOW RATE FROM BREAK (BASED ON LOW RANGE DRAG DISK DATA)

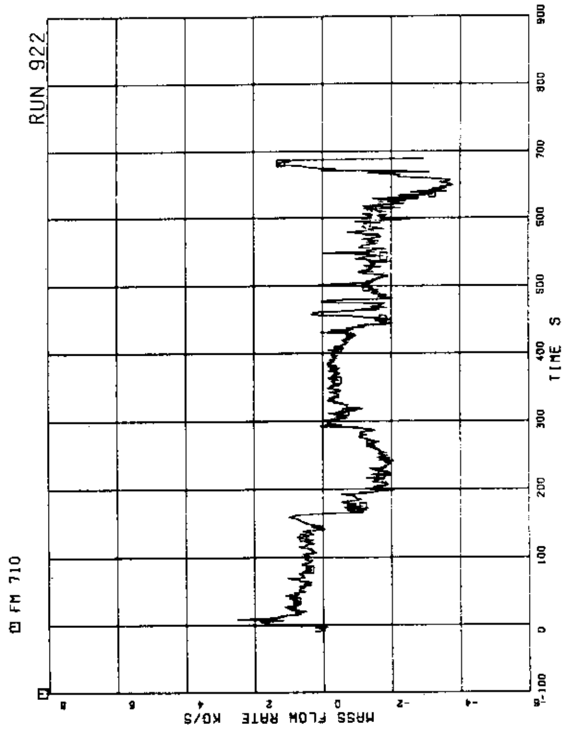


FIG.5.242 TOTAL DISCHARGE FLOW RATE FROM BREAK (BASED ON HIGH RANGE DRAG DISK DATA)

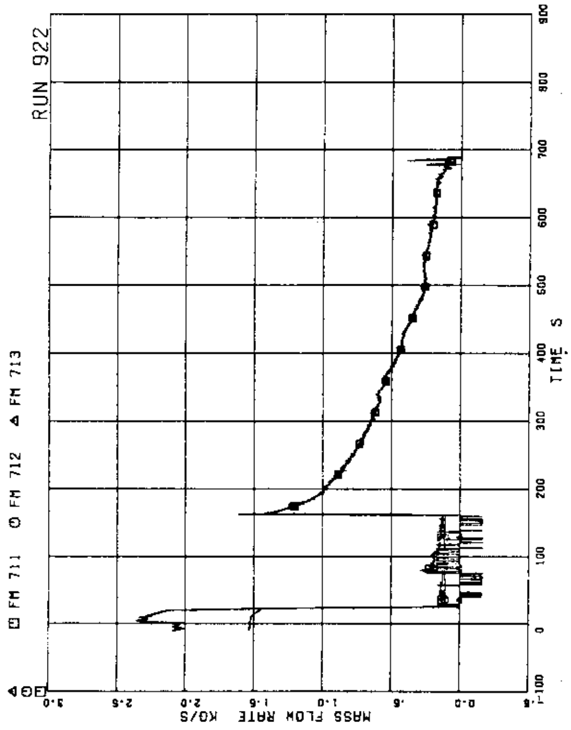


FIG.5.243 STEAM DISCHARGE FLOW RATE THROUGH MSL

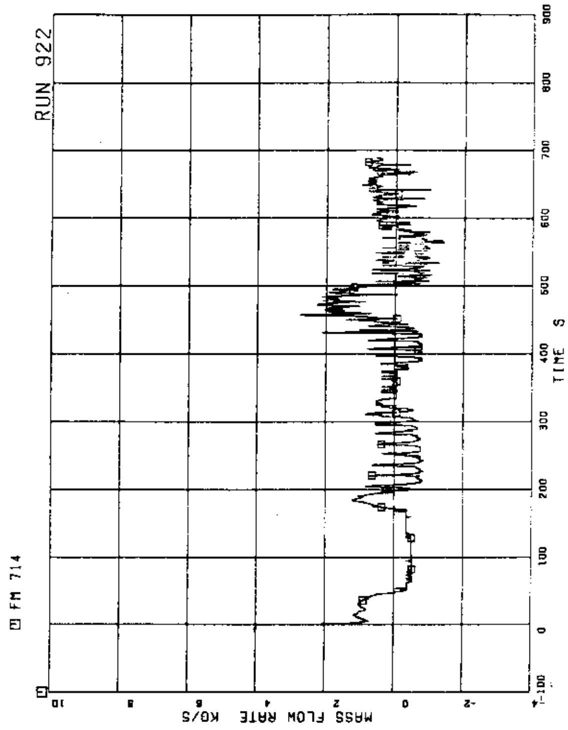


FIG.5.244 FLOW RATE AT CHANNEL A INLET

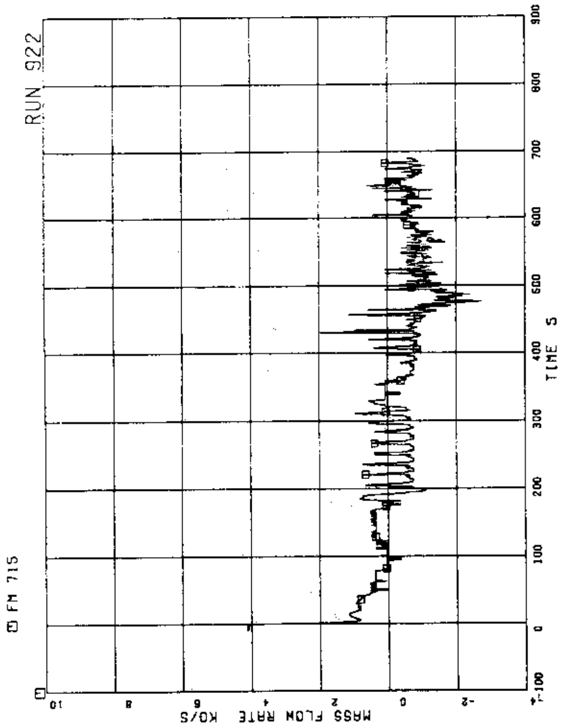


FIG.5.245 FLOW RATE AT CHANNEL B INLET

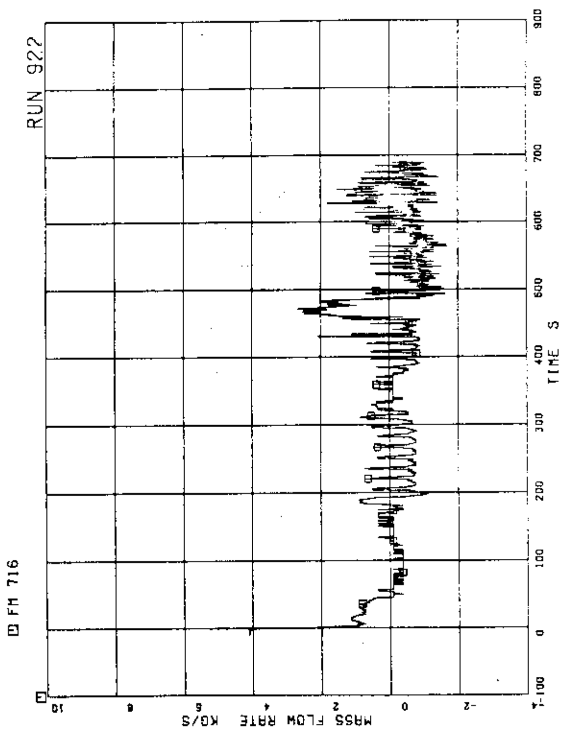


FIG.5.246 FLOW RATE AT CHANNEL C INLET

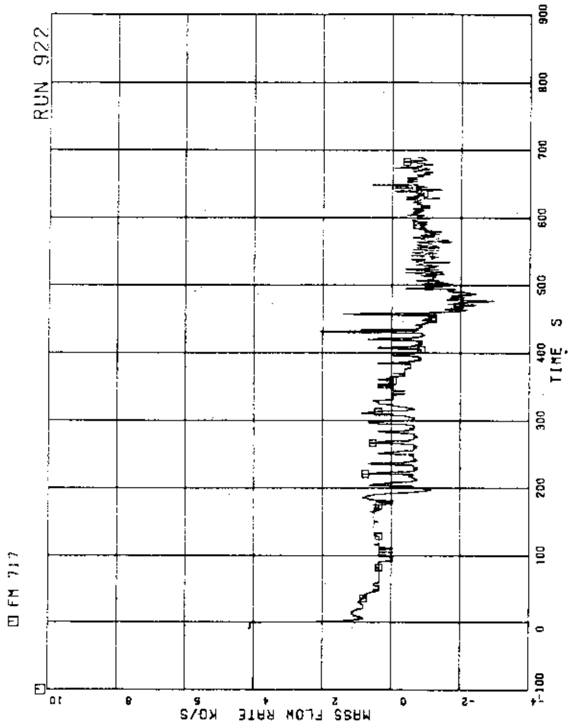


FIG.5.247 FLOW RATE AT CHANNEL D INLET

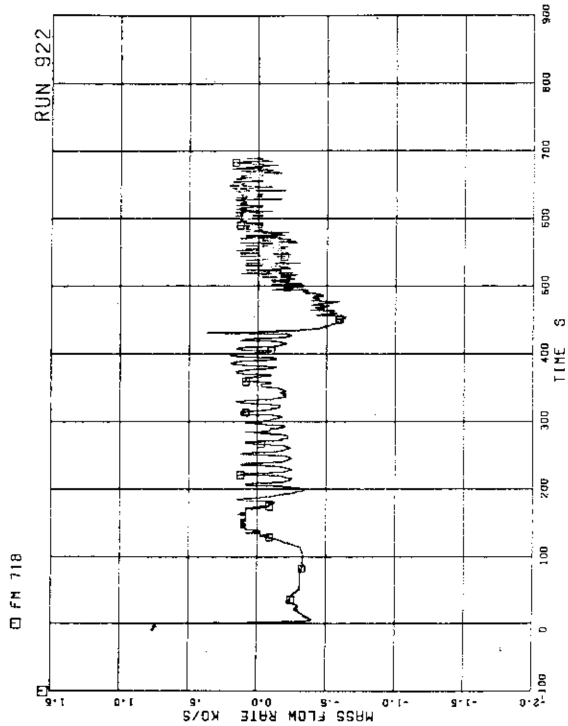


FIG.5.248 FLOW RATE AT BYPASS HOLE

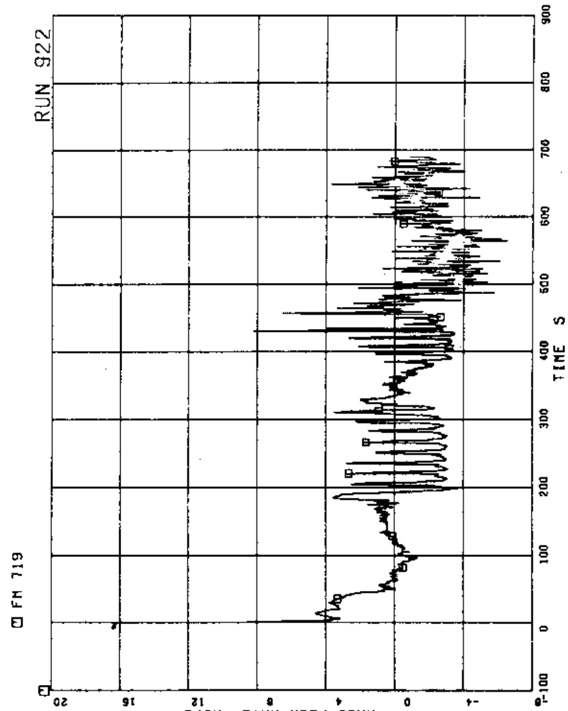


FIG.5.249 TOTAL CHANNEL INLET FLOW RATE

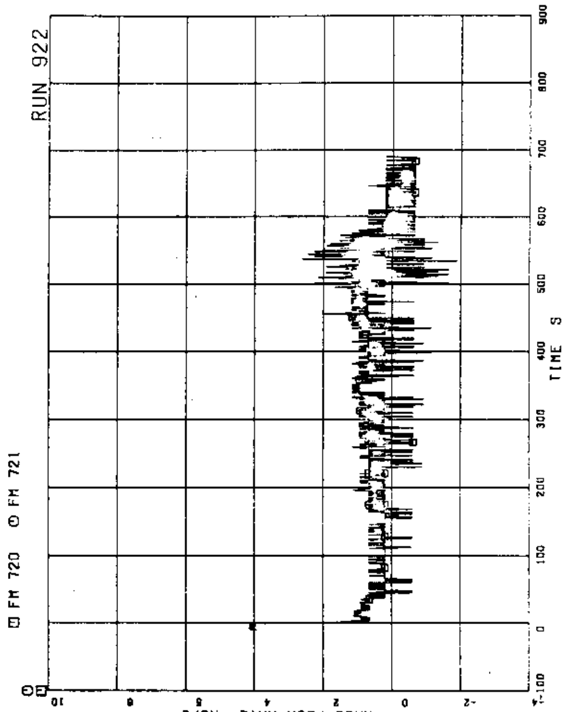


FIG.5.250 FLOW RATE AT JP-1,2 OUTLET (HIGH RANGE)

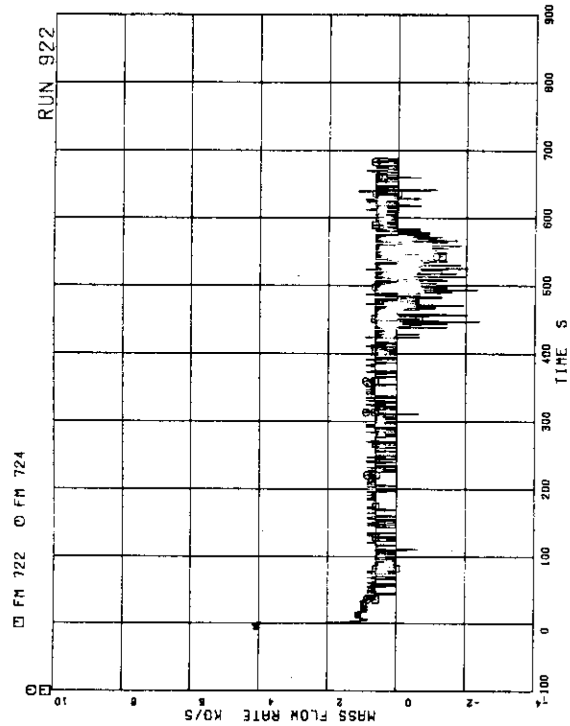


FIG.5.251 FLOW RATE AT JP-3,4 OUTLET (HIGH RANGE)

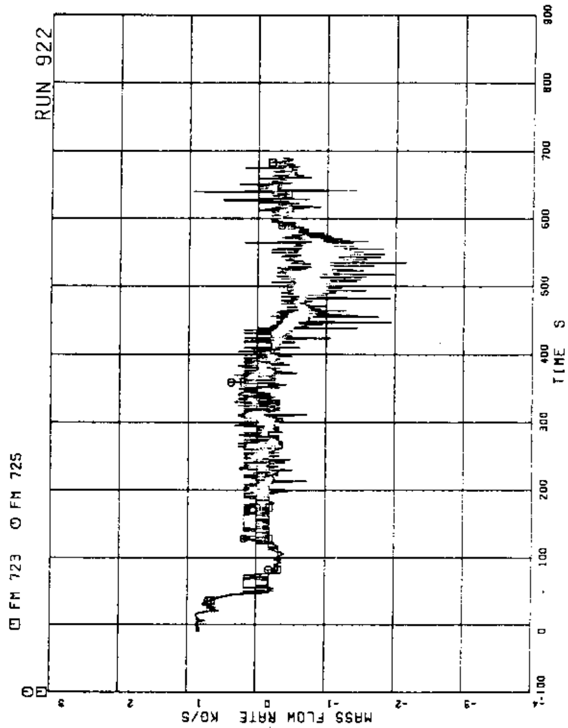


FIG.5.252 FLOW RATE AT JP-3,4 OUTLET (LOW RANGE)

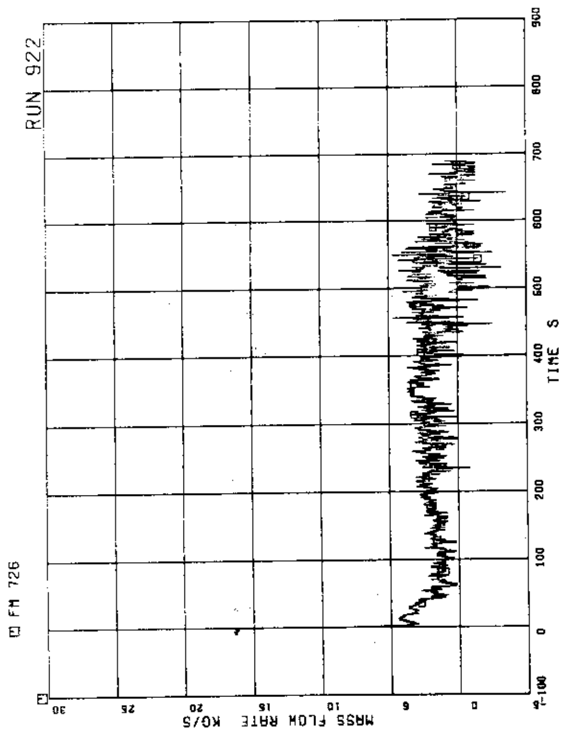


FIG.5.253 TOTAL JP OUTLET FLOW RATE (HIGH RANGE)

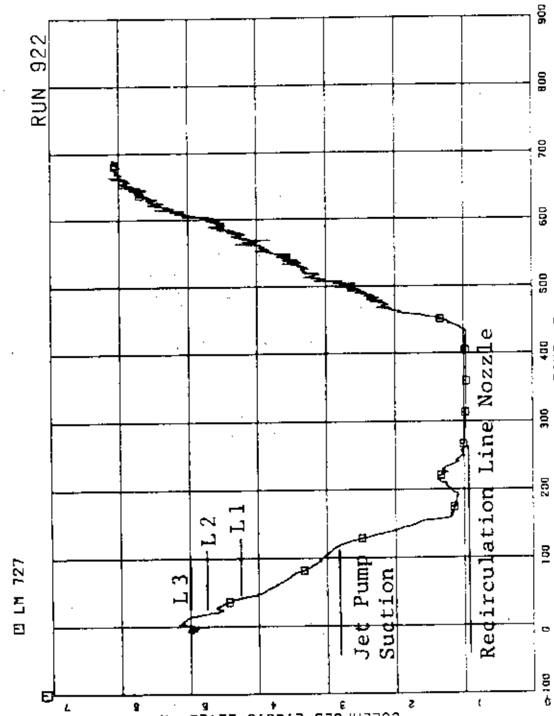


FIG.5.254 COLLAPSED LIQUID LEVEL IN DOWNCOMER

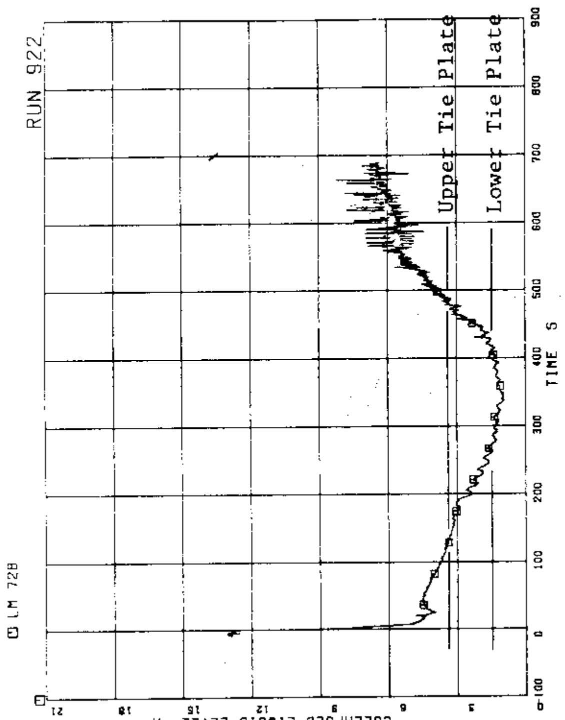


FIG.5.255 COLLAPSED LIQUID LEVEL INSIDE CORE SHROUD

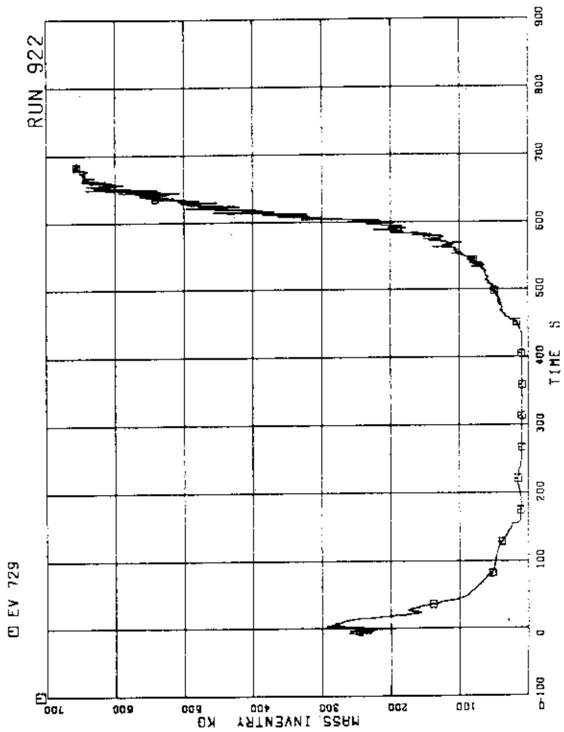


FIG.5.256 FLUID INVENTORY IN DOWNCOMER

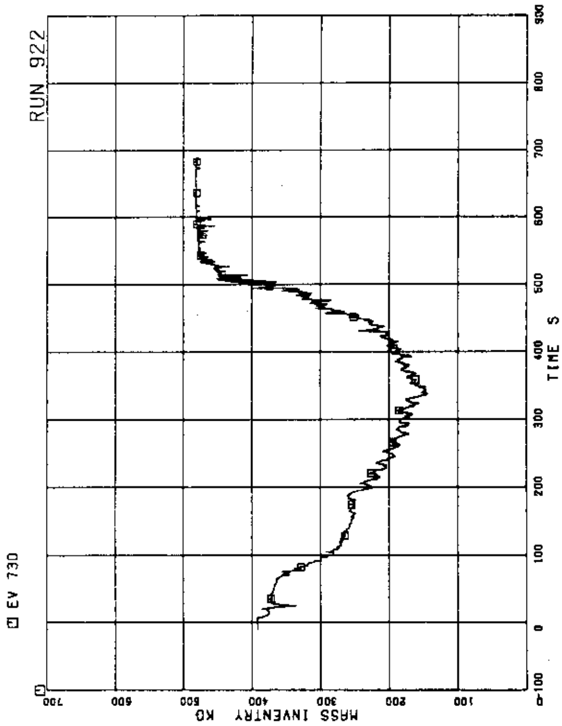


FIG.5.257 FLUID INVENTORY INSIDE CORE SHROUD

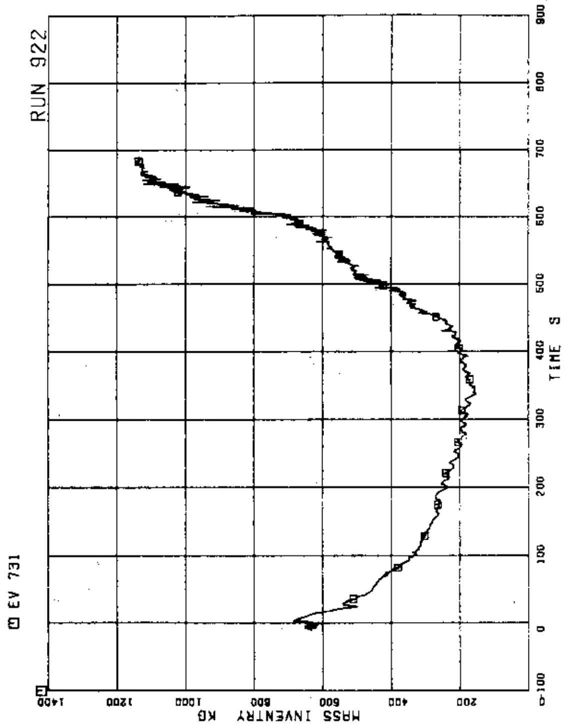


FIG.5.258 TOTAL FLUID INVENTORY IN PRESSURE VESSEL

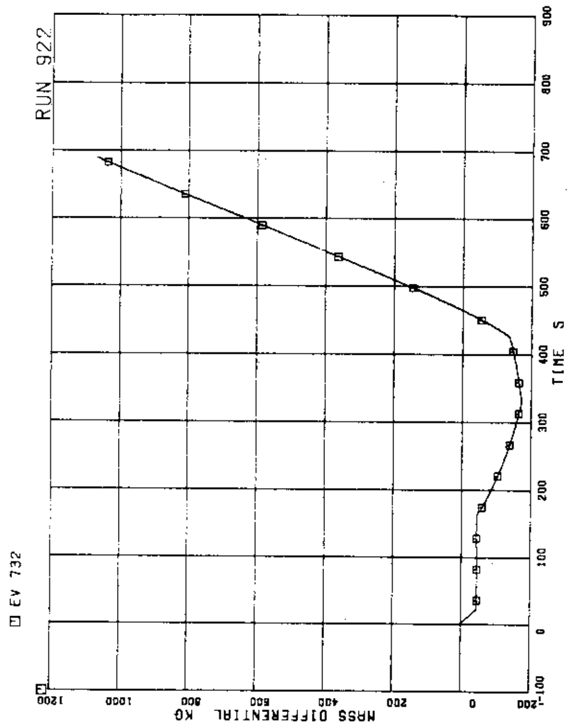


FIG.5.259 FLUID MASS INCREASE BY ECCS AND FW AND DECREASE BY STEAM DISCHARGE FLOW

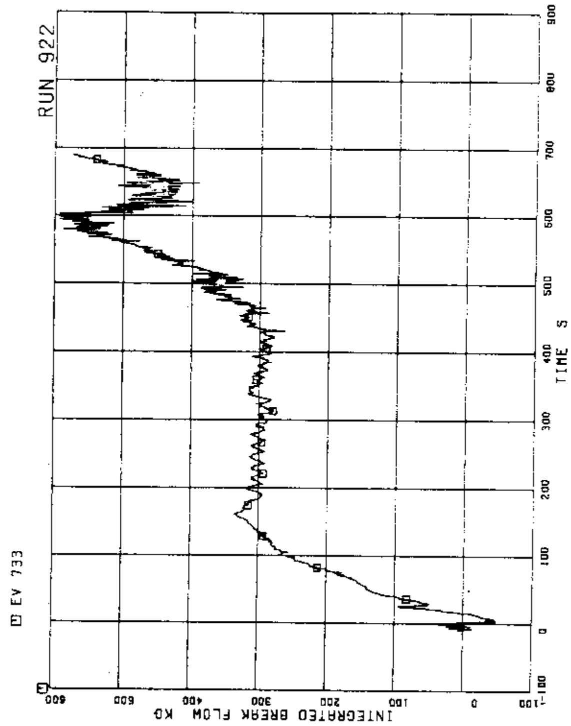


FIG.5.260 DISCHARGED FLUID MASS FROM BREAK

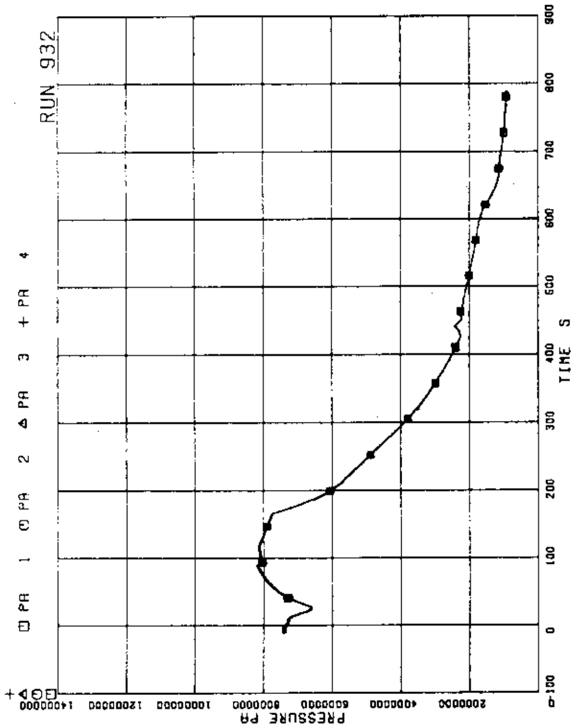


FIG.5.262 PRESSURE IN PV (PRESSURE VESSEL)

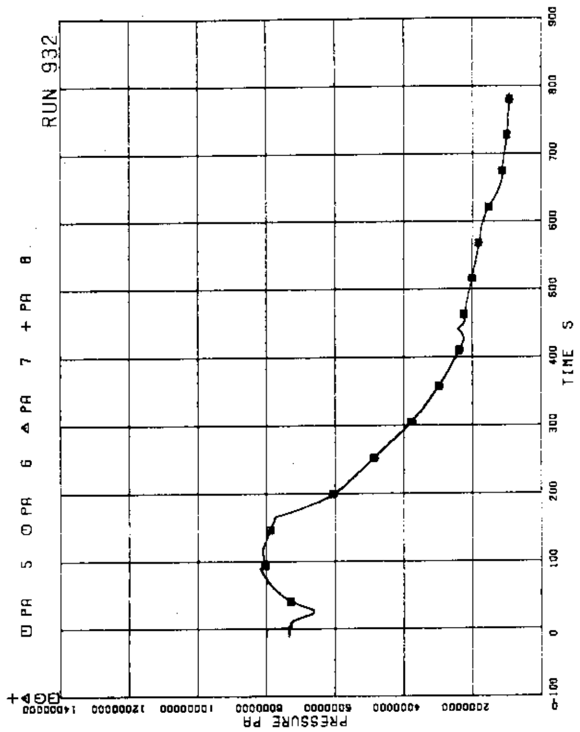


FIG.5.263 PRESSURE IN BROKEN LOOP JP (JET PUMP)

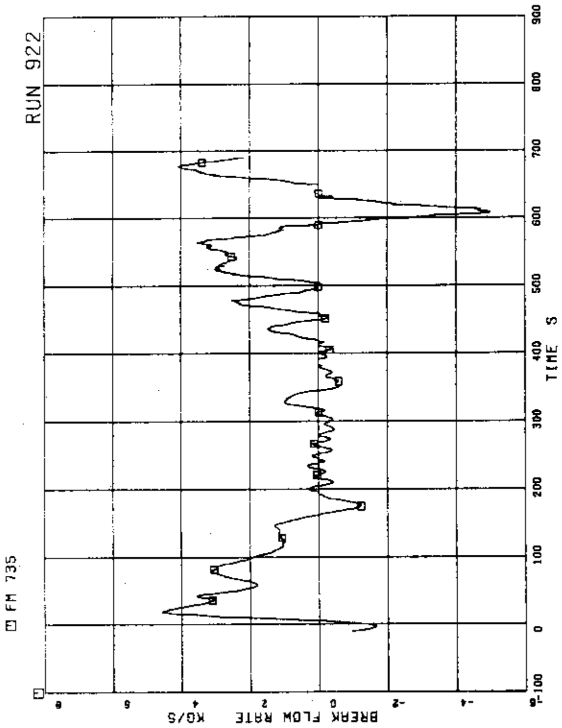


FIG.5.261 DISCHARGED FLOW RATE FROM BREAK

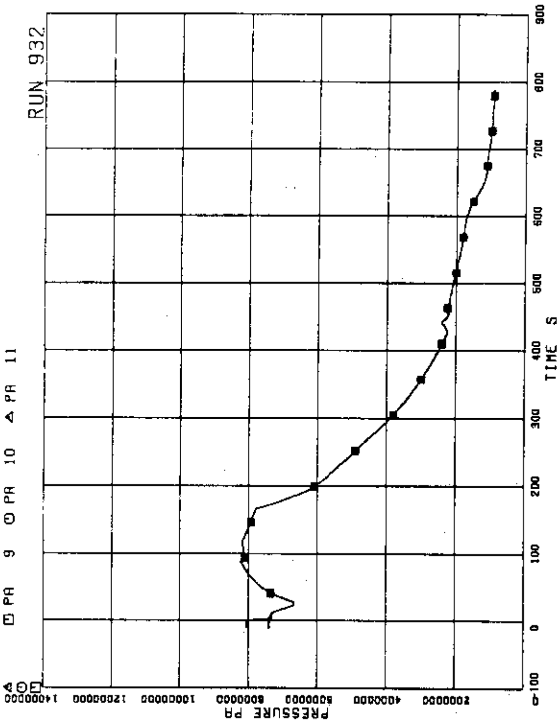


FIG.5.264 PRESSURE NEAR MRP (MAIN RECIRCULATION PUMP)

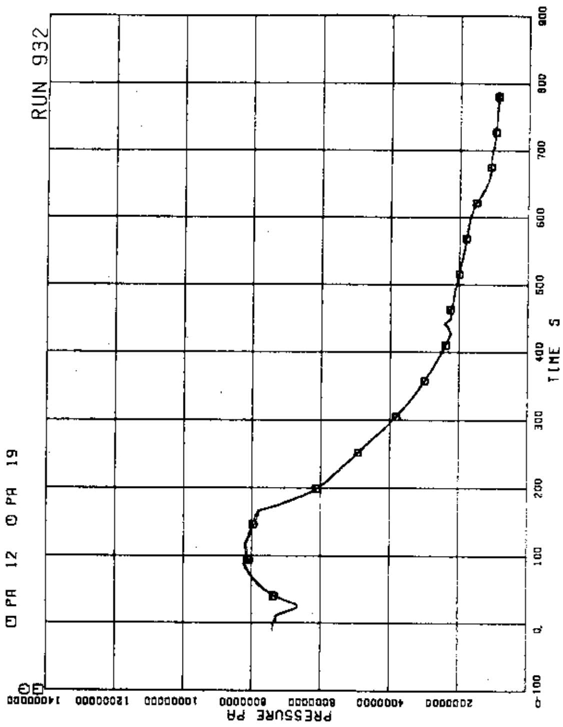


FIG.5.265 PRESSURE AT MRP SIDE OF BREAK

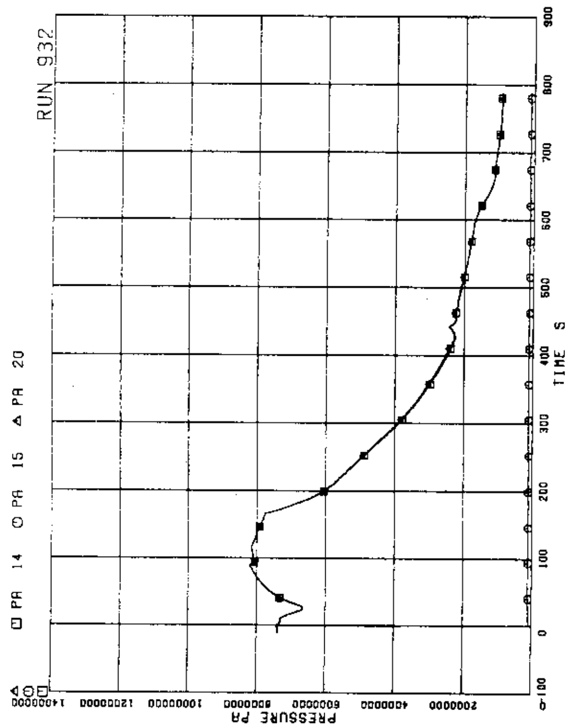


FIG.5.266 PRESSURE AT PV SIDE OF BREAK

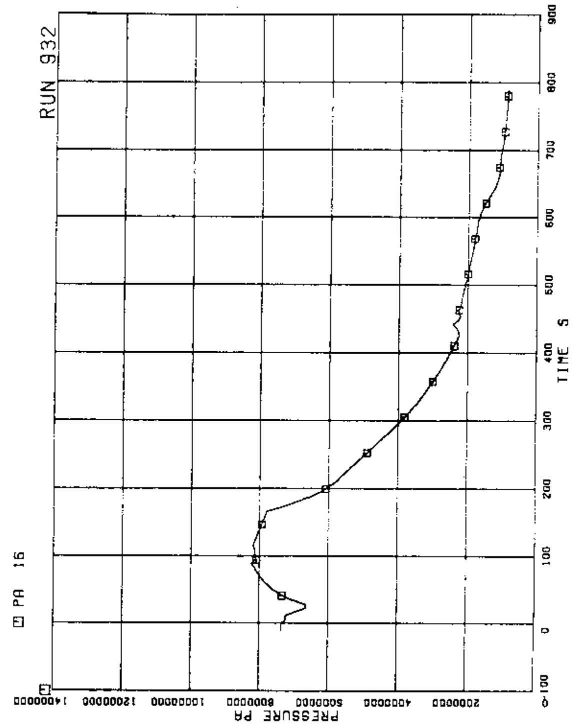


FIG.5.267 PRESSURE IN MSL (MAIN STEAM LINE)

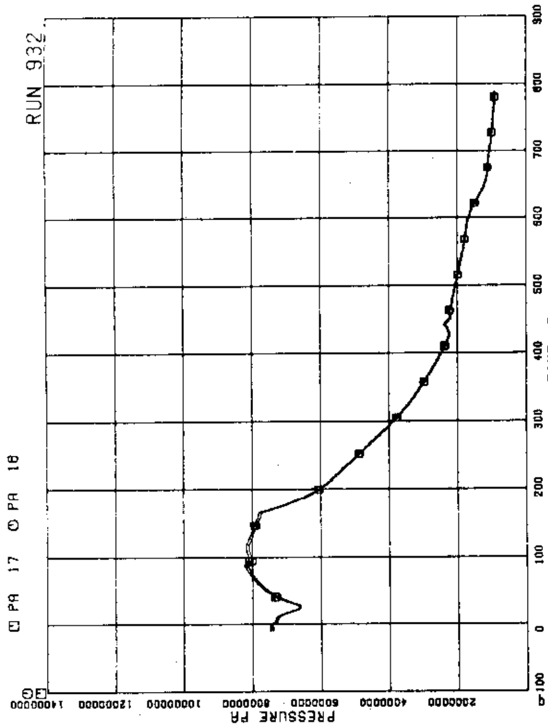


FIG.5.268 PRESSURE IN JP OUTLET SPOOL

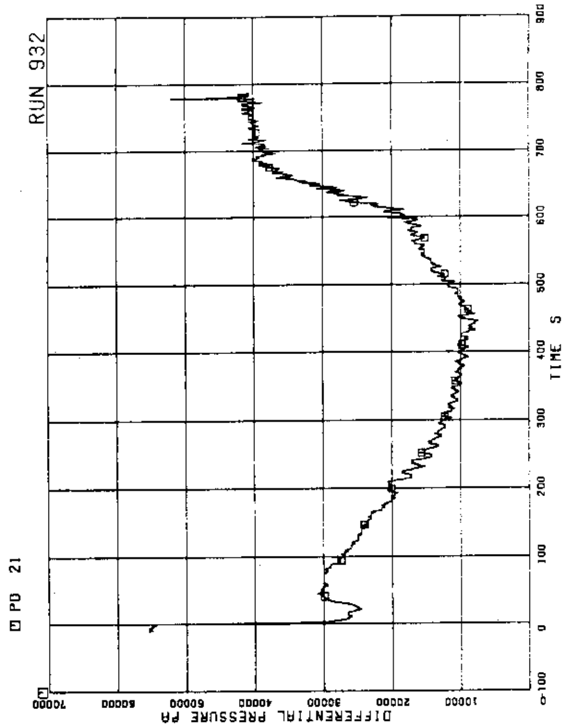


FIG.5.269 DIFFERENTIAL PRESSURE BETWEEN LOWER PLENUM AND UPPER PLENUM

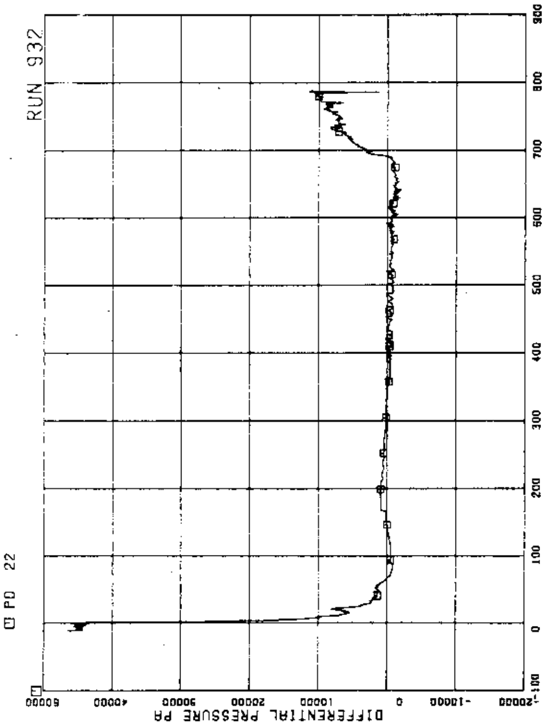


FIG.5.270 DIFFERENTIAL PRESSURE BETWEEN UPPER PLENUM AND STEAM DOME

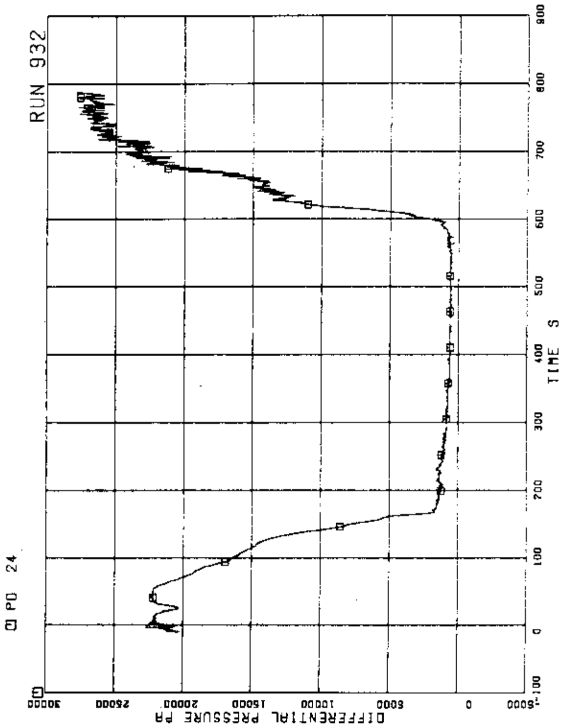


FIG.5.271 DC (DOWNCOMER) HEAD

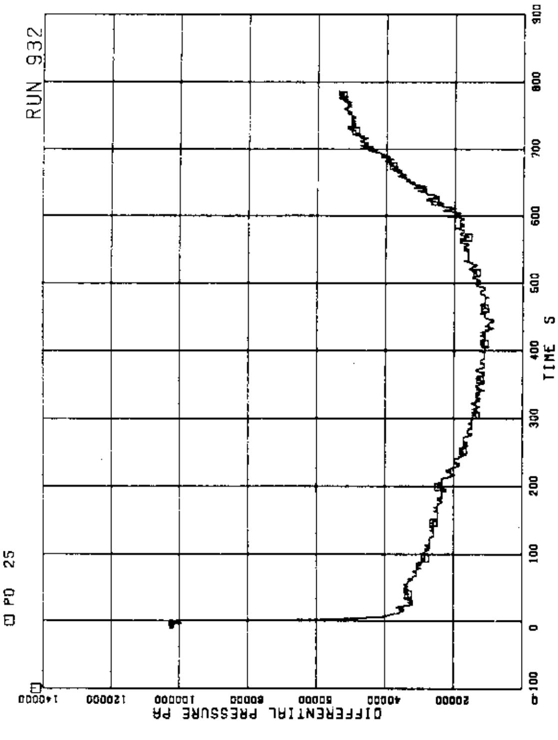


FIG.5.272 DIFFERENTIAL PRESSURE BETWEEN PV BOTTOM AND TOP

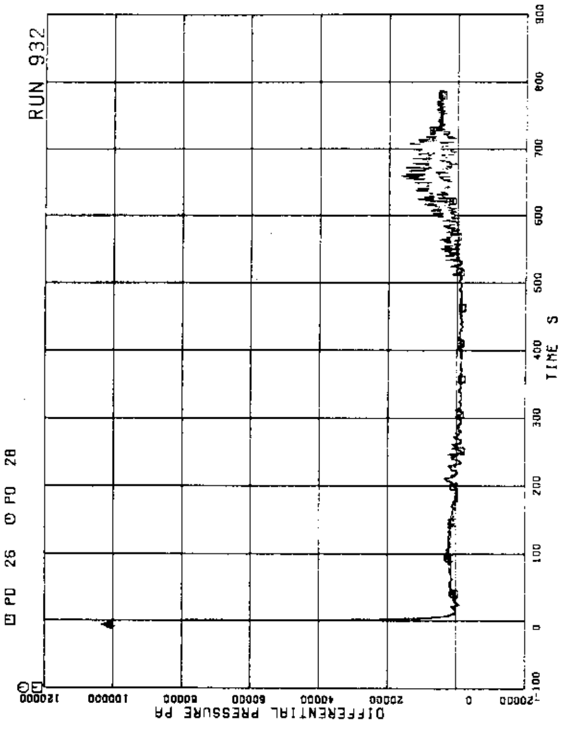


FIG.5.273 DIFFERENTIAL PRESSURE BETWEEN JP-1.2 DISCHARGE AND SUCTION

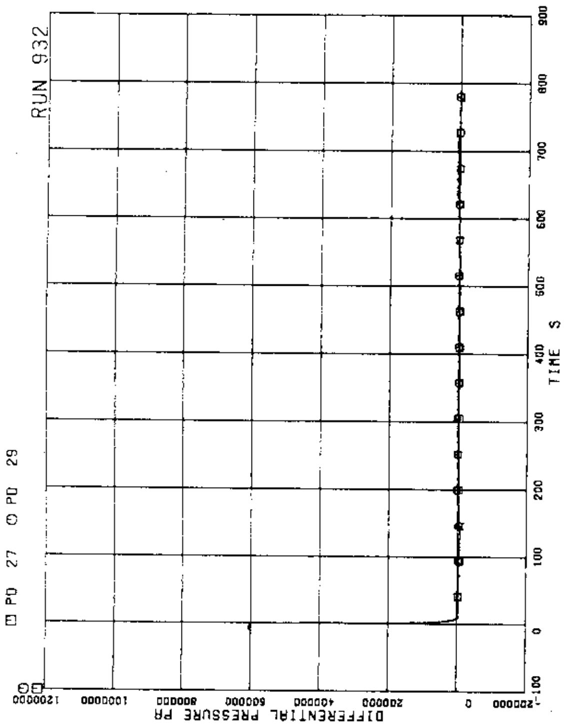


FIG.5.274 DIFFERENTIAL PRESSURE BETWEEN JP-1.2 DRIVE AND SUCTION

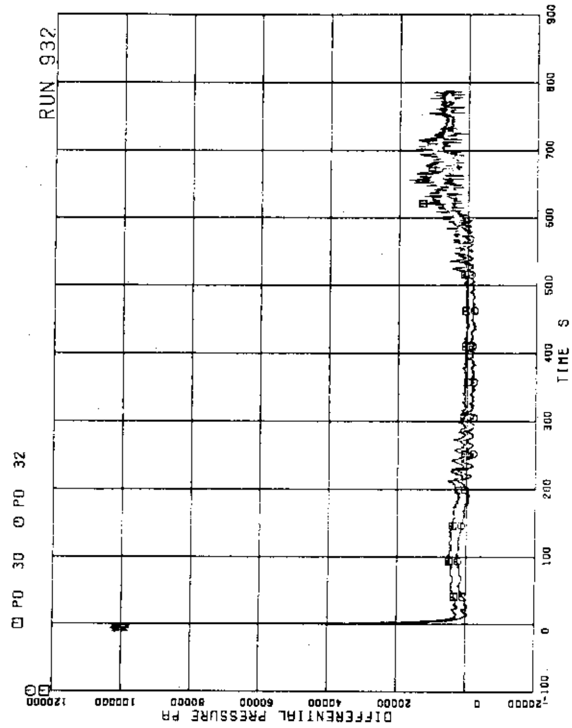


FIG.5.275 DIFFERENTIAL PRESSURE BETWEEN JP-3.4 DISCHARGE AND SUCTION

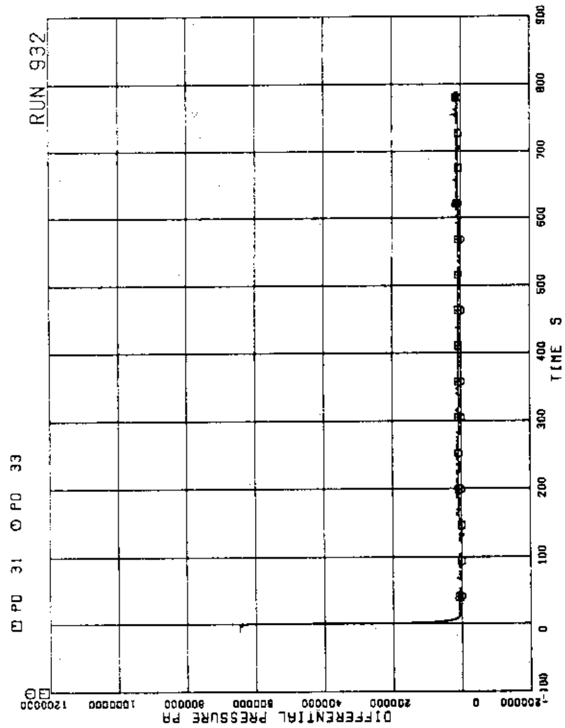


FIG.5.276 DIFFERENTIAL PRESSURE BETWEEN JP-3,4 DRIVE AND SUCTION

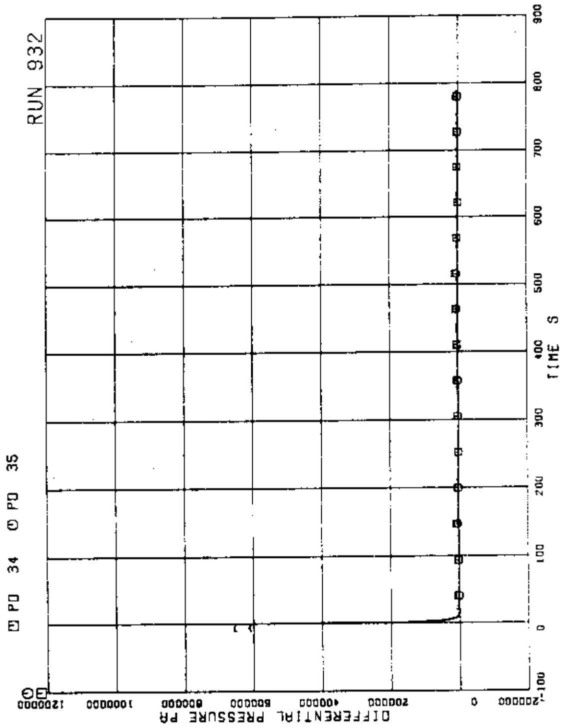


FIG.5.277 DIFFERENTIAL PRESSURE BETWEEN MRP DELIVERY AND SUCTION

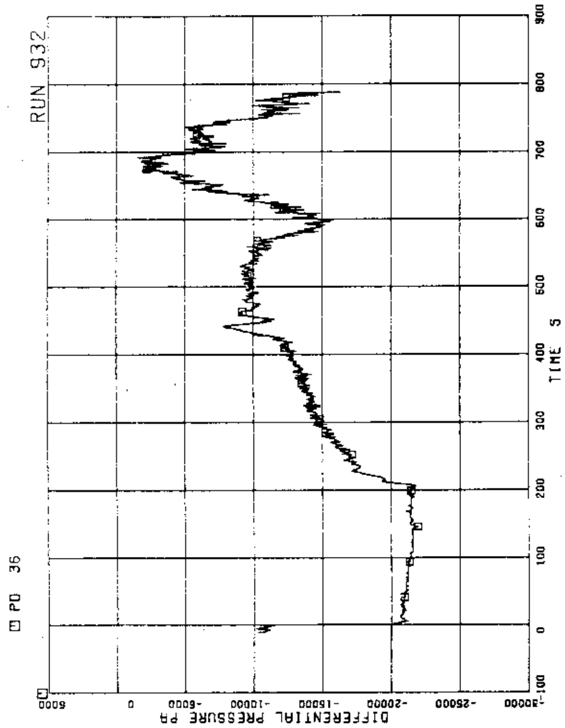


FIG.5.278 DIFFERENTIAL PRESSURE BETWEEN DOWNCOMER BOTTOM AND MRP1 SUCTION

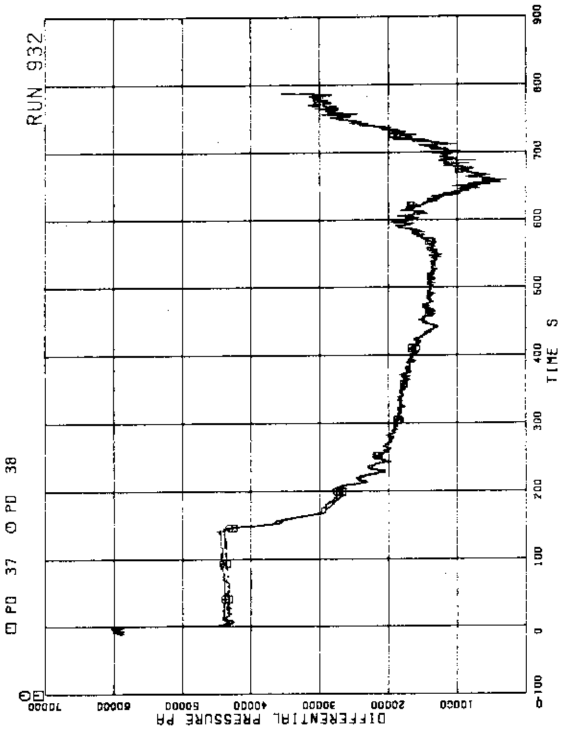


FIG.5.279 DIFFERENTIAL PRESSURE BETWEEN MRP DELIVERY AND JP-1,2 SUCTION

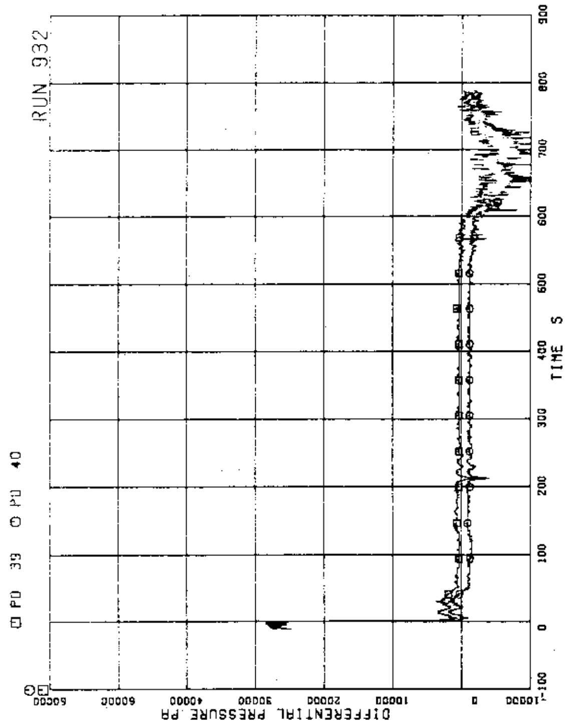


FIG.5.280 DIFFERENTIAL PRESSURE BETWEEN DOWNCOMER MIDDLE AND JP-1.2 SUCTION

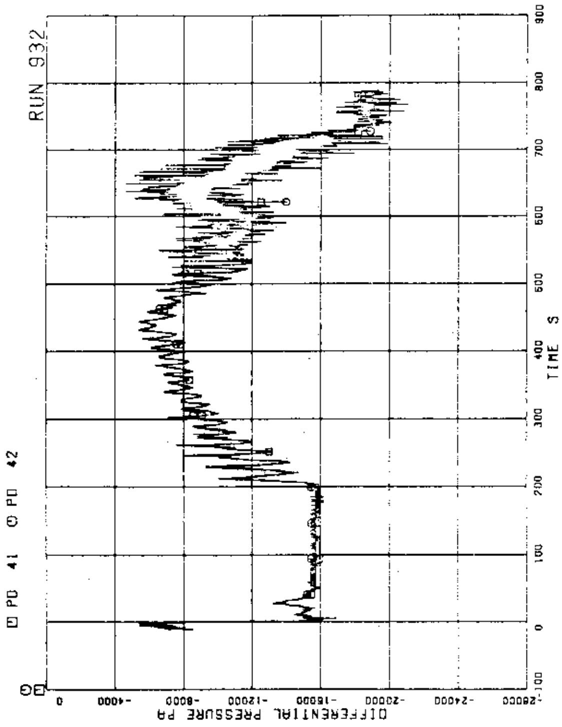


FIG.5.281 DIFFERENTIAL PRESSURE BETWEEN JP 1,2 DISCHARGE AND LOWER PLENUM

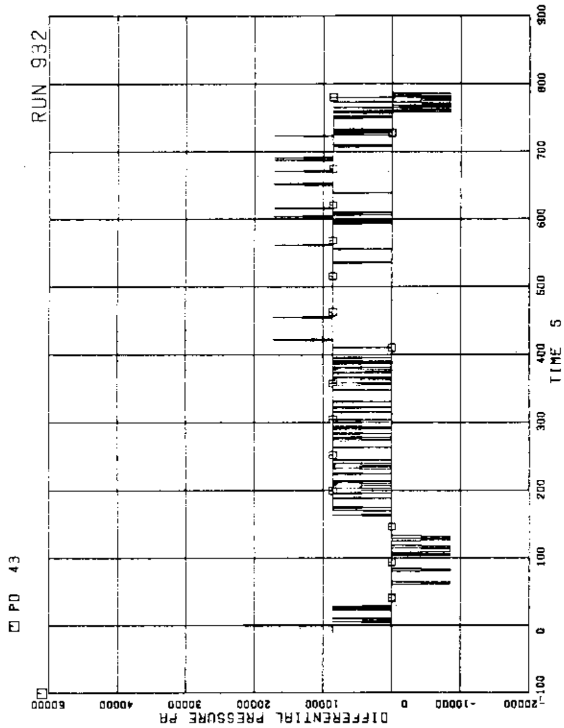


FIG.5.282 DIFFERENTIAL PRESSURE BETWEEN DOWNCOMER BOTTOM AND BREAK B

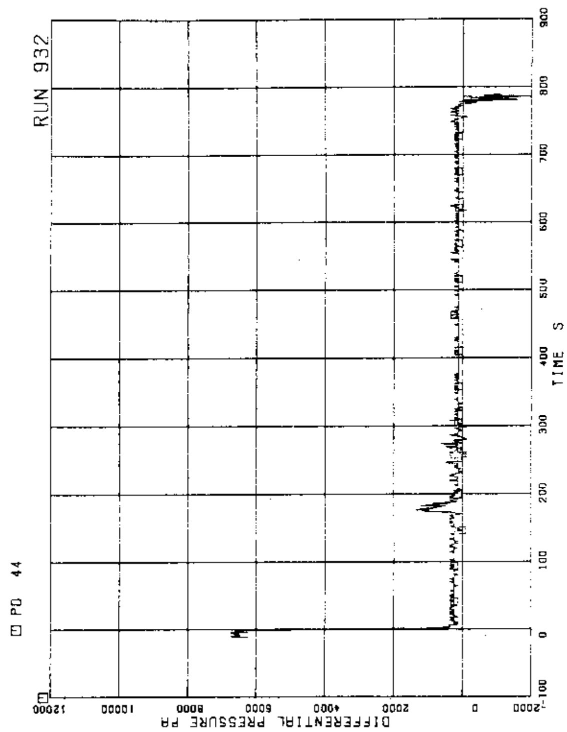


FIG.5.283 DIFFERENTIAL PRESSURE BETWEEN BREAKS A AND B

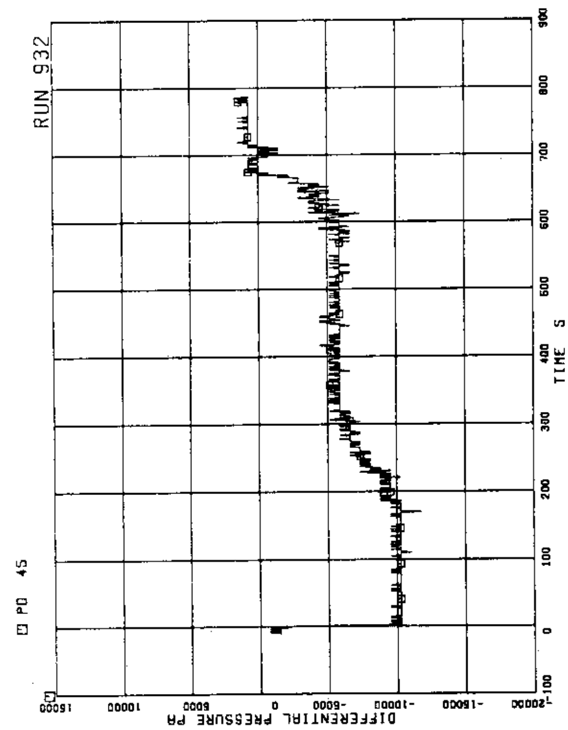


FIG.5.284 DIFFERENTIAL PRESSURE BETWEEN BREAK A AND MRP2 SUCTION

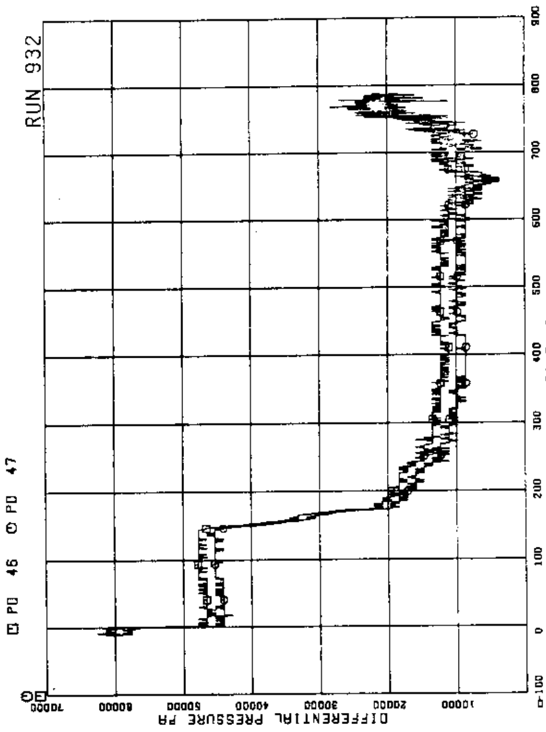


FIG.5.285 DIFFERENTIAL PRESSURE BETWEEN MRP DELIVERY AND JP 3,4 DRIVE

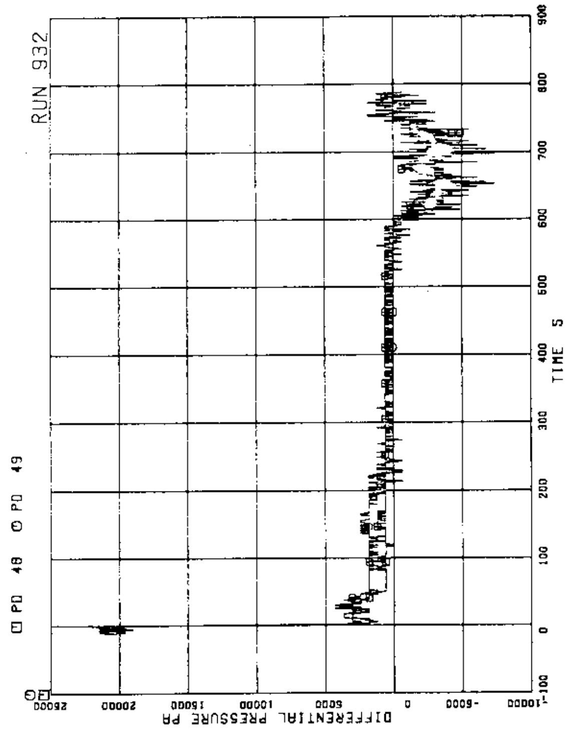


FIG.5.286 DIFFERENTIAL PRESSURE BETWEEN DOWNCOMER MIDDLE AND JP-3,4 SUCTION

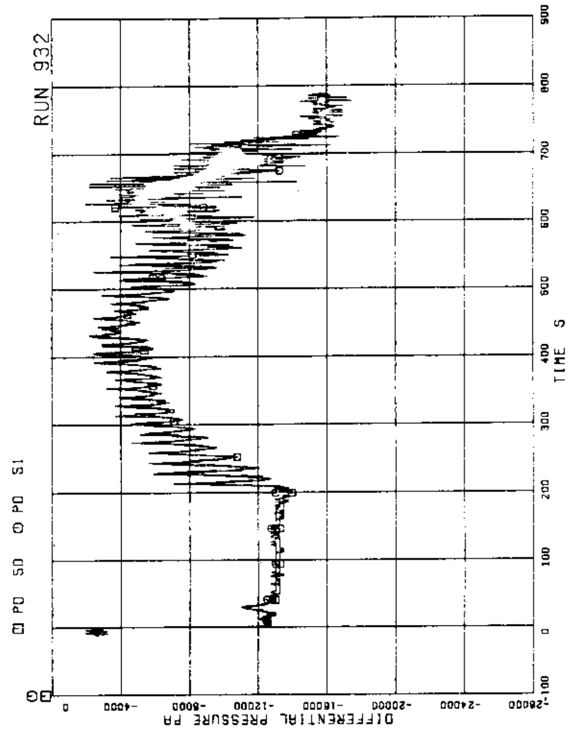


FIG.5.287 DIFFERENTIAL PRESSURE BETWEEN JP 3,4 DISCHARGE AND CONFLUENCE

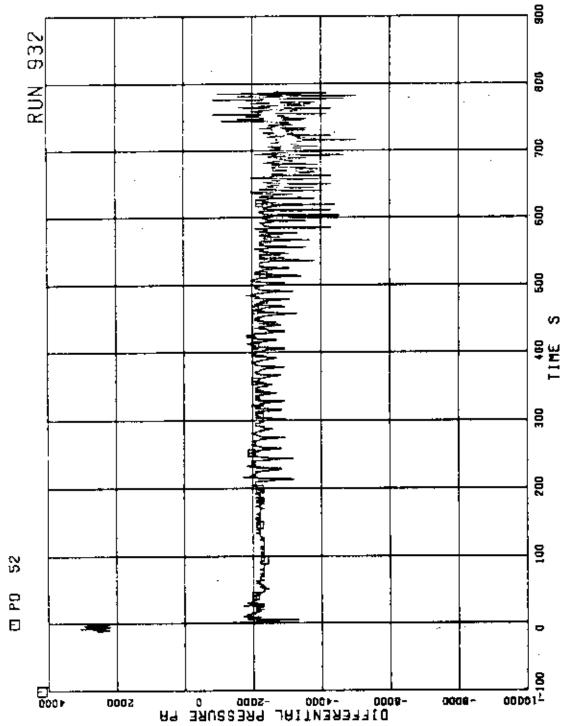


FIG.5.288 DIFFERENTIAL PRESSURE BETWEEN JP-3,4 CONFLUENCE IN BROKEN LOOP AND LP

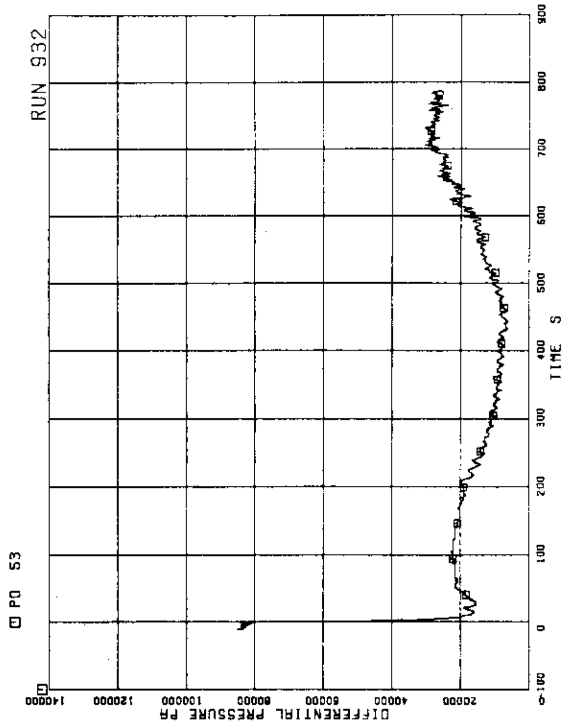


FIG.5.289 DIFFERENTIAL PRESSURE BETWEEN LOWER PLENUM AND DOWNCOMER MIDDLE

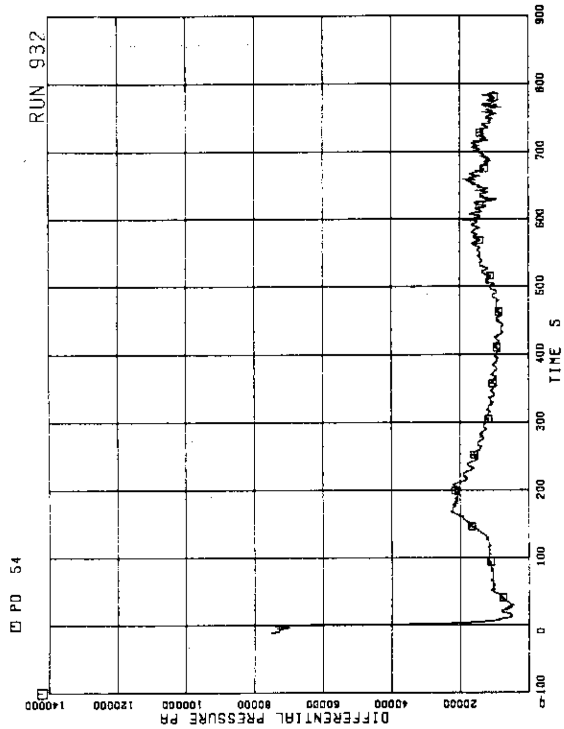


FIG.5.290 DIFFERENTIAL PRESSURE BETWEEN LOWER PLENUM AND DOWNCOMER BOTTOM

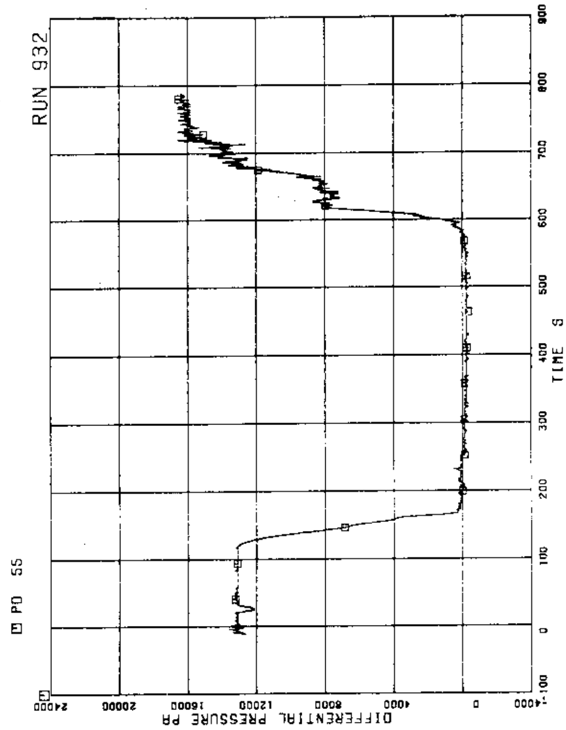


FIG.5.291 DIFFERENTIAL PRESSURE BETWEEN DOWNCOMER BOTTOM AND DOWNCOMER MIDDLE

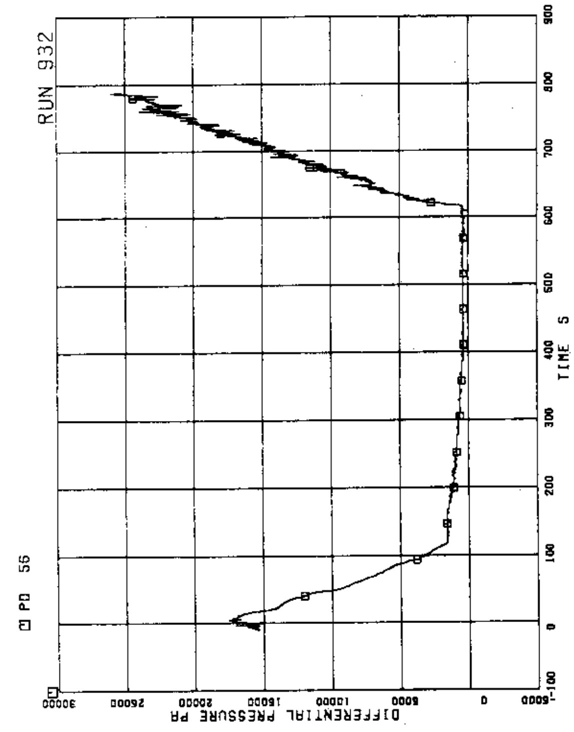


FIG.5.292 DIFFERENTIAL PRESSURE BETWEEN DOWNCOMER MIDDLE AND STEAM DOME

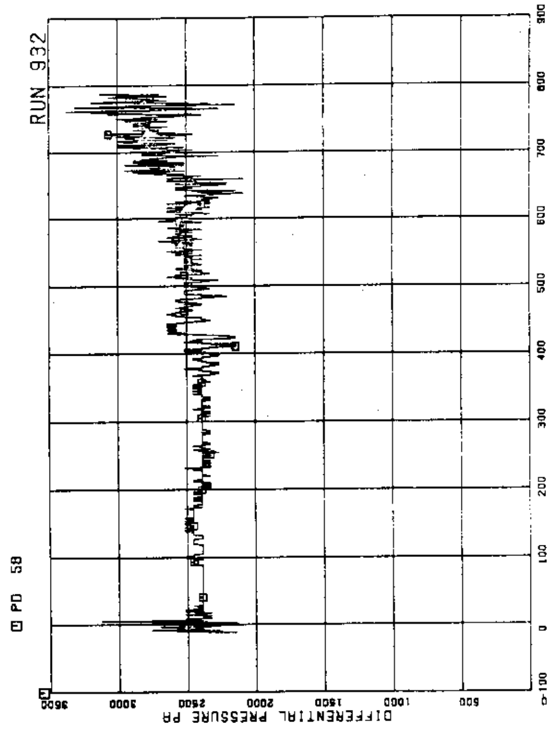


FIG.5.293 DIFFERENTIAL PRESSURE BETWEEN LP BOTTOM AND LP MIDDLE

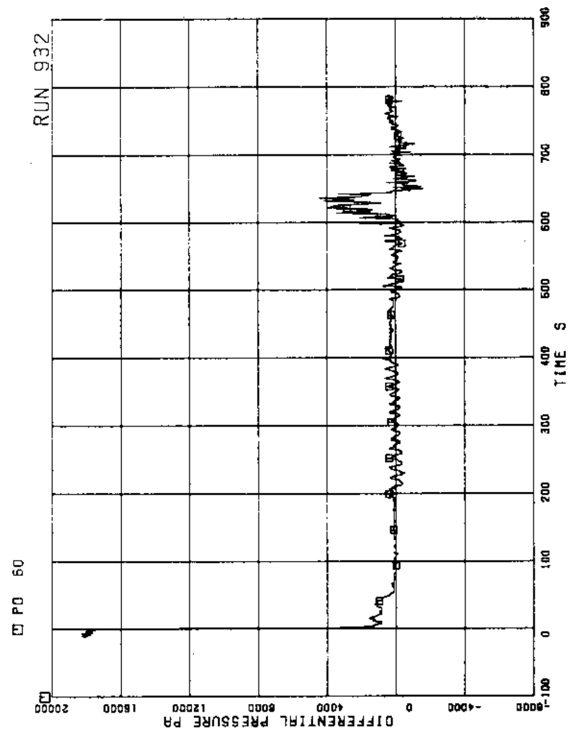


FIG.5.294 DIFFERENTIAL PRESSURE ACROSS CHANNEL INLET ORIFICE A

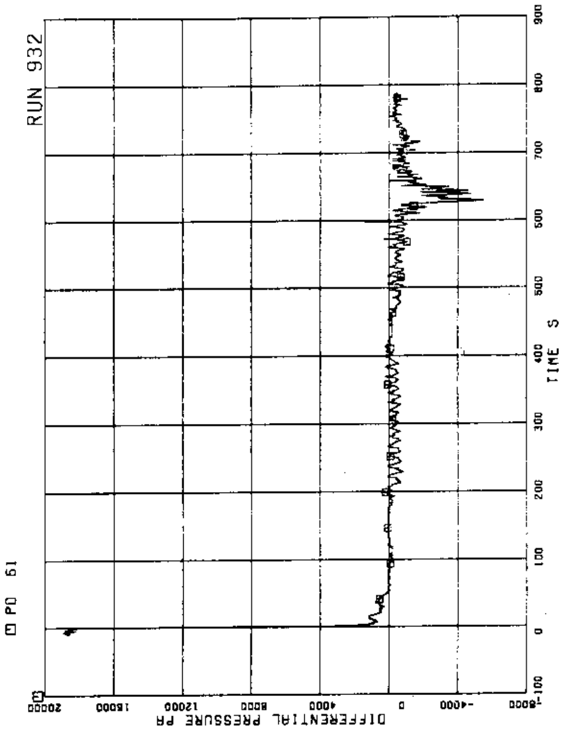


FIG.5.295 DIFFERENTIAL PRESSURE ACROSS CHANNEL INLET ORIFICE B

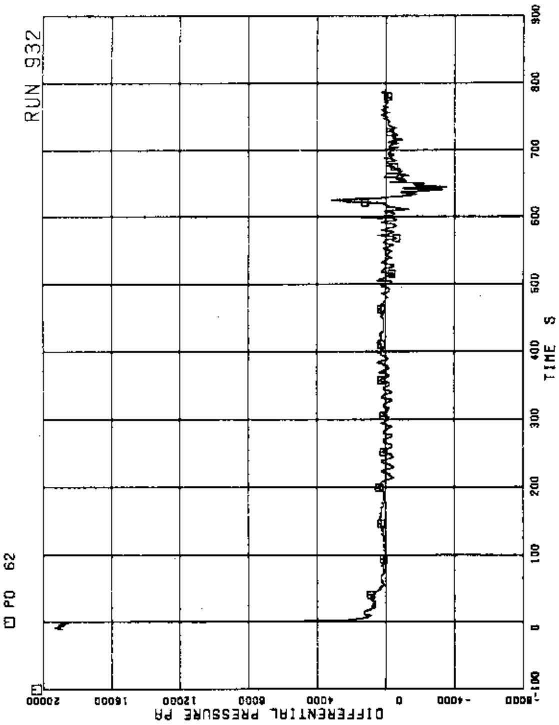


FIG.5.296 DIFFERENTIAL PRESSURE ACROSS CHANNEL INLET ORIFICE C

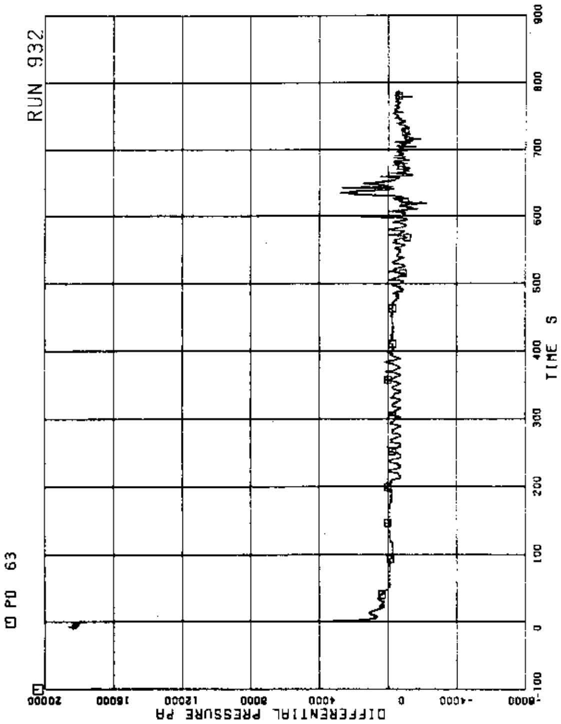


FIG.5.297 DIFFERENTIAL PRESSURE ACROSS CHANNEL INLET ORIFICE D

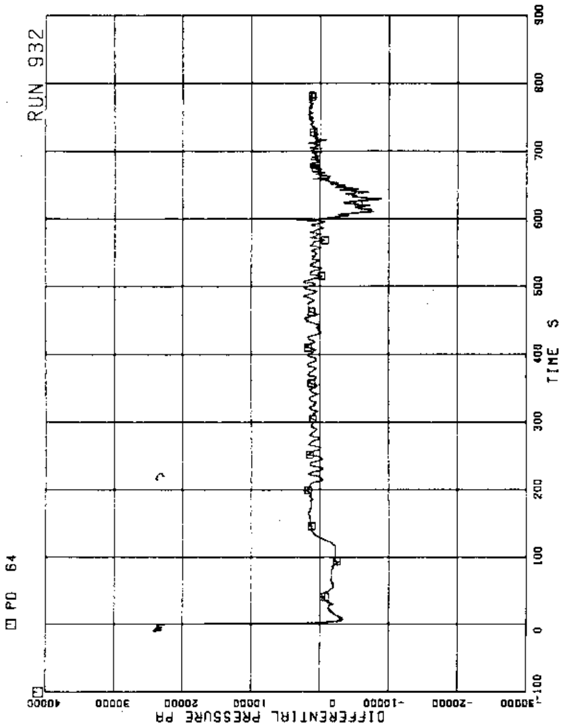


FIG.5.298 DIFFERENTIAL PRESSURE ACROSS BYPASS HOLE

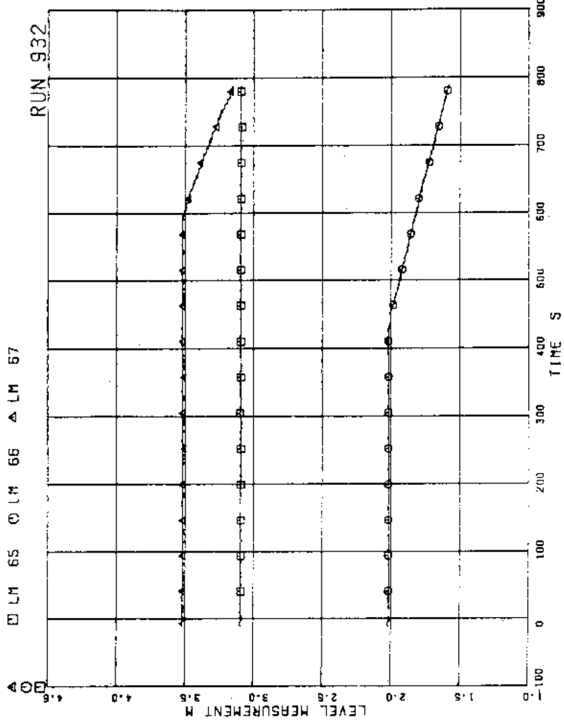


FIG.5.299 LIQUID LEVELS IN ECCS TANKS

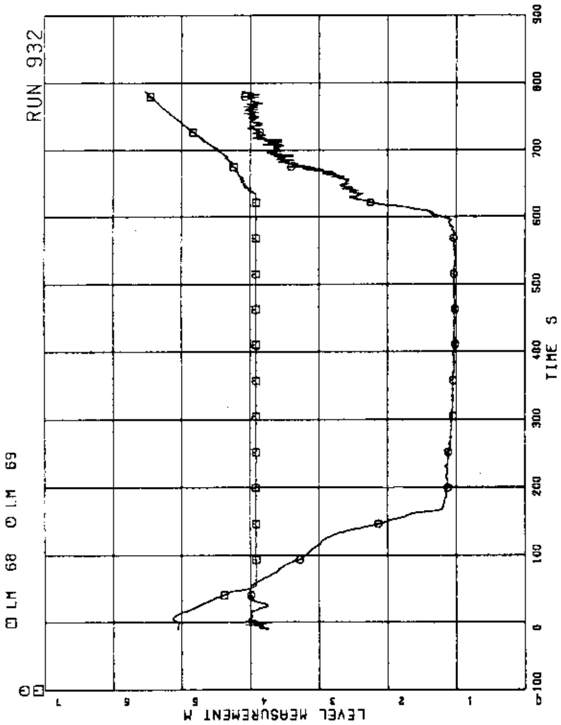


FIG.5.300 LIQUID LEVELS IN DOWNCOMER

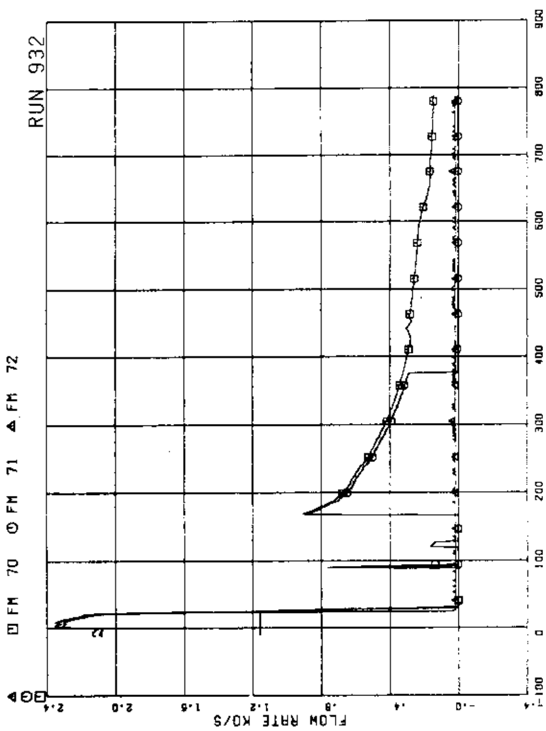


FIG.5.301 MASS FLOW RATE IN MSL

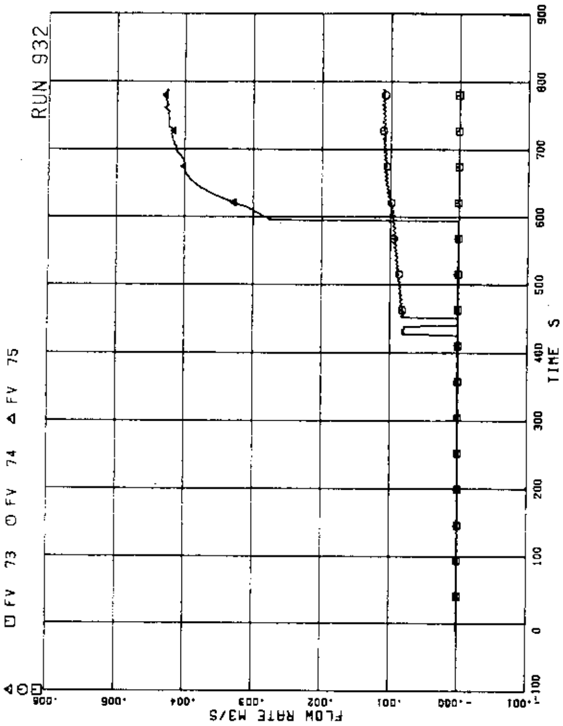


FIG.5.302 ECC INJECTION FLOW RATE

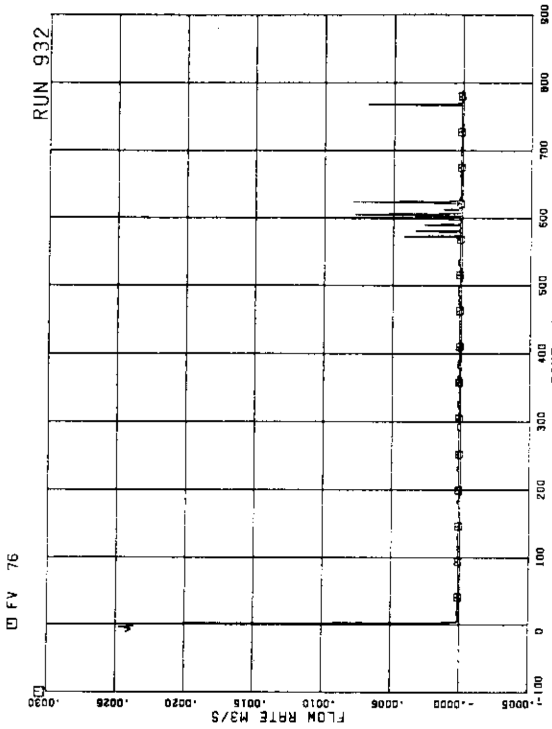


FIG.5.303 FEEDWATER FLOW RATE

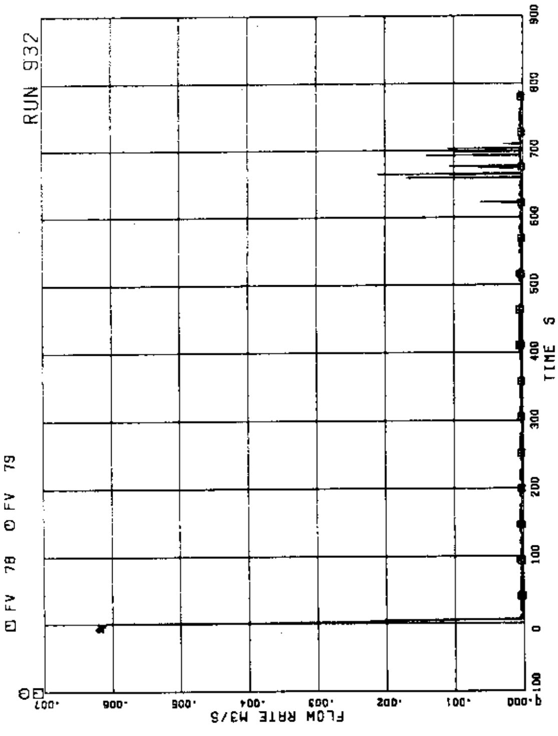


FIG.5.304 JP-1,2 DISCHARGE FLOW RATE (HIGH RANGE)

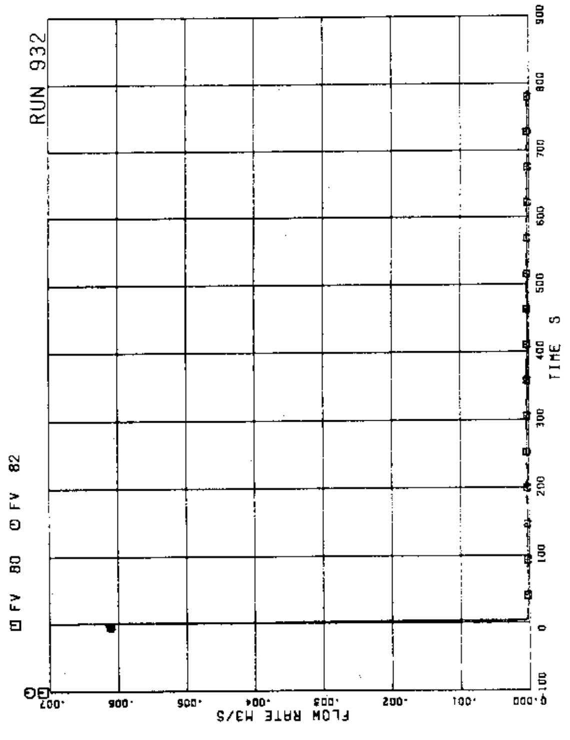


FIG.5.305 JP-3,4 DISCHARGE FLOW RATE (HIGH RANGE)

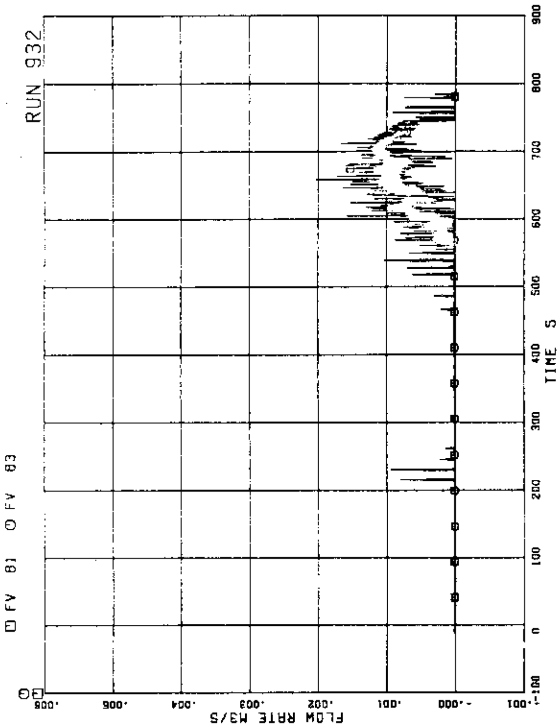


FIG.5.306 JP-3,4 DISCHARGE FLOW RATE (LOW RANGE)

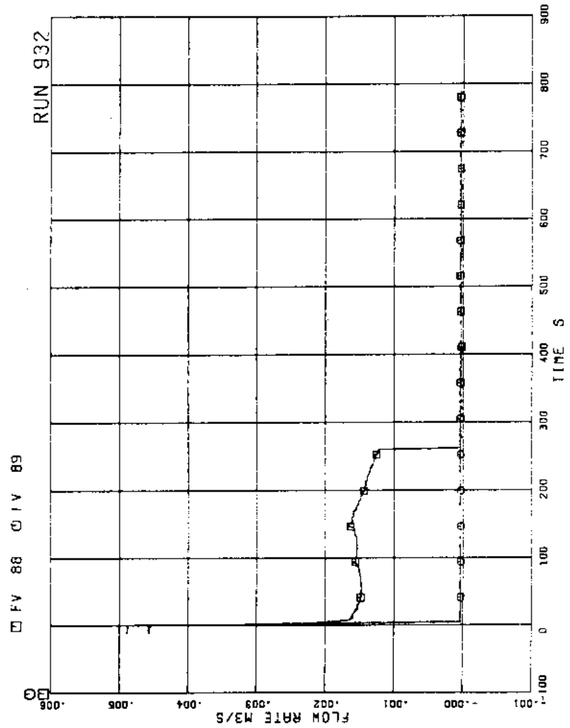


FIG.5.307 MRP DISCHARGE FLOW RATE

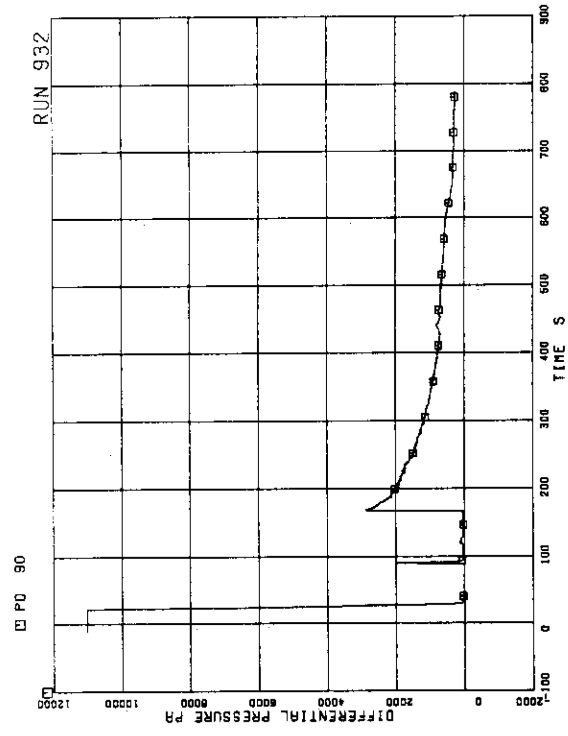


FIG.5.308 DIFFERENTIAL PRESSURE ACROSS ORIFICE FLOWMETER F-1

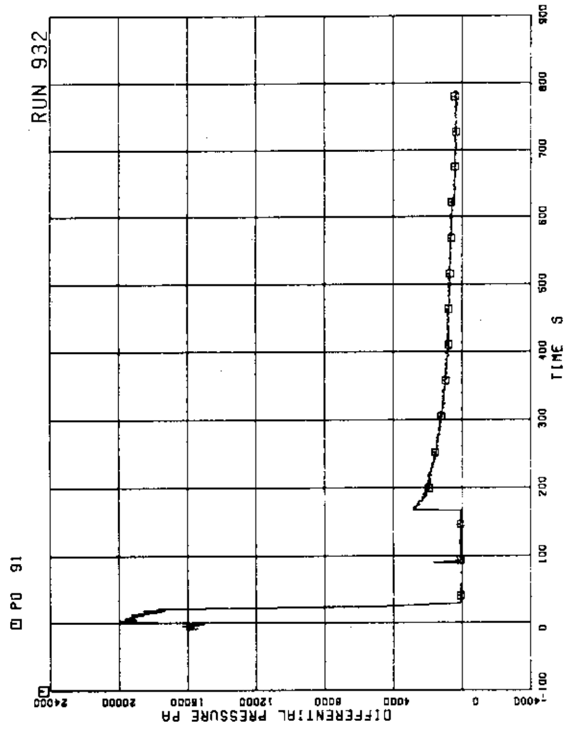


FIG.5.309 DIFFERENTIAL PRESSURE ACROSS ORIFICE FLOWMETER F-2

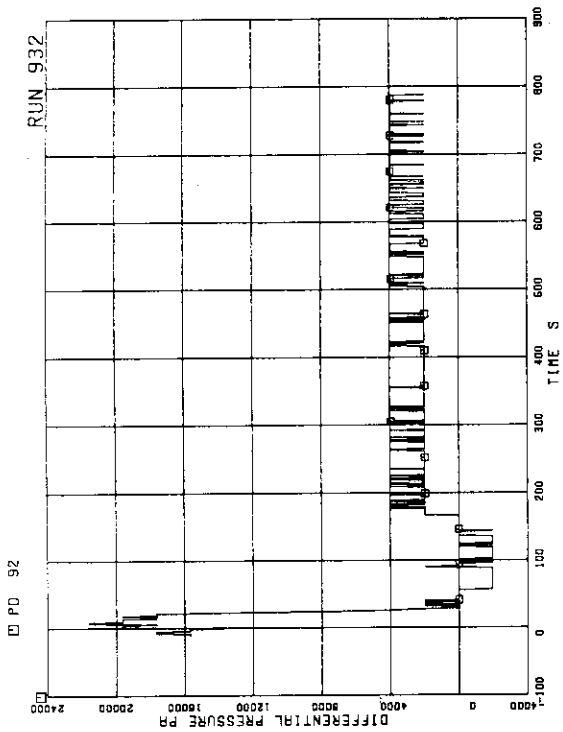


FIG.5.310 DIFFERENTIAL PRESSURE ACROSS ORIFICE FLOWMETER F-3

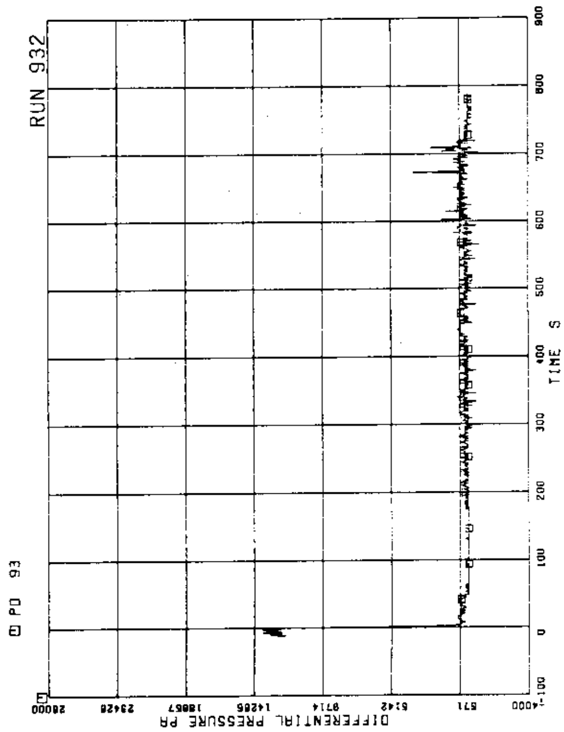


FIG.5.311 DIFFERENTIAL PRESSURE ACROSS VENTURI FLOWMETER F-17

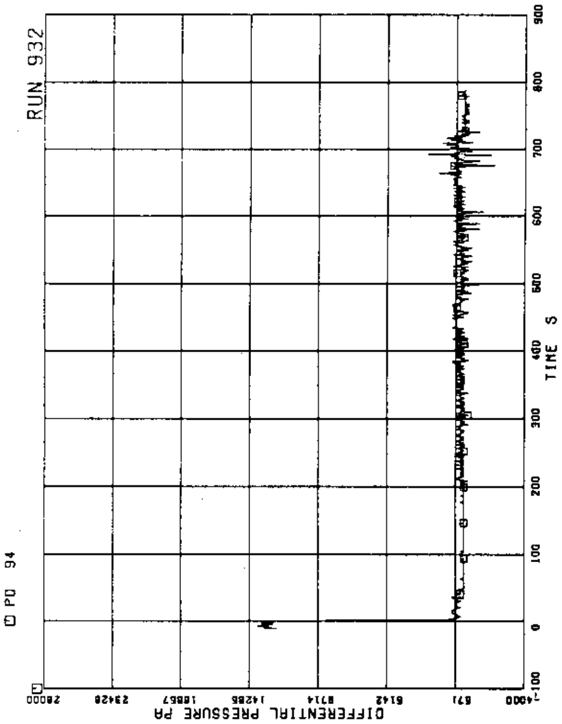


FIG.5.312 DIFFERENTIAL PRESSURE ACROSS VENTURI FLOWMETER F-18

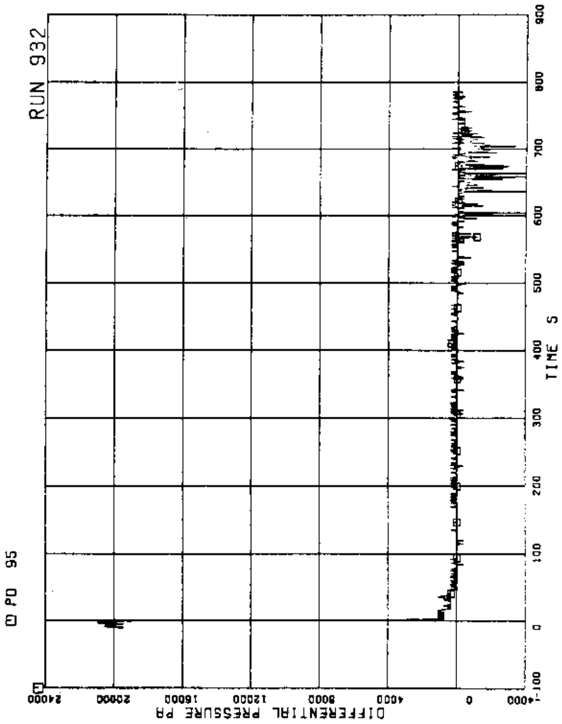


FIG.5.313 DIFFERENTIAL PRESSURE ACROSS ORIFICE FLOWMETER F-19

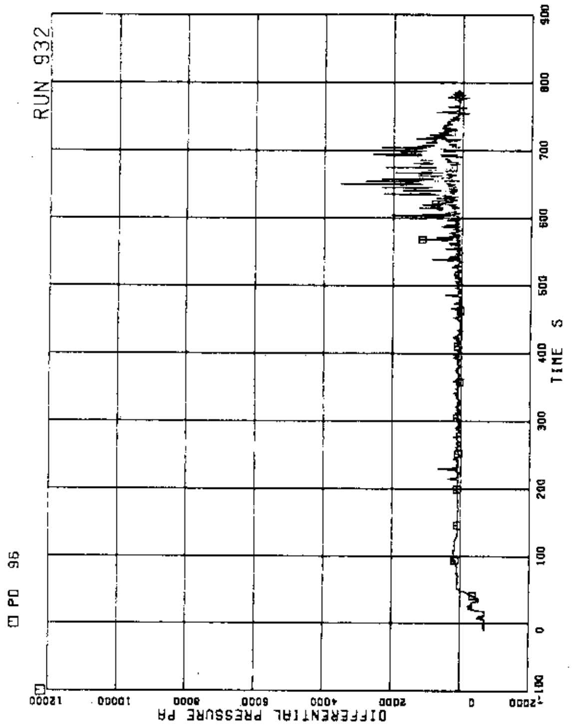


FIG.5.314 DIFFERENTIAL PRESSURE ACROSS ORIFICE FLOWMETER F-20

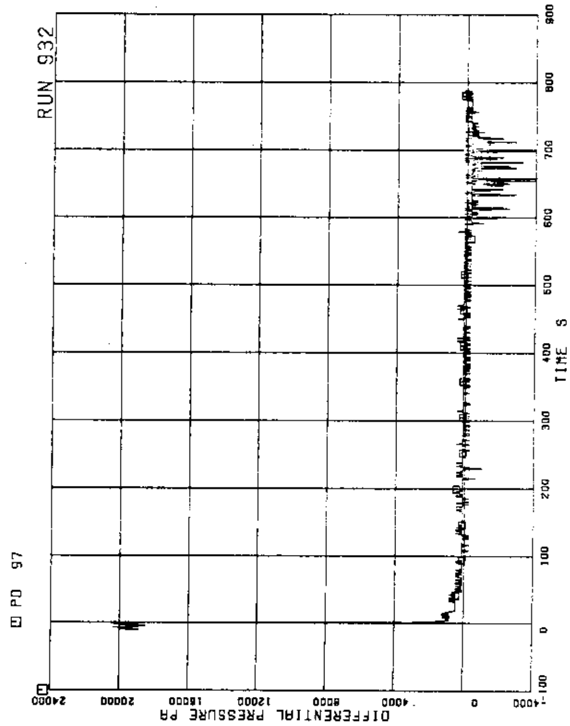


FIG.5.315 DIFFERENTIAL PRESSURE ACROSS ORIFICE FLOWMETER F-21

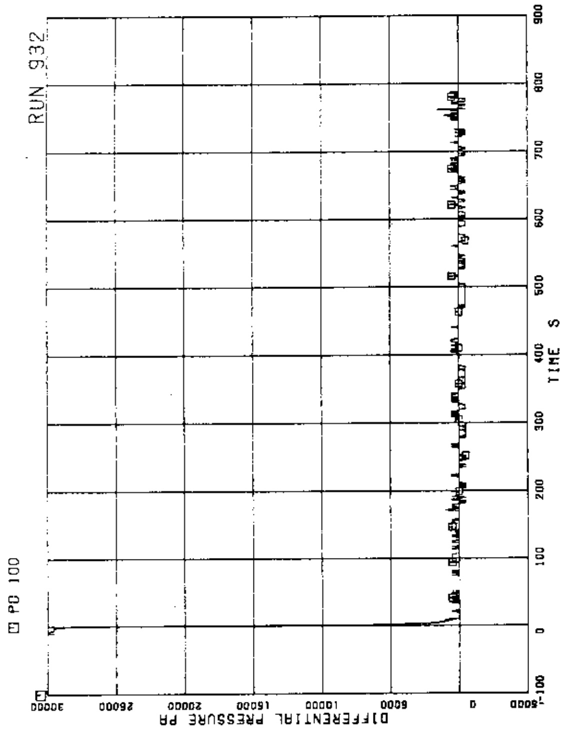


FIG.5.318 DIFFERENTIAL PRESSURE ACROSS VENTURI FLOWMETER F-28

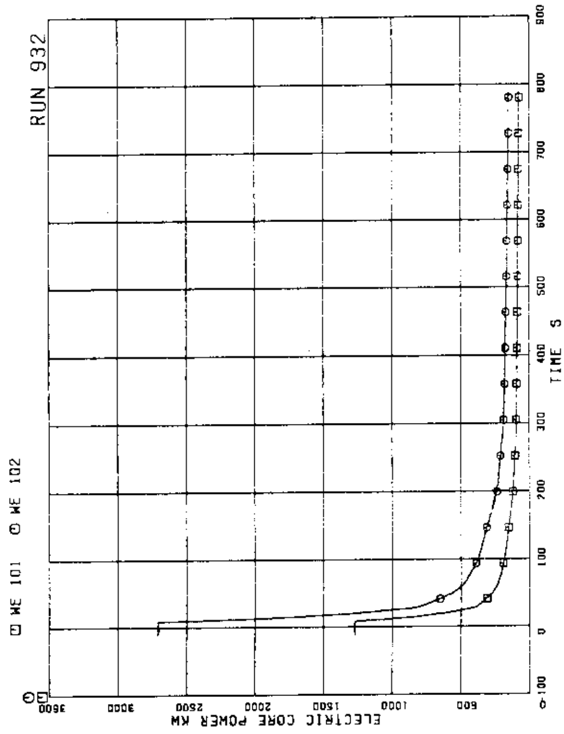


FIG.5.319 ELECTRIC CORE POWER

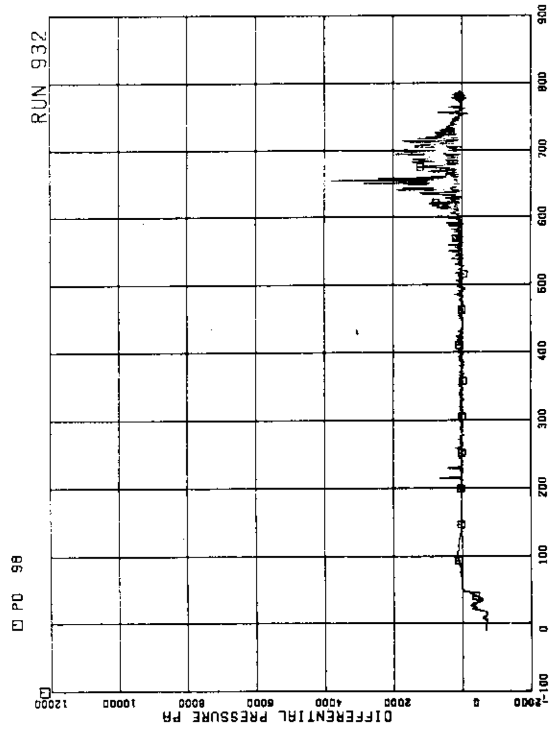


FIG.5.316 DIFFERENTIAL PRESSURE ACROSS ORIFICE FLOWMETER F-22

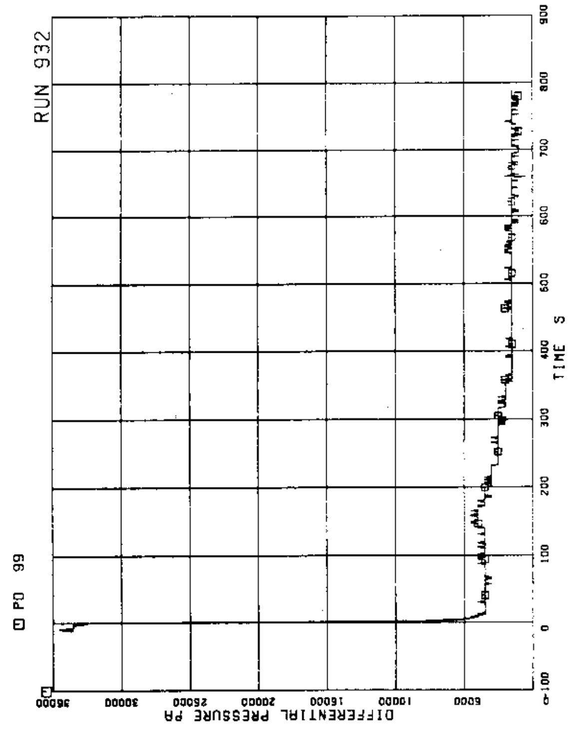


FIG.5.317 DIFFERENTIAL PRESSURE ACROSS VENTURI FLOWMETER F-27

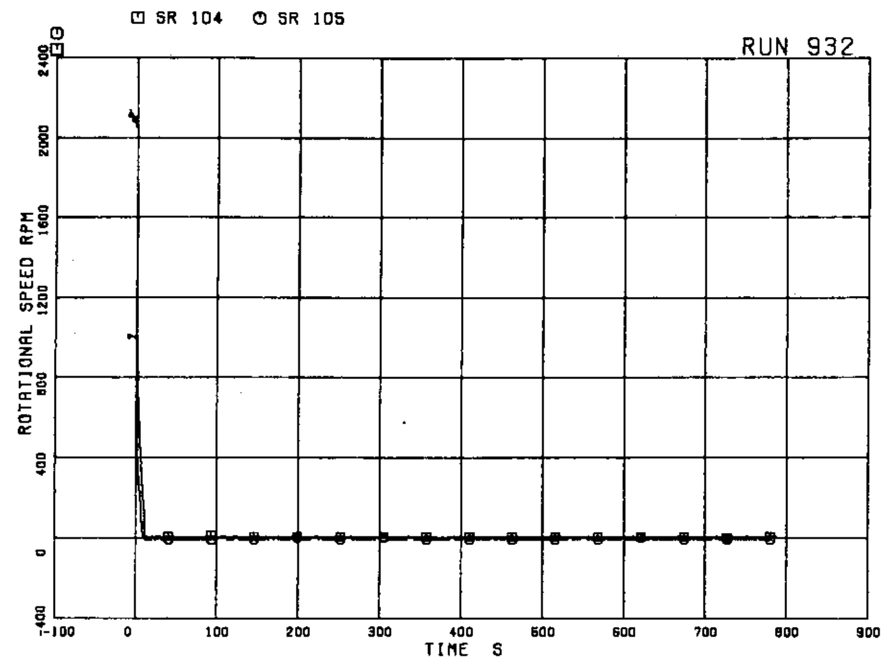


FIG.5.320 MRP REVOLUTION

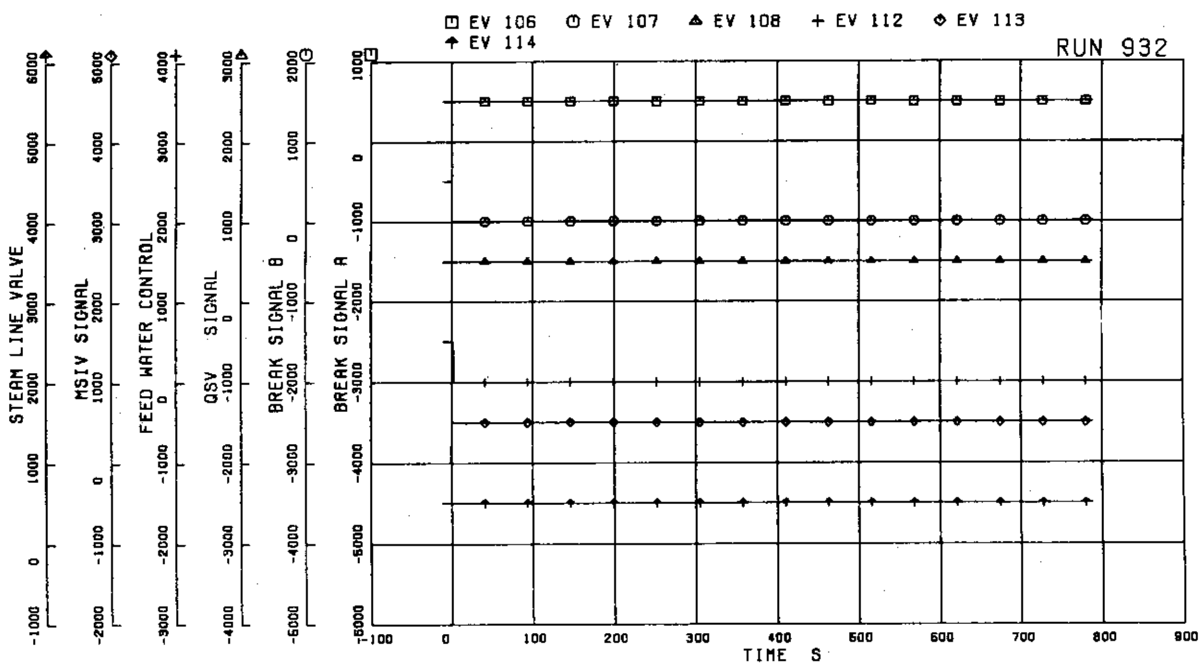


FIG.5.321 VALVE OPERATION SIGNALS

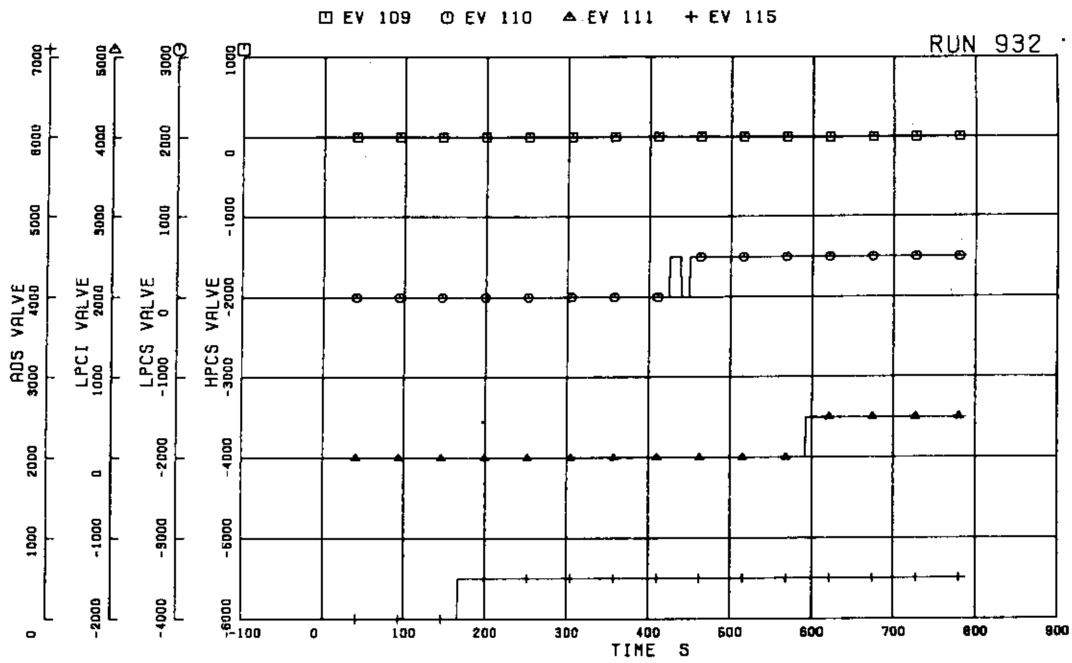


FIG.5.322 ECCS OPERATION SIGNALS

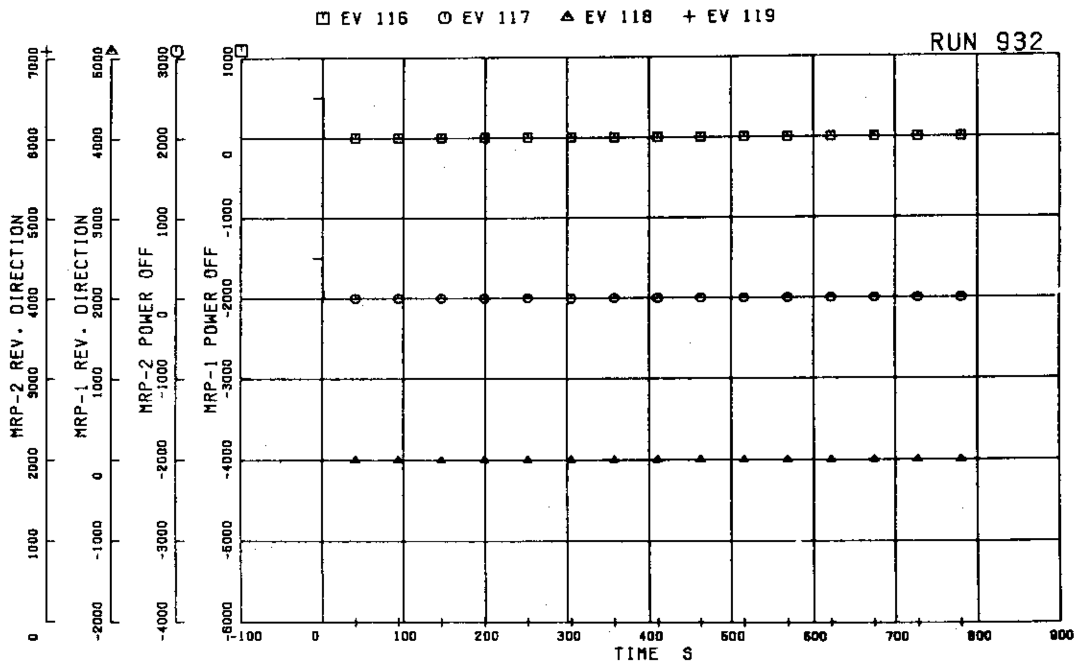


FIG.5.323 MRP OPERATION SIGNALS

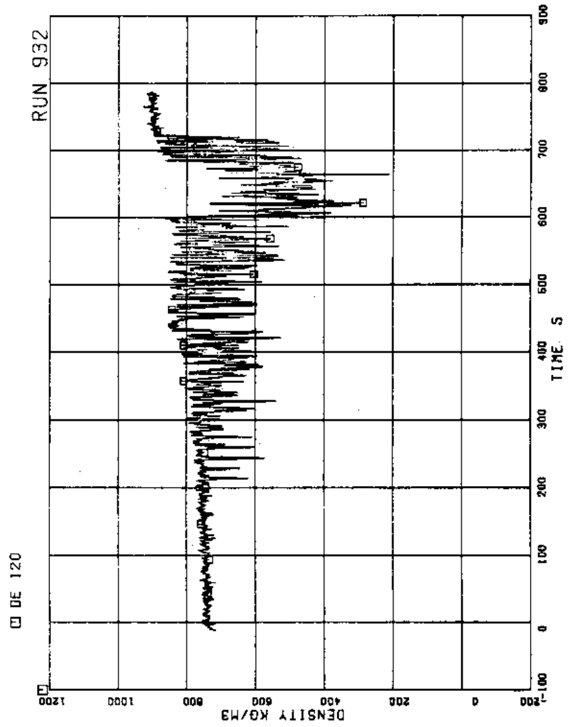


FIG.5.324 FLUID DENSITY AT JP-1.2 OUTLET, BEAM A

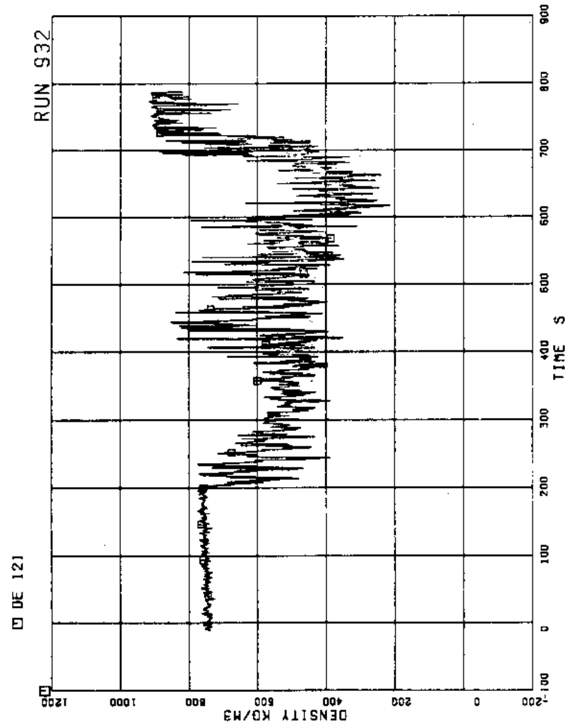


FIG.5.325 FLUID DENSITY AT JP-1.2 OUTLET, BEAM B

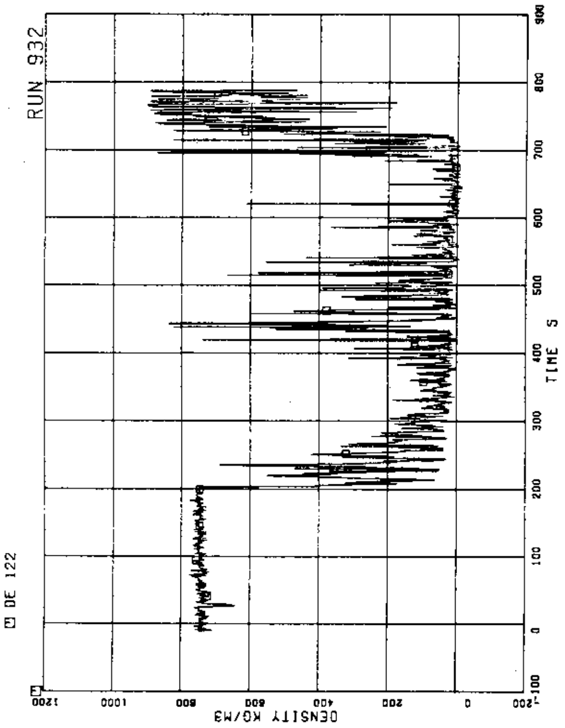


FIG.5.326 FLUID DENSITY AT JP-1.2 OUTLET, BEAM C

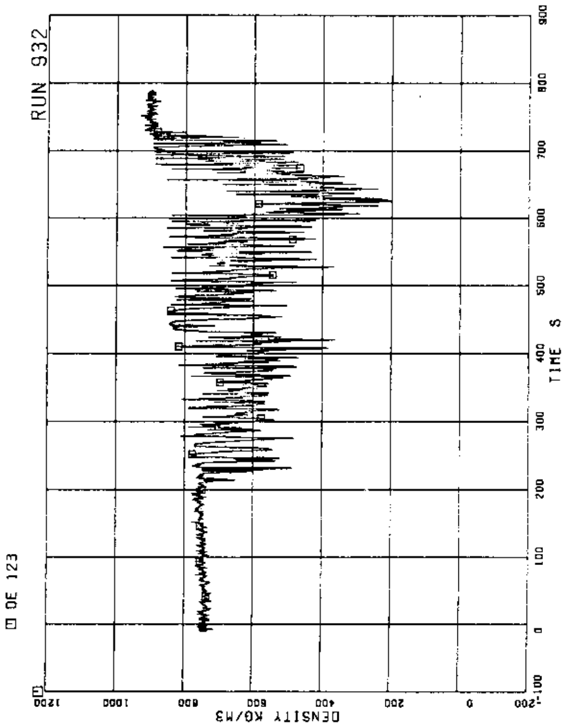


FIG.5.327 FLUID DENSITY AT JP-3.4 OUTLET, BEAM A

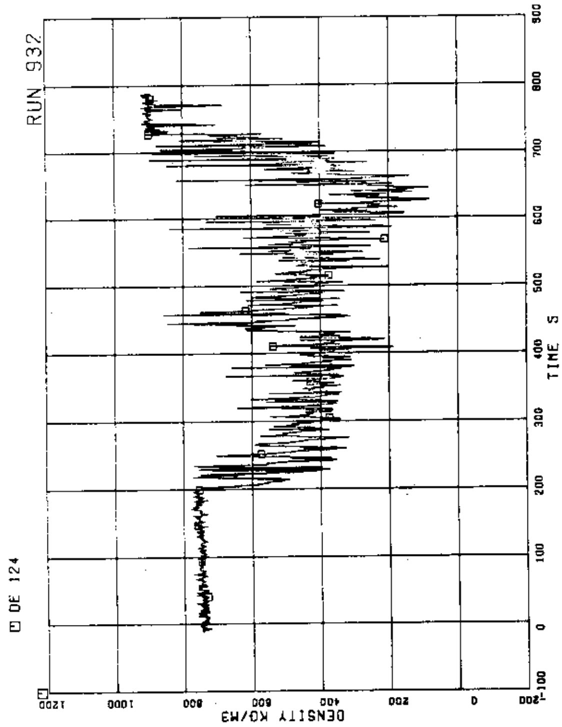


FIG.5.328 FLUID DENSITY AT JP-3,4 OUTLET, BEAM B

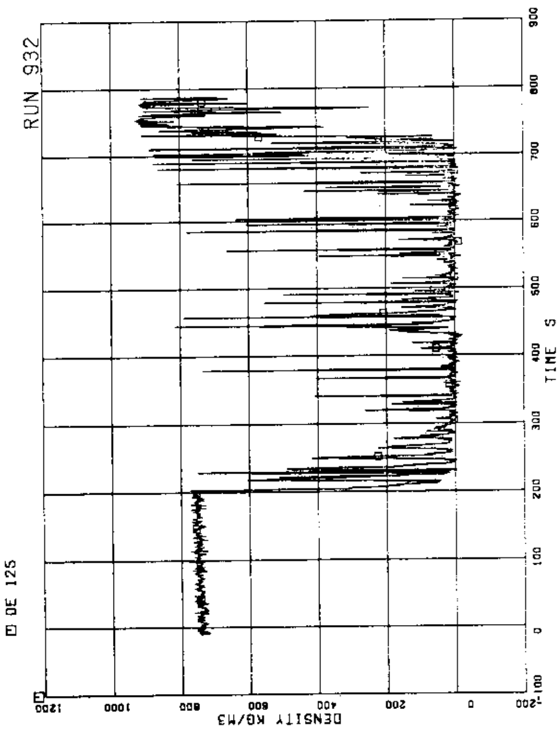


FIG.5.329 FLUID DENSITY AT JP-3,4 OUTLET, BEAM C

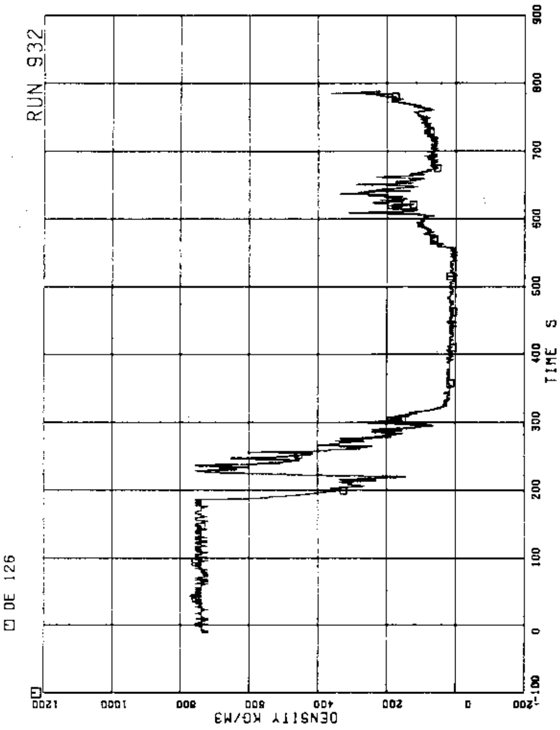


FIG.5.330 FLUID DENSITY AT MRP SIDE OF BREAK, BEAM A

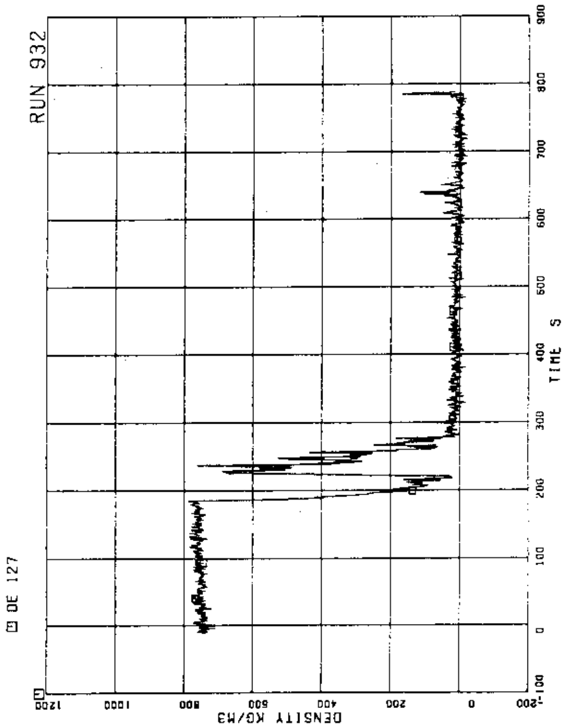


FIG.5.331 FLUID DENSITY AT MRP SIDE OF BREAK, BEAM B

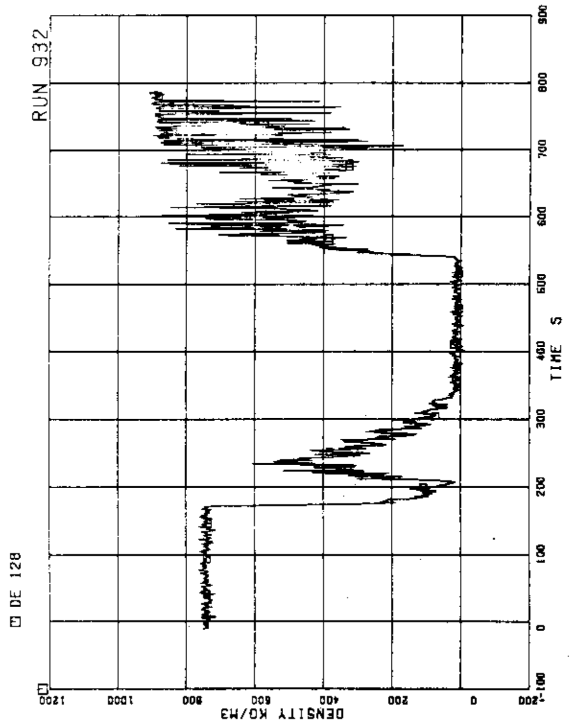


FIG.5.332 FLUID DENSITY AT PV SIDE OF BREAK, BEAM A

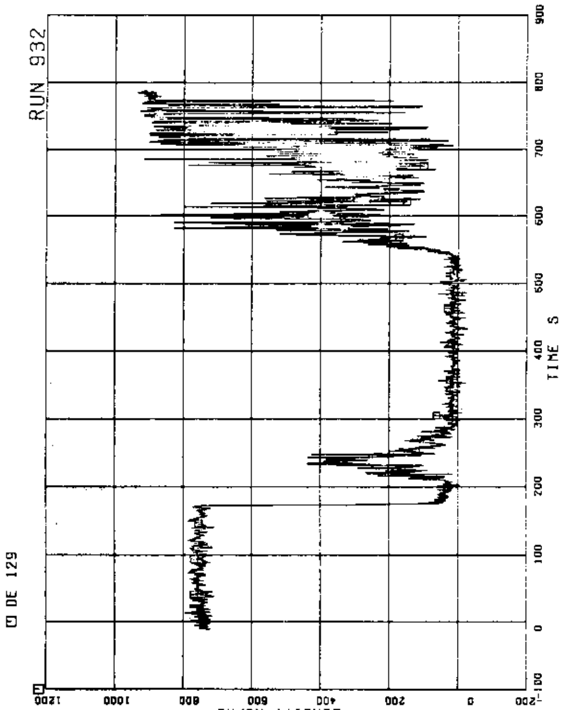


FIG.5.333 FLUID DENSITY AT PV SIDE OF BREAK, BEAM B

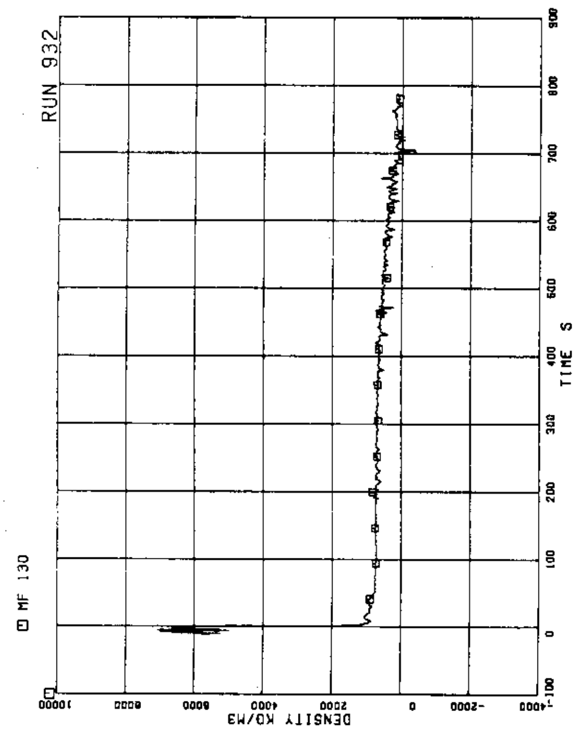


FIG.5.334 MOMENTUM FLUX AT JP-1.2 OUTLET SPOOL

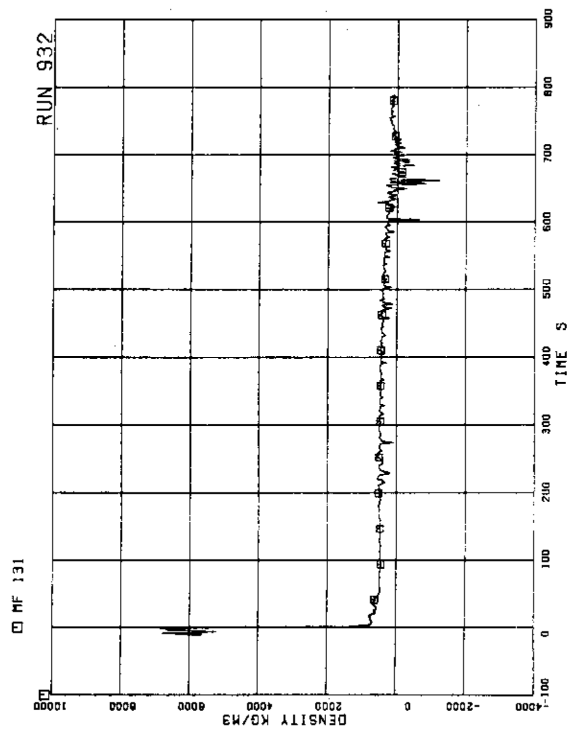


FIG.5.335 MOMENTUM FLUX AT JP-3.4 OUTLET SPOOL

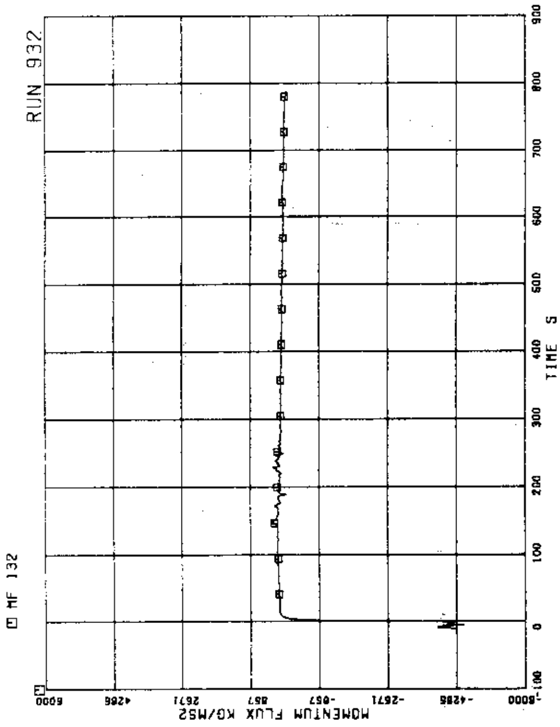


FIG.5.336 MOMENTUM FLUX AT BREAK A SPOOL PIECE (LOW RANGE)

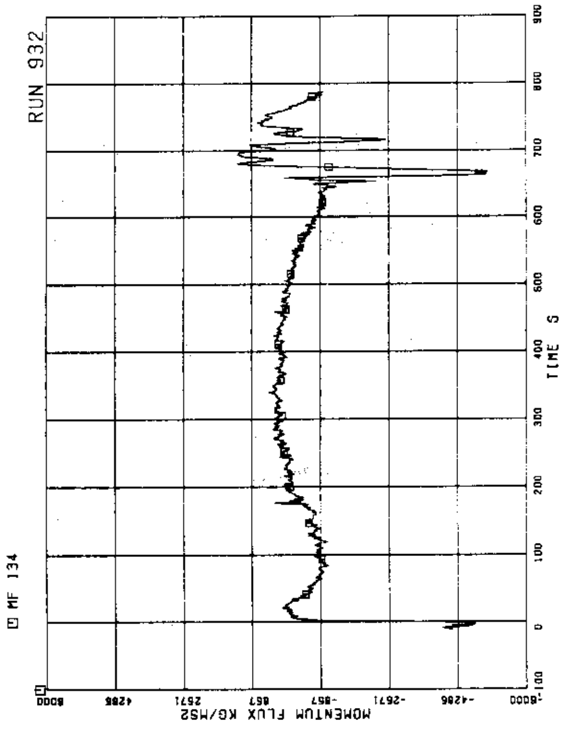


FIG.5.337 MOMENTUM FLUX AT BREAK A SPOOL PIECE (HIGH RANGE)

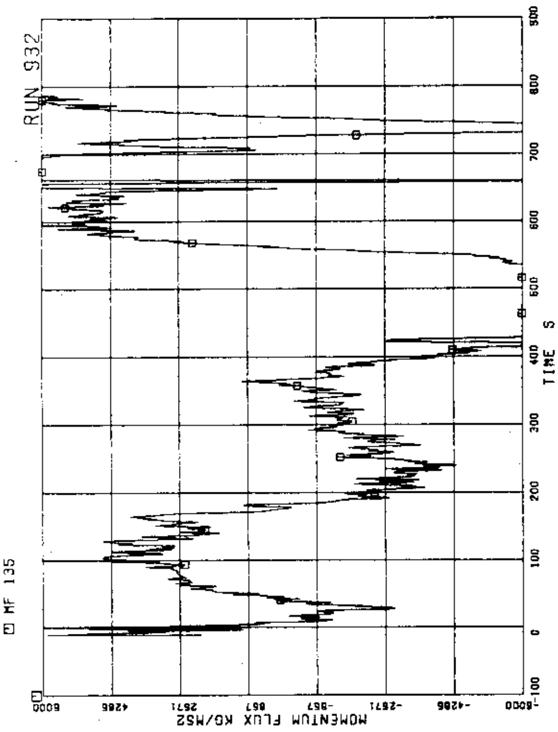


FIG.5.338 MOMENTUM FLUX AT BREAK B SPOOL PIECE (HIGH RANGE)

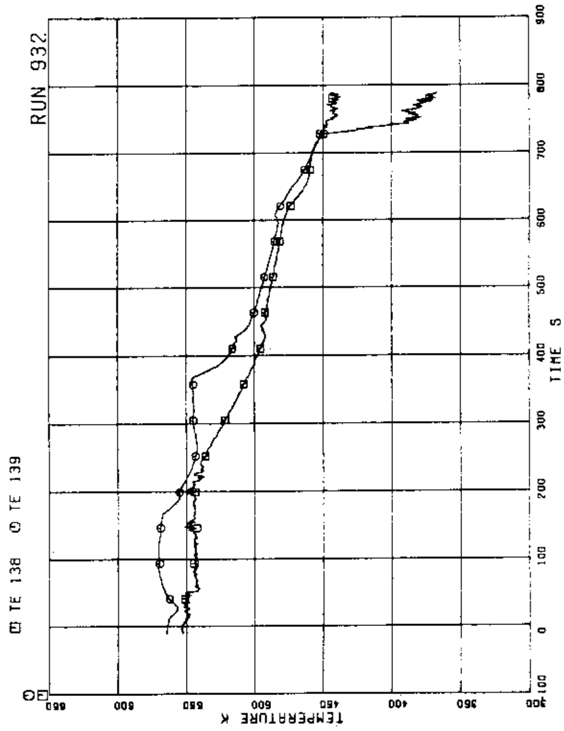


FIG.5.339 FLUID TEMPERATURES IN LOWER PLENUM AND UPPER PLENUM

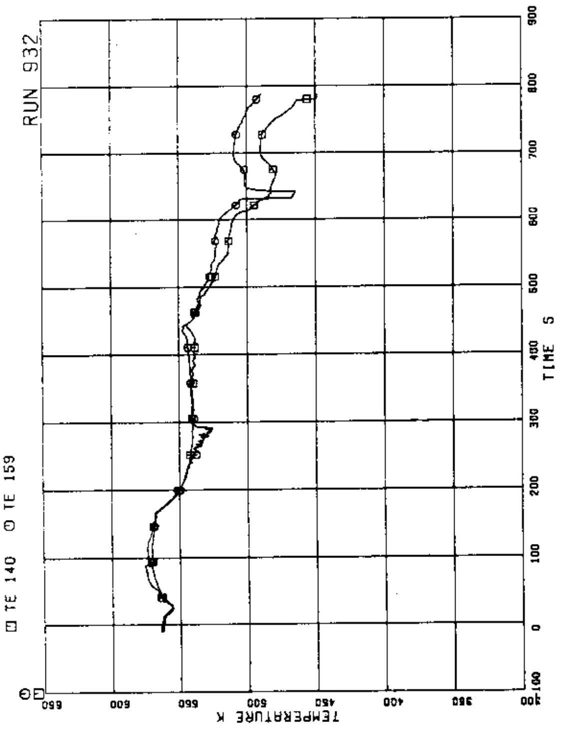


FIG.5.340 FLUID TEMPERATURES IN STEAM DOME AND MSL

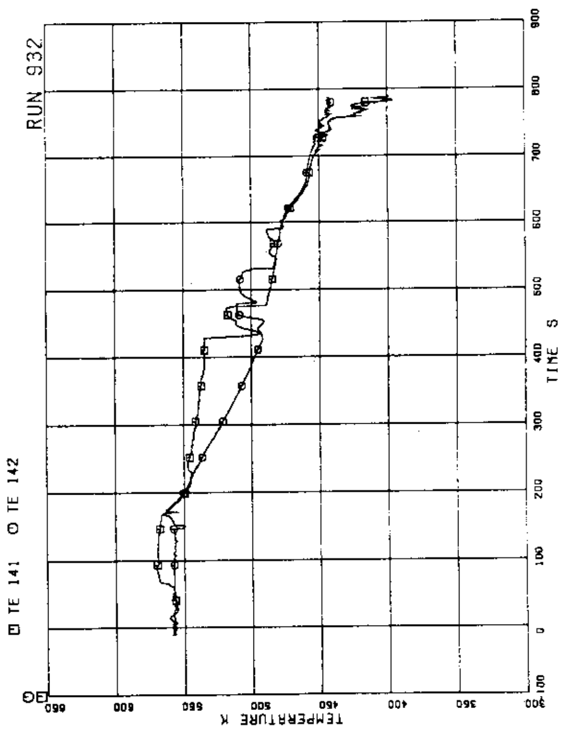


FIG.5.341 FLUID TEMPERATURES IN DOWNCOMER

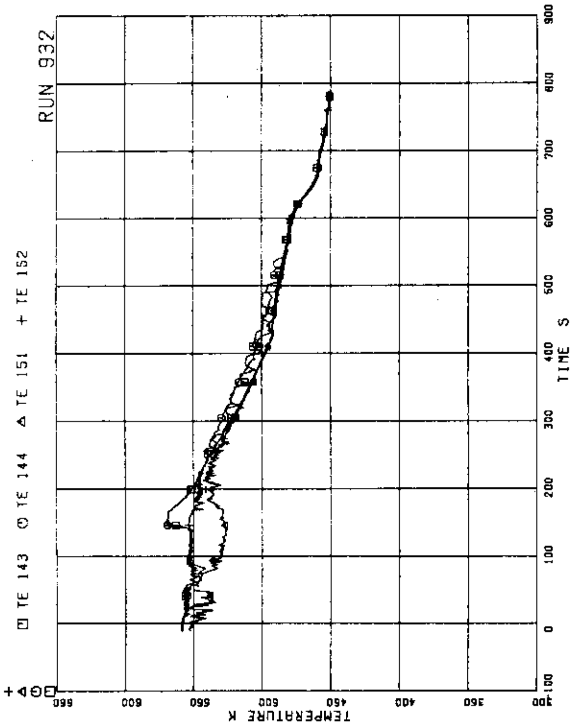


FIG.5.342 FLUID TEMPERATURES IN INTACT RECIRCULATION LOOP

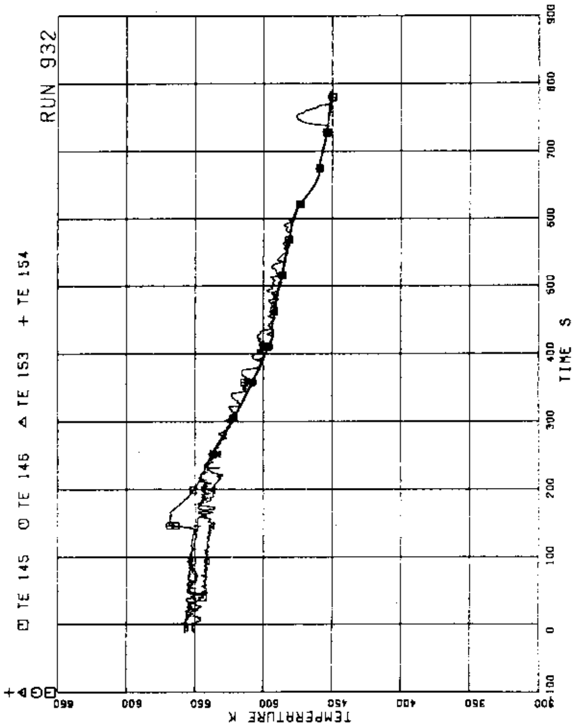


FIG.5.343 FLUID TEMPERATURES IN BROKEN RECIRCULATION LOOP

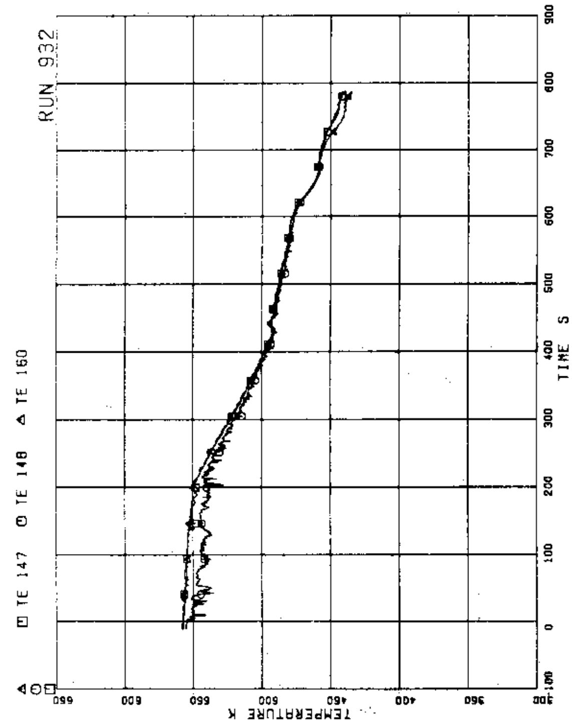


FIG.5.344 FLUID TEMPERATURES AT JP-1.2 OUTLET

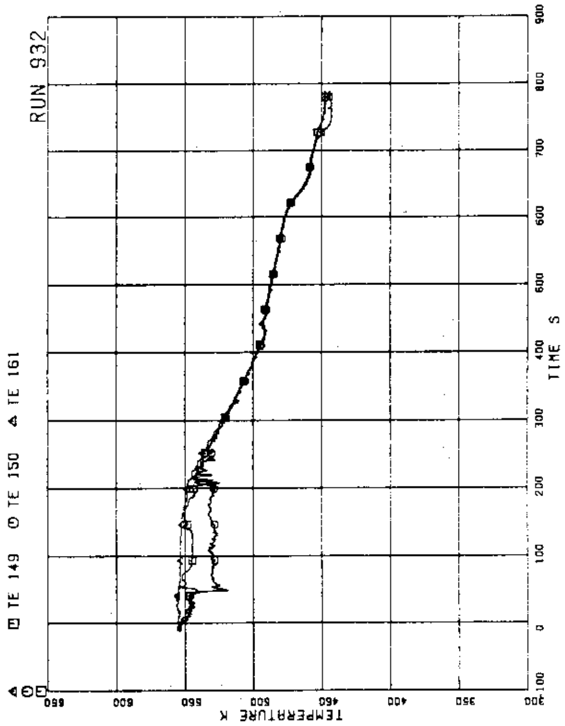


FIG.5.345 FLUID TEMPERATURES AT JP-3.4 OUTLET

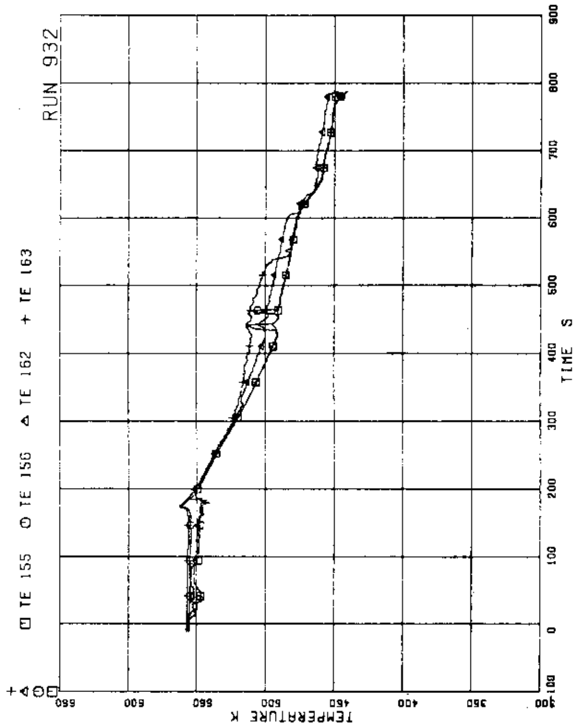


FIG.5.346 FLUID TEMPERATURES NEAR BREAKS A AND B

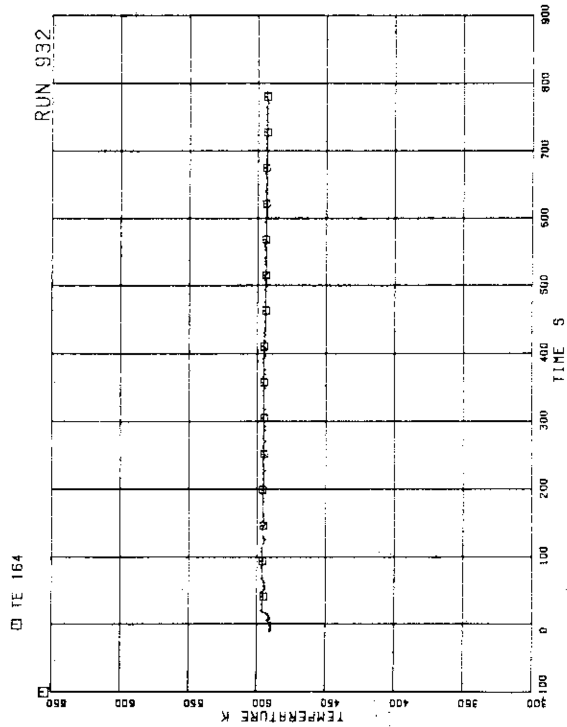


FIG.5.347 FEEDWATER TEMPERATURE

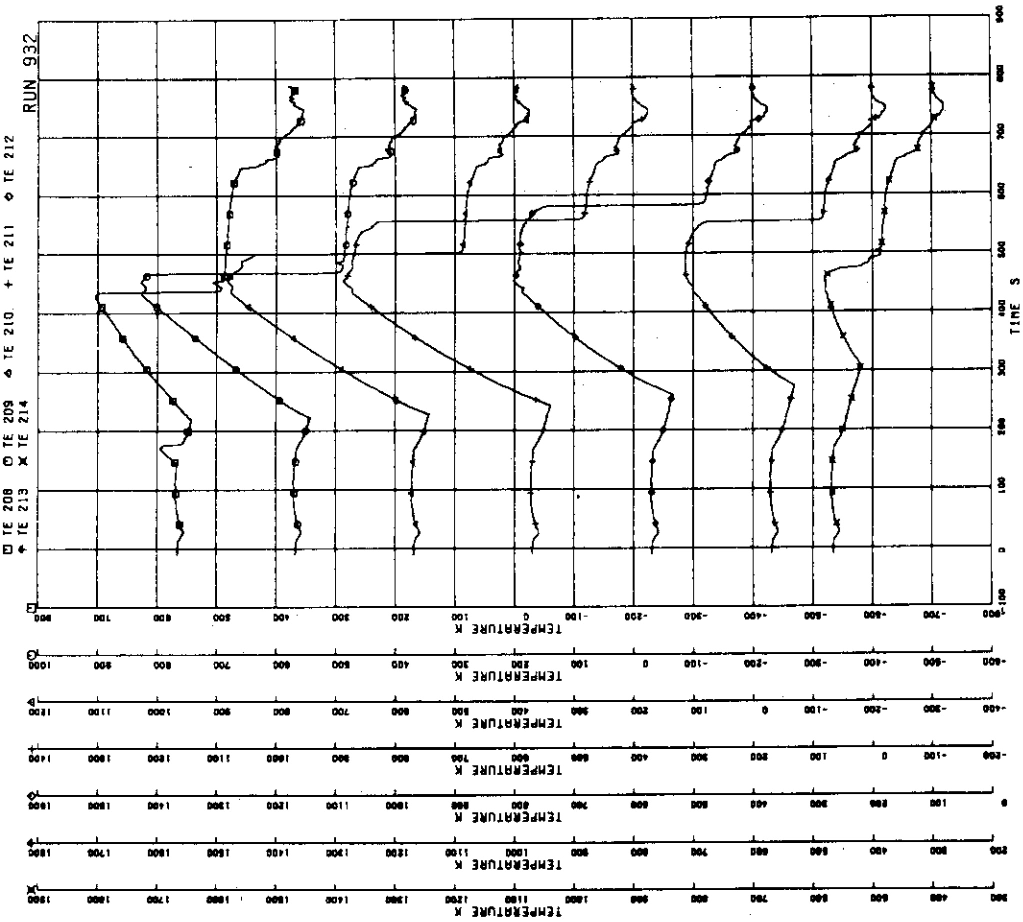


FIG.5.349 SURFACE TEMPERATURES OF FUEL ROD A12

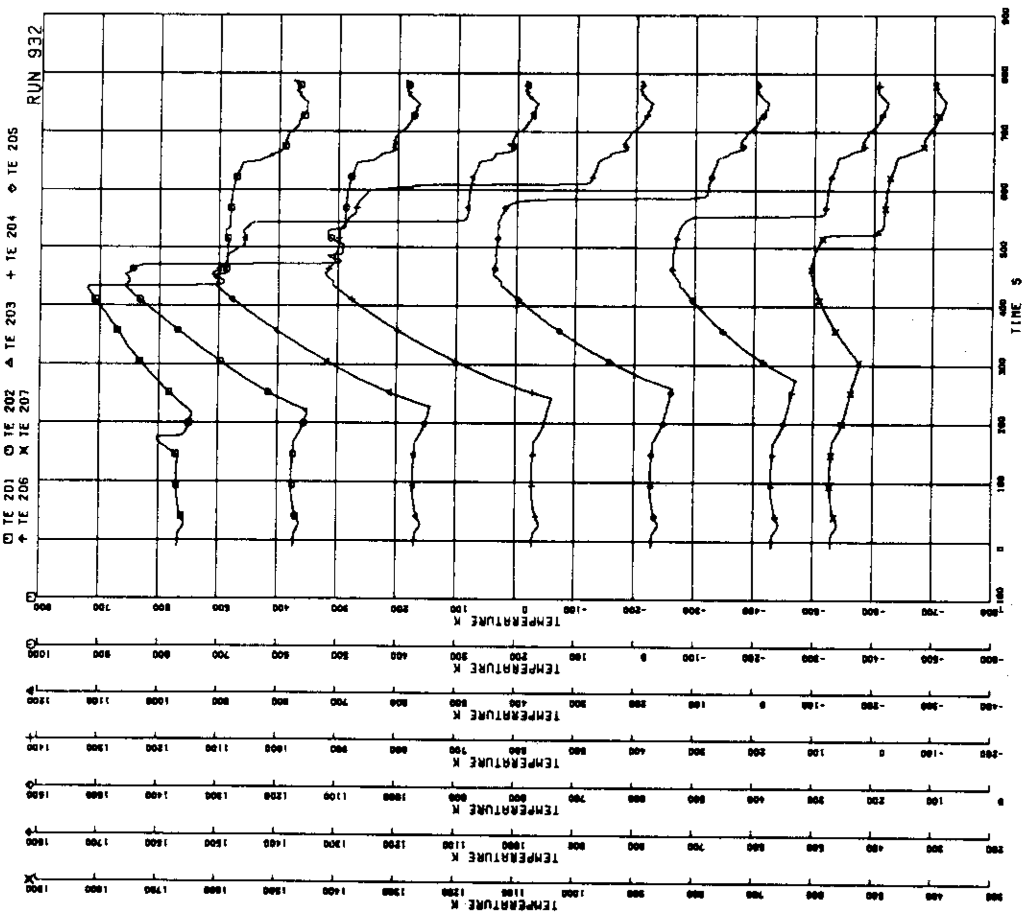


FIG.5.348 SURFACE TEMPERATURES OF FUEL ROD A11

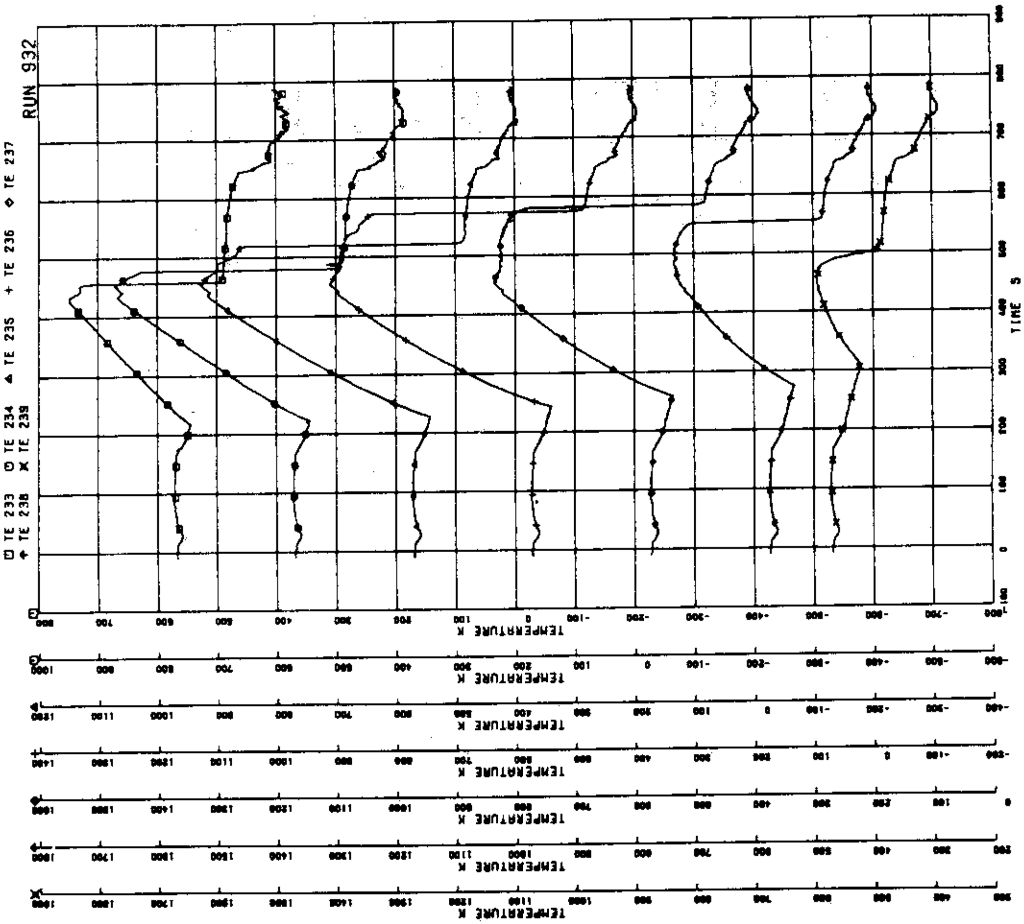


FIG.5.351 SURFACE TEMPERATURES OF FUEL ROD A22

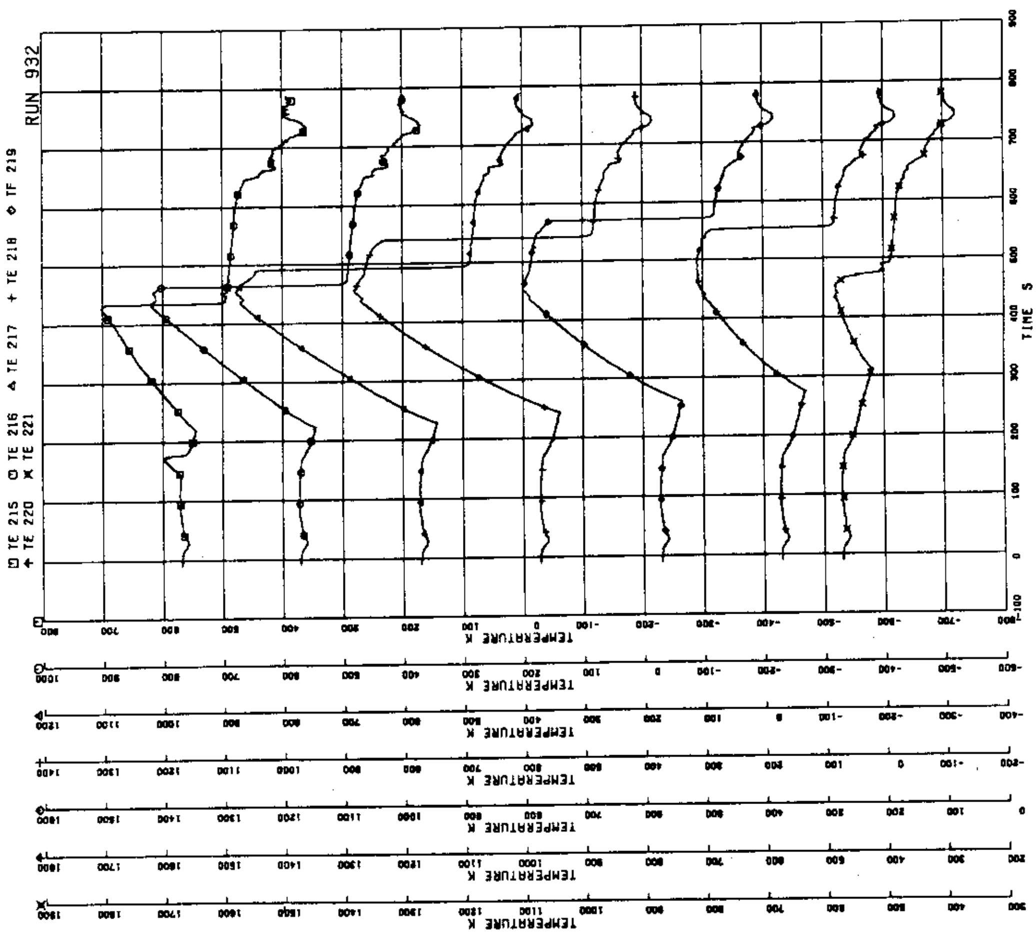


FIG.5.350 SURFACE TEMPERATURES OF FUEL ROD A13

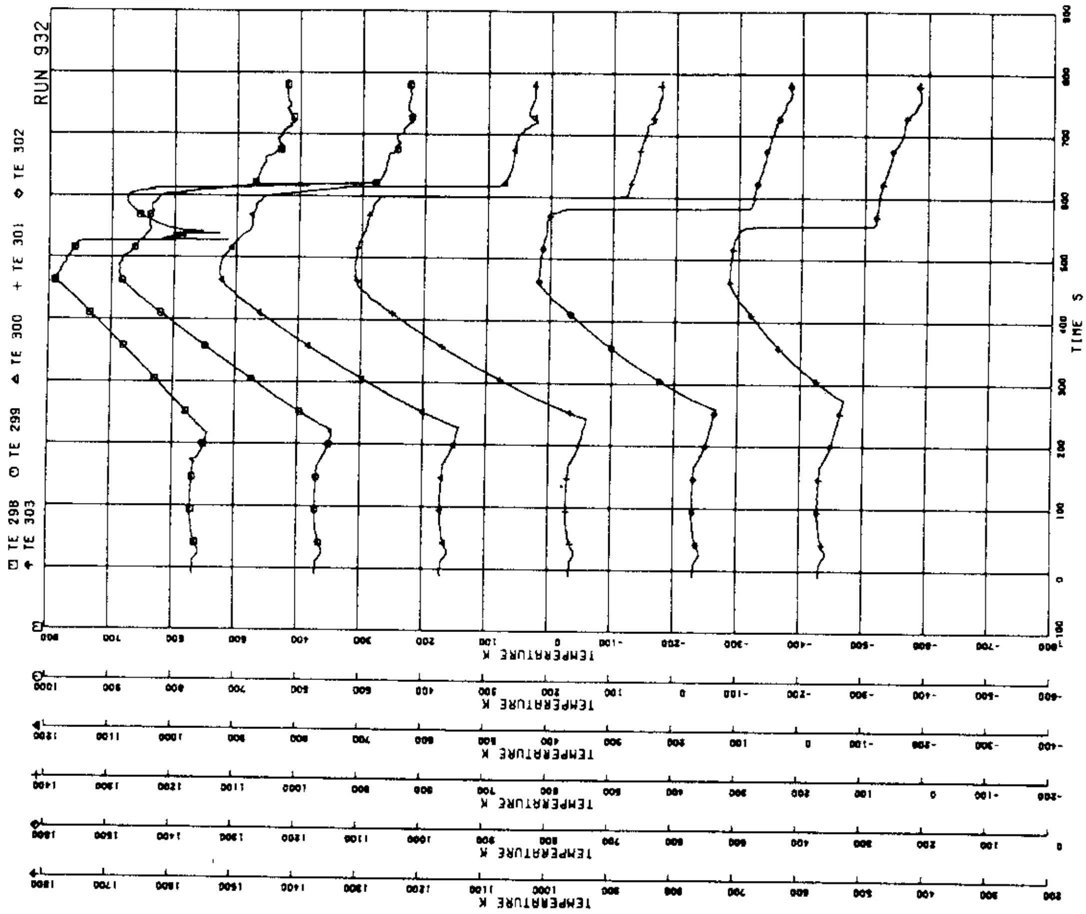


FIG.5.353 SURFACE TEMPERATURES OF FUEL ROD A77

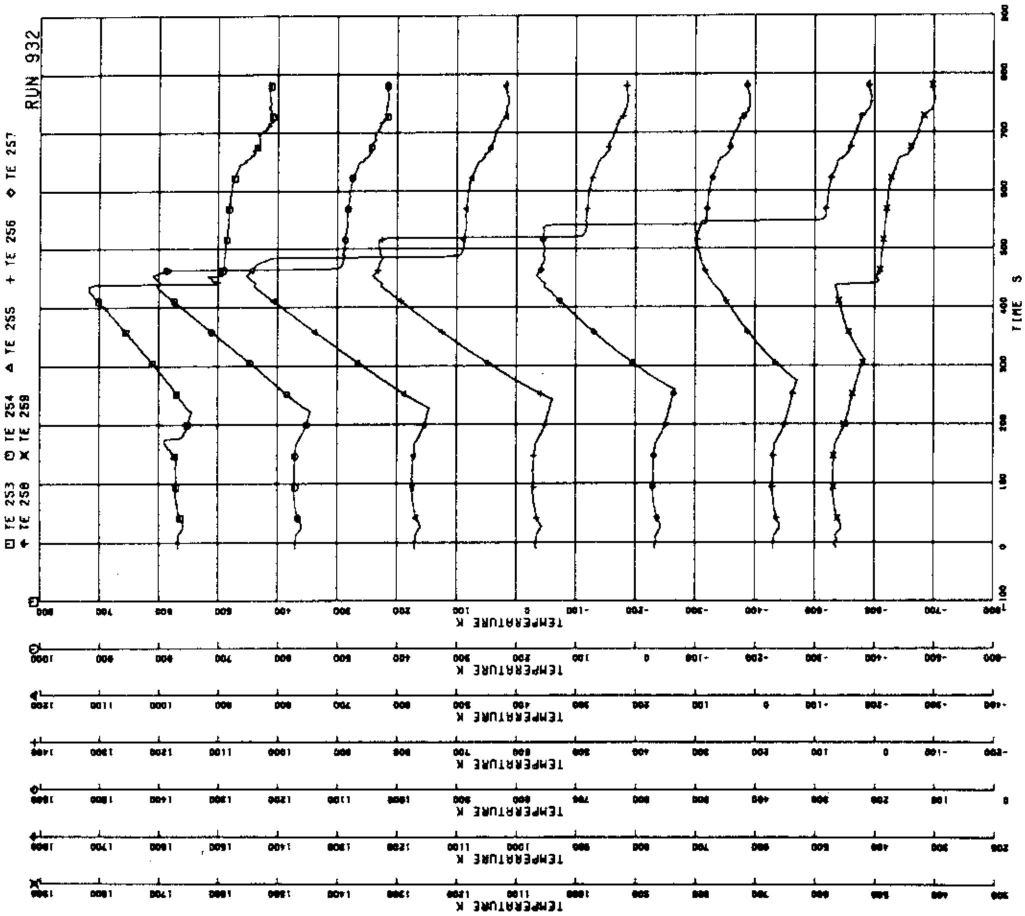


FIG.5.352 SURFACE TEMPERATURES OF FUEL ROD A33

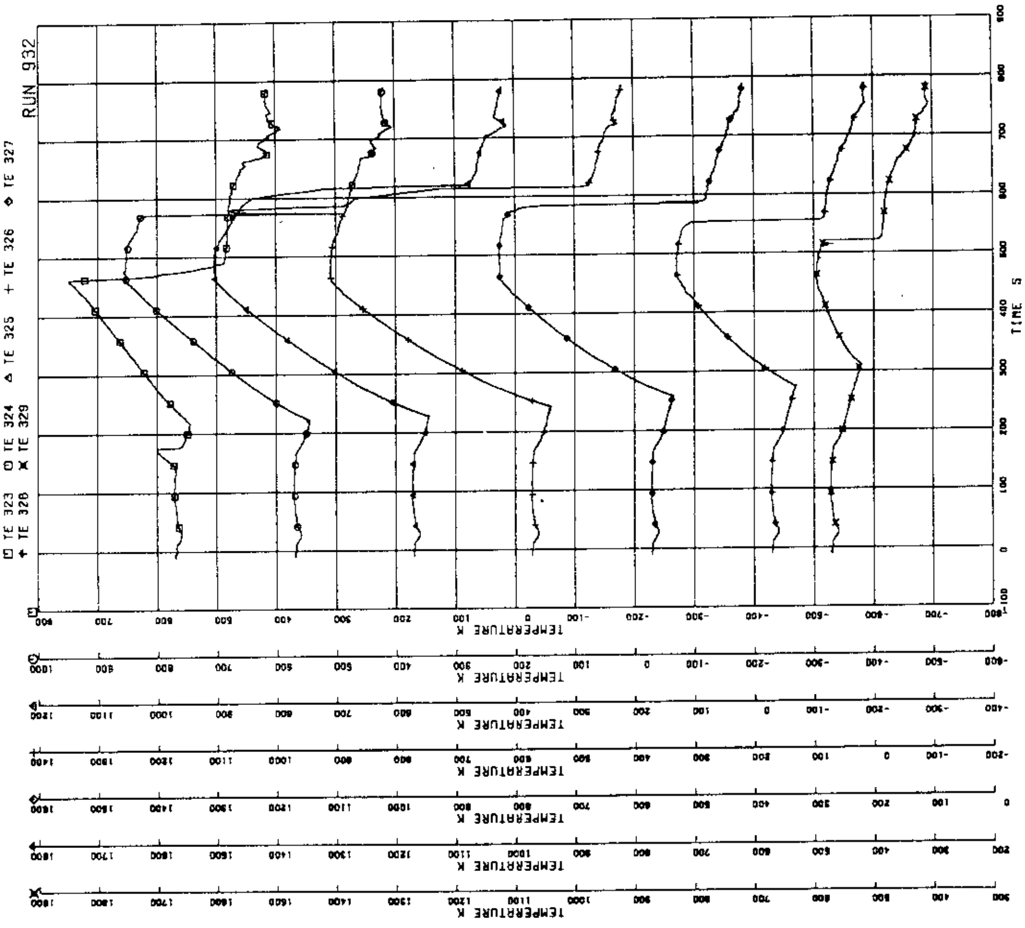


FIG.5.355 SURFACE TEMPERATURES OF FUEL ROD A88

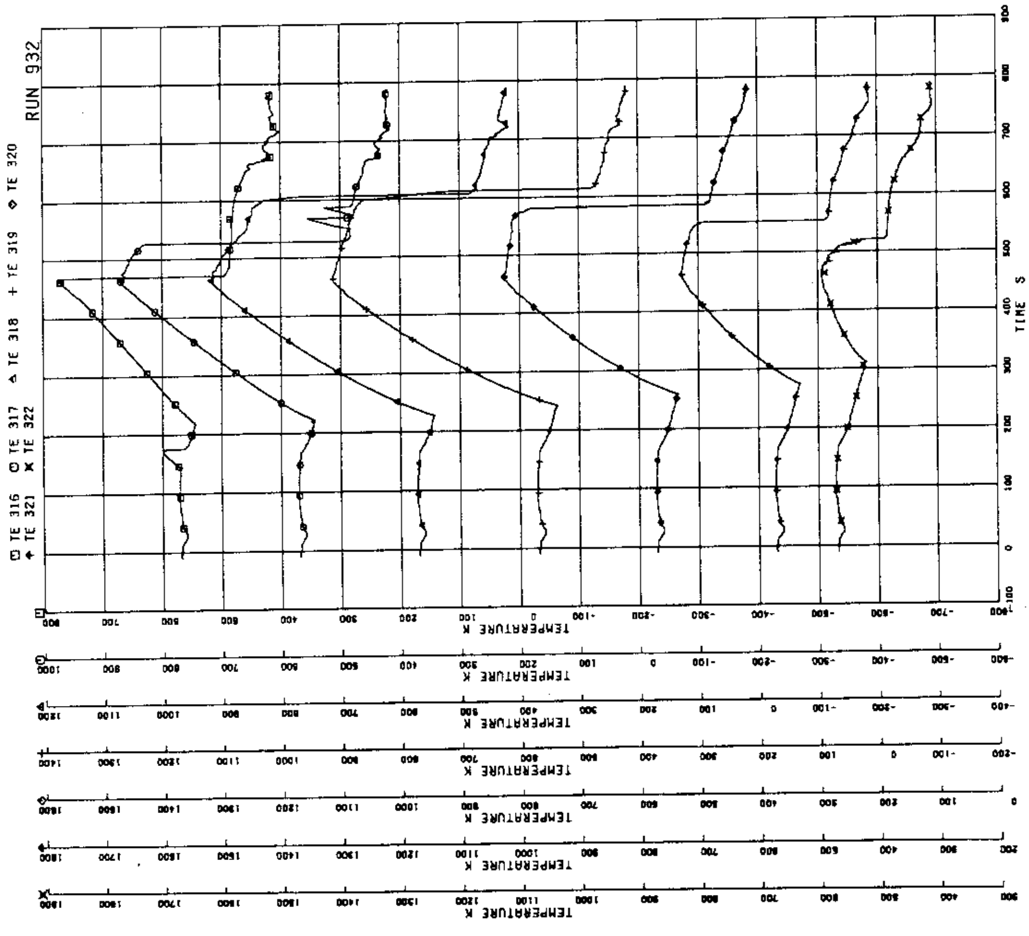


FIG.5.354 SURFACE TEMPERATURES OF FUEL ROD A87

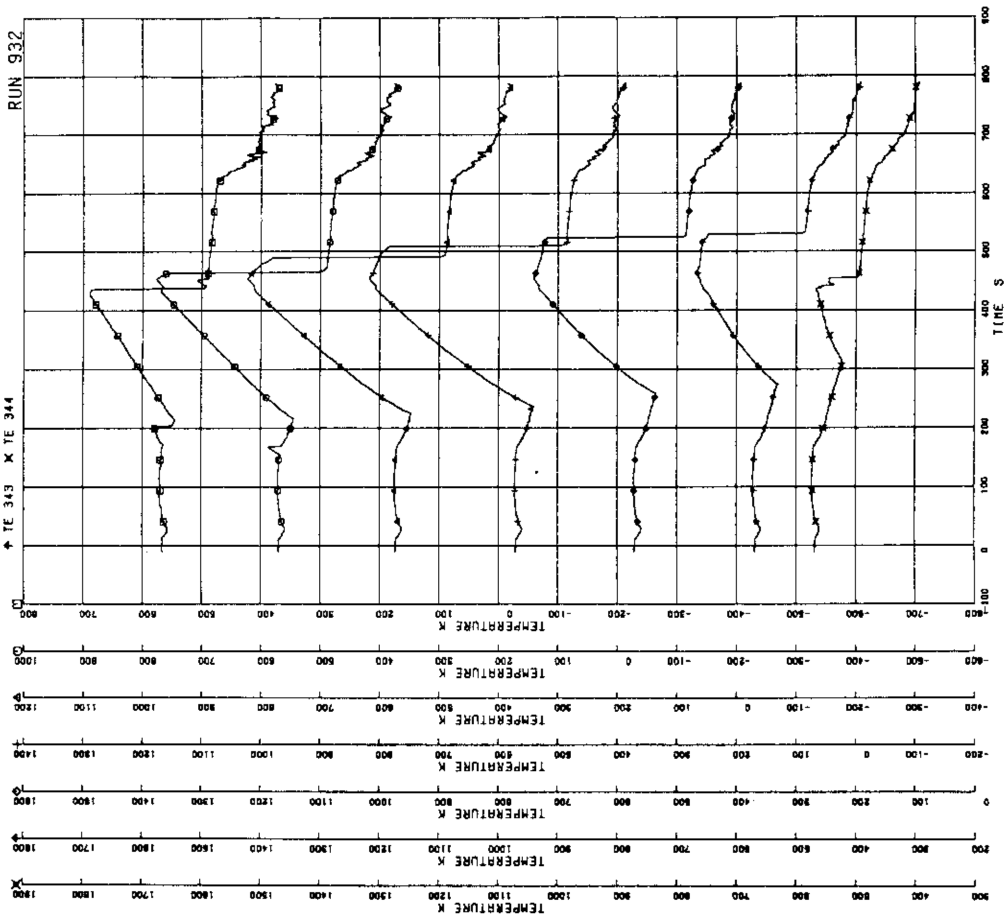


FIG.5.357 SURFACE TEMPERATURES OF FUEL ROD B22

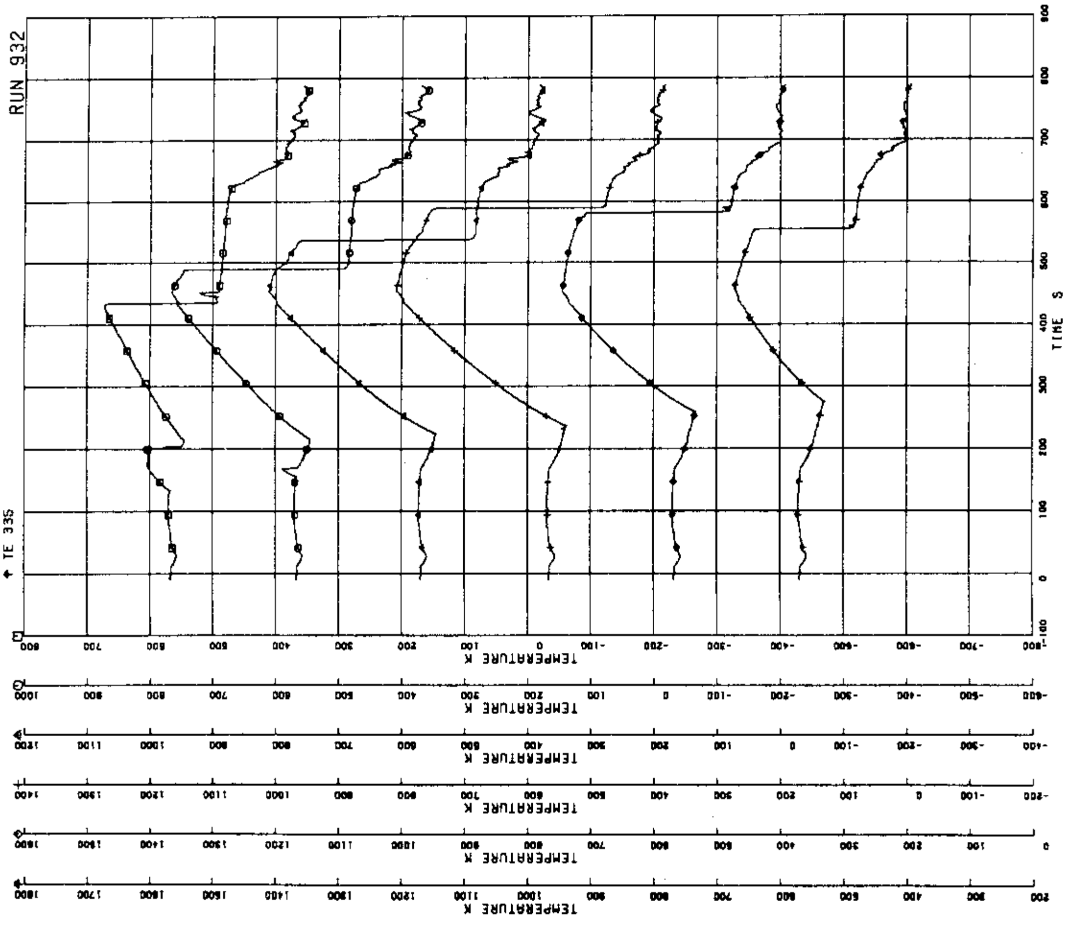


FIG.5.356 SURFACE TEMPERATURES OF FUEL ROD B11

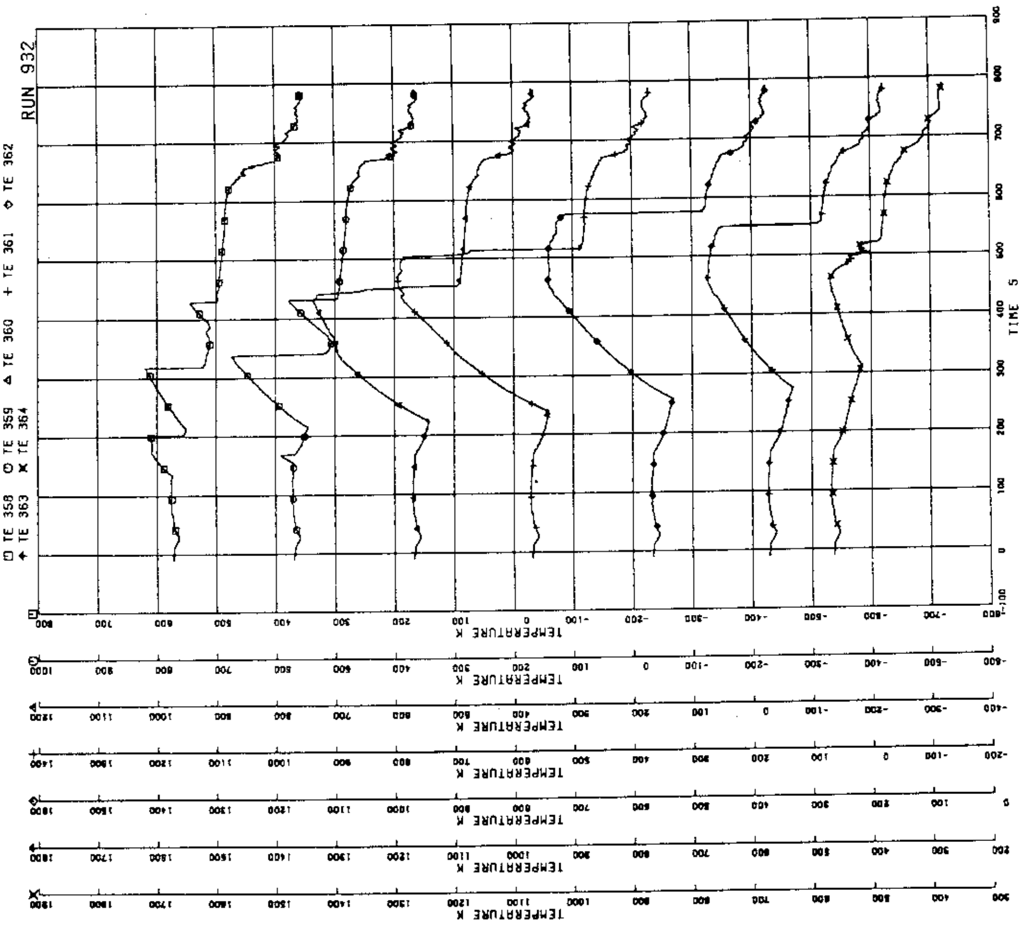


FIG.5.359 SURFACE TEMPERATURES OF FUEL ROD C11

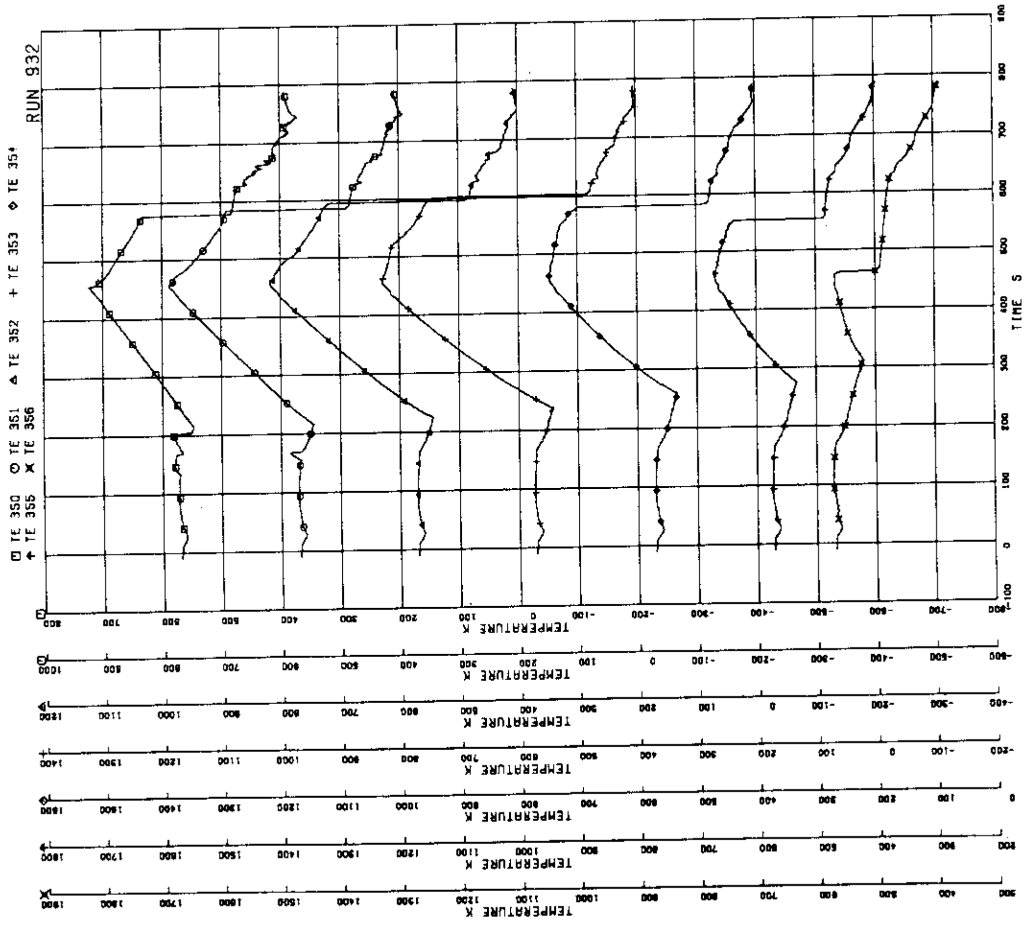


FIG.5.358 SURFACE TEMPERATURES OF FUEL ROD B77

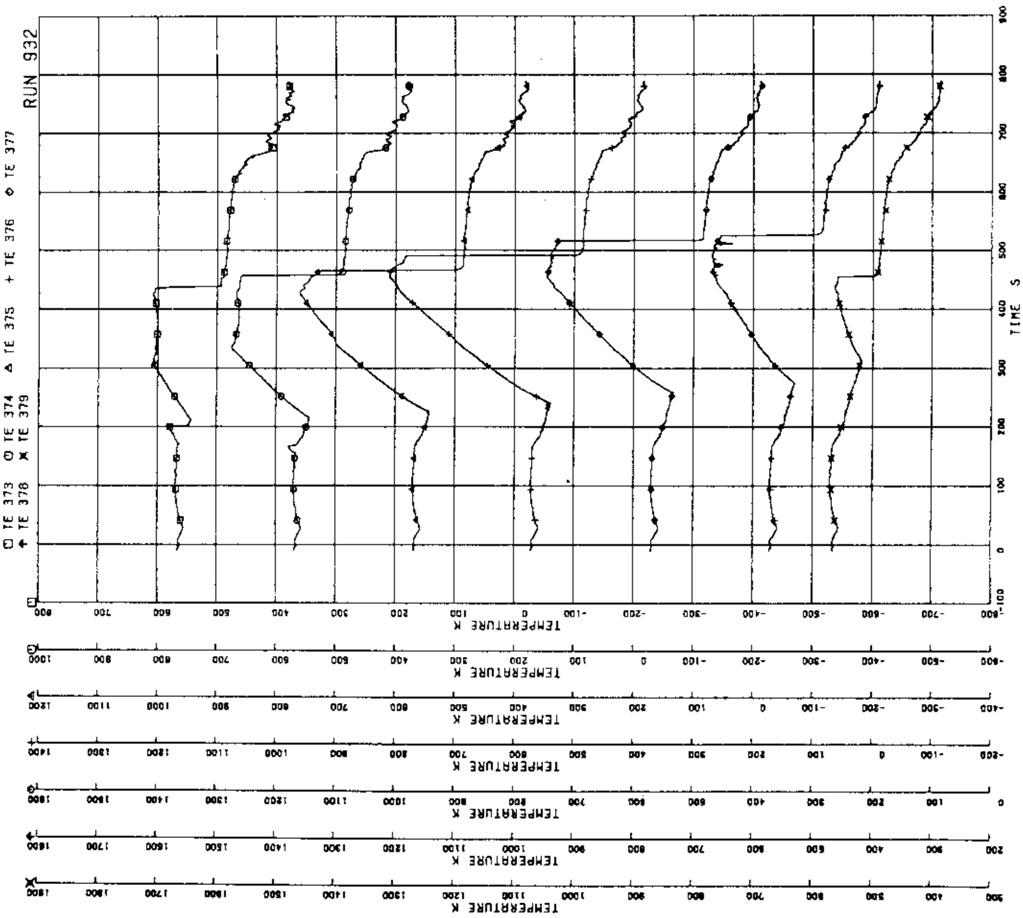


FIG.5.361 SURFACE TEMPERATURES OF FUEL ROD C22

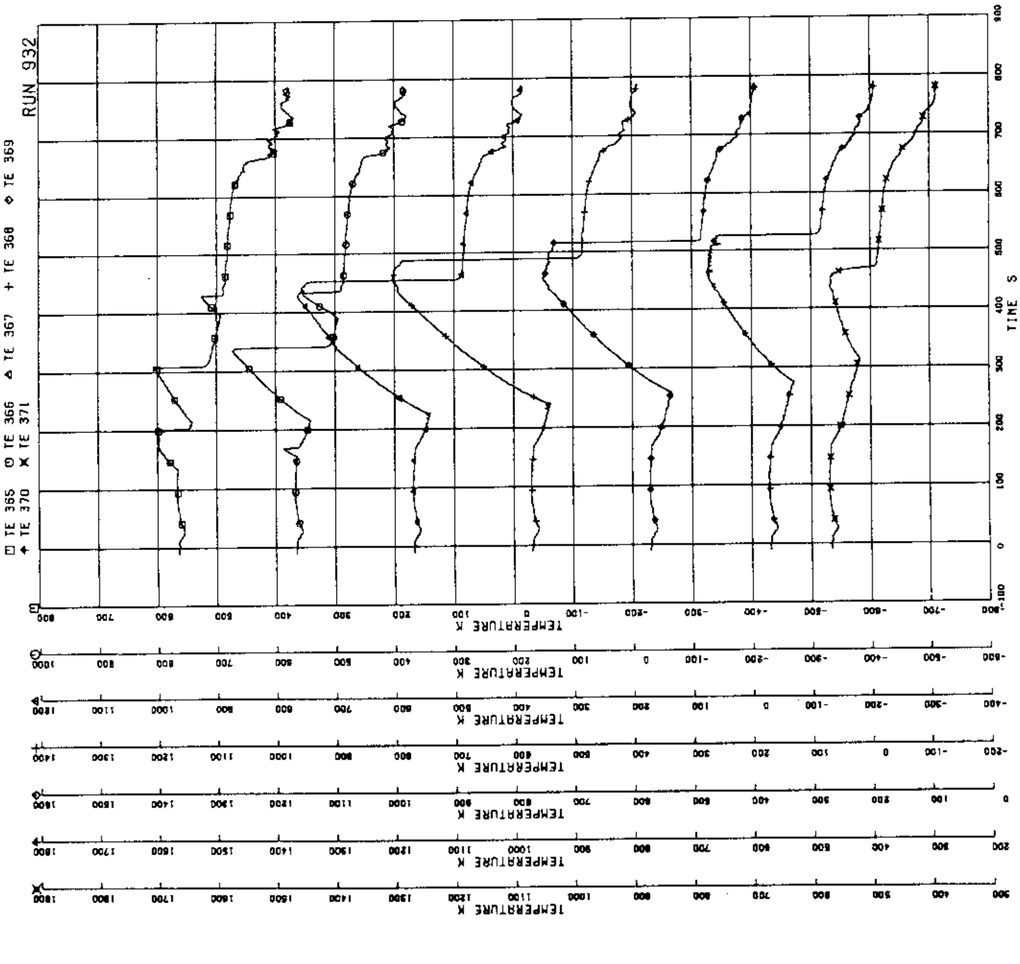


FIG.5.360 SURFACE TEMPERATURES OF FUEL ROD C13

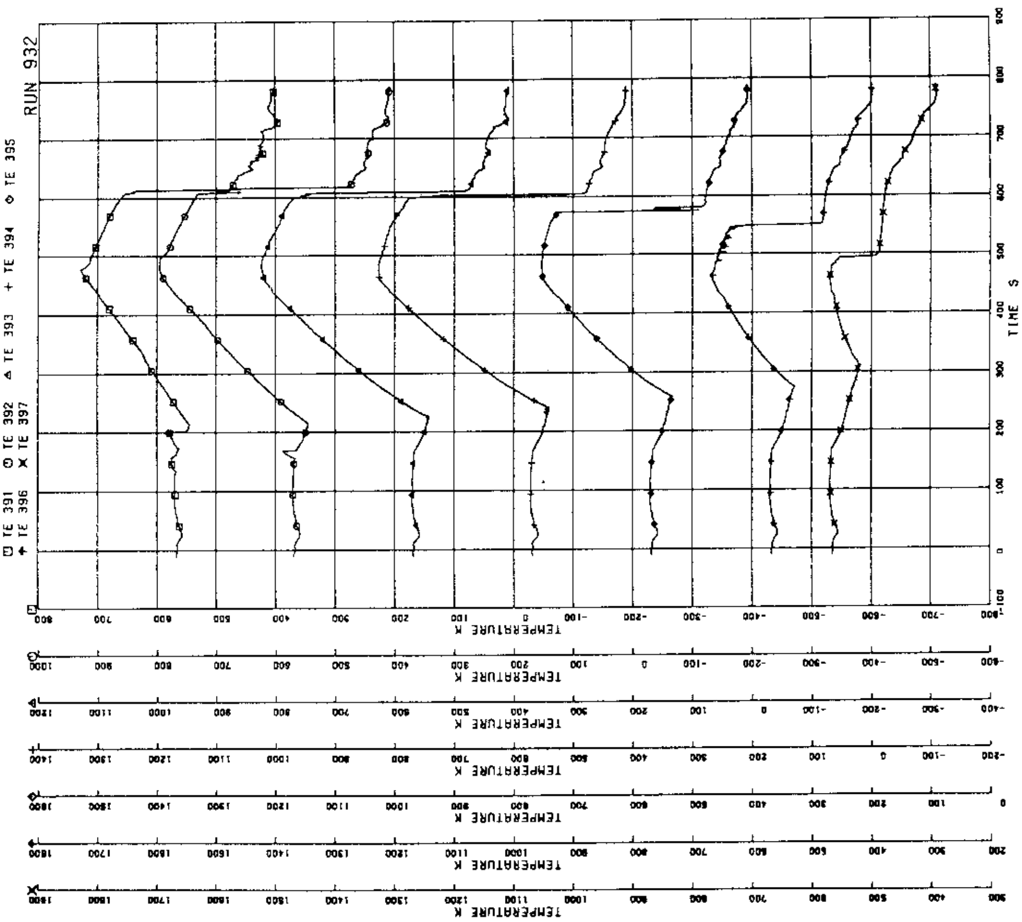


FIG.5-363 SURFACE TEMPERATURES OF FUEL ROD C77

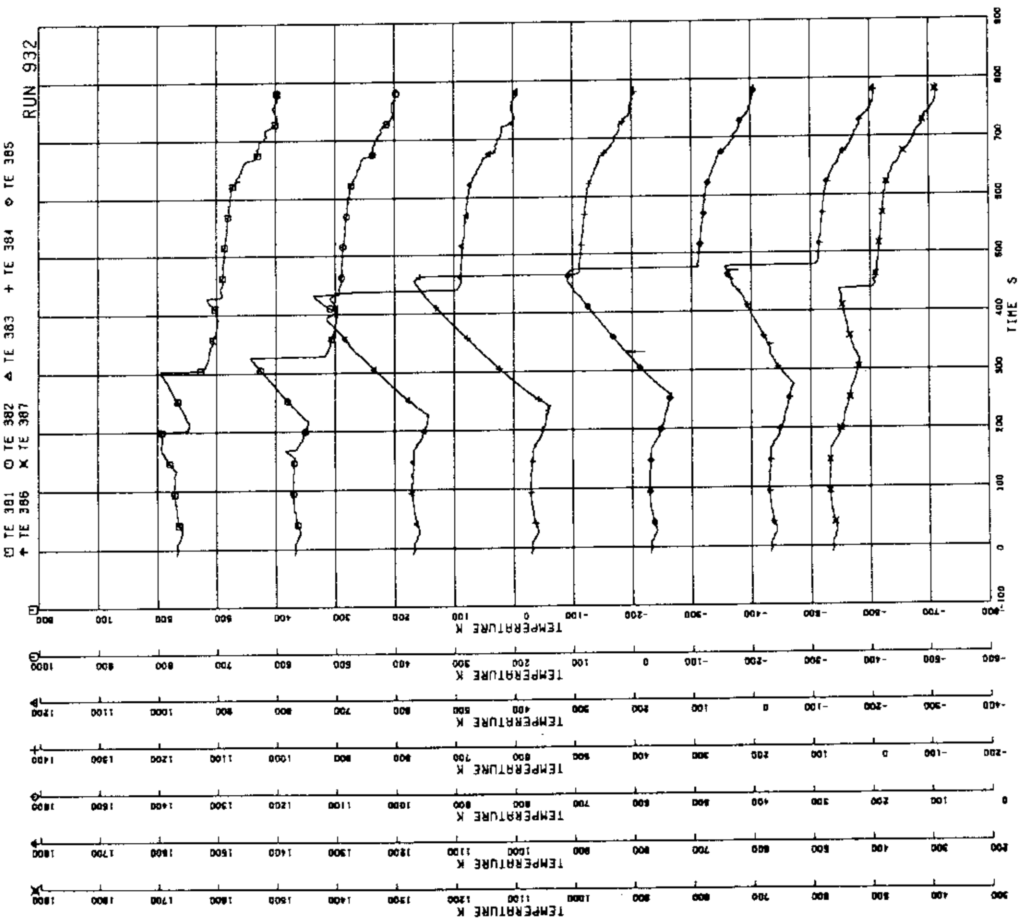


FIG.5-362 SURFACE TEMPERATURES OF FUEL ROD C33

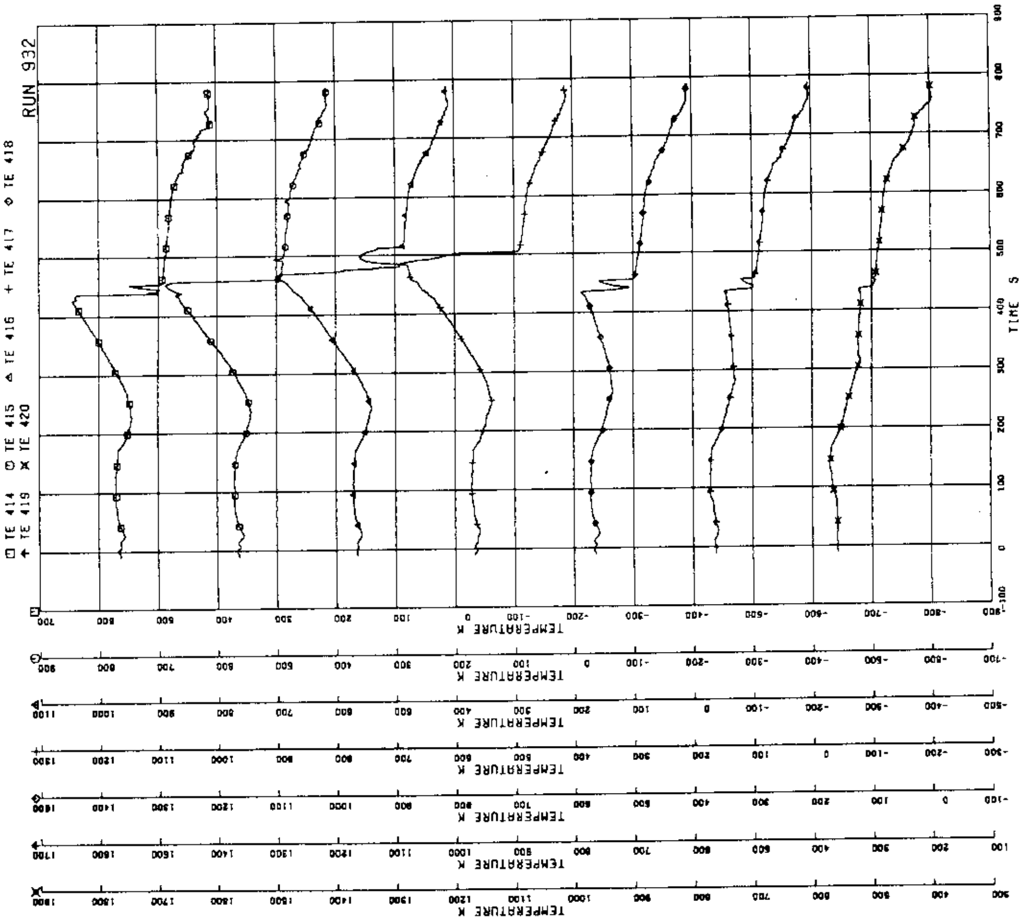


FIG.5.365 SURFACE TEMPERATURES OF WATER ROD SIMULATOR A45

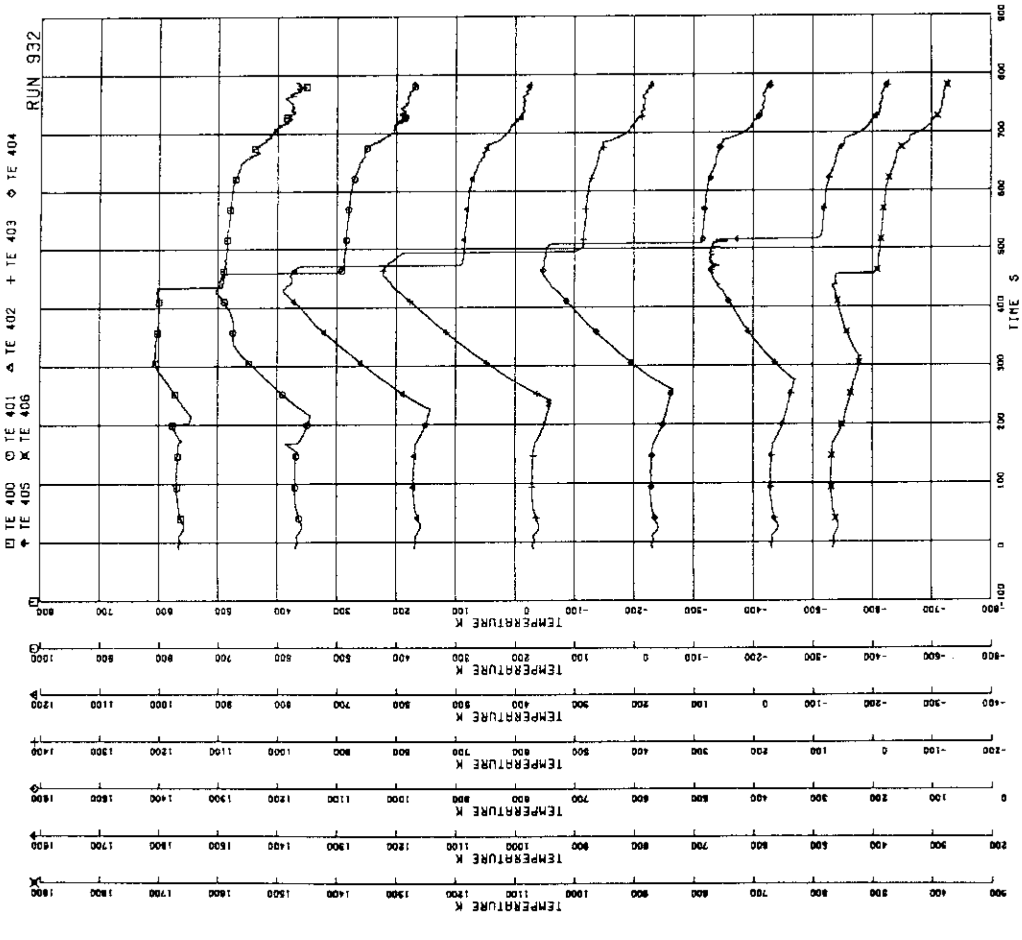


FIG.5.364 SURFACE TEMPERATURES OF FUEL ROD D22

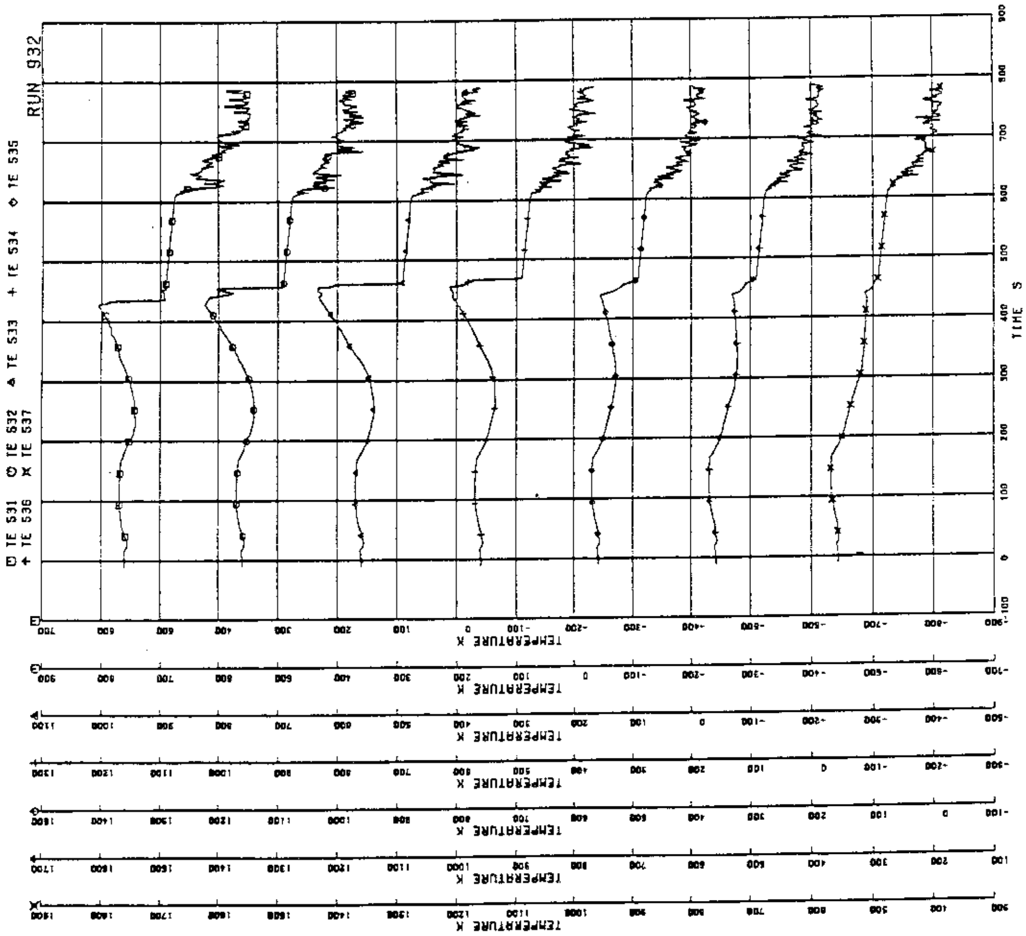


FIG.5.367 OUTER SURFACE TEMPERATURES OF CHANNEL BOX A

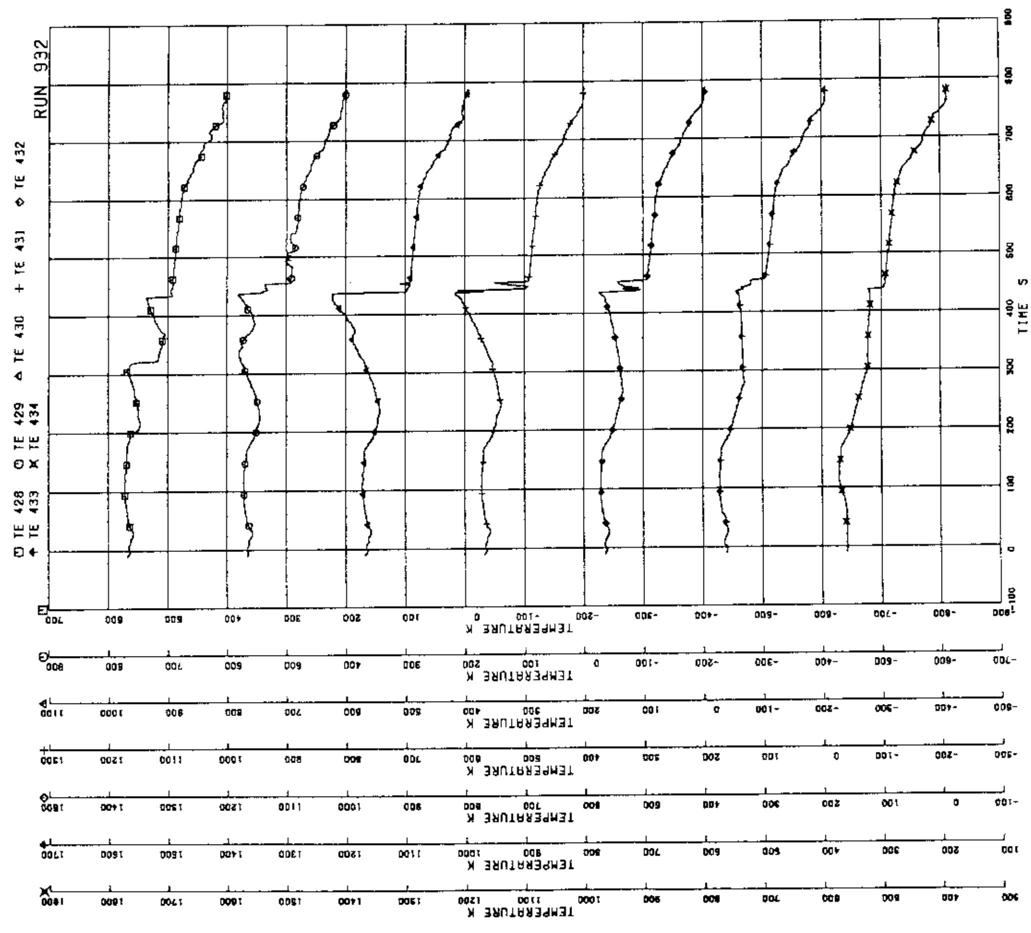


FIG.5.366 SURFACE TEMPERATURES OF WATER ROD SIMULATOR C45

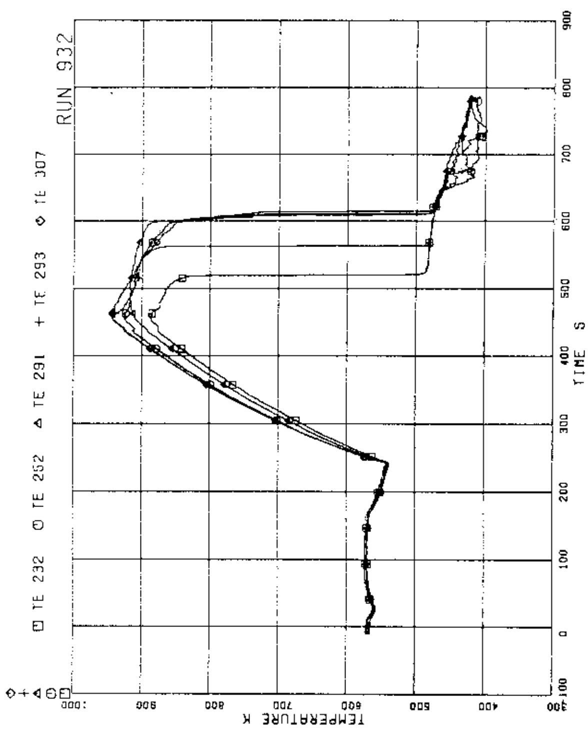


FIG.5.368 SURFACE TEMPERATURES OF FUEL RODS A17,A31,A68,A71,A82 AT POSITION 4

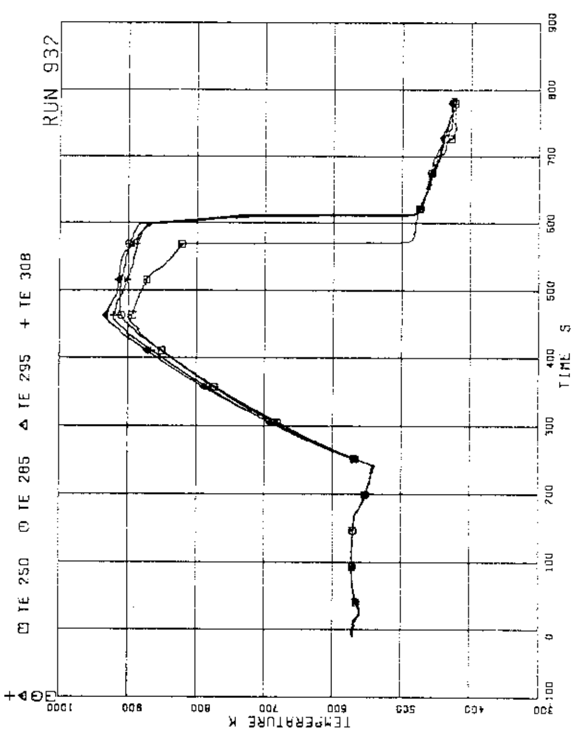


FIG.5.369 SURFACE TEMPERATURES OF FUEL RODS A28,A57,A73,A84 AT POSITION 4

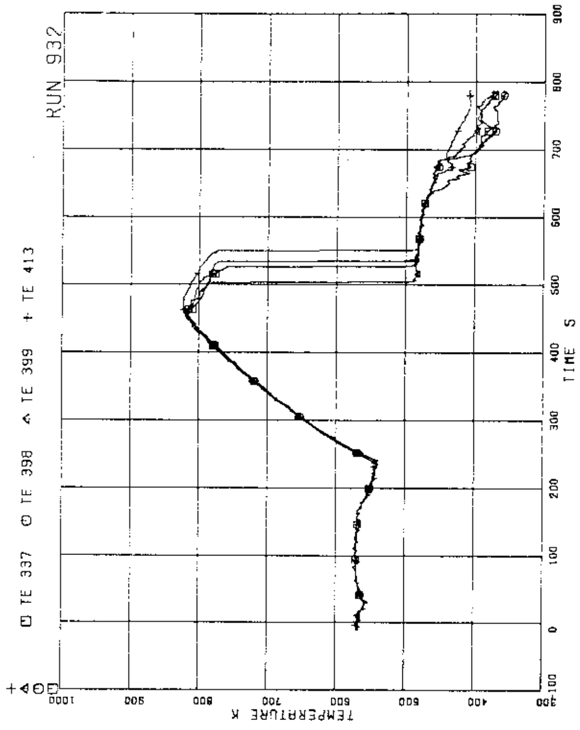


FIG.5.370 SURFACE TEMPERATURES OF FUEL RODS B13,D11,D13,D86' AT POSITION 4

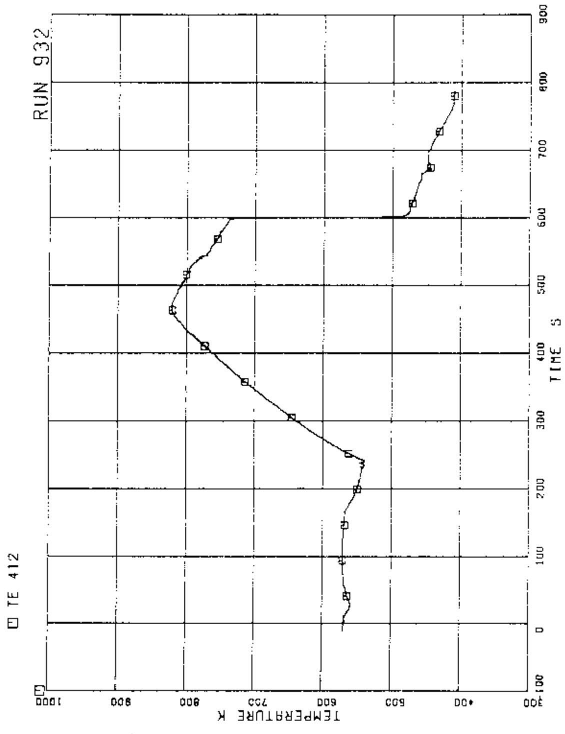


FIG.5.371 SURFACE TEMPERATURE OF FUEL ROD D77 AT POSITION 4

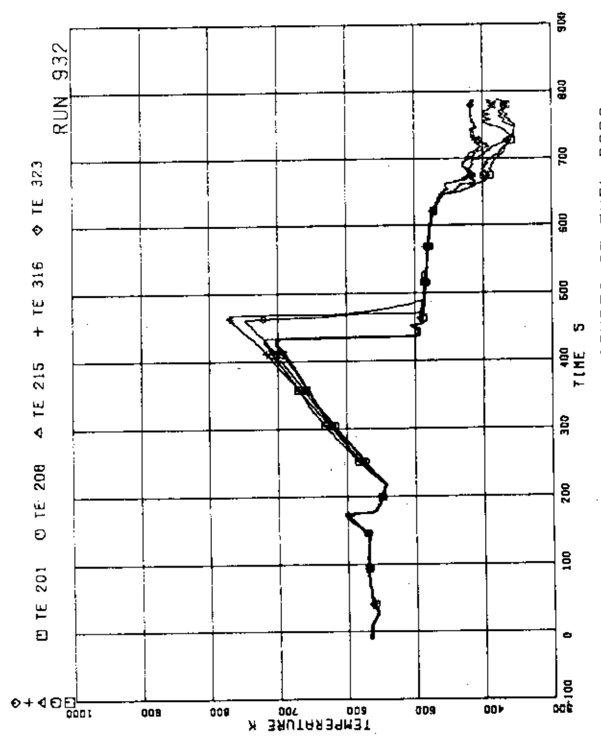


FIG.5.372 SURFACE TEMPERATURES OF FUEL RODS A11,A12,A13,A87,A88 AT POSITION 1

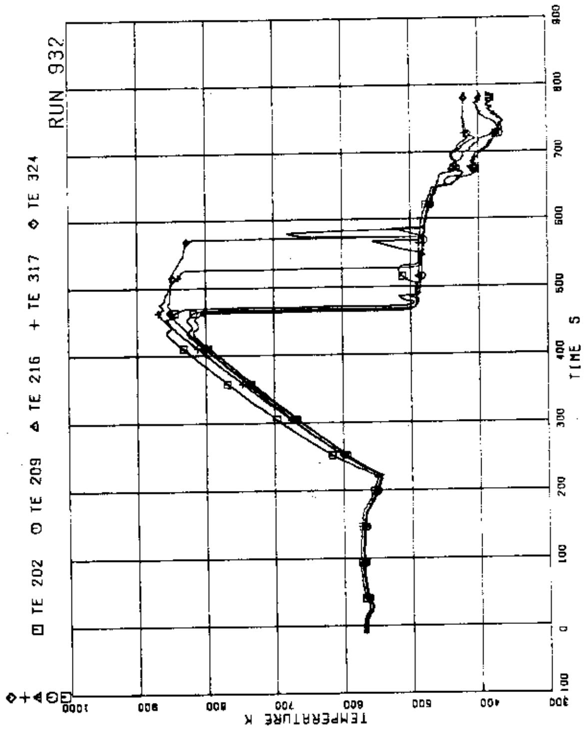


FIG.5.373 SURFACE TEMPERATURES OF FUEL RODS A11,A12,A13,A87,A88 AT POSITION 2

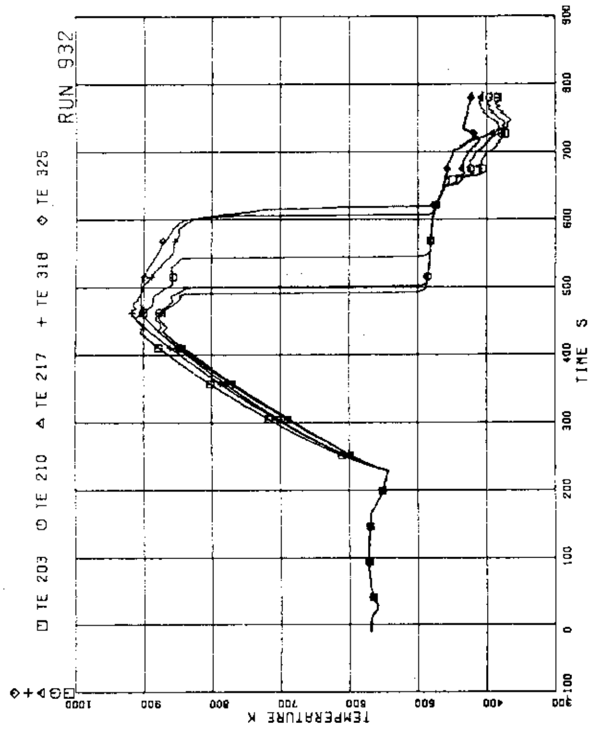


FIG.5.374 SURFACE TEMPERATURES OF FUEL RODS A11,A12,A13,A87,A88 AT POSITION 3

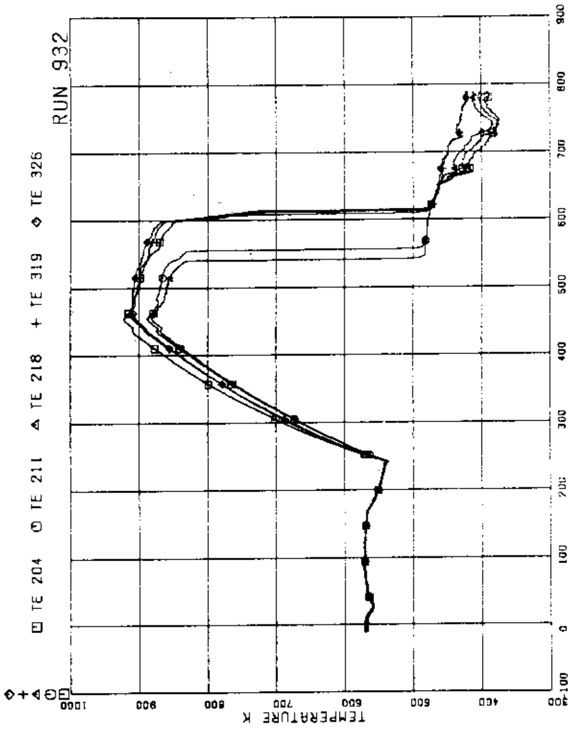


FIG.5.375 SURFACE TEMPERATURES OF FUEL RODS A11,A12,A13,A87,A88 AT POSITION 4

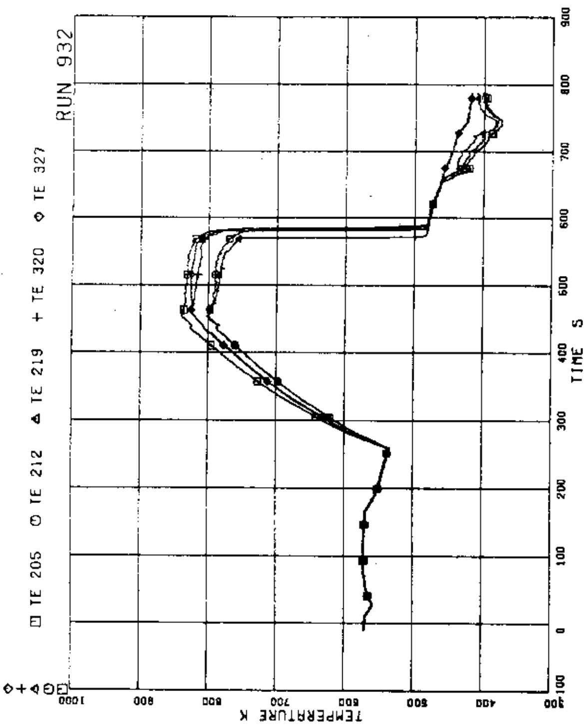


FIG.5.376 SURFACE TEMPERATURES OF FUEL RODS
A11,A12,A13,A87,A88 AT POSITION 5

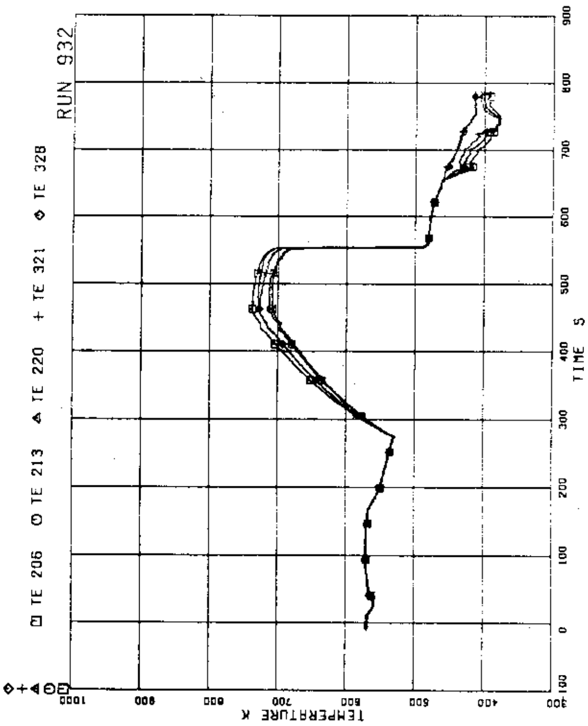


FIG.5.377 SURFACE TEMPERATURES OF FUEL RODS
A11,A12,A13,A87,A88 AT POSITION 6

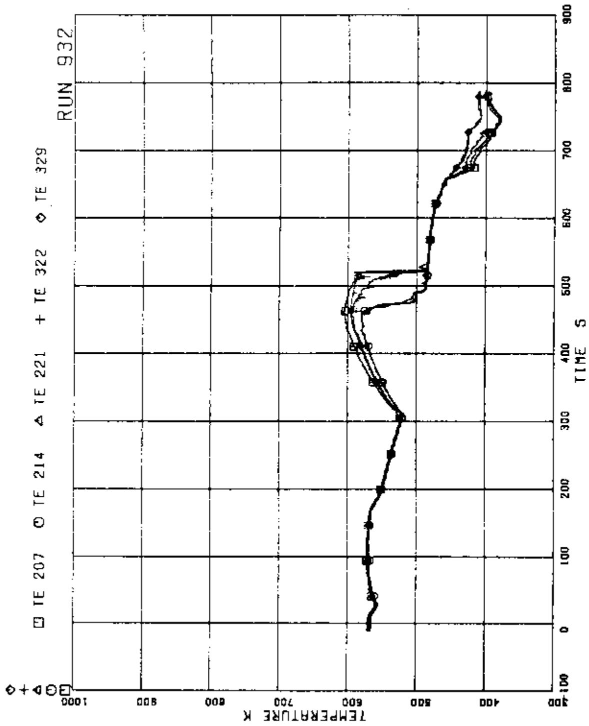


FIG.5.378 SURFACE TEMPERATURES OF FUEL RODS
A11,A12,A13,A87,A88 AT POSITION 7

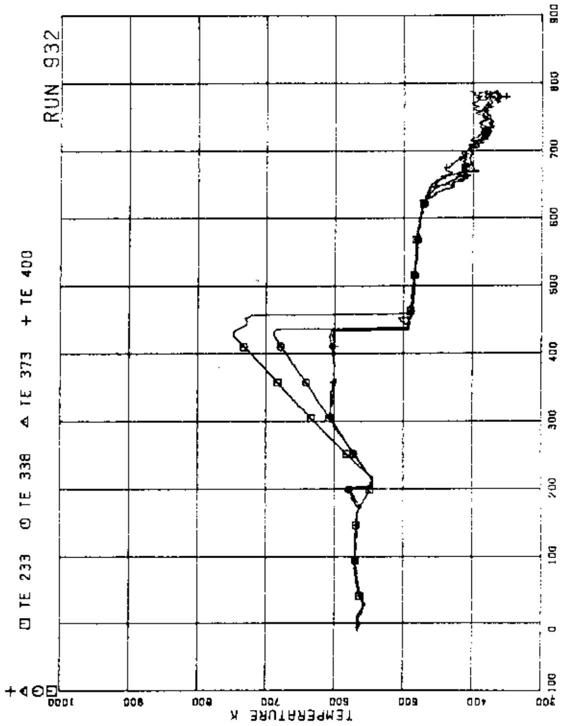


FIG.5.379 SURFACE TEMPERATURES OF FUEL RODS
A22,B22,C22,D22 AT POSITION 1

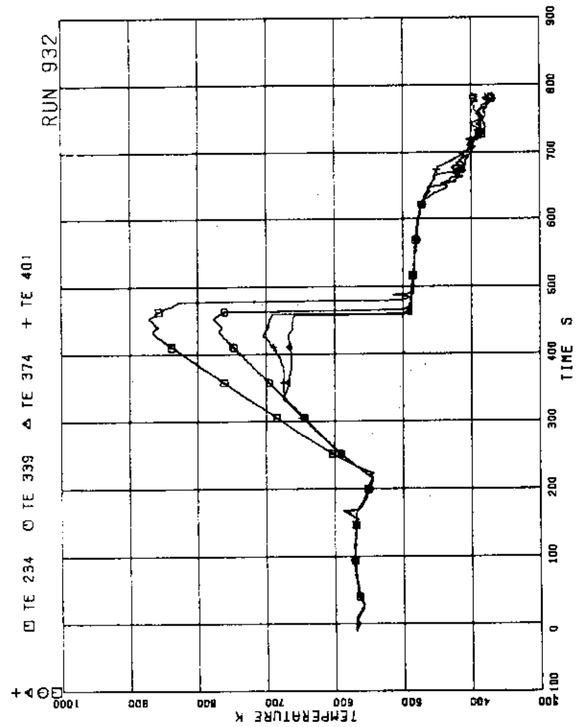


FIG.5.380 SURFACE TEMPERATURES OF FUEL RODS A22,B22,C22,D22 AT POSITION 2

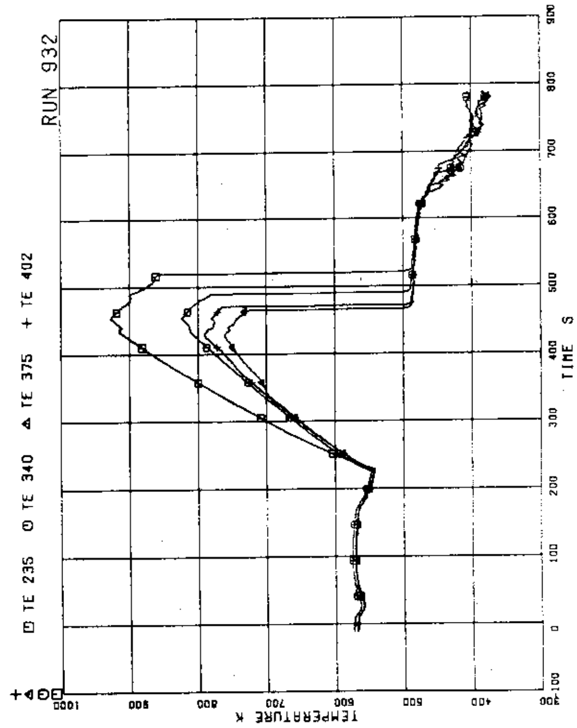


FIG.5.381 SURFACE TEMPERATURES OF FUEL RODS A22,B22,C22,D22 AT POSITION 3

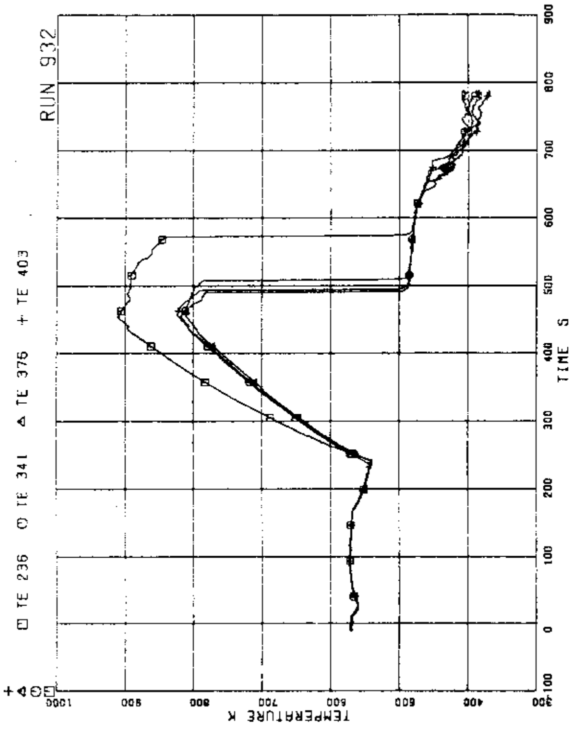


FIG.5.382 SURFACE TEMPERATURES OF FUEL RODS A22,C22,D22 AT POSITION 4

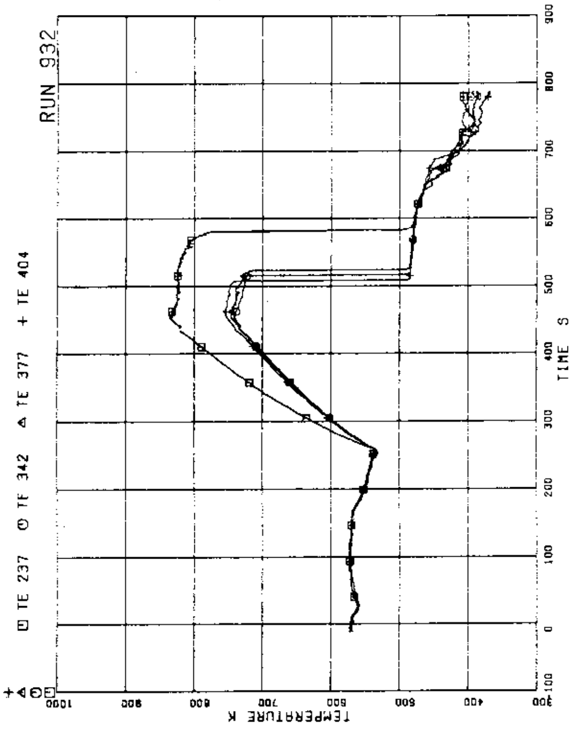


FIG.5.383 SURFACE TEMPERATURES OF FUEL RODS A22,B22,C22,D22 AT POSITION 5

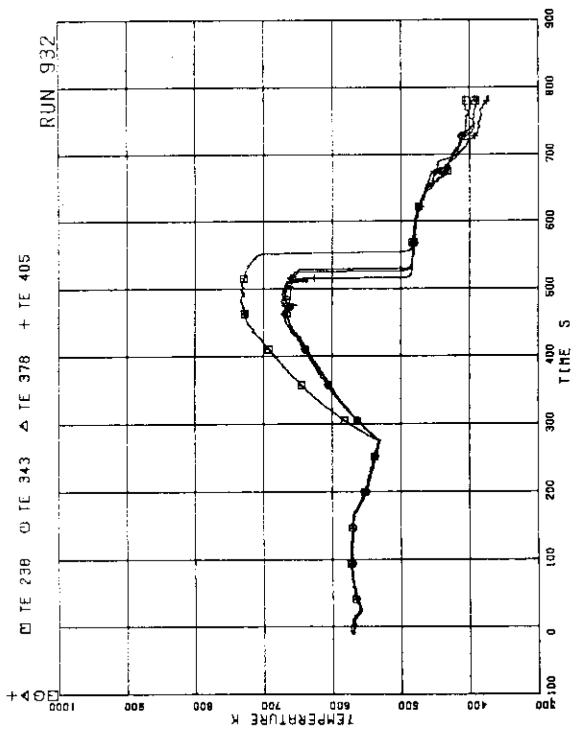


FIG.5.384 SURFACE TEMPERATURES OF FUEL RODS A22,B22,C22,D22 AT POSITION 6

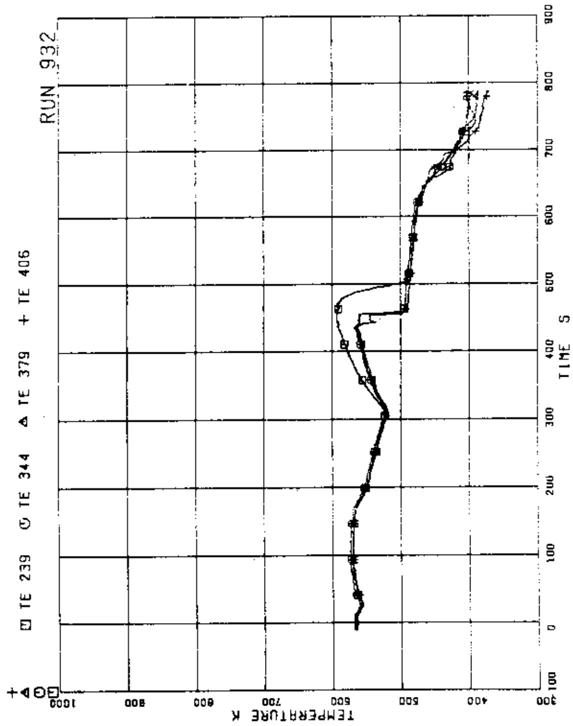


FIG.5.385 SURFACE TEMPERATURES OF FUEL RODS A22,B22,C22,D22 AT POSITION 7

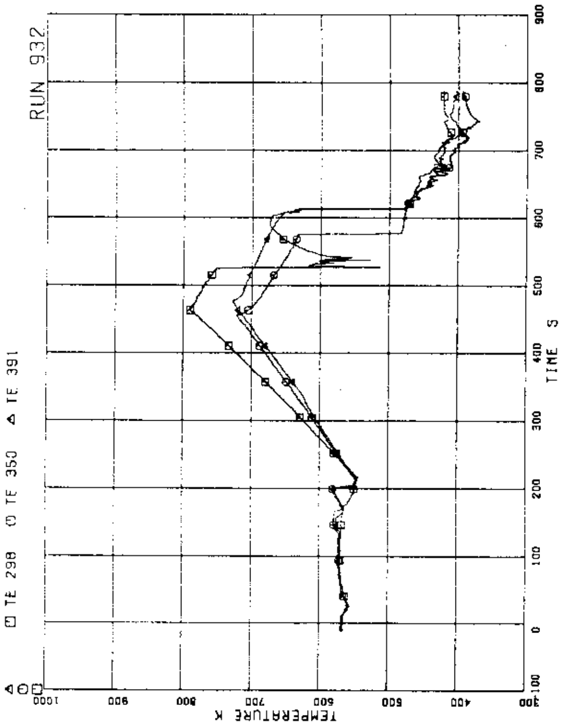


FIG.5.386 SURFACE TEMPERATURES OF FUEL RODS A77,B77,C77 AT POSITION 1

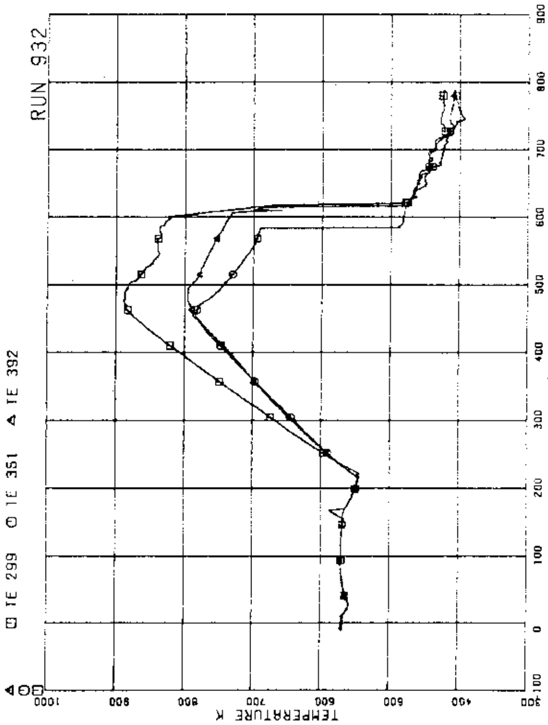


FIG.5.387 SURFACE TEMPERATURES OF FUEL RODS A77,B77,C77 AT POSITION 2

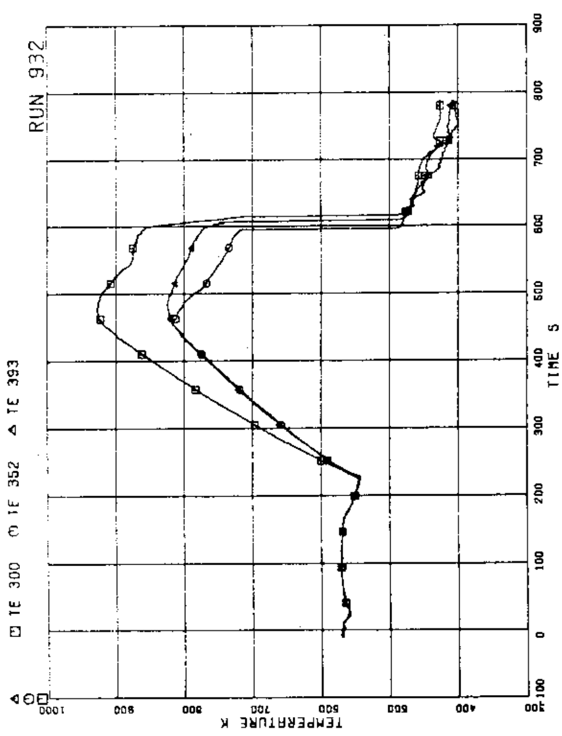


FIG.5.388 SURFACE TEMPERATURES OF FUEL RODS
A77,B77,C77 AT POSITION 3

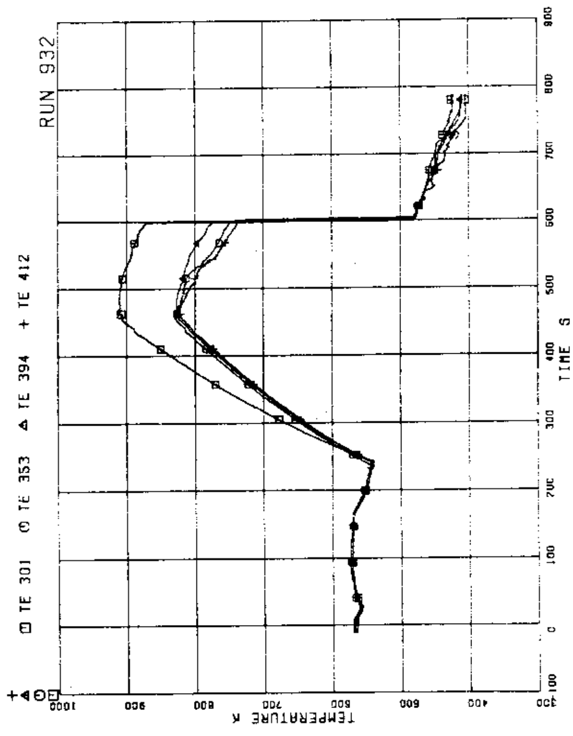


FIG.5.389 SURFACE TEMPERATURES OF FUEL RODS
A77,B77,C77 AT POSITION 4

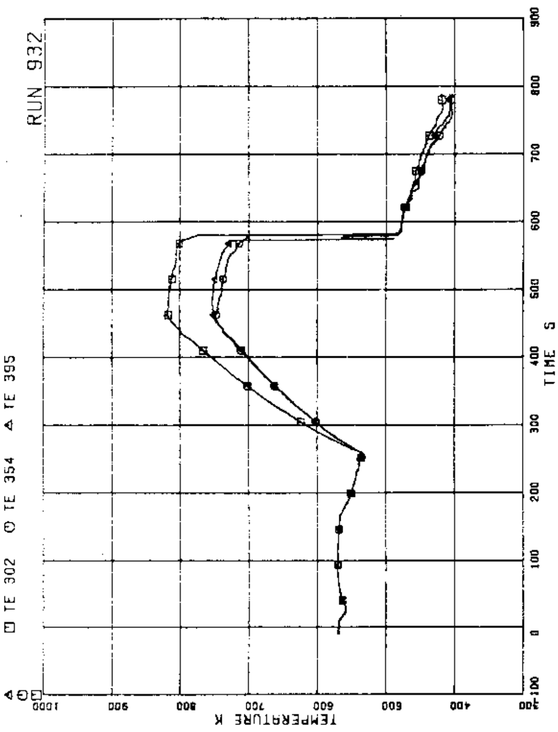


FIG.5.390 SURFACE TEMPERATURES OF FUEL RODS
A77,B77,C77 AT POSITION 5

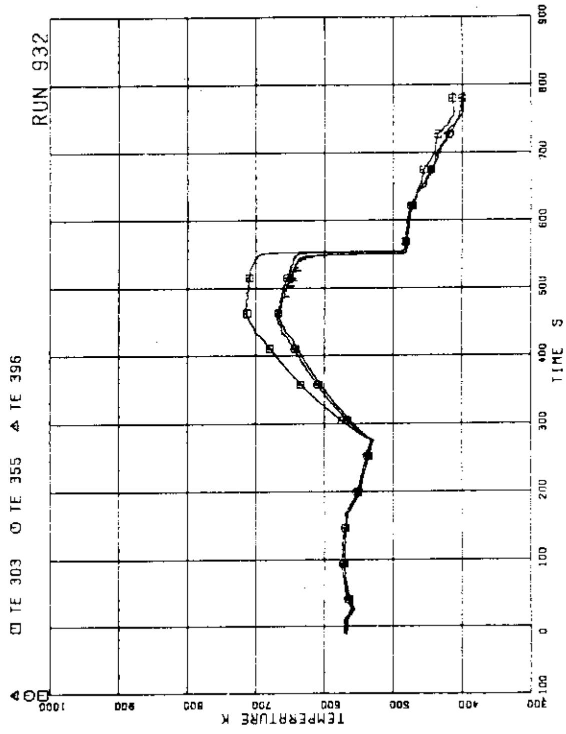


FIG.5.391 SURFACE TEMPERATURES OF FUEL RODS
A77,B77,C77 AT POSITION 6

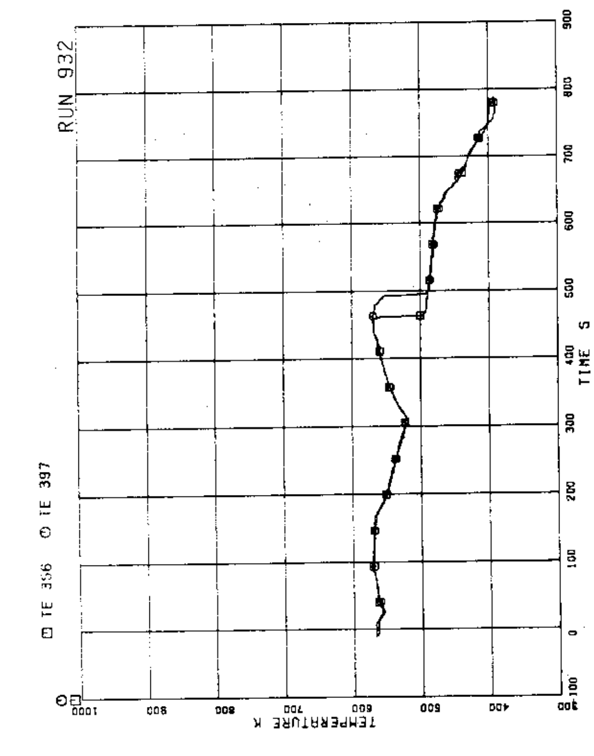


FIG.5.392 SURFACE TEMPERATURES OF FUEL RODS B77,C77 RODS AT POSITION 7

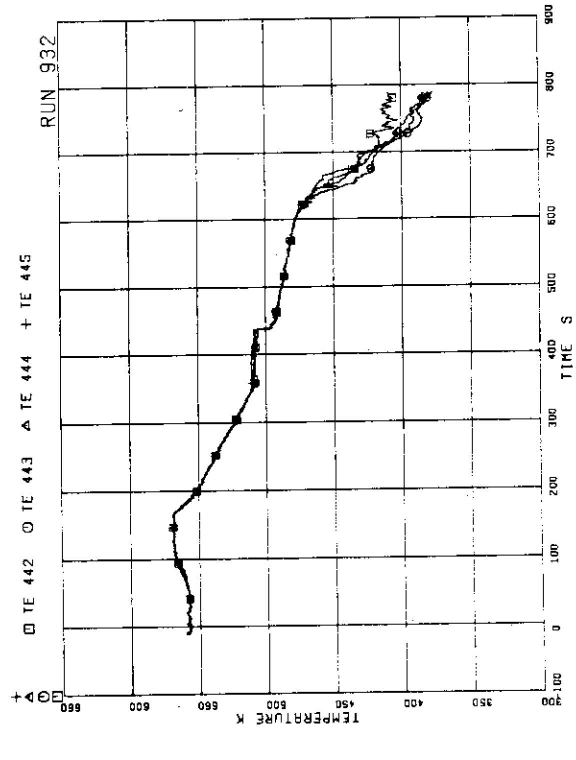


FIG.5.393 FLUID TEMPERATURES AT CHANNEL INLET

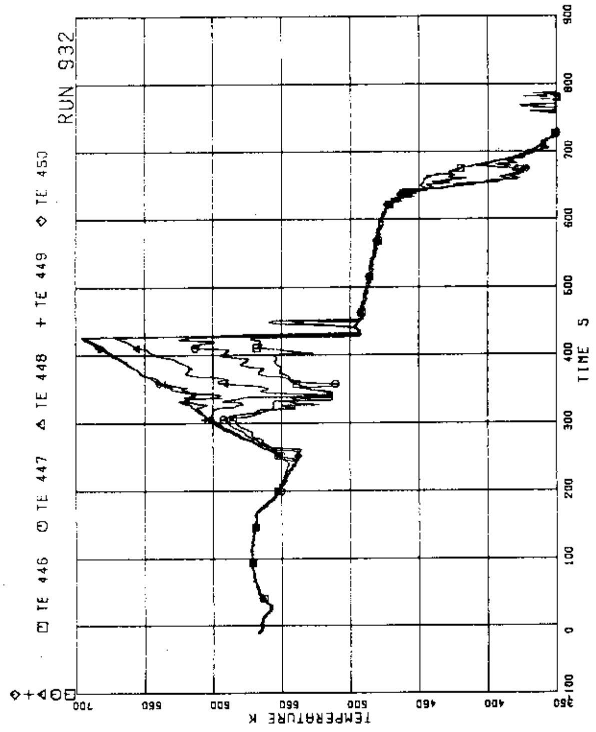


FIG.5.394 FLUID TEMPERATURES AT CHANNEL A OUTLET

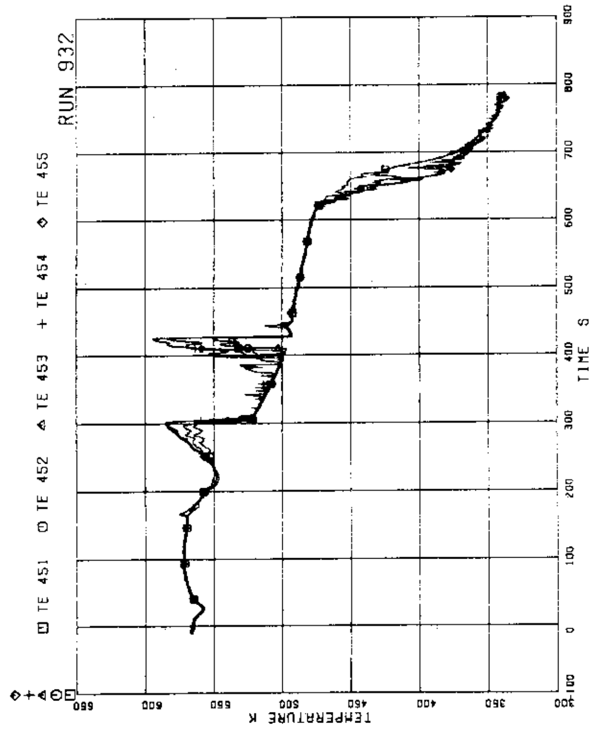


FIG.5.395 FLUID TEMPERATURES AT CHANNEL C OUTLET

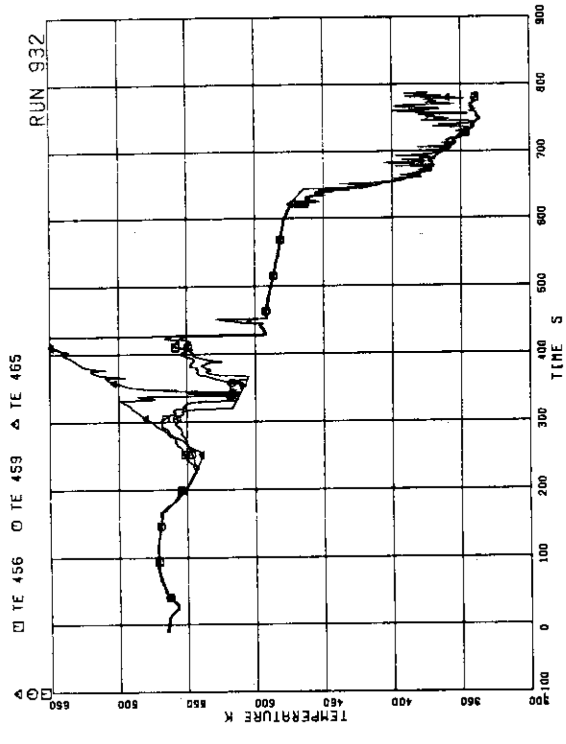


FIG.5.396 FLUID TEMPERATURES ABOVE UTP OF CHANNEL A. OPENINGS 1.4.10

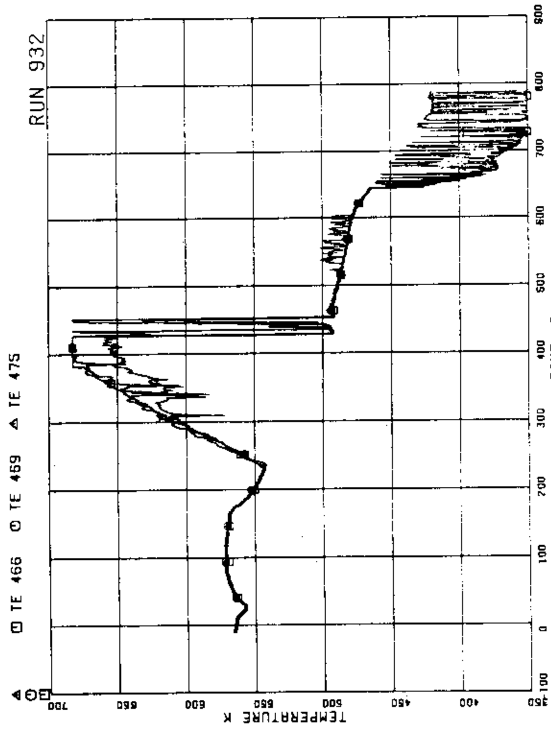


FIG.5.397 FLUID TEMPERATURES BELOW UTP OF CHANNEL A. OPENINGS 1.4.10

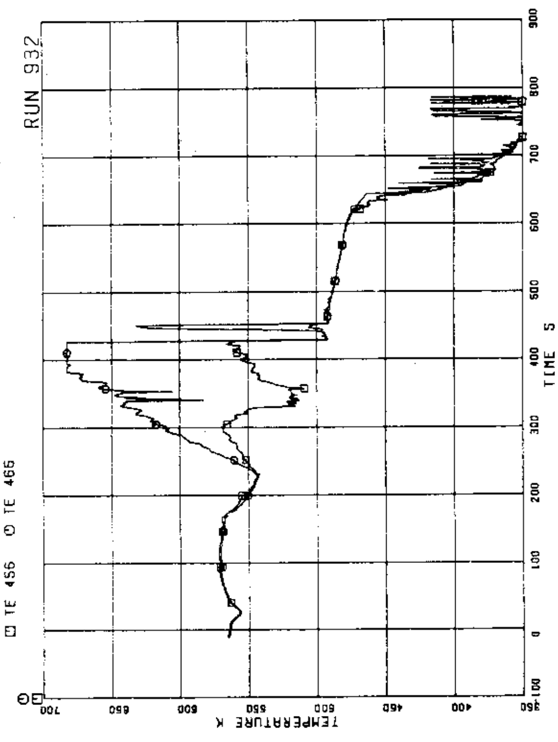


FIG.5.398 FLUID TEMPERATURES AT UTP IN CHANNEL A. OPENING 1

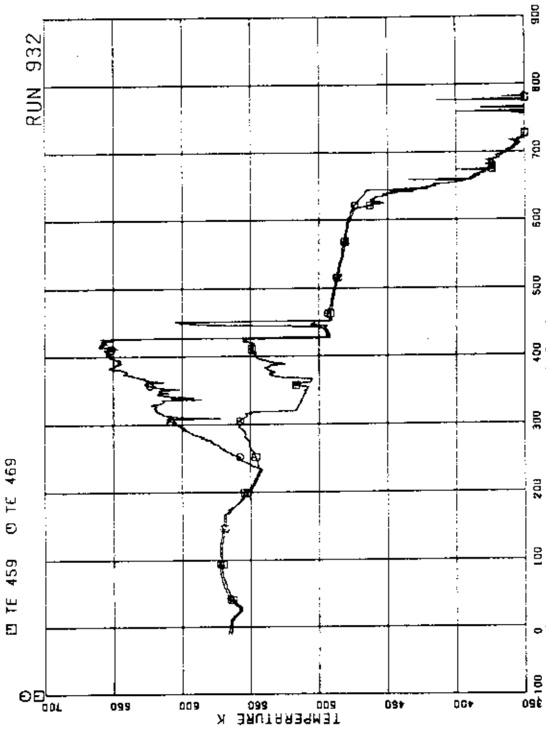


FIG.5.399 FLUID TEMPERATURES AT UTP IN CHANNEL A. OPENING 4

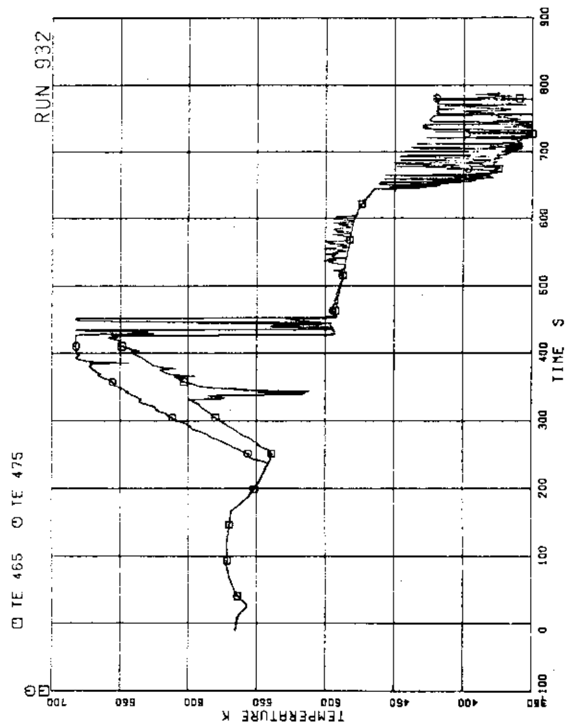


FIG.5.400 FLUID TEMPERATURES AT UTP IN CHANNEL A. OPENING 10

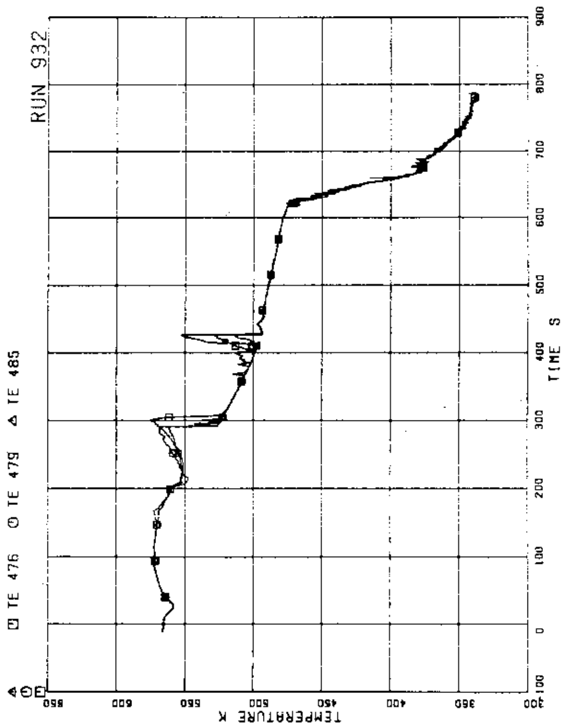


FIG.5.401 FLUID TEMPERATURES ABOVE UTP OF CHANNEL C. OPENINGS 1.4.10

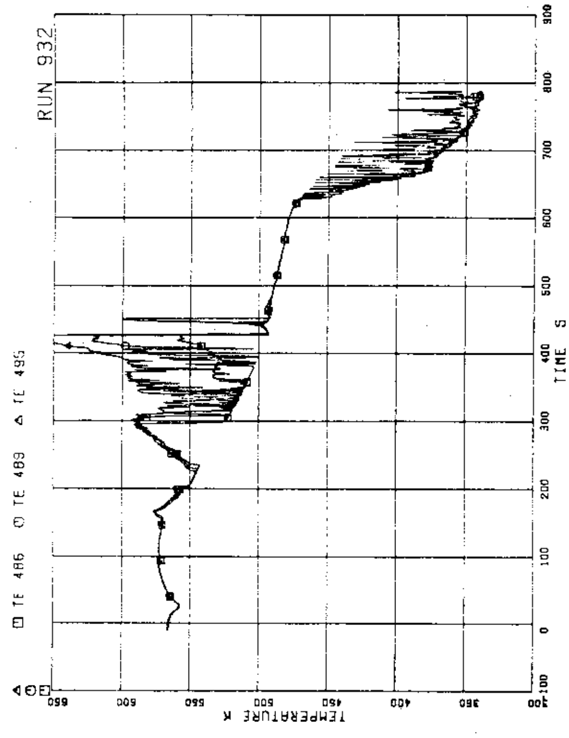


FIG.5.402 FLUID TEMPERATURES BELOW UTP OF CHANNEL C. OPENINGS 1.4.10

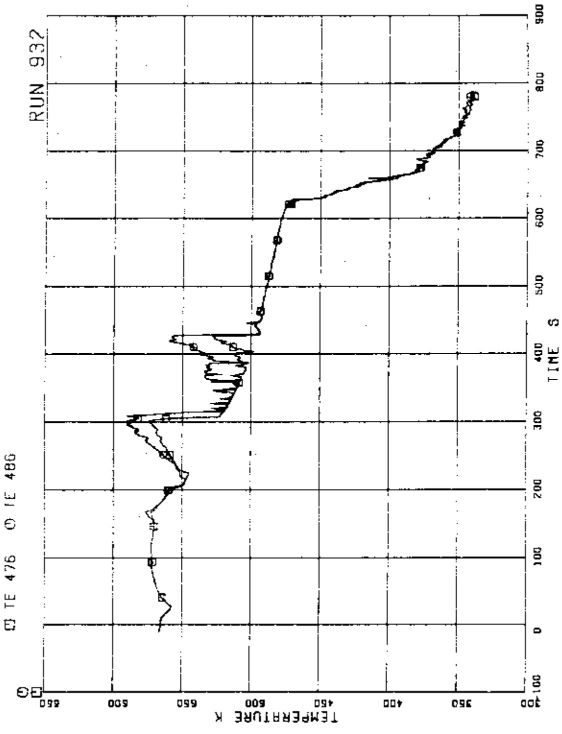


FIG.5.403 FLUID TEMPERATURES AT UTP IN CHANNEL C. OPENINGS 1

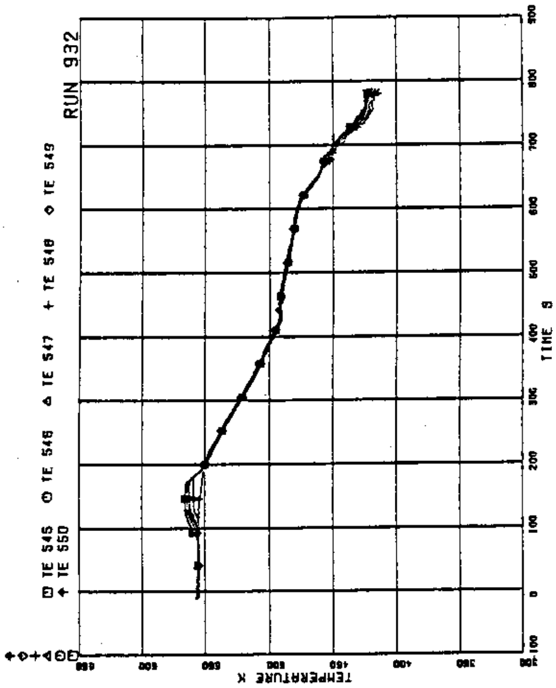


FIG.5.406 FLUID TEMPERATURES IN LOWER PLENUM. CENTER

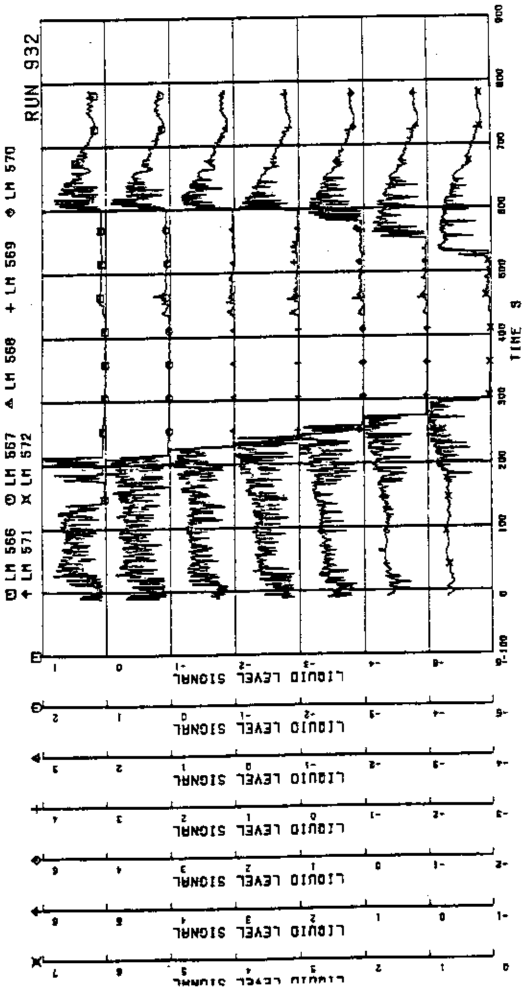


FIG.5.407 LIQUID LEVEL SIGNALS IN CHANNEL BOX A. LOCATION A2

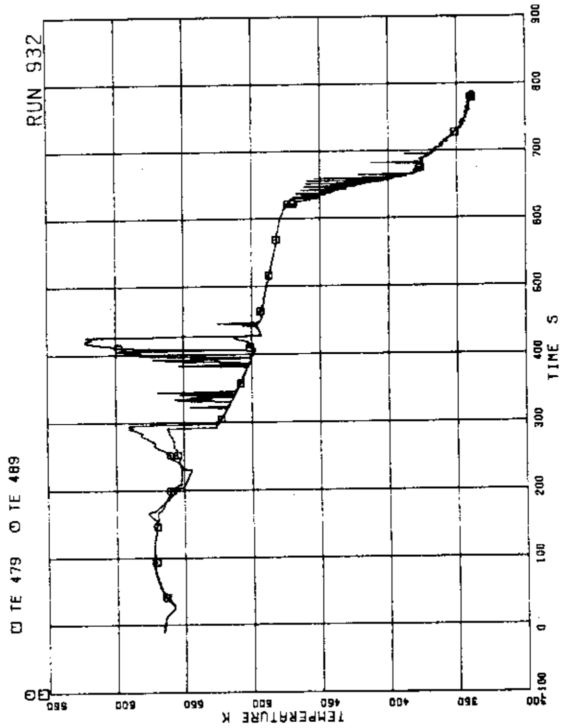


FIG.5.404 FLUID TEMPERATURES AT UTP IN CHANNEL C. OPENING 4

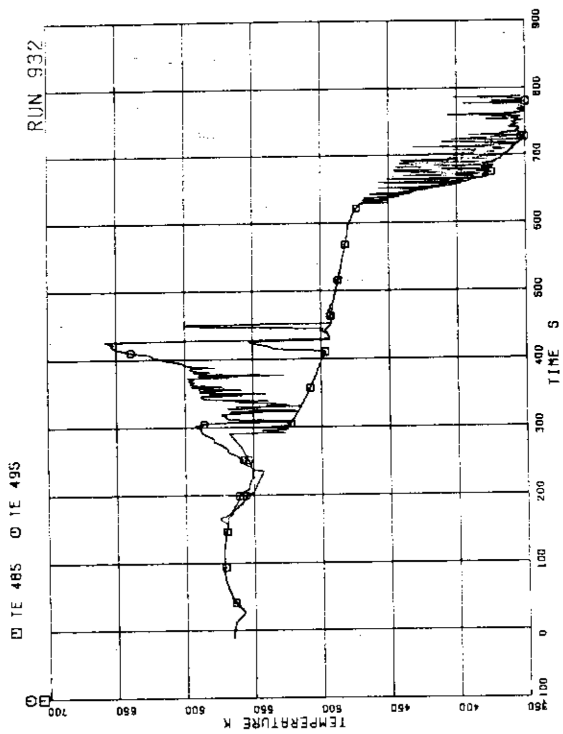


FIG.5.405 FLUID TEMPERATURES AT UTP IN CHANNEL C. OPENING 10

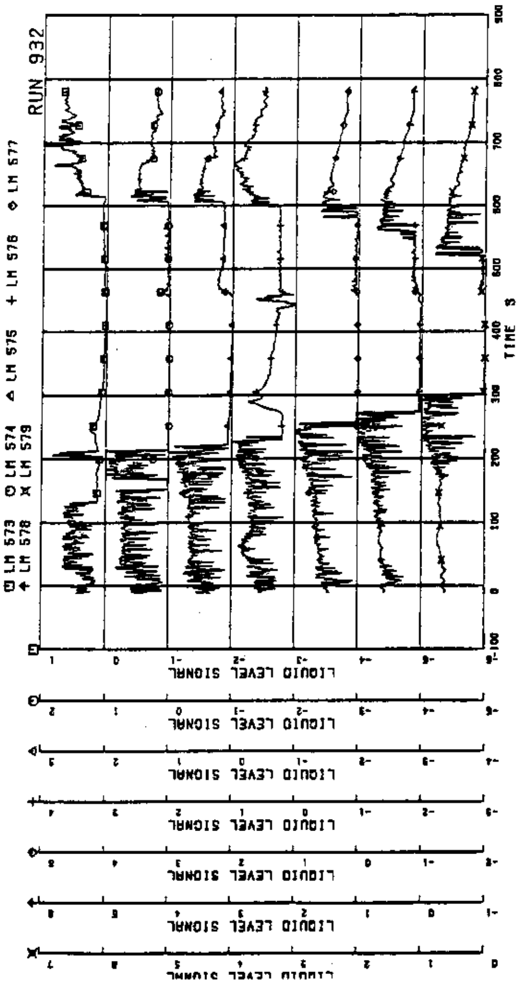


FIG.5.408 LIQUID LEVEL SIGNALS IN CHANNEL BOX B

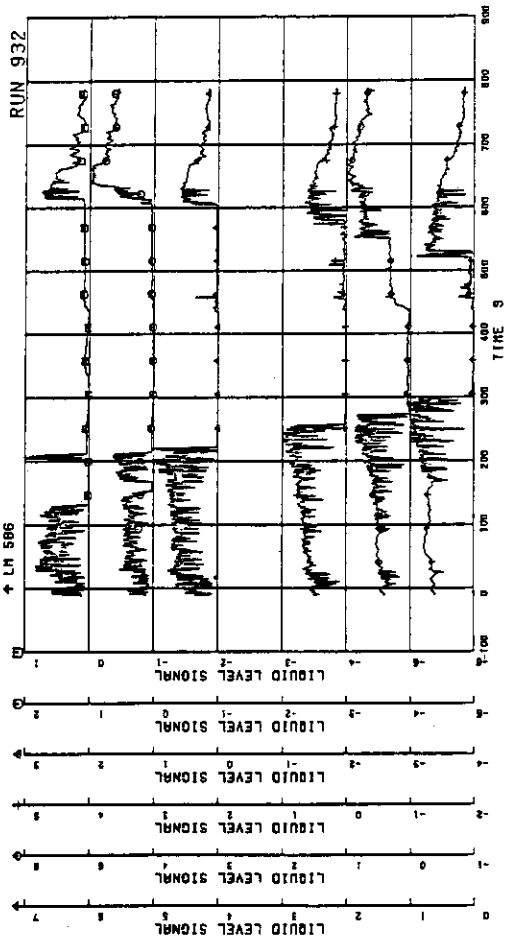


FIG.5.409 LIQUID LEVEL SIGNALS IN CHANNEL BOX C

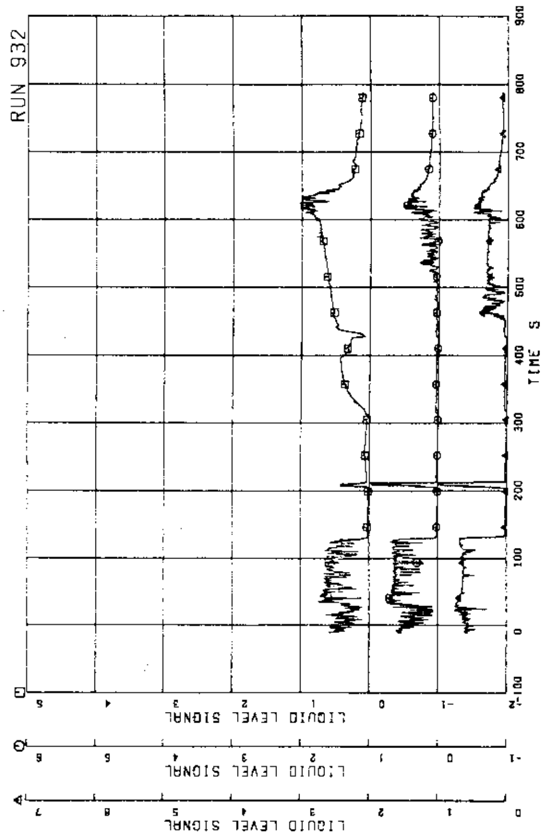


FIG.5.410 LIQUID LEVEL SIGNALS IN CHANNEL A OUTLET LOCATION A2

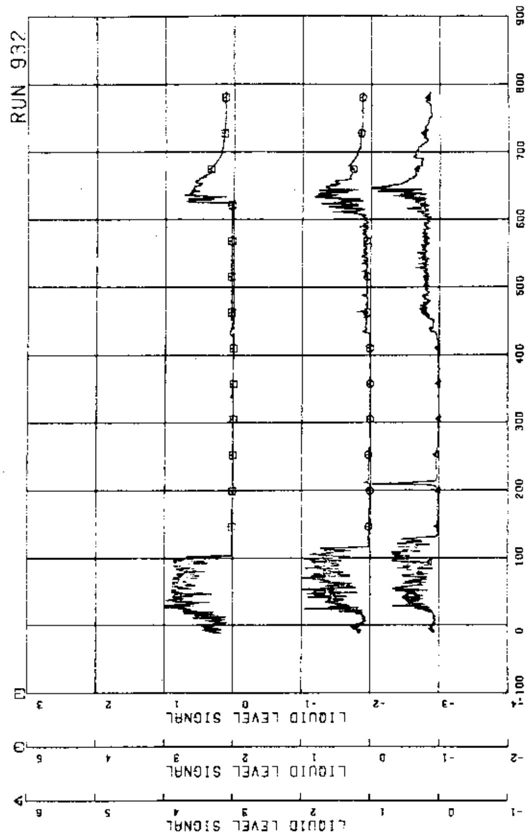


FIG.5.411 LIQUID LEVEL SIGNALS IN CHANNEL A OUTLET CENTER

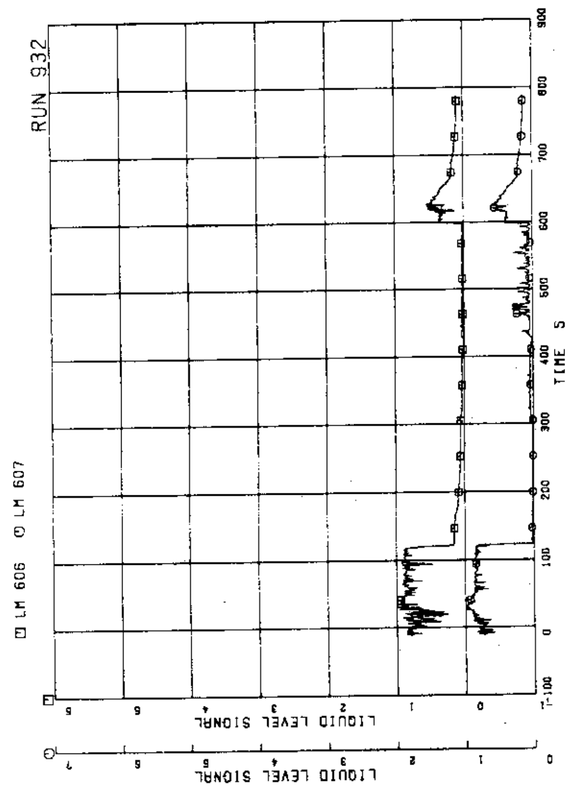


FIG.5.412 LIQUID LEVEL SIGNALS IN CHANNEL C OUTLET LOCATION C2

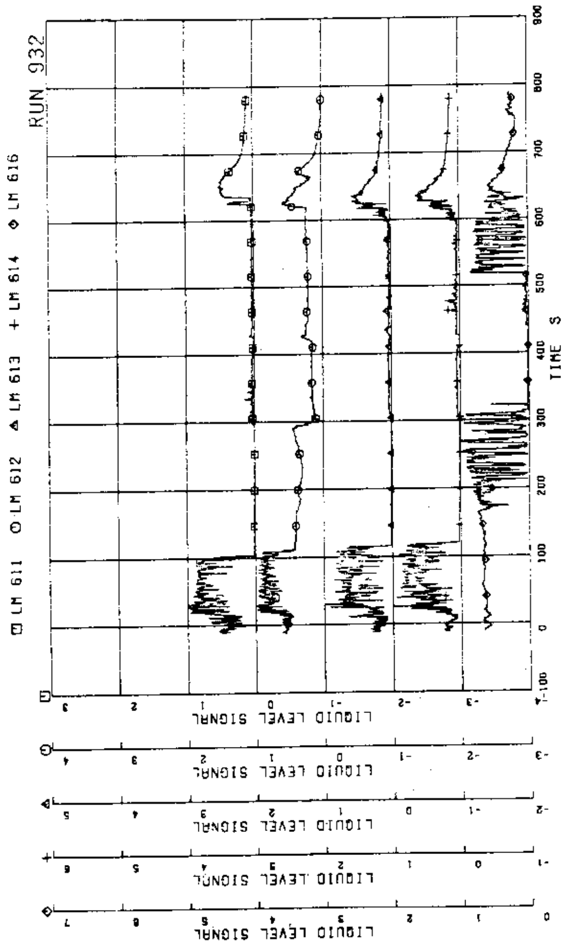


FIG.5.413 LIQUID LEVEL SIGNALS IN CHANNEL C OUTLET CENTER

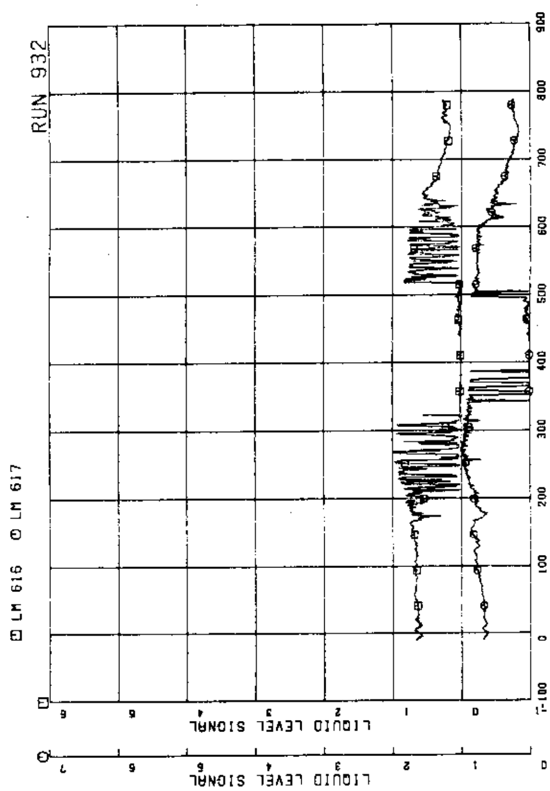


FIG.5.414 LIQUID LEVEL SIGNALS IN CHANNEL A INLET

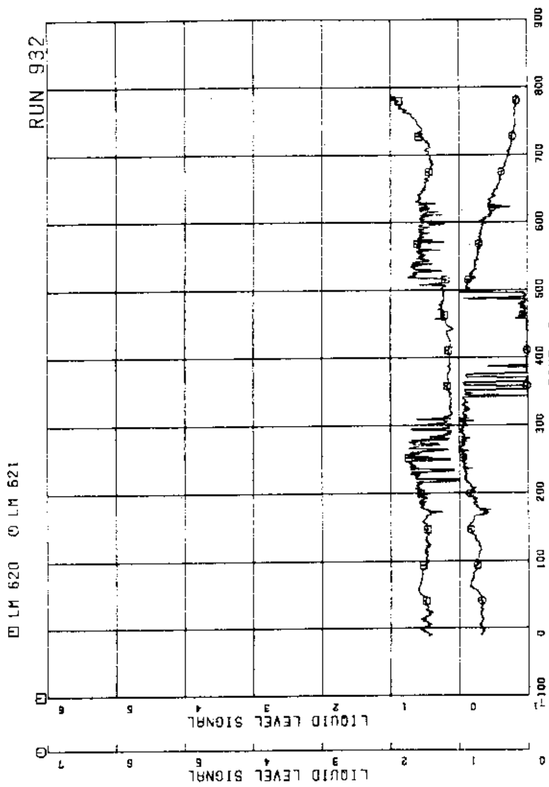


FIG.5.415 LIQUID LEVEL SIGNALS IN CHANNEL C INLET

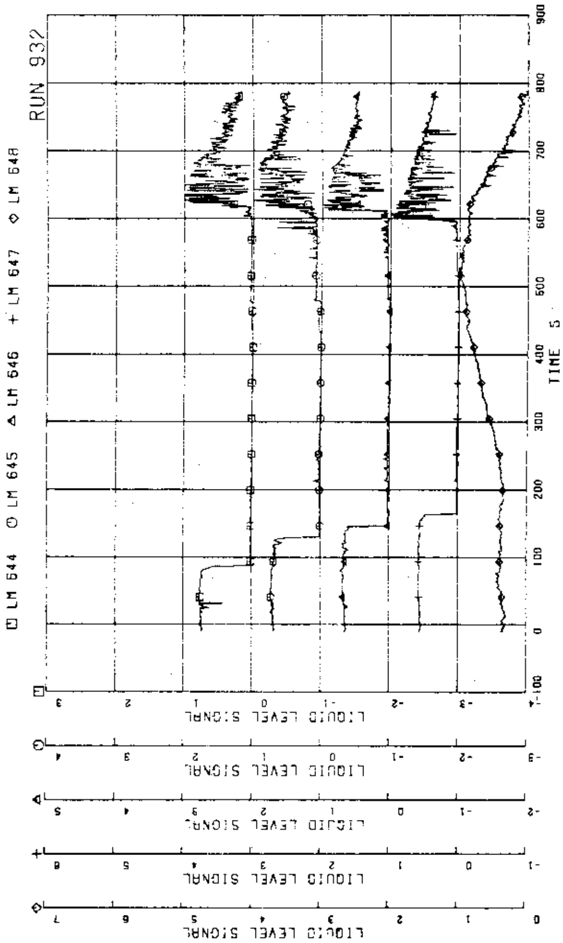


FIG.5.418 LIQUID LEVEL SIGNALS IN DOWNCOMER, D SIDE

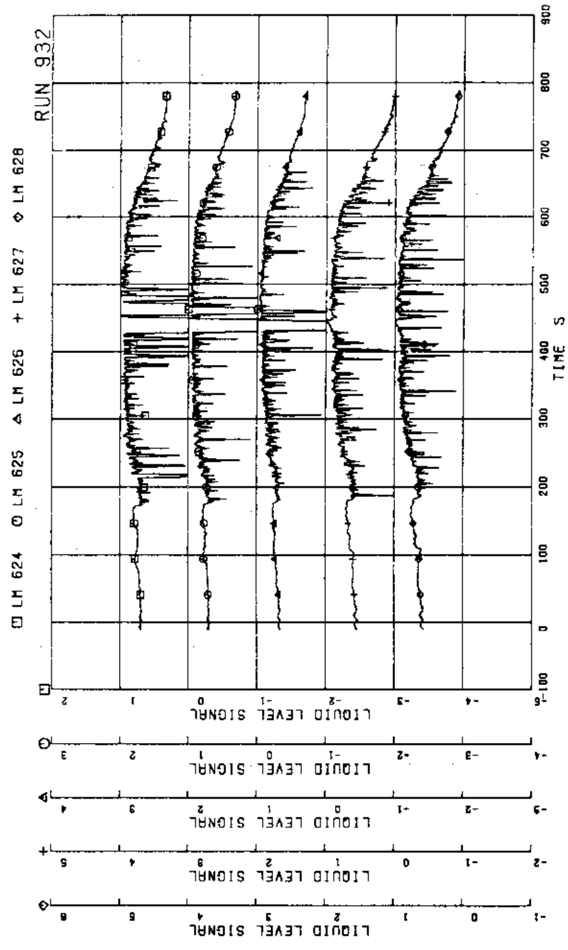


FIG.5.416 LIQUID LEVEL SIGNALS IN LOWER PLENUM, NORTH

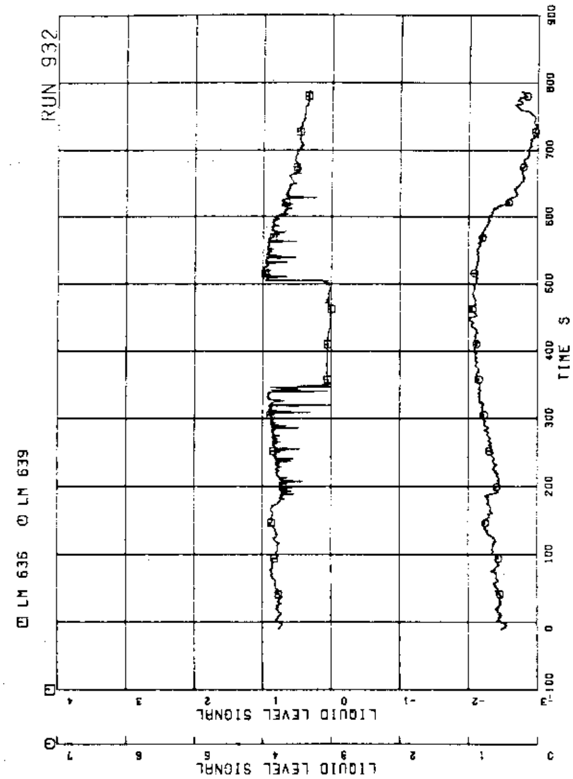


FIG.5.417 LIQUID LEVEL SIGNALS IN GUIDE TUBE, NORTH

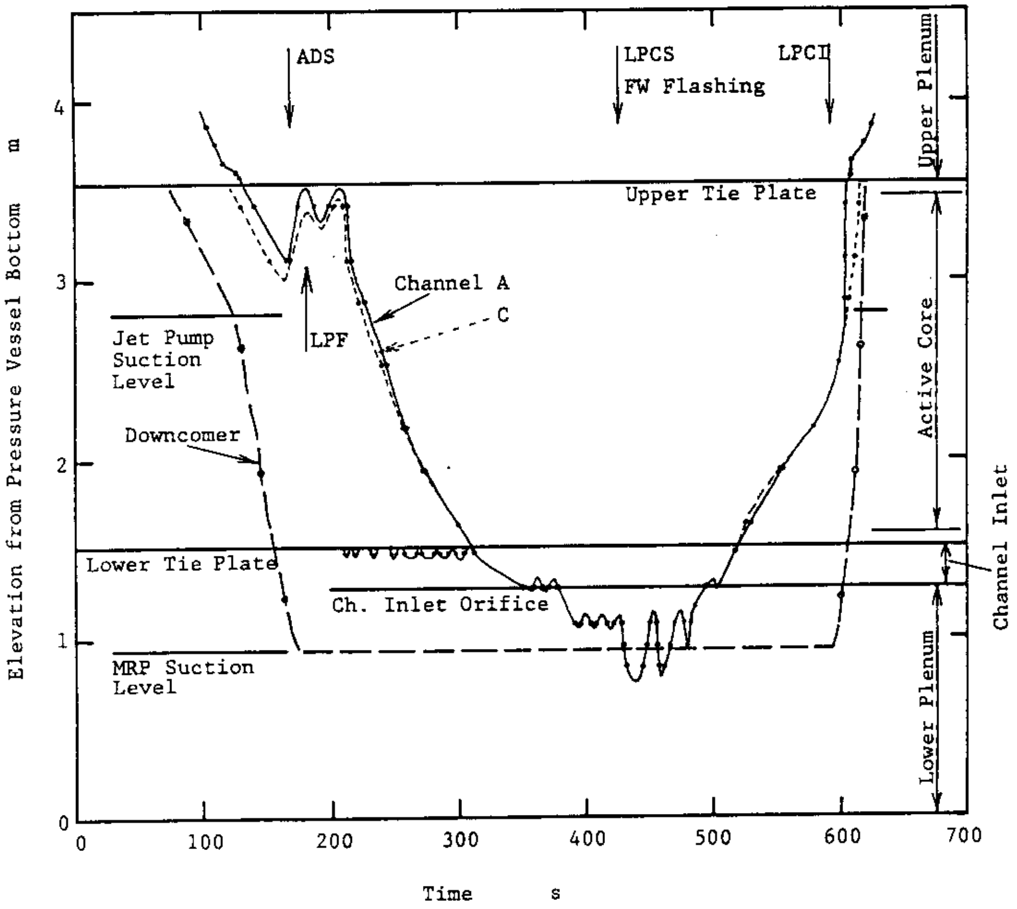


Fig. 5.419 Liquid level in core and downcomer

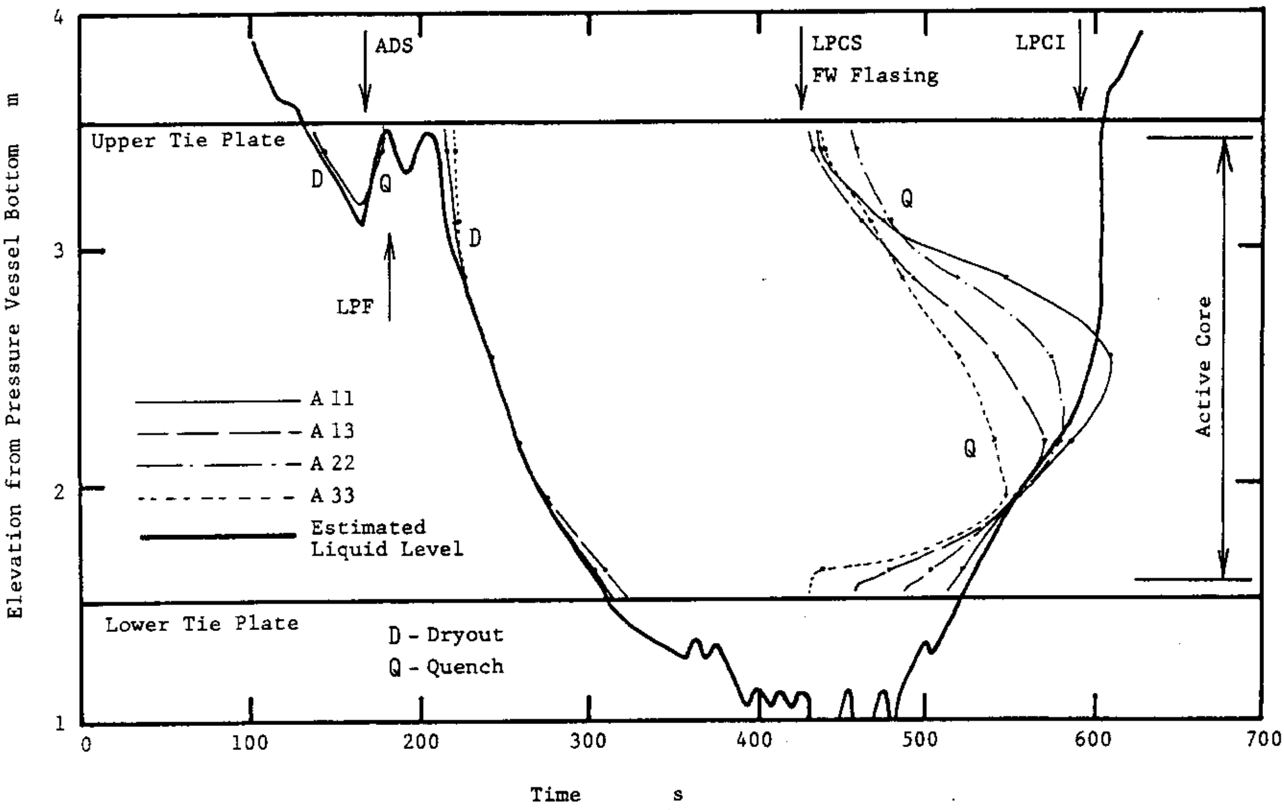


Fig. 5.420 Dryout and quench front transients in channel A

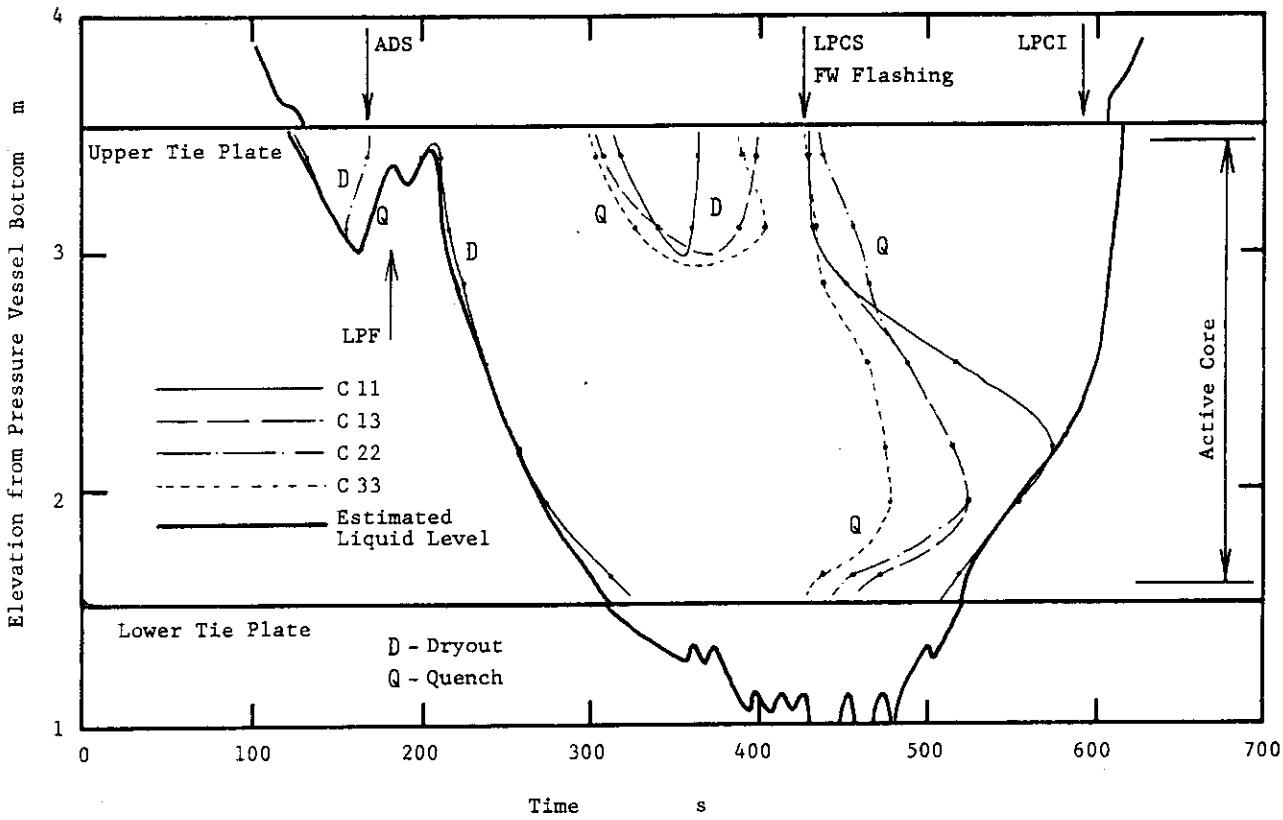


Fig. 5.421 Dryout and quench front transients in channel C

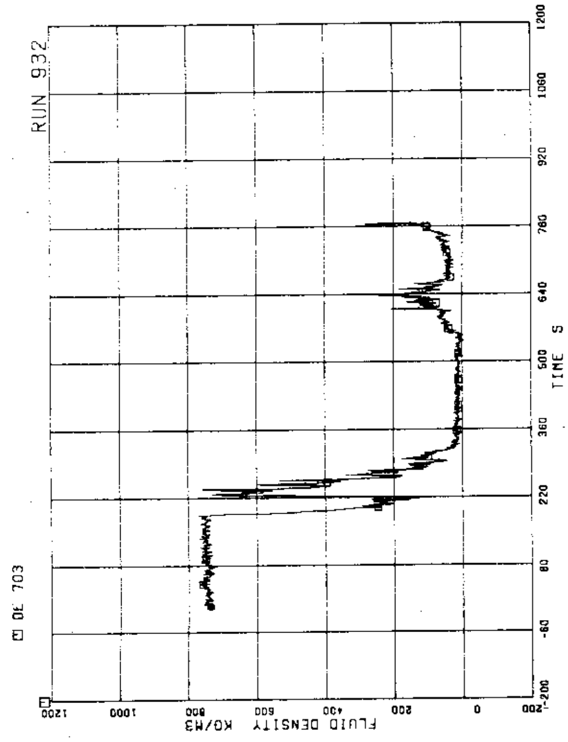


FIG.5.424 AVERAGE DENSITY AT MRP SIDE OF BREAK

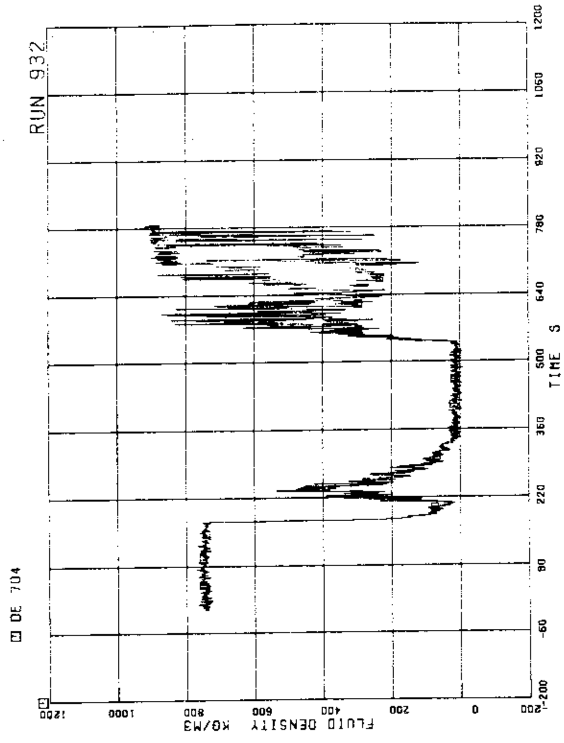


FIG.5.425 AVERAGE DENSITY AT PV SIDE OF BREAK

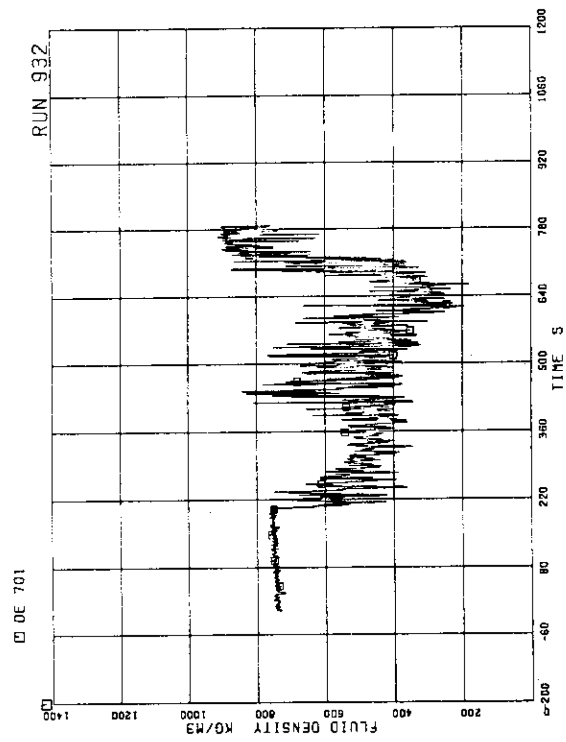


FIG.5.422 AVERAGE DENSITY AT JP-1.2 OUTLET

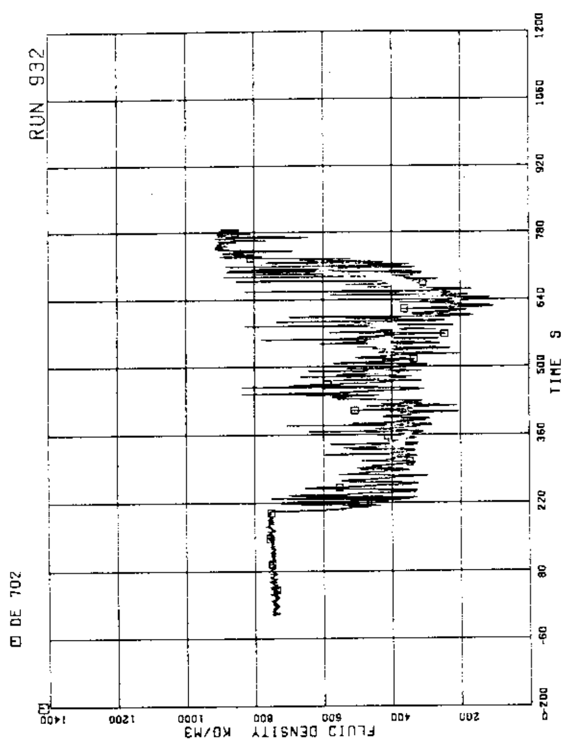


FIG.5.423 AVERAGE DENSITY AT JP-3.4 OUTLET

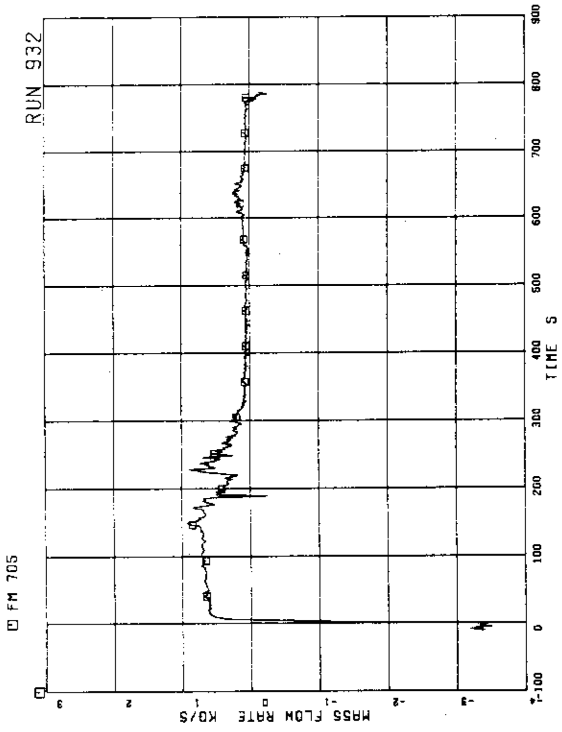


FIG.5.426 FLOW RATE AT MRP SIDE OF BREAK
(BASED ON LOW RANGE DRAG DISK DATA)

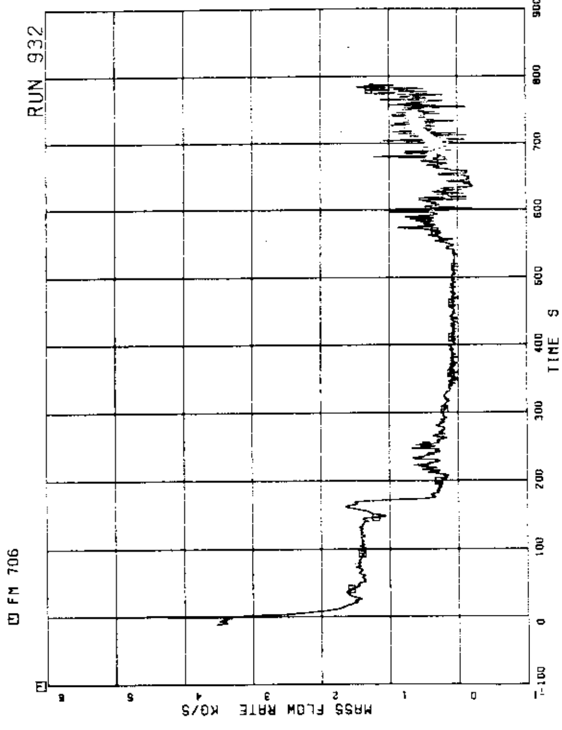


FIG.5.427 FLOW RATE AT PV SIDE OF BREAK
(BASED ON LOW RANGE DRAG DISK DATA)

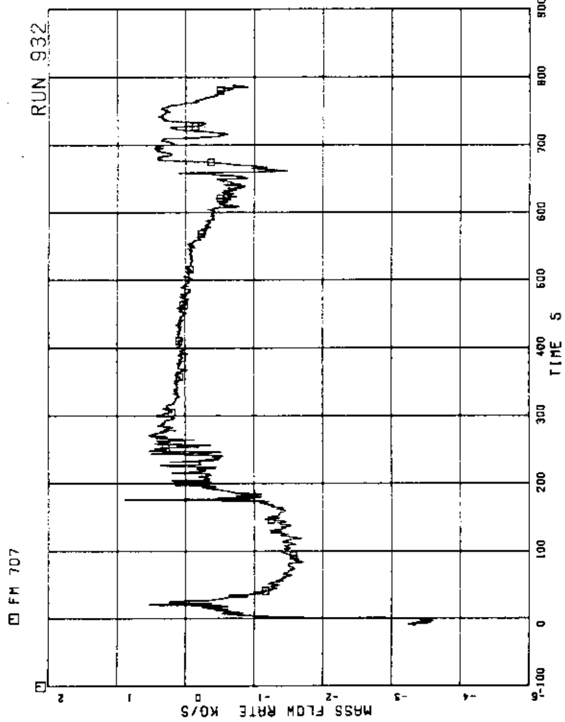


FIG.5.428 FLOW RATE AT MRP SIDE OF BREAK
(BASED ON HIGH RANGE DRAG DISK DATA)

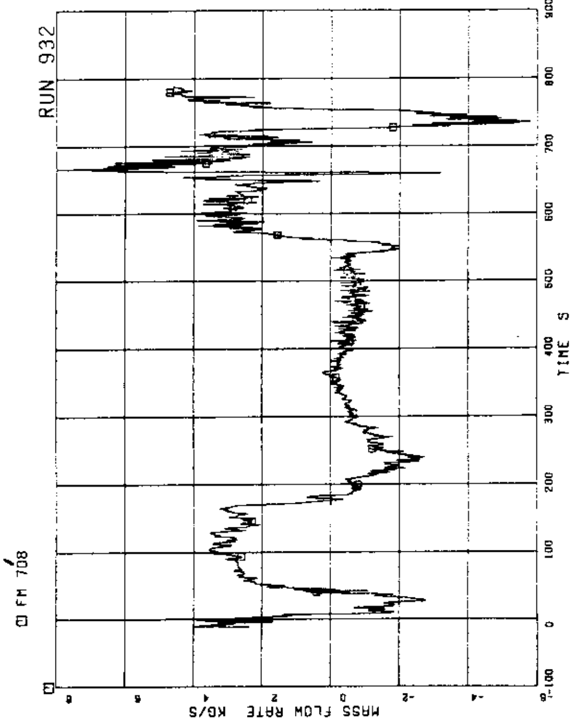


FIG.5.429 FLOW RATE AT PV SIDE OF BREAK
(BASED ON HIGH RANGE DRAG DISK DATA)

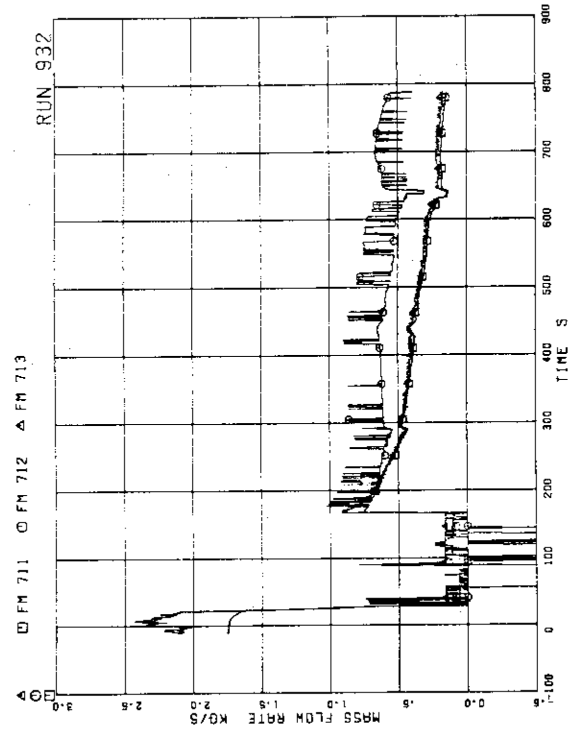


FIG.5.432 STEAM DISCHARGE FLOW RATE THROUGH MSL

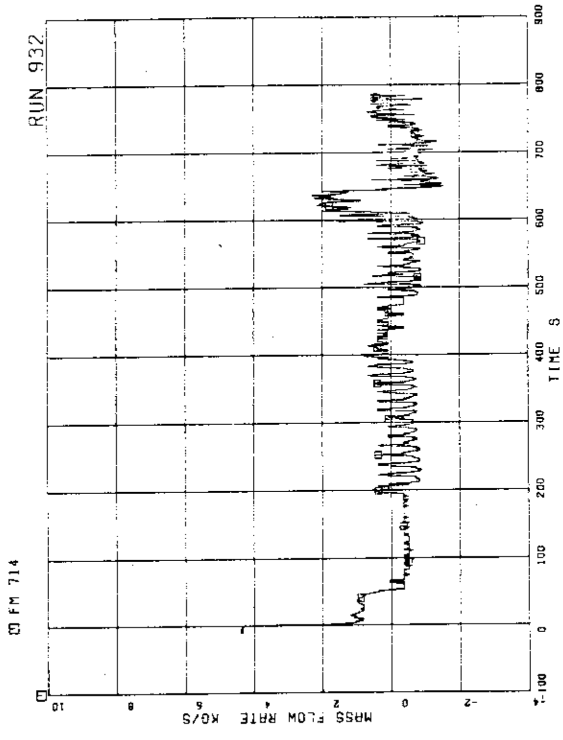


FIG.5.433 FLOW RATE AT CHANNEL A INLET

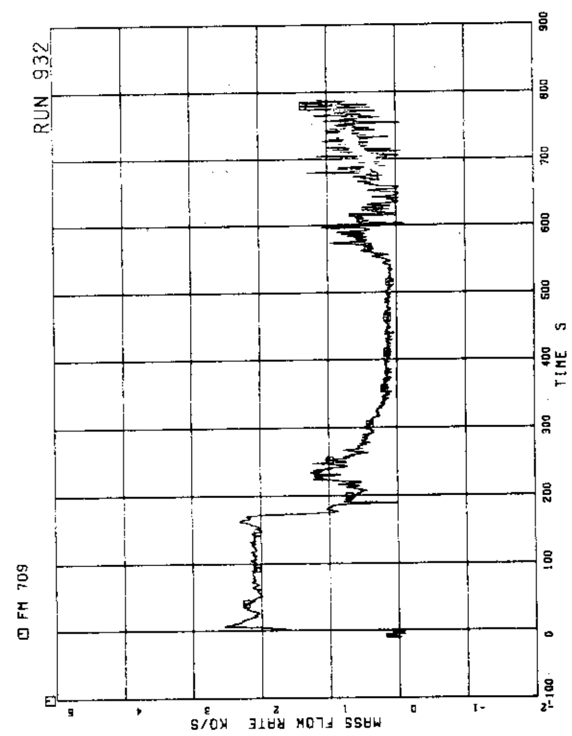


FIG.5.430 TOTAL DISCHARGE FLOW RATE FROM BREAK (BASED ON LOW RANGE DRAG DISK DATA)

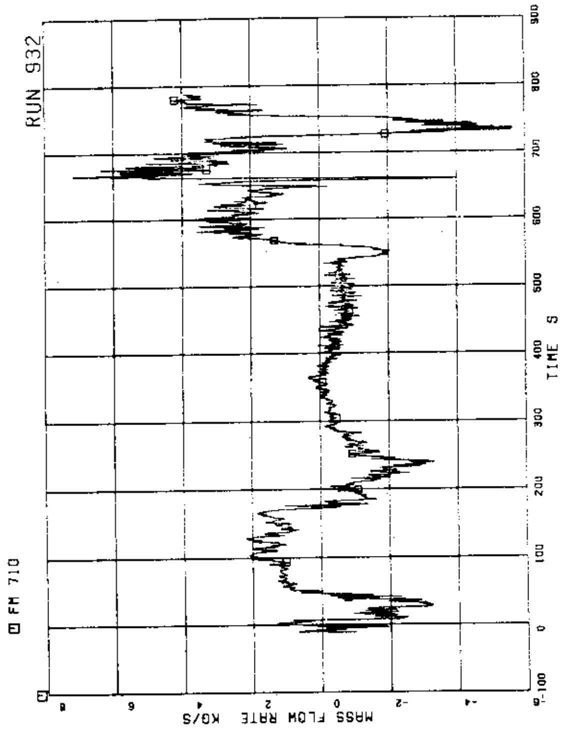


FIG.5.431 TOTAL DISCHARGE FLOW RATE FROM BREAK (BASED ON HIGH RANGE DRAG DISK DATA)

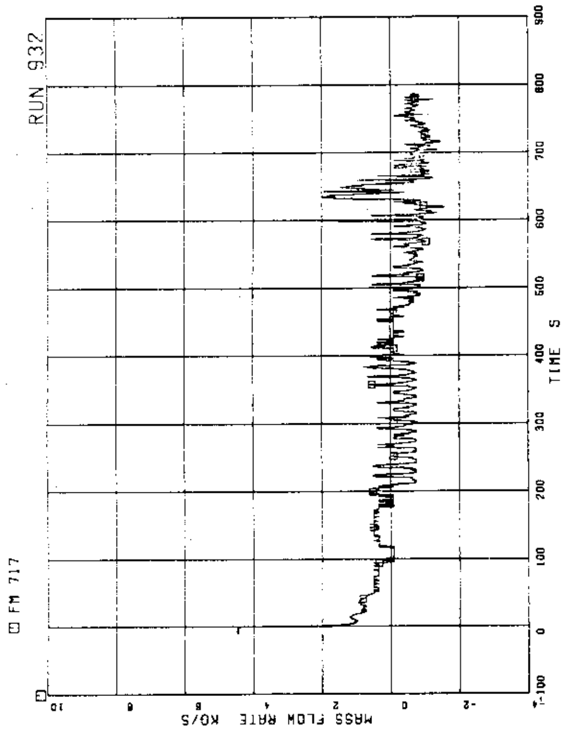


FIG.5.436 FLOW RATE AT CHANNEL D INLET

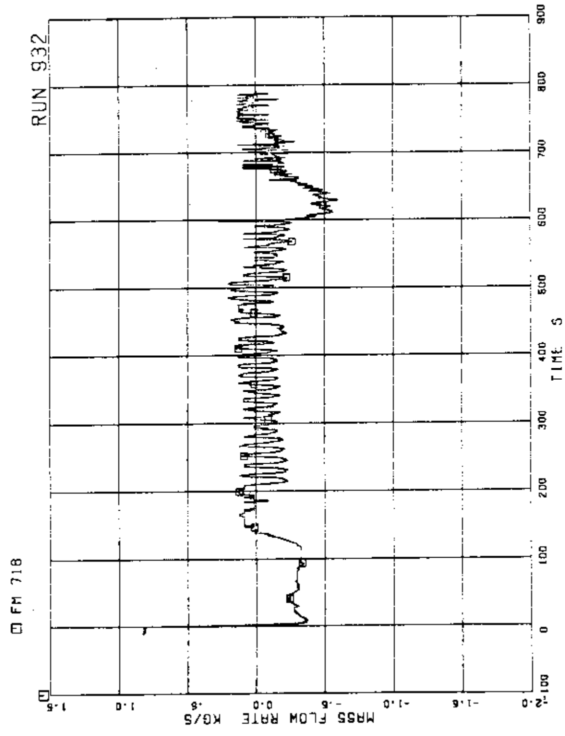


FIG.5.437 FLOW RATE AT BYPASS HOLE

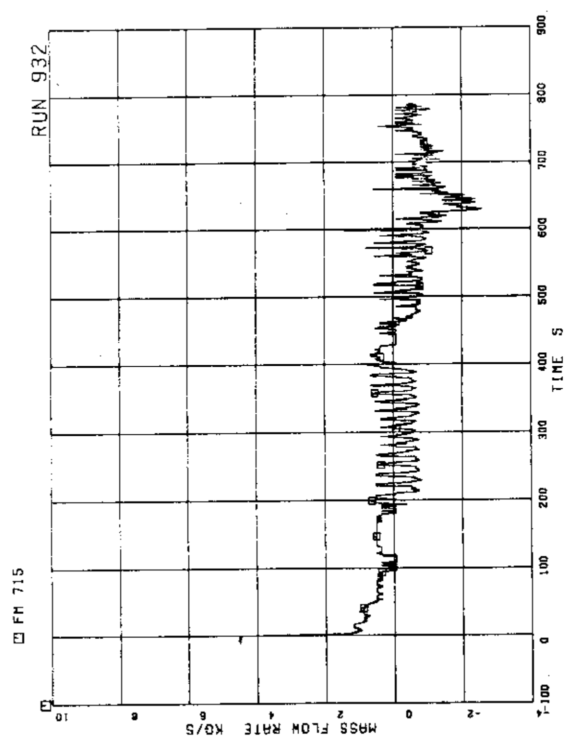


FIG.5.434 FLOW RATE AT CHANNEL B INLET

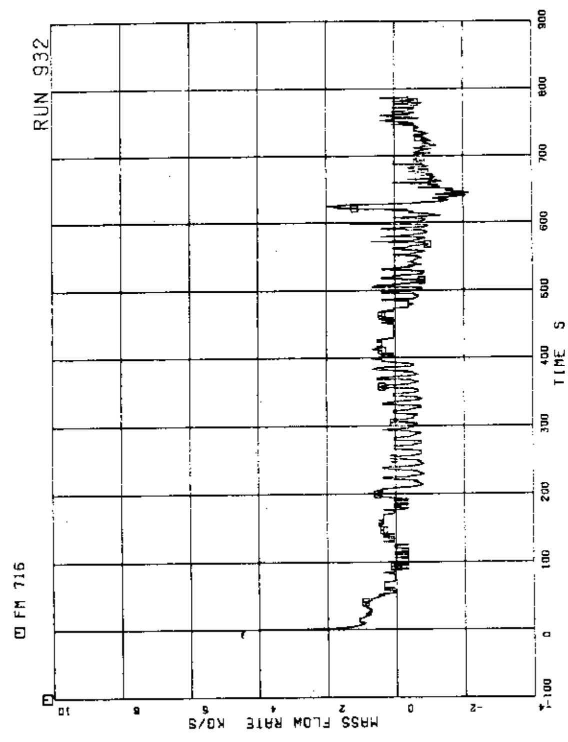


FIG.5.435 FLOW RATE AT CHANNEL C INLET

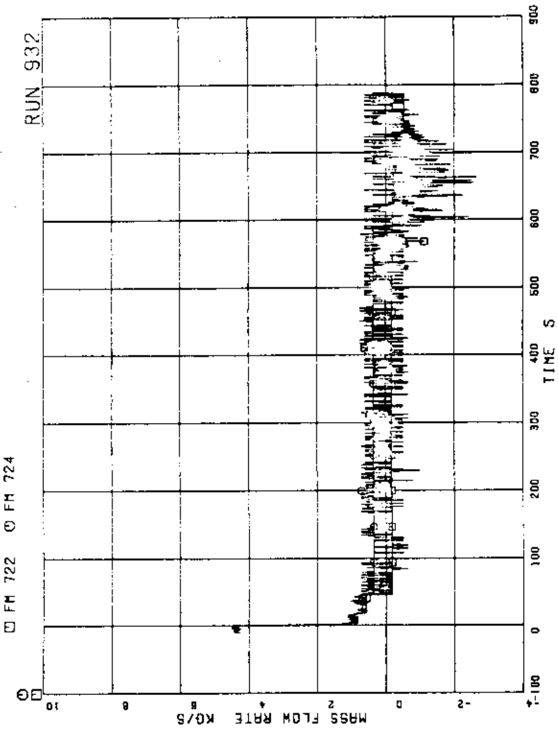


FIG.5.440 FLOW RATE AT JP-3,4 OUTLET (HIGH RANGE)

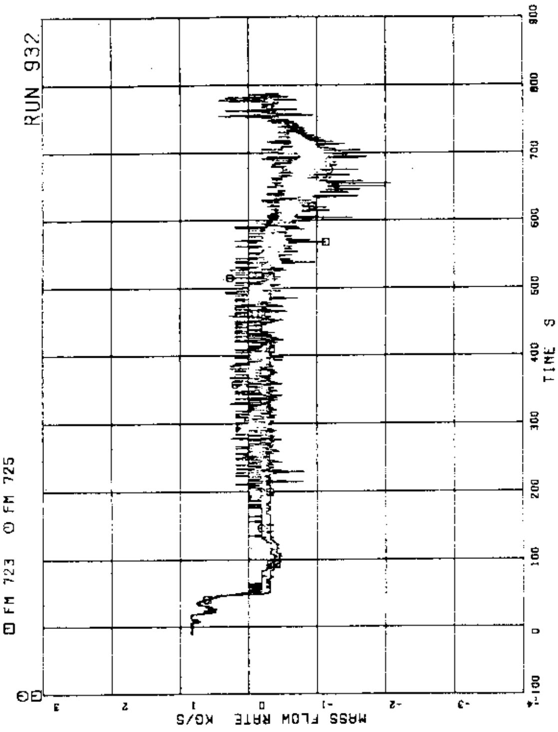


FIG.5.441 FLOW RATE AT JP-3.4 OUTLET (LOW RANGE)

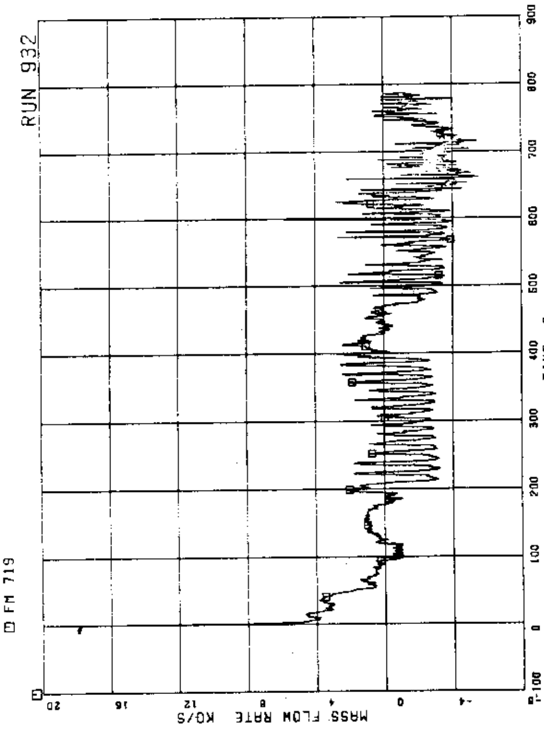


FIG.5.438 TOTAL CHANNEL INLET FLOW RATE

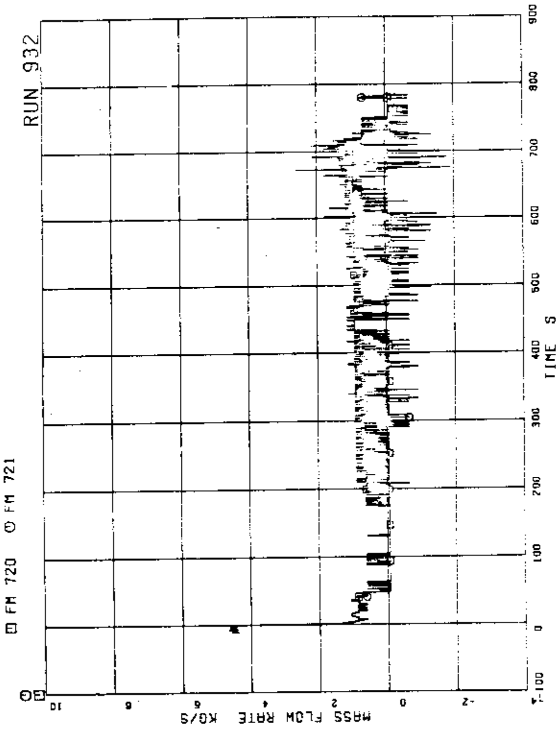


FIG.5.439 FLOW RATE AT JP-1.2 OUTLET (HIGH RANGE)

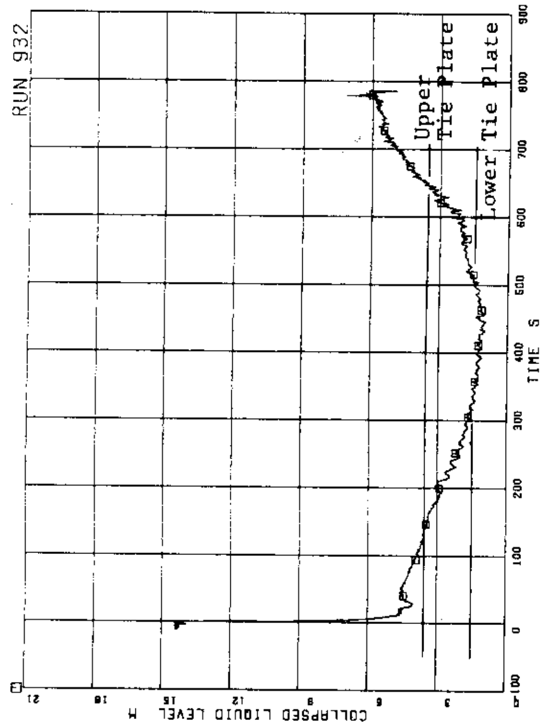


FIG.5.444 COLLAPSED LIQUID LEVEL INSIDE CORE SHROUD

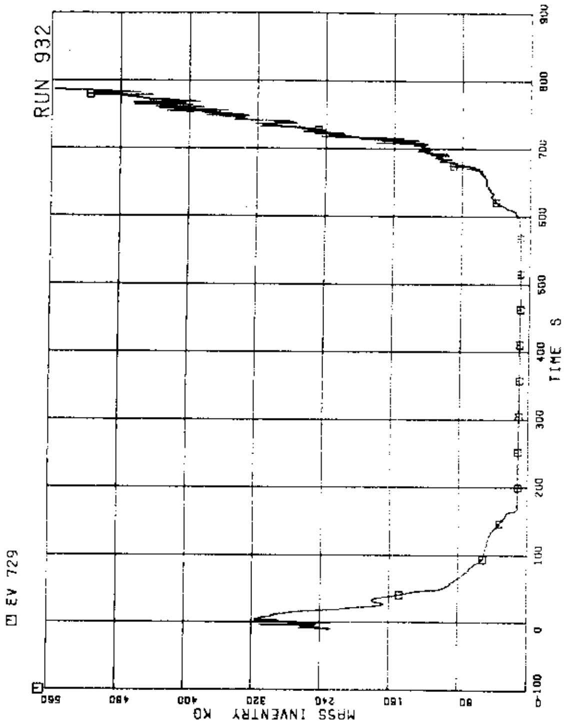


FIG.5.445 FLUID INVENTORY IN DOWNCOMER

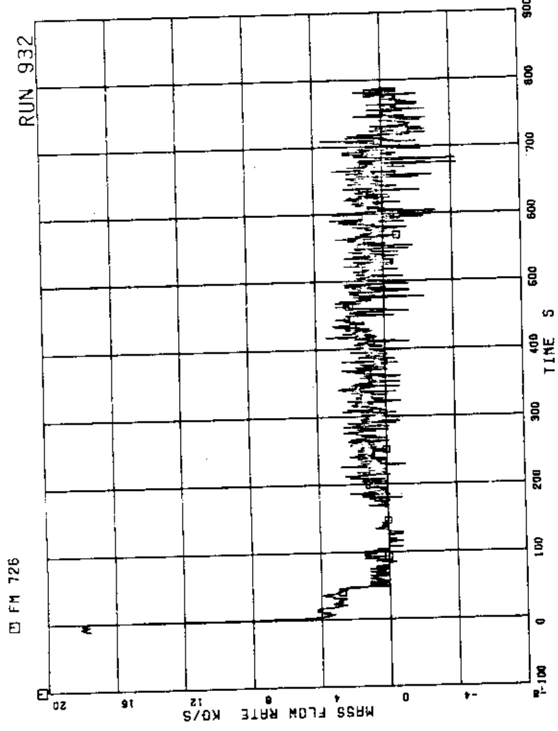


FIG.5.442 TOTAL JP OUTLET FLOW RATE (HIGH RANGE)

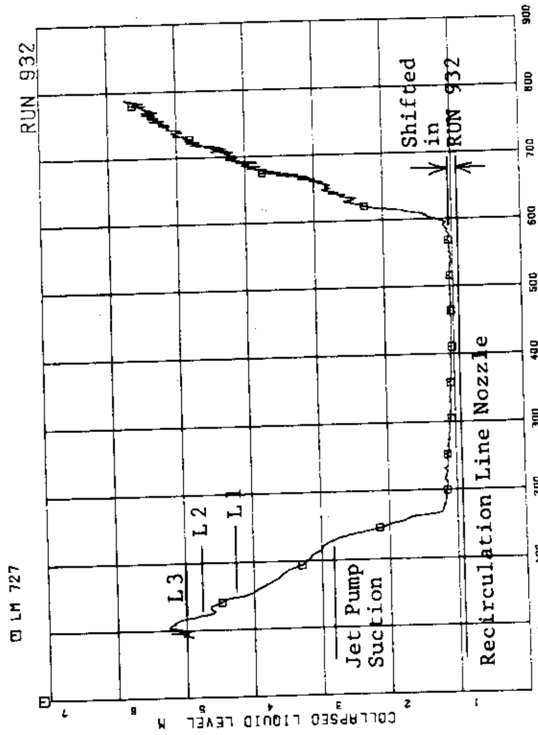


FIG.5.443 COLLAPSED LIQUID LEVEL IN DOWNCOMER

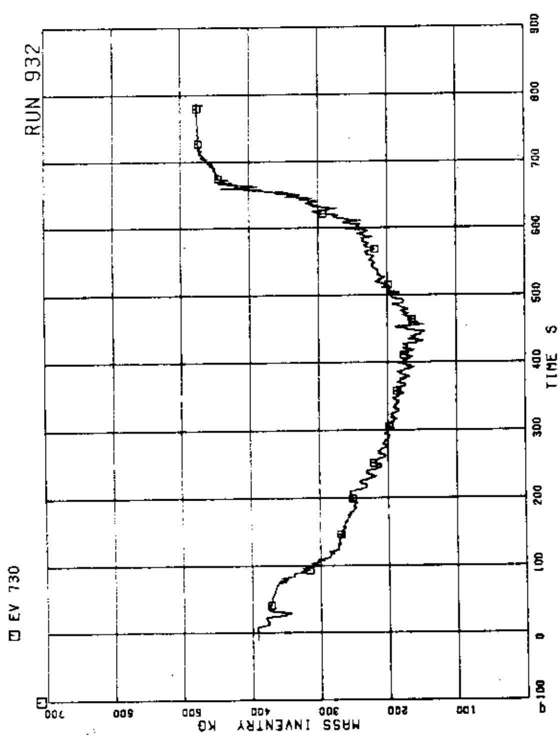


FIG.5.446 FLUID INVENTORY INSIDE CORE SHROUD

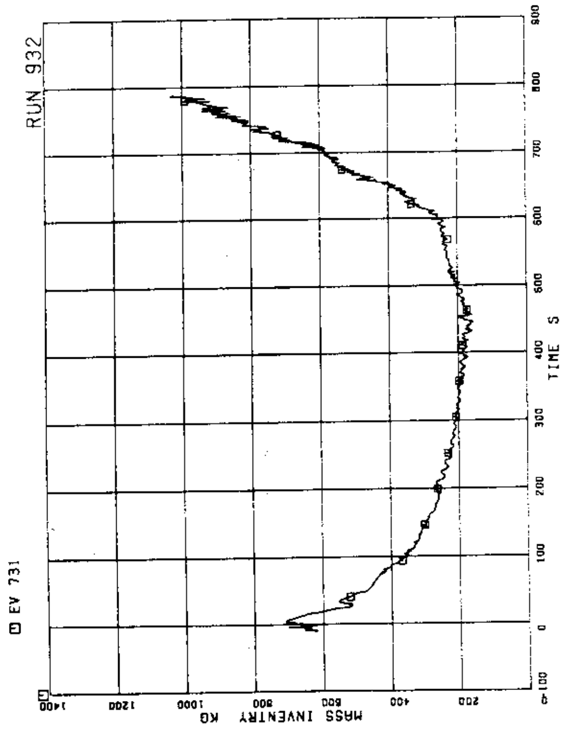


FIG.5.447 TOTAL FLUID INVENTORY IN PRESSURE VESSEL

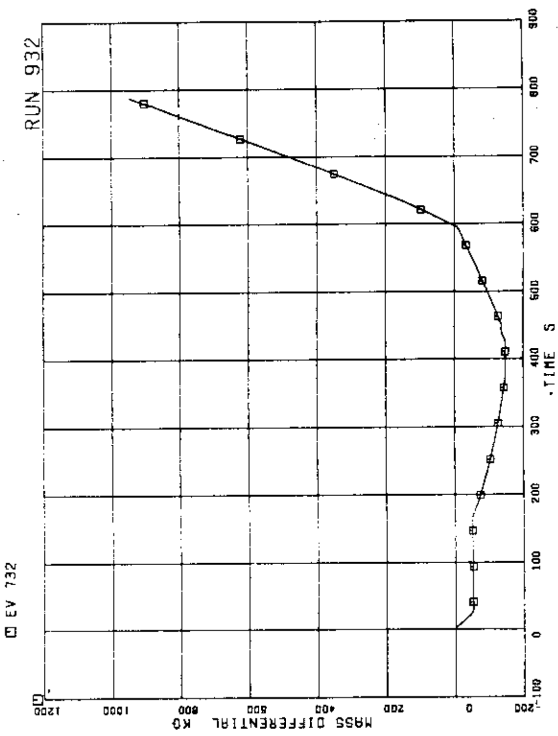


FIG.5.448 FLUID MASS INCREASE BY ECCS AND FW AND DECREASE BY STEAM DISCHARGE FLOW

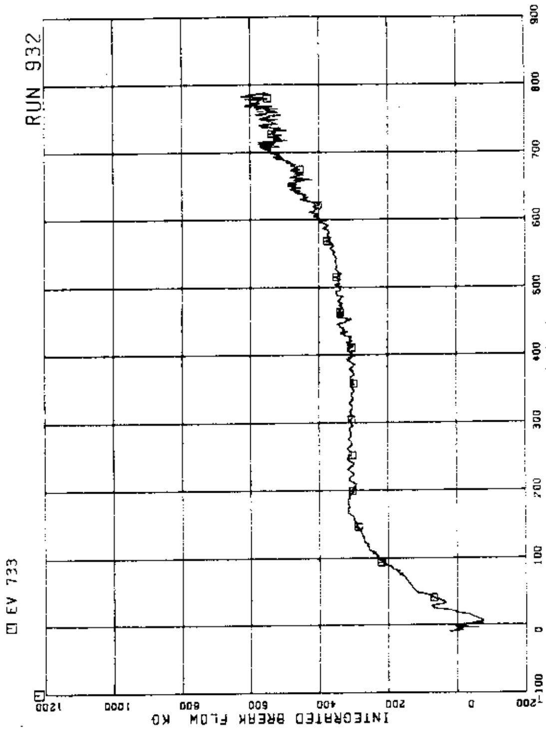


FIG.5.449 DISCHARGED FLUID MASS FROM BREAK

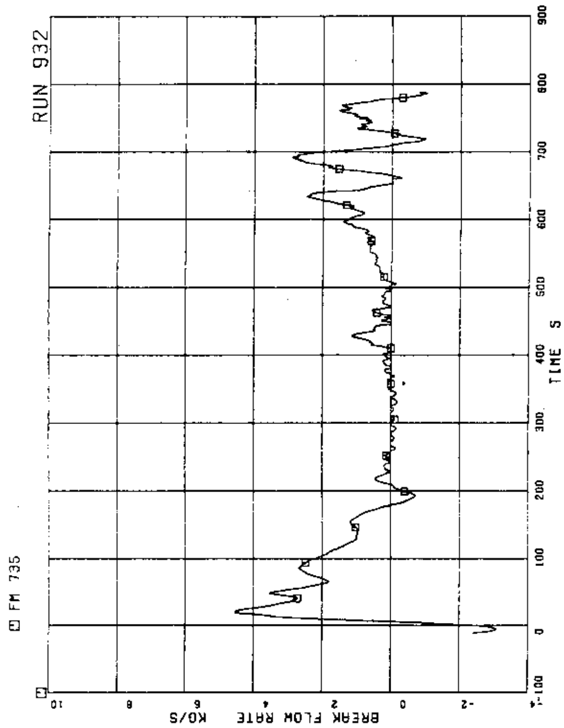


FIG.5.450 DISCHARGED FLOW RATE FROM BREAK

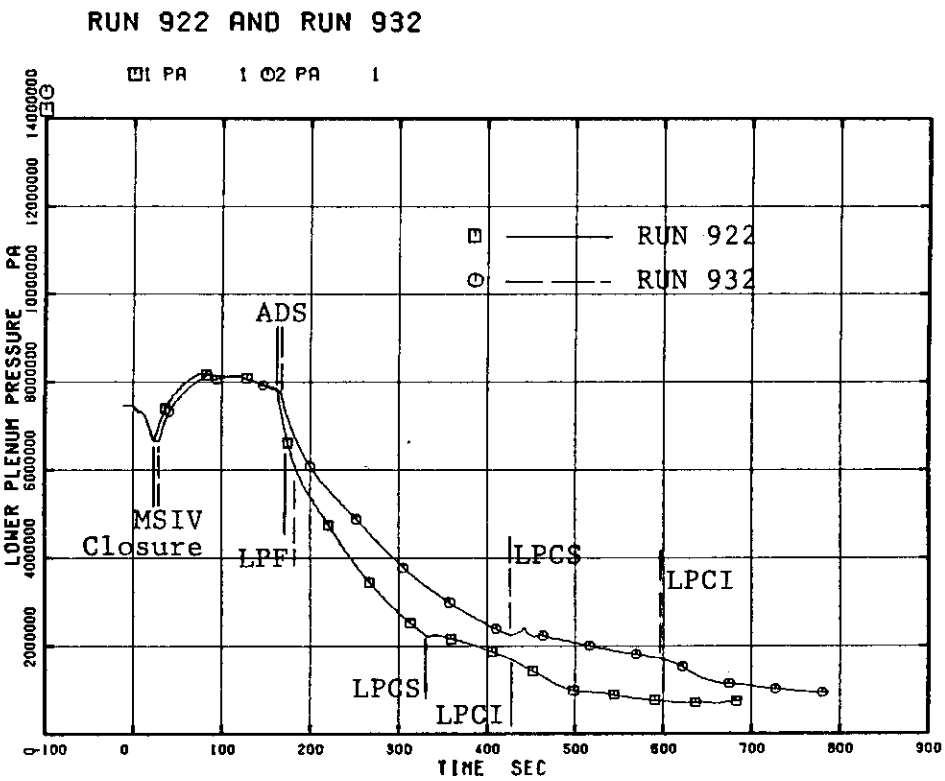


Fig. 6.1 Lower plenum pressure transients

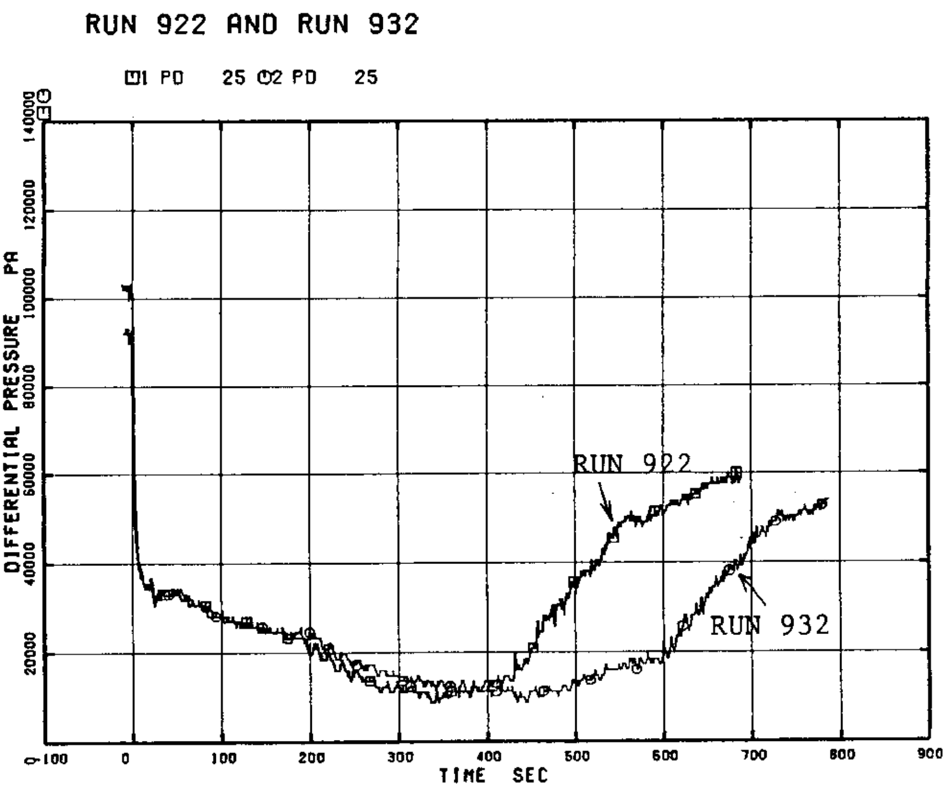


Fig. 6.2 Differential pressure between pressure vessel top and bottom

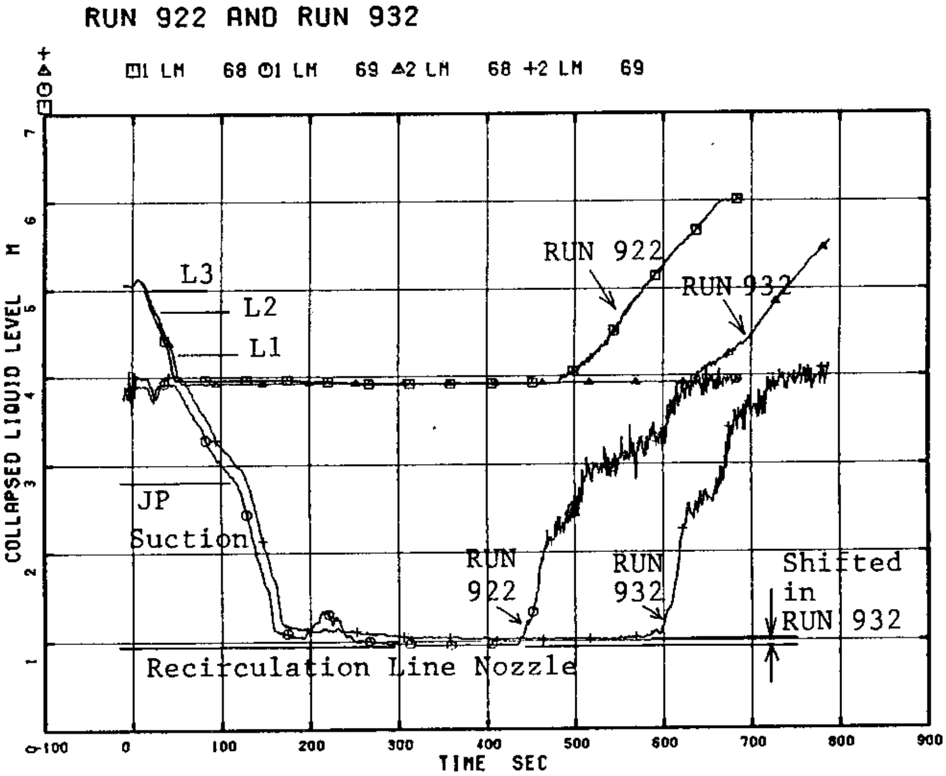


Fig. 6.3 Collapsed liquid level in upper and lower downcomer

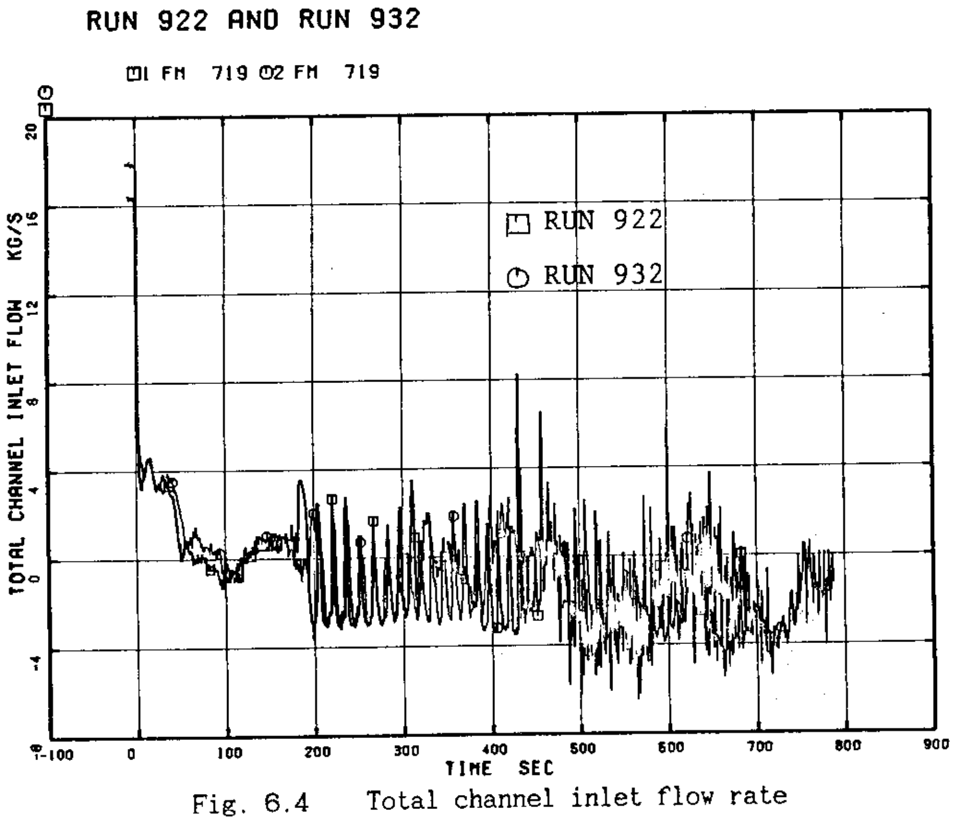


Fig. 6.4 Total channel inlet flow rate

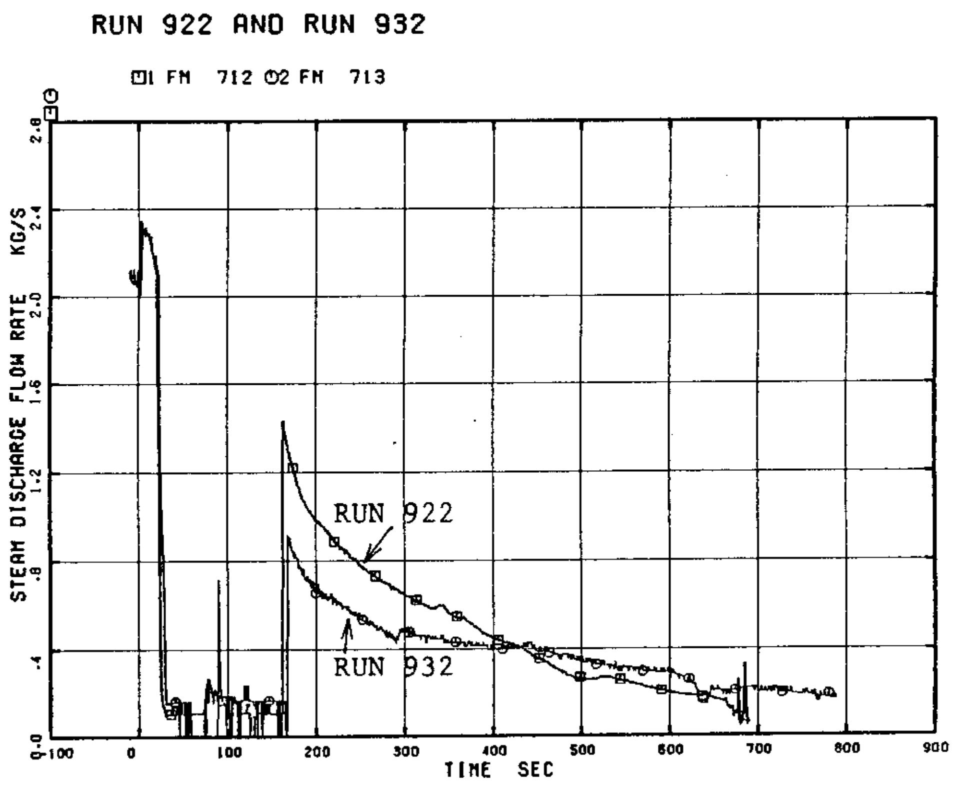


Fig. 6.5 Steam flow rate in the Main Steam Line

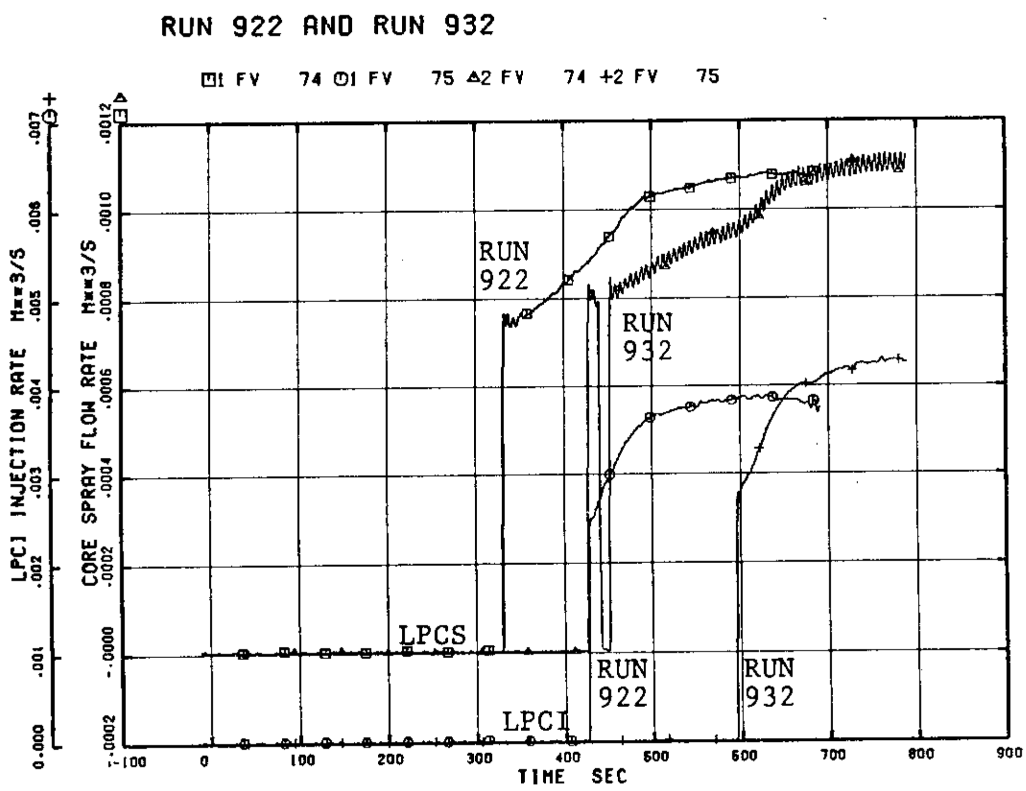


Fig. 6.6 ECCS flow rates

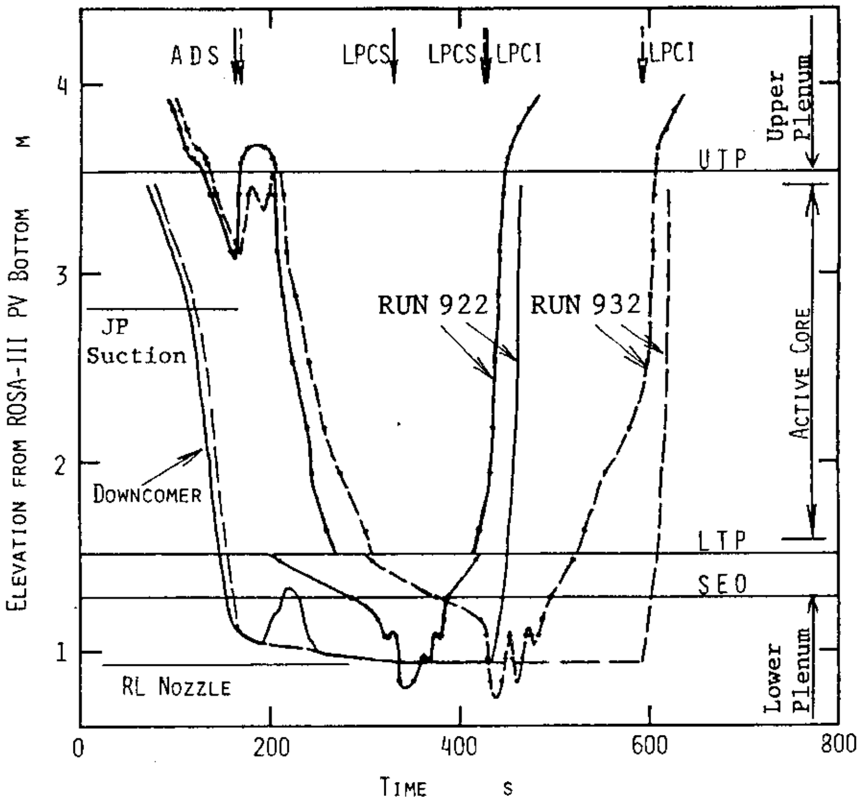


Fig. 6.7 Mixture levels inside pressure vessel

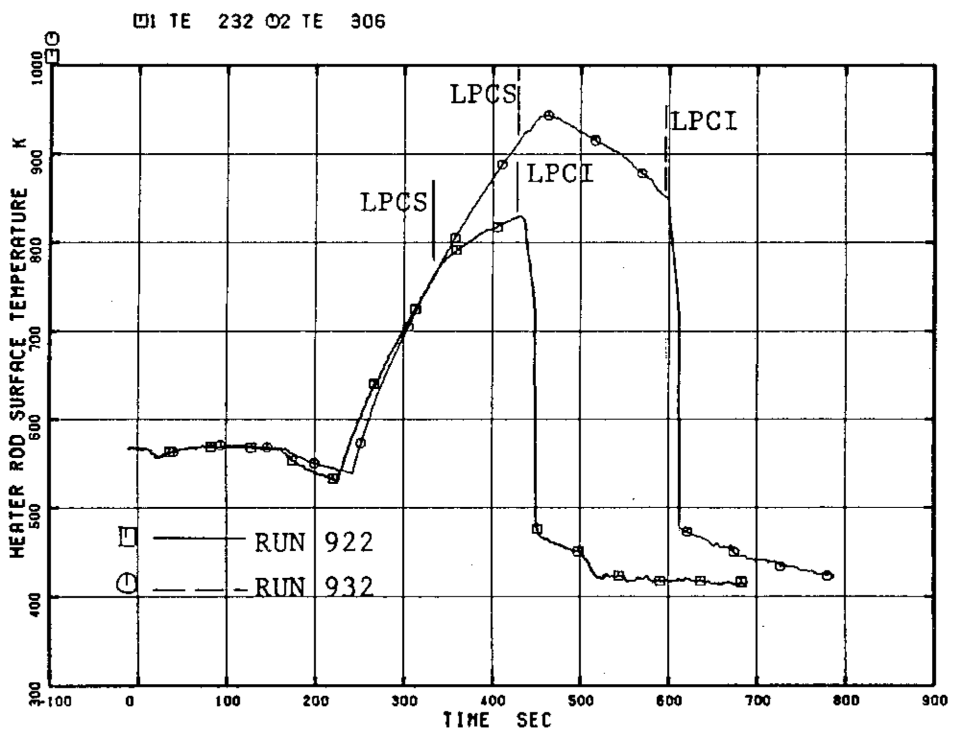


Fig. 6.8 Peak cladding temperatures