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EXPERIMENT DATA OF ROSA-III INTEGRAL TEST RUN 912
(5% SPLIT BREAK TEST WITHOUT HPCS ACTUATION)

March 1982

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This report presents the test data of Run 912, one of the tests in the small break LOCA/ECC test series of the ROSA-III program to conduct the system effect test concerning the response of a BWR with the ECC injection. Run 912 is the 5% split break test at the recirculation pump inlet using the ROSA-III test facility, the volumetrically scaled primary system of the BWR/6 with an electrically heated core and the scaled ECCS. The test is initiated with the steam dome pressure of 7.30 MPa, the lower plenum subcooling of 10.8 K, the core inlet flow rate of 16.4 kg/s, and the core heat generation rate of 3.9 MW and proceeded as previously planned. All the core is quenched after the ECCS actuation and the maximum fuel cladding temperature is 839 K at the mid-plane of the highest power rod. Run 912 is utilized as the international standard problem #12 under the auspice of the OECD/NEA-CSNI.

Keywords : BWR, LOCA, ECCS, Integral Test, ROSA-III Program, 5% Split Break, Small Break, International Standard Problem - 12, Data Report

ROSA－Ⅲ実験データレポート；Run 912
（HPCS不作動５％スプリット破断実験）

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（1982年1月30日受理）

本報は，ROSA－Ⅲ実験装置によるBWR LOCA模擬実験のうち，小口径破断実験シリーズのRun 912の実験データレポートである。Run 912はHPCS系統の単一故障を仮定した再循環ポンプ吸込側配管の５％破断実験である。この実験はOECD／NEA－CSNIの第12番目の国際標準問題（ISP－12）として行なわれた。主な初期条件は蒸気ドーム圧力7.30 MPa下部プレナム未飽和度10.8 K，炉心入口流量16.4 kg／s，炉心発熱量3.97 MWである。最高被覆管温度は，最高出力燃料棒の炉心中央高さにおける839 Kであった。LPCSとLPCI作動後燃料棒はクエンチし，ECCSは有効に働いた。

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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
CHV	Check Valve
CV	Control Valve
CWT	Cooling Water Tank
D	Differential Pressure
DF	Density of Fluid
DL(+100)	Elevation (+100 mm) from the bottom of PV
ECCS	Emergency Core Cooling System
ESF	Engineered Safety Features
F	Flow Rate
Fig.	Figure
FS	Full Scale
FWP	Feed Water Pump
FWT	Feed Water Tank
HPCS	High Pressure Core Spray
HPCSP	High Pressure Core Spray Pump
HPCST	High Pressure Core Spray 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	Liquid Level
ℓ	Liter
LB	Liquid Level in Channel Box
LBWR	Large Boiling Water Reactor
LL	Liquid Level in the Lower Plenum
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 Spray Pump
LPCST	Low Pressure Core Spray Tank
M	Momentum Flux
m	Meter
mm	Milimeter
MLHR	Maximum Linear Heat Rate
MPa	Megapascal
MRP	Main Recirculation Pump
MW	Megawatt
N	Rotation Speed
OR	Orifice
P	Pressure
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
V	Valve
VF	Void Fraction
W	Power
W	Watt
WL	Water Level
WSP	Water Supply Pump

1. Introduction

The ROSA-III program is to study thermal hydraulic response of a BWR (boiling water reactor) during a postulated LOCA (loss-of-coolant accident) with the ECC (emergency core cooling) injection and to provide base data to evaluate the predictability of computer codes developed for LOCA/ECC analysis. The program has been carried out since 1978 at Japan Atomic Energy Research Institute to conduct the system effect tests using the ROSA-III test facility. The ROSA-III test facility consists of the volumetrically scaled primary system of a 1100MW electric BWR/6-251 with an electrically heated core and the scaled ECCS (emergency core cooling system).

Various series of tests such as the large break test series and the series of tests with the single component failure condition have been conducted in the program. A series of the test with the various break size has been conducted in the past few months since need for detailed understanding of the small break LOCA/ECC has been emphasized after the TMI-2 accident. Run 912 is the one of the small break series tests and is the 5% split break test at the pump inlet in the recirculation line with the condition that the off-site power and the HPCS (high pressure core spray system) are lost. The test was initiated from fluid condition of the elevated pressure and temperature simulating the operating condition of the BWR and all the ECCS except the HPCS provided the cooling water with the scaled flow rates.

Run 912 was conducted May 19, 1981, and proceeded successfully as previously planned without any trouble. This test is utilized as the standard problem number 12 of the international standard problem program on LOCA/ECC under the auspice of the OECD/NEA-CSNI.

2. ROSA-III Test Facility

The ROSA-III 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 the postulated LOCA. The facility is instrumented such that various thermal-hydraulic parameters are measured and recorded during the test. Details of the instrumentations are described in Sec. 3.

The test facility consists of four subsystems. These subsystems are : (a) the pressure vessel, (b) the steam line and the feedwater line, (c) the recirculation loops, and (d) the ECCS. Figures 2 and 3 illustrate configuration of the facility and the pressure vessel internals, respectively. Table 2.1 compares the major dimensions of the ROSA-III facility to the corresponding dimensions of the large BWR system.

The ROSA-III pressure vessel includes various components in it 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, the lower plenum, the upper plenum, the downcomer annulus, the steam separator, the steam dome, and the steam dryer. The core is consisted 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 supporting rods spaced in a 8 × 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. 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 0.86 respectively. The orifice plates are inserted at the core inlet to control the core inlet flow.

The steam line is connected to the steam dome of the pressure vessel. A control valve is installed in the steam line to control the steam dome pressure in steady state before the initiation of the tests. The steam line has a branch in which the automatic depressurization system is installed. The operation of the control valve in the steam line is described in Sec. 4. The feedwater is supplied from the feedwater tank (FWT) through the feedwater line and the feedwater sparger in the downcomer annulus.

Figure 2.8 shows the recirculation lines consisted of two loops. Each line is furnished with a pump and two jet pumps. The jet pumps are installed outside the pressure vessel to simulte the relative volume and the relative height to the core. Two break simulators and a quick shut-off valve are installed in one of these loops to simulate the various break conditions. Each break simulator consists of a nozzle to determine the break size and a quick openning blowdown valve (QOBV) to initiate the test. The break mode (the double-ended or the split), the break size, and the break location can be changed. The diameter of the largest nozzle available is 26.2 mm. Figure 2.8 shows two quick openning blowdown valves,a quick shut-off valve, and flow nozzles installed upstream of the quick openning blowdown valves. Several flow nozzles of different size are prepared to vary the break size.

The ROSA -III facility is furnished with all kinds of the ECCS available in the BWR system, i.e., the high pressure core spray (HPCS), the low pressure core spray (LPCS), the low pressure coolant injection (LPCI), and the automatic depressurization (ADS) systems. The HPCS and the LPCS provide the cooling water from the top of the core. The LPCI injects the cooling water into the core shroud. Each ECCS consists of a pump, a tank, piping, and a control system.

More detailed information of the facility design is available in Reference (1).

3. Instrumentation

The instrumentation of the ROSA-III is designed to obtain thermo-hydraulic data during the simulated BWR LOCE. The data obtained from the experiments will contribute to the assessment of the analytical computer code. Table 3.1 summerizes instrumentations used in Run 912.

Instrumentation locations are shown in Fig. 3.1 through Fig. 3.8.

Typical measured parameters in the ROSA-III are pressure, differential pressure, folw rate, electric power, pump speed, fluid and metal temperatures, liquid level, coolant fluid density, on-off type signals and the like.

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

Flow rate is measured by either orifice or venturi type flow meters depending on the fluid condition and measurement location.

The temperatures of the fluid, structural materials and fuel rod cladding are measured with Chromel-Alumel thermocouples (CA T/C) of 1.6 mm ϕ, or 0.5 mm ϕ.

Liquid levels are measured by either differential pressure transducers, of the type described above, or needle type electrical conductivity probes developed in the ROSA-III program. The probe is distributed along the vessel hight to detect the existence of water or vapor at each level.

Electric power for the simulated fuel rods is controlled as a predetermined function of time and is measured by a fast response electric power meter.

Pump speed is measured by a pulse generator integral to the pump. On-off signals such as selected valve positions, decay heat and pump coastdown simulation initiations and the like are detected in order to record the exact signal actuation time.

Fluid density in the pipe is measured by means of gamma-ray densitometers. Preliminary studies indicate three-beam densitometers should be used to determine the flow regime. The gamma source is ^{137}Cs and the detector is a water cooled NaI (Tl) scintillation type.

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

The data acquisition system (DATAC 2000 B, Iwasaki Tsūshinki Co.) scans all the 700 channel signals with the frequency up to 30 kHz. The data recorded on magnetic tape is processed by the FACOM M200 system at JAERI. After evaluation, for example by comparing the initial and final pressure values with standard values, the data is reprocessed using the correct conversion factors as determined from the consistency examination.

More detailed information on the instrumentation and the data processing procedure are available in Reference (2).

4. Test Conditions and Procedure

Run 912 is a 5% split break test at the recirculation pump inlet in the recirculation line. The break area is determined by inserting an orifice upstream of the QOBV as shown in Fig. 4.1. The initial conditions of the test are as follows : The steam dome pressure is 7.30 MPa, the steam dome temperature is 562 K at saturation condition, the core inlet flow rate is 16.4 kg/s, the reciculation flow rate in each of the two reciculation loops is 0.0155 m^3/s, the core heat generating rate is 3.97 MW. The estimated quality at the core outlet is 13.5%. The detailed conditions are summerized in Table 4.1.

To conduct the test, make-up water is pumped into the primary system of the test facility and electric power is supplied to the core to heat the water in the system and to achieve the saturation condition in the upper portion of the pressure vessel. The core power is 3.97 MW before the initiation of the test and is 44% of the core power based on the power to volume ratio which is taken the same in the BWR and in the test facility. The core power is changed during the transient after the break initiation as shown in Fig.4.2. The power is kept constant for the first 8.8 seconds and reduced along the curve shown in the figure which simulated the delayed neutron fission power, the decay power of fission products and actinides and stored heat in the fuel pin. There are high power rods in the core as introduced in the preceding section. The maximum heat generation rate is 16.6 kW/m before the initiation of the test.

The details of the steam line and the feedwater line are shown in Figs. 4.3 and 4.4. The control valves CV-1 and CV-2 are opened before the initiation of the break to provide steam to heat feedwater. CV-130 controls the steam flow to maintain the steam dome pressure constant before the break initiation. At the break initiation, CV-1 and 2 are closed and CV-130 is fully opened limiting the steam flow by an orifice of 18 mm ID (Inside Diameter) at the upstream of CV-130. AV-112 is opened before the break initiation and is closed at 2s after the break to block the feedwater flow. The coolant recirculation pumps are tripped to start coasting down at the break.

The low liquid level signal in the downcomer is used to actuate the ECCS and to close the steam line simulating the MSIV (Main Steam line Isolation Valve) closure. The downcomer level in the steady state operation is 5.00 meters above the bottom of the pressure vessel and L1 and L2 levels are set 4.25 meters and 4.76 meters respectively. The L2 signal is used to close MSIV with time delay of 3 s and CV-130 is closed at 24.0 s after the break . The L1 signal is used to the ADS with time delay of 120 s. The LPCI, the LPCS could inject cooling water after the primary system pressure is reduced to 2.16 MPa and 1.57MPa, respectively. The test is terminated after all the core is quenched at 800 seconds after the break initiation.

Tables 4.2 and 4.3 show the valve characteristics and the valve control sequence in the present test, respectively.

5. Data Presentation

Run 912 is proceeded as previously planned, started by opening the QOBV (Quick Opening Blowdown Valve) "B" at the pump inlet in the recirculation line. The sequence of major events in the test is shown in Table 5.1.

The feedwater valve, AV-112, begins to close at 2.0 s and is completely closed at 3.1 s. The core power is reduced after 8.8 s to simulate decay heat and the stored heat of a nuclear fuel rod as specified in Fig.4.2. The steam discharge valve, CV-130, begins to close at 19.5 s and completely close at 24.0 s. CV-130 is opended again from 83.6 s to 109 s to simulate the SRV (Safety Relief Valve) actuation. The jet pump suction line is uncovered at 98.8 s in the downcomer and the recirculation pump suction line is uncovered at 150 s after the break initiation. The ADS valve ,AV 169, is opened at 158 s (120 s after L1 signal is generated). The lower plenum fluid is saturated and initiated flashing at 159 s. The whole core is uncovered at 275 s. The peak cladding temperature (PCT) is 839 K, at position 4 (midplane of the core) of the A88 rod at the outer corner in the peak power channel. The LPCS and LPCI are started to provide water at 318 s (2.38 MPa) and 406 s (1.81 MPa), respectively. All heater rods are quenched at 444 s.

The test is completed at 680 s after the break initiation, terminating the core power, closing the LPCS and LPCI valves, and closing the QOBV.

The data acquisition is terminated at approximately 800 s.

The test data are shown in Figs. 5.1 through 5.217. In these figures, the measured quantity is identified by the channel number and the alphabetic characters (Ref. Table 3.3).

Figures 5.1 through 5.7 show the pressure data in the pressure vessel and in the recirculation loop. Figures 5.8 through 5.45 show differential pressure data between various positions in the pressure vessel and the loop. Figures 5.46, 5.47 and 5.48 show the liquid levels in the pressure vessel and in the tanks. Figures 5.49 through 5.54 show the flow rates. Differential pressures across orifices and venturis shown in Figs. 5.55 through 5.65, are usefull to check out the flow rate instrumentations. Figure 5.66 shows the power supplies to the core with the maximum capacities of 2100 and 3150 kW. The revolution

speeds of the recirculation pumps are shown in Fig. 5.67.
On-off signals such as the break initiation signal and the valve positioning signals are shown in Figs. 5.68, 5.69 and 5.70. Figures 5.71 through 5.80 show the fluid densities measured by the gamma densitometer. Figures 5.81 through 5.84 show momentum flux measured by drag disks. Figures 5.85 through 5.90 show the fluid temperatures at the various positions in the loops. The cladding temperature is shown in Figs. 5.91 through 5.171. Figures 5.172 through 5.183 show the fluid temperature in the core. The wall temperatures of the primary system components are shown in Figs. 5.184 through 5.195. The fluid temperature in the lower plenum is shown in Fig. 5.196. The liquid level signals in the core, the upper plenum, the lower plenum, the guide tube and the downcomer are shown in Fig. 5.197 through Fig. 5.217. Figure 5.218 shows the estimated liquid level in the pressure vessel obtained by reducing the conductivity probe signals in Figs. 5.197 through 5.217.
Figures 5.219 and 5.220 show the dryout front and the quenching front.

Quantities obtained from reduction of the test data are shown in Figs. 5.221 through 5.244. Figures 5.221 through 5.224 show the average density. The average density is calculated from the data measured by the three-beam or two-beam gamma densitometers. The beam configurations of gamma densitometers installed in the ROSA-III facility are shown in Figs 3.9 and 3.10. The average density is calculated as an arithmetic mean of the densities in multi directions with the weight of the cord length.

For the three beam densitometer,

$$\rho_{av} = 0.3221\rho_A + 0.43\rho_B + 0.2479\rho_C \qquad (5.1)$$

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,

$$\rho_{av} = 0.5863\rho_A + 0.4137\rho_B \qquad (5.2)$$

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).

Figures 5.225 through 5.228 show the flow rates at upstreams of the break in the recircularion loop. The flow rate is computed from the drag disk data and the gamma densitometer data using the following equation,

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

where,

G : mass flow rate,

C_D : drag coefficient (=1.13),

A : flow area ($=1.923 \times 10^{-3}$ m^2),

ρ_{av} : average density from gamma densitometer,

ρv^2 : momentum flux from drag disk.

The break flow is derived from the flow rate in the recirculation loop as follows,

$$G_B = G_P + G_V \tag{5.4}$$

where,

G_B : break flow,

G_P : flow rate at the pump side of the break,

G_V : flow rate at the vessel side of the break.

The break flow rate based on the low and the high range drag disk data are shown in Fig. 5.229 and Fig. 5.230, respectively.

Figures 5.231 through 5.236 show the core inlet flow and the core by-pass flow. The core inlet flow rate is obtained from the pressure drop across the core inlet orifice and the liquid density corressponding to the liquid temperature in the lower plenum assuming the saturation condition. This method is not applicable for two-phase flow condition after the initiation of the lower plenum flashing (LPF) . The flow rate through each of the four channel box and the guide tube are calculated from Eq. (5.5),

$$G = C_D A \sqrt{2g \cdot \rho_\ell \cdot \Delta p} \qquad (5.5)$$

where,

G : flow rate,

ΔP : pressure drop across the orifice,

C_D : discharge coefficient,

= 0.4778 (for the channel inlet orifice)

= 0.8032 (for the guide tube inlet orifice)

A : flow area,

= 1.521×10^{-3} m^2 (for the channel inlet orifice)

= 0.175×10^{-3} m^2 (for the guide tube inlet orifice)

g : gravitational acceleration,

ρ_ℓ : density of the satulated liquid.

The core inlet flow rate is obtained as the summation of the inlet flow rate to the four channels.

Figures 5.237 and 5.238 show the collapsed water level outside and inside the shroud. The collapsed water level is obtained from the differential pressure in the pressure vessel. The differential pressure may include the flow resistance effect, however, the flow resistance becomes negligible after completion of the recirculation pump coastdown.

Figures 5.239, 5.240 and 5.241 show the fluid mass inventories in the pressure vessel. The fluid mass inventory is determined from the density and the volumes of liquid outside and inside the shroud,

$$M = \rho_\ell \cdot Q \qquad (5.6)$$

where,

M : fluid inventory,

ρ_ℓ : liquid density estimated from the satulation temperature and/or pressure,

Q : liquid volume calculated from the liquid level.

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

$$
\begin{aligned}
Q &= 0 && (\quad L \le 0.494) \\
Q &= 0.0225\,L - 0.0111 && (0.494 \le L \le 1.384) \\
Q &= 0.0697\,L - 0.0769 && (1.384 \le L \le 1.519) \\
Q &= 0.0225\,L - 0.0048 && (1.519 \le L \le 3.355) \\
Q &= 0.0801\,L - 0.1980 && (3.355 \le L \le 4.250) \\
Q &= 0.2443\,L - 0.8959 && (4.250 \le L \le 4.413) \\
Q &= 0.2611\,L - 0.9700 && (4.413 \le L \le 4.578) \\
Q &= 0.2504\,L - 0.9211 && (4.578 \le L \le 4.654) \\
Q &= 0.2375\,L - 0.8610 && (4.654 \le L \le 4.815) \\
Q &= 0.2866\,L - 1.0974 && (4.815 \le L \le 4.915) \\
Q &= 0.3396\,L - 1.3580 && (4.915 \le L \le 5.143) \\
Q &= 0.3607\,L - 1.4665 && (5.143 \le L \le 5.365) \\
Q &= 0.3848\,L - 1.5960 && (5.365 \le L \le 5.955) \\
Q &= 0.7111 && (5.955 \le L \quad)
\end{aligned}
\tag{5.7}
$$

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

$$
\begin{aligned}
Q &= 0 && (\quad L \le 0.0\quad) \\
Q &= 0.2350\,L && (0.0 \le L \le 0.497) \\
Q &= 0.1245\,L + 0.0549 && (0.497 \le L \le 1.354) \\
Q &= 0.0698\,L + 0.1290 && (1.354 \le L \le 3.589) \\
Q &= 0.1648\,L - 0.2120 && (3.589 \le L \le 3.744) \\
Q &= 0.1963\,L - 0.3299 && (3.744 \le L \le 4.243)
\end{aligned}
$$

$$Q = 0.0196\,L + 0.4199 \quad (4.243 \le L \le 4.578) \tag{5.8}$$

$$Q = 0.0186\,L + 0.4244 \quad (4.578 \le L \le 4.654)$$

$$Q = 0.0410\,L + 0.3201 \quad (4.654 \le L \le 5.099)$$

$$Q = 0.0196\,L + 0.4292 \quad (5.099 \le L \le 5.365)$$

$$Q = 0.5344\,L \quad (5.365 \le L \quad)$$

The total fluid mass inventory in the pressure vessel is obtained as the summation of the mass inventory outside and inside the shroud.

The mass decrease by the fluid discharge from the break and the fluid mass recovery by the ECCS water and the feedwater injection is shown in Fig.5.242. The variation of fluid mass inventory with time is calculated by the following equation,

$$M = \int_0^t \{G + \rho_1 \cdot (W_A + W_B + W_C) + \rho_2 \cdot W_D\}\,dt \tag{5.9}$$

Where,

M : mass accumulation,

G : steam discharge flow rate,

ρ_1 : density of satulated liquid at 315 K,

ρ_2 : density of satulated liquid at 489 K,

W_A : volumetric flow rate of the HPCS,

W_B : volumetric flow rate of the LPCS,

W_C : volumetric flow rate of the LPCI,

W_D : volumetric flow rate of the feedwater.

Figure 5.243 shows the fluid mass discharged from the break. The fluid mass discharge M_B is calculated as follows neglecting the fluid mass inventory in the loops,

$$M_B = (M_P)_{\text{initial}} - M_P + M_F \tag{5.10}$$

where,

M_B : fluid mass discharged from the break,

M_P : fluid mass inventory in the pressure vessel,

M_F : fluid mass increase by the ECCS and the feedwater flow and the decrease by the steam discharge flow.

Figure 5.244 shows the break flow calculated from the fluid mass inventory in the pressure vessel. The break flow is estimated from the mass inventory as follows,

$$G_B = \frac{d}{dt} M_B \tag{5.11}$$

where,

G_B : break flow,

M_B : fluid mass discharge from the break.

6. Concluding Remarks

The conduct of ROSA-III Run 912 and the experimental data acquired concerning the integral systems phenomena during an LOCA following a 5% split break at the recirculation pump suction with HPCS failure are considered to have met the objectives as described in Section 1.

The ROSA-III facility and its instrumentation worked wall, and the obtained experimental data are useful for assessing the computer codes for BWR LOCA/ECCS analyses.

Acknowledgement

The authors are grateful to H. Asahi, T. Odaira, T. Takayasu, S. Sekiguchi, Y. Kitano and T. Numata of Nuclear Engineering Corporation for their assistance in conducting the experiment and K. Yamano of Information System Laboratory Corpolation for preparing the data plots.

References

(1) ANODA,Y et.al., "ROSA -III System Description for Fuel Assembly No. 4", JAERI-M 9363 (1981).

(2) SOBAJIMA,M. et.al., "Instrumentation and Data Processing for ROSA-III Test", JAERI-M 8499 (1979).

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

	BWR-6	ROSA-III	BWR/ROSA
No. of Recirculation Loops	2	2	1
No. of Jet Pumps	24	4	6
No. of Separators	251	1	251
No. 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)	3800	4.4	864
Pressure (MPa)	7.23	7.23	1
Core Flow (kg/s)	1.54×10^4	36.4	424
Recirculation Flow (ℓ/s)	2970	7.01	424
Feedwater Flow (kg/s)	2060	4.86	424
Feedwater Temperature (K)	489	489	1

Table 3.1 ROSA-III Measurement List

** MEASUREMENT LIST ** 1CH.- 50CH.

CH.	ITEM	SYMBOL	ID.		LOCATION	FIG.NO.	RANGE				ACCURACY
1	PRESS.	P- 1	PA	1	LOWER PLENUM	FIG.5. 1	0.100	-	10.0	MPA	1.08%FS
2	PRESS.	P- 2	PA	2	UPPER PLENUM	FIG.5. 1	0.100	-	10.0	MPA	1.08%FS
3	PRESS.	P- 3	PA	3	STEAM DOME	FIG.5. 1	0.100	-	10.0	MPA	1.08%FS
4	PRESS.	P- 4	PA	4	DOWNCOMER BOTTOM	FIG.5. 1	0.100	-	10.0	MPA	1.08%FS
5	PRESS.	P- 5	PA	5	JP-3 DRIVE	FIG.5. 2	0.100	-	10.0	MPA	1.08%FS
6	PRESS.	P- 6	PA	6	JP-4 DRIVE	FIG.5. 2	0.100	-	10.0	MPA	1.08%FS
7	PRESS.	P- 7	PA	7	JP-3 SUCTION	FIG.5. 2	0.100	-	10.0	MPA	1.08%FS
8	PRESS.	P- 8	PA	8	JP-4 SUCTION	FIG.5. 2	0.100	-	10.0	MPA	1.08%FS
9	PRESS.	P- 9	PA	9	MRP-1 SUCTION	FIG.5. 3	0.100	-	10.0	MPA	1.08%FS
10	PRESS.	P-10	PA	10	MRP-2 SUCTION	FIG.5. 4	0.100	-	10.0	MPA	1.08%FS
11	PRESS.	P-11	PA	11	MRP-2 DELIVERY	FIG.5. 4	0.100	-	10.0	MPA	1.08%FS
12	PRESS.	P-12	PA	12	BREAK A UPSTREAM	FIG.5. 5	0.100	-	10.0	MPA	1.08%FS
13	PRESS.	P-13	PA	13	BREAK A DOWNSTREAM	FIG.5. 5	0.100	-	10.0	MPA	1.08%FS
14	PRESS.	P-14	PA	14	BREAK B UPSTREAM	FIG.5. 6	0.100	-	10.0	MPA	1.08%FS
15	PRESS.	P-15	PA	15	BREAK B DOWNSTREAM	FIG.5. 6	0.100	-	10.0	MPA	1.08%FS
16	PRESS.	P-16	PA	16	STEAM LINE	FIG.5. 7	0.100	-	10.0	MPA	1.08%FS
17	PRESS.	P-17	PA	17	JP-1,2 OUTLET SPOOL	NOT MEASURED	0.100	-	10.0	MPA	1.08%FS
18	PRESS.	P-18	PA	18	JP-3,4 OUTLET SPOOL	NOT MEASURED	0.100	-	10.0	MPA	1.08%FS
19	PRESS.	P-19	PA	19	BREAK A SPOOL PIECE	FIG.5. 5	0.100	-	10.0	MPA	1.08%FS
20	PRESS.	P-30	PA	20	BREAK B SPOOL PIECE	FIG.5. 6	0.100	-	10.0	MPA	1.08%FS
21	DIFF.P.	D- 1	PD	21	LOWER PL.-UPPER PL.	FIG.5. 8	-50.0	-	350.	KPA	0.63%FS
22	DIFF.P.	D- 2	PD	22	UPPER PL.-STEAM DOME	FIG.5. 9	-10.0	-	90.0	KPA	0.63%FS
23	DIFF.P.	D- 3	PD	23	LOWER PLENUM HEAD	NOT MEASURED					
24	DIFF.P.	D- 4	PD	24	DOWNCOMER HEAD	FIG.5.10	0.0	-	100.	KPA	0.63%FS
25	DIFF.P.	D- 5	PD	25	PV BOTTOM-TOP	FIG.5.11	-100.	-	900.	KPA	0.63%FS
26	DIFF.P.	D- 6	PD	26	JP-1 DISCH.-SUCTION	FIG.5.12	-100.	-	300.	KPA	0.63%FS
27	DIFF.P.	D- 7	PD	27	JP-1 DRIVE -SUCTION	FIG.5.13	0.0	-	2.50	MPA	0.63%FS
28	DIFF.P.	D- 8	PD	28	JP-2 DISCH.-SUCTION	FIG.5.12	-100.	-	300.	KPA	0.63%FS
29	DIFF.P.	D- 9	PD	29	JP-2 DRIVE -SUCTION	FIG.5.13	0.0	-	2.50	MPA	0.63%FS
30	DIFF.P.	D-10	PD	30	JP-3 DISCH.-SUCTION	FIG.5.14	-100.	-	300.	KPA	0.63%FS
31	DIFF.P.	D-11	PD	31	JP-3 DRIVE -SUCTION	FIG.5.15	-4.00	-	2.00	MPA	0.63%FS
32	DIFF.P.	D-12	PD	32	JP-4 DISCH.-SUCTION	FIG.5.14	-100.	-	300.	KPA	0.63%FS
33	DIFF.P.	D-13	PD	33	JP-4 DRIVE -SUCTION	FIG.5.15	-4.00	-	2.00	MPA	0.63%FS
34	DIFF.P.	D-14	PD	34	MRP-1 DELIV.-SUCTION	FIG.5.16	-0.100	-	2.50	MPA	0.63%FS
35	DIFF.P.	D-15	PD	35	MRP-2 DELIV.-SUCTION	FIG.5.17	-0.100	-	2.50	MPA	0.63%FS
36	DIFF.P.	D-16	PD	36	DC BOTTOM- MRP-1 SUC.	FIG.5.18	-50.0	-	50.0	KPA	0.63%FS
37	DIFF.P.	D-17	PD	37	MRP1 DELIV.-JP1 DRIVE	FIG.5.19	0.0	-	250.	KPA	0.63%FS
38	DIFF.P.	D-18	PD	38	MRP1 DELIV.-JP2 DRIVE	FIG.5.20	0.0	-	250.	KPA	0.63%FS
39	DIFF.P.	D-19	PD	39	DC MIDDLE-JP1 SUCTION	FIG.5.21	0.0	-	250.	KPA	0.63%FS
40	DIFF.P.	D-20	PD	40	DC MIDDLE-JP2 SUCTION	FIG.5.22	0.0	-	250.	KPA	0.63%FS
41	DIFF.P.	D-21	PD	41	JP1 DISCH.-LOWER PL.	FIG.5.23	-100.	-	100.	KPA	0.63%FS
42	DIFF.P.	D-22	PD	42	JP2 DISCH.-LOWER PL.	FIG.5.24	-100.	-	100.	KPA	0.63%FS
43	DIFF.P.	D-23	PD	43	DC BOTTOM- BREAK B	FIG.5.25	-60.0	-	540.	KPA	0.63%FS
44	DIFF.P.	D-24	PD	44	BREAK B- BREAK A	FIG.5.26	0.0	-	100.	KPA	0.63%FS
45	DIFF.P.	D-25	PD	45	BREAK A- MRP2 SUCTION	FIG.5.27	-500.	-	100.	KPA	0.63%FS
46	DIFF.P.	D-26	PD	46	MRP2 DELIV.-JP3 DRIVE	FIG.5.28	-500.	-	500.	KPA	0.63%FS
47	DIFF.P.	D-27	PD	47	MRP2 DELIV.-JP4 DRIVE	FIG.5.29	-500.	-	500.	KPA	0.63%FS
48	DIFF.P.	D-28	PD	48	DC MIDDLE-JP3 SUCTION	FIG.5.30	-250.	-	250.	KPA	0.63%FS
49	DIFF.P.	D-29	PD	49	DC MIDDLE-JP4 SUCTION	FIG.5.31	-250.	-	250.	KPA	0.63%FS
50	DIFF.P.	D-30	PD	50	JP3 DISCH.-CONFLUENCE	FIG.5.32	-100.	-	100.	KPA	0.63%FS

Table 3.1 (continued)

** MEASUREMENT LIST **

51CH.- 100CH.

CH.	ITEM	SYMBOL	ID.		LOCATION	FIG.NO.	RANGE				ACCURACY
51	DIFF.P.	D-31	PD	51	JP4 DISCH.-CONFLUENCE	FIG.5.33	-100.	-	100.	KPA	0.63%FS
52	DIFF.P.	D-32	PD	52	CONFLUENCE -LOWER PL.	FIG.5.34	-50.0	-	50.0	KPA	0.63%FS
53	DIFF.P.	D-33	PD	53	LOWER PL.-DC MIDDLE	FIG.5.35	-250.	-	250.	KPA	0.63%FS
54	DIFF.P.	D-34	PD	54	LOWER PL.-DC BOTTOM	FIG.5.36	-250.	-	250.	KPA	0.63%FS
55	DIFF.P.	D-35	PD	55	DC BOTTOM-DC MIDDLE	FIG.5.37	-50.0	-	50.0	KPA	0.63%FS
56	DIFF.P.	D-36	PD	56	DC MIDDLE-STEAM DOME	FIG.5.38	-50.0	-	50.0	KPA	0.63%FS
57	DIFF.P.	D-37	PD	57	LOWER PL.MID-UPPER PL	NOT MEASURED					
58	DIFF.P.	D-38	PD	58	LOWER PL.BOTTOM-MID.	FIG.5.39	0.0	-	50.0	KPA	0.63%FS
59	DIFF.P.	D-39	PD	59	UPPER PL.-DC HIGH	FIG.5.40	-20.0	-	100.	KPA	0.63%FS
60	DIFF.P.	D-40	PD	60	CHANNEL ORIFICE A	FIG.5.41	-50.0	-	50.0	KPA	0.63%FS
61	DIFF.P.	D-41	PD	61	CHANNEL ORIFICE B	FIG.5.42	-50.0	-	50.0	KPA	0.63%FS
62	DIFF.P.	D-42	PD	62	CHANNEL ORIFICE C	FIG.5.43	-25.0	-	75.0	KPA	0.63%FS
63	DIFF.P.	D-43	PD	63	CHANNEL ORIFICE D	FIG.5.44	-50.0	-	50.0	KPA	0.63%FS
64	DIFF.P.	D-44	PD	64	LOWER PLENUM HEAD	FIG.5.45	-100.	-	100.	KPA	0.63%FS
65	LEVEL	WL- 1	LM	65	HPCS TANK	NOT USED	0.0	-	2.30	M	1.00%FS
66	LEVEL	WL- 2	LM	66	LPCS TANK	FIG.5.46	0.0	-	2.30	M	1.00%FS
67	LEVEL	WL- 3	LM	67	LPCI TANK	FIG.5.47	0.0	-	4.25	M	1.00%FS
68	LEVEL	WL- 4	LM	68	UPPER DOWNCOMER	FIG.5.48	3.90	-	6.04	M	1.00%FS
69	LEVEL	WL- 5	LM	69	LOWER DOWNCOMER	FIG.5.48	0.938	-	3.90	M	1.00%FS
70	MASS.F.	F- 1	FM	70	STEAM LINE (LOW RANGE)	FIG.5.49	0.0	-	1.13	KG/S	0.92%FS
71	MASS.F.	F- 2	FM	71	STEAM LINE(HIGH RANGE)	FIG.5.49	0.0	-	3.00	KG/S	0.92%FS
72	MASS.F.	F- 3	FM	72	STEAM LINE (MID RANGE)	FIG.5.49	0.0	-	1.94	KG/S	1.40%FS
73	VOL.F.	F- 7	FV	73	HPCS (UPPER PLENUM)	NOT USED	0.0	-	0.250E-02	M3/S	0.79%FS
74	VOL.F.	F- 9	FV	74	LPCS (UPPER PLENUM)	FIG.5.50	0.0	-	0.250E-02	M3/S	0.79%FS
75	VOL.F.	F-11	FV	75	LPCI (IN-SHROUD)	FIG.5.50	0.0	-	0.830E-02	M3/S	0.79%FS
76	VOL.F.	F-15	FV	76	FEED WATER	FIG.5.51	0.0	-	0.100E-01	M3/S	0.79%FS
77	VOL.F.	F-16	FV	77	PWT FLOW	NOT MEASURED	0.0	-	0.420E-02	M3/S	0.79%FS
78	VOL.F.	F-17	FV	78	JP1 DISCHARGE	FIG.5.52	0.0	-	0.170E-01	M3/S	0.88%FS
79	VOL.F.	F-18	FV	79	JP2 DISCHARGE	FIG.5.52	0.0	-	0.170E-01	M3/S	0.88%FS
80	VOL.F.	F-19	FV	80	JP3 DISCH. POSITIVE	FIG.5.53	0.0	-	0.170E-01	M3/S	0.92%FS
81	VOL.F.	F-20	FV	81	JP3 DISCH. NEGATIVE	FIG.5.53	0.0	-	0.500E-02	M3/S	0.92%FS
82	VOL.F.	F-21	FV	82	JP4 DISCH. POSITIVE	FIG.5.53	0.0	-	0.170E-01	M3/S	0.92%FS
83	VOL.F.	F-22	FV	83	JP4 DISCH. NEGATIVE	FIG.5.53	0.0	-	0.500E-02	M3/S	0.92%FS
84	MASS.F.	F-23	FM	84	JP1,2 OUTLET SPOOL	NOT MEASURED	0.0	-	30.0	KG/S	1.40%FS
85	MASS.F.	F-24	FM	85	JP3,4 OUTLET SPOOL	NOT MEASURED	0.0	-	30.0	KG/S	1.40%FS
86	MASS.F.	F-25	FM	86	BREAK A SPOOL PIECE	NOT MEASURED	0.0	-	30.0	KG/S	1.40%FS
87	MASS.F.	F-26	FM	87	BREAK B SPOOL PIECE	NOT MEASURED	0.0	-	30.0	KG/S	1.40%FS
88	VOL.F.	F-27	FV	88	MRP-1	FIG.5.54	0.0	-	0.120E-01	M3/S	0.88%FS
89	VOL.F.	F-28	FV	89	MRP-2	FIG.5.54	0.0	-	0.120E-01	M3/S	0.63%FS
90	DIFF.P.	D-F1	PD	90	F1 ORIFICE	FIG.5.55	0.0	-	4.90	KPA	0.63%FS
91	DIFF.P.	D-F2	PD	91	F2 ORIFICE	FIG.5.56	0.0	-	34.9	KPA	0.63%FS
92	DIFF.P.	D-F3	PD	92	F3 ORIFICE	FIG.5.57	0.0	-	14.6	KPA	0.63%FS
93	DIFF.P.	D-F17	PD	93	F17 VENTURI	FIG.5.58	0.0	-	98.1	KPA	0.63%FS
94	DIFF.P.	D-F18	PD	94	F18 VENTURI	FIG.5.59	0.0	-	98.1	KPA	0.63%FS
95	DIFF.P.	D-F19	PD	95	F19 ORIFICE	FIG.5.60	0.0	-	147.	KPA	0.63%FS
96	DIFF.P.	D-F20	PD	96	F20 ORIFICE	FIG.5.61	0.0	-	13.2	KPA	0.63%FS
97	DIFF.P.	D-F21	PD	97	F21 ORIFICE	FIG.5.62	0.0	-	147.	KPA	0.63%FS
98	DIFF.P.	D-F22	PD	98	F22 ORIFICE	FIG.5.63	0.0	-	13.2	KPA	0.63%FS
99	DIFF.P.	D-F27	PD	99	F27 VENTURI	FIG.5.64	0.0	-	200.	KPA	0.63%FS
100	DIFF.P.	D-F28	PD	100	F28 VENTURI	FIG.5.65	0.0	-	200.	KPA	0.63%FS

Table 3.1 (continued)

** MEASUREMENT LIST **   101CH.- 150CH.

CH.	ITEM	SYMBOL	ID.		LOCATION	FIG.NO.	RANGE	ACCURACY
101	POWER	W- 1	WE	101	2100 KW POWER SUPPLIER	FIG.5.66	0.0 - 0.210E+04 KW	1.00%FS
102	POWER	W- 2	WE	102	3150 KW POWER SUPPLIER	FIG.5.66	0.0 - 0.315E+04 KW	1.00%FS
103								
104	REV.	N- 1	SR	104	MRP-1	FIG.5.67	0.0 - 0.500E+04 RPM	1.08%FS
105	REV.	N- 2	SR	105	MRP-2	FIG.5.67	0.0 - 0.500E+04 RPM	1.08%FS
106	SIGNAL	S- 1	EV	106	BREAK SIGNAL A	FIG.5.68		
107	SIGNAL	S- 2	EV	107	BREAK SIGNAL B	FIG.5.68		
108	SIGNAL	S- 3	EV	108	QSV SIGNAL	FIG.5.68		
109	SIGNAL	S- 6	EV	109	HPCS VALVE	FIG.5.69		
110	SIGNAL	S- 7	EV	110	LPCS VALVE	FIG.5.69		
111	SIGNAL	S- 8	EV	111	LPCI VALVE	FIG.5.69		
112	SIGNAL	S- 9	EV	112	FEED WATER CONTROL	FIG.5.68		
113	SIGNAL	S-10	EV	113	MSIV SIGNAL	FIG.5.68		
114	SIGNAL	S-11	EV	114	STEAM LINE VALVE	FIG.5.68		
115	SIGNAL	S-12	EV	115	ADS VALVE	FIG.5.69		
116	SIGNAL	S-13	EV	116	MRP-1 POWER OFF	FIG.5.70		
117	SIGNAL	S-14	EV	117	MRP-2 POWER OFF	FIG.5.70		
118	SIGNAL	RD- 1	EV	118	MRP-1 REV. DIRECTION	FIG.5.70		
119	SIGNAL	RD- 2	EV	119	MRP-2 REV. DIRECTION	FIG.5.70		
120	DENSITY	DF- 1	DE	120	JP1,2 OUTLET BEAM A	FIG.5.71	0.0 - 0.100E+04 KG/M3	1.00%FS
121	DENSITY	DF- 2	DE	121	JP1,2 OUTLET BEAM B	FIG.5.72	0.0 - 0.100E+04 KG/M3	1.00%FS
122	DENSITY	DF- 3	DE	122	JP1,2 OUTLET BEAM C	FIG.5.73	0.0 - 0.100E+04 KG/M3	1.00%FS
123	DENSITY	DF- 4	DE	123	JP3,4 OUTLET BEAM A	FIG.5.74	0.0 - 0.100E+04 KG/M3	1.00%FS
124	DENSITY	DF- 5	DE	124	JP3,4 OUTLET BEAM B	FIG.5.75	0.0 - 0.100E+04 KG/M3	1.00%FS
125	DENSITY	DF- 6	DE	125	JP3,4 OUTLET BEAM C	FIG.5.76	0.0 - 0.100E+04 KG/M3	1.00%FS
126	DENSITY	DF- 7	DE	126	BREAK A BEAM A	FIG.5.77	0.0 - 0.100E+04 KG/M3	1.00%FS
127	DENSITY	DF- 8	DE	127	BREAK A BEAM B	FIG.5.78	0.0 - 0.100E+04 KG/M3	1.00%FS
128	DENSITY	DF- 9	DE	128	BREAK B BEAM A	FIG.5.79	0.0 - 0.100E+04 KG/M3	1.00%FS
129	DENSITY	DF-10	DE	129	BREAK B BEAM B	FIG.5.80	0.0 - 0.100E+04 KG/M3	1.00%FS
130	MO.FLUX	M- 1	MF	130	JP1,2 OUTLET SPOOL	NOT MEASURED	0.0 - 0.220E+05 KG/MS2	1.00%FS
131	MO.FLUX	M- 2	MF	131	JP3,4 OUTLET SPOOL	NOT MEASURED	0.0 - 0.220E+05 KG/MS2	1.00%FS
132	MO.FLUX	M- 3	MF	132	BREAK A (LOW RANGE)	FIG.5.81	0.0 - 0.220E+05 KG/MS2	1.00%FS
133	MO.FLUX	M- 4	MF	133	BREAK B (LOW RANGE)	FIG.5.82	0.0 - 0.220E+05 KG/MS2	1.00%FS
134	MO.FLUX	M- 5	MF	134	BREAK A (HIGH RANGE)	FIG.5.83	0.0 - 0.220E+06 KG/MS2	1.00%FS
135	MO.FLUX	M- 6	MF	135	BREAK B (HIGH RANGE)	FIG.5.84	0.0 - 0.220E+06 KG/MS2	1.00%FS
136	MO.FLUX	M- 7	MF	136	BREAK ORIFICE	NOT MEASURED	0.0 - 0.220E+05 KG/MS2	1.00%FS
137								
138	FLUID T.	T- 1	TE	138	LOWER PLENUM	FIG.5.85	273. - 673. K	0.64%FS
139	FLUID T.	T- 2	TE	139	UPPER PLENUM	FIG.5.85	273. - 673. K	0.64%FS
140	FLUID T.	T- 3	TE	140	STEAM DOME	FIG.5.85	273. - 673. K	0.64%FS
141	FLUID T.	T- 4	TE	141	UPPER DOWNCOMER	FIG.5.85	273. - 673. K	0.64%FS
142	FLUID T.	T- 5	TE	142	LOWER DOWNCOMER	FIG.5.85	273. - 673. K	0.64%FS
143	FLUID T.	T- 6	TE	143	JP-1 DRIVE	FIG.5.86	273. - 673. K	0.64%FS
144	FLUID T.	T- 7	TE	144	JP-2 DRIVE	FIG.5.86	273. - 673. K	0.64%FS
145	FLUID T.	T- 8	TE	145	JP-3 DRIVE	FIG.5.87	273. - 673. K	0.64%FS
146	FLUID T.	T- 9	TE	146	JP-4 DRIVE	FIG.5.87	273. - 673. K	0.64%FS
147	FLUID T.	T-10	TE	147	JP-1 DISCHARGE	FIG.5.86	273. - 673. K	0.64%FS
148	FLUID T.	T-11	TE	148	JP-2 DISCHARGE	FIG.5.86	273. - 673. K	0.64%FS
149	FLUID T.	T-12	TE	149	JP-3 DISCHARGE	FIG.5.87	273. - 673. K	0.64%FS
150	FLUID T.	T-13	TE	150	JP-4 DISCHARGE	FIG.5.87	273. - 673. K	0.64%FS

Table 3.1 (continued)

** MEASUREMENT LIST **

151CH.- 200CH.

CH.	ITEM	SYMBOL	ID.		LOCATION	FIG.NO.	RANGE				ACCURACY
151	FLUID T.	T-14	TE	151	MRP-1 SUCTION	FIG.5.86	273.	-	673.	K	0.64%FS
152	FLUID T.	T-15	TE	152	MRP-1 DELIVERY	FIG.5.86	273.	-	673.	K	0.64%FS
153	FLUID T.	T-16	TE	153	MRP-2 SUCTION	FIG.5.87	273.	-	673.	K	0.64%FS
154	FLUID T.	T-17	TE	154	MRP-2 DELIVERY	FIG.5.87	273.	-	673.	K	0.64%FS
155	FLUID T.	T-18	TE	155	BREAK A UPSTREAM	FIG.5.88	273.	-	673.	K	0.64%FS
156	FLUID T.	T-19	TE	156	BREAK B UPSTREAM	FIG.5.88	273.	-	673.	K	0.64%FS
157	FLUID T.	T-20	TE	157	RCN A CONDENSED WATER	NOT USED	273.	-	698.	K	0.64%FS
158	FLUID T.	T-21	TE	158	RCN B CONDENSED WATER	NOT USED	273.	-	698.	K	0.64%FS
159	FLUID T.	T-22	TE	159	DISCHARGED STEAM	FIG.5.89	273.	-	673.	K	0.64%FS
160	FLUID T.	T-24	TE	160	JP-1,2 OUTLET SPOOL	FIG.5.86	273.	-	763.	K	0.64%FS
161	FLUID T.	T-25	TE	161	JP-3,4 OUTLET SPOOL	FIG.5.87	273.	-	763.	K	0.64%FS
162	FLUID T.	T-26	TE	162	BREAK A SPOOL PIECE	FIG.5.88	273.	-	763.	K	0.64%FS
163	FLUID T.	T-37	TE	163	BREAK B SPOOL PIECE	FIG.5.88	273.	-	763.	K	0.64%FS
164	FLUID T.	T-38	TE	164	FEED WATER	FIG.5.90	273.	-	673.	K	0.64%FS
165	SLAB T.	TS- 1	TE	165	CORE BARREL C POS.1	NOT MEASURED	273.	-	673.	K	0.64%FS
166	SLAB T.	TS- 2	TE	166	CORE BARREL C POS.2	NOT MEASURED	273.	-	673.	K	0.64%FS
167	SLAB T.	TS- 3	TE	167	CORE BARREL C POS.3	NOT MEASURED	273.	-	673.	K	0.64%FS
168	SLAB T.	TS- 4	TE	168	CORE BARREL C POS.4	NOT MEASURED	273.	-	673.	K	0.64%FS
169	SLAB T.	TS- 5	TE	169	CORE BARREL C POS.5	NOT MEASURED	273.	-	673.	K	0.64%FS
170	SLAB T.	TS- 6	TE	170	CORE BARREL C POS.6	NOT MEASURED	273.	-	673.	K	0.64%FS
171	SLAB T.	TS- 7	TE	171	CORE BARREL A POS.1	NOT MEASURED	273.	-	673.	K	0.64%FS
172	SLAB T.	TS- 8	TE	172	CORE BARREL A POS.2	NOT MEASURED	273.	-	673.	K	0.64%FS
173	SLAB T.	TS- 9	TE	173	CORE BARREL A POS.3	NOT MEASURED	273.	-	673.	K	0.64%FS
174	SLAB T.	TS-10	TE	174	CORE BARREL A POS.4	NOT MEASURED	273.	-	673.	K	0.64%FS
175	SLAB T.	TS-11	TE	175	CORE BARREL A POS.5	NOT MEASURED	273.	-	673.	K	0.64%FS
176	SLAB T.	TS-12	TE	176	CORE BARREL A POS.6	NOT MEASURED	273.	-	673.	K	0.64%FS
177	SLAB T.	TS-13	TE	177	FILLER BLOCK C POS.1	NOT MEASURED	273.	-	673.	K	0.64%FS
178	SLAB T.	TS-14	TE	178	FILLER BLOCK C POS.2	NOT MEASURED	273.	-	673.	K	0.64%FS
179	SLAB T.	TS-15	TE	179	FILLER BLOCK C POS.3	NOT MEASURED	273.	-	673.	K	0.64%FS
180	SLAB T.	TS-16	TE	180	FILLER BLOCK C POS.4	NOT MEASURED	273.	-	673.	K	0.64%FS
181	SLAB T.	TS-17	TE	181	FILLER BLOCK C POS.5	NOT MEASURED	273.	-	673.	K	0.64%FS
182	SLAB T.	TS-18	TE	182	FILLER BLOCK C POS.6	NOT MEASURED	273.	-	673.	K	0.64%FS
183	SLAB T.	TS-19	TE	183	FILLER BLOCK A POS.1	NOT MEASURED	273.	-	673.	K	0.64%FS
184	SLAB T.	TS-20	TE	184	FILLER BLOCK A POS.2	NOT MEASURED	273.	-	673.	K	0.64%FS
185	SLAB T.	TS-21	TE	185	FILLER BLOCK A POS.3	NOT MEASURED	273.	-	673.	K	0.64%FS
186	SLAB T.	TS-22	TE	186	FILLER BLOCK A POS.4	NOT MEASURED	273.	-	673.	K	0.64%FS
187	SLAB T.	TS-23	TE	187	FILLER BLOCK A POS.5	NOT MEASURED	273.	-	673.	K	0.64%FS
188	SLAB T.	TS-24	TE	188	FILLER BLOCK A POS.6	NOT MEASURED	273.	-	673.	K	0.64%FS
189	SLAB T.	TS-25	TE	189	JP-1 DIFFUSER WALL	NOT MEASURED	273.	-	673.	K	0.64%FS
190	SLAB T.	TS-26	TE	190	JP-2 DIFFUSER WALL	NOT MEASURED	273.	-	673.	K	0.64%FS
191	SLAB T.	TS-27	TE	191	JP-3 DIFFUSER WALL	NOT MEASURED	273.	-	673.	K	0.64%FS
192	SLAB T.	TS-28	TE	192	JP-4 DIFFUSER WALL	NOT MEASURED	273.	-	673.	K	0.64%FS
193	SLAB T.	TS-29	TE	193	PV WALL INSIDE 1-1	NOT MEASURED	273.	-	673.	K	0.64%FS
194	SLAB T.	TS-30	TE	194	PV INNER SURFACE 1-2	NOT MEASURED	273.	-	673.	K	0.64%FS
195	SLAB T.	TS-31	TE	195	PV INNER SURFACE 1-3	NOT MEASURED	273.	-	673.	K	0.64%FS
196	SLAB T.	TS-32	TE	196	PV WALL INSIDE 2	NOT MEASURED	273.	-	673.	K	0.64%FS
197	SLAB T.	TS-33	TE	197	PV WALL INSIDE 3	NOT MEASURED	273.	-	673.	K	0.64%FS
198	SLAB T.	TS-34	TE	198	PV WALL INSIDE 4	NOT MEASURED	273.	-	673.	K	0.64%FS
199	SLAB T.	TS-35	TE	199	L.P. INNER SURFACE	NOT MEASURED	273.	-	673.	K	0.64%FS
200	SLAB T.	TS-36	TE	200	L.P. WALL INSIDE	NOT MEASURED	273.	-	673.	K	0.64%FS

Table 3.1 (continued)

** MEASUREMENT LIST **

201CH.- 250CH.

CH.	ITEM	SYMBOL	ID.	LOCATION	FIG.NO.	RANGE	ACCURACY
201	TEMP.	TF- 1	TE 201	A11 FUEL ROD POS.1	FIG.5.91, 151	273. - 0.147E+04 K	0.64%FS
202	TEMP.	TF- 2	TE 202	A11 FUEL ROD POS.2	FIG.5.91, 152	273. - 0.147E+04 K	0.64%FS
203	TEMP.	TF- 3	TE 203	A11 FUEL ROD POS.3	FIG.5.91, 153	273. - 0.147E+04 K	0.64%FS
204	TEMP.	TF- 4	TE 204	A11 FUEL ROD POS.4	FIG.5.91, 154	273. - 0.147E+04 K	0.64%FS
205	TEMP.	TF- 5	TE 205	A11 FUEL ROD POS.5	FIG.5.91, 155	273. - 0.147E+04 K	0.64%FS
206	TEMP.	TF- 6	TE 206	A11 FUEL ROD POS.6	FIG.5.91, 156	273. - 0.147E+04 K	0.64%FS
207	TEMP.	TF- 7	TE 207	A11 FUEL ROD POS.7	FIG.5.91, 157	273. - 0.147E+04 K	0.64%FS
208	TEMP.	TF- 8	TE 208	A12 FUEL ROD POS.1	FIG.5.92, 151	273. - 0.147E+04 K	0.64%FS
209	TEMP.	TF- 9	TE 209	A12 FUEL ROD POS.2	FIG.5.92, 152	273. - 0.147E+04 K	0.64%FS
210	TEMP.	TF- 10	TE 210	A12 FUEL ROD POS.3	FIG.5.92, 153	273. - 0.147E+04 K	0.64%FS
211	TEMP.	TF- 11	TE 211	A12 FUEL ROD POS.4	FIG.5.92, 154	273. - 0.147E+04 K	0.64%FS
212	TEMP.	TF- 12	TE 212	A12 FUEL ROD POS.5	FIG.5.92, 155	273. - 0.147E+04 K	0.64%FS
213	TEMP.	TF- 13	TE 213	A12 FUEL ROD POS.6	FIG.5.92, 156	273. - 0.147E+04 K	0.64%FS
214	TEMP.	TF- 14	TE 214	A12 FUEL ROD POS.7	FIG.5.92, 157	273. - 0.147E+04 K	0.64%FS
215	TEMP.	TF- 15	TE 215	A13 FUEL ROD POS.1	FIG.5.93, 151	273. - 0.147E+04 K	0.64%FS
216	TEMP.	TF- 16	TE 216	A13 FUEL ROD POS.2	FIG.5.93, 152	273. - 0.147E+04 K	0.64%FS
217	TEMP.	TF- 17	TE 217	A13 FUEL ROD POS.3	FIG.5.93, 153	273. - 0.147E+04 K	0.64%FS
218	TEMP.	TF- 18	TE 218	A13 FUEL ROD POS.4	FIG.5.93, 154	273. - 0.147E+04 K	0.64%FS
219	TEMP.	TF- 19	TE 219	A13 FUEL ROD POS.5	FIG.5.93, 155	273. - 0.147E+04 K	0.64%FS
220	TEMP.	TF- 20	TE 220	A13 FUEL ROD POS.6	FIG.5.93, 156	273. - 0.147E+04 K	0.64%FS
221	TEMP.	TF- 21	TE 221	A13 FUEL ROD POS.7	FIG.5.93, 157	273. - 0.147E+04 K	0.64%FS
222	TEMP.	TF- 22	TE 222	A14 FUEL ROD POS.1	FIG.5.94	273. - 0.147E+04 K	0.64%FS
223	TEMP.	TF- 23	TE 223	A14 FUEL ROD POS.2	FIG.5.94	273. - 0.147E+04 K	0.64%FS
224	TEMP.	TF- 24	TE 224	A14 FUEL ROD POS.3	FIG.5.94	273. - 0.147E+04 K	0.64%FS
225	TEMP.	TF- 25	TE 225	A14 FUEL ROD POS.4	FIG.5.94	273. - 0.147E+04 K	0.64%FS
226	TEMP.	TF- 26	TE 226	A14 FUEL ROD POS.5	FIG.5.94	273. - 0.147E+04 K	0.64%FS
227	TEMP.	TF- 27	TE 227	A14 FUEL ROD POS.6	FIG.5.94	273. - 0.147E+04 K	0.64%FS
228	TEMP.	TF- 28	TE 228	A14 FUEL ROD POS.7	FIG.5.94	273. - 0.147E+04 K	0.64%FS
229	TEMP.	TF- 29	TE 229	A15 FUEL ROD POS.1	FIG.5.95	273. - 0.147E+04 K	0.64%FS
230	TEMP.	TF- 30	TE 230	A15 FUEL ROD POS.4	FIG.5.95	273. - 0.147E+04 K	0.64%FS
231	TEMP.	TF- 31	TE 231	A17 FUEL ROD POS.1	FIG.5.96	273. - 0.147E+04 K	0.64%FS
232	TEMP.	TF- 32	TE 232	A17 FUEL ROD POS.4	FIG.5.96	273. - 0.147E+04 K	0.64%FS
233	TEMP.	TF- 33	TE 233	A22 FUEL ROD POS.1	FIG.5.97, 151, 165	273. - 0.147E+04 K	0.64%FS
234	TEMP.	TF- 34	TE 234	A22 FUEL ROD POS.2	FIG.5.97, 152, 166	273. - 0.147E+04 K	0.64%FS
235	TEMP.	TF- 35	TE 235	A22 FUEL ROD POS.3	FIG.5.97, 153, 167	273. - 0.147E+04 K	0.64%FS
236	TEMP.	TF- 36	TE 236	A22 FUEL ROD POS.4	FIG.5.97, 154, 168	273. - 0.125E+04 K	0.64%FS
237	TEMP.	TF- 37	TE 237	A22 FUEL ROD POS.5	FIG.5.97, 155, 169	273. - 0.125E+04 K	0.64%FS
238	TEMP.	TF- 38	TE 238	A22 FUEL ROD POS.6	FIG.5.97, 156, 170	273. - 0.125E+04 K	0.64%FS
239	TEMP.	TF- 39	TE 239	A22 FUEL ROD POS.7	FIG.5.97, 157, 171	273. - 0.125E+04 K	0.64%FS
240	TEMP.	TF- 40	TE 240	A24 FUEL ROD POS.1	FIG.5.98	273. - 0.125E+04 K	0.64%FS
241	TEMP.	TF- 41	TE 241	A24 FUEL ROD POS.2	FIG.5.98	273. - 0.125E+04 K	0.64%FS
242	TEMP.	TF- 42	TE 242	A24 FUEL ROD POS.3	FIG.5.98	273. - 0.125E+04 K	0.64%FS
243	TEMP.	TF- 43	TE 243	A24 FUEL ROD POS.4	FIG.5.98	273. - 0.125E+04 K	0.64%FS
244	TEMP.	TF- 44	TE 244	A24 FUEL ROD POS.5	FIG.5.98	273. - 0.125E+04 K	0.64%FS
245	TEMP.	TF- 45	TE 245	A24 FUEL ROD POS.6	FIG.5.98	273. - 0.125E+04 K	0.64%FS
246	TEMP.	TF- 46	TE 246	A24 FUEL ROD POS.7	FIG.5.98	273. - 0.125E+04 K	0.64%FS
247	TEMP.	TF- 47	TE 247	A26 FUEL ROD POS.1	FIG.5.99	273. - 0.125E+04 K	0.64%FS
248	TEMP.	TF- 48	TE 248	A26 FUEL ROD POS.2	FIG.5.99	273. - 0.125E+04 K	0.64%FS
249	TEMP.	TF- 49	TE 249	A28 FUEL ROD POS.1	FIG.5.100	273. - 0.125E+04 K	0.64%FS
250	TEMP.	TF- 50	TE 250	A28 FUEL ROD POS.4	FIG.5.100	273. - 0.125E+04 K	0.64%FS

Table 3.1 (continued)

** MEASUREMENT LIST **　　　　251CH.- 300CH.

CH.	ITEM	SYMBOL	ID.	LOCATION	FIG.NO.	RANGE	ACCURACY
251	TEMP.	TF- 51	TE 251	A31 FUEL ROD POS.1	FIG.5.101	273. - 0.125E+04 K	0.64%FS
252	TEMP.	TF- 52	TE 252	A31 FUEL ROD POS.4	FIG.5.101	273. - 0.125E+04 K	0.64%FS
253	TEMP.	TF- 53	TE 253	A33 FUEL ROD POS.1	FIG.5.102, 151	273. - 0.125E+04 K	0.64%FS
254	TEMP.	TF- 54	TE 254	A33 FUEL ROD POS.2	FIG.5.102, 152	273. - 0.125E+04 K	0.64%FS
255	TEMP.	TF- 55	TE 255	A33 FUEL ROD POS.3	FIG.5.102, 153	273. - 0.125E+04 K	0.64%FS
256	TEMP.	TF- 56	TE 256	A33 FUEL ROD POS.4	FIG.5.102, 154	273. - 0.125E+04 K	0.64%FS
257	TEMP.	TF- 57	TE 257	A33 FUEL ROD POS.5	FIG.5.102, 155	273. - 0.125E+04 K	0.64%FS
258	TEMP.	TF- 58	TE 258	A33 FUEL ROD POS.6	FIG.5.102, 156	273. - 0.125E+04 K	0.64%FS
259	TEMP.	TF- 59	TE 259	A33 FUEL ROD POS.7	FIG.5.102, 157	273. - 0.125E+04 K	0.64%FS
260	TEMP.	TF- 60	TE 260	A34 FUEL ROD POS.1	FIG.5.103	273. - 0.125E+04 K	0.64%FS
261	TEMP.	TF- 61	TE 261	A34 FUEL ROD POS.2	FIG.5.103	273. - 0.125E+04 K	0.64%FS
262	TEMP.	TF- 62	TE 262	A34 FUEL ROD POS.3	FIG.5.103	273. - 0.125E+04 K	0.64%FS
263	TEMP.	TF- 63	TE 263	A34 FUEL ROD POS.4	FIG.5.103	273. - 0.125E+04 K	0.64%FS
264	TEMP.	TF- 64	TE 264	A34 FUEL ROD POS.5	FIG.5.103	273. - 0.125E+04 K	0.64%FS
265	TEMP.	TF- 65	TE 265	A34 FUEL ROD POS.6	FIG.5.103	273. - 0.125E+04 K	0.64%FS
266	TEMP.	TF- 66	TE 266	A34 FUEL ROD POS.7	FIG.5.103	273. - 0.125E+04 K	0.64%FS
267	TEMP.	TF- 67	TE 267	A37 FUEL ROD POS.1	FIG.5.104	273. - 0.125E+04 K	0.64%FS
268	TEMP.	TF- 68	TE 268	A37 FUEL ROD POS.4	FIG.5.104	273. - 0.125E+04 K	0.64%FS
269	TEMP.	TF- 69	TE 269	A42 FUEL ROD POS.1	FIG.5.105	273. - 0.125E+04 K	0.64%FS
270	TEMP.	TF- 70	TE 270	A42 FUEL ROD POS.4	FIG.5.105	273. - 0.125E+04 K	0.64%FS
271	TEMP.	TF- 71	TE 271	A44 FUEL ROD POS.1	FIG.5.106	273. - 0.125E+04 K	0.64%FS
272	TEMP.	TF- 72	TE 272	A44 FUEL ROD POS.2	FIG.5.106	273. - 0.125E+04 K	0.64%FS
273	TEMP.	TF- 73	TE 273	A44 FUEL ROD POS.3	FIG.5.106	273. - 0.125E+04 K	0.64%FS
274	TEMP.	TF- 74	TE 274	A44 FUEL ROD POS.4	FIG.5.106	273. - 0.125E+04 K	0.64%FS
275	TEMP.	TF- 75	TE 275	A44 FUEL ROD POS.5	FIG.5.106	273. - 0.125E+04 K	0.64%FS
276	TEMP.	TF- 76	TE 276	A44 FUEL ROD POS.6	FIG.5.106	273. - 0.125E+04 K	0.64%FS
277	TEMP.	TF- 77	TE 277	A44 FUEL ROD POS.7	FIG.5.106	273. - 0.125E+04 K	0.64%FS
278	TEMP.	TF- 78	TE 278	A48 FUEL ROD POS.1	FIG.5.107	273. - 0.125E+04 K	0.64%FS
279	TEMP.	TF- 79	TE 279	A48 FUEL ROD POS.4	FIG.5.107	273. - 0.125E+04 K	0.64%FS
280	TEMP.	TF- 80	TE 280	A51 FUEL ROD POS.1	FIG.5.108	273. - 0.125E+04 K	0.64%FS
281	TEMP.	TF- 81	TE 281	A51 FUEL ROD POS.4	FIG.5.108	273. - 0.125E+04 K	0.64%FS
282	TEMP.	TF- 82	TE 282	A53 FUEL ROD POS.1	FIG.5.109	273. - 0.125E+04 K	0.64%FS
283	TEMP.	TF- 83	TE 283	A53 FUEL ROD POS.4	FIG.5.109	273. - 0.125E+04 K	0.64%FS
284	TEMP.	TF- 84	TE 284	A57 FUEL ROD POS.1	FIG.5.110	273. - 0.125E+04 K	0.64%FS
285	TEMP.	TF- 85	TE 285	A57 FUEL ROD POS.4	FIG.5.110	273. - 0.125E+04 K	0.64%FS
286	TEMP.	TF- 86	TE 286	A62 FUEL ROD POS.1	FIG.5.111	273. - 0.125E+04 K	0.64%FS
287	TEMP.	TF- 87	TE 287	A62 FUEL ROD POS.4	FIG.5.111	273. - 0.125E+04 K	0.64%FS
288	TEMP.	TF- 88	TE 288	A66 FUEL ROD POS.1	FIG.5.112	273. - 0.125E+04 K	0.64%FS
289	TEMP.	TF- 89	TE 289	A66 FUEL ROD POS.4	FIG.5.112	273. - 0.125E+04 K	0.64%FS
290	TEMP.	TF- 90	TE 290	A68 FUEL ROD POS.1	FIG.5.113	273. - 0.125E+04 K	0.64%FS
291	TEMP.	TF- 91	TE 291	A68 FUEL ROD POS.4	FIG.5.113	273. - 0.125E+04 K	0.64%FS
292	TEMP.	TF- 92	TE 292	A71 FUEL ROD POS.1	FIG.5.114	273. - 0.125E+04 K	0.64%FS
293	TEMP.	TF- 93	TE 293	A71 FUEL ROD POS.4	FIG.5.114	273. - 0.125E+04 K	0.64%FS
294	TEMP.	TF- 94	TE 294	A73 FUEL ROD POS.1	FIG.5.115	273. - 0.125E+04 K	0.64%FS
295	TEMP.	TF- 95	TE 295	A73 FUEL ROD POS.4	FIG.5.115	273. - 0.125E+04 K	0.64%FS
296	TEMP.	TF- 96	TE 296	A75 FUEL ROD POS.1	FIG.5.116	273. - 0.125E+04 K	0.64%FS
297	TEMP.	TF- 97	TE 297	A75 FUEL ROD POS.4	FIG.5.116	273. - 0.125E+04 K	0.64%FS
298	TEMP.	TF- 98	TE 298	A77 FUEL ROD POS.1	FIG.5.117, 151	273. - 0.125E+04 K	0.64%FS
299	TEMP.	TF- 99	TE 299	A77 FUEL ROD POS.2	FIG.5.117, 152	273. - 0.125E+04 K	0.64%FS
300	TEMP.	TF-100	TE 300	A77 FUEL ROD POS.3	FIG.5.117, 153	273. - 0.125E+04 K	0.64%FS

Table 3.1 (continued)

** MEASUREMENT LIST ** 301CH.- 350CH.

CH.	ITEM	SYMBOL	ID.		LOCATION	FIG.NO.	RANGE			ACCURACY
301	TEMP.	TF-101	TE	301	A77 FUEL ROD POS.4	FIG.5.117, 154	273.	-	0.125E+04 K	0.64%FS
302	TEMP.	TF-102	TE	302	A77 FUEL ROD POS.5	FIG.5.117, 155	273.	-	0.125E+04 K	0.64%FS
303	TEMP.	TF-103	TE	303	A77 FUEL ROD POS.6	FIG.5.117, 156	273.	-	0.125E+04 K	0.64%FS
304	TEMP.	TF-104	TE	304	A77 FUEL ROD POS.7	FIG.5.117, 157	273.	-	0.125E+04 K	0.64%FS
305	TEMP.	TF-105	TE	305	A82 FUEL ROD POS.1	FIG.5.118	273.	-	0.125E+04 K	0.64%FS
306	TEMP.	TF-106	TE	306	A82 FUEL ROD POS.4	FIG.5.118	273.	-	0.125E+04 K	0.64%FS
307	TEMP.	TF-107	TE	307	A84 FUEL ROD POS.1	FIG.5.119	273.	-	0.125E+04 K	0.64%FS
308	TEMP.	TF-108	TE	308	A84 FUEL ROD POS.4	FIG.5.119	273.	-	0.125E+04 K	0.64%FS
309	TEMP.	TF-109	TE	309	A85 FUEL ROD POS.1	FIG.5.120	273.	-	0.125E+04 K	0.64%FS
310	TEMP.	TF-110	TE	310	A85 FUEL ROD POS.2	FIG.5.120	273.	-	0.125E+04 K	0.64%FS
311	TEMP.	TF-111	TE	311	A85 FUEL ROD POS.3	FIG.5.120	273.	-	0.125E+04 K	0.64%FS
312	TEMP.	TF-112	TE	312	A85 FUEL ROD POS.4	FIG.5.120	273.	-	0.125E+04 K	0.64%FS
313	TEMP.	TF-113	TE	313	A85 FUEL ROD POS.5	FIG.5.120	273.	-	0.125E+04 K	0.64%FS
314	TEMP.	TF-114	TE	314	A85 FUEL ROD POS.6	FIG.5.120	273.	-	0.125E+04 K	0.64%FS
315	TEMP.	TF-115	TE	315	A85 FUEL ROD POS.7	FIG.5.120	273.	-	0.125E+04 K	0.64%FS
316	TEMP.	TF-116	TE	316	A87 FUEL ROD POS.1	FIG.5.121	273.	-	0.125E+04 K	0.64%FS
317	TEMP.	TF-117	TE	317	A87 FUEL ROD POS.2	FIG.5.121	273.	-	0.125E+04 K	0.64%FS
318	TEMP.	TF-118	TE	318	A87 FUEL ROD POS.3	FIG.5.121	273.	-	0.125E+04 K	0.64%FS
319	TEMP.	TF-119	TE	319	A87 FUEL ROD POS.4	FIG.5.121	273.	-	0.125E+04 K	0.64%FS
320	TEMP.	TF-120	TE	320	A87 FUEL ROD POS.5	FIG.5.121	273.	-	0.125E+04 K	0.64%FS
321	TEMP.	TF-121	TE	321	A87 FUEL ROD POS.6	FIG.5.121	273.	-	0.125E+04 K	0.64%FS
322	TEMP.	TF-122	TE	322	A87 FUEL ROD POS.7	FIG.5.121	273.	-	0.125E+04 K	0.64%FS
323	TEMP.	TF-123	TE	323	A88 FUEL ROD POS.1	FIG.5.122, 151	273.	-	0.125E+04 K	0.64%FS
324	TEMP.	TF-124	TE	324	A88 FUEL ROD POS.2	FIG.5.122, 152	273.	-	0.125E+04 K	0.64%FS
325	TEMP.	TF-125	TE	325	A88 FUEL ROD POS.3	FIG.5.122, 153	273.	-	0.125E+04 K	0.64%FS
326	TEMP.	TF-126	TE	326	A88 FUEL ROD POS.4	FIG.5.122, 154	273.	-	0.125E+04 K	0.64%FS
327	TEMP.	TF-127	TE	327	A88 FUEL ROD POS.5	FIG.5.122, 155	273.	-	0.125E+04 K	0.64%FS
328	TEMP.	TF-128	TE	328	A88 FUEL ROD POS.6	FIG.5.122, 156	273.	-	0.125E+04 K	0.64%FS
329	TEMP.	TF-129	TE	329	A88 FUEL ROD POS.7	FIG.5.122, 157	273.	-	0.125E+04 K	0.64%FS
330	TEMP.	TF-130	TE	330	B11 FUEL ROD POS.1	NOT MEASURED	273.	-	0.125E+04 K	0.64%FS
331	TEMP.	TF-131	TE	331	B11 FUEL ROD POS.2	NOT MEASURED	273.	-	0.125E+04 K	0.64%FS
332	TEMP.	TF-132	TE	332	B11 FUEL ROD POS.3	NOT MEASURED	273.	-	0.125E+04 K	0.64%FS
333	TEMP.	TF-133	TE	333	B11 FUEL ROD POS.4	NOT MEASURED	273.	-	0.125E+04 K	0.64%FS
334	TEMP.	TF-134	TE	334	B11 FUEL ROD POS.5	NOT MEASURED	273.	-	0.125E+04 K	0.64%FS
335	TEMP.	TF-135	TE	335	B11 FUEL ROD POS.6	NOT MEASURED	273.	-	0.125E+04 K	0.64%FS
336	TEMP.	TF-136	TE	336	B11 FUEL ROD POS.7	NOT MEASURED	273.	-	0.125E+04 K	0.64%FS
337	TEMP.	TF-137	TE	337	B13 FUEL ROD POS.4	FIG.5.123	273.	-	0.125E+04 K	0.64%FS
338	TEMP.	TF-138	TE	338	B22 FUEL ROD POS.1	FIG.5.124, 165	273.	-	0.125E+04 K	0.64%FS
339	TEMP.	TF-139	TE	339	B22 FUEL ROD POS.2	FIG.5.124, 166	273.	-	0.125E+04 K	0.64%FS
340	TEMP.	TF-140	TE	340	B22 FUEL ROD POS.3	FIG.5.124, 167	273.	-	0.125E+04 K	0.64%FS
341	TEMP.	TF-141	TE	341	B22 FUEL ROD POS.4	FIG.5.124, 168	273.	-	0.125E+04 K	0.64%FS
342	TEMP.	TF-142	TE	342	B22 FUEL ROD POS.5	FIG.5.124, 169	273.	-	0.125E+04 K	0.64%FS
343	TEMP.	TF-143	TE	343	B22 FUEL ROD POS.6	FIG.5.124, 170	273.	-	0.125E+04 K	0.64%FS
344	TEMP.	TF-144	TE	344	B22 FUEL ROD POS.7	FIG.5.124, 171	273.	-	0.125E+04 K	0.64%FS
345	TEMP.	TF-145	TE	345	B31 FUEL ROD POS.4	FIG.5.125	273.	-	0.125E+04 K	0.64%FS
346	TEMP.	TF-146	TE	346	B33 FUEL ROD POS.4	FIG.5.126	273.	-	0.125E+04 K	0.64%FS
347	TEMP.	TF-147	TE	347	B51 FUEL ROD POS.4	FIG.5.127	273.	-	0.125E+04 K	0.64%FS
348	TEMP.	TF-148	TE	348	B53 FUEL ROD POS.4	FIG.5.128	273.	-	0.125E+04 K	0.64%FS
349	TEMP.	TF-149	TE	349	B66 FUEL ROD POS.4	FIG.5.129	273.	-	0.125E+04 K	0.64%FS
350	TEMP.	TF-150	TE	350	B77 FUEL ROD POS.1	NOT MEASURED	273.	-	0.125E+04 K	0.64%FS

Table 3.1 (continued)

** MEASUREMENT LIST **　　351CH.- 400CH.

CH.	ITEM	SYMBOL	ID.	LOCATION	FIG.NO.	RANGE	ACCURACY
351	TEMP.	TF-151	TE 351	B77 FUEL ROD POS.2	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
352	TEMP.	TF-152	TE 352	B77 FUEL ROD POS.3	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
353	TEMP.	TF-153	TE 353	B77 FUEL ROD POS.4	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
354	TEMP.	TF-154	TE 354	B77 FUEL ROD POS.5	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
355	TEMP.	TF-155	TE 355	B77 FUEL ROD POS.6	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
356	TEMP.	TF-156	TE 356	B77 FUEL ROD POS.7	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
357	TEMP.	TF-157	TE 357	B86 FUEL ROD POS.4	FIG.5.130	273. - 0.125E+04 K	0.64%FS
358	TEMP.	TF-158	TE 358	C11 FUEL ROD POS.1	FIG.5.131, 158	273. - 0.125E+04 K	0.64%FS
359	TEMP.	TF-159	TE 359	C11 FUEL ROD POS.2	FIG.5.131, 159	273. - 0.125E+04 K	0.64%FS
360	TEMP.	TF-160	TE 360	C11 FUEL ROD POS.3	FIG.5.131, 160	273. - 0.125E+04 K	0.64%FS
361	TEMP.	TF-161	TE 361	C11 FUEL ROD POS.4	FIG.5.131, 161	273. - 0.125E+04 K	0.64%FS
362	TEMP.	TF-162	TE 362	C11 FUEL ROD POS.5	FIG.5.131, 162	273. - 0.125E+04 K	0.64%FS
363	TEMP.	TF-163	TE 363	C11 FUEL ROD POS.6	FIG.5.131, 163	273. - 0.125E+04 K	0.64%FS
364	TEMP.	TF-164	TE 364	C11 FUEL ROD POS.7	FIG.5.131, 164	273. - 0.125E+04 K	0.64%FS
365	TEMP.	TF-165	TE 365	C13 FUEL ROD POS.1	FIG.5.132, 158	273. - 0.125E+04 K	0.64%FS
366	TEMP.	TF-166	TE 366	C13 FUEL ROD POS.2	FIG.5.132, 159	273. - 0.125E+04 K	0.64%FS
367	TEMP.	TF-167	TE 367	C13 FUEL ROD POS.3	FIG.5.132, 160	273. - 0.125E+04 K	0.64%FS
368	TEMP.	TF-168	TE 368	C13 FUEL ROD POS.4	FIG.5.132, 161	273. - 0.125E+04 K	0.64%FS
369	TEMP.	TF-169	TE 369	C13 FUEL ROD POS.5	FIG.5.132, 162	273. - 0.125E+04 K	0.64%FS
370	TEMP.	TF-170	TE 370	C13 FUEL ROD POS.6	FIG.5.132, 163	273. - 0.125E+04 K	0.64%FS
371	TEMP.	TF-171	TE 371	C13 FUEL ROD POS.7	FIG.5.132, 164	273. - 0.125E+04 K	0.64%FS
372	TEMP.	TF-172	TE 372	C15 FUEL ROD POS.4	FIG.5.133	273. - 0.125E+04 K	0.64%FS
373	TEMP.	TF-173	TE 373	C22 FUEL ROD POS.1	FIG.5.134, 158, 165	273. - 0.125E+04 K	0.64%FS
374	TEMP.	TF-174	TE 374	C22 FUEL ROD POS.2	FIG.5.134, 159, 166	273. - 0.125E+04 K	0.64%FS
375	TEMP.	TF-175	TE 375	C22 FUEL ROD POS.3	FIG.5.134, 160, 167	273. - 0.125E+04 K	0.64%FS
376	TEMP.	TF-176	TE 376	C22 FUEL ROD POS.4	FIG.5.134, 161, 168	273. - 0.125E+04 K	0.64%FS
377	TEMP.	TF-177	TE 377	C22 FUEL ROD POS.5	FIG.5.134, 162, 169	273. - 0.125E+04 K	0.64%FS
378	TEMP.	TF-178	TE 378	C22 FUEL ROD POS.6	FIG.5.134, 163, 170	273. - 0.125E+04 K	0.64%FS
379	TEMP.	TF-179	TE 379	C22 FUEL ROD POS.7	FIG.5.134, 164, 171	273. - 0.125E+04 K	0.64%FS
380	TEMP.	TF-180	TE 380	C31 FUEL ROD POS.4	FIG.5.135	273. - 0.125E+04 K	0.64%FS
381	TEMP.	TF-181	TE 381	C33 FUEL ROD POS.1	FIG.5.136, 158	273. - 0.125E+04 K	0.64%FS
382	TEMP.	TF-182	TE 382	C33 FUEL ROD POS.2	FIG.5.136, 159	273. - 0.125E+04 K	0.64%FS
383	TEMP.	TF-183	TE 383	C33 FUEL ROD POS.3	FIG.5.136, 160	273. - 0.125E+04 K	0.64%FS
384	TEMP.	TF-184	TE 384	C33 FUEL ROD POS.4	FIG.5.136, 161	273. - 0.125E+04 K	0.64%FS
385	TEMP.	TF-185	TE 385	C33 FUEL ROD POS.5	FIG.5.136, 162	273. - 0.125E+04 K	0.64%FS
386	TEMP.	TF-186	TE 386	C33 FUEL ROD POS.6	FIG.5.136, 163	273. - 0.125E+04 K	0.64%FS
387	TEMP.	TF-187	TE 387	C33 FUEL ROD POS.7	FIG.5.136, 164	273. - 0.125E+04 K	0.64%FS
388	TEMP.	TF-188	TE 388	C35 FUEL ROD POS.4	FIG.5.137	273. - 0.125E+04 K	0.64%FS
389	TEMP.	TF-189	TE 389	C66 FUEL ROD POS.4	FIG.5.138	273. - 0.125E+04 K	0.64%FS
390	TEMP.	TF-190	TE 390	C68 FUEL ROD POS.4	FIG.5.139	273. - 0.125E+04 K	0.64%FS
391	TEMP.	TF-191	TE 391	C77 FUEL ROD POS.1	FIG.5.140, 158	273. - 0.125E+04 K	0.64%FS
392	TEMP.	TF-192	TE 392	C77 FUEL ROD POS.2	FIG.5.140, 159	273. - 0.125E+04 K	0.64%FS
393	TEMP.	TF-193	TE 393	C77 FUEL ROD POS.3	FIG.5.140, 160	273. - 0.125E+04 K	0.64%FS
394	TEMP.	TF-194	TE 394	C77 FUEL ROD POS.4	FIG.5.140, 161	273. - 0.125E+04 K	0.64%FS
395	TEMP.	TF-195	TE 395	C77 FUEL ROD POS.5	FIG.5.140, 162	273. - 0.125E+04 K	0.64%FS
396	TEMP.	TF-196	TE 396	C77 FUEL ROD POS.6	FIG.5.140, 163	273. - 0.125E+04 K	0.64%FS
397	TEMP.	TF-197	TE 397	C77 FUEL ROD POS.7	FIG.5.140, 164	273. - 0.125E+04 K	0.64%FS
398	TEMP.	TF-198	TE 398	D11 FUEL ROD POS.4	FIG.5.141	273. - 0.125E+04 K	0.64%FS
399	TEMP.	TF-199	TE 399	D13 FUEL ROD POS.4	FIG.5.142	273. - 0.125E+04 K	0.64%FS
400	TEMP.	TF-200	TE 400	D22 FUEL ROD POS.1	FIG.5.143, 165	273. - 0.125E+04 K	0.64%FS

Table 3.1 (continued)

** MEASUREMENT LIST **

401CH.- 450CH.

CH.	ITEM	SYMBOL	ID.		LOCATION	FIG.NO.	RANGE	ACCURACY
401	TEMP.	TF-201	TE	401	D22 FUEL ROD POS.2	FIG.5.143, 166	273. - 0.125E+04 K	0.64%FS
402	TEMP.	TF-202	TE	402	D22 FUEL ROD POS.3	FIG.5.143, 167	273. - 0.125E+04 K	0.64%FS
403	TEMP.	TF-203	TE	403	D22 FUEL ROD POS.4	FIG.5.143, 168	273. - 0.125E+04 K	0.64%FS
404	TEMP.	TF-204	TE	404	D22 FUEL ROD POS.5	FIG.5.143, 169	273. - 0.125E+04 K	0.64%FS
405	TEMP.	TF-205	TE	405	D22 FUEL ROD POS.6	FIG.5.143, 170	273. - 0.125E+04 K	0.64%FS
406	TEMP.	TF-206	TE	406	D22 FUEL ROD POS.7	FIG.5.143, 171	273. - 0.125E+04 K	0.64%FS
407	TEMP.	TF-207	TE	407	D31 FUEL ROD POS.4	FIG.5.144	273. - 0.125E+04 K	0.64%FS
408	TEMP.	TF-208	TE	408	D33 FUEL ROD POS.4	FIG.5.145	273. - 0.125E+04 K	0.64%FS
409	TEMP.	TF-209	TE	409	D51 FUEL ROD POS.4	FIG.5.146	273. - 0.125E+04 K	0.64%FS
410	TEMP.	TF-210	TE	410	D53 FUEL ROD POS.4	FIG.5.147	273. - 0.125E+04 K	0.64%FS
411	TEMP.	TF-211	TE	411	D66 FUEL ROD POS.4	FIG.5.148	273. - 0.125E+04 K	0.64%FS
412	TEMP.	TF-212	TE	412	D77 FUEL ROD POS.4	FIG.5.149	273. - 0.125E+04 K	0.64%FS
413	TEMP.	TF-213	TE	413	D86 FUEL ROD POS.4	FIG.5.150	273. - 0.125E+04 K	0.64%FS
414	FLUID T.	TW- 1	TE	414	A45 TIE ROD POS.1	FIG.5.172	273. - 0.125E+04 K	0.64%FS
415	FLUID T.	TW- 2	TE	415	A45 TIE ROD POS.2	FIG.5.172	273. - 0.125E+04 K	0.64%FS
416	FLUID T.	TW- 3	TE	416	A45 TIE ROD POS.3	FIG.5.172	273. - 0.125E+04 K	0.64%FS
417	FLUID T.	TW- 4	TE	417	A45 TIE ROD POS.4	FIG.5.172	273. - 0.125E+04 K	0.64%FS
418	FLUID T.	TW- 5	TE	418	A45 TIE ROD POS.5	FIG.5.172	273. - 0.125E+04 K	0.64%FS
419	FLUID T.	TW- 6	TE	419	A45 TIE ROD POS.6	FIG.5.172	273. - 0.125E+04 K	0.64%FS
420	FLUID T.	TW- 7	TE	420	A45 TIE ROD POS.7	FIG.5.172	273. - 0.125E+04 K	0.64%FS
421	FLUID T.	TW- 8	TE	421	B45 TIE ROD POS.1	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
422	FLUID T.	TW- 9	TE	422	B45 TIE ROD POS.2	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
423	FLUID T.	TW-10	TE	423	B45 TIE ROD POS.3	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
424	FLUID T.	TW-11	TE	424	B45 TIE ROD POS.4	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
425	FLUID T.	TW-12	TE	425	B45 TIE ROD POS.5	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
426	FLUID T.	TW-13	TE	426	B45 TIE ROD POS.6	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
427	FLUID T.	TW-14	TE	427	B45 TIE ROD POS.7	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
428	FLUID T.	TW-15	TE	428	C45 TIE ROD POS.1	FIG.5.173	273. - 0.125E+04 K	0.64%FS
429	FLUID T.	TW-16	TE	429	C45 TIE ROD POS.2	FIG.5.173	273. - 0.125E+04 K	0.64%FS
430	FLUID T.	TW-17	TE	430	C45 TIE ROD POS.3	FIG.5.173	273. - 0.125E+04 K	0.64%FS
431	FLUID T.	TW-18	TE	431	C45 TIE ROD POS.4	FIG.5.173	273. - 0.125E+04 K	0.64%FS
432	FLUID T.	TW-19	TE	432	C45 TIE ROD POS.5	FIG.5.173	273. - 0.125E+04 K	0.64%FS
433	FLUID T.	TW-20	TE	433	C45 TIE ROD POS.6	FIG.5.173	273. - 0.125E+04 K	0.64%FS
434	FLUID T.	TW-21	TE	434	C45 TIE ROD POS.7	FIG.5.173	273. - 0.125E+04 K	0.64%FS
435	FLUID T.	TW-22	TE	435	D45 TIE ROD POS.1	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
436	FLUID T.	TW-23	TE	436	D45 TIE ROD POS.2	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
437	FLUID T.	TW-24	TE	437	D45 TIE ROD POS.3	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
438	FLUID T.	TW-25	TE	438	D45 TIE ROD POS.4	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
439	FLUID T.	TW-26	TE	439	D45 TIE ROD POS.5	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
440	FLUID T.	TW-27	TE	440	D45 TIE ROD POS.6	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
441	FLUID T.	TW-28	TE	441	D45 TIE ROD POS.7	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
442	FLUID T.	TC- 1	TE	442	CHANNEL BOX A INLET	FIG.5.174	273. - 0.125E+04 K	0.64%FS
443	FLUID T.	TC- 2	TE	443	CHANNEL BOX B INLET	FIG.5.174	273. - 0.125E+04 K	0.64%FS
444	FLUID T.	TC- 3	TE	444	CHANNEL BOX C INLET	FIG.5.174	273. - 0.125E+04 K	0.64%FS
445	FLUID T.	TC- 4	TE	445	CHANNEL BOX D INLET	FIG.5.174	273. - 0.125E+04 K	0.64%FS
446	FLUID T.	TC- 5	TE	446	CHANNEL BOX OUTLET A-1	FIG.5.175	273. - 0.125E+04 K	0.64%FS
447	FLUID T.	TC- 6	TE	447	CHANNEL BOX OUTLET A-2	FIG.5.175	273. - 0.125E+04 K	0.64%FS
448	FLUID T.	TC- 7	TE	448	CHANNEL BOX OUTLET A-3	FIG.5.175	273. - 0.125E+04 K	0.64%FS
449	FLUID T.	TC- 8	TE	449	CHANNEL BOX OUTLET A-4	FIG.5.175	273. - 0.125E+04 K	0.64%FS
450	FLUID T.	TC- 9	TE	450	CHANNEL BOX OUTLET A-6	FIG.5.175	273. - 0.125E+04 K	0.64%FS

Table 3.1 (continued)

** MEASUREMENT LIST **

451CH.- 500CH.

CH.	ITEM	SYMBOL	ID.	LOCATION	FIG.NO.	RANGE	ACCURACY
451	FLUID T.	TC-10	TE 451	CHANNEL BOX OUTLET C-1	FIG.5.176	273. - 0.125E+04 K	0.64%FS
452	FLUID T.	TC-11	TE 452	CHANNEL BOX OUTLET C-2	FIG.5.176	273. - 0.125E+04 K	0.64%FS
453	FLUID T.	TC-12	TE 453	CHANNEL BOX OUTLET C-3	FIG.5.176	273. - 0.125E+04 K	0.64%FS
454	FLUID T.	TC-13	TE 454	CHANNEL BOX OUTLET C-4	FIG.5.176	273. - 0.125E+04 K	0.64%FS
455	FLUID T.	TC-14	TE 455	CHANNEL BOX OUTLET C-6	FIG.5.176	273. - 0.125E+04 K	0.64%FS
456	FLUID T.	TG- 1	TE 456	UPPER TIEPLATE A UP.1	FIG.5.177, 179	273. - 0.125E+04 K	0.64%FS
457	FLUID T.	TG- 2	TE 457	UPPER TIEPLATE A UP.2	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
458	FLUID T.	TG- 3	TE 458	UPPER TIEPLATE A UP.3	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
459	FLUID T.	TG- 4	TE 459	UPPER TIEPLATE A UP.4	FIG.5.177, 180	273. - 0.125E+04 K	0.64%FS
460	FLUID T.	TG- 5	TE 460	UPPER TIEPLATE A UP.5	FIG.5.177, 181	273. - 0.125E+04 K	0.64%FS
461	FLUID T.	TG- 6	TE 461	UPPER TIEPLATE A UP.6	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
462	FLUID T.	TG- 7	TE 462	UPPER TIEPLATE A UP.7	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
463	FLUID T.	TG- 8	TE 463	UPPER TIEPLATE A UP.8	FIG.5.177, 182	273. - 0.125E+04 K	0.64%FS
464	FLUID T.	TG- 9	TE 464	UPPER TIEPLATE A UP.9	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
465	FLUID T.	TG-10	TE 465	UPPER TIEPLATE A UP.10	FIG.5.177, 183	273. - 0.125E+04 K	0.64%FS
466	FLUID T.	TG-11	TE 466	UPPER TIEPLATE A LO.1	FIG.5.178, 179	273. - 0.125E+04 K	0.64%FS
467	FLUID T.	TG-12	TE 467	UPPER TIEPLATE A LO.2	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
468	FLUID T.	TG-13	TE 468	UPPER TIEPLATE A LO.3	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
469	FLUID T.	TG-14	TE 469	UPPER TIEPLATE A LO.4	FIG.5.178, 180	273. - 0.125E+04 K	0.64%FS
470	FLUID T.	TG-15	TE 470	UPPER TIEPLATE A LO.5	FIG.5.178, 181	273. - 0.125E+04 K	0.64%FS
471	FLUID T.	TG-16	TE 471	UPPER TIEPLATE A LO.6	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
472	FLUID T.	TG-17	TE 472	UPPER TIEPLATE A LO.7	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
473	FLUID T.	TG-18	TE 473	UPPER TIEPLATE A LO.8	FIG.5.178, 182	273. - 0.125E+04 K	0.64%FS
474	FLUID T.	TG-19	TE 474	UPPER TIEPLATE A LO.9	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
475	FLUID T.	TG-20	TE 475	UPPER TIEPLATE A LO.10	FIG.5.178, 183	273. - 0.125E+04 K	0.64%FS
476	FLUID T.	TG-21	TE 476	UPPER TIEPLATE C UP.1	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
477	FLUID T.	TG-22	TE 477	UPPER TIEPLATE C UP.2	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
478	FLUID T.	TG-23	TE 478	UPPER TIEPLATE C UP.3	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
479	FLUID T.	TG-24	TE 479	UPPER TIEPLATE C UP.4	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
480	FLUID T.	TG-25	TE 480	UPPER TIEPLATE C UP.5	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
481	FLUID T.	TG-26	TE 481	UPPER TIEPLATE C UP.6	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
482	FLUID T.	TG-27	TE 482	UPPER TIEPLATE C UP.7	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
483	FLUID T.	TG-28	TE 483	UPPER TIEPLATE C UP.8	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
484	FLUID T.	TG-29	TE 484	UPPER TIEPLATE C UP.9	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
485	FLUID T.	TG-30	TE 485	UPPER TIEPLATE C UP.10	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
486	FLUID T.	TG-31	TE 486	UPPER TIEPLATE C LO.1	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
487	FLUID T.	TG-32	TE 487	UPPER TIEPLATE C LO.2	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
488	FLUID T.	TG-33	TE 488	UPPER TIEPLATE C LO.3	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
489	FLUID T.	TG-34	TE 489	UPPER TIEPLATE C LO.4	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
490	FLUID T.	TG-35	TE 490	UPPER TIEPLATE C LO.5	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
491	FLUID T.	TG-36	TE 491	UPPER TIEPLATE C LO.6	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
492	FLUID T.	TG-37	TE 492	UPPER TIEPLATE C LO.7	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
493	FLUID T.	TG-38	TE 493	UPPER TIEPLATE C LO.8	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
494	FLUID T.	TG-39	TE 494	UPPER TIEPLATE C LO.9	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
495	FLUID T.	TG-40	TE 495	UPPER TIEPLATE C LO.10	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
496	SLAB T.	TB- 1	TE 496	C.B. A1 INNER ,POS.1	FIG.5.184, 189	273. - 0.125E+04 K	0.64%FS
497	SLAB T.	TB- 2	TE 497	C.B. A1 INNER ,POS.2	FIG.5.184, 190	273. - 0.125E+04 K	0.64%FS
498	SLAB T.	TB- 3	TE 498	C.B. A1 INNER ,POS.3	FIG.5.184, 191	273. - 0.125E+04 K	0.64%FS
499	SLAB T.	TB- 4	TE 499	C.B. A1 INNER ,POS.4	FIG.5.184, 192	273. - 0.125E+04 K	0.64%FS
500	SLAB T.	TB- 5	TE 500	C.B. A1 INNER ,POS.5	FIG.5.184, 193	273. - 0.125E+04 K	0.64%FS

Table 3.1 (continued)

** MEASUREMENT LIST ** 501CH.- 550CH.

CH.	ITEM	SYMBOL	ID.	LOCATION	FIG.NO.	RANGE	ACCURACY
501	SLAB T.	TB- 6	TE 501	C.B. A1 INNER ,POS.6	FIG.5.184, 194	273. - 0.125E+04 K	0.64%FS
502	SLAB T.	TB- 7	TE 502	C.B. A1 INNER ,POS.7	FIG.5.184, 195	273. - 0.125E+04 K	0.64%FS
503	SLAB T.	TB- 8	TE 503	C.B. A2 INNER ,POS.1	FIG.5.185, 189	273. - 0.125E+04 K	0.64%FS
504	SLAB T.	TB- 9	TE 504	C.B. A2 INNER ,POS.2	FIG.5.185, 190	273. - 0.125E+04 K	0.64%FS
505	SLAB T.	TB-10	TE 505	C.B. A2 INNER ,POS.3	FIG.5.185, 191	273. - 0.125E+04 K	0.64%FS
506	SLAB T.	TB-11	TE 506	C.B. A2 INNER ,POS.4	FIG.5.185, 192	273. - 0.125E+04 K	0.64%FS
507	SLAB T.	TB-12	TE 507	C.B. A2 INNER ,POS.5	FIG.5.185, 193	273. - 0.125E+04 K	0.64%FS
508	SLAB T.	TB-13	TE 508	C.B. A2 INNER ,POS.6	FIG.5.185, 194	273. - 0.125E+04 K	0.64%FS
509	SLAB T.	TB-14	TE 509	C.B. A2 INNER ,POS.7	FIG.5.185, 195	273. - 0.125E+04 K	0.64%FS
510	SLAB T.	TB-15	TE 510	C.B. B INNER ,POS.1	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
511	SLAB T.	TB-16	TE 511	C.B. B INNER ,POS.2	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
512	SLAB T.	TB-17	TE 512	C.B. B INNER ,POS.3	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
513	SLAB T.	TB-18	TE 513	C.B. B INNER ,POS.4	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
514	SLAB T.	TB-19	TE 514	C.B. B INNER ,POS.5	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
515	SLAB T.	TB-20	TE 515	C.B. B INNER ,POS.6	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
516	SLAB T.	TB-21	TE 516	C.B. B INNER ,POS.7	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
517	SLAB T.	TB-22	TE 517	C.B. C INNER ,POS.1	FIG.5.186, 189	273. - 0.125E+04 K	0.64%FS
518	SLAB T.	TB-23	TE 518	C.B. C INNER ,POS.2	FIG.5.186, 190	273. - 0.125E+04 K	0.64%FS
519	SLAB T.	TB-24	TE 519	C.B. C INNER ,POS.3	FIG.5.186, 191	273. - 0.125E+04 K	0.64%FS
520	SLAB T.	TB-25	TE 520	C.B. C INNER ,POS.4	FIG.5.186, 192	273. - 0.125E+04 K	0.64%FS
521	SLAB T.	TB-26	TE 521	C.B. C INNER ,POS.5	FIG.5.186, 193	273. - 0.125E+04 K	0.64%FS
522	SLAB T.	TB-27	TE 522	C.B. C INNER ,POS.6	FIG.5.186, 194	273. - 0.125E+04 K	0.64%FS
523	SLAB T.	TB-28	TE 523	C.B. C INNER ,POS.7	FIG.5.186, 195	273. - 0.125E+04 K	0.64%FS
524	SLAB T.	TB-29	TE 524	C.B. D INNER ,POS.1	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
525	SLAB T.	TB-30	TE 525	C.B. D INNER ,POS.2	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
526	SLAB T.	TB-31	TE 526	C.B. D INNER ,POS.3	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
527	SLAB T.	TB-32	TE 527	C.B. D INNER ,POS.4	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
528	SLAB T.	TB-33	TE 528	C.B. D INNER ,POS.5	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
529	SLAB T.	TB-34	TE 529	C.B. D INNER ,POS.6	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
530	SLAB T.	TB-35	TE 530	C.B. D INNER ,POS.7	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
531	FLUID T.	TB-36	TE 531	C.B. A OUTER ,POS.1	FIG.5.187, 189	273. - 0.125E+04 K	0.64%FS
532	FLUID T.	TB-37	TE 532	C.B. A OUTER ,POS.2	FIG.5.187, 190	273. - 0.125E+04 K	0.64%FS
533	FLUID T.	TB-38	TE 533	C.B. A OUTER ,POS.3	FIG.5.187, 191	273. - 0.125E+04 K	0.64%FS
534	FLUID T.	TB-39	TE 534	C.B. A OUTER ,POS.4	FIG.5.187, 192	273. - 0.125E+04 K	0.64%FS
535	FLUID T.	TB-40	TE 535	C.B. A OUTER ,POS.5	FIG.5.187, 193	273. - 0.125E+04 K	0.64%FS
536	FLUID T.	TB-41	TE 536	C.B. A OUTER ,POS.6	FIG.5.187, 194	273. - 0.125E+04 K	0.64%FS
537	FLUID T.	TB-42	TE 537	C.B. A OUTER ,POS.7	FIG.5.187, 195	273. - 0.125E+04 K	0.64%FS
538	FLUID T.	TB-43	TE 538	C.B. C OUTER ,POS.1	FIG.5.188, 189	273. - 0.125E+04 K	0.64%FS
539	FLUID T.	TB-44	TE 539	C.B. C OUTER ,POS.2	FIG.5.188, 190	273. - 0.125E+04 K	0.64%FS
540	FLUID T.	TB-45	TE 540	C.B. C OUTER ,POS.3	FIG.5.188, 191	273. - 0.125E+04 K	0.64%FS
541	FLUID T.	TB-46	TE 541	C.B. C OUTER ,POS.4	FIG.5.188, 192	273. - 0.125E+04 K	0.64%FS
542	FLUID T.	TB-47	TE 542	C.B. C OUTER ,POS.5	FIG.5.188, 193	273. - 0.125E+04 K	0.64%FS
543	FLUID T.	TB-48	TE 543	C.B. C OUTER ,POS.6	FIG.5.188, 194	273. - 0.125E+04 K	0.64%FS
544	FLUID T.	TB-49	TE 544	C.B. C OUTER ,POS.7	FIG.5.188, 195	273. - 0.125E+04 K	0.64%FS
545	FLUID T.	TP- 1	TE 545	LOWER PL. CENTER 1	FIG.5.196	273. - 0.125E+04 K	0.64%FS
546	FLUID T.	TP- 2	TE 546	LOWER PL. CENTER 2	FIG.5.196	273. - 0.125E+04 K	0.64%FS
547	FLUID T.	TP- 3	TE 547	LOWER PL. CENTER 3	FIG.5.196	273. - 0.125E+04 K	0.64%FS
548	FLUID T.	TP- 4	TE 548	LOWER PL. CENTER 4	FIG.5.196	273. - 0.125E+04 K	0.64%FS
549	FLUID T.	TP- 5	TE 549	LOWER PL. CENTER 5	FIG.5.196	273. - 0.125E+04 K	0.64%FS
550	FLUID T.	TP- 6	TE 550	LOWER PL. CENTER 7	FIG.5.196	273. - 0.125E+04 K	0.64%FS

Table 3.1 (continued)

** MEASUREMENT LIST **

551CH.- 600CH.

CH.	ITEM	SYMBOL	ID.	LOCATION	FIG.NO.	RANGE	ACCURACY
551	SLAB T.	TP- 7	TE 551	LOWER PL. NORTH 1	NOT MEASURED	273. - 0.125E+04 K	0.64%FS
552	SLAB T.	TP- 8	TE 552	LOWER PL. NORTH 2	NOT MEASURED	273. - 673. K	0.64%FS
553	SLAB T.	TP- 9	TE 553	LOWER PL. NORTH 4	NOT MEASURED	273. - 673. K	0.64%FS
554	SLAB T.	TP-10	TE 554	LOWER PL. NORTH 6	NOT MEASURED	273. - 673. K	0.64%FS
555	SLAB T.	TP-11	TE 555	LOWER PL. SOUTH 1	NOT MEASURED	273. - 673. K	0.64%FS
556	SLAB T.	TP-12	TE 556	LOWER PL. SOUTH 2	NOT MEASURED	273. - 673. K	0.64%FS
557	SLAB T.	TP-13	TE 557	LOWER PL. SOUTH 4	NOT MEASURED	273. - 673. K	0.64%FS
558	SLAB T.	TP-14	TE 558	LOWER PL. SOUTH 6	NOT MEASURED	273. - 673. K	0.64%FS
559	LEVEL	LB- 1	LM 559	C.B.LIQUID LEVEL A1-1	FIG.5.197		
560	LEVEL	LB- 2	LM 560	C.B.LIQUID LEVEL A1-2	FIG.5.197		
561	LEVEL	LB- 3	LM 561	C.B.LIQUID LEVEL A1-3	FIG.5.197		
562	LEVEL	LB- 4	LM 562	C.B.LIQUID LEVEL A1-4	FIG.5.197		
563	LEVEL	LB- 5	LM 563	C.B.LIQUID LEVEL A1-5	FIG.5.197		
564	LEVEL	LB- 6	LM 564	C.B.LIQUID LEVEL A1-6	FIG.5.197		
565	LEVEL	LB- 7	LM 565	C.B.LIQUID LEVEL A1-7	FIG.5.197		
566	LEVEL	LB- 8	LM 566	C.B.LIQUID LEVEL A2-1	FIG.5.198		
567	LEVEL	LB- 9	LM 567	C.B.LIQUID LEVEL A2-2	FIG.5.198		
568	LEVEL	LB-10	LM 568	C.B.LIQUID LEVEL A2-3	FIG.5.198		
569	LEVEL	LB-11	LM 569	C.B.LIQUID LEVEL A2-4	FIG.5.198		
570	LEVEL	LB-12	LM 570	C.B.LIQUID LEVEL A2-5	FIG.5.198		
571	LEVEL	LB-13	LM 571	C.B.LIQUID LEVEL A2-6	FIG.5.198		
572	LEVEL	LB-14	LM 572	C.B.LIQUID LEVEL A2-7	FIG.5.198		
573	LEVEL	LB-15	LM 573	C.B.LIQUID LEVEL B-1	FIG.5.199		
574	LEVEL	LB-16	LM 574	C.B.LIQUID LEVEL B-2	FIG.5.199		
575	LEVEL	LB-17	LM 575	C.B.LIQUID LEVEL B-3	FIG.5.199		
576	LEVEL	LB-18	LM 576	C.B.LIQUID LEVEL B-4	FIG.5.199		
577	LEVEL	LB-19	LM 577	C.B.LIQUID LEVEL B-5	FIG.5.199		
578	LEVEL	LB-20	LM 578	C.B.LIQUID LEVEL B-6	FIG.5.199		
579	LEVEL	LB-21	LM 579	C.B.LIQUID LEVEL B-7	FIG.5.199		
580	LEVEL	LB-22	LM 580	C.B.LIQUID LEVEL C-1	FIG.5.200		
581	LEVEL	LB-23	LM 581	C.B.LIQUID LEVEL C-2	FIG.5.200		
582	LEVEL	LB-24	LM 582	C.B.LIQUID LEVEL C-3	FIG.5.200		
583	LEVEL	LB-25	LM 583	C.B.LIQUID LEVEL C-4	FIG.5.200		
584	LEVEL	LB-26	LM 584	C.B.LIQUID LEVEL C-5	FIG.5.200		
585	LEVEL	LB-27	LM 585	C.B.LIQUID LEVEL C-6	FIG.5.200		
586	LEVEL	LB-28	LM 586	C.B.LIQUID LEVEL C-7	FIG.5.200		
587	LEVEL	LB-29	LM 587	C.B.LIQUID LEVEL D-1	FIG.5.201		
588	LEVEL	LB-30	LM 588	C.B.LIQUID LEVEL D-2	FIG.5.201		
589	LEVEL	LB-31	LM 589	C.B.LIQUID LEVEL D-3	FIG.5.201		
590	LEVEL	LB-32	LM 590	C.B.LIQUID LEVEL D-4	FIG.5.201		
591	LEVEL	LB-33	LM 591	C.B.LIQUID LEVEL D-5	FIG.5.201		
592	LEVEL	LB-34	LM 592	C.B.LIQUID LEVEL D-6	FIG.5.201		
593	LEVEL	LB-35	LM 593	C.B.LIQUID LEVEL D-7	FIG.5.201		
594	LEVEL	LL- 1	LM 594	CH.BOX OUTLET A1-5	FIG.5.20R		
595	LEVEL	LL- 2	LM 595	CH.BOX OUTLET A1-6	FIG.5.20R		
596	LEVEL	LL- 3	LM 596	CH.BOX OUTLET A1-7	FIG.5.20R		
597	LEVEL	LL- 4	LM 597	CH.BOX OUTLET A2-5	FIG.5.203		
598	LEVEL	LL- 5	LM 598	CH.BOX OUTLET A2-6	FIG.5.203		
599	LEVEL	LL- 6	LM 599	CH.BOX OUTLET A2-7	FIG.5.203		
600	LEVEL	LL- 7	LM 600	CH.BOX OUTLET A-1	FIG.5.204		

Table 3.1 (continued)

** MEASUREMENT LIST **

601CH.- 650CH.

CH.	ITEM	SYMBOL	ID.	LOCATION	FIG.NO.	RANGE	ACCURACY
601	LEVEL	LL- 8	LM 601	CH.BOX OUTLET A-2	FIG.5.204		
602	LEVEL	LL- 9	LM 602	CH.BOX OUTLET A-3	FIG.5.204		
603	LEVEL	LL-10	LM 603	CH.BOX OUTLET A-4	FIG.5.204		
604	LEVEL	LL-11	LM 604	CH.BOX OUTLET A-6	FIG.5.204		
605	LEVEL	LL-12	LM 605	CH.BOX OUTLET C1-5	FIG.5.205		
606	LEVEL	LL-13	LM 606	CH.BOX OUTLET C1-6	FIG.5.205		
607	LEVEL	LL-14	LM 607	CH.BOX OUTLET C1-7	FIG.5.205		
608	LEVEL	LL-15	LM 608	CH.BOX OUTLET C2-5	FIG.5.206		
609	LEVEL	LL-16	LM 609	CH.BOX OUTLET C2-6	FIG.5.206		
610	LEVEL	LL-17	LM 610	CH.BOX OUTLET C2-7	FIG.5.206		
611	LEVEL	LL-18	LM 611	CH.BOX OUTLET C-1	FIG.5.207		
612	LEVEL	LL-19	LM 612	CH.BOX OUTLET C-2	FIG.5.207		
613	LEVEL	LL-20	LM 613	CH.BOX OUTLET C-3	FIG.5.207		
614	LEVEL	LL-21	LM 614	CH.BOX OUTLET C-4	FIG.5.207		
615	LEVEL	LL-22	LM 615	CH.BOX OUTLET C-6	FIG.5.207		
616	LEVEL	LL-23	LM 616	CH.BOX INLET A-1	FIG.5.208		
617	LEVEL	LL-24	LM 617	CH.BOX INLET A-2	FIG.5.208		
618	LEVEL	LL-25	LM 618	CH.BOX INLET B-1	FIG.5.209		
619	LEVEL	LL-26	LM 619	CH.BOX INLET B-2	FIG.5.209		
620	LEVEL	LL-27	LM 620	CH.BOX INLET C-1	FIG.5.210		
621	LEVEL	LL-28	LM 621	CH.BOX INLET C-2	FIG.5.210		
622	LEVEL	LL-29	LM 622	CH.BOX INLET D-1	FIG.5.211		
623	LEVEL	LL-30	LM 623	CH.BOX INLET D-2	FIG.5.211		
624	LEVEL	LL-31	LM 624	LOWER PL. NORTH 1	FIG.5.212		
625	LEVEL	LL-32	LM 625	LOWER PL. NORTH 2	FIG.5.212		
626	LEVEL	LL-33	LM 626	LOWER PL. NORTH 3	FIG.5.212		
627	LEVEL	LL-34	LM 627	LOWER PL. NORTH 4	FIG.5.212		
628	LEVEL	LL-35	LM 628	LOWER PL. NORTH 5	FIG.5.212		
629	LEVEL	LL-36	LM 629	LOWER PL. NORTH 6	FIG.5.212		
630	LEVEL	LL-37	LM 630	LOWER PL. SOUTH 1	FIG.5.213		
631	LEVEL	LL-38	LM 631	LOWER PL. SOUTH 2	FIG.5.213		
632	LEVEL	LL-39	LM 632	LOWER PL. SOUTH 3	FIG.5.213		
633	LEVEL	LL-40	LM 633	LOWER PL. SOUTH 4	FIG.5.213		
634	LEVEL	LL-41	LM 634	LOWER PL. SOUTH 5	FIG.5.213		
635	LEVEL	LL-42	LM 635	LOWER PL. SOUTH 6	FIG.5.213		
636	LEVEL	LL-43	LM 636	GUIDE TUBE NORTH 0	FIG.5.214		
637	LEVEL	LL-44	LM 637	GUIDE TUBE NORTH 1	FIG.5.214		
638	LEVEL	LL-45	LM 638	GUIDE TUBE NORTH 3	FIG.5.214		
639	LEVEL	LL-46	LM 639	GUIDE TUBE NORTH 6	FIG.5.214		
640	LEVEL	LL-47	LM 640	GUIDE TUBE SOUTH 0	FIG.5.215		
641	LEVEL	LL-48	LM 641	GUIDE TUBE SOUTH 1	FIG.5.215		
642	LEVEL	LL-49	LM 642	GUIDE TUBE SOUTH 3	FIG.5.215		
643	LEVEL	LL-50	LM 643	GUIDE TUBE SOUTH 6	FIG.5.215		
644	LEVEL	L- 1	LM 644	DOWNCOMER D-SIDE 1	FIG.5.216		
645	LEVEL	L- 2	LM 645	DOWNCOMER D-SIDE 2	FIG.5.216		
646	LEVEL	L- 3	LM 646	DOWNCOMER D-SIDE 3	FIG.5.216		
647	LEVEL	L- 4	LM 647	DOWNCOMER D-SIDE 4	FIG.5.216		
648	LEVEL	L- 5	LM 648	DOWNCOMER D-SIDE 5	FIG.5.216		
649	LEVEL	L- 6	LM 649	DOWNCOMER B-SIDE 1	FIG.5.217		
650	LEVEL	L- 7	LM 650	DOWNCOMER B-SIDE 2	FIG.5.217		

Table 3.1 (continued)

** MEASUREMENT LIST ** 651CH.- 700CH.

CH.	ITEM	SYMBOL	ID.	LOCATION	FIG.NO.	RANGE	ACCURACY
651	LEVEL	L- 8	LM 651	DOWNCOMER B-SIDE 3	FIG.5.217		
652	LEVEL	L- 9	LM 652	DOWNCOMER B-SIDE 4	FIG.5.217		
653	LEVEL	L-10	LM 653	DOWNCOMER B-SIDE 5	FIG.5.217		
654	VOID	VF- 1	VD 654	A54 TIE ROD POS.1	NOT MEASURED	0.0 - 1.00	
655	VOID	VF- 2	VD 655	A54 TIE ROD POS.2	NOT MEASURED	0.0 - 1.00	
656	VOID	VF- 3	VD 656	A54 TIE ROD POS.3	NOT MEASURED	0.0 - 1.00	
657	VOID	VF- 4	VD 657	A54 TIE ROD POS.4	NOT MEASURED	0.0 - 1.00	
658	VOID	VF- 5	VD 658	A54 TIE ROD POS.5	NOT MEASURED	0.0 - 1.00	
659	VOID	VF- 6	VD 659	A54 TIE ROD POS.6	NOT MEASURED	0.0 - 1.00	
660	VOID	VF- 7	VD 660	A54 TIE ROD POS.7	NOT MEASURED	0.0 - 1.00	
661	VOID	VF- 8	VD 661	B54 TIE ROD POS.1	NOT MEASURED	0.0 - 1.00	
662	VOID	VF- 9	VD 662	B54 TIE ROD POS.2	NOT MEASURED	0.0 - 1.00	
663	VOID	VF-10	VD 663	B54 TIE ROD POS.3	NOT MEASURED	0.0 - 1.00	
664	VOID	VF-11	VD 664	B54 TIE ROD POS.4	NOT MEASURED	0.0 - 1.00	
665	VOID	VF-12	VD 665	B54 TIE ROD POS.5	NOT MEASURED	0.0 - 1.00	
666	VOID	VF-13	VD 666	B54 TIE ROD POS.6	NOT MEASURED	0.0 - 1.00	
667	VOID	VF-14	VD 667	B54 TIE ROD POS.7	NOT MEASURED	0.0 - 1.00	
668	VOID	VF-15	VD 668	C54 TIE ROD POS.1	NOT MEASURED	0.0 - 1.00	
669	VOID	VF-16	VD 669	C54 TIE ROD POS.2	NOT MEASURED	0.0 - 1.00	
670	VOID	VF-17	VD 670	C54 TIE ROD POS.3	NOT MEASURED	0.0 - 1.00	
671	VOID	VF-18	VD 671	C54 TIE ROD POS.4	NOT MEASURED	0.0 - 1.00	
672	VOID	VF-19	VD 672	C54 TIE ROD POS.5	NOT MEASURED	0.0 - 1.00	
673	VOID	VF-20	VD 673	C54 TIE ROD POS.6	NOT MEASURED	0.0 - 1.00	
674	VOID	VF-21	VD 674	C54 TIE ROD POS.7	NOT MEASURED	0.0 - 1.00	
675	VOID	VF-22	VD 675	D54 TIE ROD POS.7	NOT MEASURED	0.0 - 1.00	
676	VOID	VF-23	VD 676	D54 TIE ROD POS.7	NOT MEASURED	0.0 - 1.00	
677	VOID	VF-24	VD 677	D54 TIE ROD POS.7	NOT MEASURED	0.0 - 1.00	
678	VOID	VF-25	VD 678	D54 TIE ROD POS.7	NOT MEASURED	0.0 - 1.00	
679	VOID	VF-26	VD 679	D54 TIE ROD POS.7	NOT MEASURED	0.0 - 1.00	
680	VOID	VF-27	VD 680	D54 TIE ROD POS.7	NOT MEASURED	0.0 - 1.00	
681	VOID	VF-28	VD 681	D54 TIE ROD POS.7	NOT MEASURED	0.0 - 1.00	
682	VOID	VE- 1	VD 682	CHANNEL A OUTLET 1	NOT MEASURED	0.0 - 1.00	
683	VOID	VE- 2	VD 683	CHANNEL A OUTLET 2	NOT MEASURED	0.0 - 1.00	
684	VOID	VE- 3	VD 684	CHANNEL A OUTLET 3	NOT MEASURED	0.0 - 1.00	
685	VOID	VE- 4	VD 685	CHANNEL B OUTLET 1	NOT MEASURED	0.0 - 1.00	
686	VOID	VE- 5	VD 686	CHANNEL B OUTLET 2	NOT MEASURED	0.0 - 1.00	
687	VOID	VE- 6	VD 687	CHANNEL B OUTLET 3	NOT MEASURED	0.0 - 1.00	
688	VOID	VE- 7	VD 688	CHANNEL C OUTLET 1	NOT MEASURED	0.0 - 1.00	
689	VOID	VE- 8	VD 689	CHANNEL C OUTLET 2	NOT MEASURED	0.0 - 1.00	
690	VOID	VE- 9	VD 690	CHANNEL C OUTLET 3	NOT MEASURED	0.0 - 1.00	
691	VOID	VE-10	VD 691	CHANNEL D OUTLET 1	NOT MEASURED	0.0 - 1.00	
692	VOID	VE-11	VD 692	CHANNEL D OUTLET 2	NOT MEASURED	0.0 - 1.00	
693	VOID	VE-12	VD 693	CHANNEL D OUTLET 3	NOT MEASURED	0.0 - 1.00	
694	VOID	VE-13	VD 694	LOWER PLENUM BOTTOM 1	NOT MEASURED	0.0 - 1.00	
695	VOID	VE-14	VD 695	LOWER PLENUM BOTTOM 2	NOT MEASURED	0.0 - 1.00	
696	VOID	VE-15	VD 696	LOWER PLENUM BOTTOM 3	NOT MEASURED	0.0 - 1.00	
697	VOID	VP- 1	VD 697	LOWER PLENUM INLET	NOT MEASURED	0.0 - 1.00	
698	VOID	VP- 2	VD 698	LOWER PLENUM INLET	NOT MEASURED	0.0 - 1.00	

Table 3.2 Core Instrumentation List

Item	Rod NO. \ Pos. / DL	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6	Pos.7	Core Inlet
		3417	3114.5	2879.5	2527	2174.5	1939.5	1637	1479
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	
	A24	TF 40	TF 41	TF 42	TF 43	TF 44	TF 45	TF 46	
	A26	TF 47			TF 48				
	A28	TF 49			TF 50				
	A31	TF 51			TF 52				
	A33	TF 53	TF 54	TF 55	TF 56	TF 57	TF 58	TF 59	
	A34	TF 60	TF 61	TF 62	TF 63	TF 64	TF 65	TF 66	
	A37	TF 67			TF 68				
	A42	TF 69			TF 70				
	A44	TF 71	TF 72	TF 73	TF 74	TF 75	TF 76	TF 77	
	A48	TF 78			TF 79				
	A51	TF 80			TF 81				
	A53	TF 82			TF 83				
	A57	TF 84			TF 85				
	A62	TF 86			TF 87				
	A66	TF 88			TF 89				
	A68	TF 90			TF 91				
	A71	TF 92			TF 93				
	A73	TF 94			TF 95				
	A75	TF 96			TF 97				
	A77	TF 98	TF 99	TF100	TF101	TF102	TF103	TF104	
	A82	TF105			TF106				
	A84	TF107			TF108				
	A85	TF109	TF110	TF111	TF112	TF113	TF114	TF115	
	A87	TF116	TF117	TF118	TF119	TF120	TF121	TF122	
	A88	TF123	TF124	TF125	TF126	TF127	TF128	TF129	

Table 3.2 (Continued)

Item	Pos. / Rod NO. \ DL	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6	Pos.7	Core Inlet
		3417	3114.5	2879.5	2527	2174.5	1939.5	1637	1479
Surface Temp.	B11	TF130	TF131	TF132	TF133	TF134	TF135	TF136	
	B13				TF137				
	B22	TF138	TF139	TF140	TF141	TF142	TF143	TF144	
	B31				TF145				
	B33				TF146				
	B51				TF147				
	B53				TF148				
	B66				TF149				
	B77	TF150	TF151	TF152	TF153	TF154	TF155	TF156	
	B86				TF157				
	C11	TF158	TF159	TF160	TF161	TF162	TF163	TF164	
	C13	TF165	TF166	TF167	TF168	TF169	TF170	TF171	
	C15				TF172				
	C22	TF173	TF174	TF175	TF176	TF177	TF178	TF179	
	C31				TF180				
	C33	TF181	TF182	TF183	TF184	TF185	TF186	TF187	
	C35				TF188				
	C66				TF189				
	C68				TF190				
	C77	TF191	TF192	TF193	TF194	TF195	TF196	TF197	
	D11				TF198				
	D13				TF199				
	D22	TF200	TF201	TF202	TF203	TF204	TF205	TF206	
	D31				TF207				
	D33				TF208				
	D51				TF209				
	D53				TF210				
	D66				TF211				
	D77				TF212				
	D86				TF213				

Table 3.2 (Continued)

Item	Rod NO. \ Pos. / DL	Pos.1	Pos.2	Pos.3	Pos.4	Pos.5	Pos.6	Pos.7	Core Inlet
		3417	3114.5	2879.5	2527	2174.5	1939.5	1637	1479
In-Core Fluid Temp.	A45	TW 1	TW 2	TW 3	TW 4	TW 5	TW 6	TW 7	TC 1
	B45	TW 8	TW 9	TW 10	TW 11	TW 12	TW 13	TW 14	TC 2
	C45	TW 15	TW 16	TW 17	TW 18	TW 19	TW 20	TW 21	TC 3
	D45	TW 22	TW 23	TW 24	TW 25	TW 26	TW 27	TW 28	TC 4
In-Core Void	A54	VF 1	VF 2	VF 3	VF 4	VF 5	VF 6	VF 7	
	B54	VF 8	VF 9	VF 10	VF 11	VF 12	VF 13	VF 14	
	C54	VF 15	VF 16	VF 17	VF 18	VF 19	VF 20	VF 21	
	D54	VF 22	VF 23	VF 24	VF 25	VF 26	VF 27	VF 28	
Channel Box Inner 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	
Bypass Fluid Temp.	E*	TB 36	TB 37	TB 38	TB 39	TB 40	TB 41	TB 42	
	F*	TB 43	TB 44	TB 45	TB 46	TB 47	TB 48	TB 49	
Channel Liquid Level	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	

Table 4.1 Test Conditions of Run 912

Parameter	Specified Value	Measured Value
Break Conditions		
Location	MRP Suction	MRP Suction
Type	Split	Split
Break Orifice Diameter (mm)	5.9	5.9
Initial System Conditions		
Steam Dome Pressure (MPa)	7.35	7.35
Lower Plenum Temperature (K)	551.7	551.8
Lower Plenum Subcooling (K)	10.5	10.5
Core Inlet Flow Rate (kg/s)	16.0	16.0
Core Outlet Quality (%)	13.8**	13.5**
Power Level (kW)	1260 + 2700	1262 + 2707
Maximum Liniar Heat Rate (kW/m)		
Channel A P.F.=1.1	16.65	16.67
P.F.=1.0	15.13	15.16
P.F.=0.875	13.24	13.26
Ch. B,C,D P.F.=1.1	11.89	11.92
P.F.=1.0	10.81	10.84
P.F.=0.875	9.46	9.48
Water Level in PV* (m)	5.0	5.0
Feed Water Conditions		
Temperature (K)	489	489
Flow Rate (kg/s)	2.39	Fig. 5.51
Initiation of Line Closure (s)	2.0	2.0
Steam Discharge Conditions		
Steady State Flow Rate (kg/s)	2.39	2.04
Transient Flow Rate (kg/s)	keep steady value	Fig. 5.49
Orifice Diameter (mm)	18.0	18.0
Initiation of Line Closure (s)	L2 +3(s)	24.0
SRV Setting Pressure (MPa)	$8.24 \leqq P \leqq 8.34$	$8.40 \leqq P \leqq 8.47$

Note ; * L3 Level for Scram

** not include core bypass flow

core bypass flow is assumed to be 0.8 kg/s

Table 4.1 (Continued)

Parameter	Specified Value	Measured Value
ECCS Conditions		
HPCS	not used	not used
LPCS		
Injection Location	Upper Plenum	Upper Plenum
Initiation Condition	L1+40(s) and $\leqq$ 2.16 (MPa)	318(s) at PV Pressure 2.38(MPa)
Coolant Temperature (K)	313	313
Injection Flow Rate (m^3/s)	1.13×10^{-3}	Fig. 5.50
LPCI		
Injection Location	Top of Core Bypass	Top of Core Bypass
Initiation Condition	L1+40(s) and $\leqq$ 1.57 (MPa)	406(s) at PV Pressure 1.81(MPa)
Coolant Temperature (K)	313	315
Injection Flow Rate (m^3/s)	3.50×10^{-3}	Fig. 5.50
ADS Conditions		
Initiation (s)	L1+120 (s)	158
Flow Rate	Scaled Flow of BWR	Fig. 5.49
Orifice Diameter (mm)	15.5	15.5

Note ; Each trip level is as follows,
L3 Level for Scram : 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 from PV Bottom

Table 4.2 Valve Chracteristics of Steam Discharge Line

Valve	Close to Open (s)	Open to Close (s)
AV-168	---	0.1
AV-169	0.3	2.0

Orifice	Diameter (mm)	Area (mm^2)
OR-4	15.5	188.7
OR-3	18.0	324.0

Table 4.3 Valve Control Sequence of Steam Line in Run 912

Time (s)	$t < 0$	$t = 0$	L2 + 3	$P \geqq 8.24$ MPa	L1 + 120
Events	Steady State	Break	MSIV Closure	SRV Opening	ADS Valve Opening
CV-1	Open	Manually Closed	Close	Close	Close
CV-2	Open	Manually Closed	Close	Close	Close
CV-130	Control to maintain steady state pressure	Manually Opened	Manually Closed	Control pressure between 8.24 MPa and 8.34 MPa	Close
AV-168	Open	Open	Open	Open	Automatically Closed
AV-169	Close	Close	Close	Close	Automatically Opened

Table 5.1 sequence of Events in Run 912

Time after Break (s)	Events
0.0	Break
	Initiate Coer power control
	Terminate recirculation pump power
2.0	Initiation of feed water line valve closure
3.1	Closure of feed water line
8.8	Initiation of power curve reduction
19.0	L2 (4.76m) signal
24.0	Closure of Steam Discharge line
38.2	L1 (4.25m) signal
83.6	Safety relief valve actuation
98.8	Jet pump suction nozzle uncovery
117	Dryout at the top of the core
150	Recirculation pump suction nozzle uncovery
158	ADS valve opens (at system pressure 8.03 MPa)
159	Initiation of lower plenum flashing
275	Whole core uncovery
318	LPCS initiation (at system pressure 2.38 MPa)
406	LPCI initiation (at system pressure 1.81 MPa)
440	Completion of core reflooding
444	All heater rods quenched

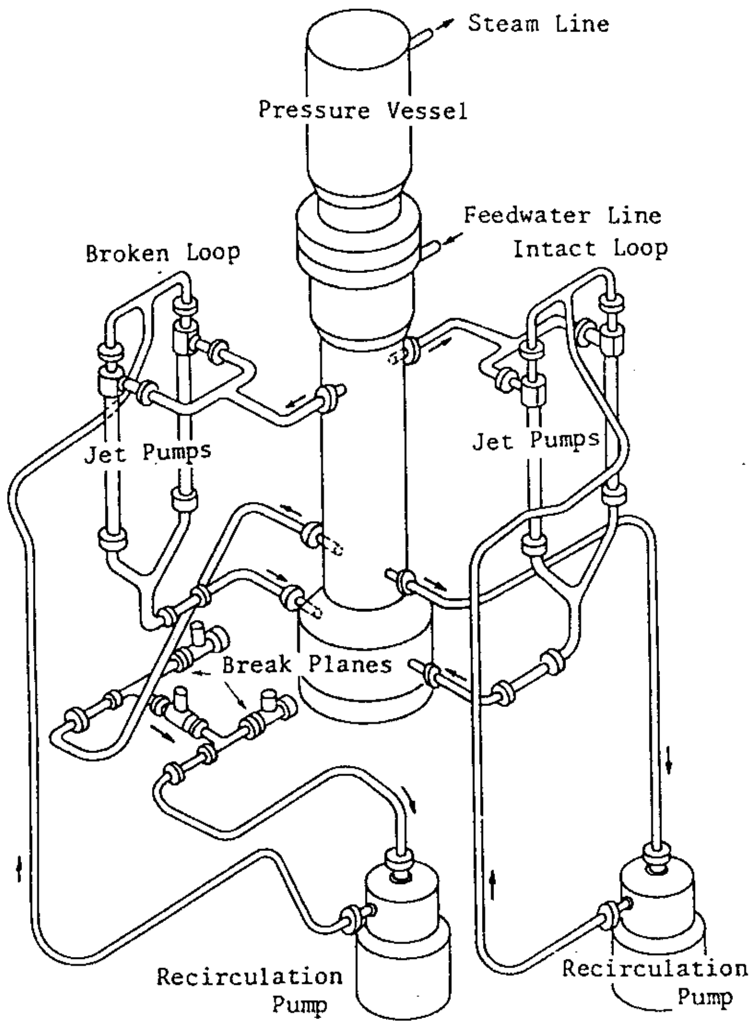


Fig. 2.1 Schematic Diagram of ROSA-III Test Facility

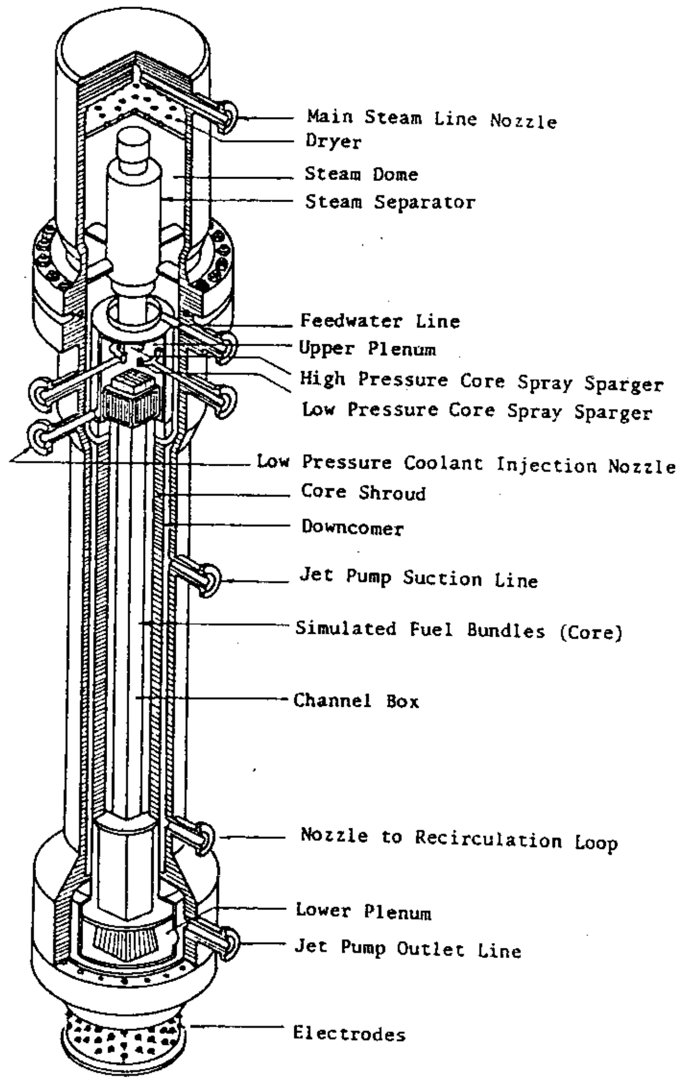


Fig. 2.2 Internal Structure of Pressure Vessel of ROSA-III

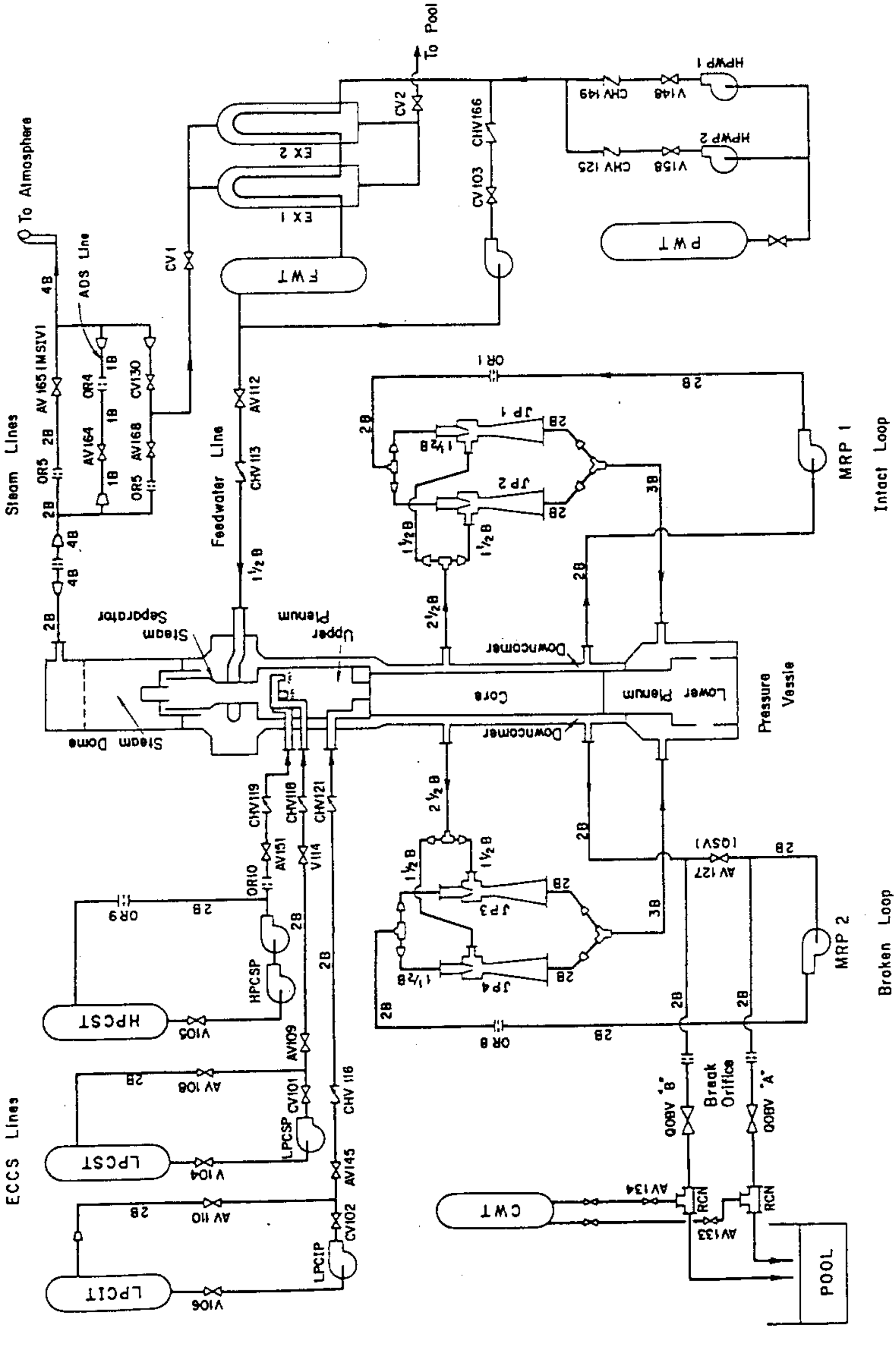


Fig. 2.3 ROSA-III Piping Schematic

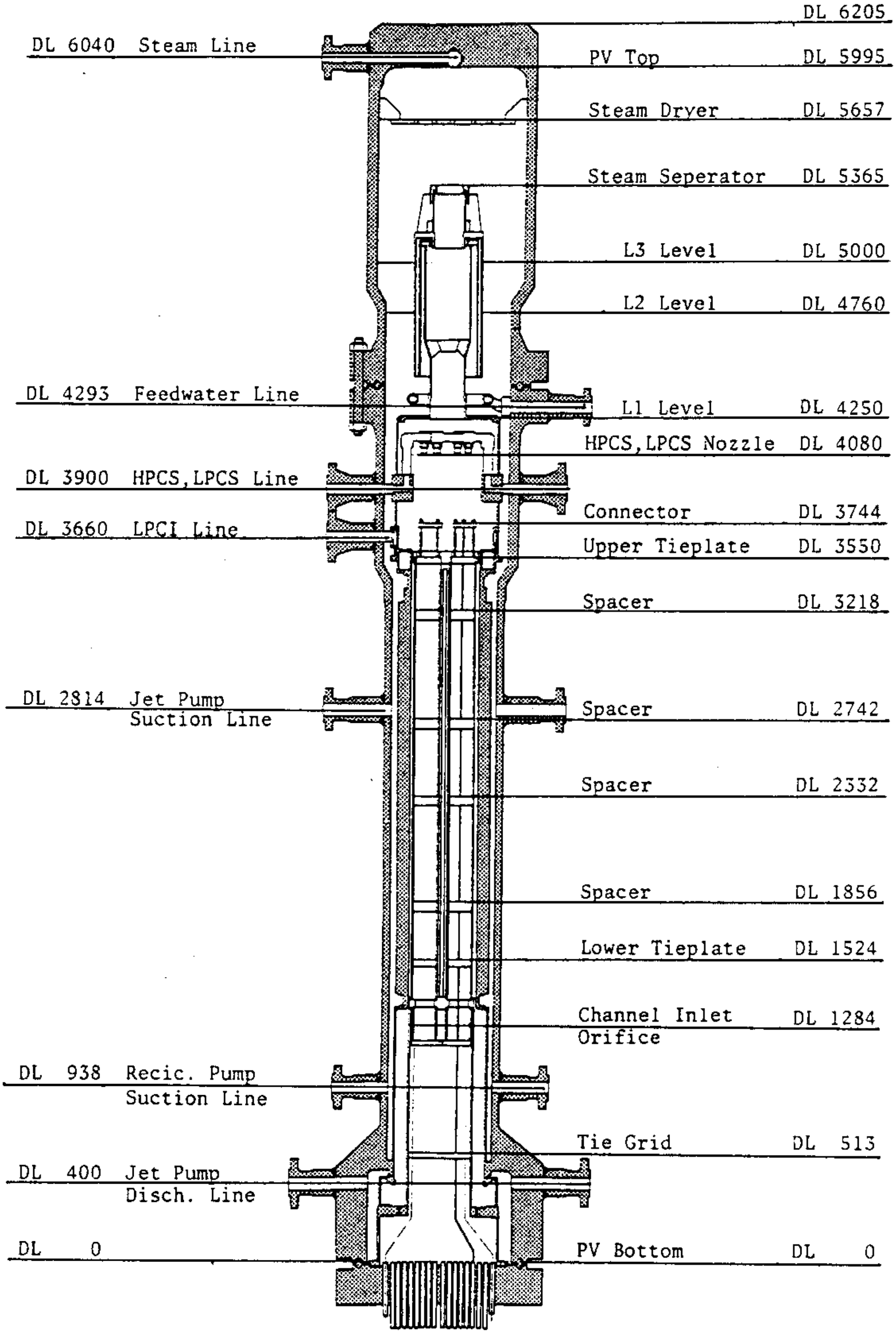
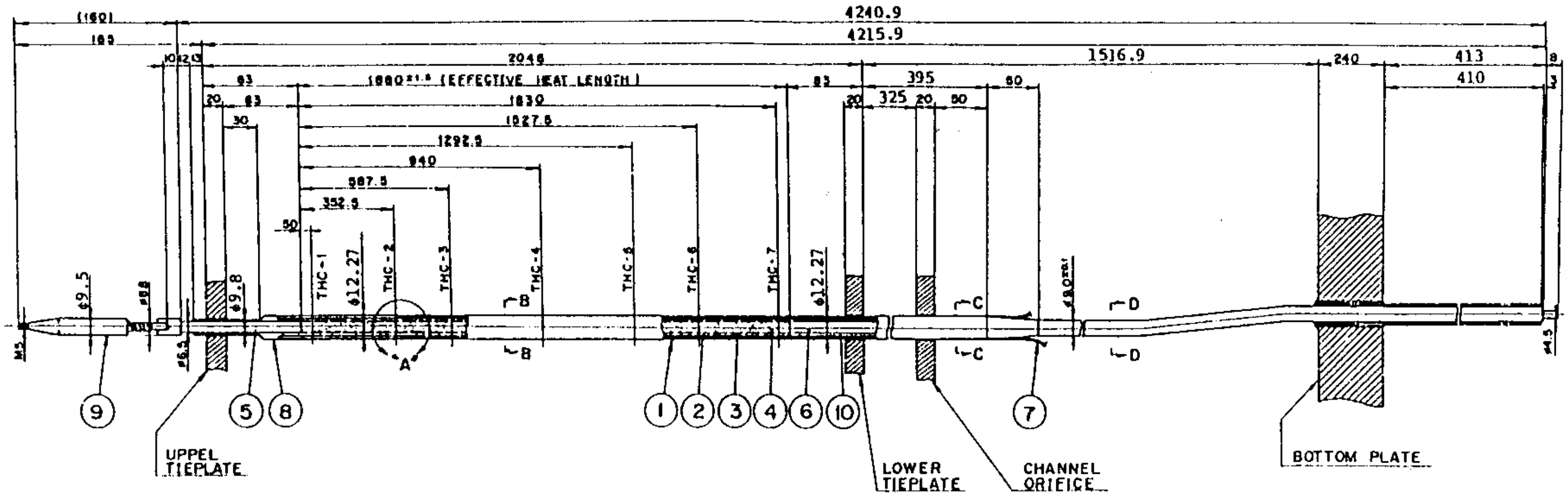
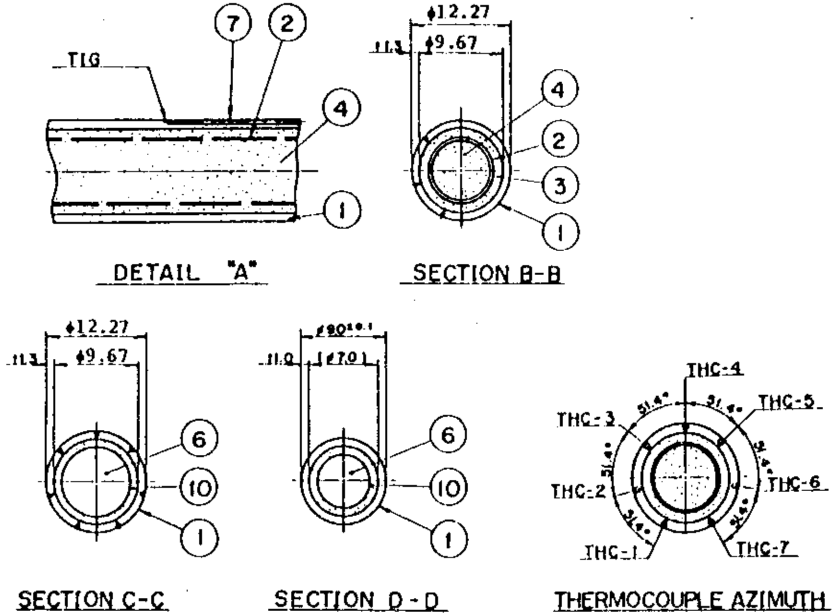


Fig.2.4 Pressure Vessel Internals Arrangement





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

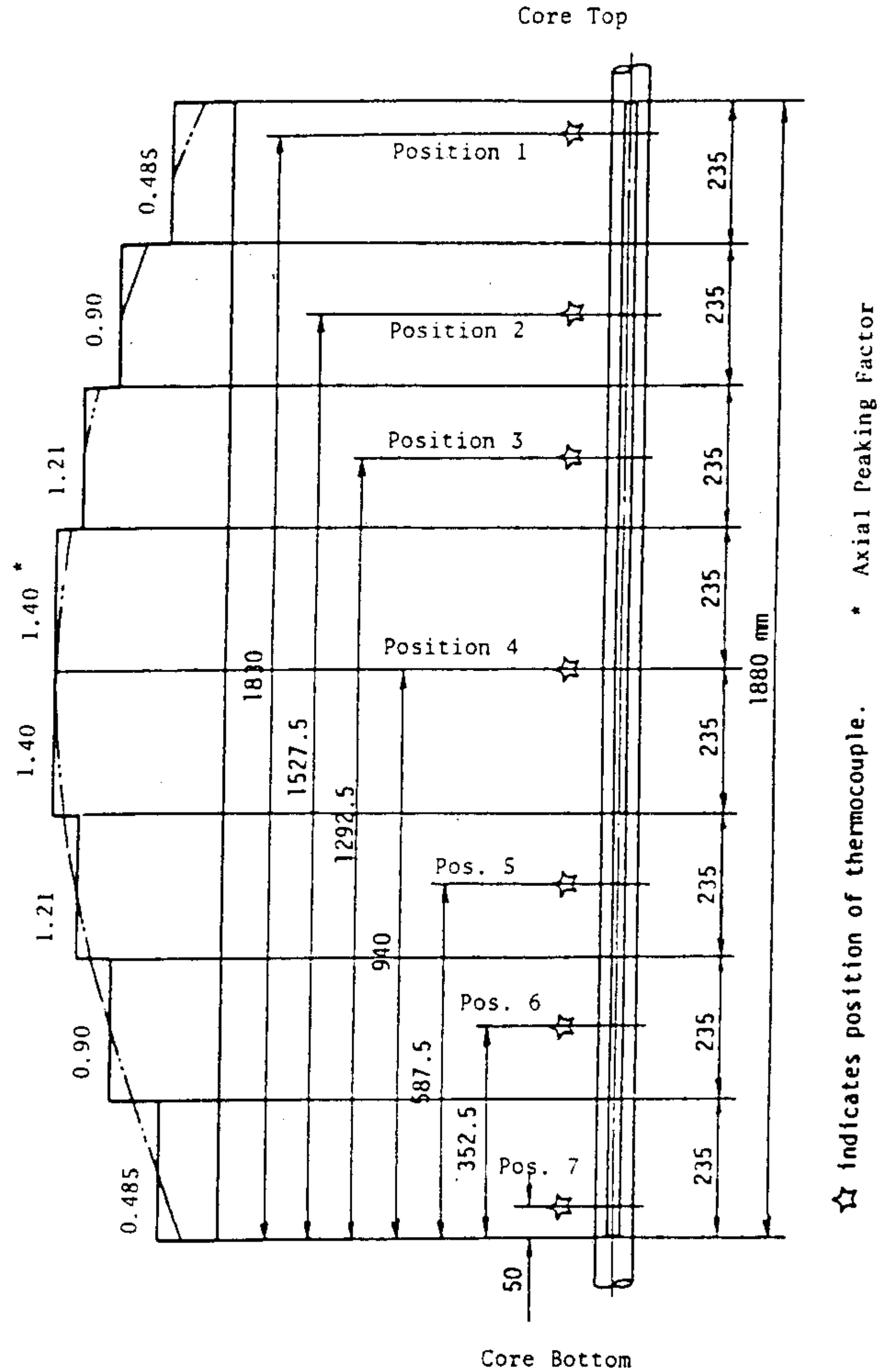


Fig.2.6 Axial Power Distribution of Heater Rod

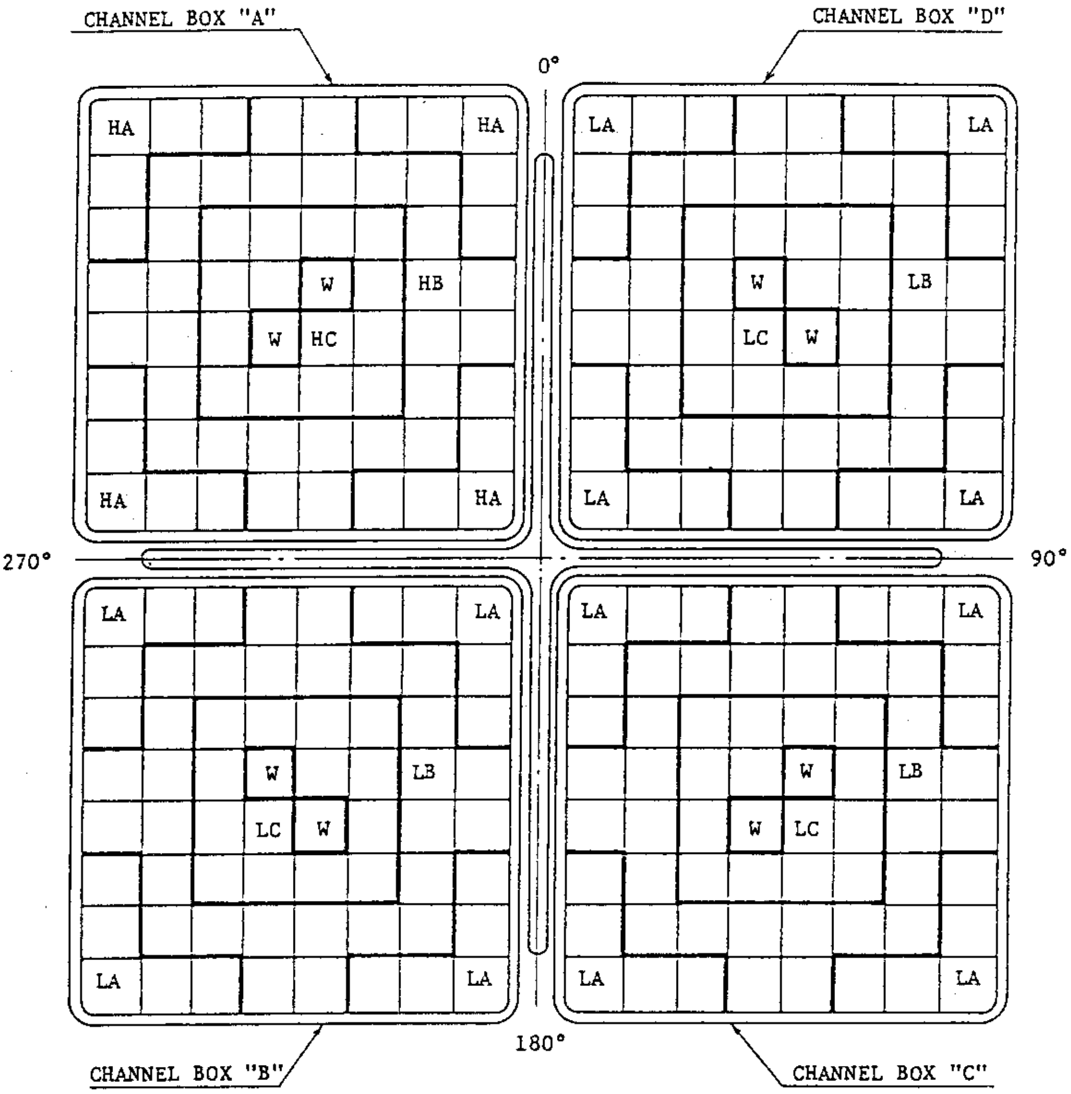


Fig. 2.7 Radial Power Distribution of Core

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

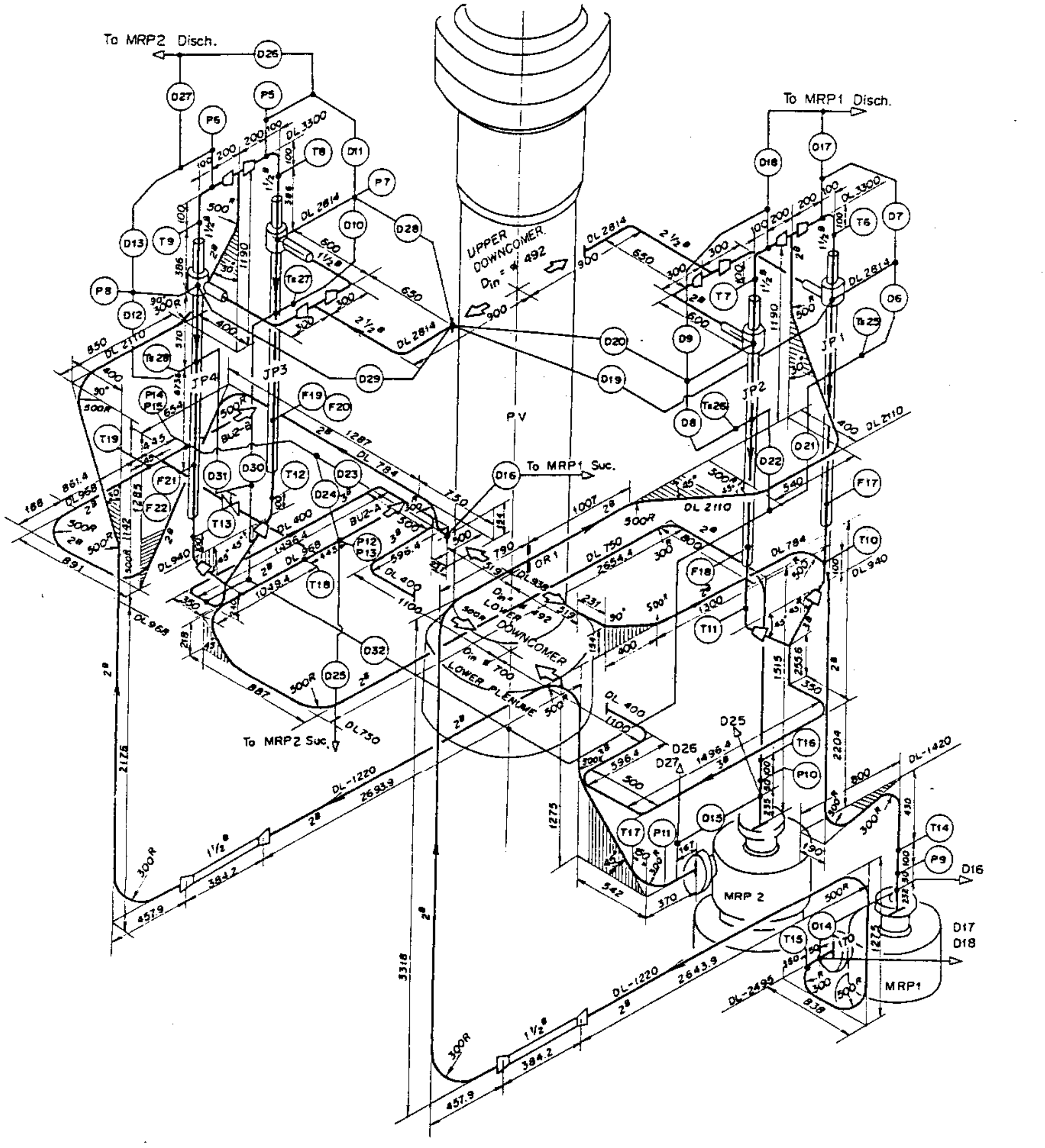


Fig. 2.8 Piping Layout of Recirculation Loops and Jet Pumps

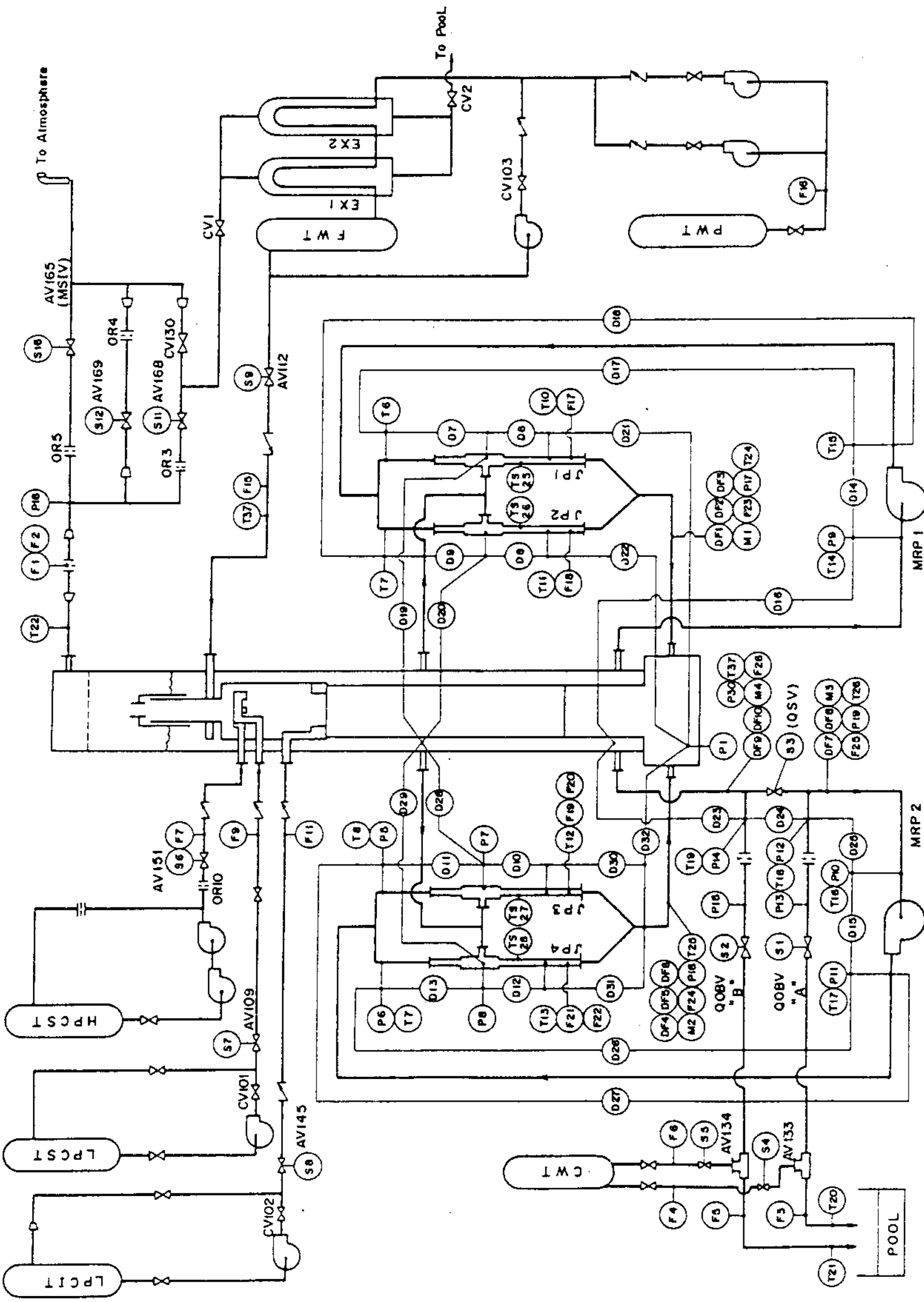


Fig. 3.1 Instrumentation Location of ROSA-III Test Facility

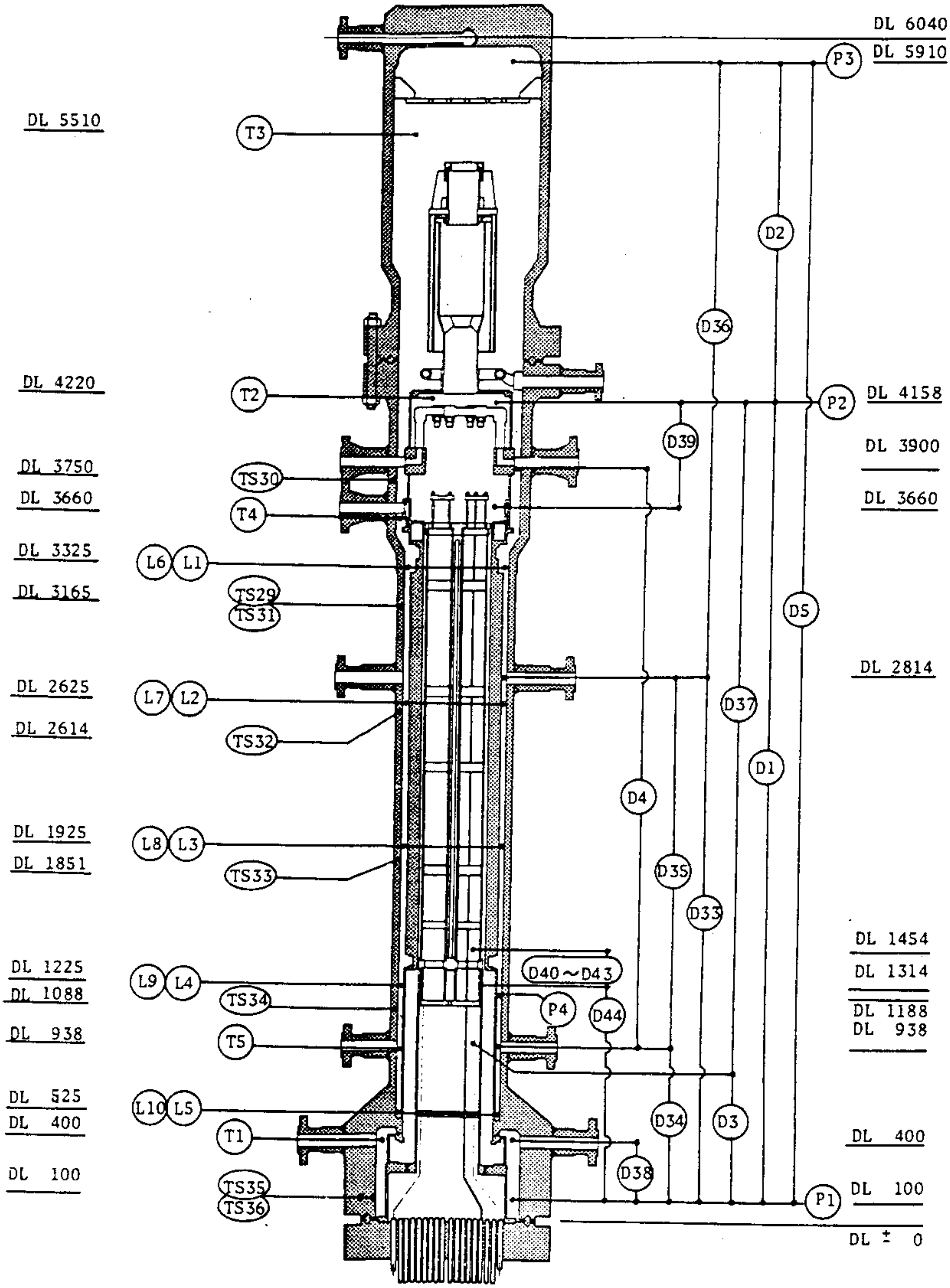


Fig. 3.2 Instrumentation Location in Pressure Vessel

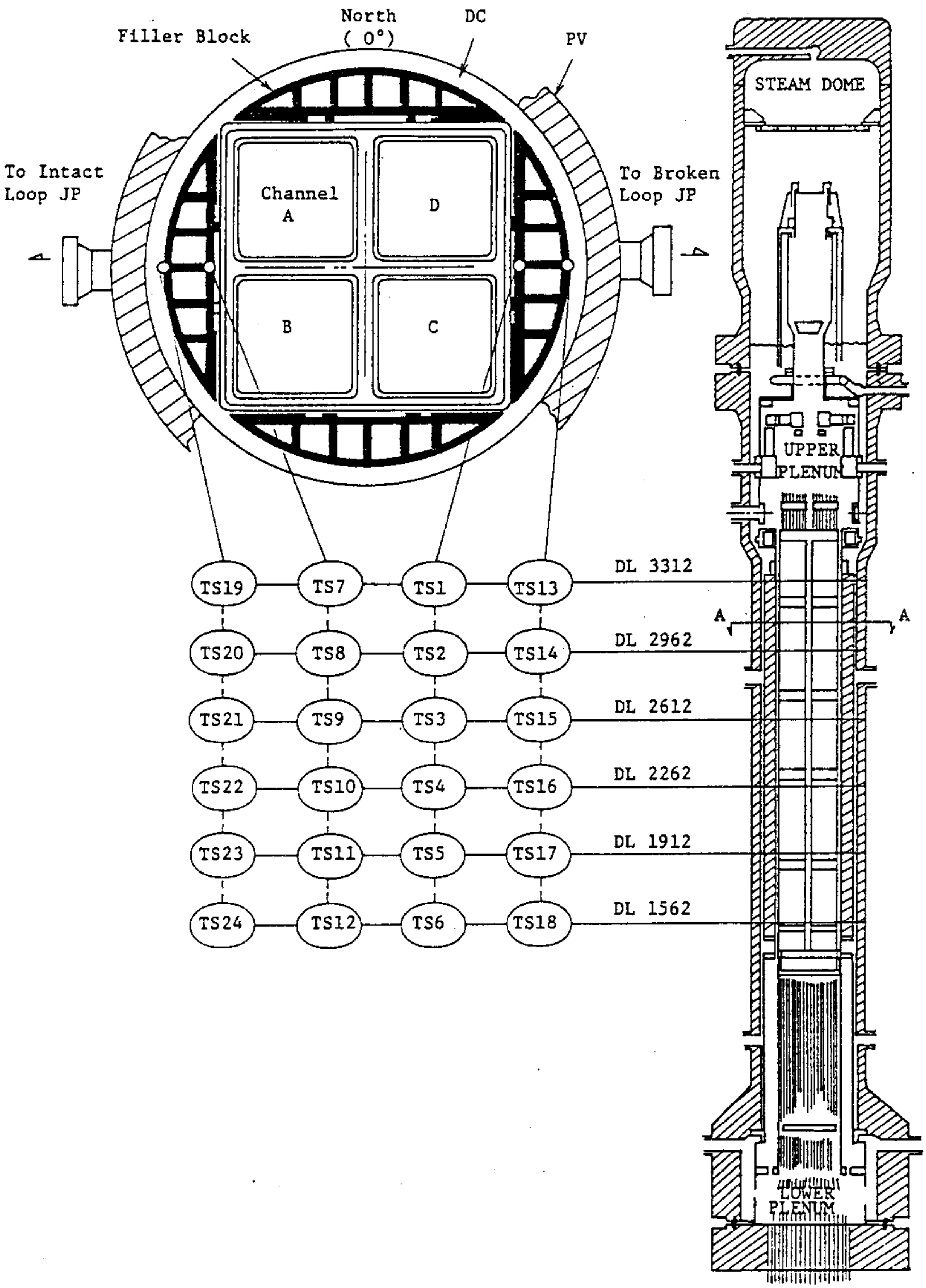


Fig. 3.3 Location of Thermocouples in Filler Blocks

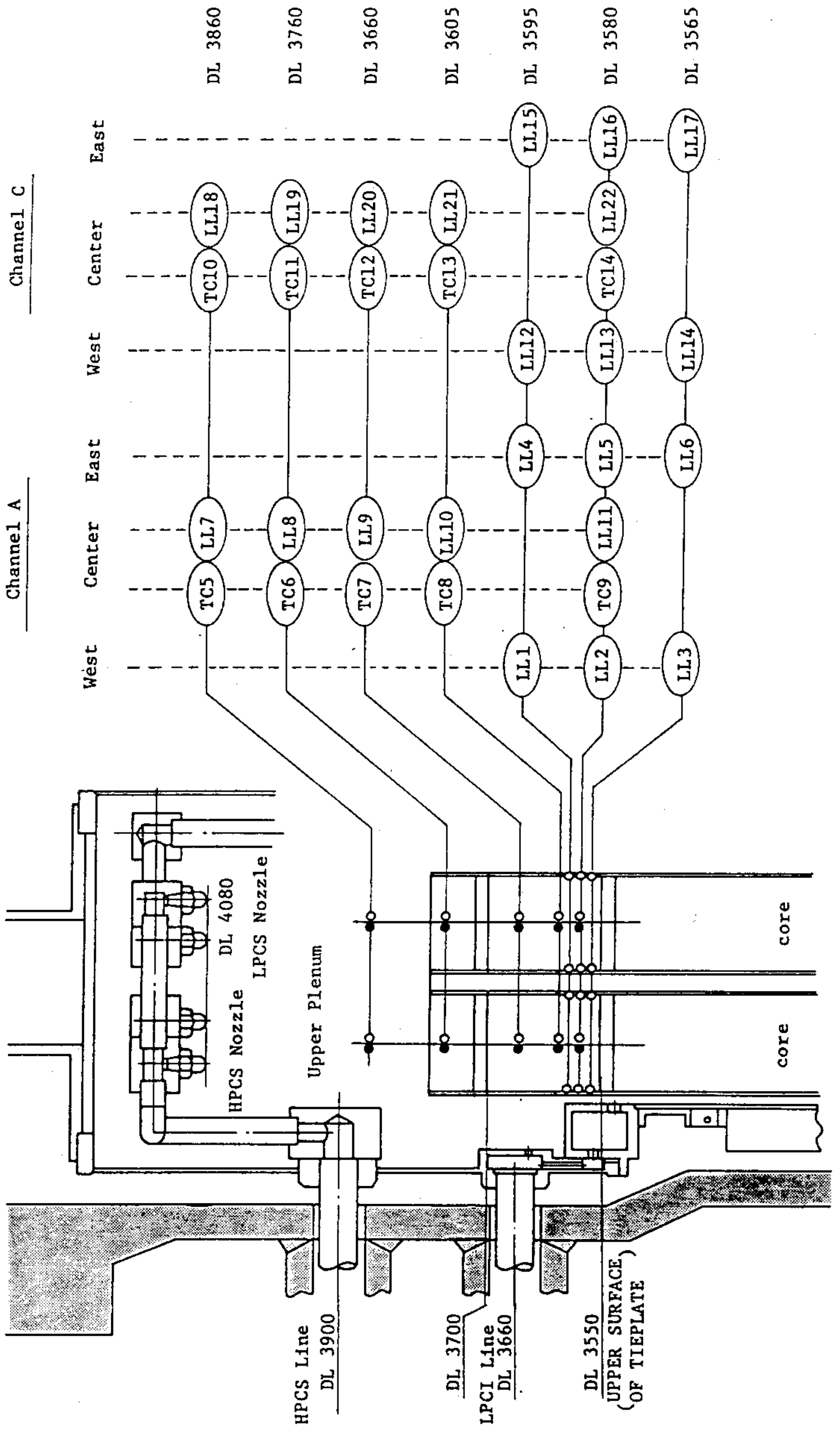
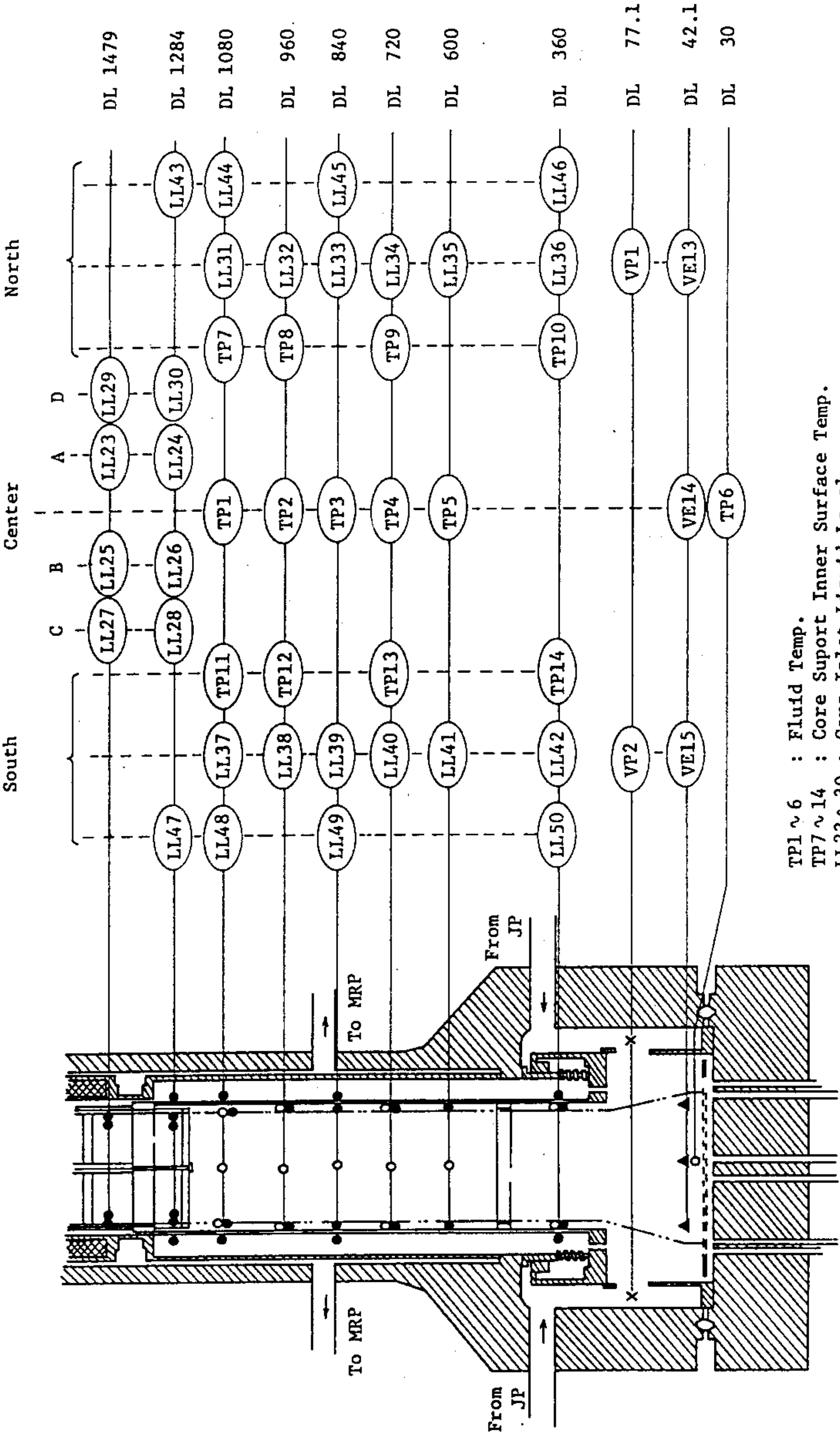
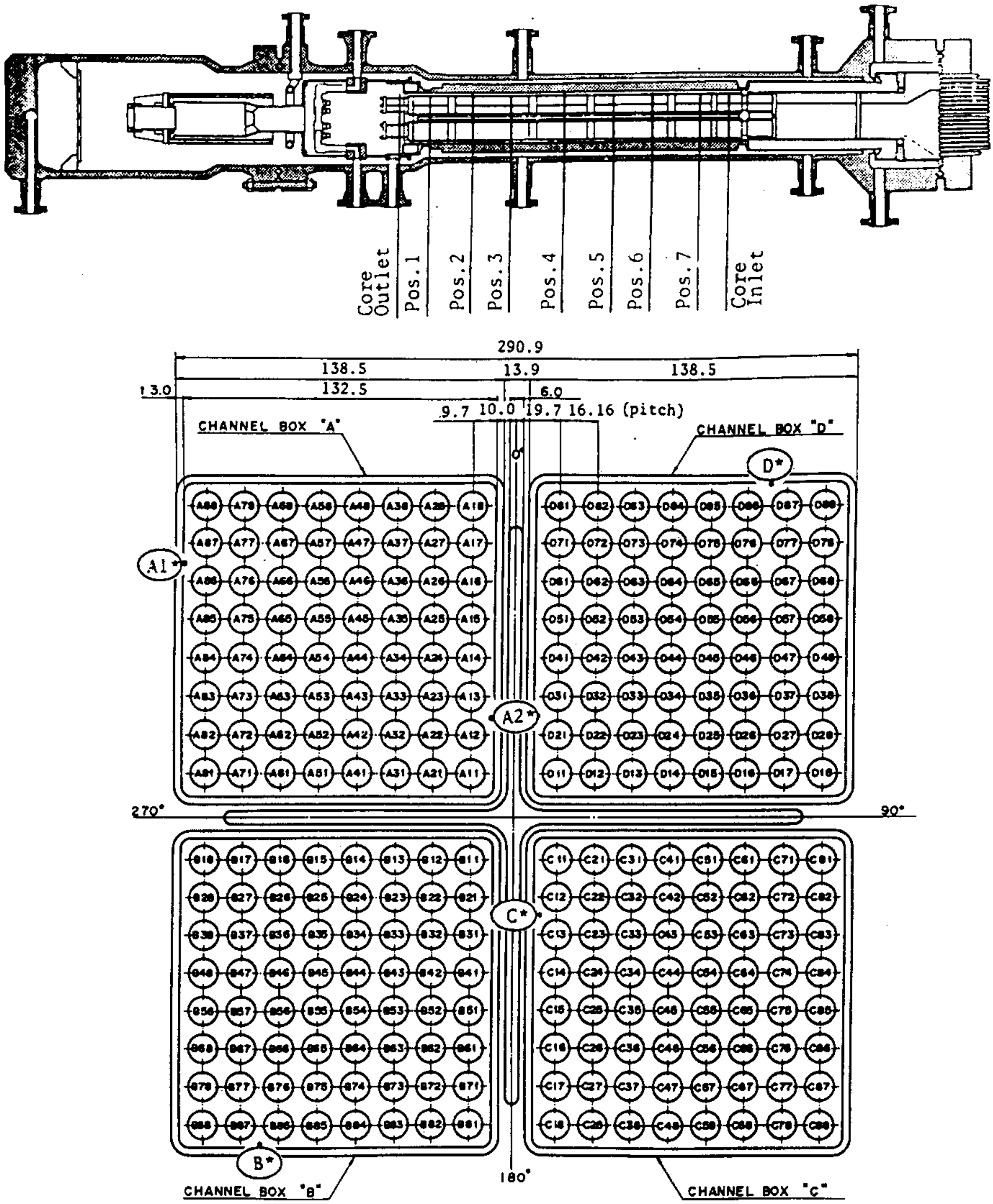


Fig. 3.4 Upper Plenum Instrumentations



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. 3.5 Lower Plenum Instrumentations



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. 3.6 Core Instrumentations (cf. Table 3.2)

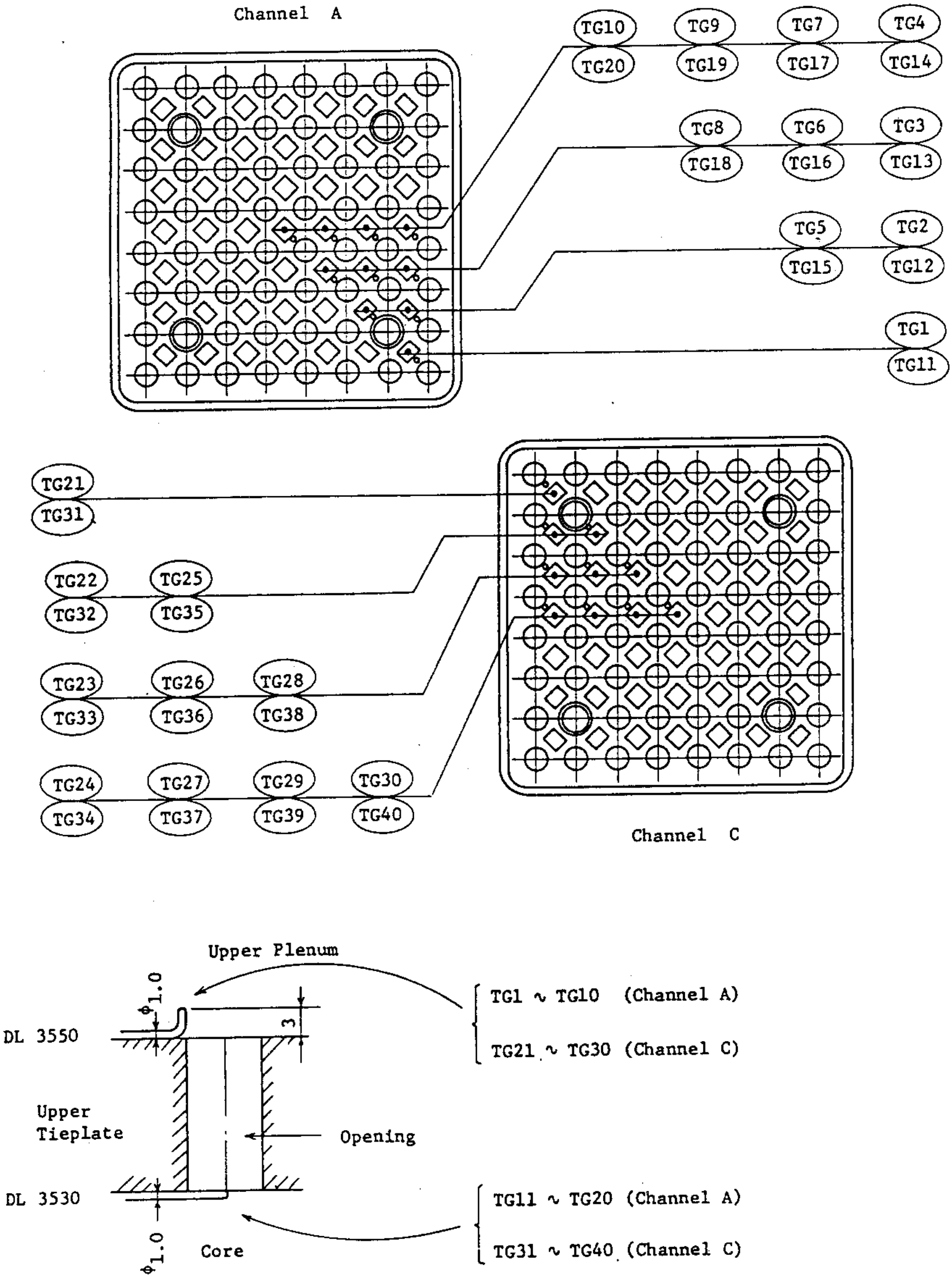


Fig. 3.7 Upper Tieplate Instrumentations

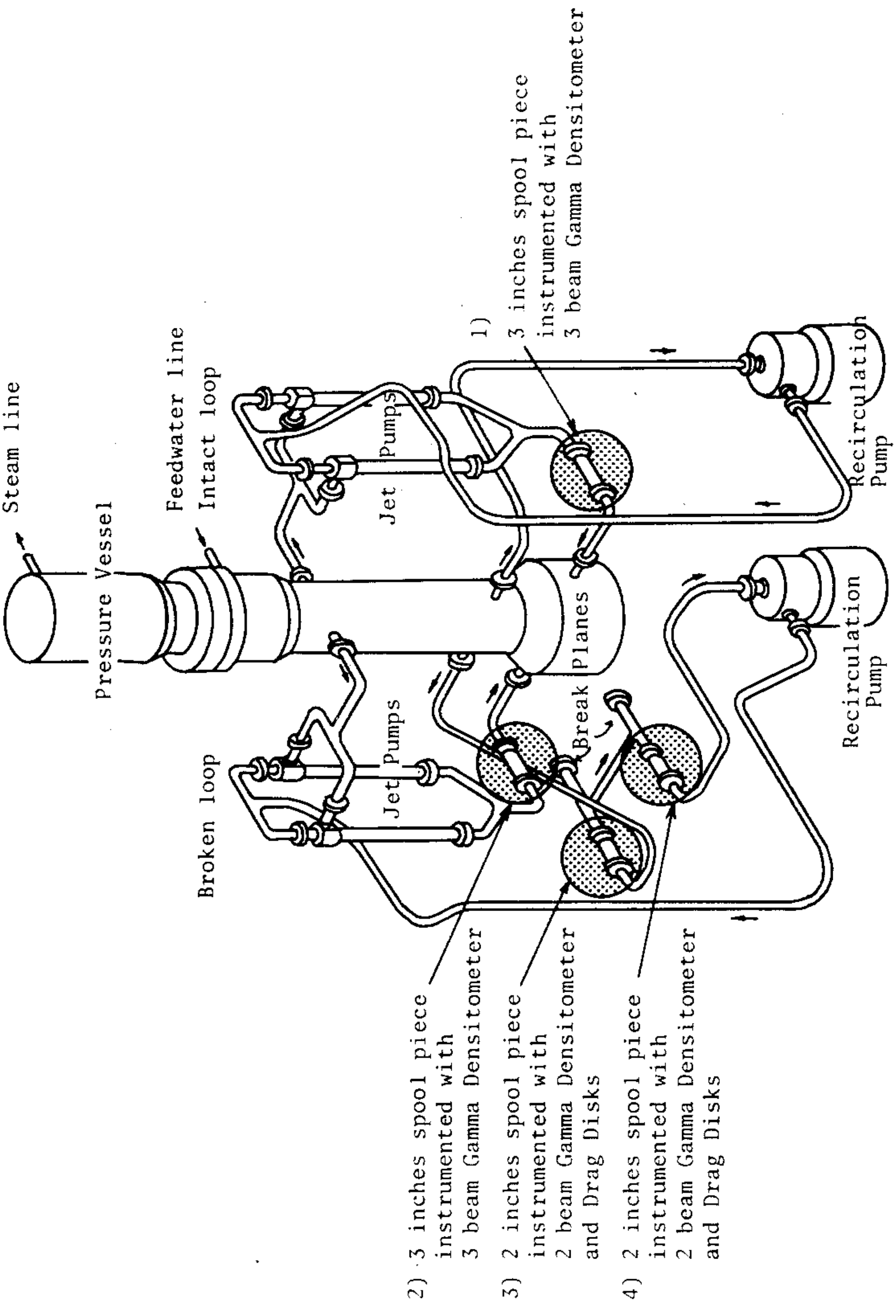


Fig. 3.8 Location of Two-Phase Flow Measurement Spool Pieces

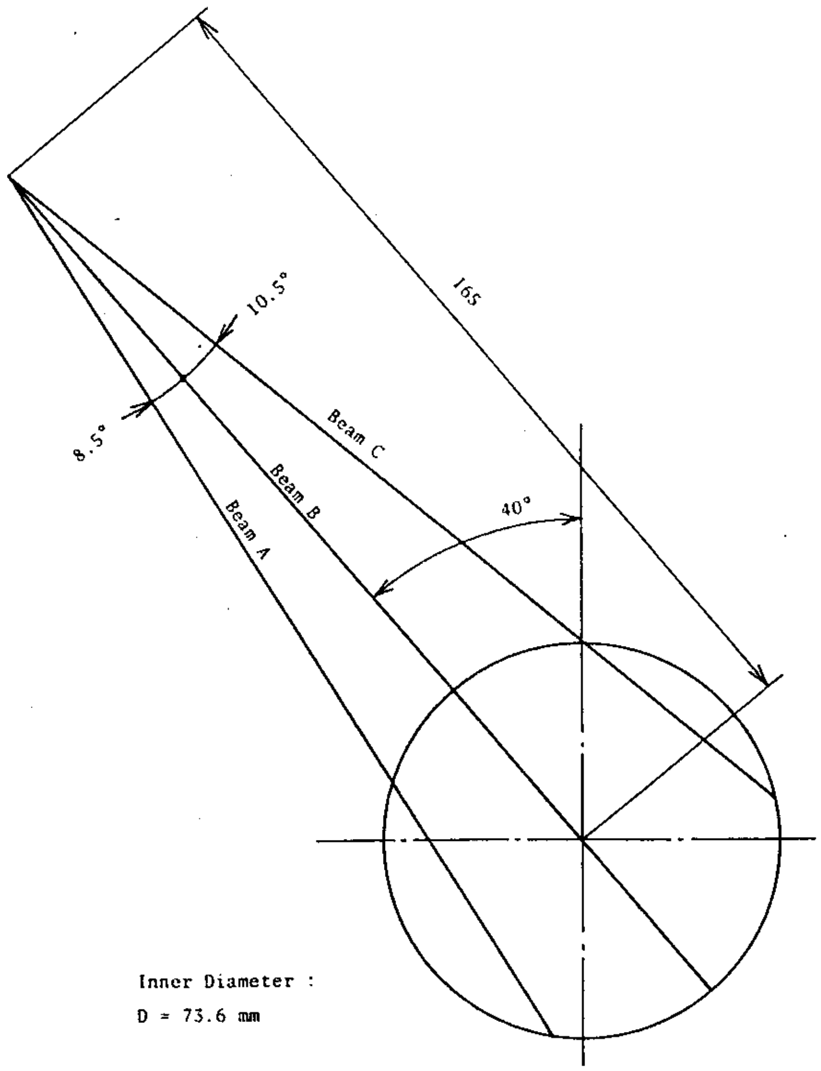


Fig. 3.9 Beam Configuration of Three-Beam Gamma Densitometer

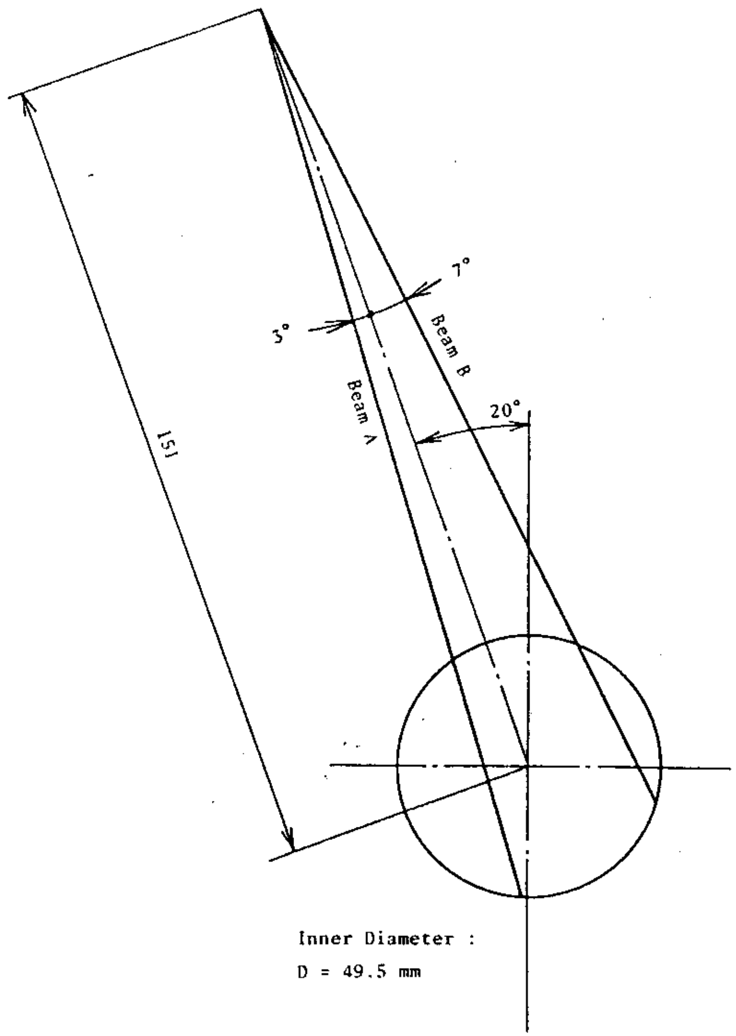
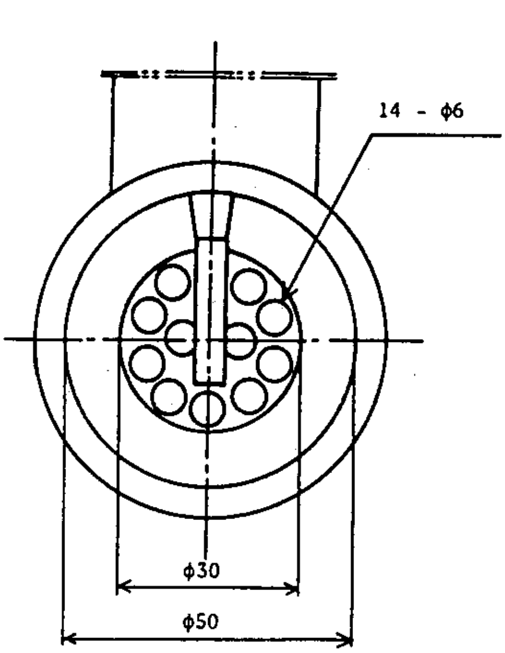
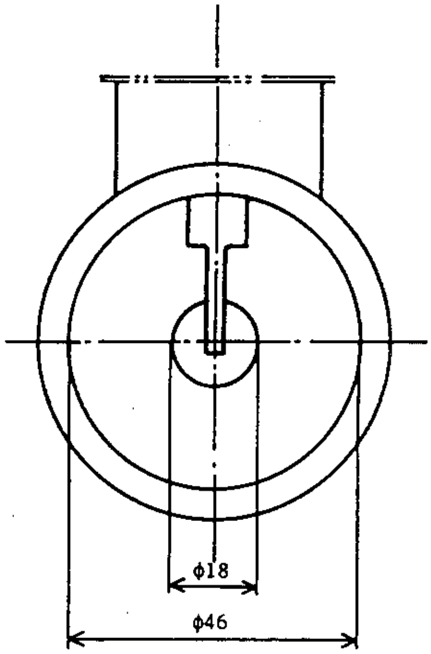


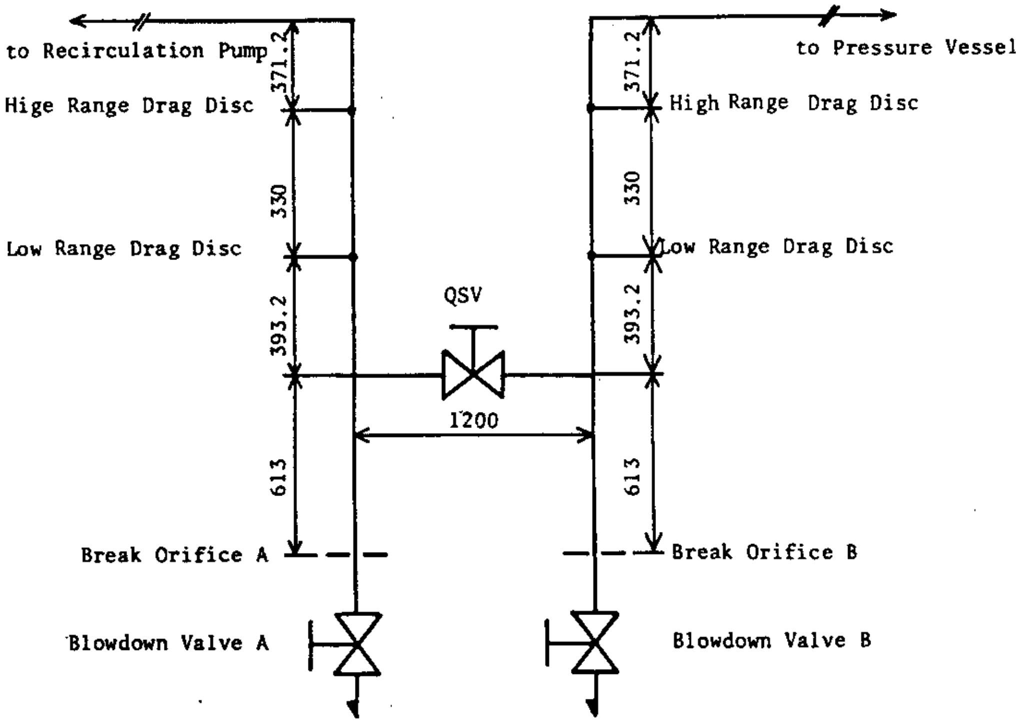
Fig. 3.10 Beam Configuration of Two-Beam Gamma Densitometer



(a) High Range Drag Disc



(b) Low Range Drag Disc



(c) Location of Drag Discs

Fig. 3.11 Configuration and Location of Drag Disks

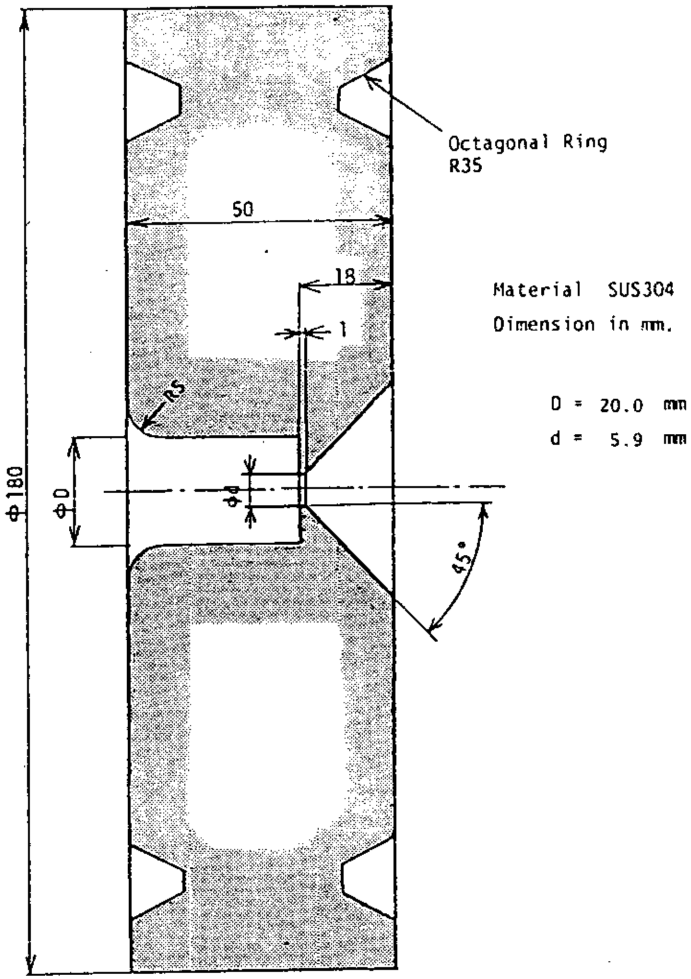


Fig. 4.1 Break Orifice Detailes

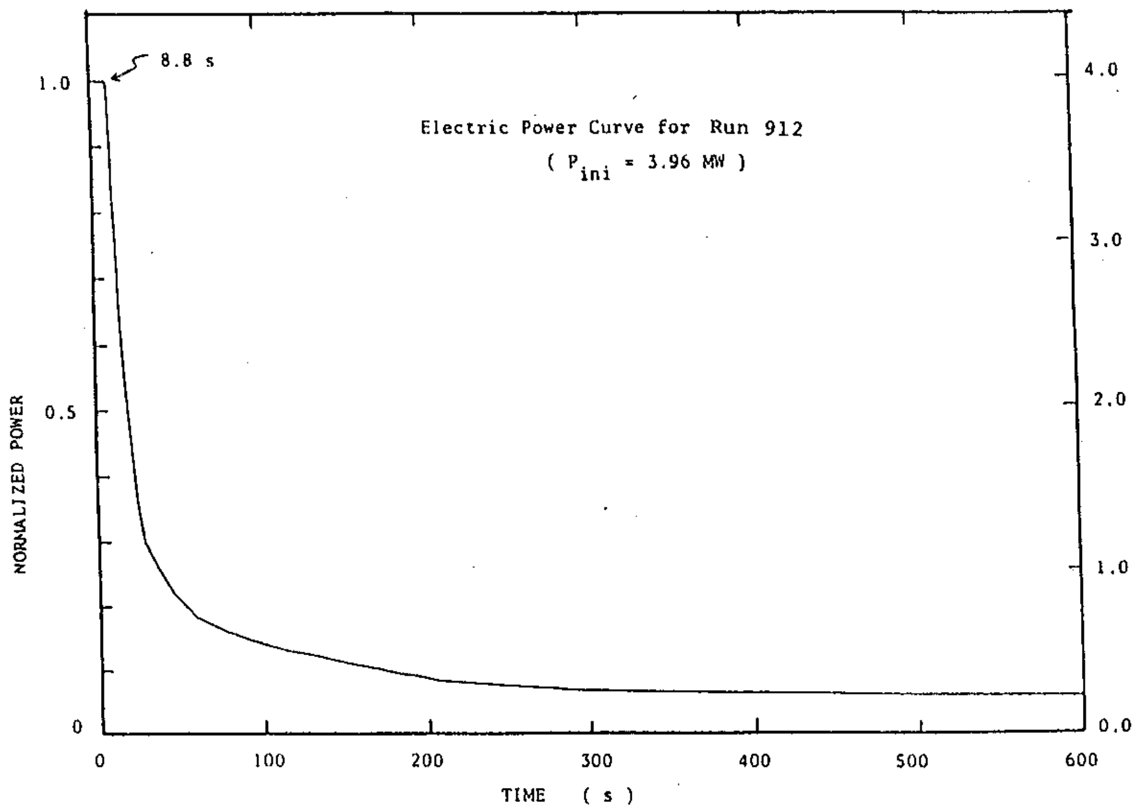


Fig. 4.2 Normalized Power Transient in BWR and ROSA-III

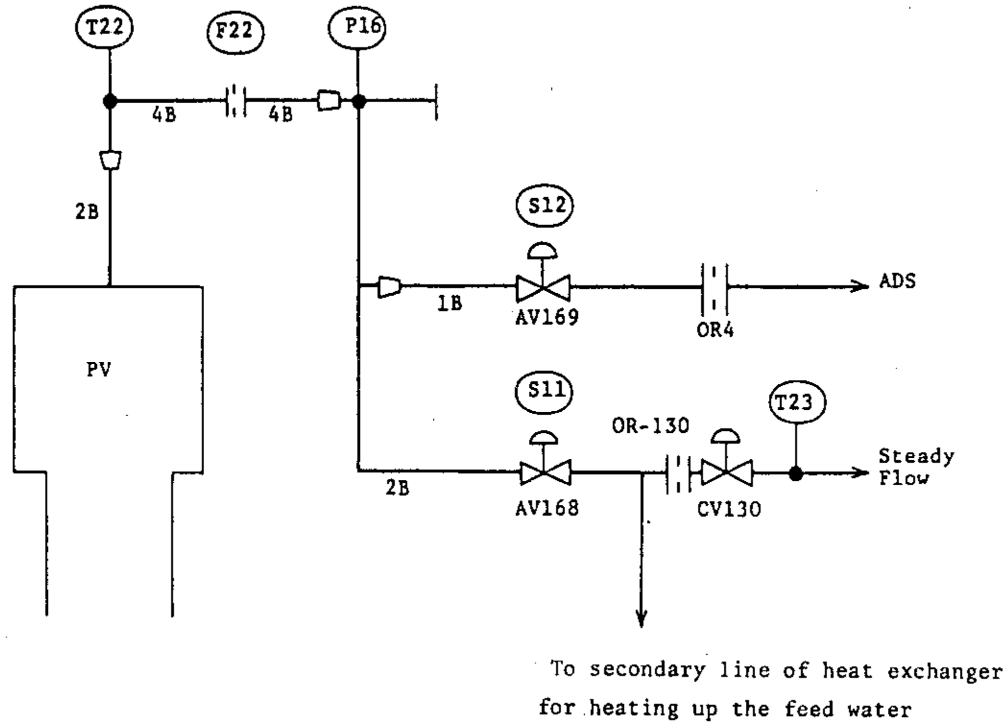


Fig. 4.3 Main Steam Line Schematic

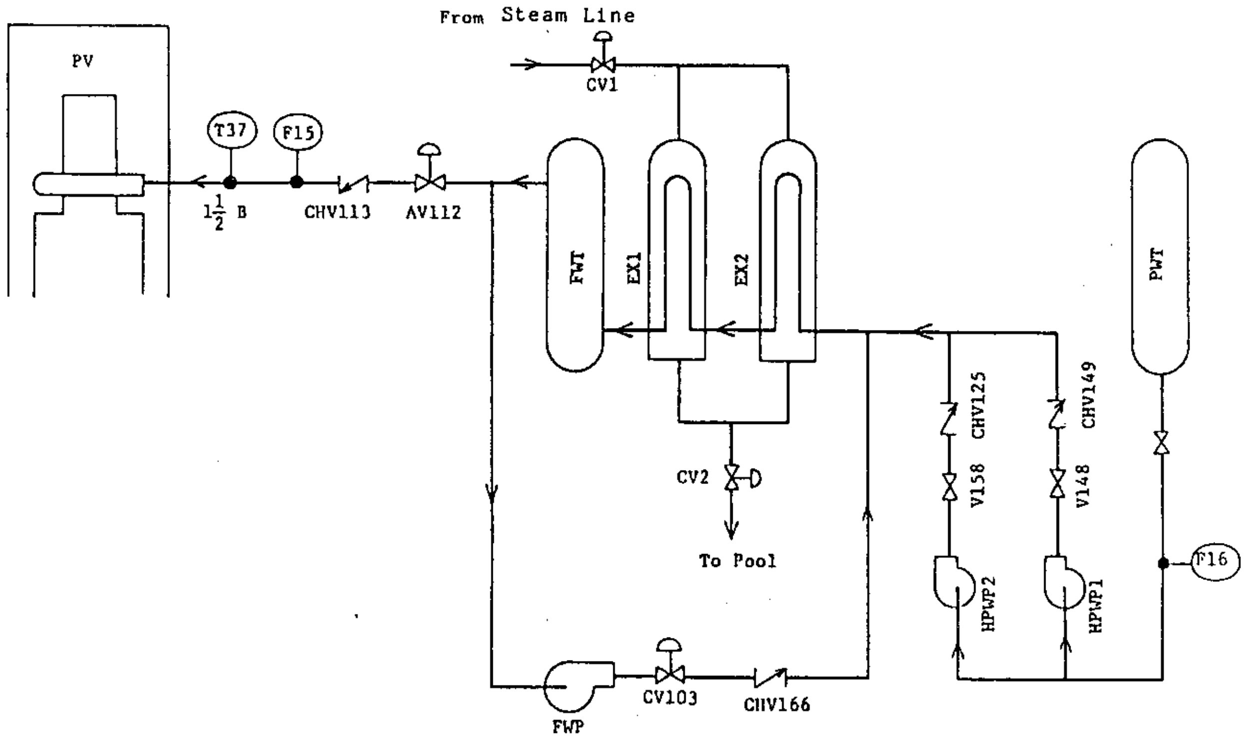


Fig. 4.4 Feed Water Line Schematic

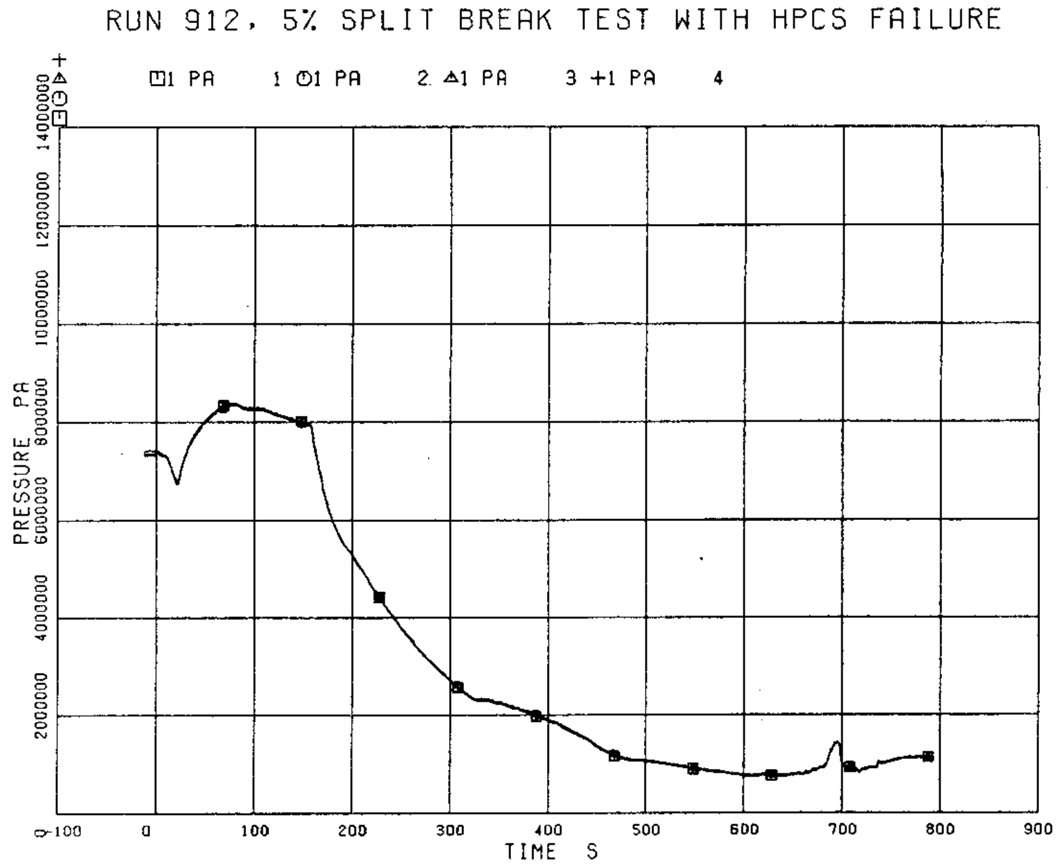


Fig. 5.1 Pressures in Pressure Vessel

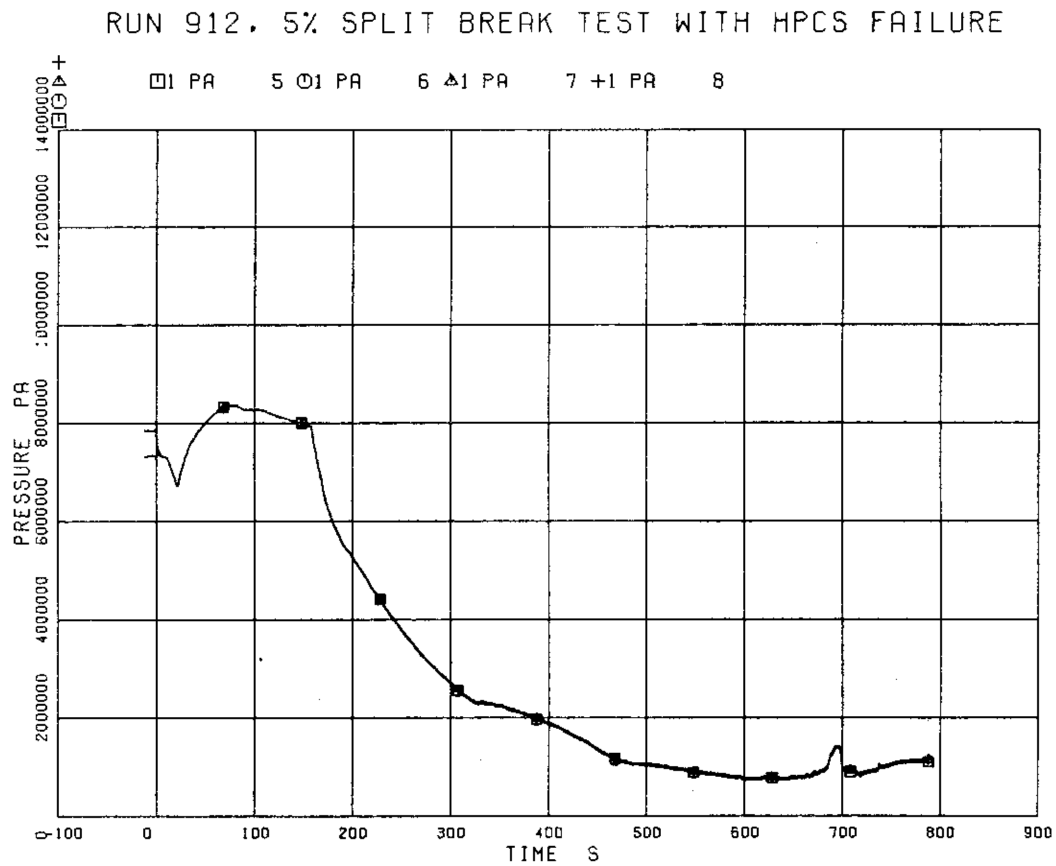


Fig. 5.2 Pressures in Broken Loop Jet Pump

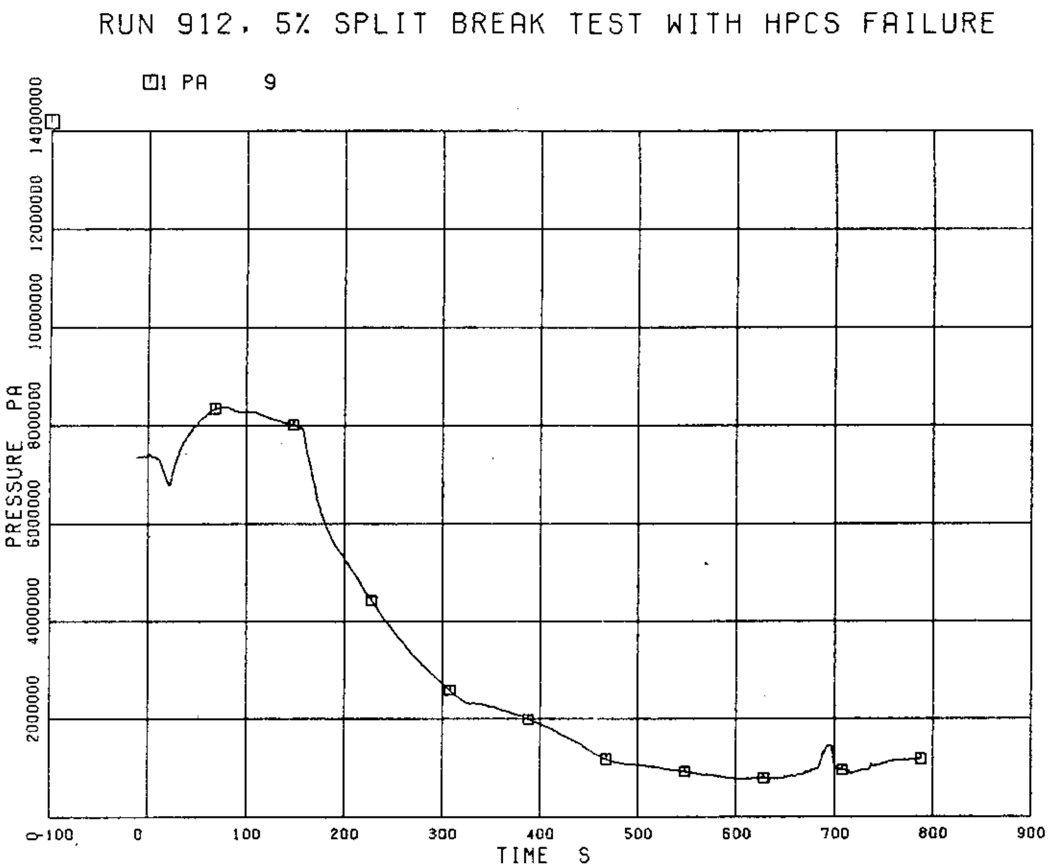


Fig. 5.3 Pressure in Intact Loop

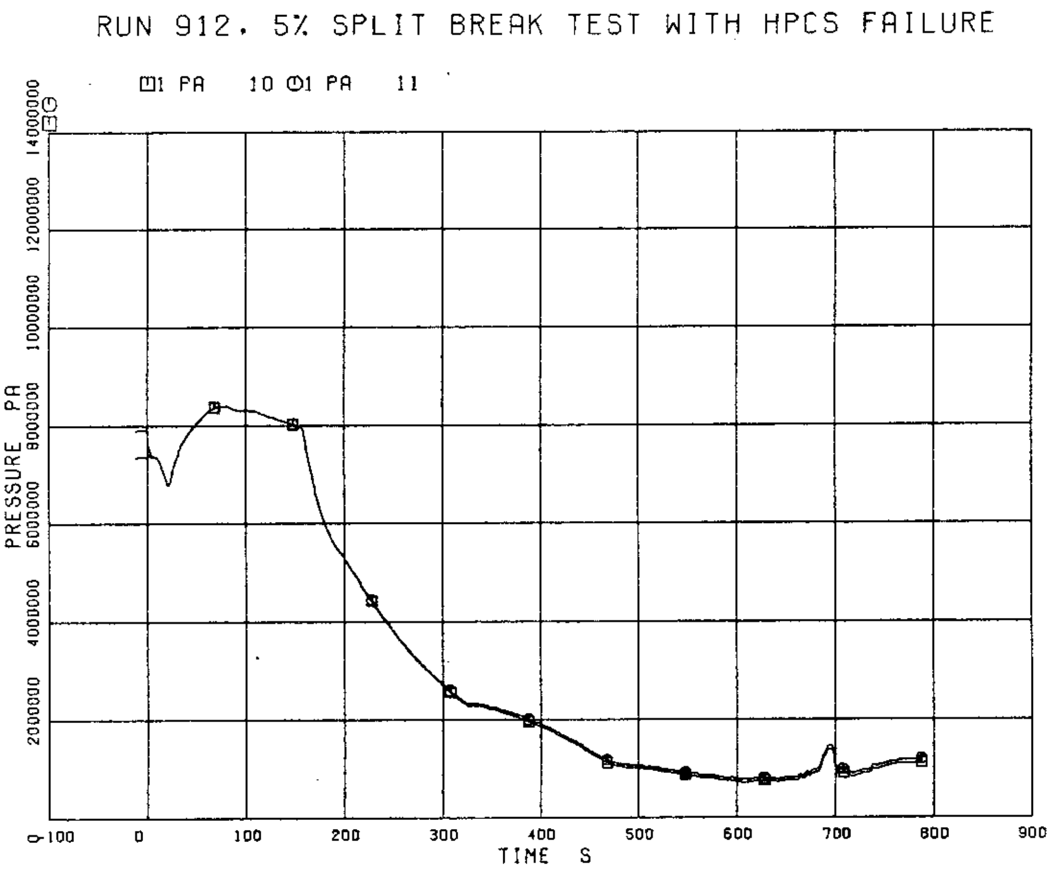


Fig. 5.4 Pressures near the Broken Loop Recirculation Pump

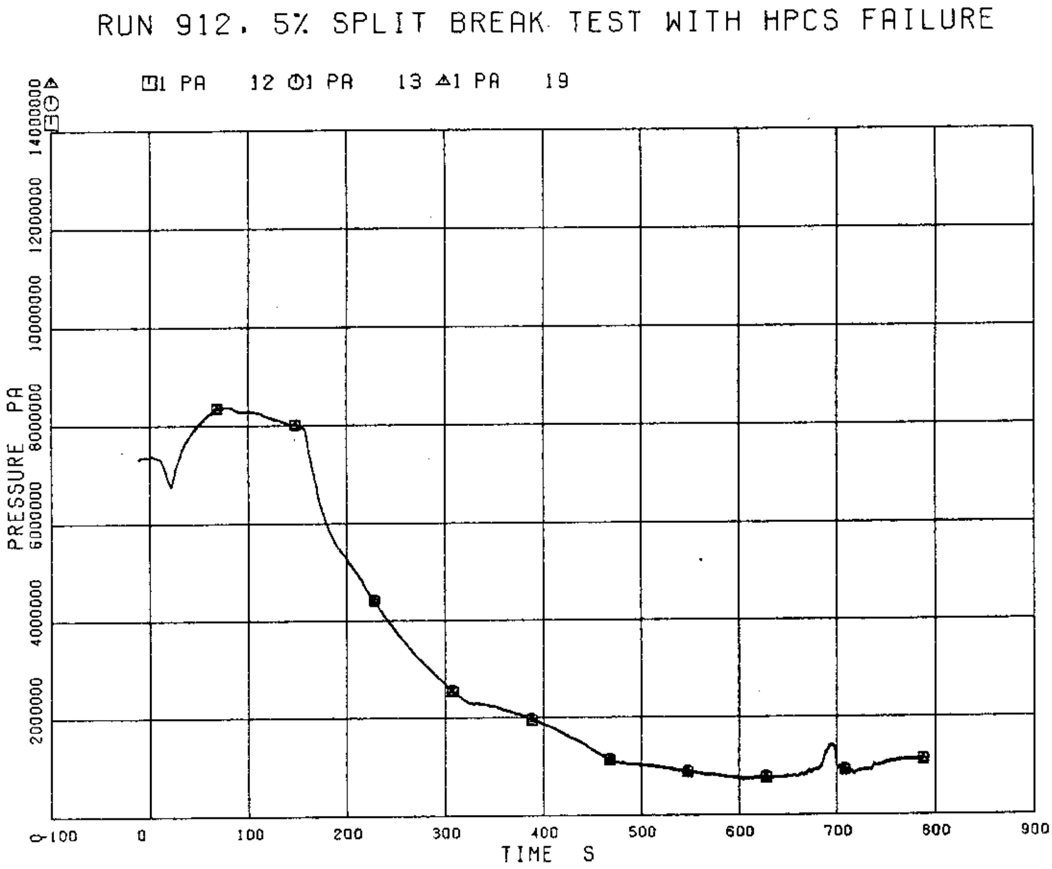


Fig. 5.5 Pressures at Pump Side of the Break

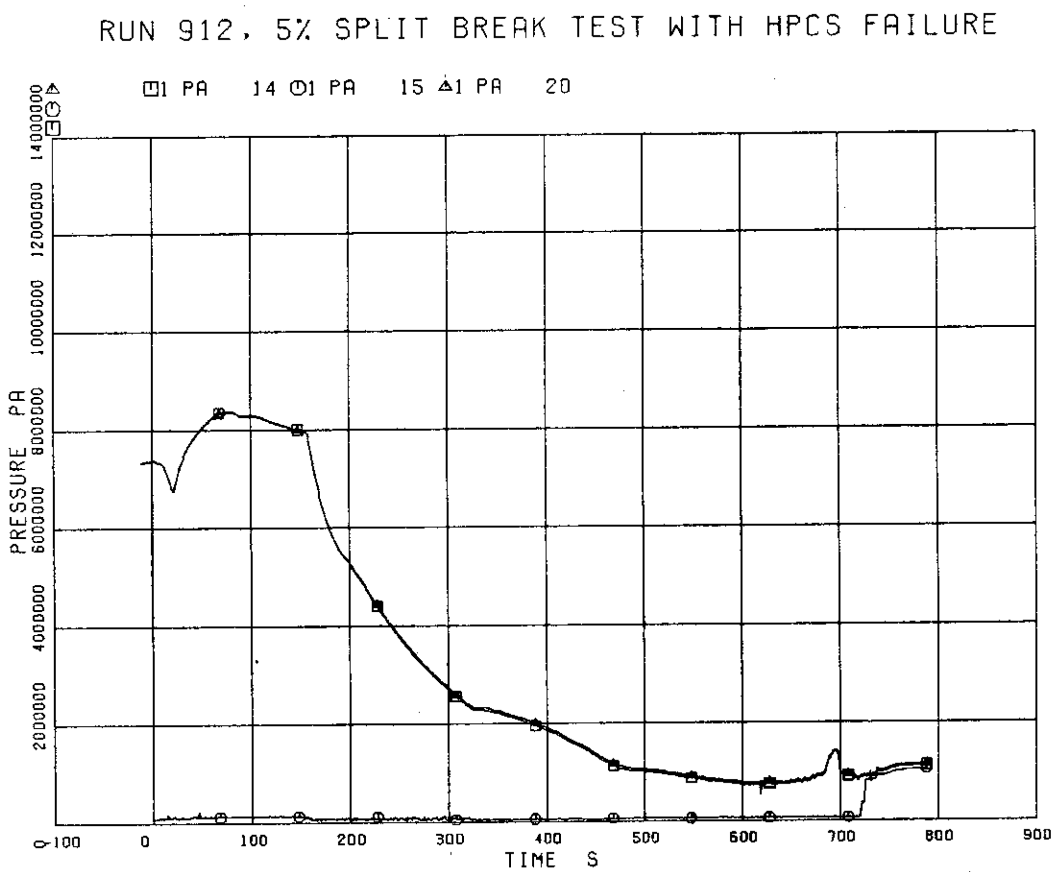


Fig. 5.6 Pressures at Vessel Side of the Break

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

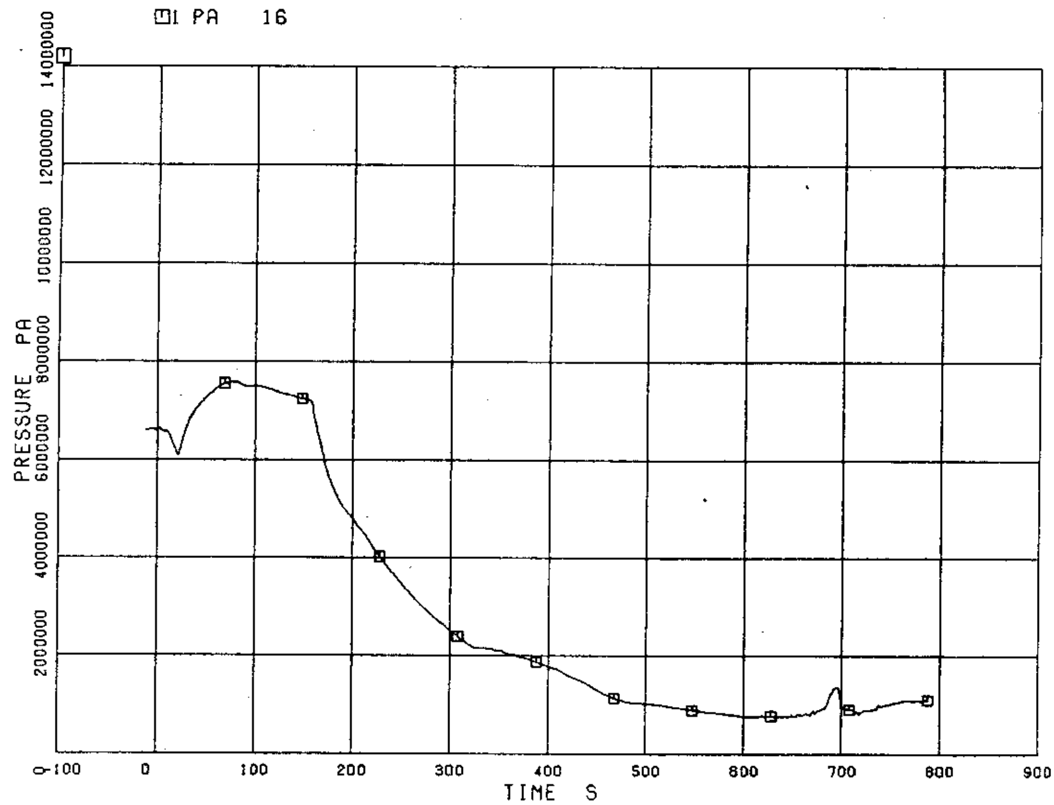


Fig. 5.7 Pressure in Steam Line

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

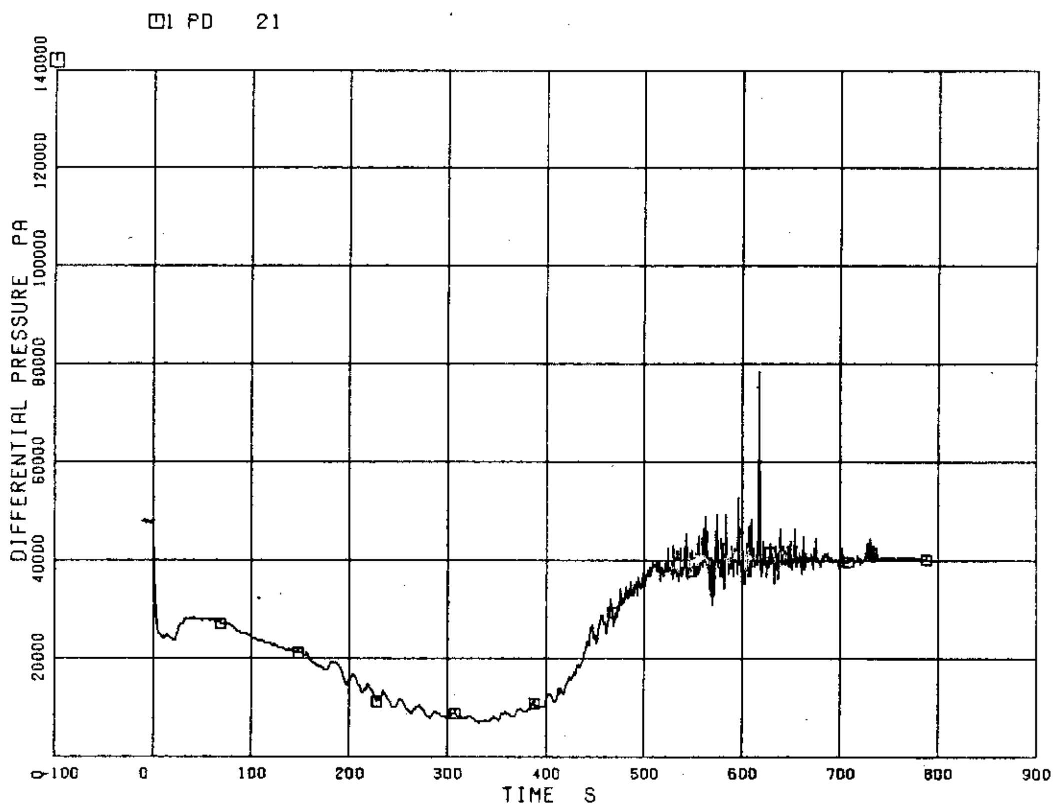


Fig. 5.8 Differential Pressure between Lower Plenum and Upper Plenum

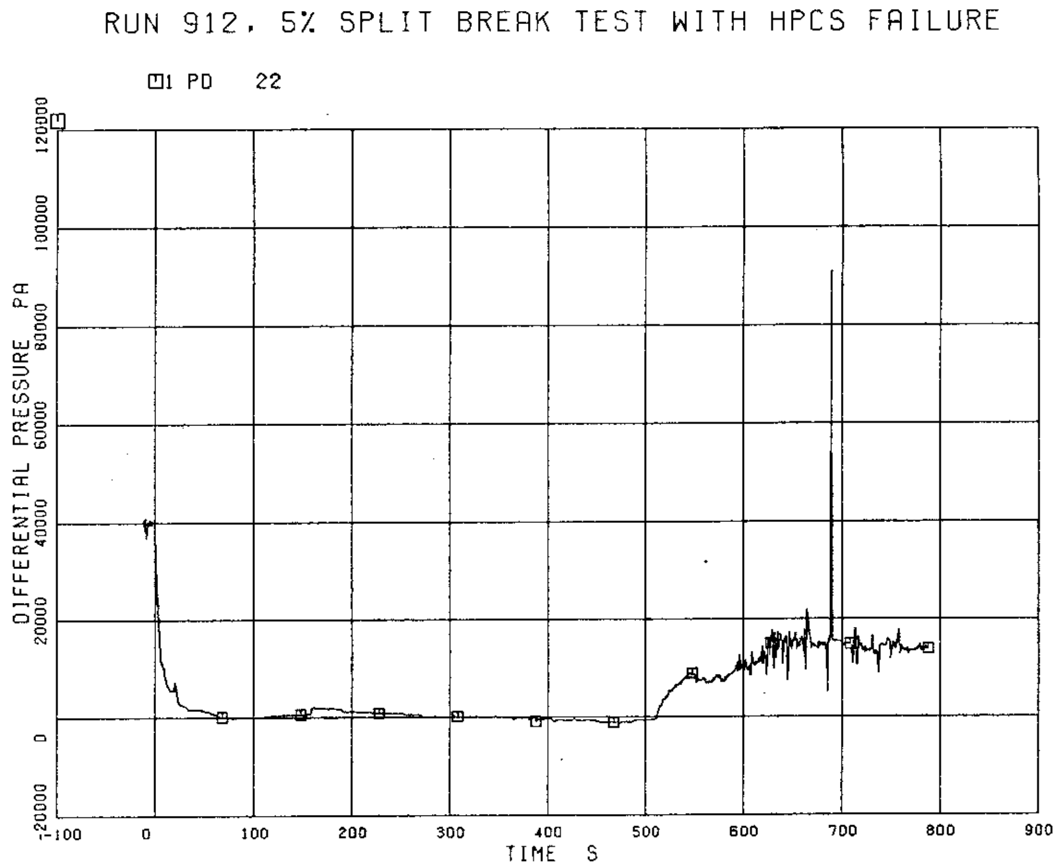


Fig. 5.9 Differential Pressure between Upper Plenum and Steam Dome

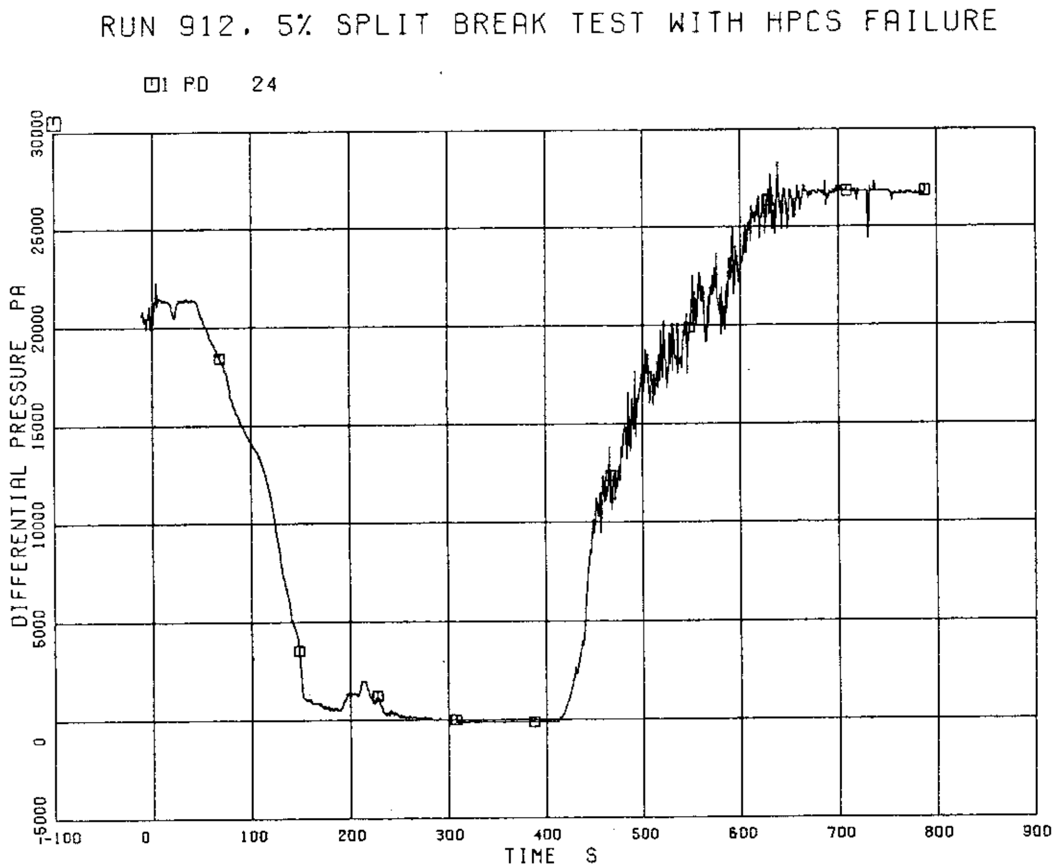


Fig. 5.10 Differential Pressure in Downcomer

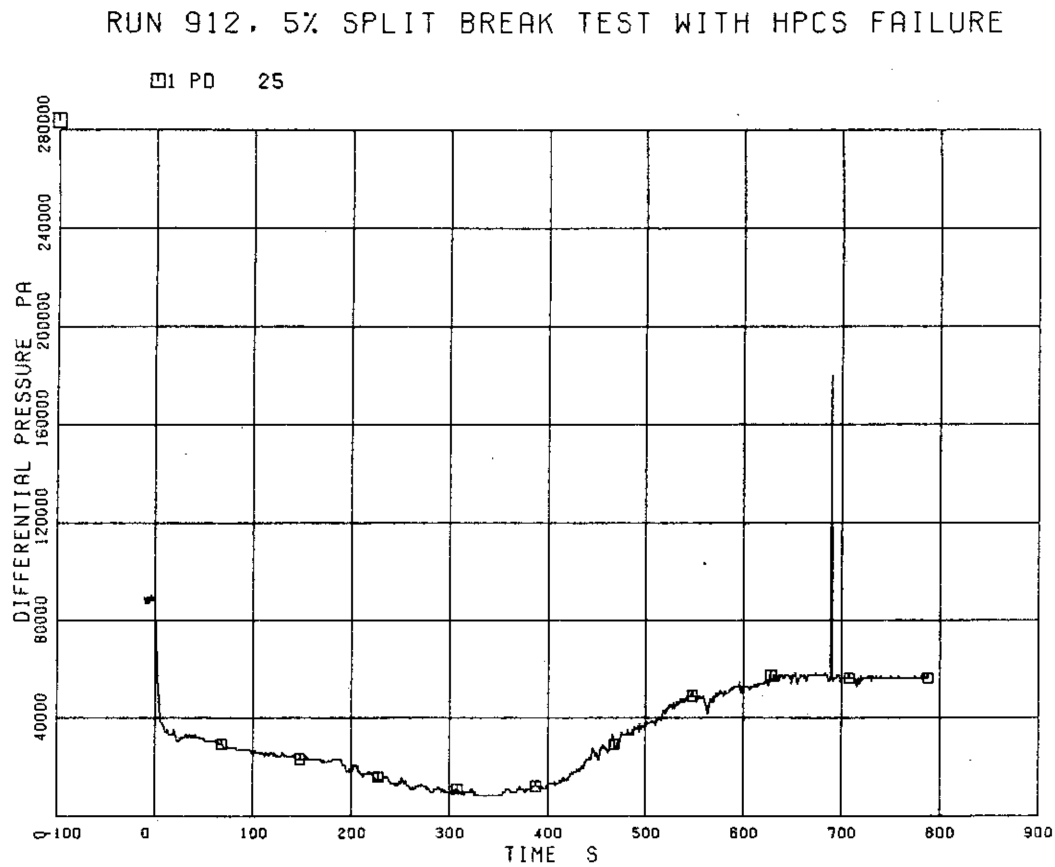


Fig. 5.11 Differential Pressure between Vessel Bottom and Top

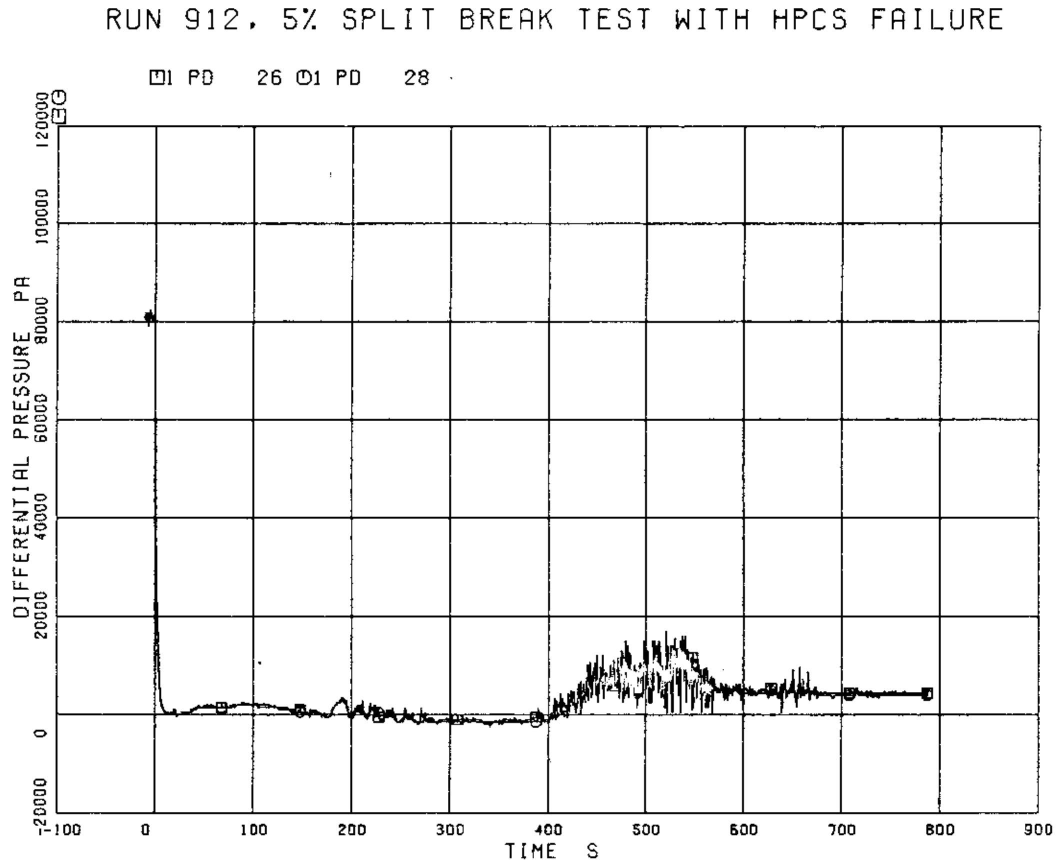


Fig. 5.12 Differential Pressure between Intact Loop Jet Pump Discharge and Suction

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

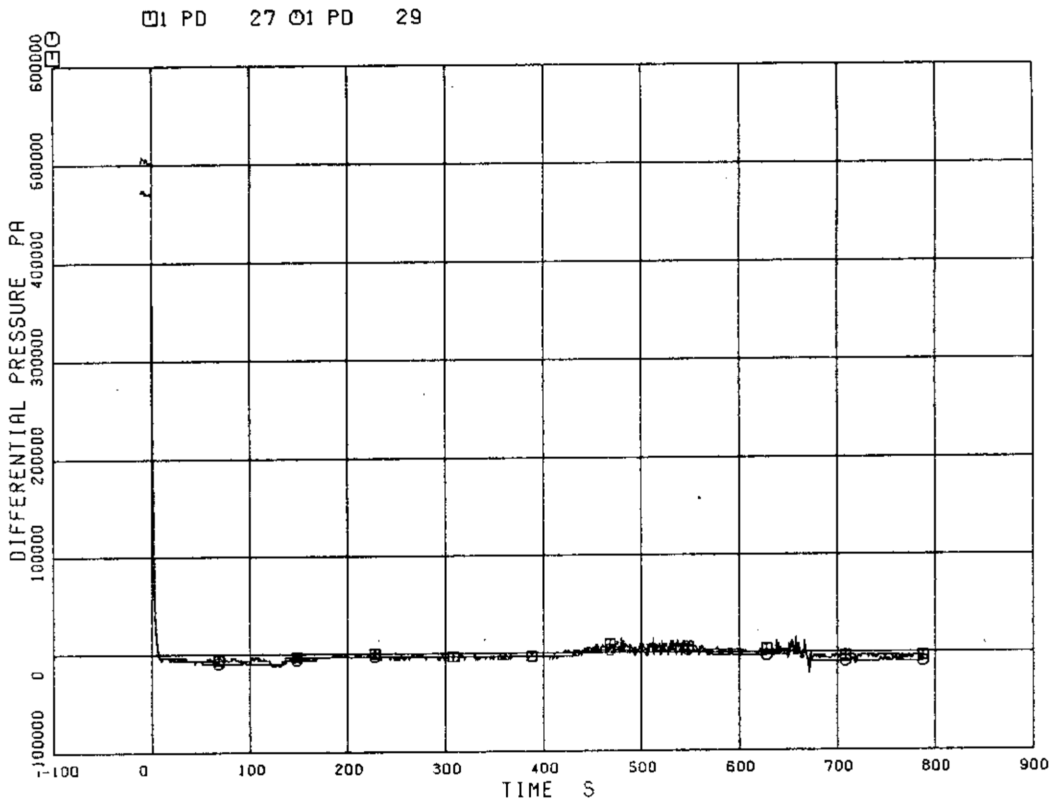


Fig. 5.13 Differential Pressure between Intact Loop Jet Pump Drive and Suction

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

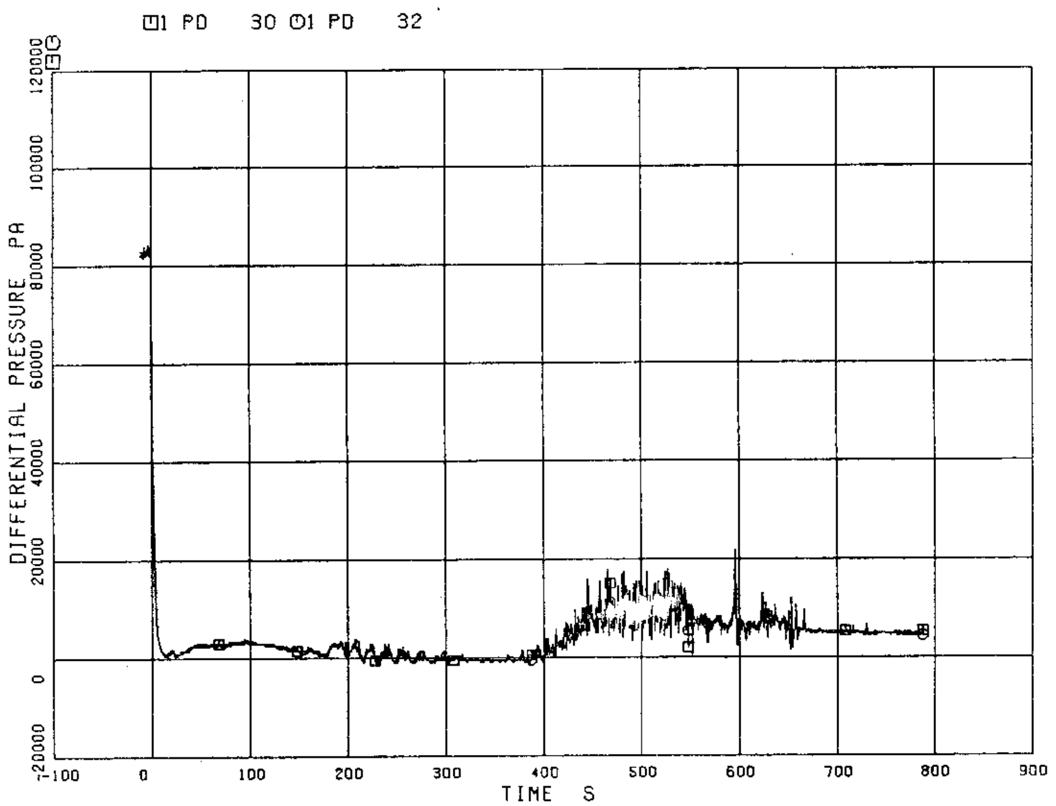


Fig. 5.14 Differential Pressure between Broken Loop Jet Pump Discharge and Suction

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

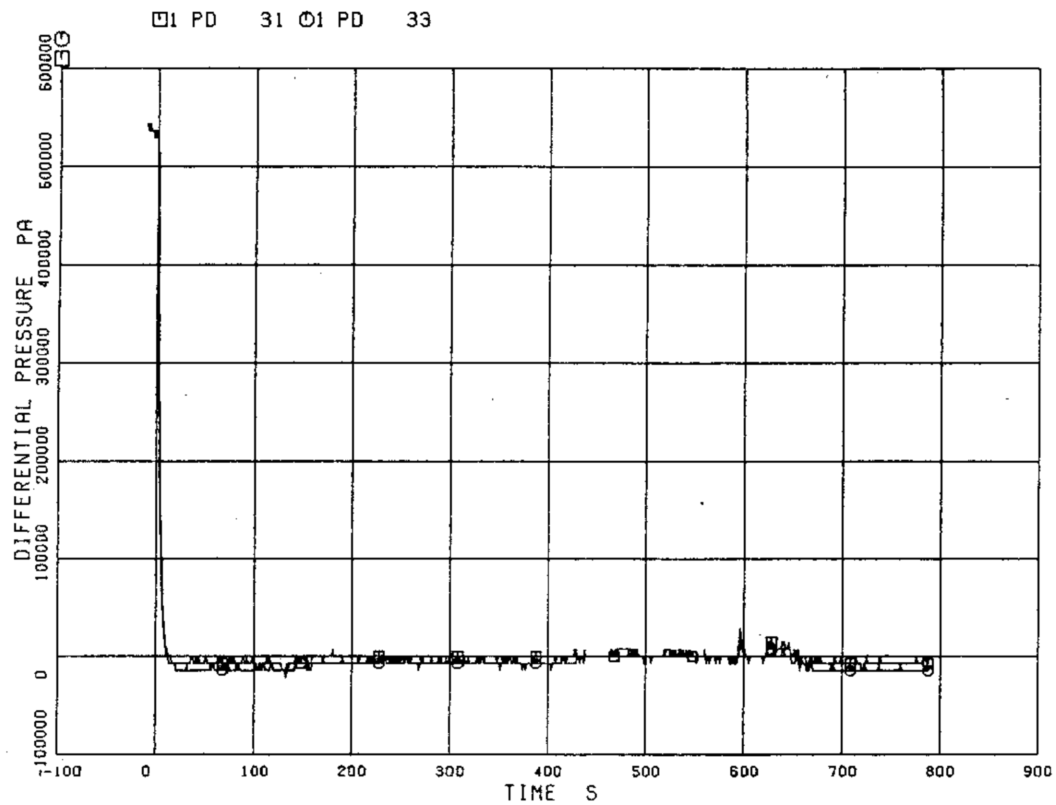


Fig. 5.15 Differential Pressure between Broken Loop Jet Pump Drive and Suction

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

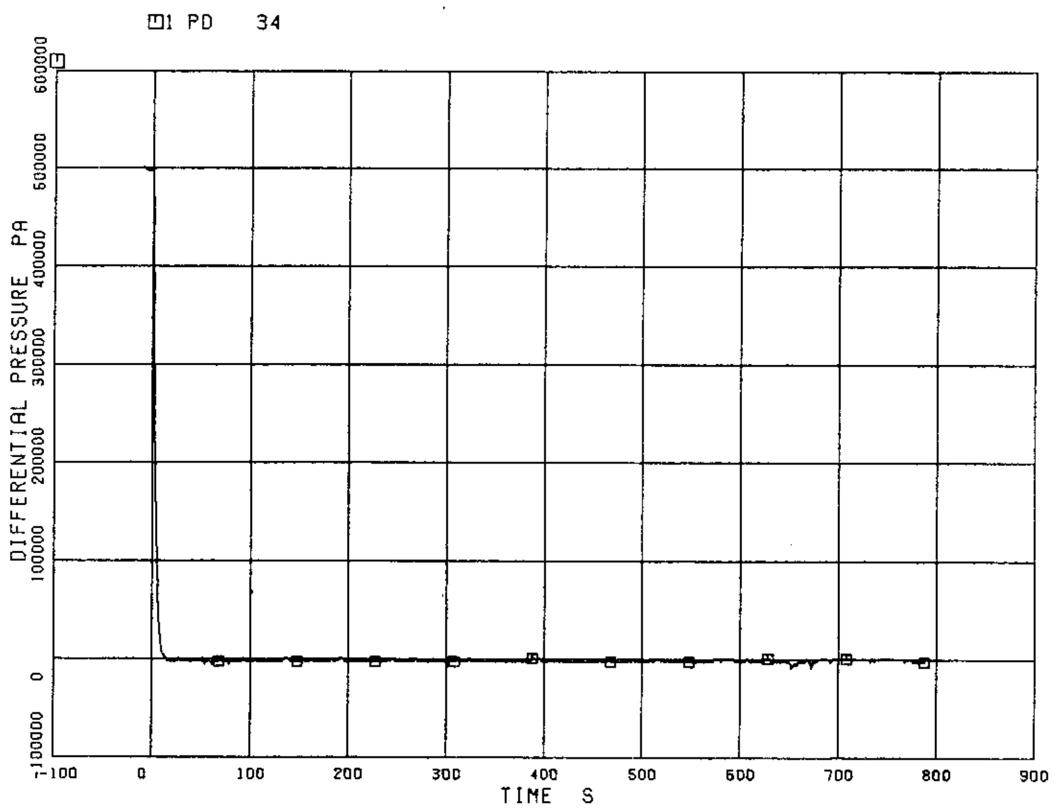


Fig. 5.16 Differential Pressure between MRP-1 Delivery and Suction

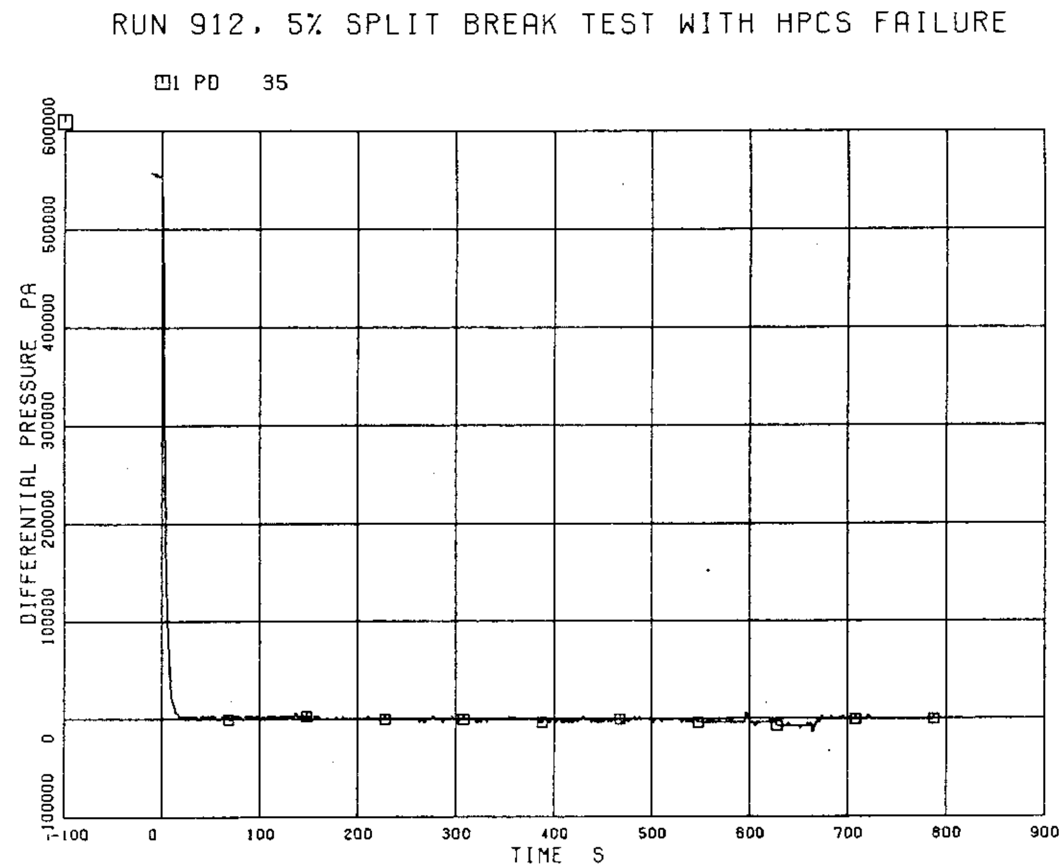


Fig. 5.17 Differential Pressure between MRP-2 Delivery and Suction

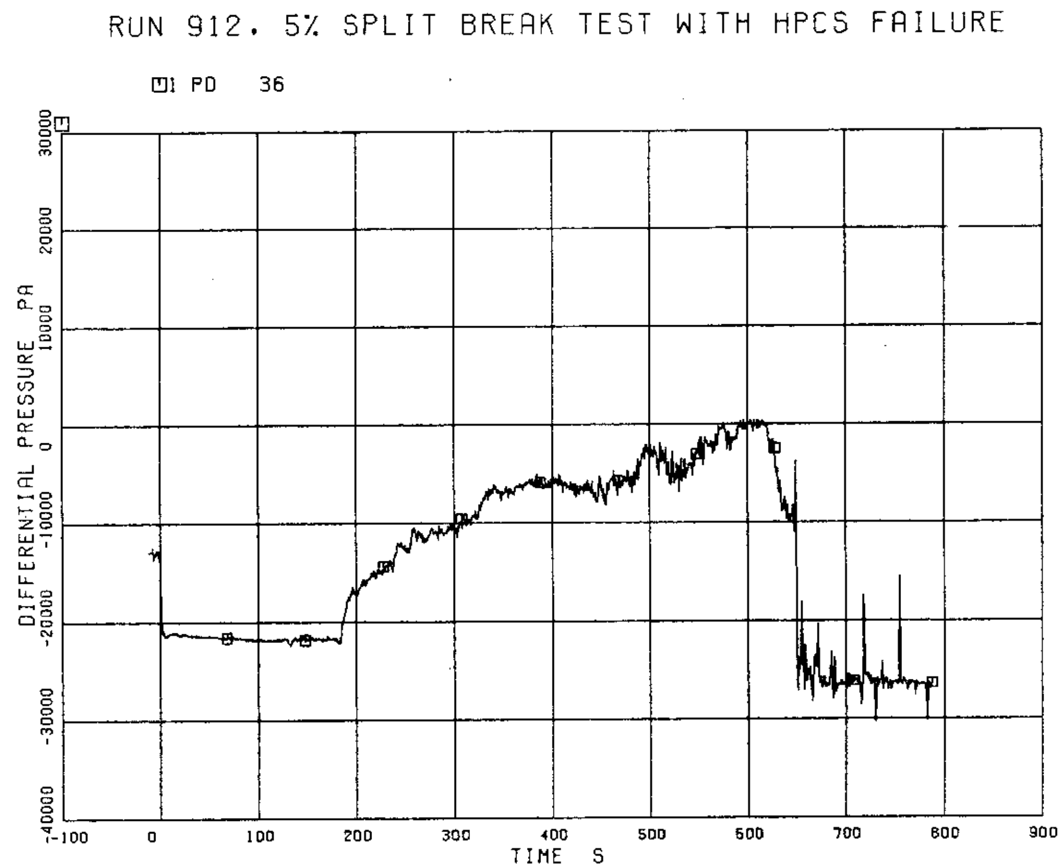


Fig. 5.18 Differential Pressure between Downcomer Bottom and MRP-1 Suction

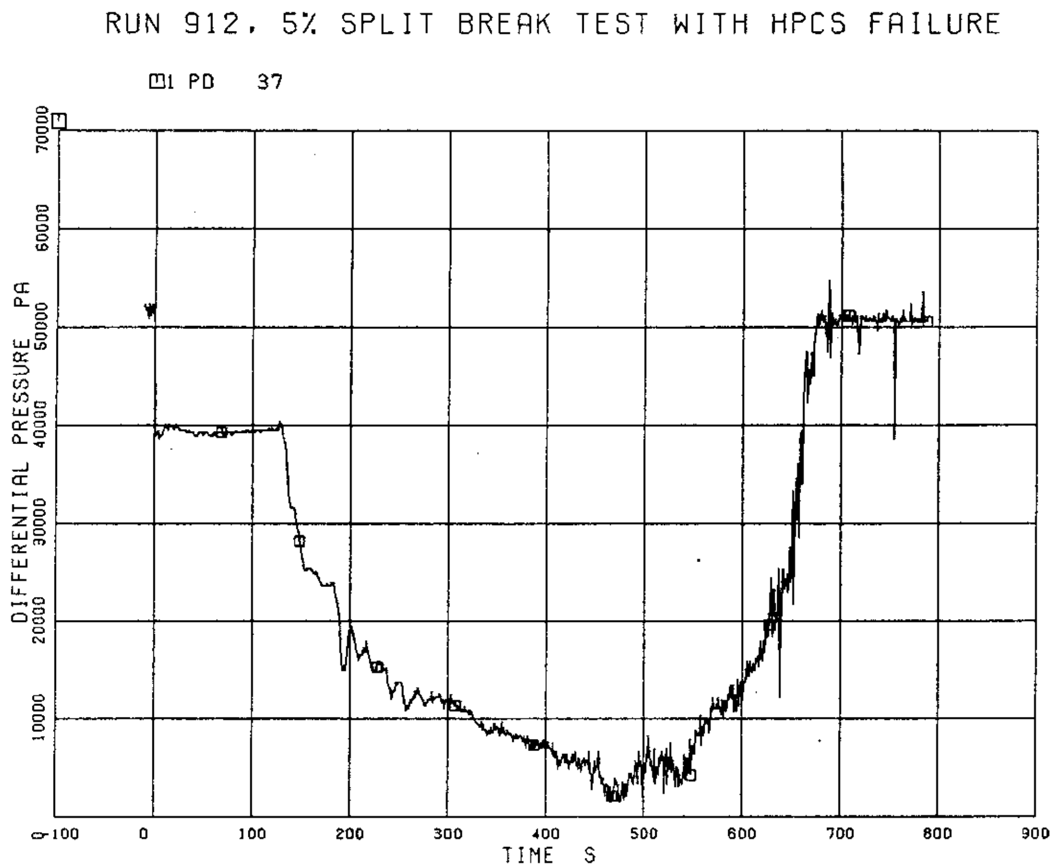


Fig. 5.19 Differential Pressure between MRP-1 Delivery and JP-1 Drive

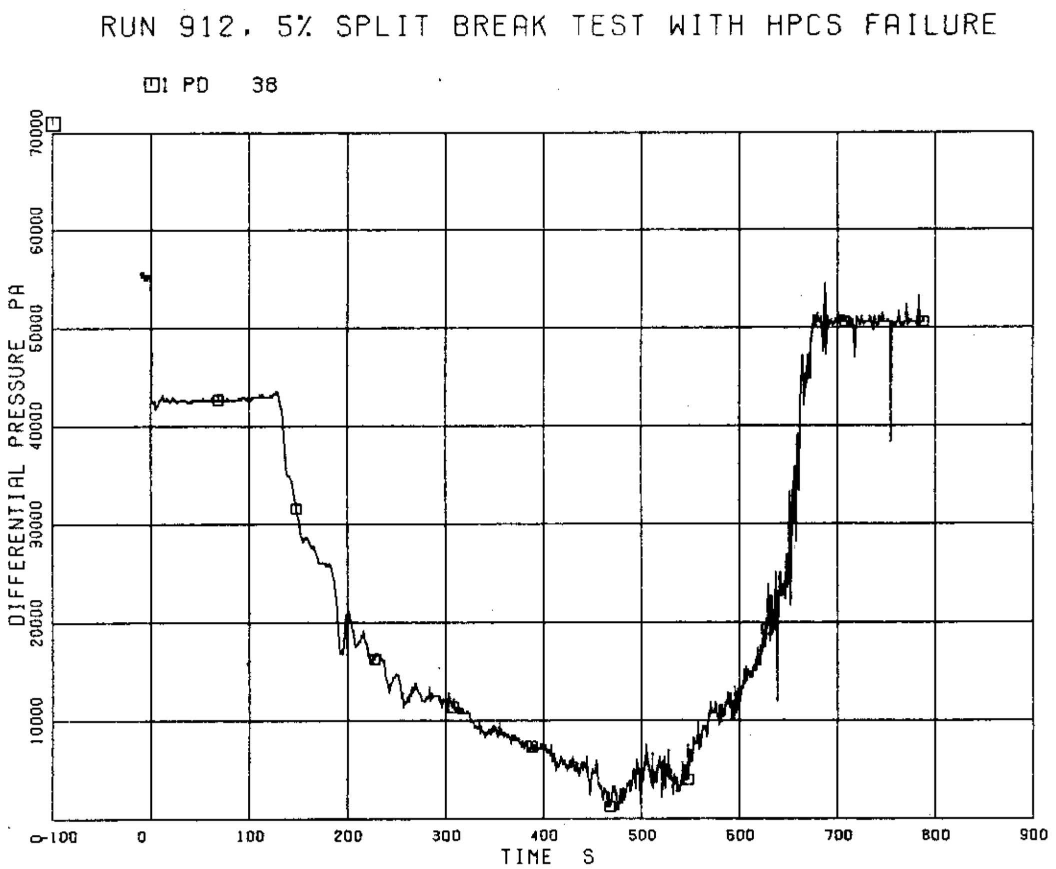


Fig. 5.20 Differential Pressure between MRP-1 Delivery and JP-2 Drive

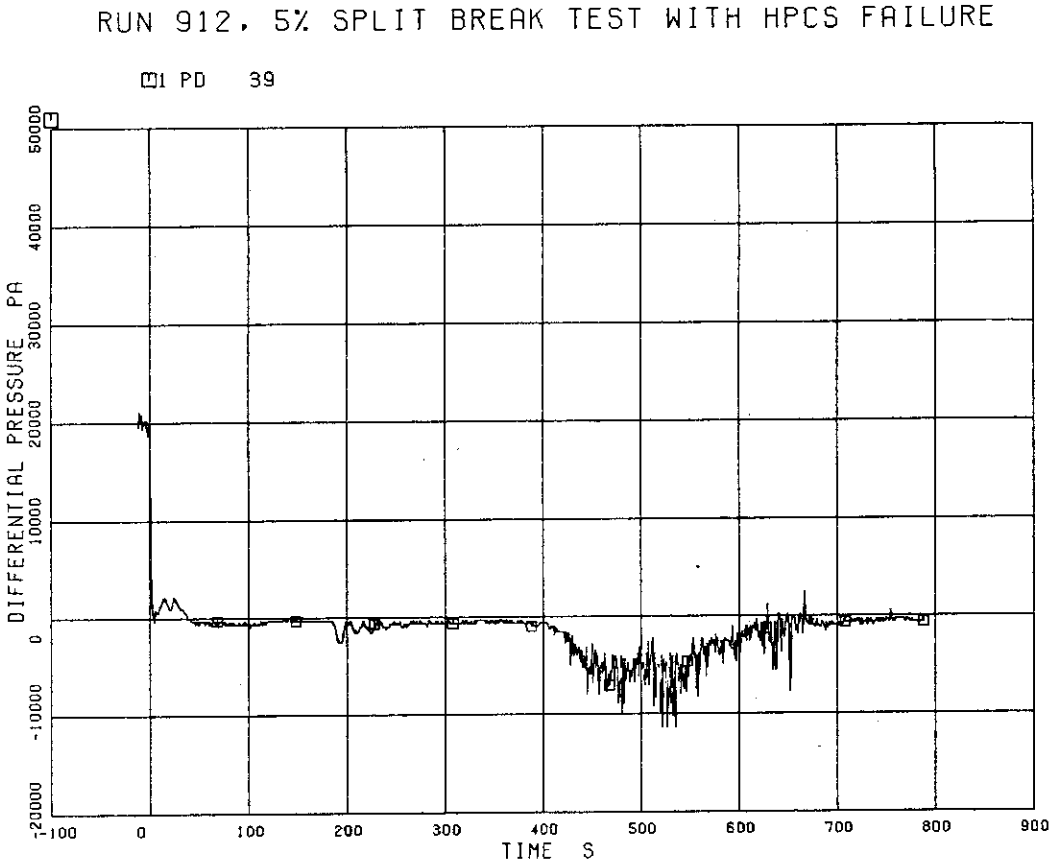


Fig. 5.21 Differential Pressure between Downcomer Middle and JP-1 Suction

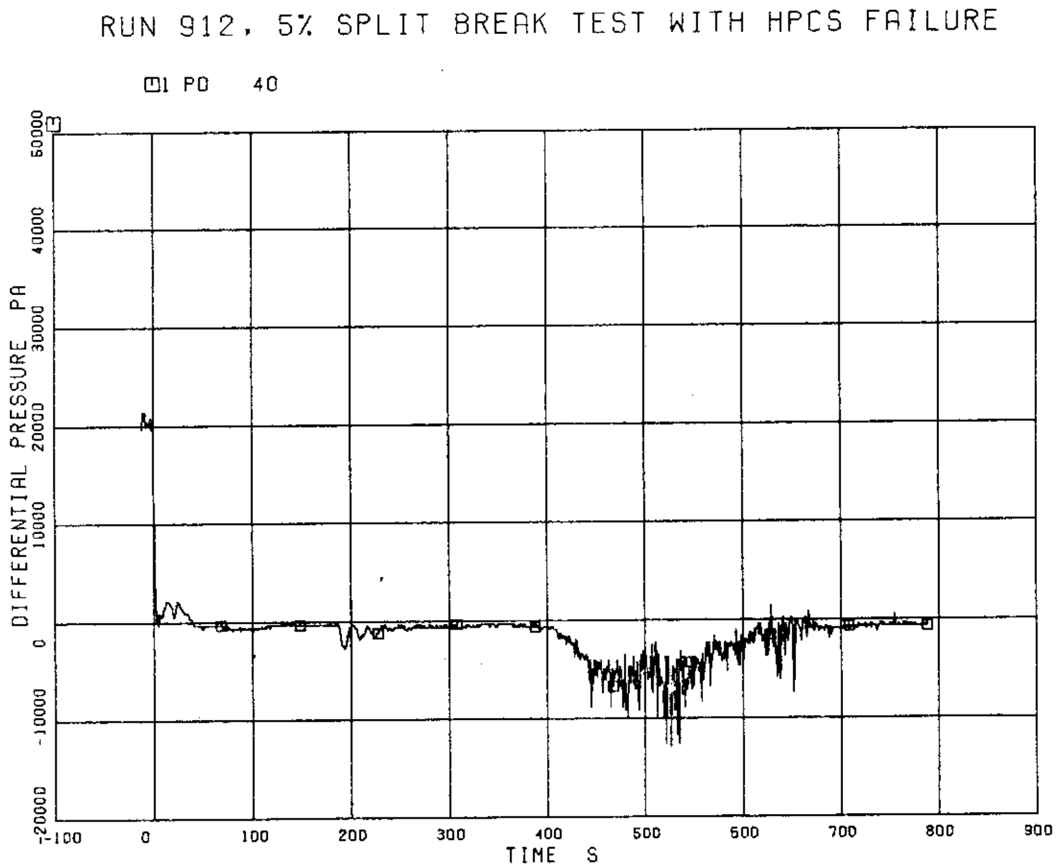


Fig. 5.22 Differential Pressure between Downcomer Middle and JP-2 Suction

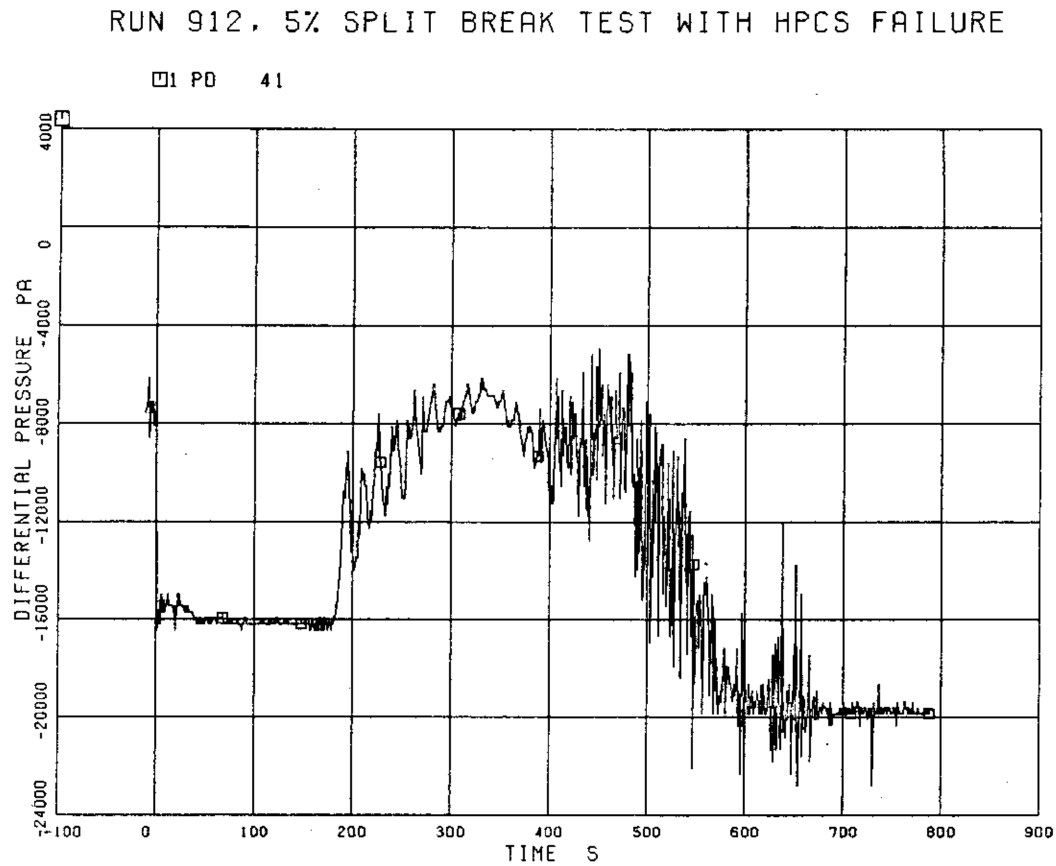


Fig. 5.23 Differential Pressure between JP-1 Discharge and Lower Plenum

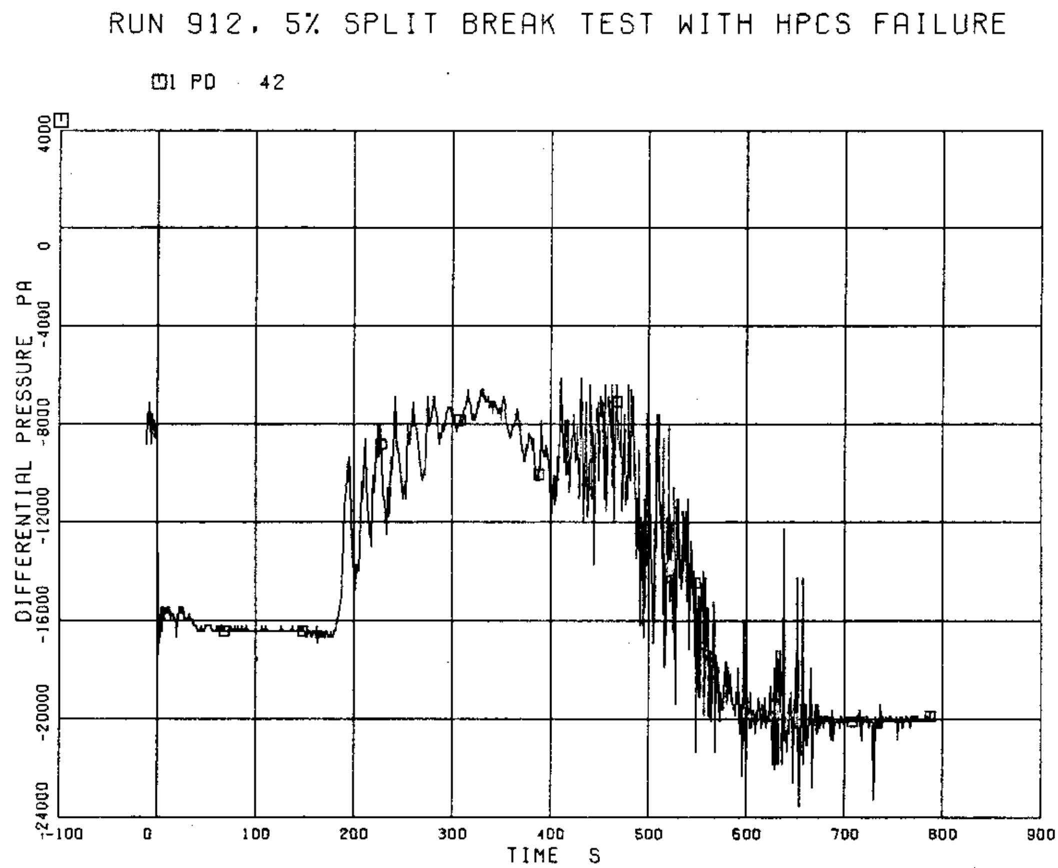


Fig. 5.24 Differential Pressure between JP-2 Discharge and Lower Plenum

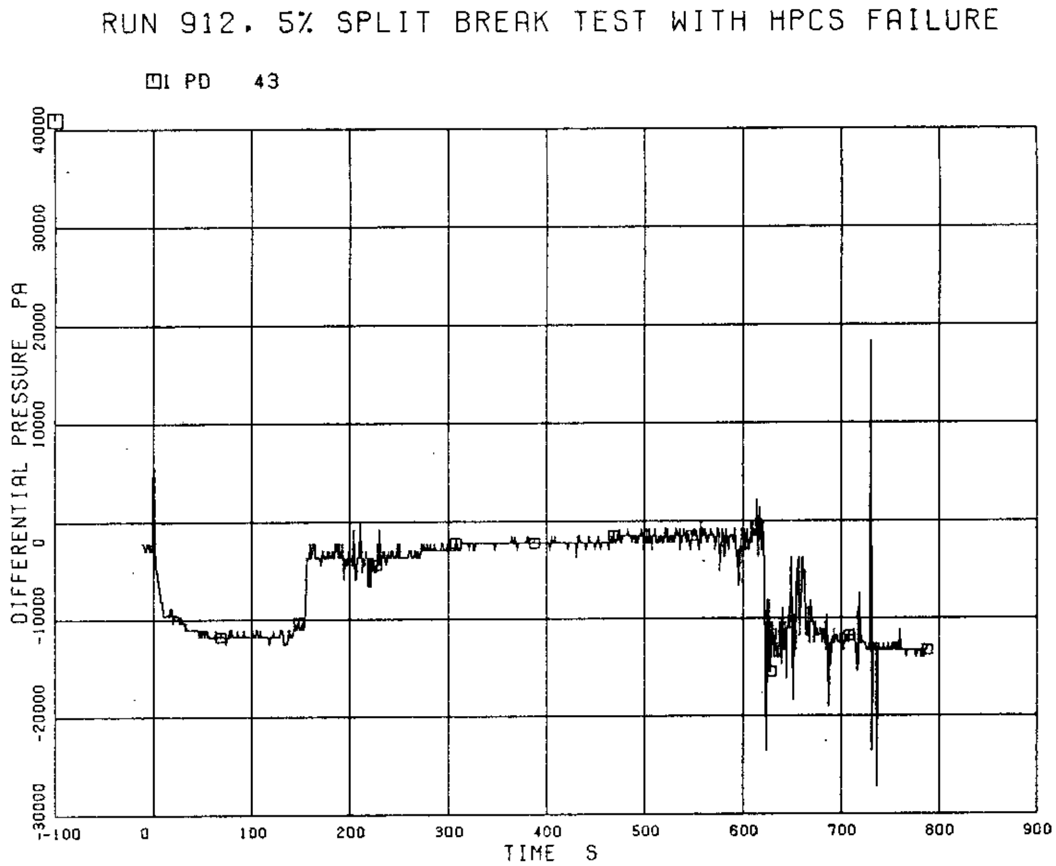


Fig. 5.25 Differential Pressure between Downcomer Bottom and Break B

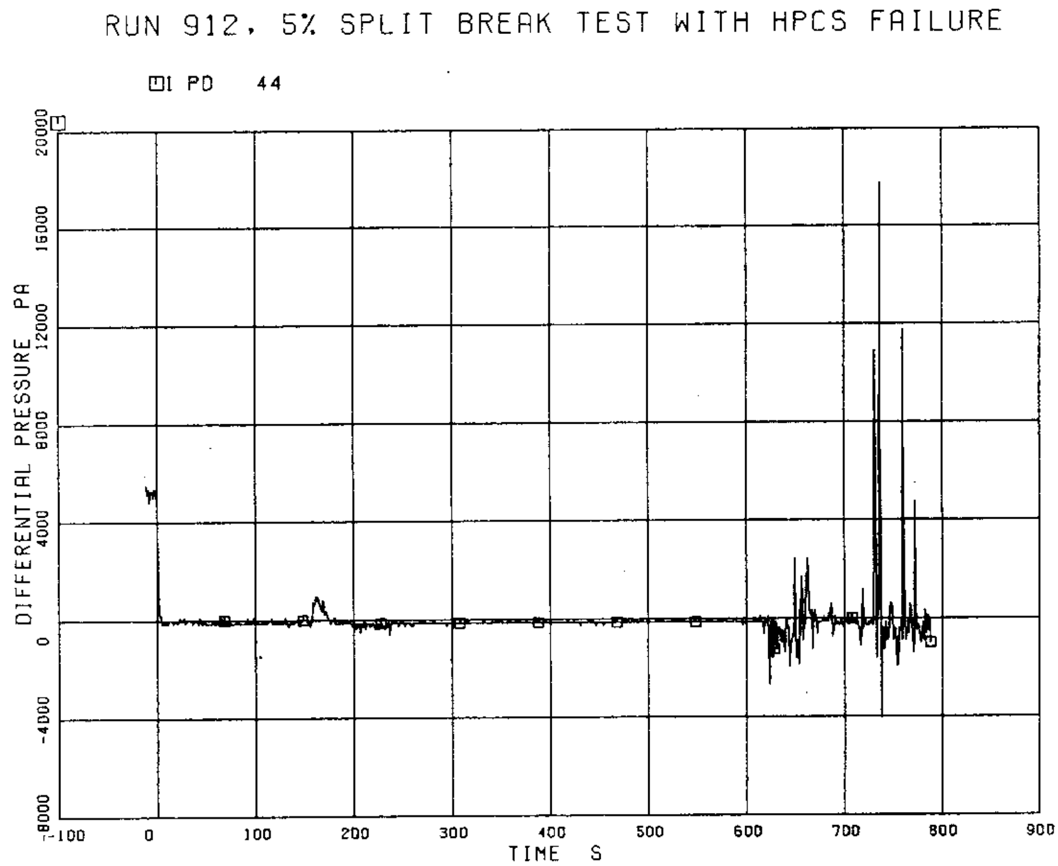


Fig. 5.26 Differential Pressure between Break B and Break A

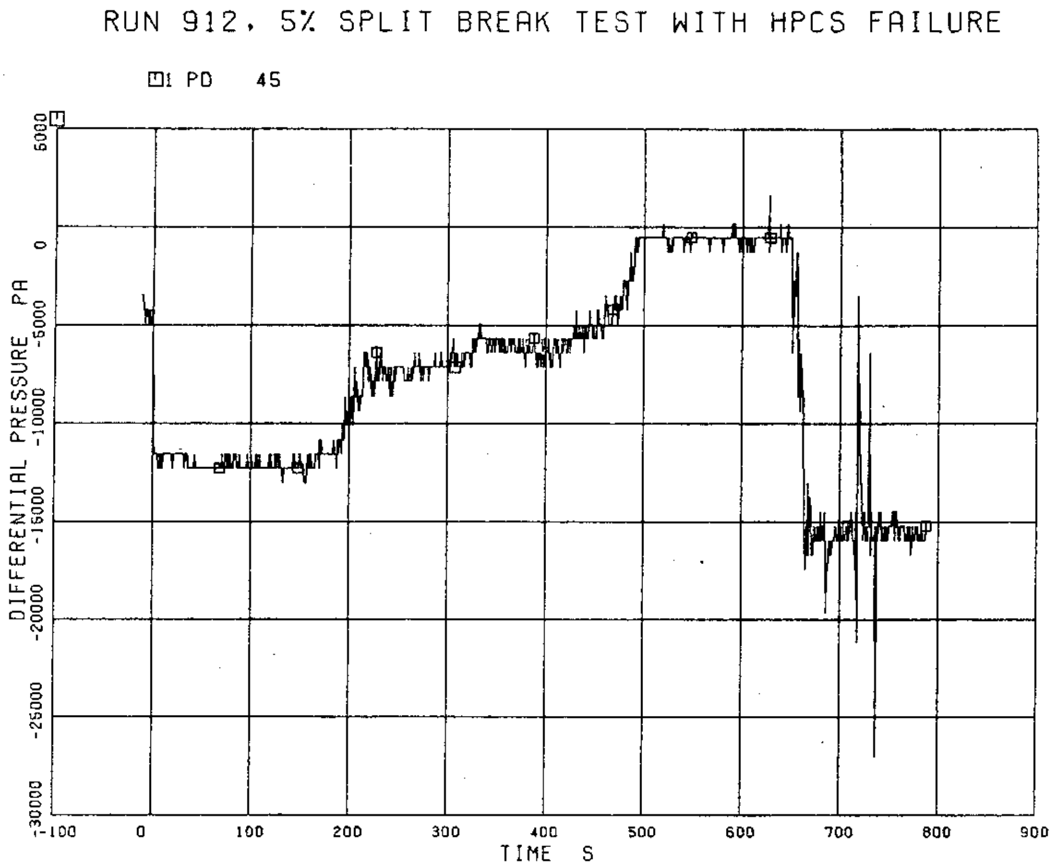


Fig. 5.27 Differential Pressure between Break A and MRP-2 Suction

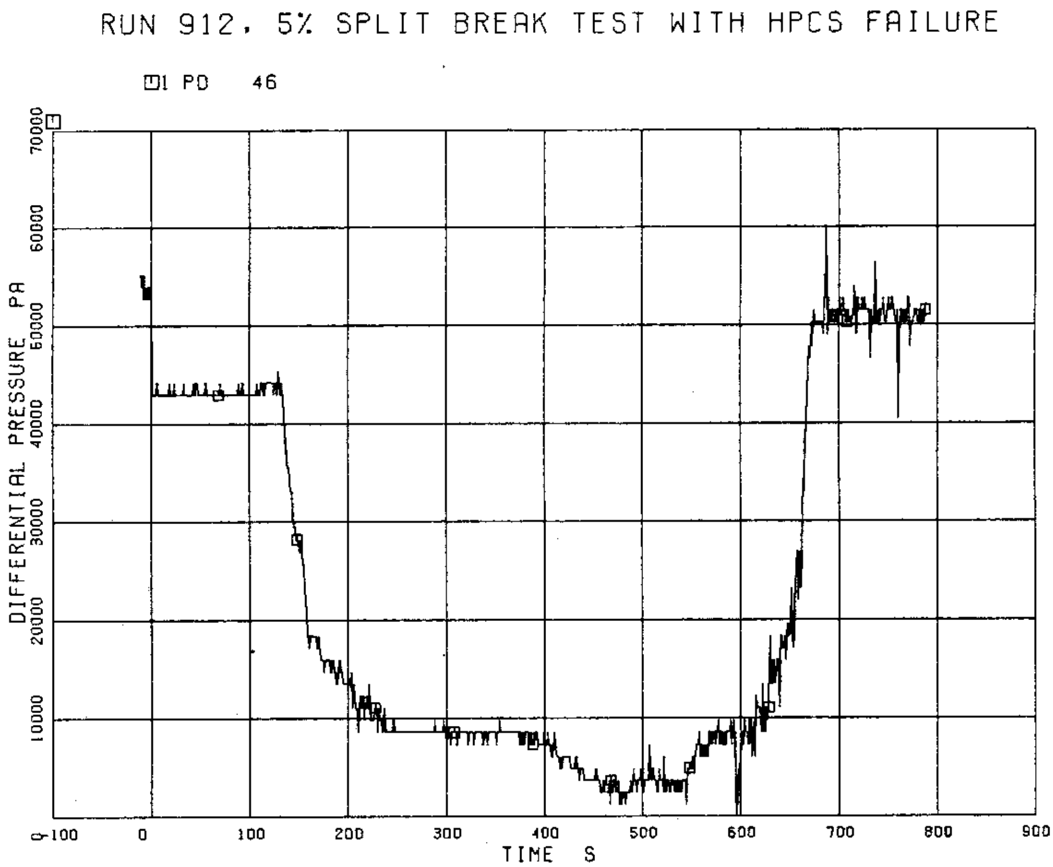


Fig. 5.28 Differential Pressure between MRP-2 Delivery and JP-3 Drive

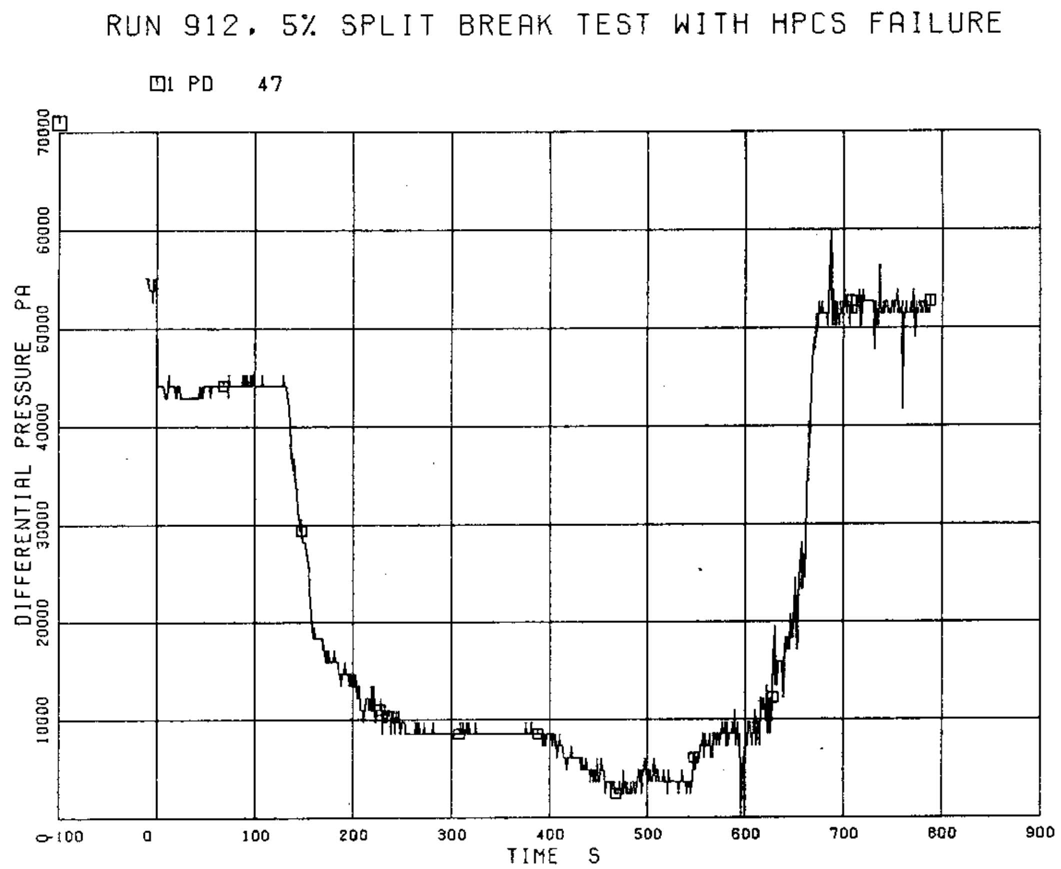


Fig. 5.29 Differential Pressure between MRP-2 Delivery and JP-4 Drive

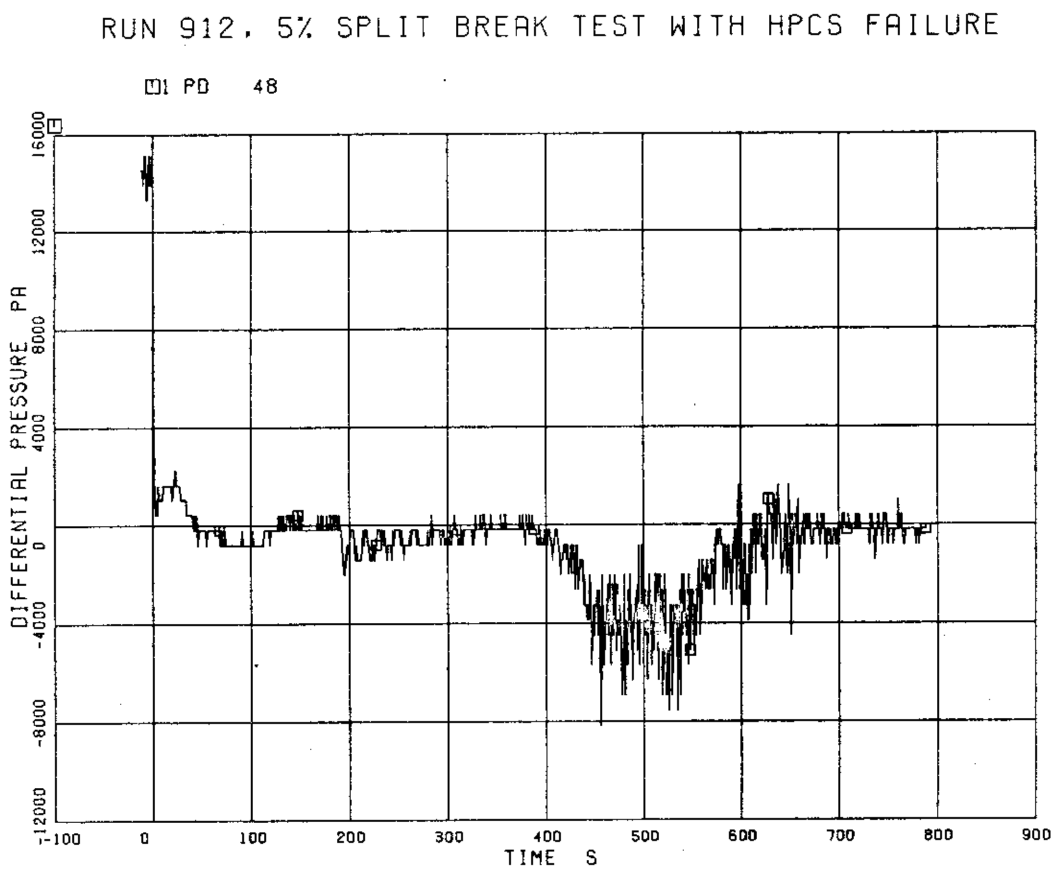


Fig. 5.30 Differential Pressure between Downcomer Middle and JP-3 Suction

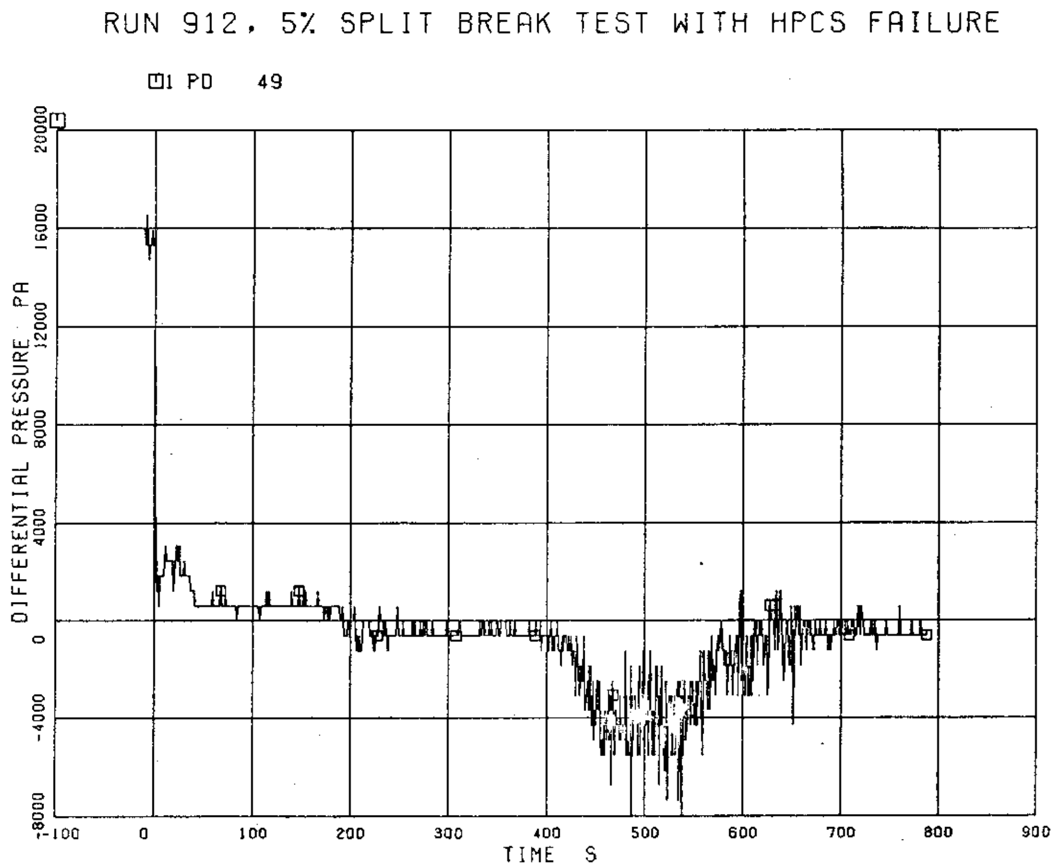


Fig. 5.31 Differential Pressure between Downcomer Middle and JP-4 Suction

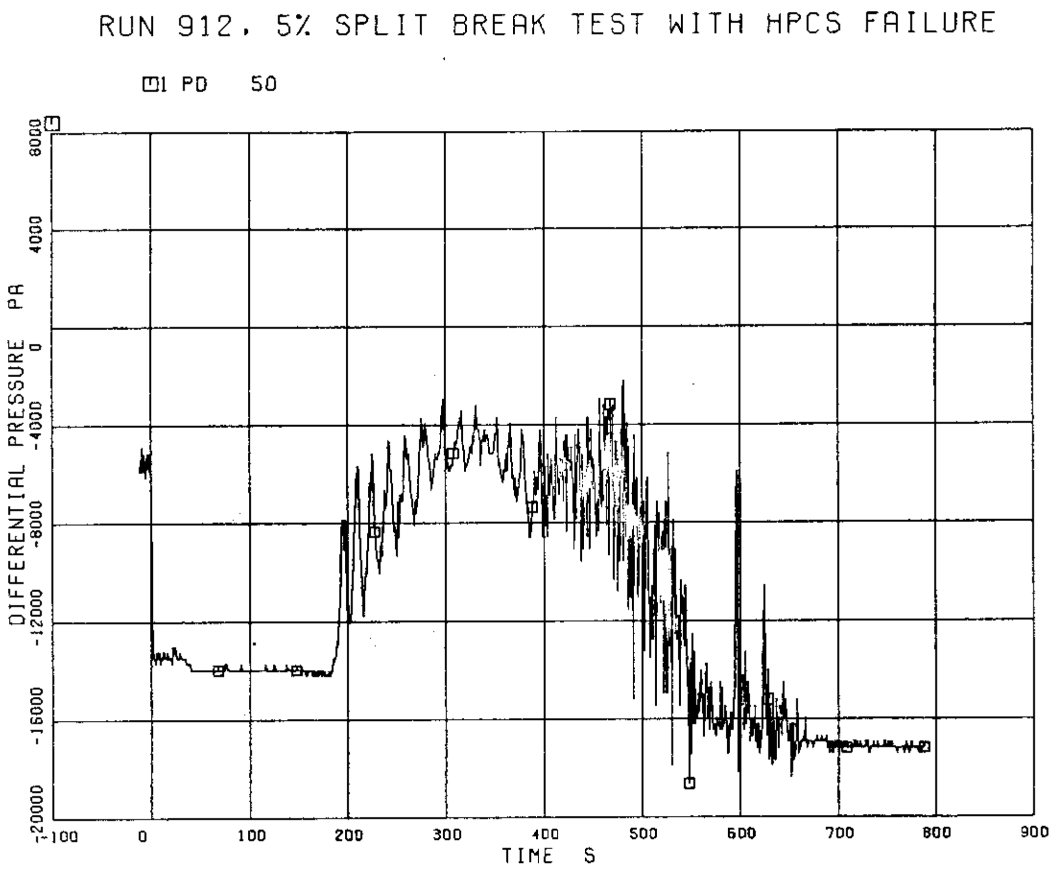


Fig. 5.32 Differential Pressure between JP-3 Discharge and Confluence

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

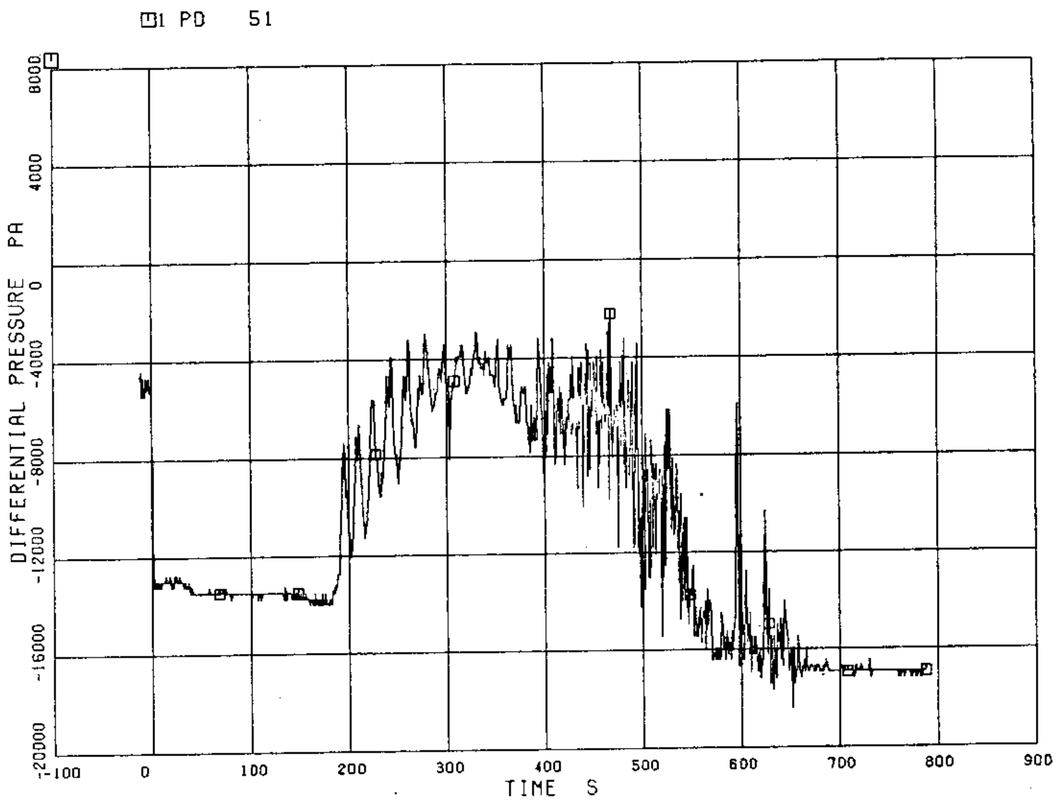


Fig. 5.33 Differential Pressure between JP-4 Discharge and Confluence

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

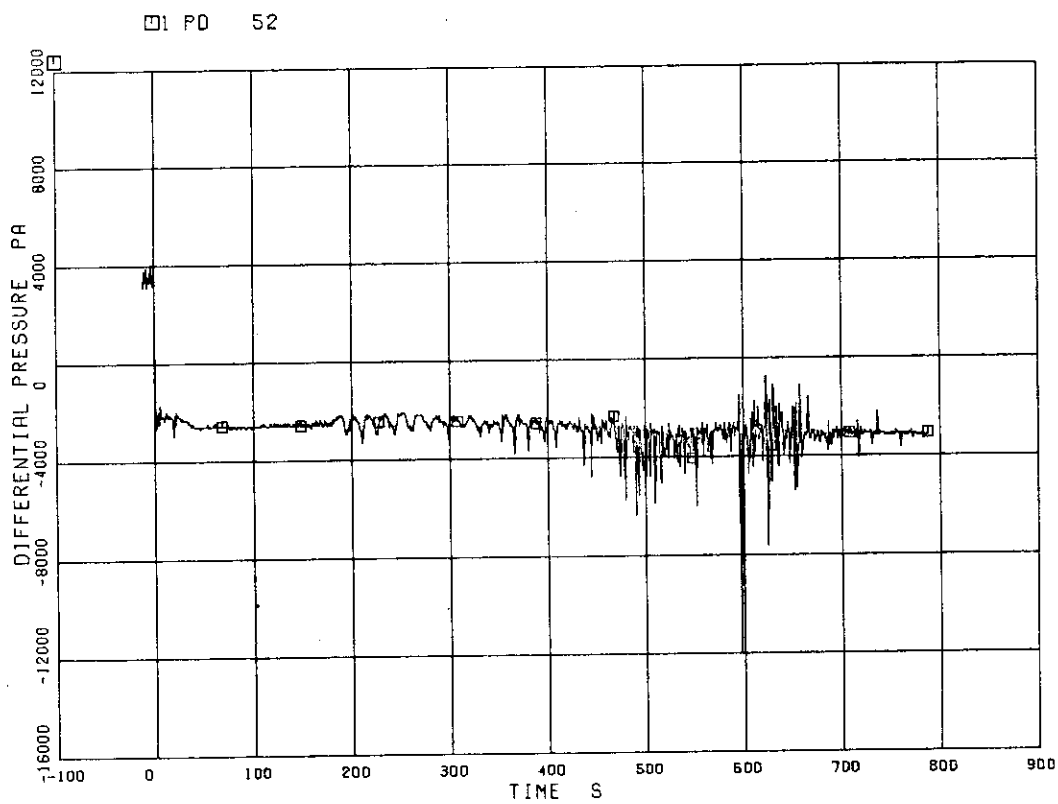


Fig. 5.34 Differential Pressure between Confluence and Lower Plenum

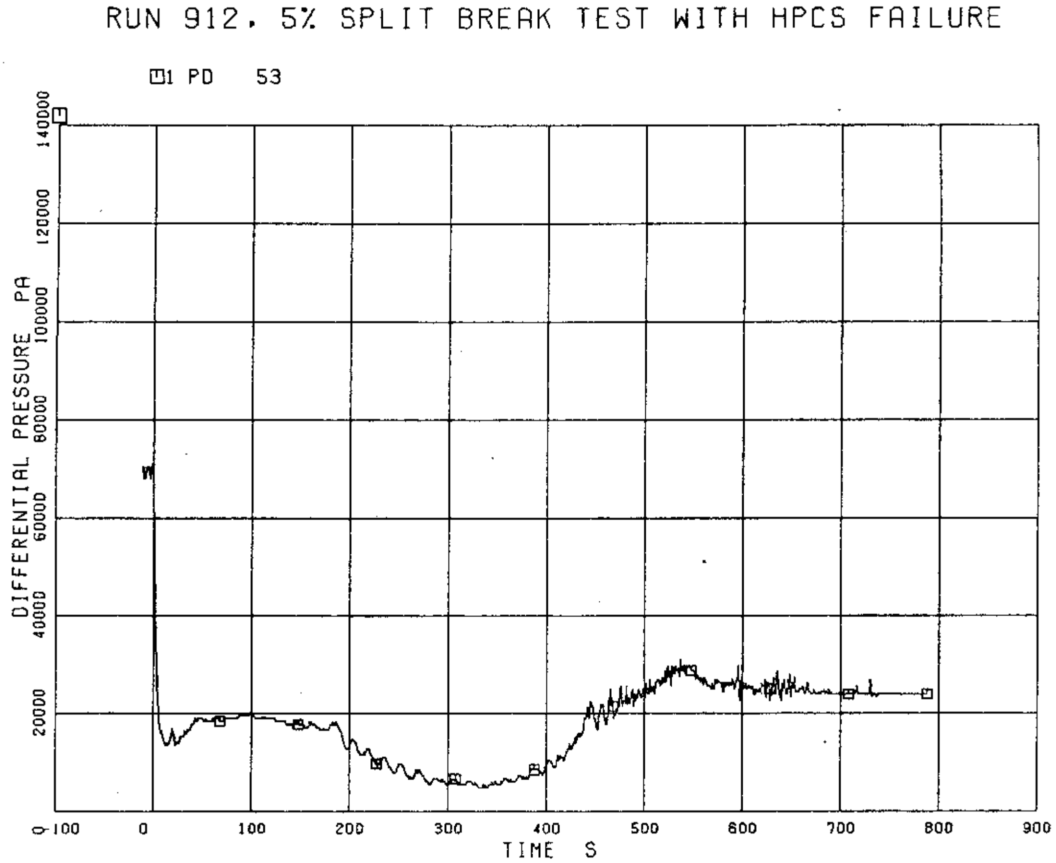


Fig. 5.35 Differential Pressure between Lower Plenum and Downcomer Middle

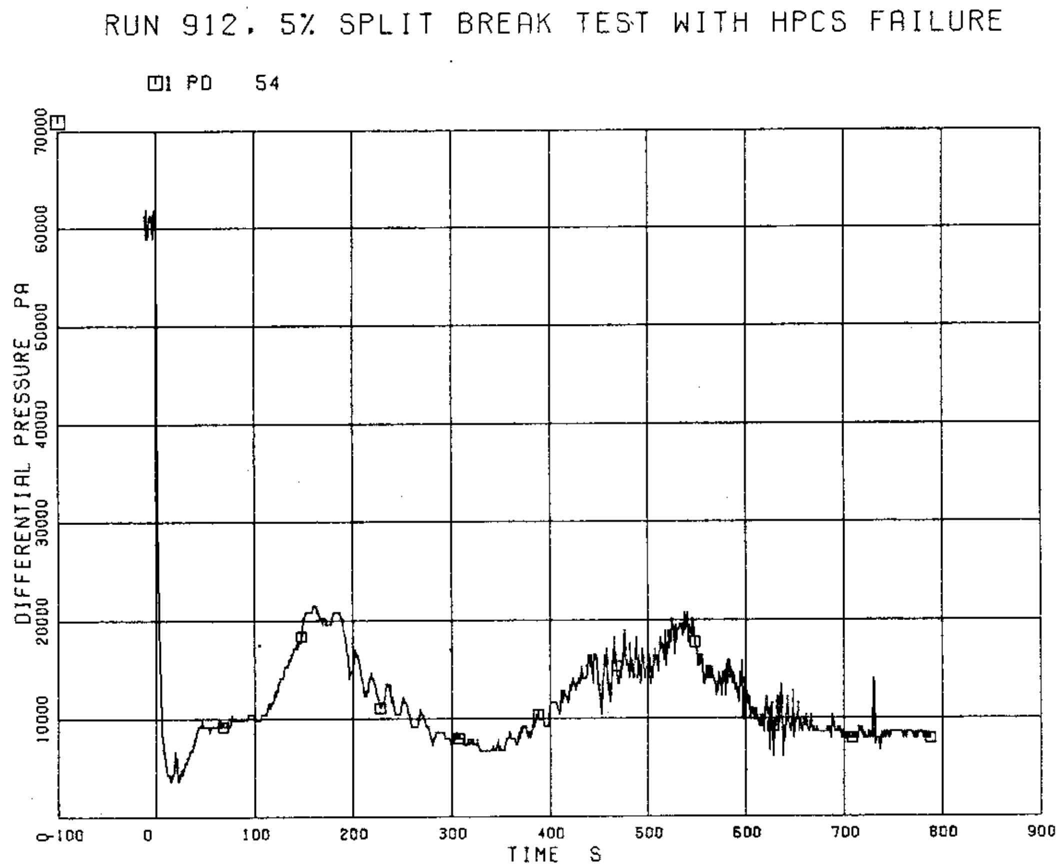


Fig. 5.36 Differential Pressure between Lower Plenum and Downcomer Bottom

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

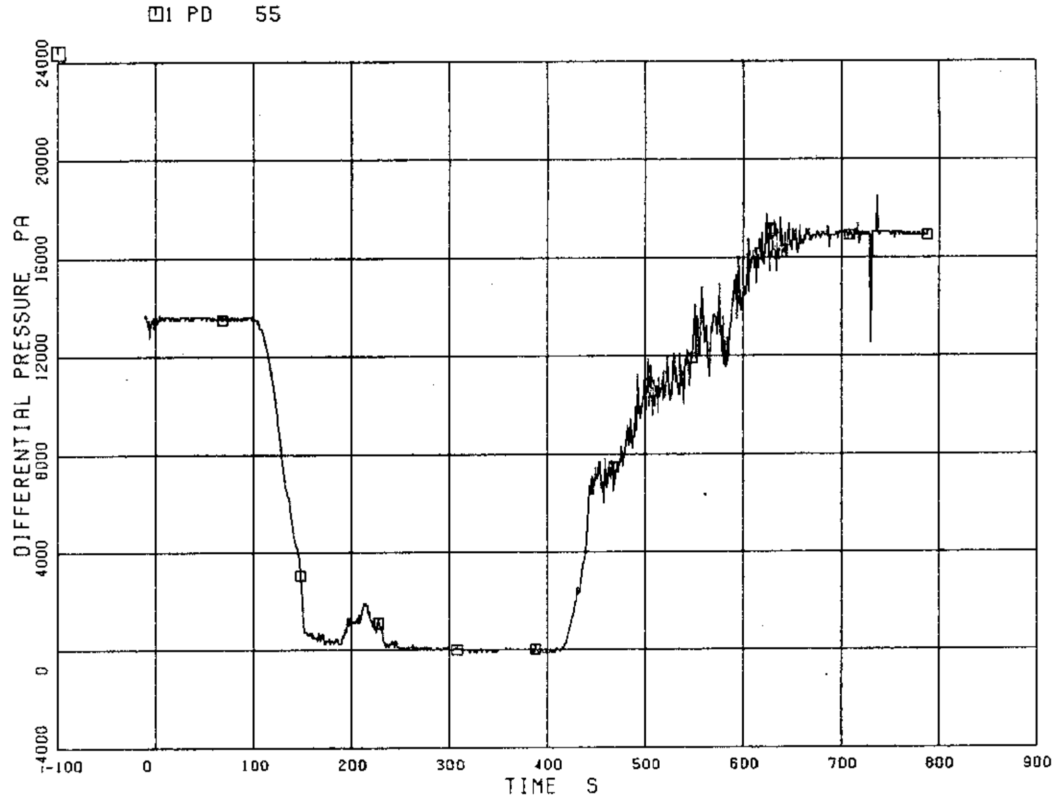


Fig. 5.37 Differential Pressure between Downcomer Bottom and Downcomer Middle

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

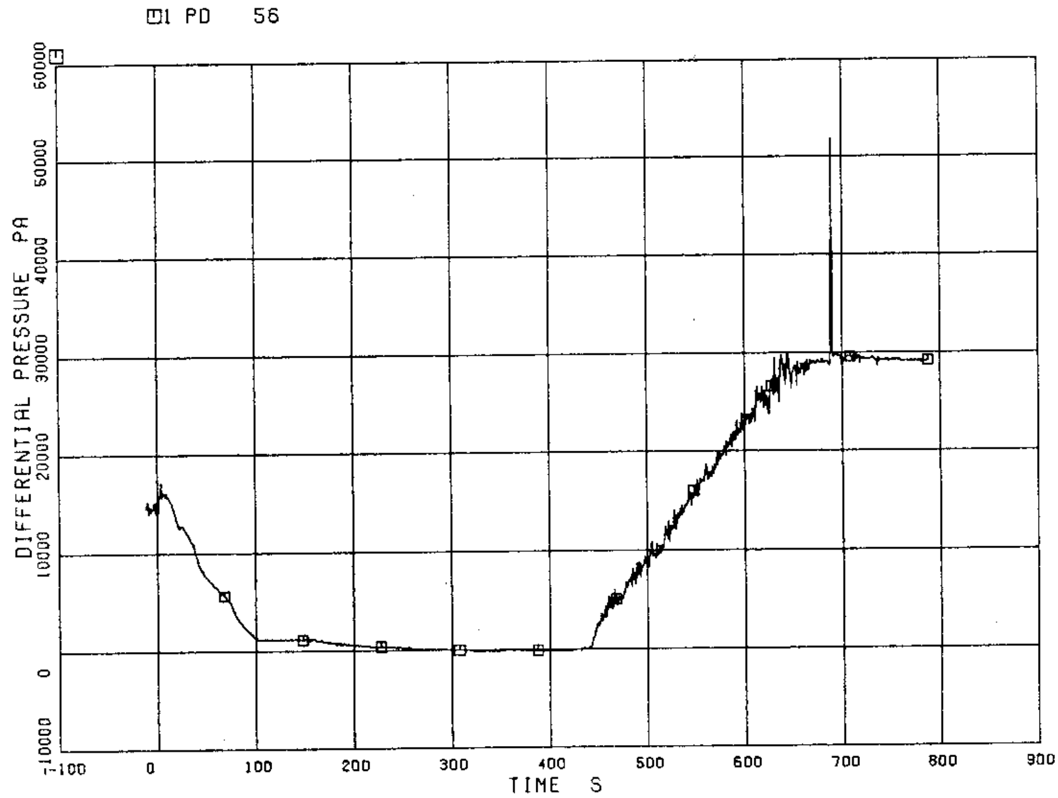


Fig. 5.38 Differential Pressure between Downcomer Middle and Steam Dome

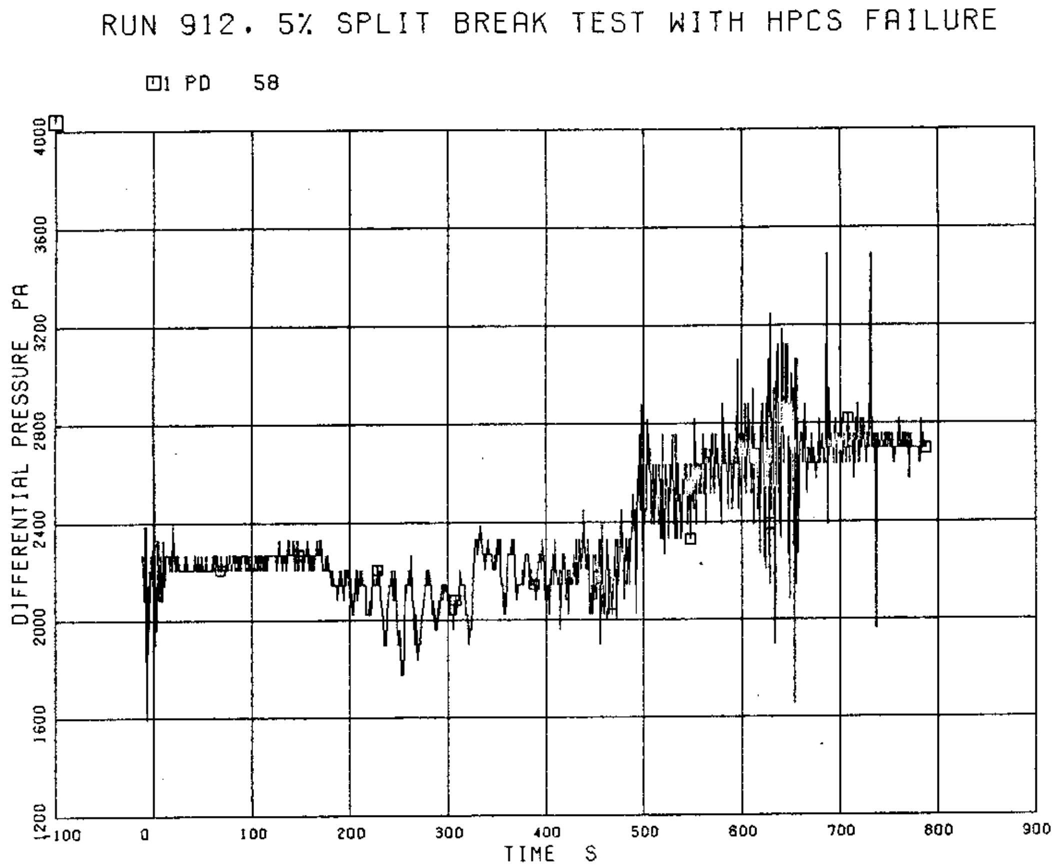


Fig. 5.39 Differential Pressure between Lower Plenum Bottom and Middle

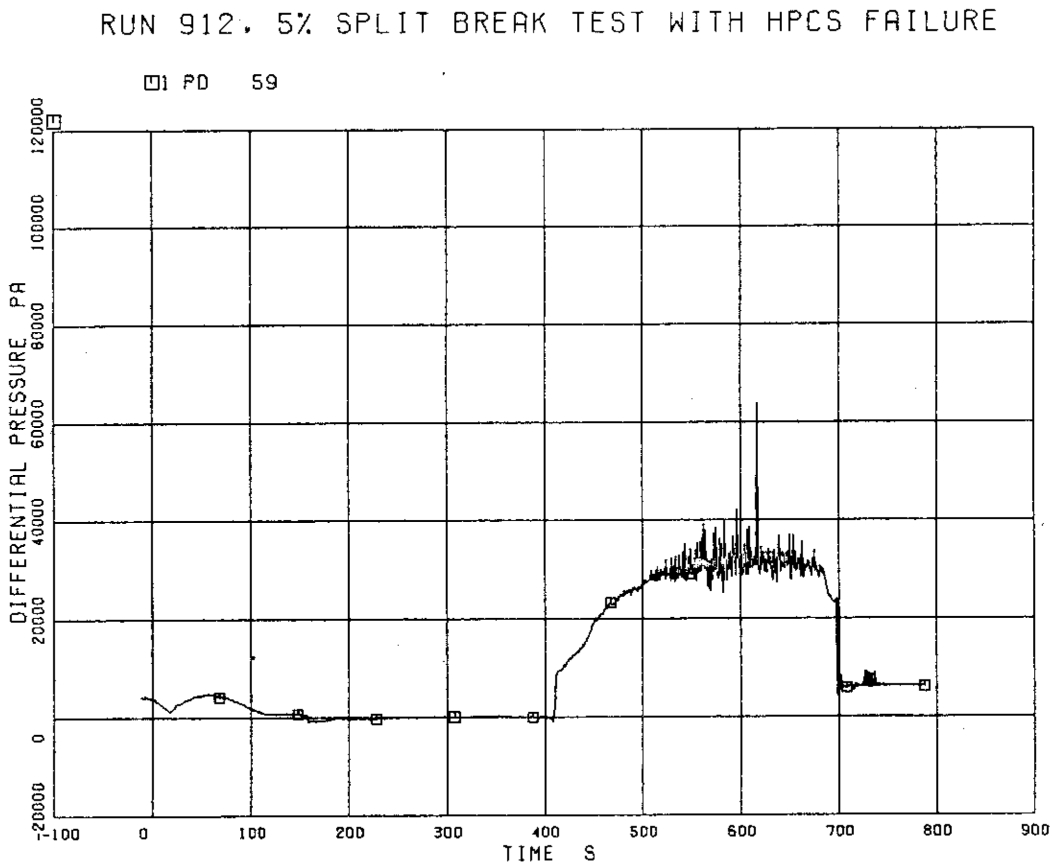


Fig. 5.40 Differential Pressure between Upper Plenum and Downcomer High

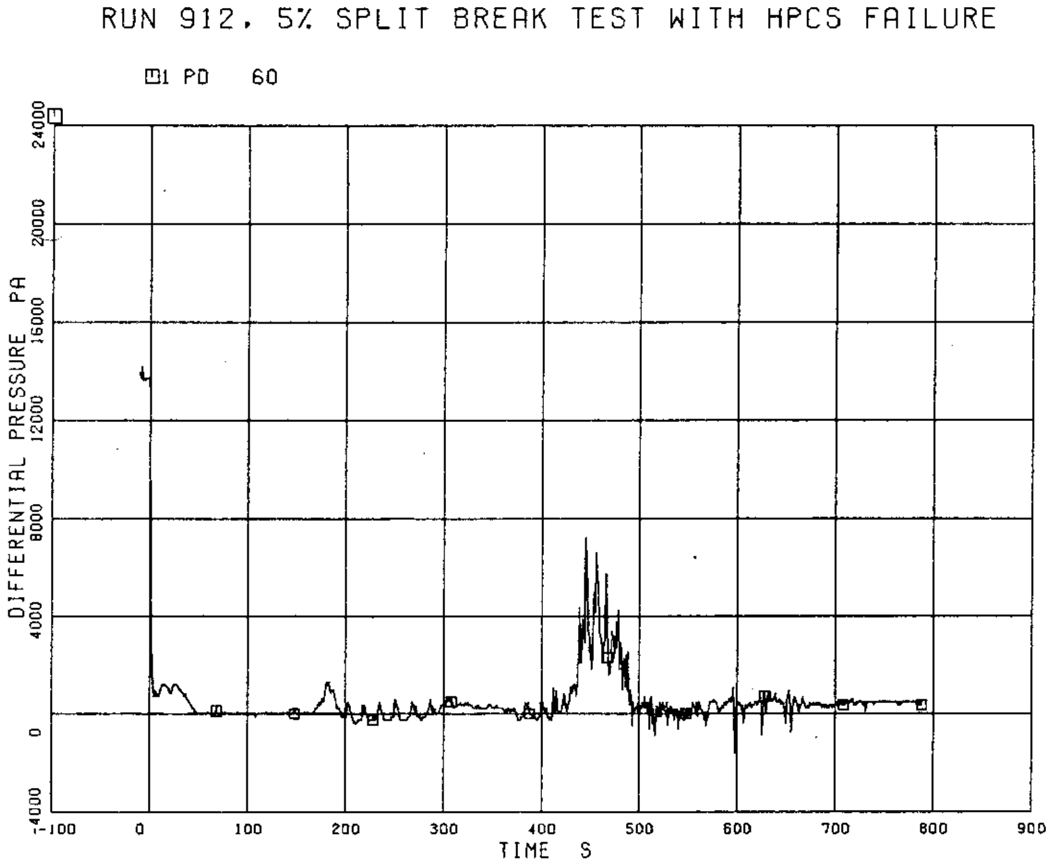


Fig. 5.41 Differential Pressure across Channel Inlet Orifice A

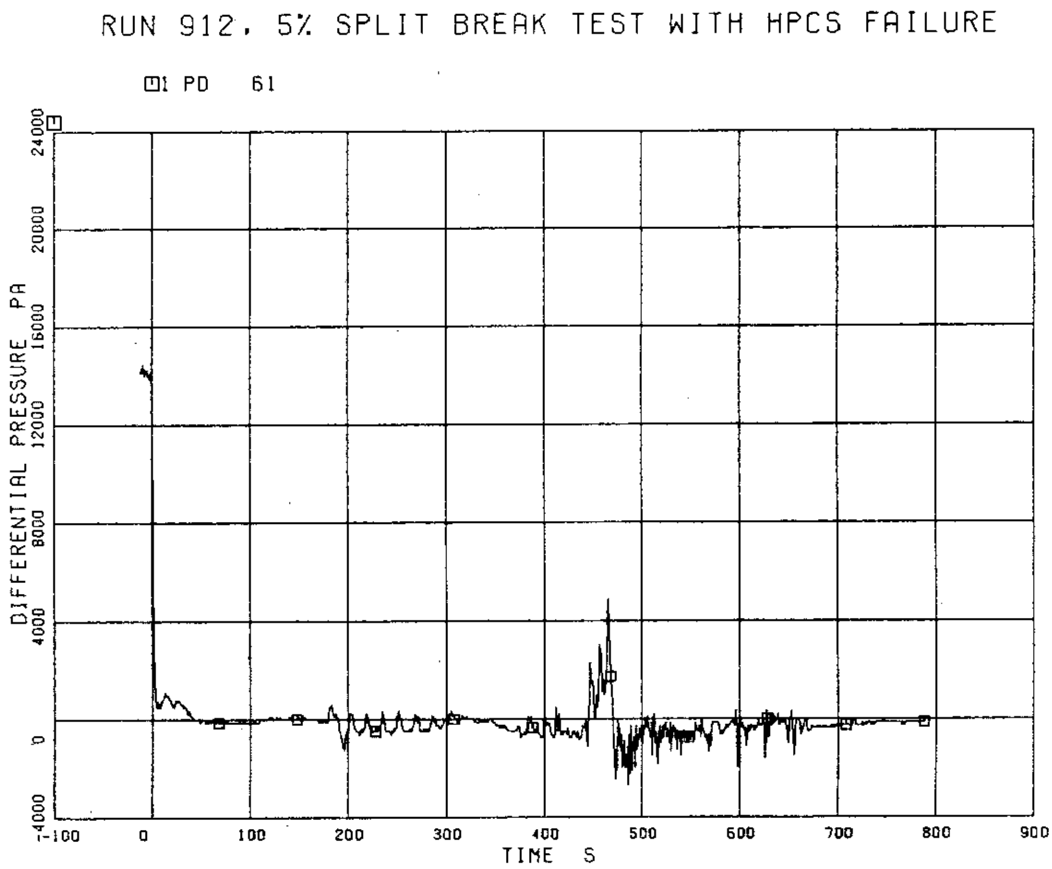


Fig. 5.42 Differential Pressure across Channel Inlet Orifice B

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

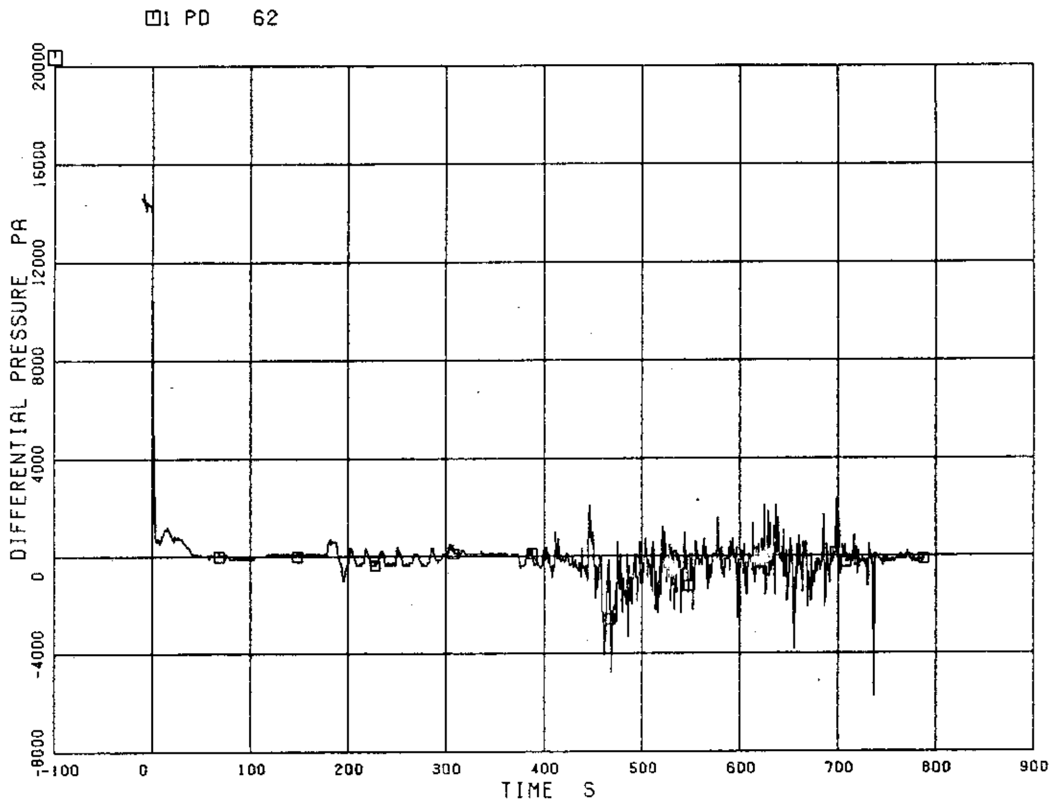


Fig. 5.43 Differential Pressure across Channel Inlet Orifice C

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

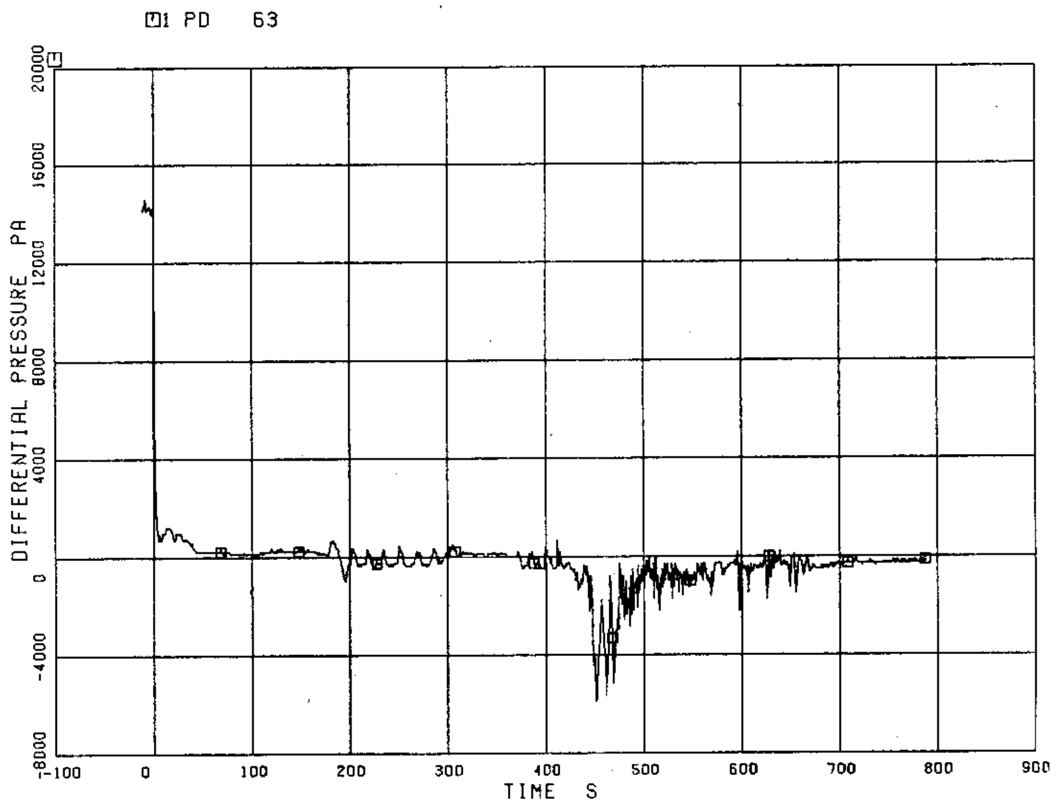


Fig. 5.44 Differential Pressure across Channel Inlet Orifice D

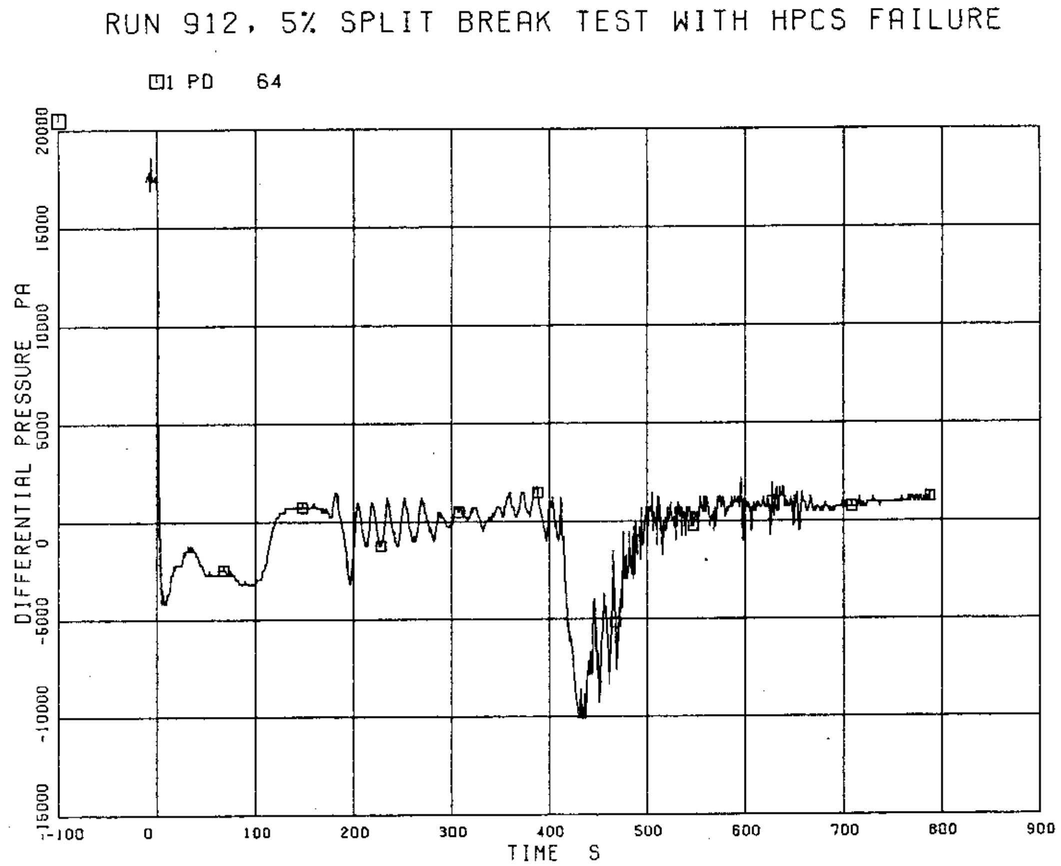


Fig. 5.45 Differential Pressure across Guide Tube Inlet Orifice

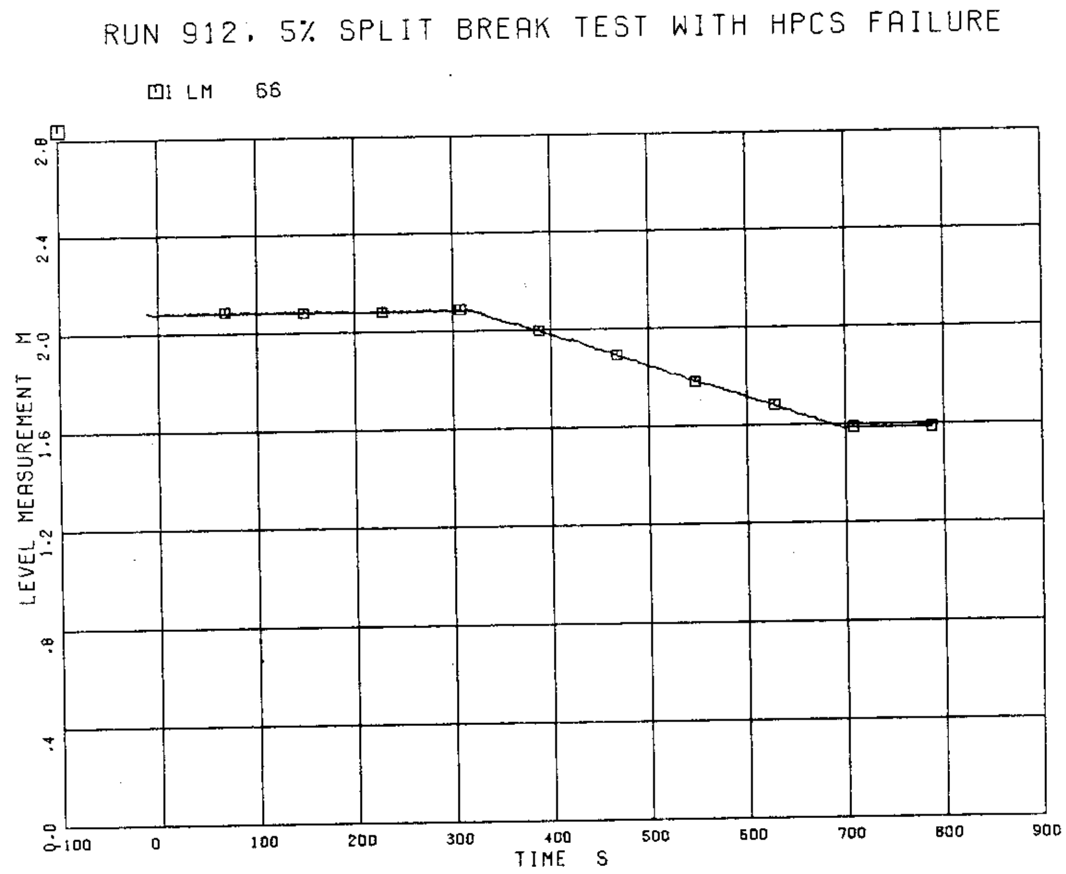


Fig. 5.46 Water Level in LPCS Tank

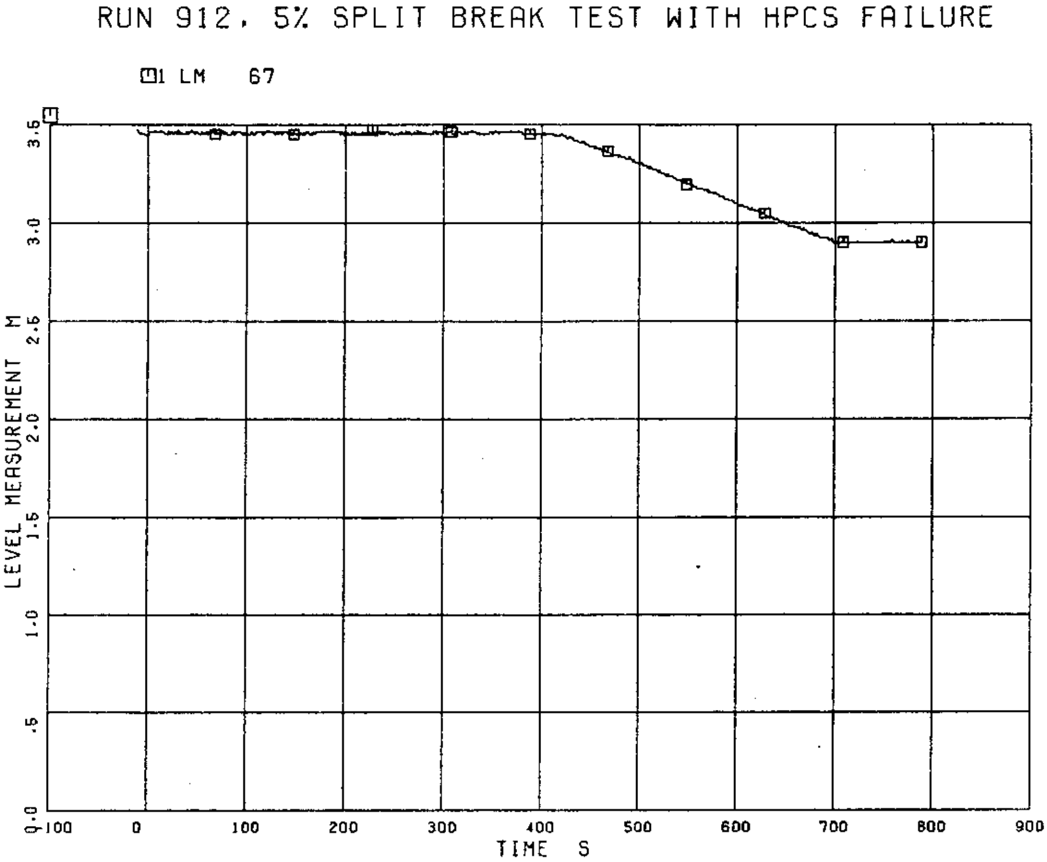


Fig. 5.47 Water Level in LPCI Tank

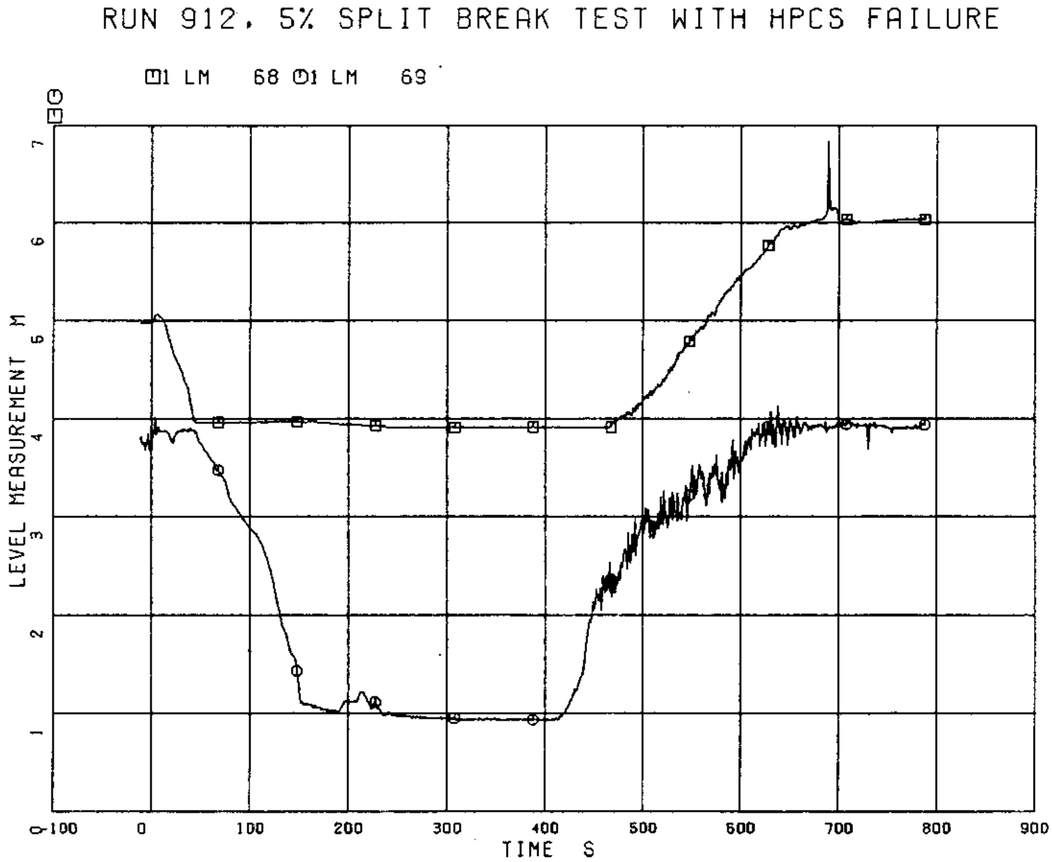


Fig. 5.48 Water Level in Downcomer

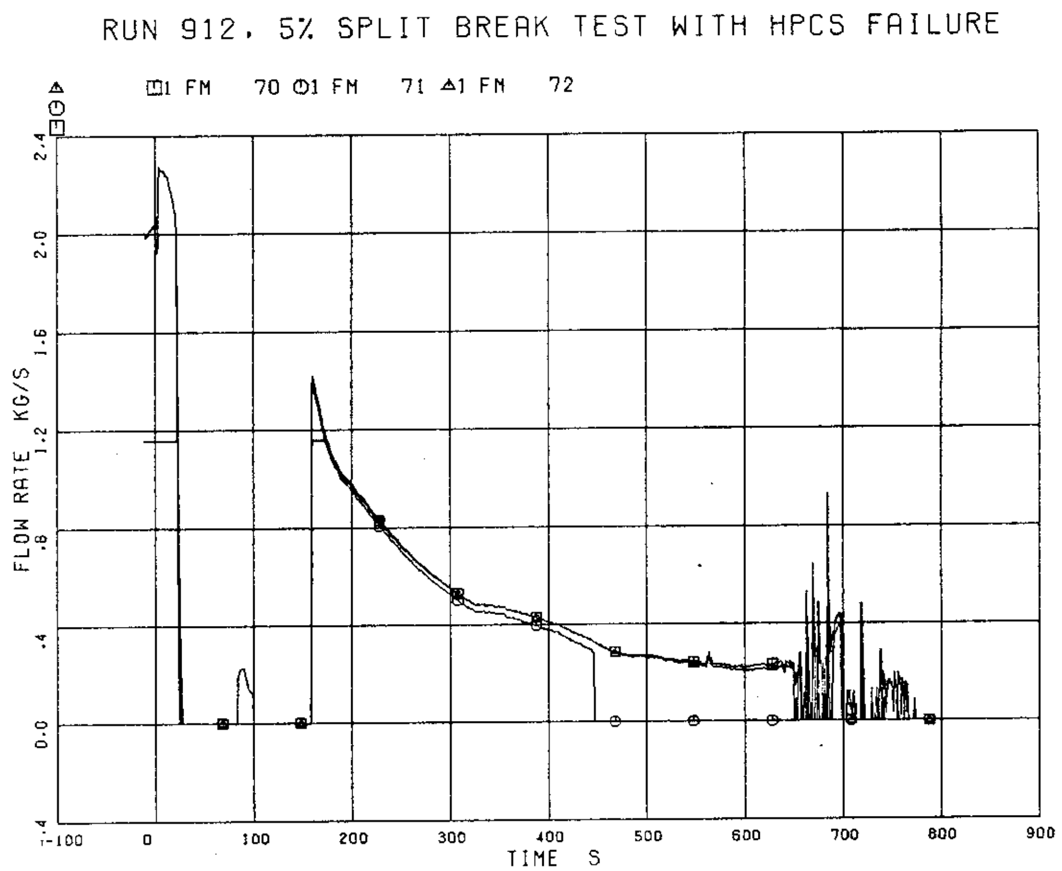


Fig. 5.49 Mass Flow Rate in Steam Line

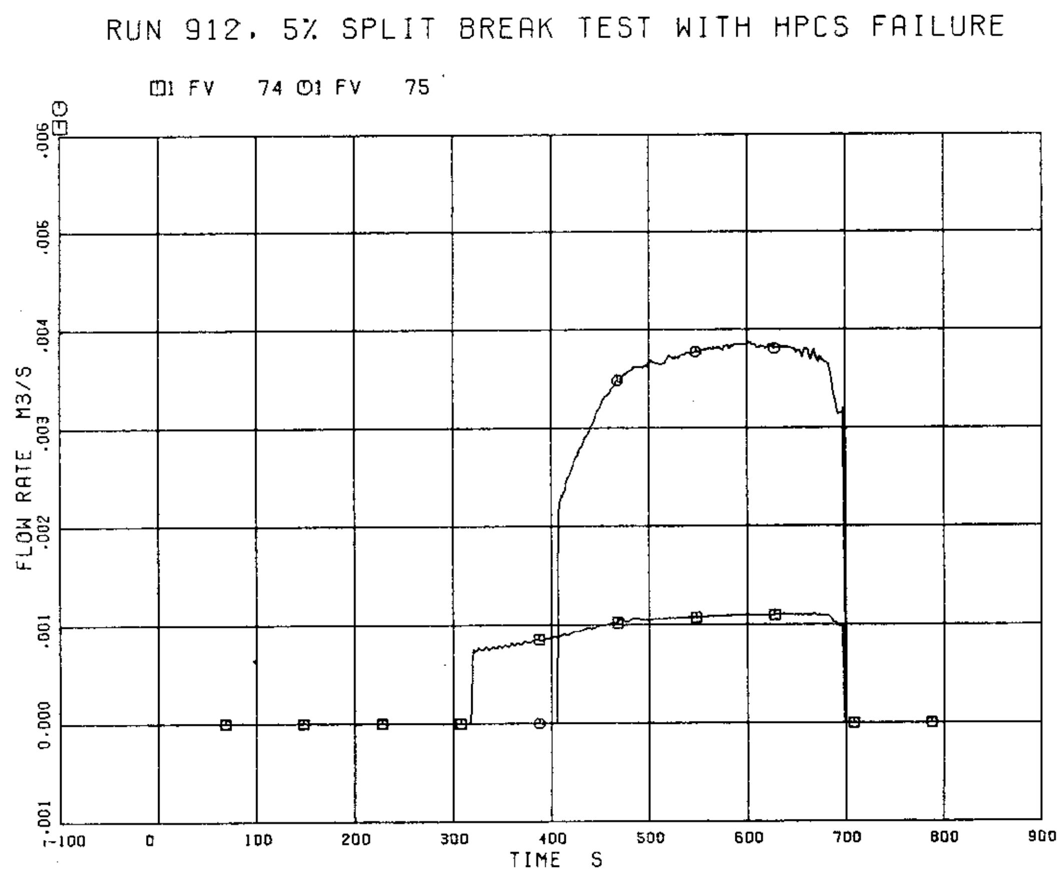


Fig. 5.50 ECC Injection Flow Rate

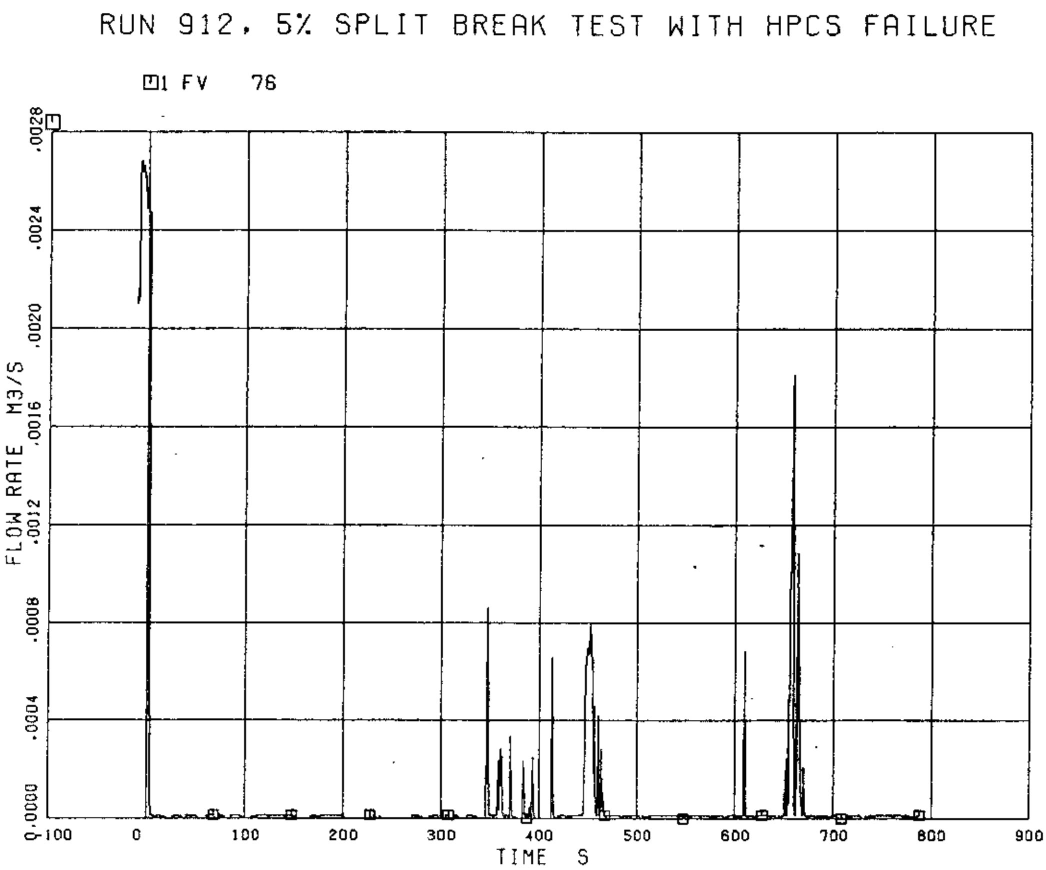


Fig. 5.51 Feed Water Flow Rate

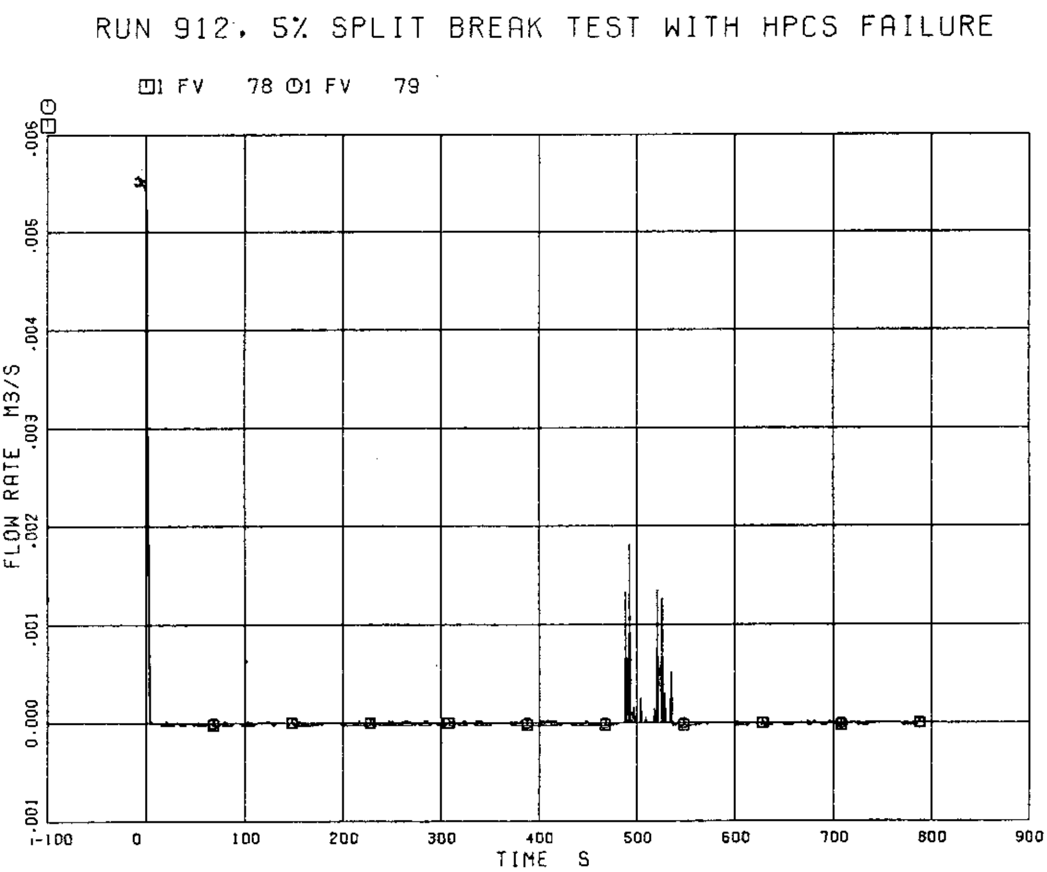


Fig. 5.52 Intact Loop Jet Pump Discharge Flow Rate

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

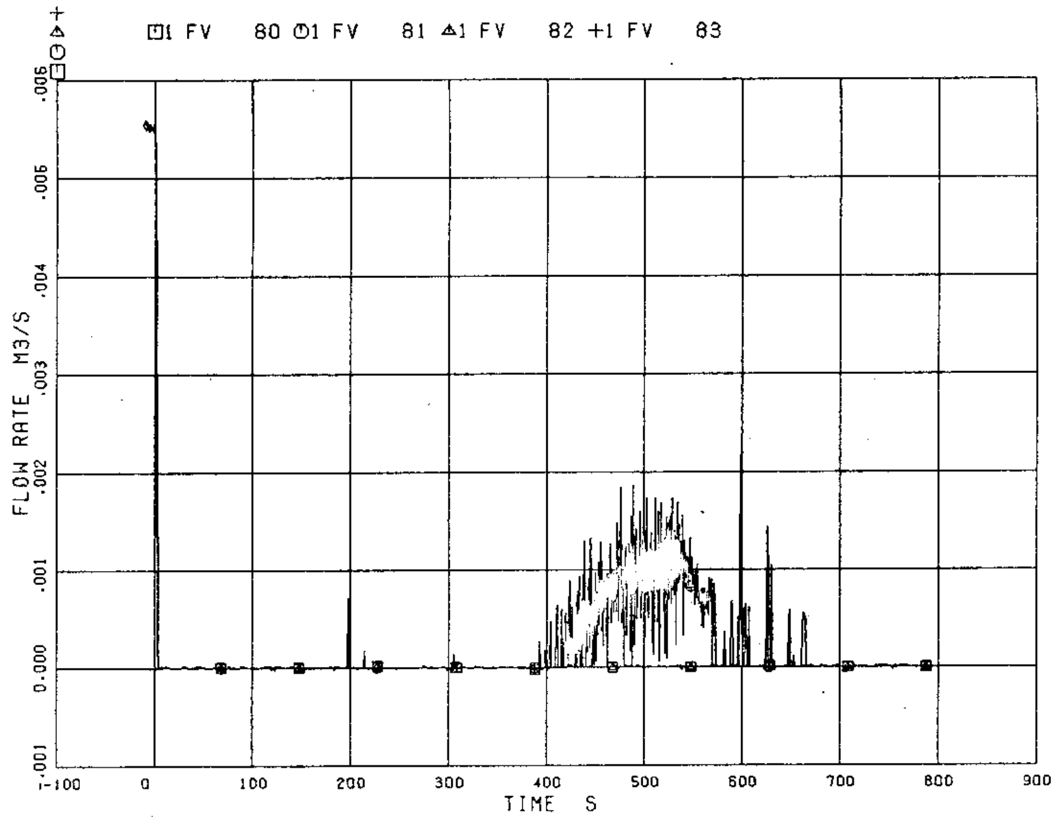


Fig. 5.53 Broken Loop Jet Pump Discharge Flow Rate

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

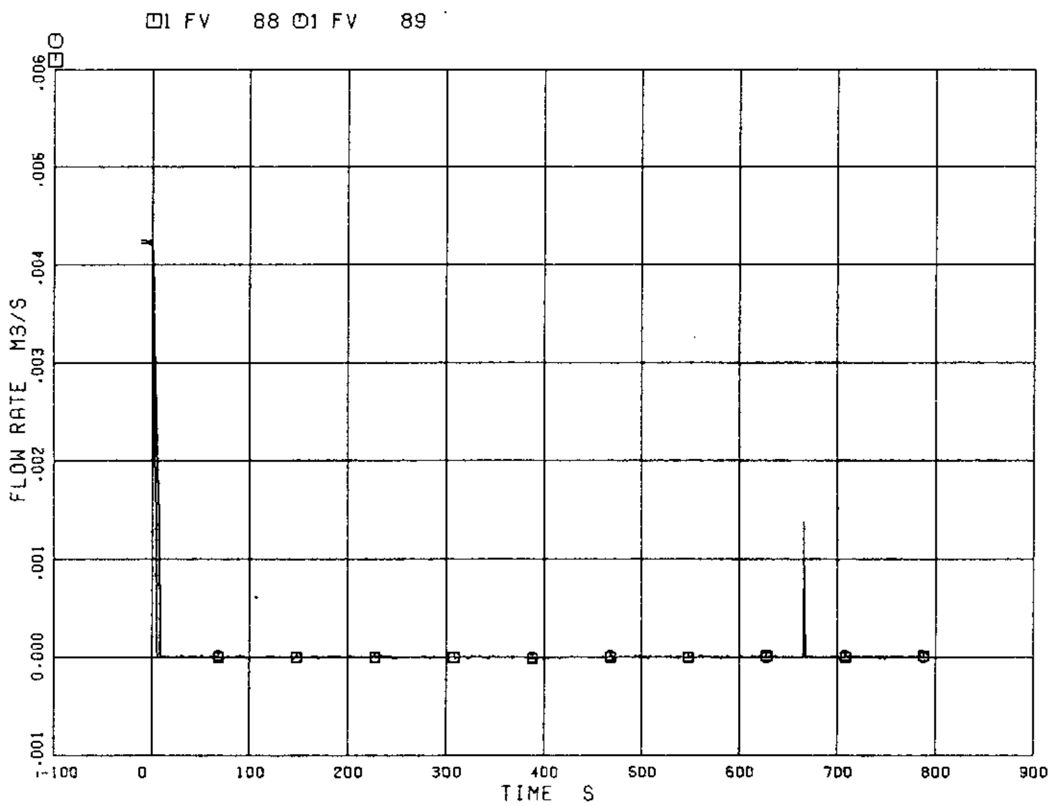


Fig. 5.54 Recirculation Pump Discharge Flow Rate

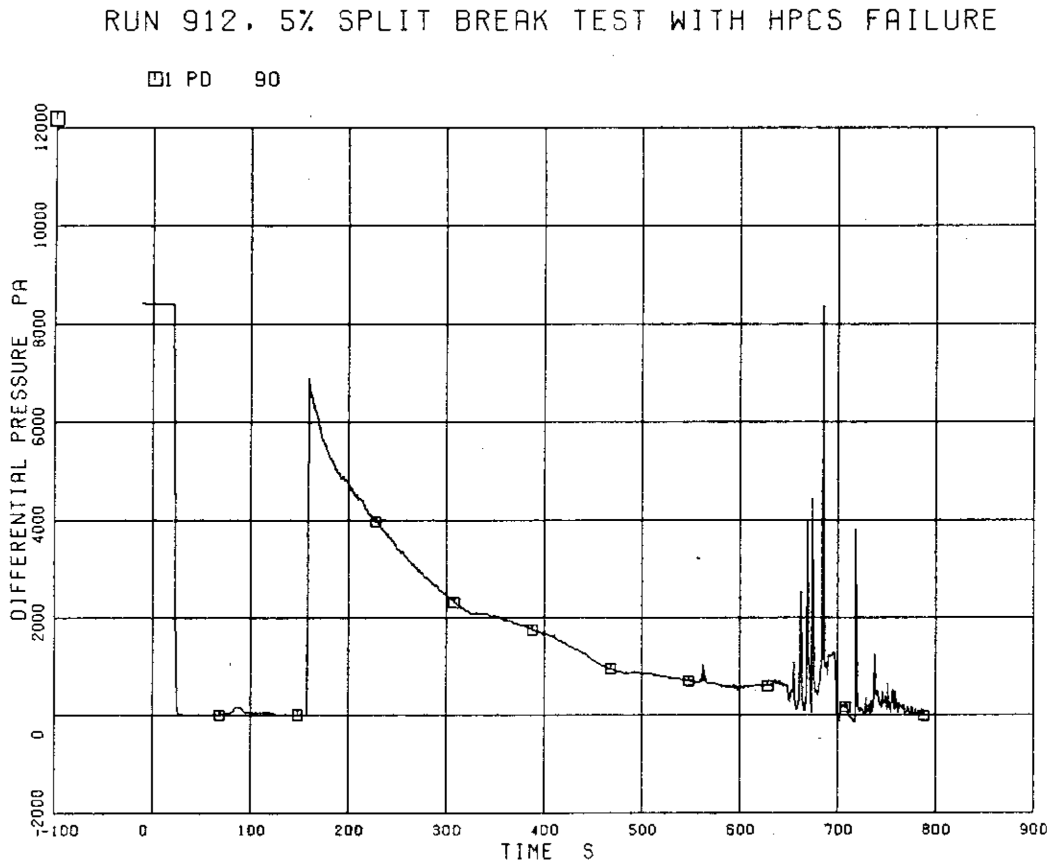


Fig. 5.55 Differential Pressure across the Orifice Flowmeter F-1

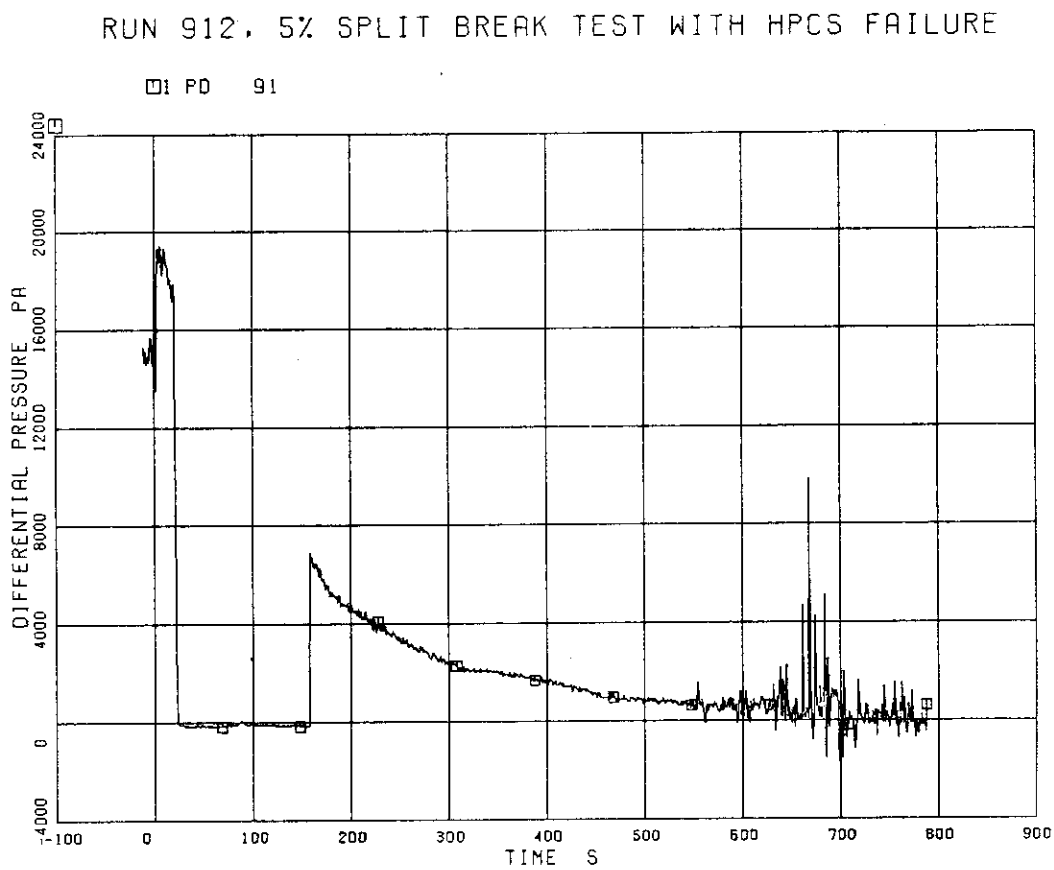


Fig. 5.56 Differential Pressure across the Orifice Flowmeter F-2

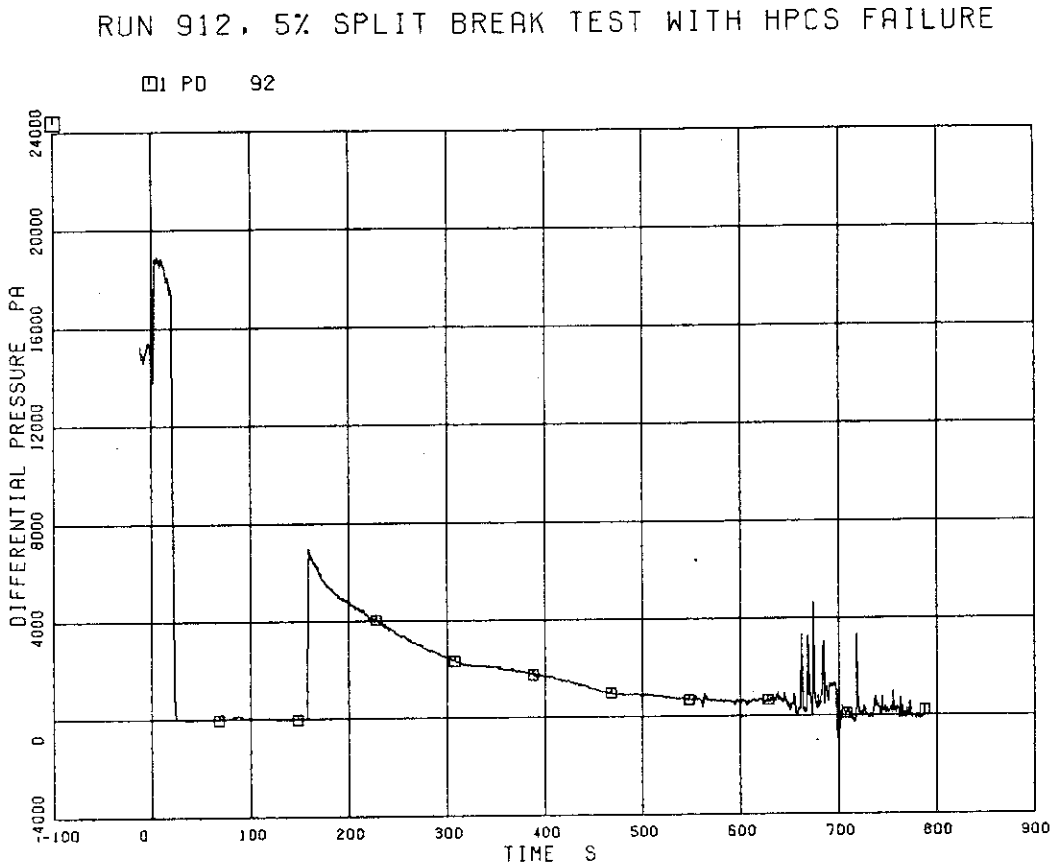


Fig. 5.57 Differential Pressure across the Orifice Flowmeter F-3

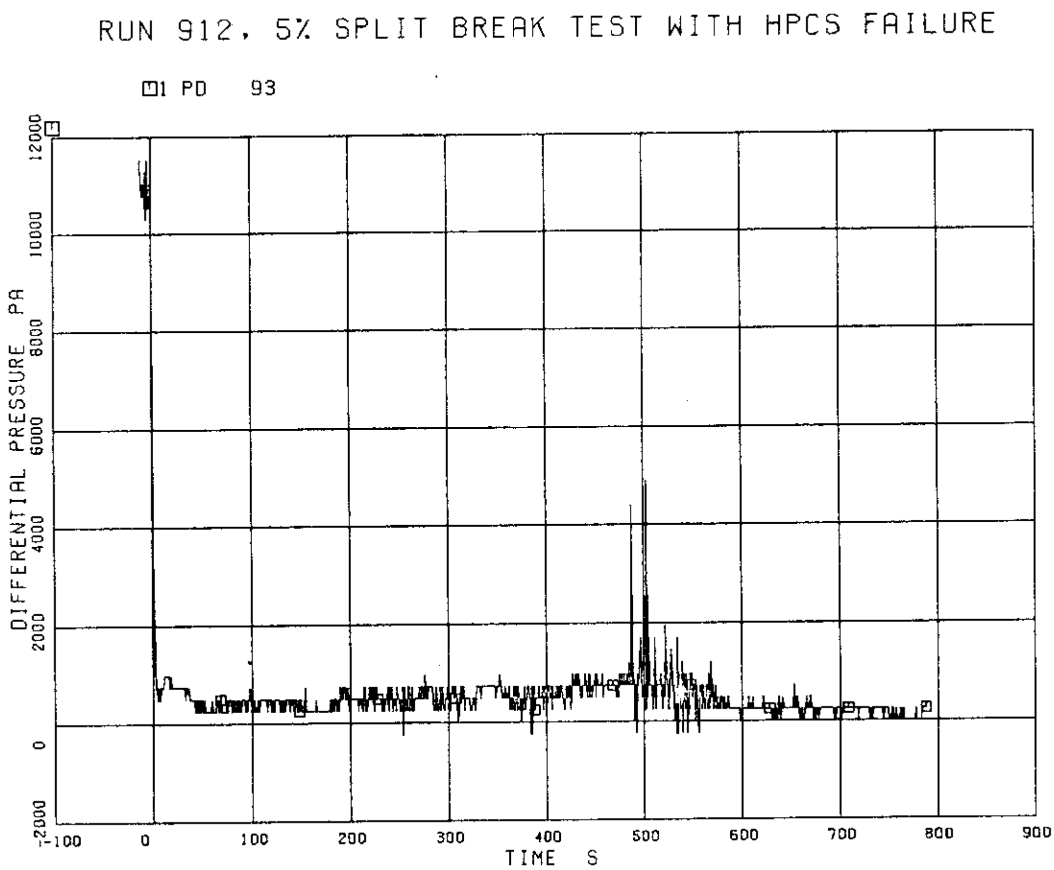


Fig. 5.58 Differential Pressure across the Venturi Flowmeter F-17

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

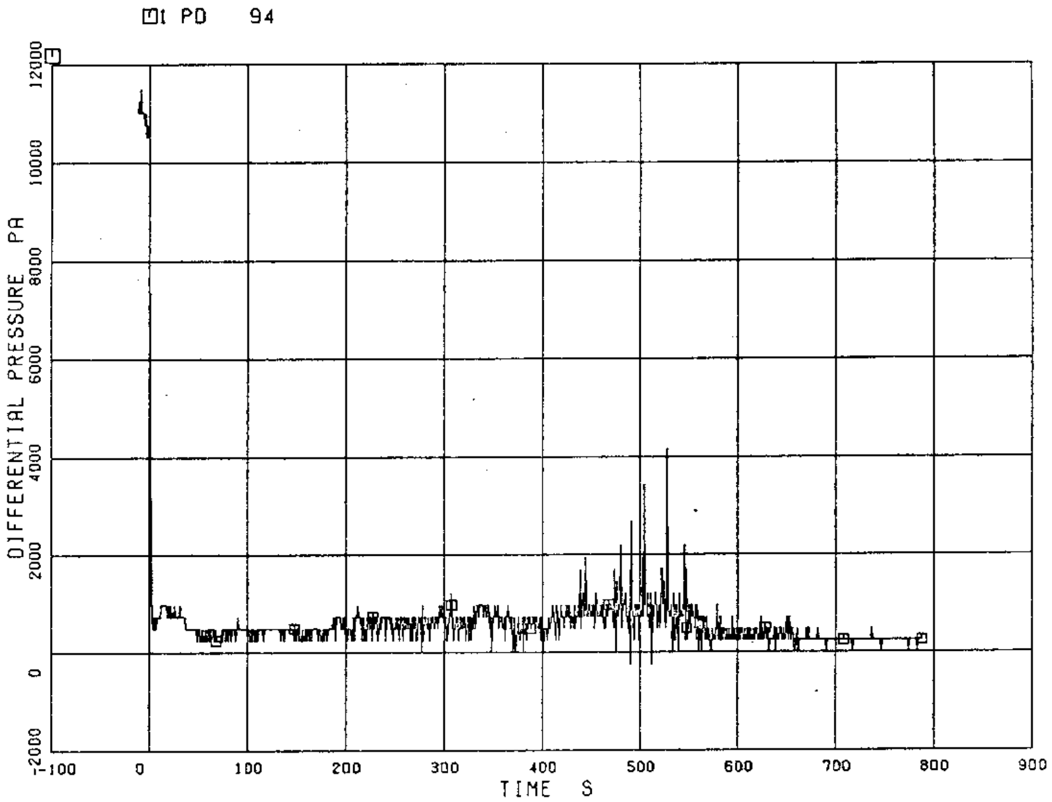


Fig. 5.59 Differential Pressure across the Venturi Flowmeter F-18

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

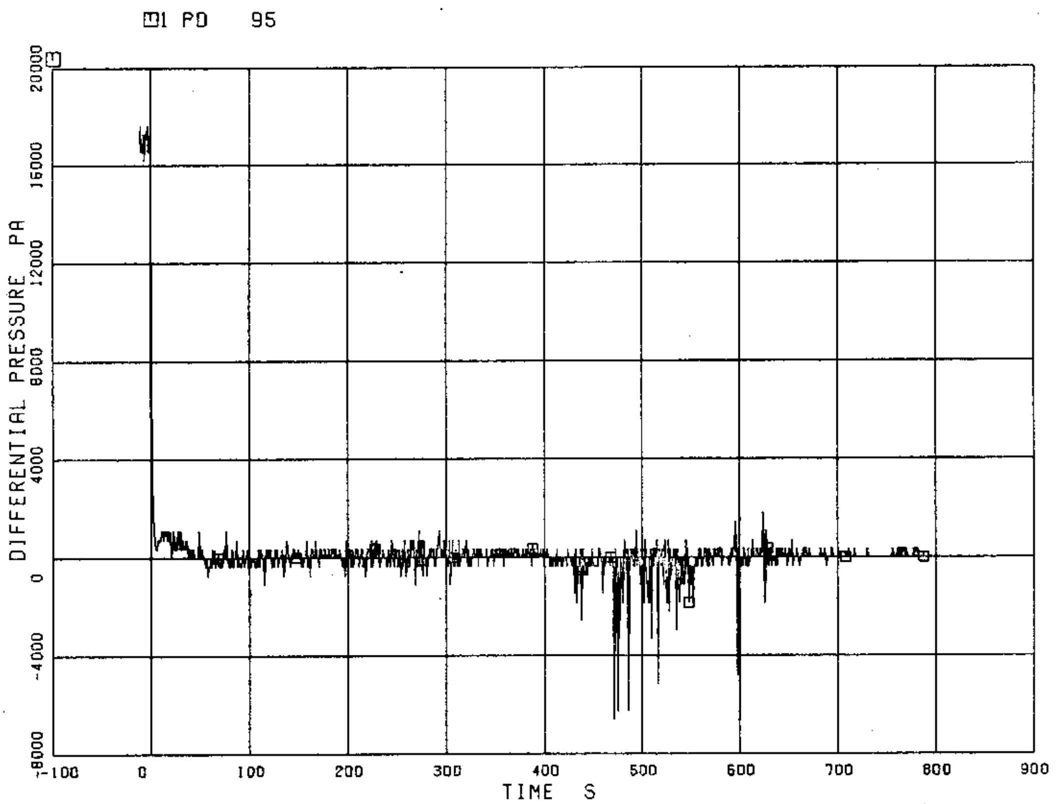


Fig. 5.60 Differential Pressure across the Orifice Flowmeter F-19

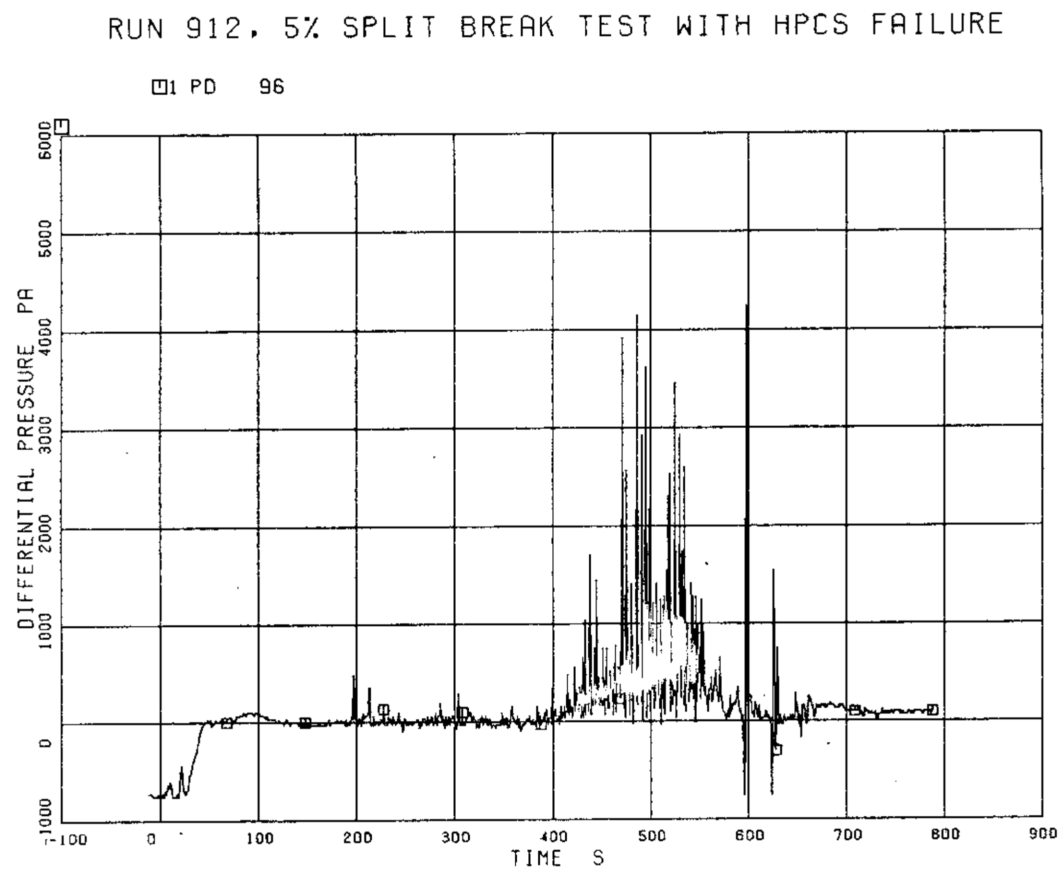


Fig. 5.61 Differential Pressure across the Orifice Flowmeter F-20

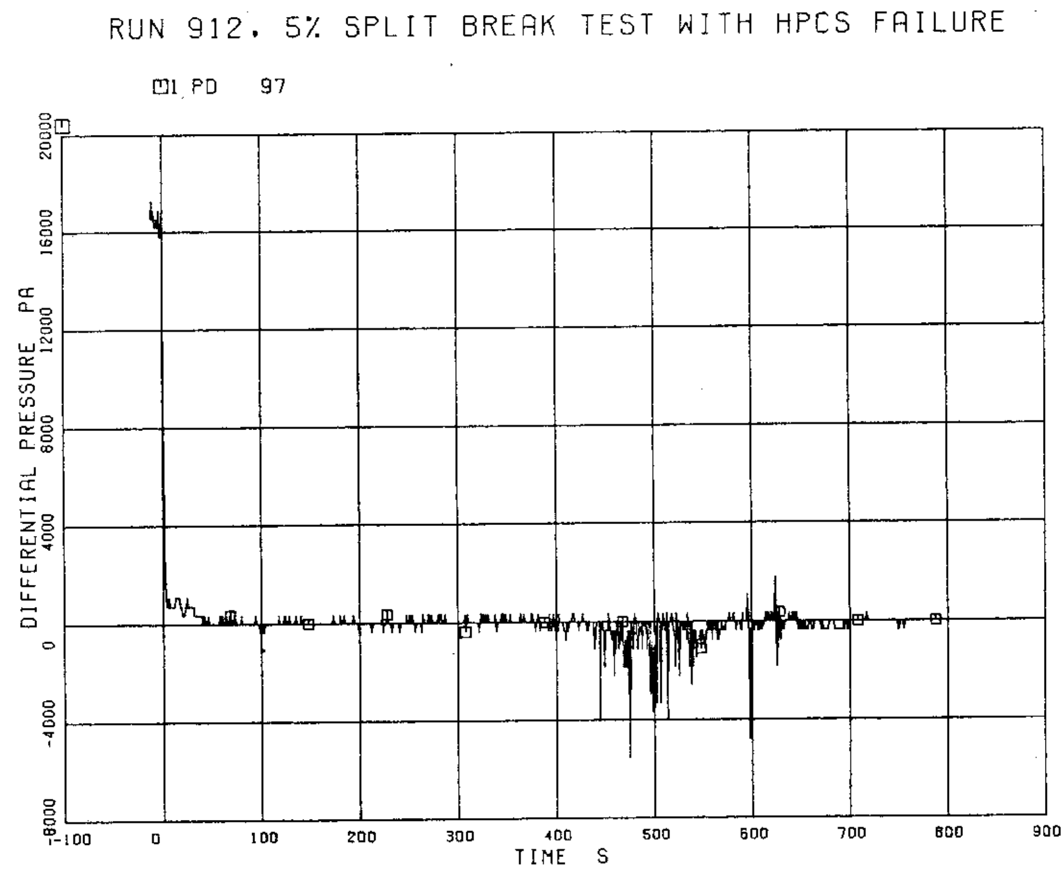


Fig. 5.62 Differential Pressure across the Orifice Flowmeter F-21

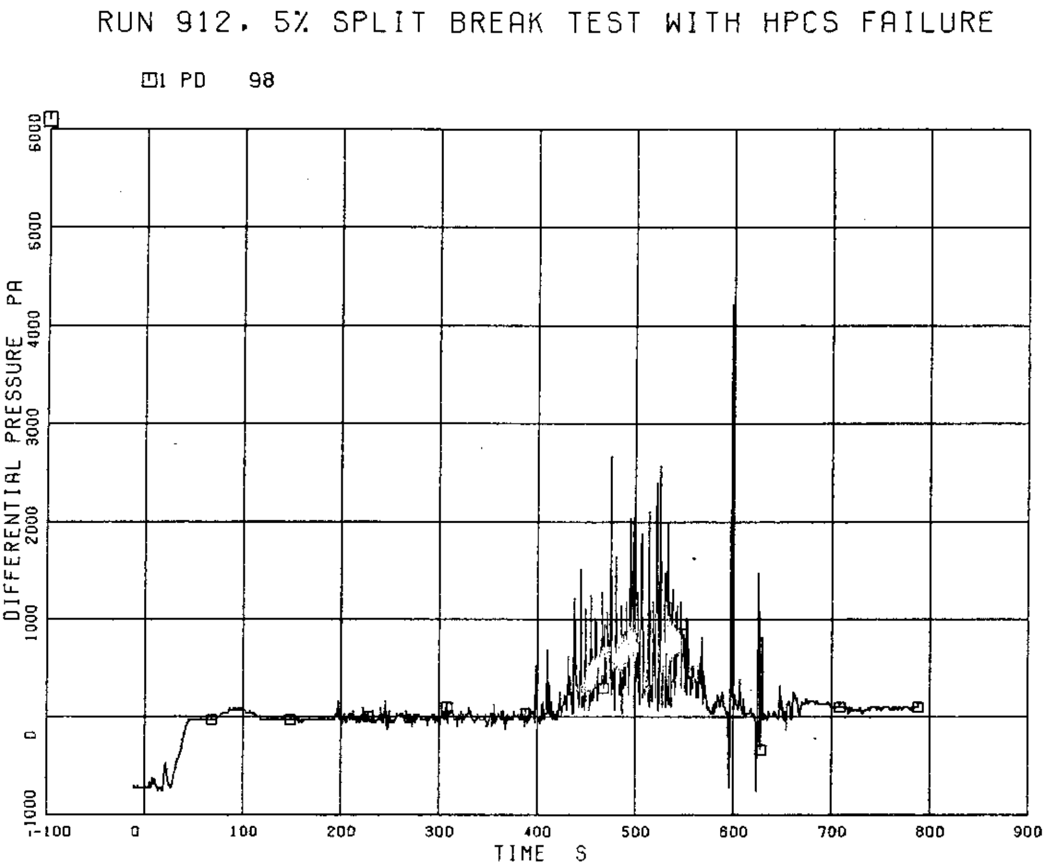


Fig. 5.63 Differential Pressure across the Orifice Flowmeter F-22

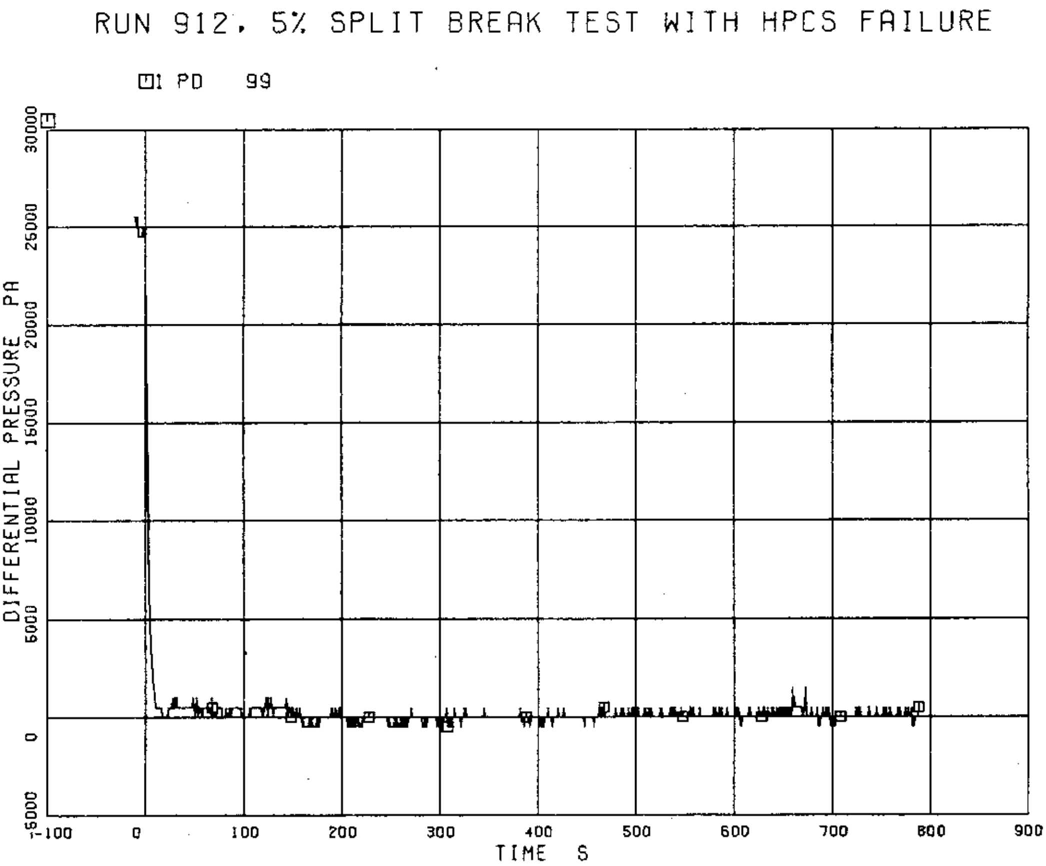


Fig. 5.64 Differential Pressure across the Venturi Flowmeter F-27

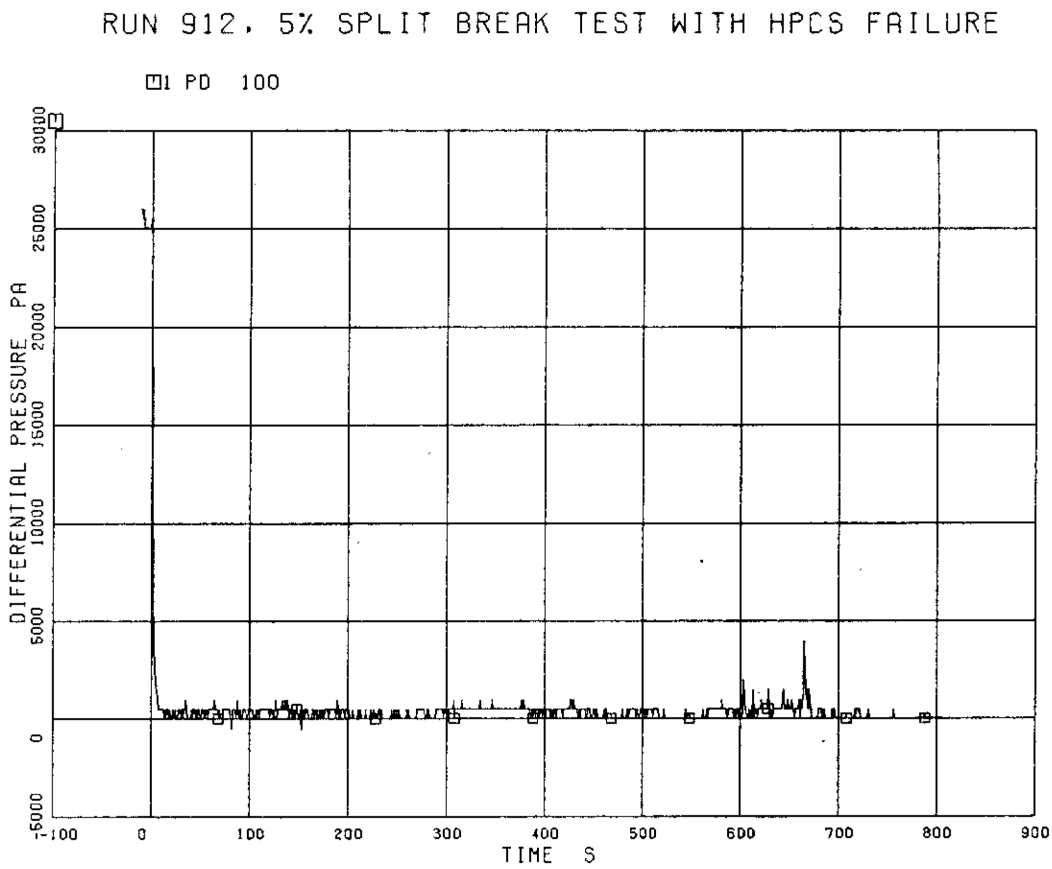


Fig. 5.65 Differential Pressure across the Venturi Flowmeter F-28

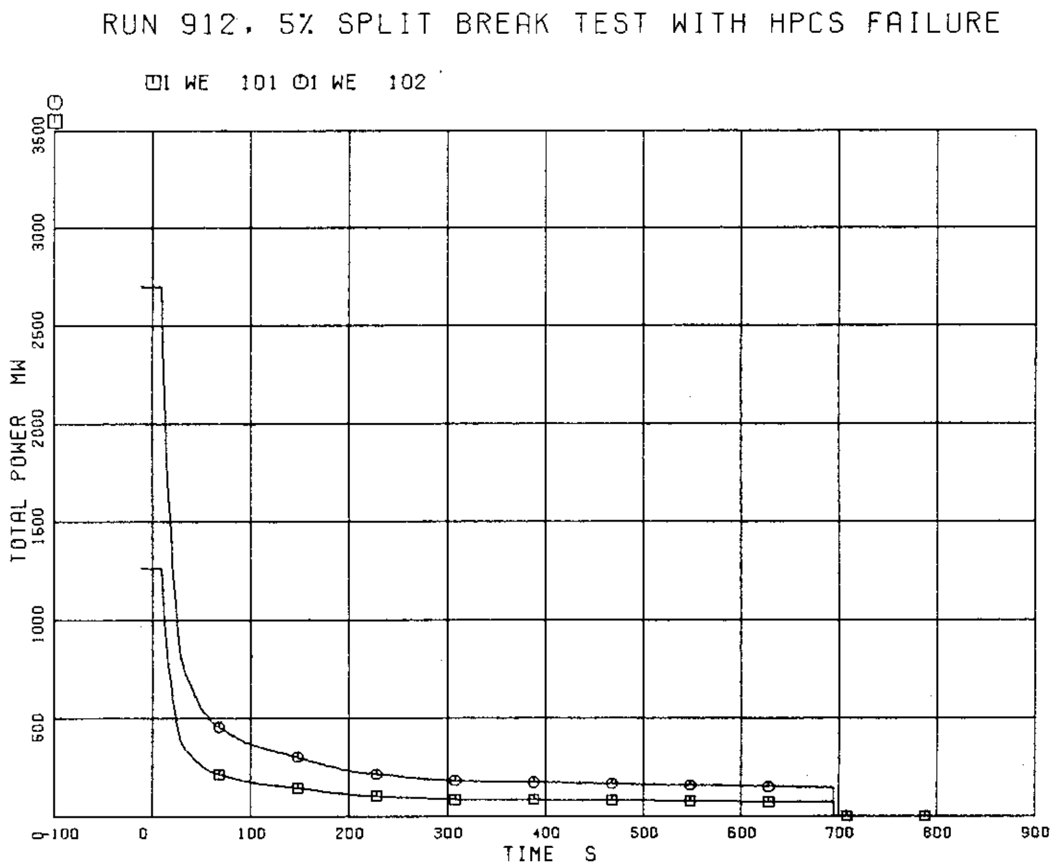


Fig. 5.66 Core Power

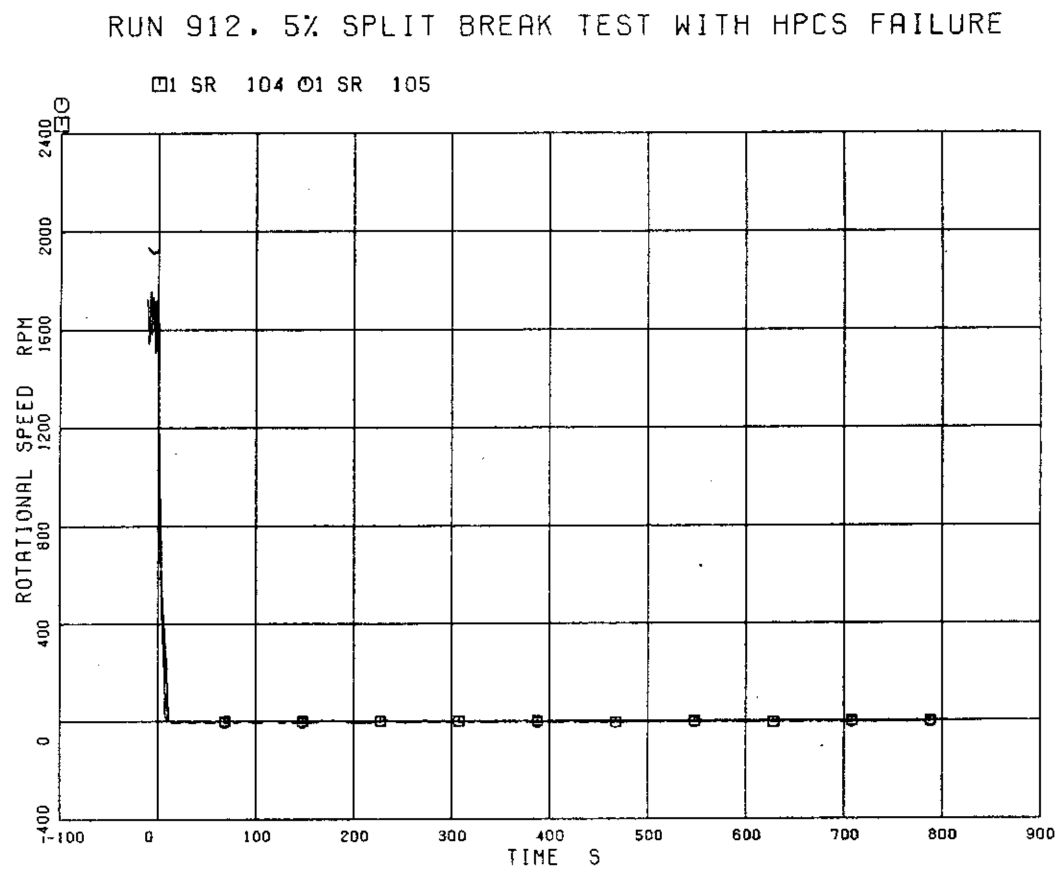


Fig. 5.67 Pump Speed

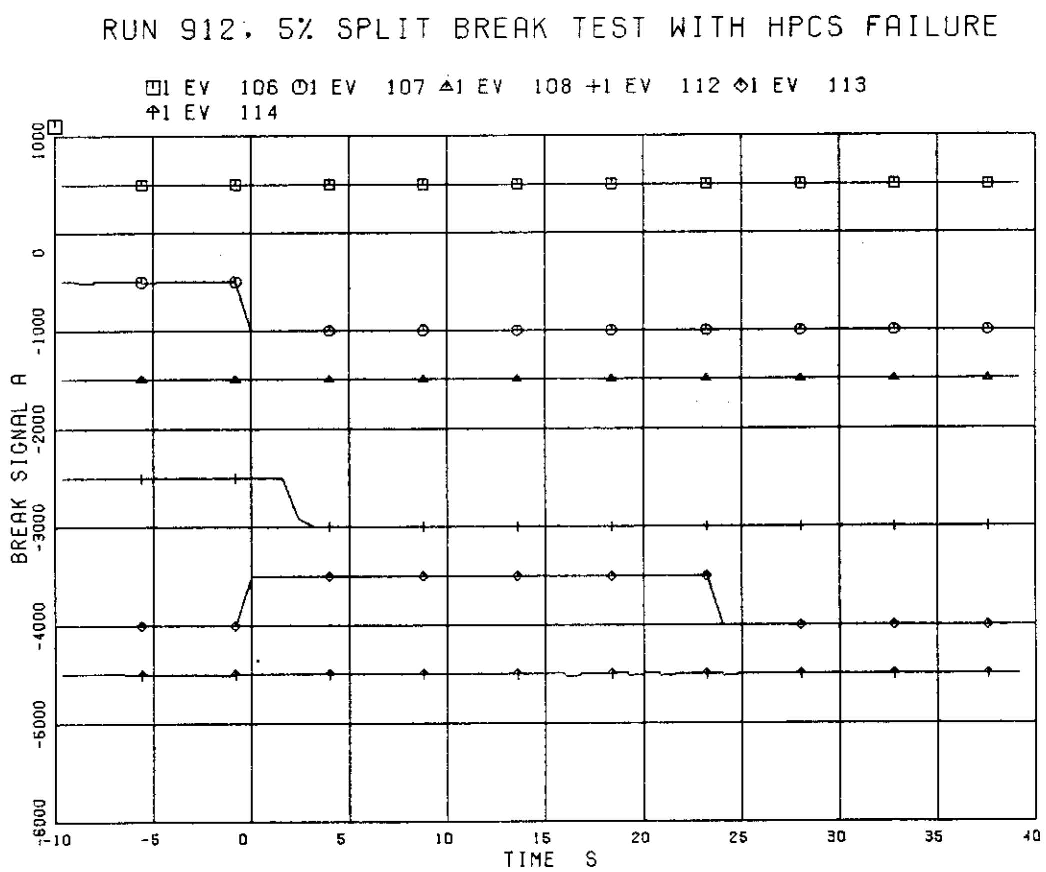


Fig. 5.68 Valve Operation Signals

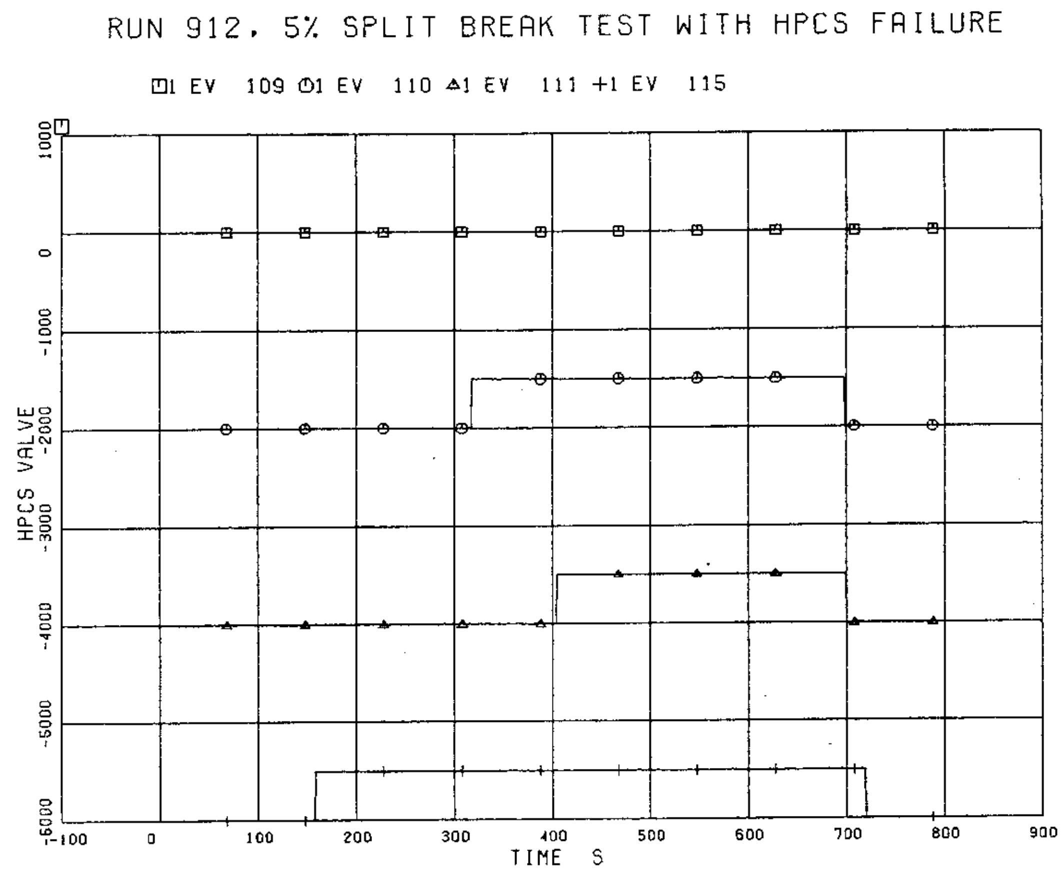


Fig. 5.69 ECCS Operation Signals

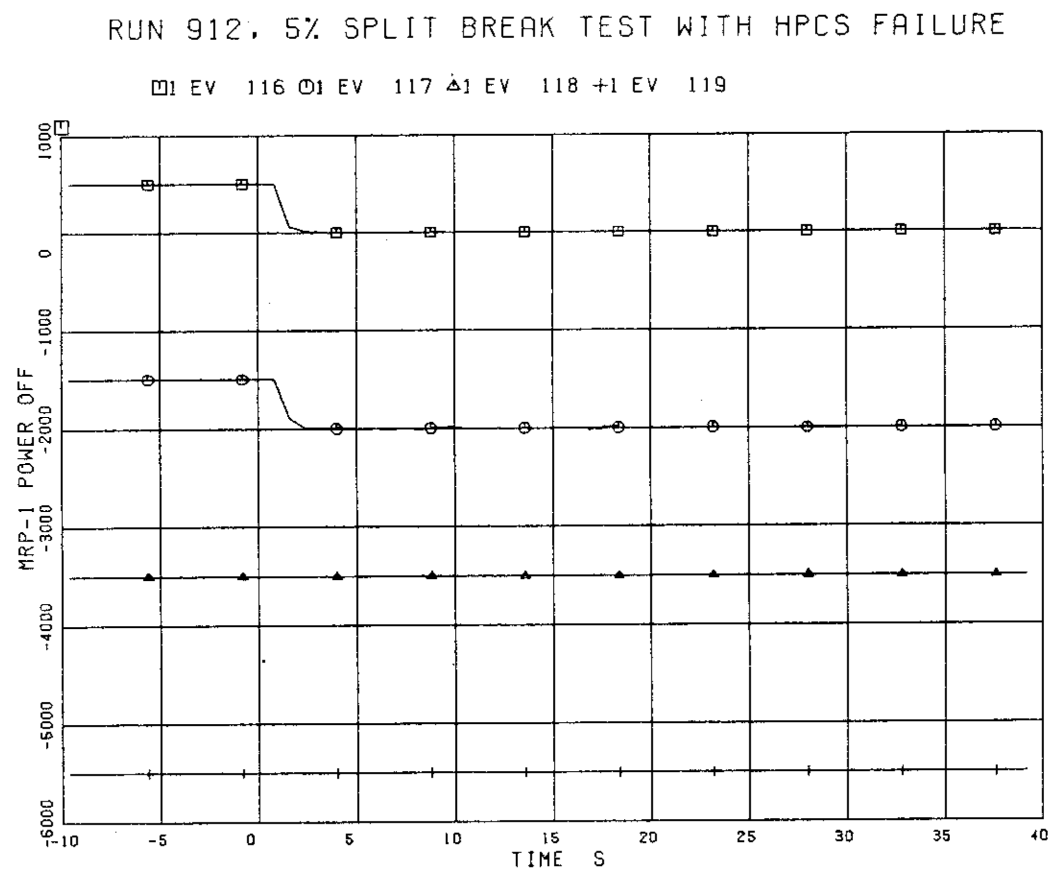


Fig. 5.70 Recirculation Pump Operation Signals

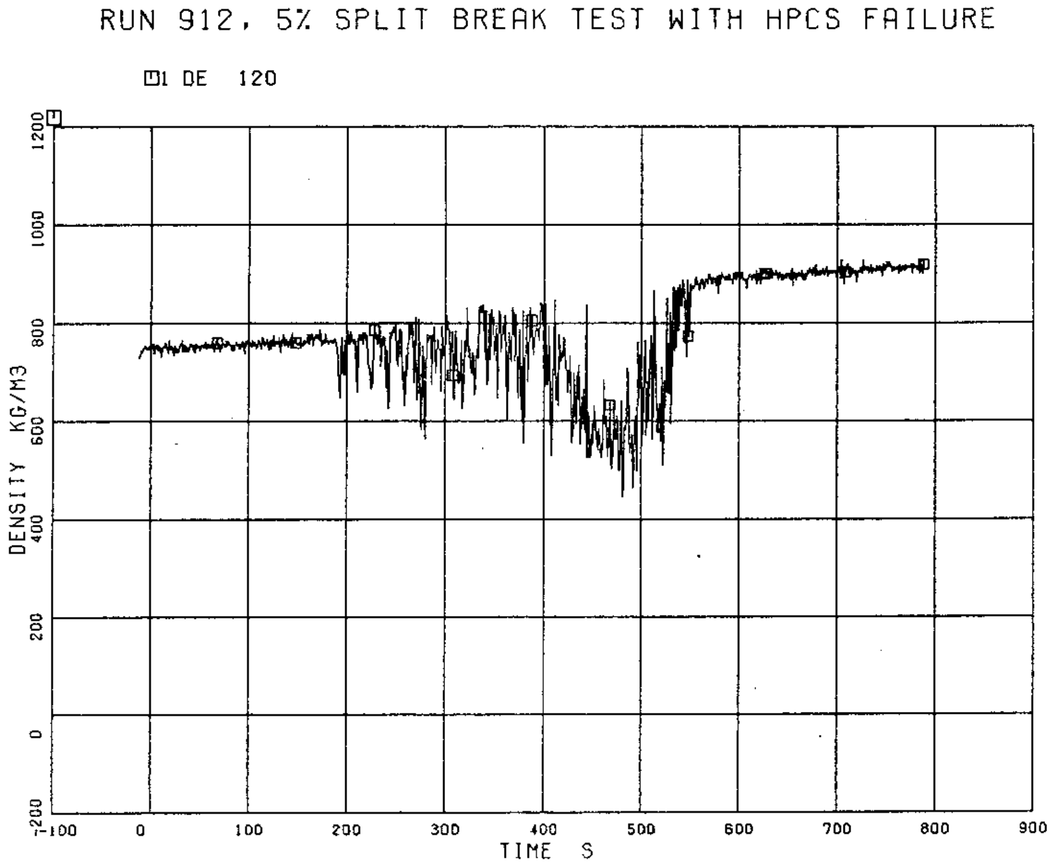


Fig. 5.71 Fluid Density at Intact Loop Jet Pump Outlet, Beam A

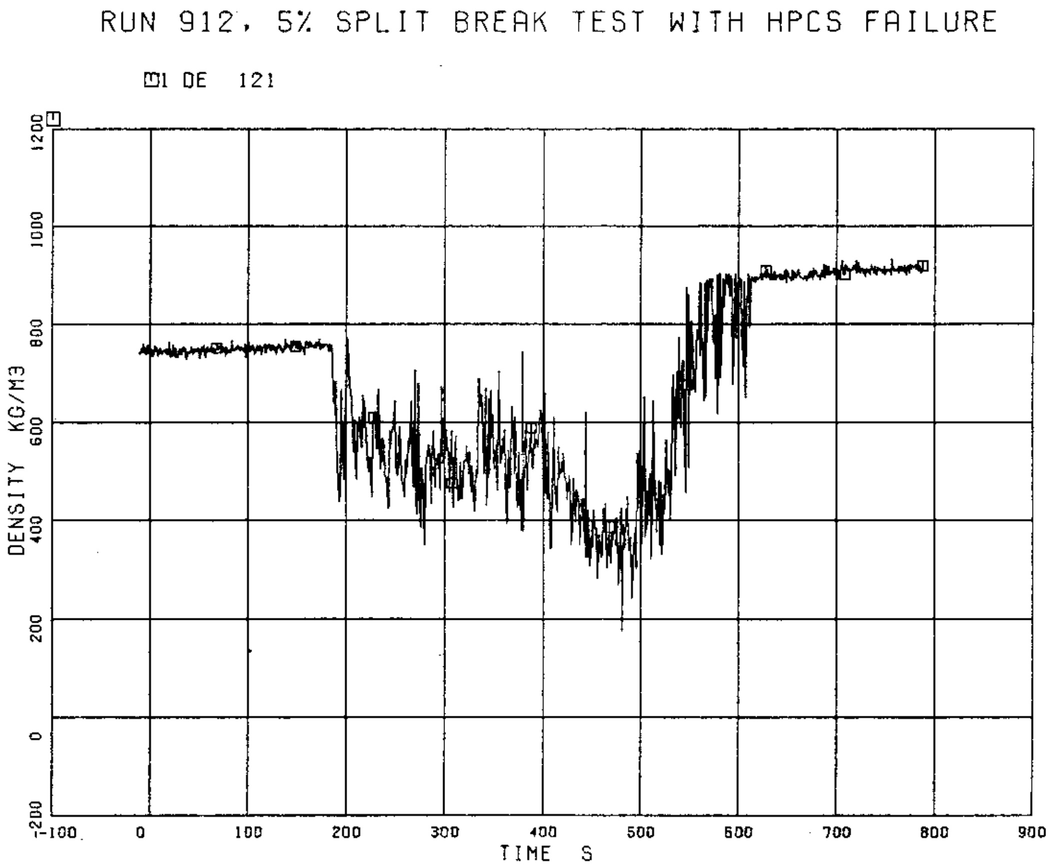


Fig. 5.72 Fluid Density at Intact Loop Jet Pump Outlet, Beam B

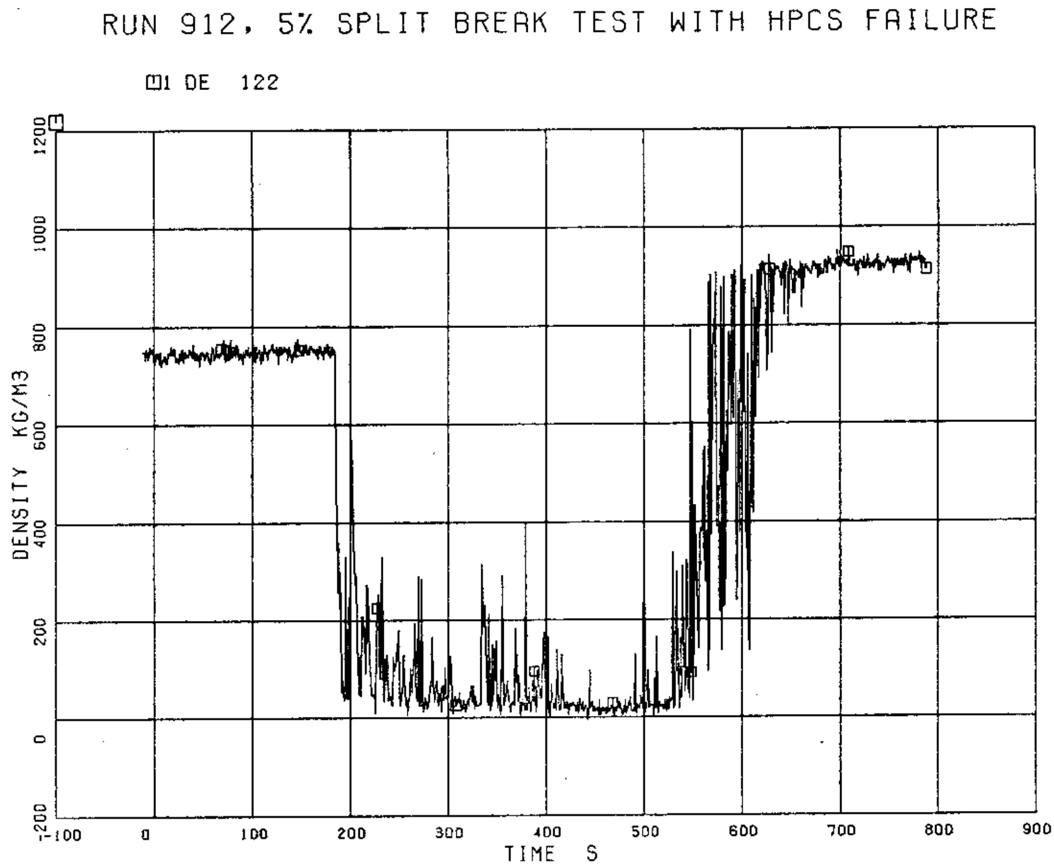


Fig. 5.73 Fluid Density at Intact Loop Jet Pump Outlet, Beam C

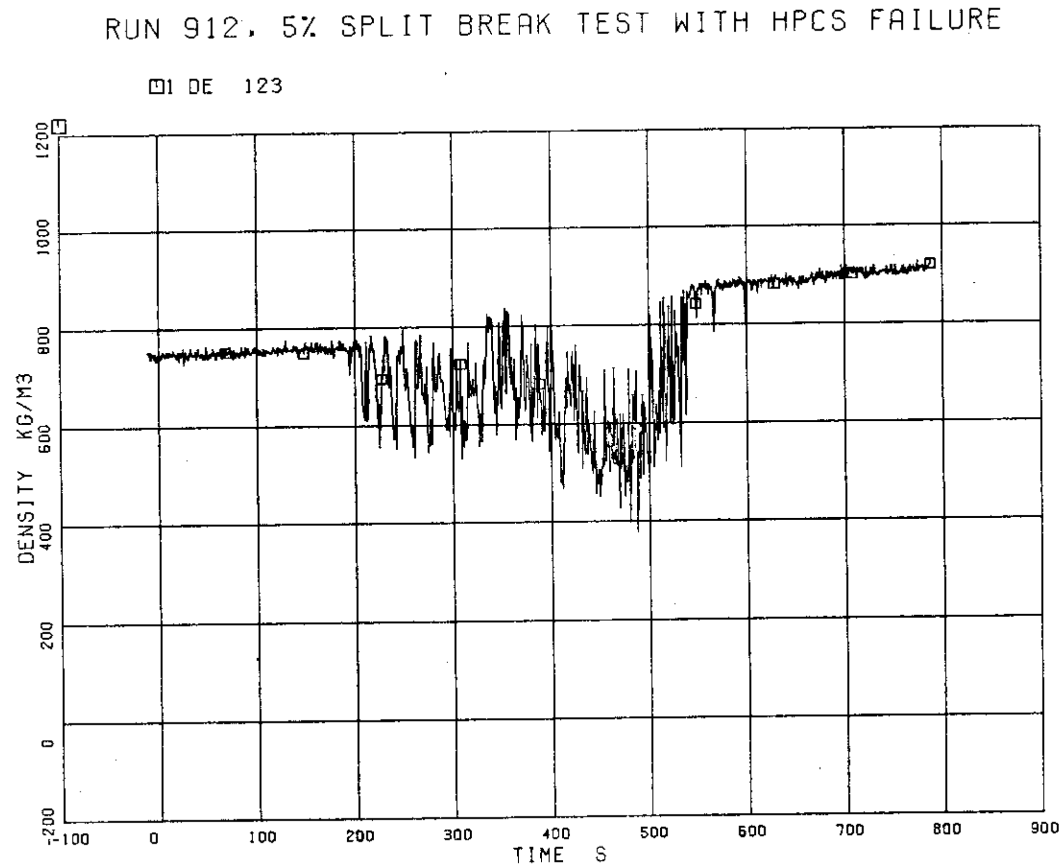


Fig. 5.74 Fluid Density at Broken Loop Jet Pump Outlet, Beam A

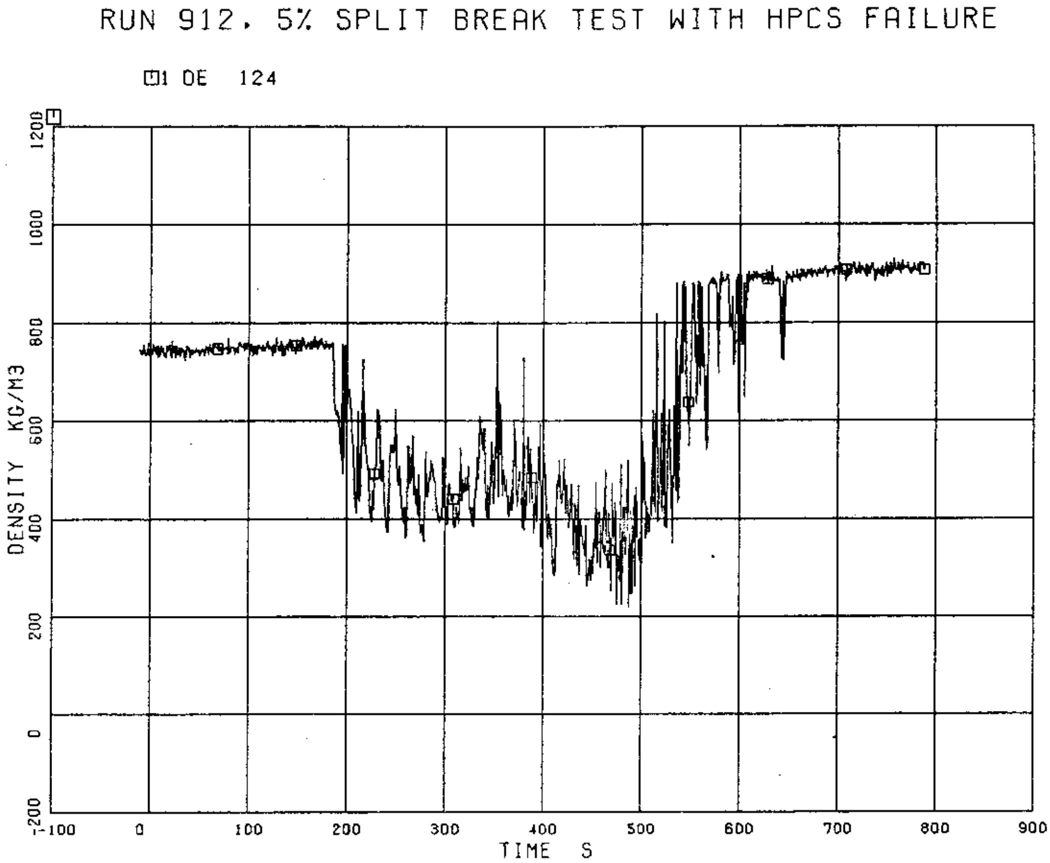


Fig. 5.75 Fluid Density at Broken Loop Jet Pump Outlet, Beam B

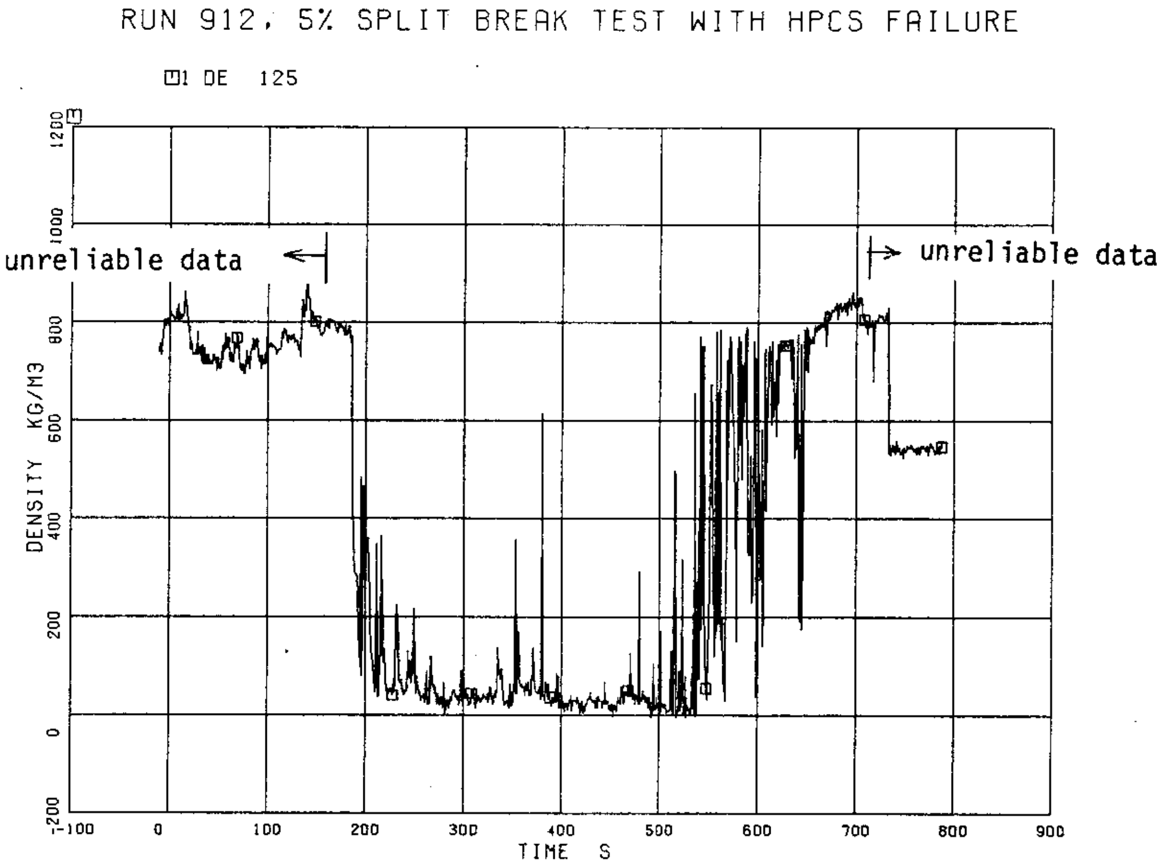


Fig. 5.76 Fluid Density at Broken Loop Jet Pump Outlet, Beam C

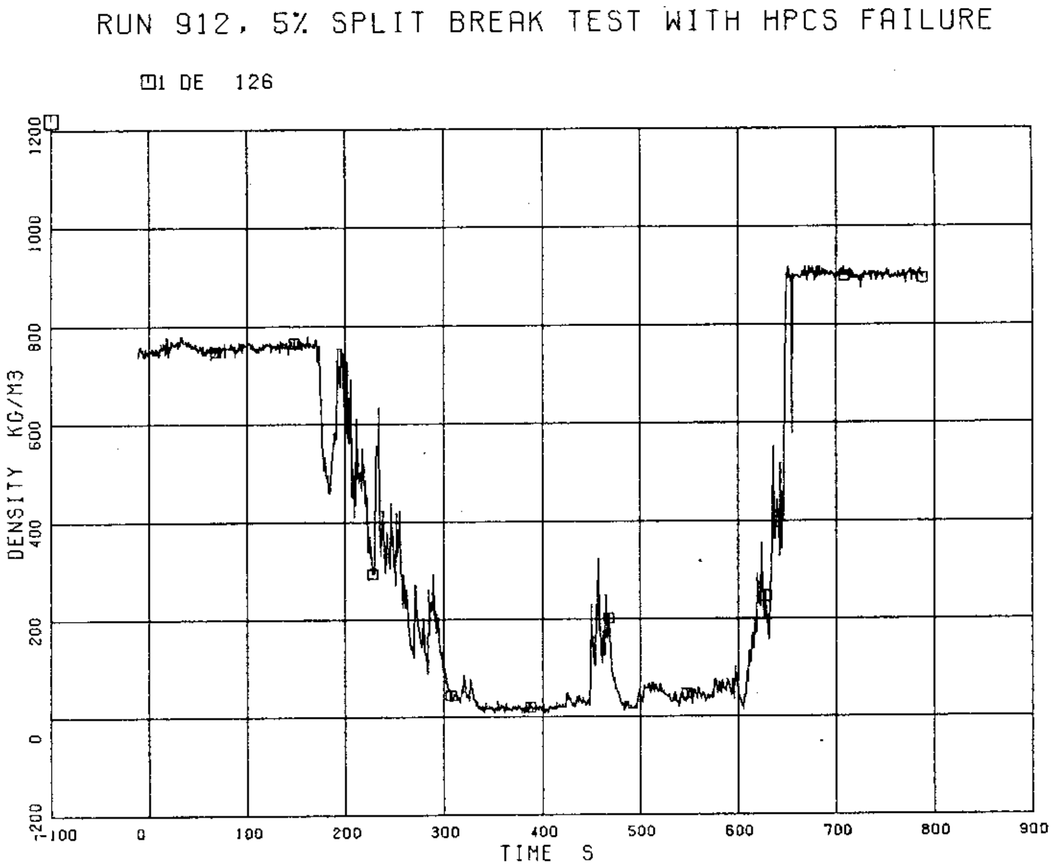


Fig. 5.77 Fluid Density at Pump Side of the Break, Beam A

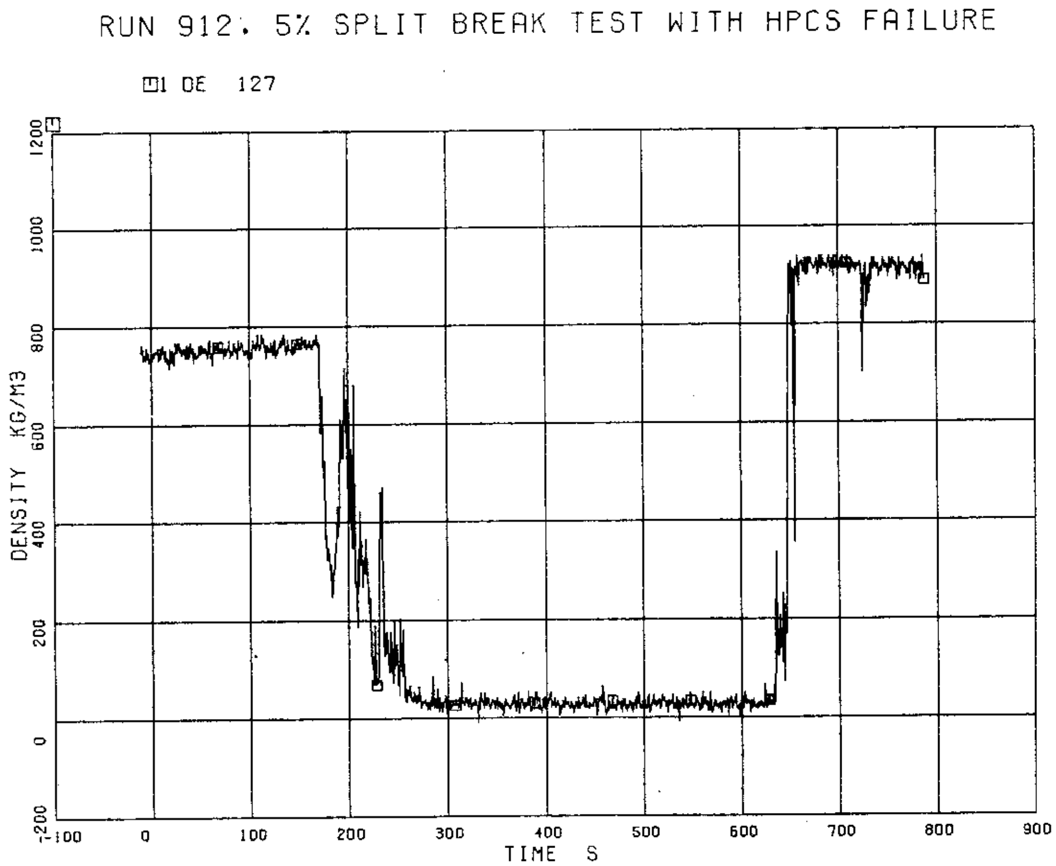


Fig. 5.78 Fluid Density at Pump Side of the Break, Beam B

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

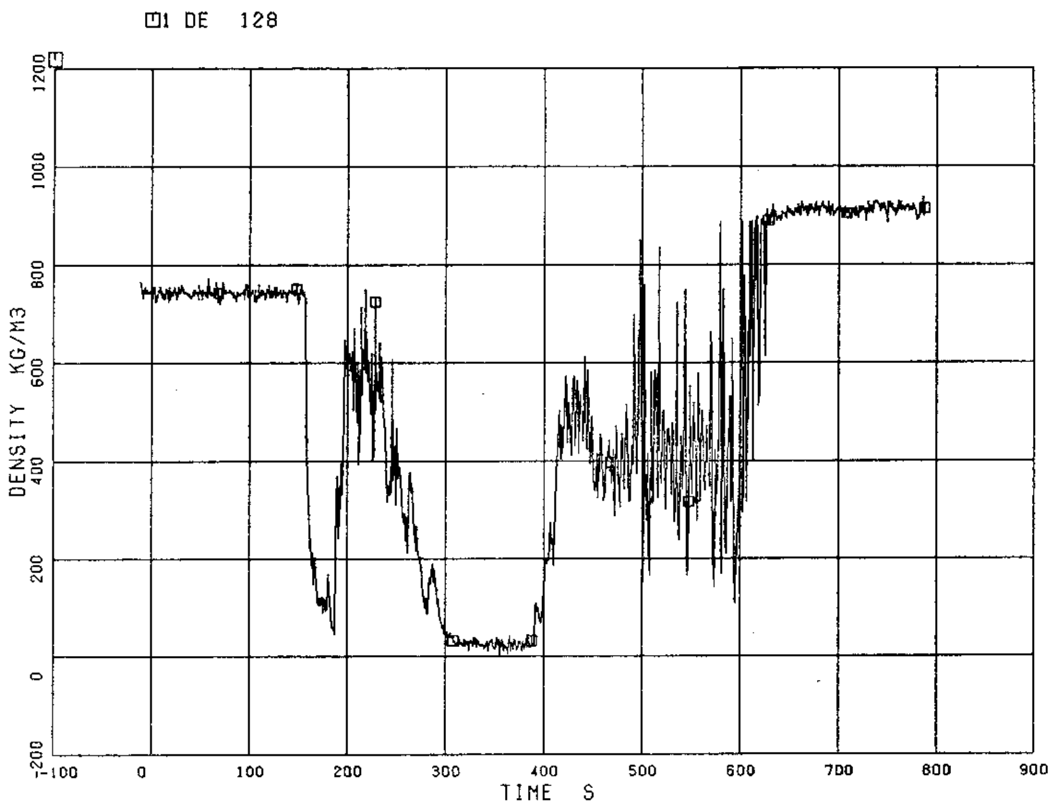


Fig. 5.79 Fluid Density at Vessel Side of the Break, Beam A

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

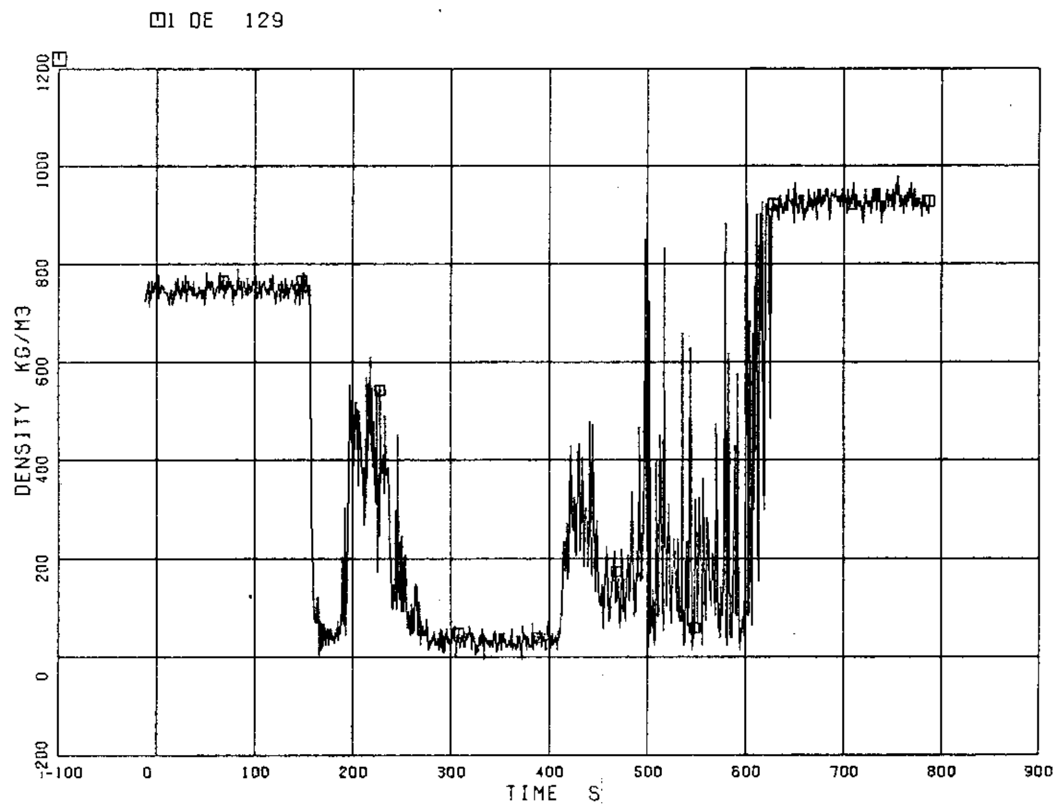


Fig. 5.80 Fluid Density at Vessel Side of the Break, Beam B

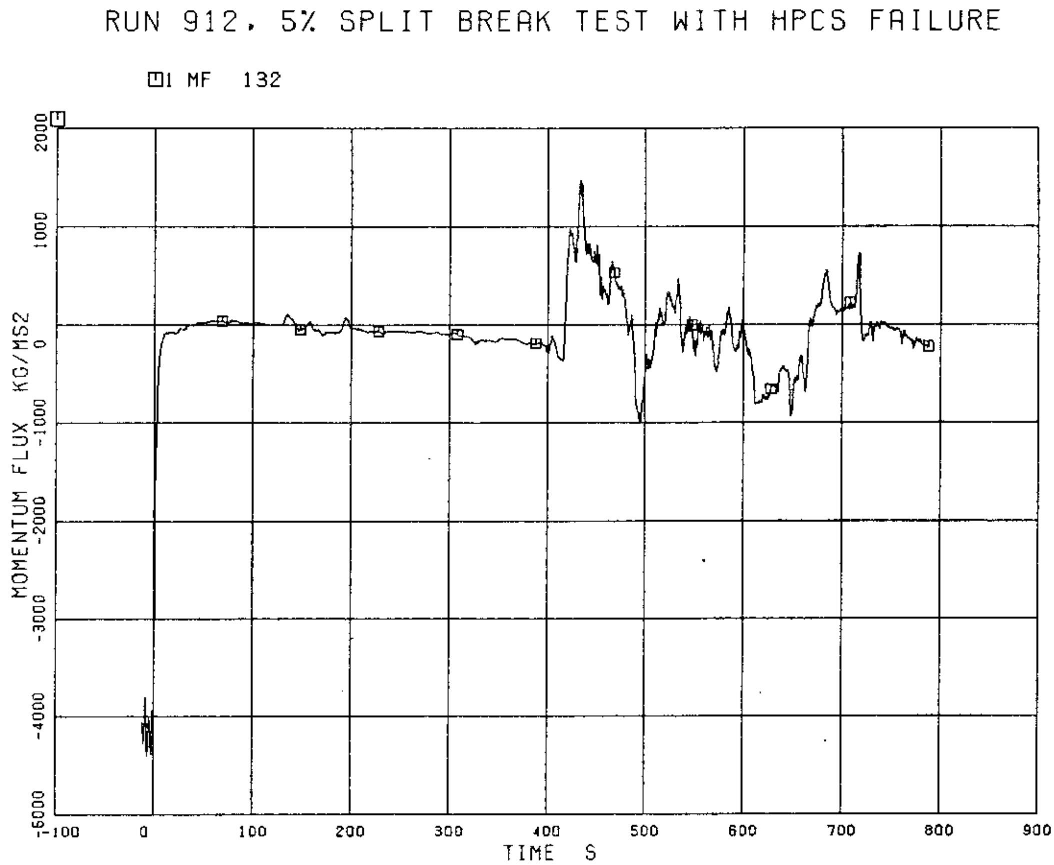


Fig. 5.81 Momentum Flux at Pump Side of the Break (Low Range)

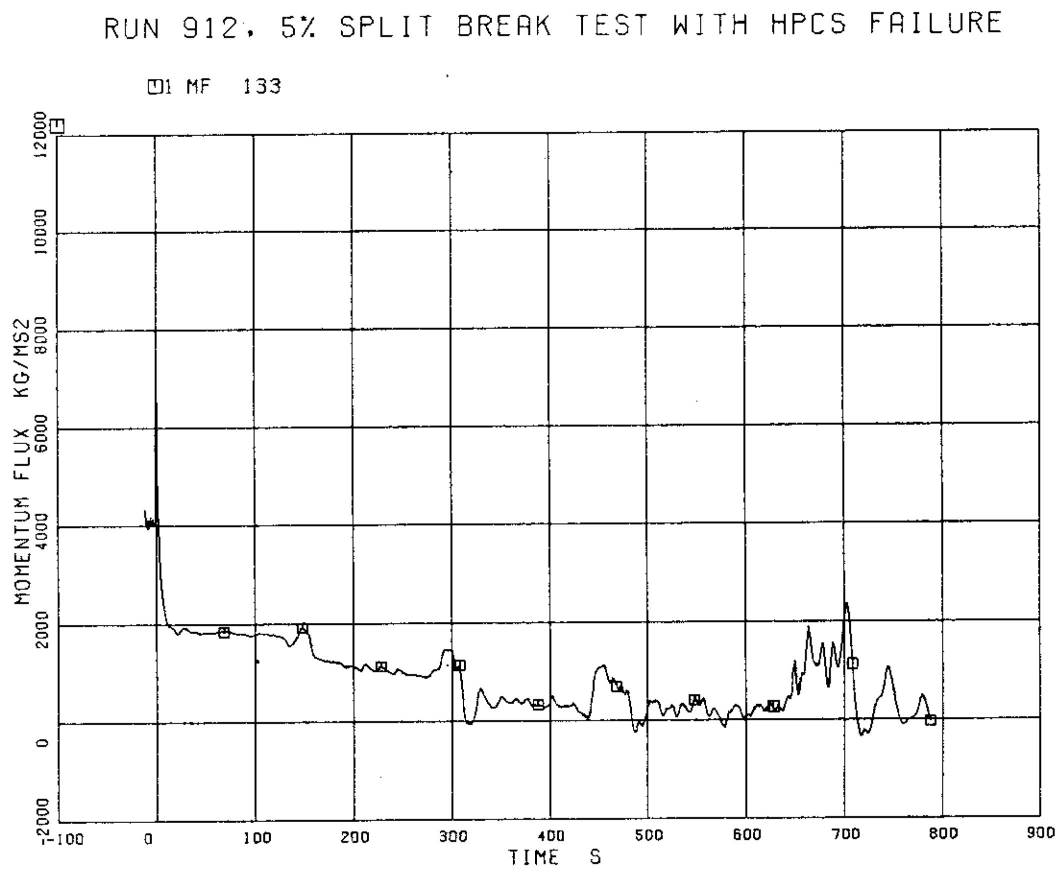


Fig. 5.82 Momentum Flux at Vessel Side of the Break (Low Range)

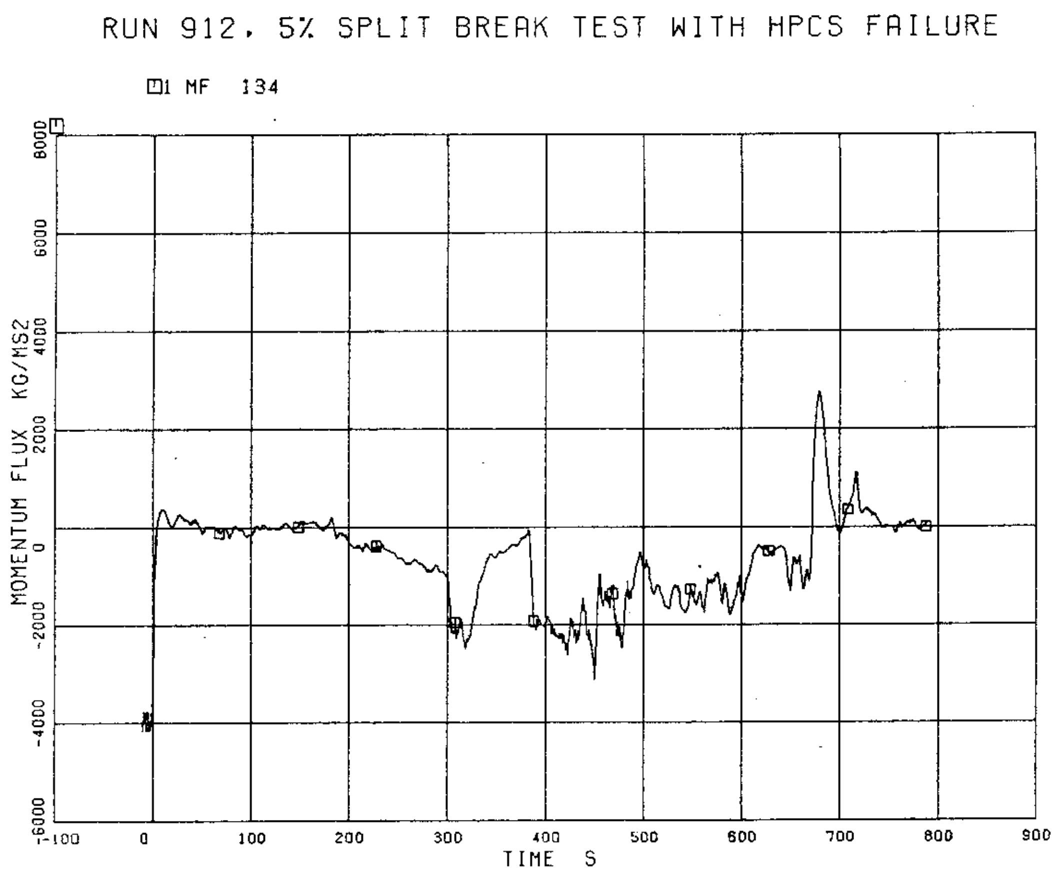


Fig. 5.83 Momentum Flux at Pump Side of the Break (High Range)

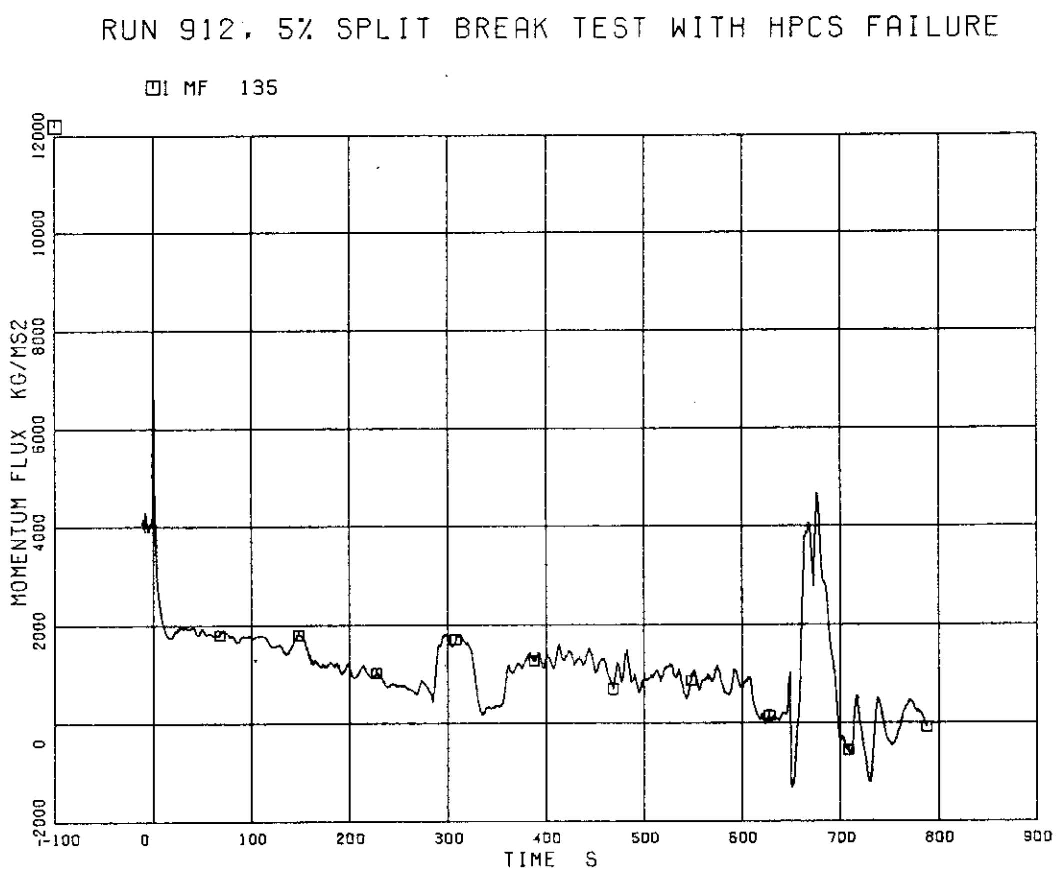


Fig. 5.84 Momentum Flux at Vessel Side of the Break (High Range)

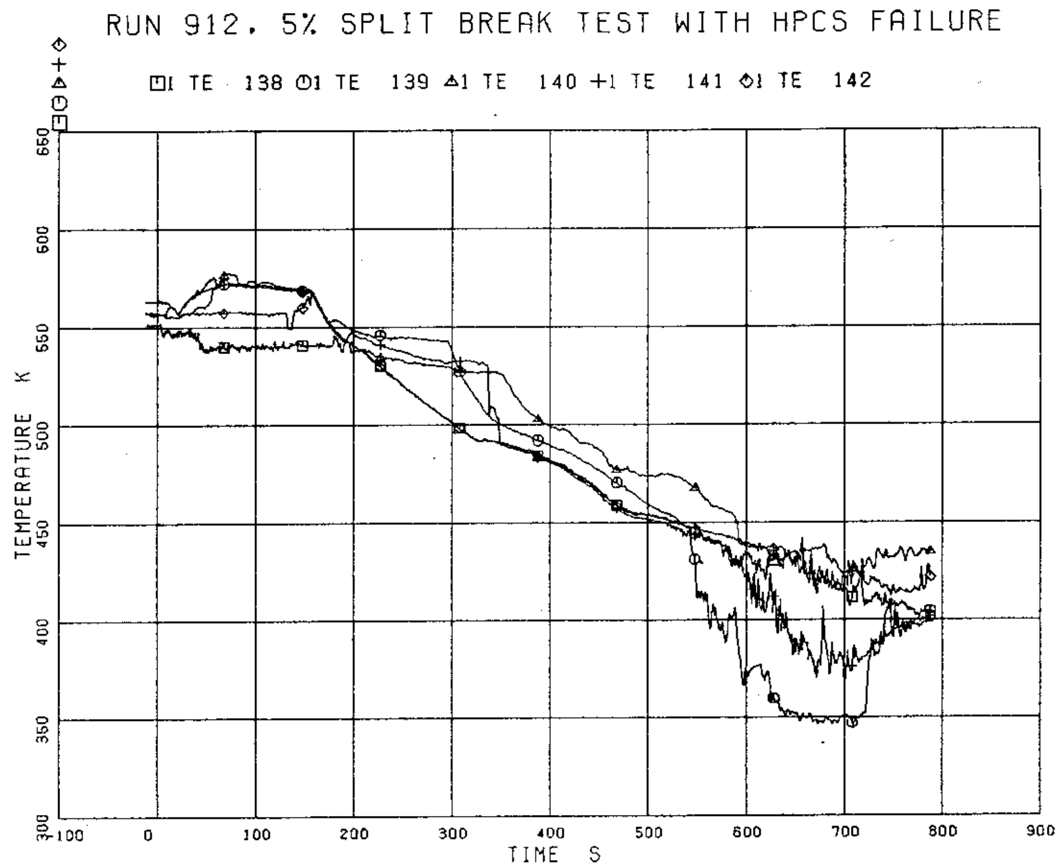


Fig. 5.85 Fluid Temperature in Pressure Vessel

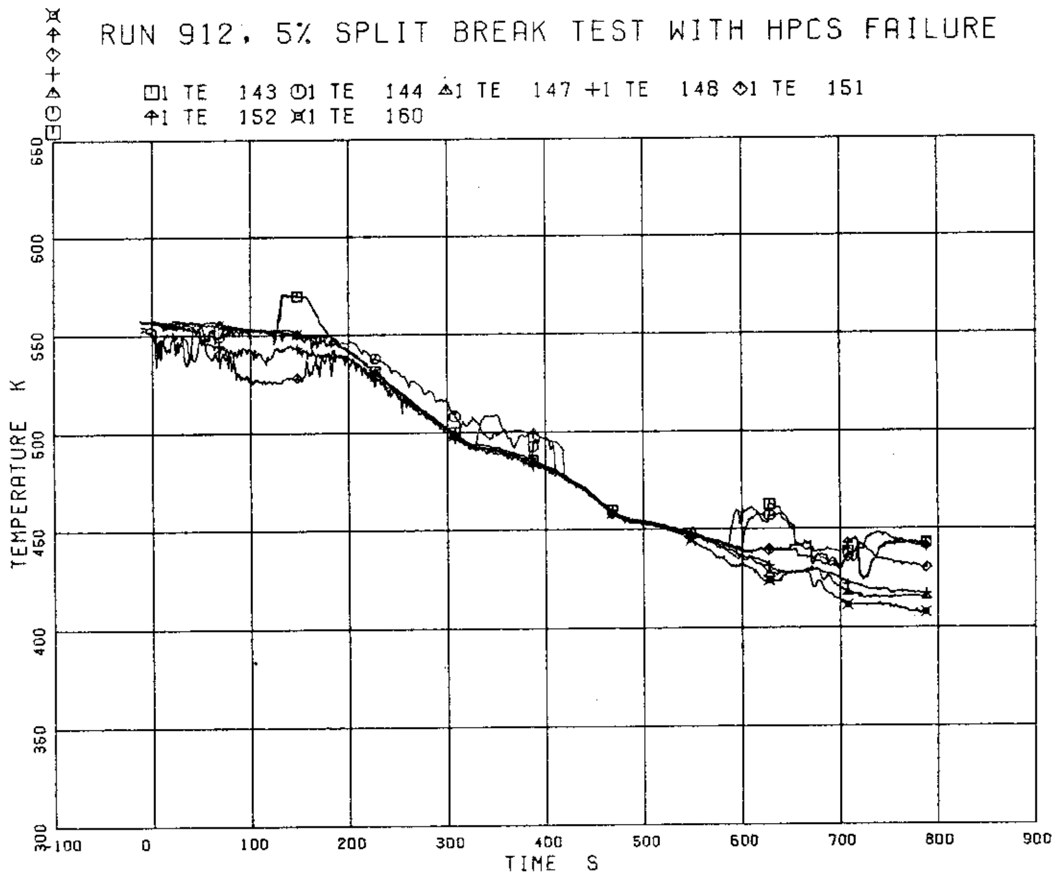


Fig. 5.86 Fluid Temperature in Intact Loop

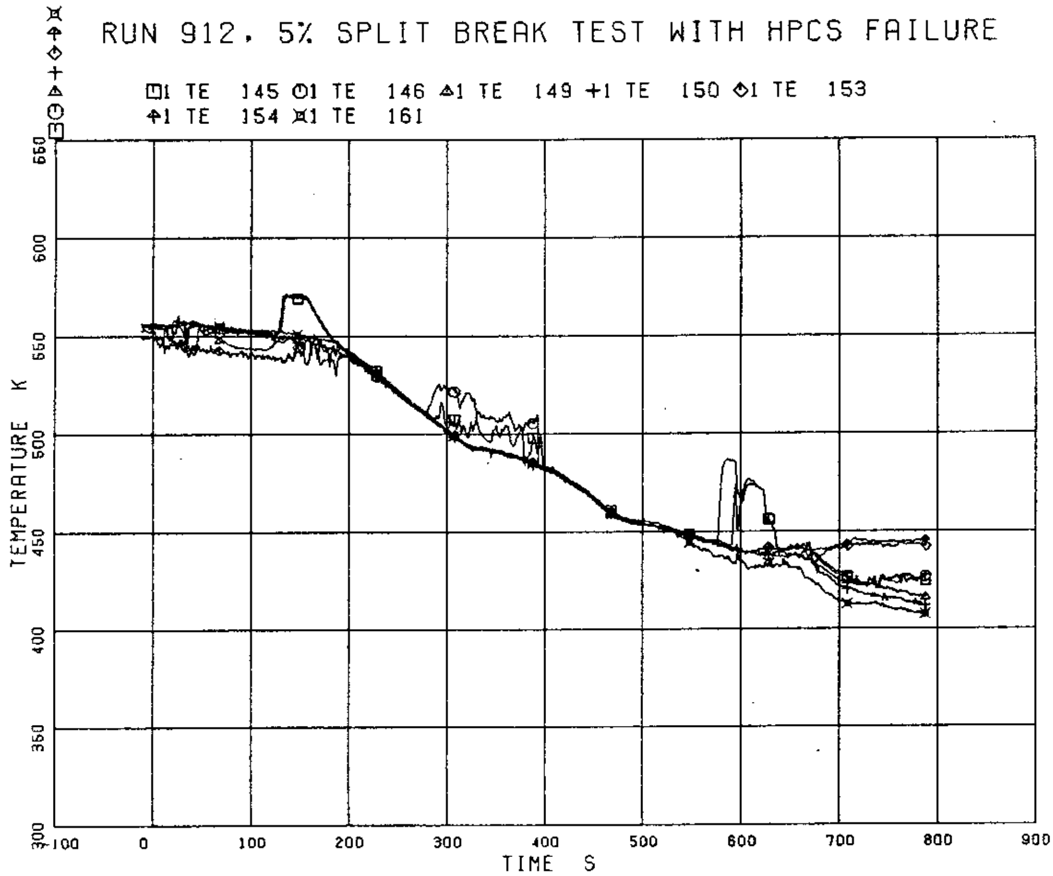


Fig. 5.87 Fluid Temperature in Broken Loop

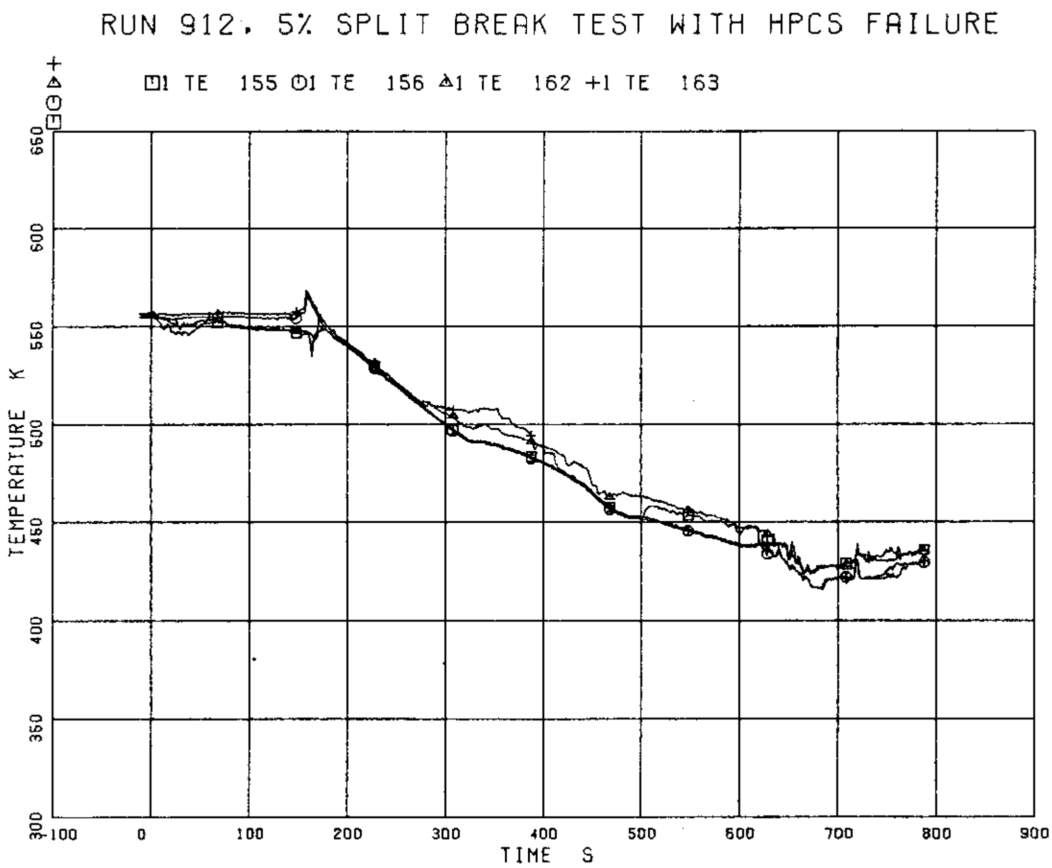


Fig. 5.88 Fluid Temperatures near the Breaks A and B

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

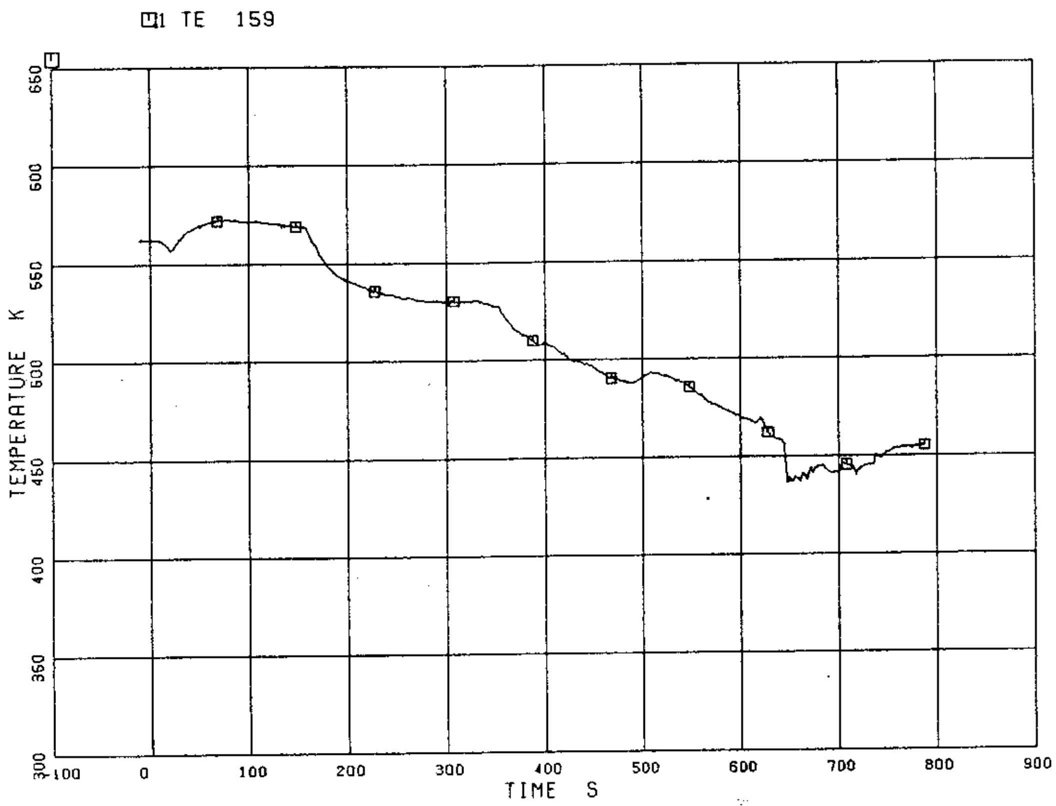


Fig. 5.89 Fluid Temperature in Steam Line

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

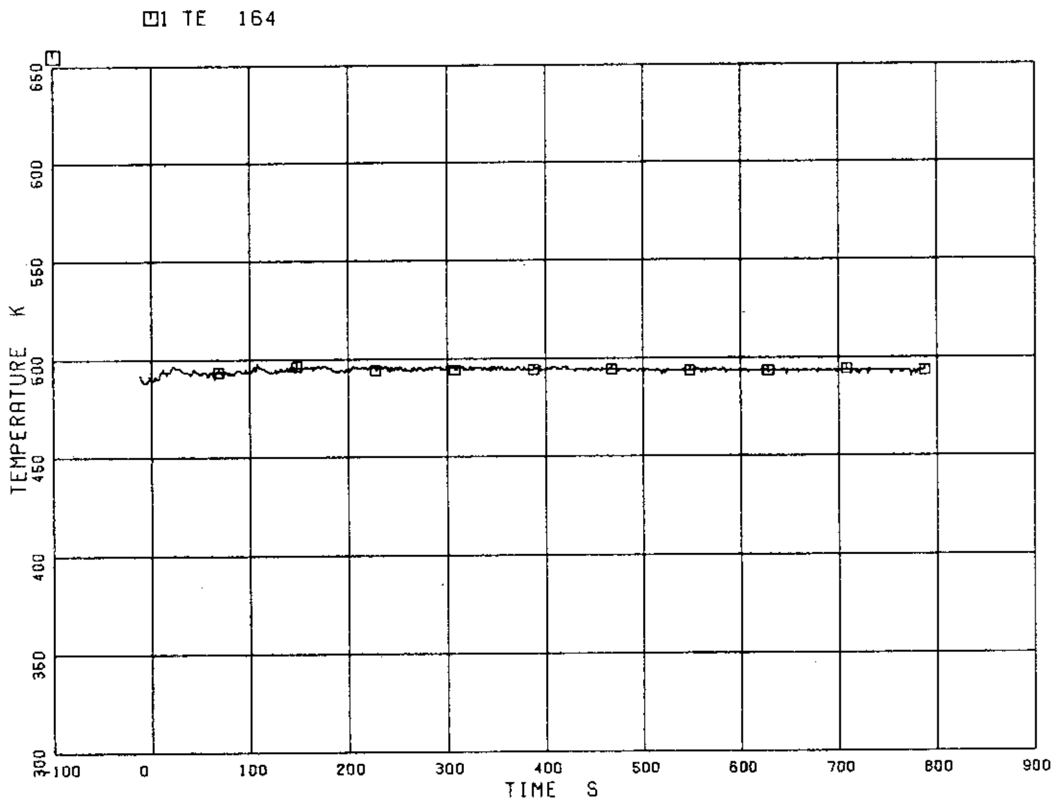


Fig. 5.90 Feed Water Temperature

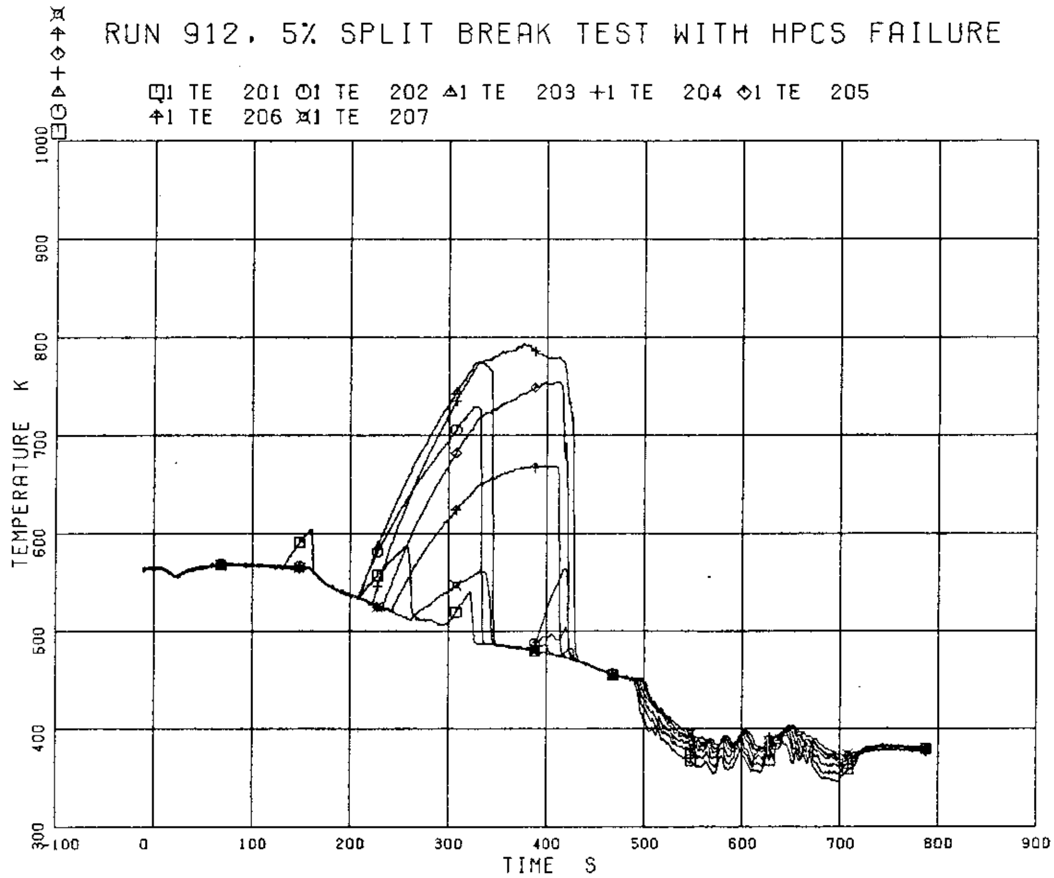


Fig. 5.91 Heater Rod Surface Temperature of A11 Rod

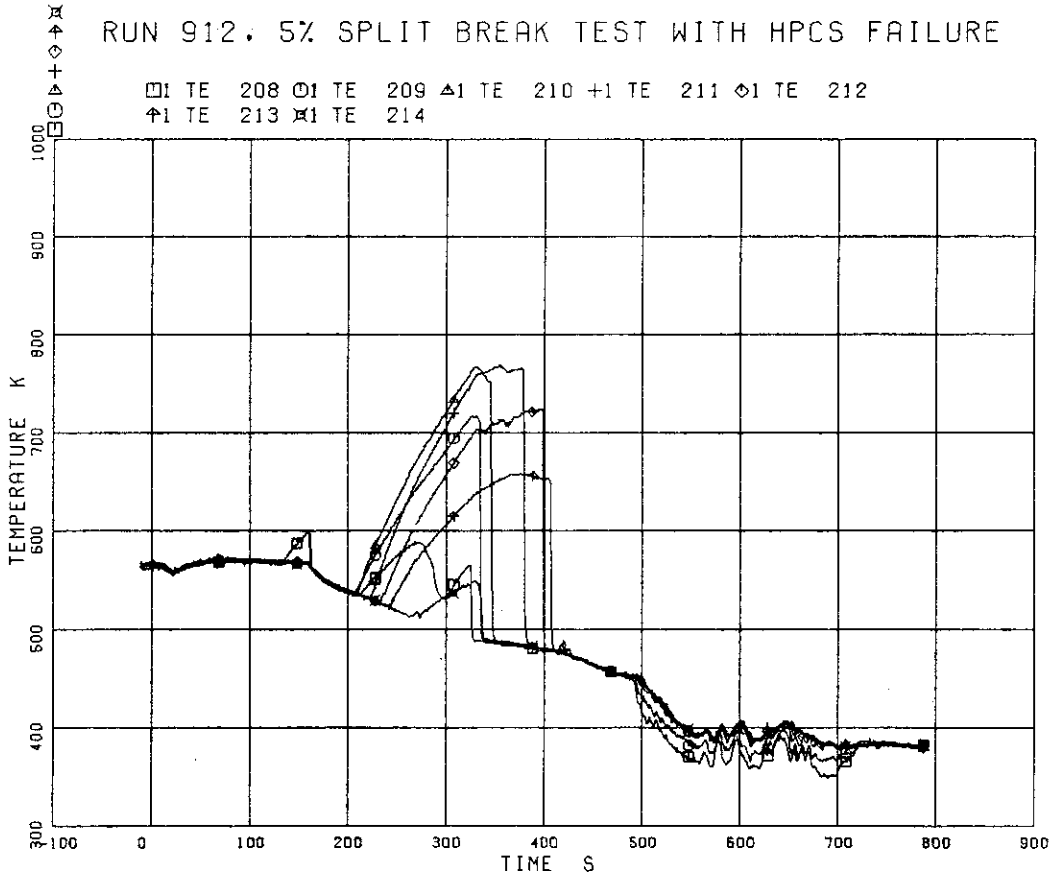


Fig. 5.92 Heater Rod Surface Temperature of A12 Rod

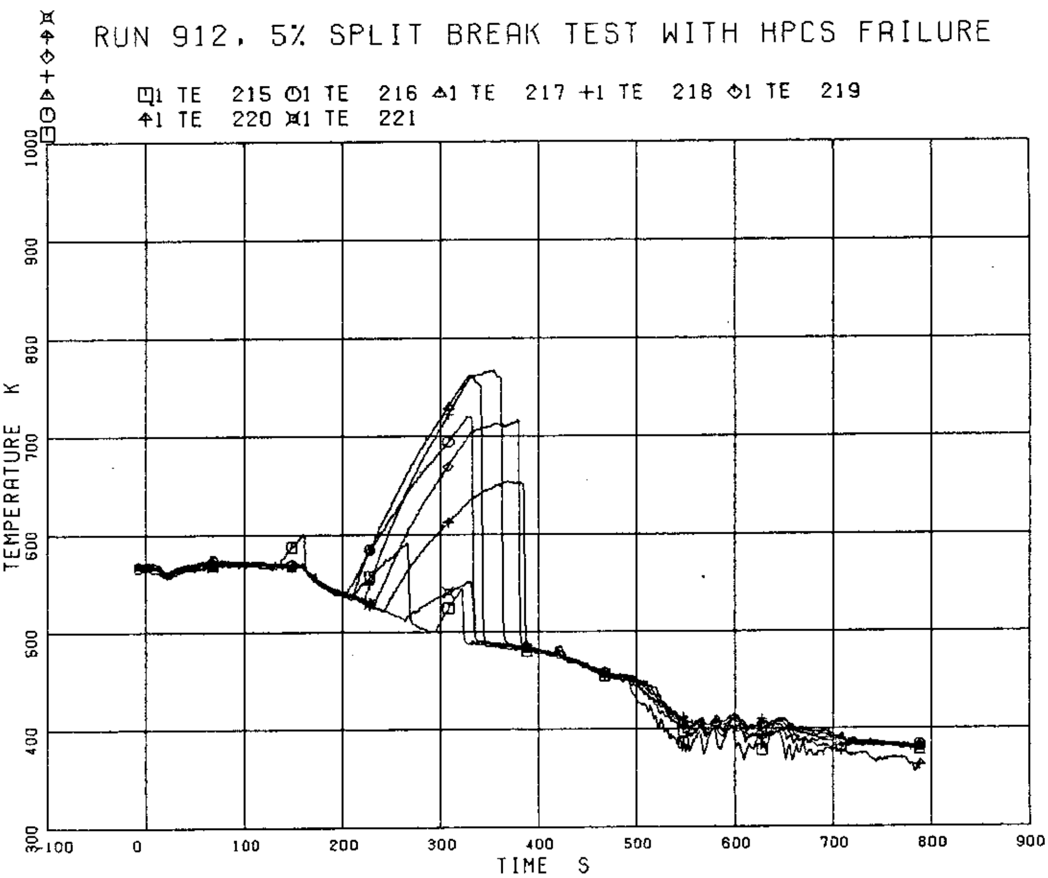


Fig. 5.93 Heater Rod Surface Temperature of A13 Rod

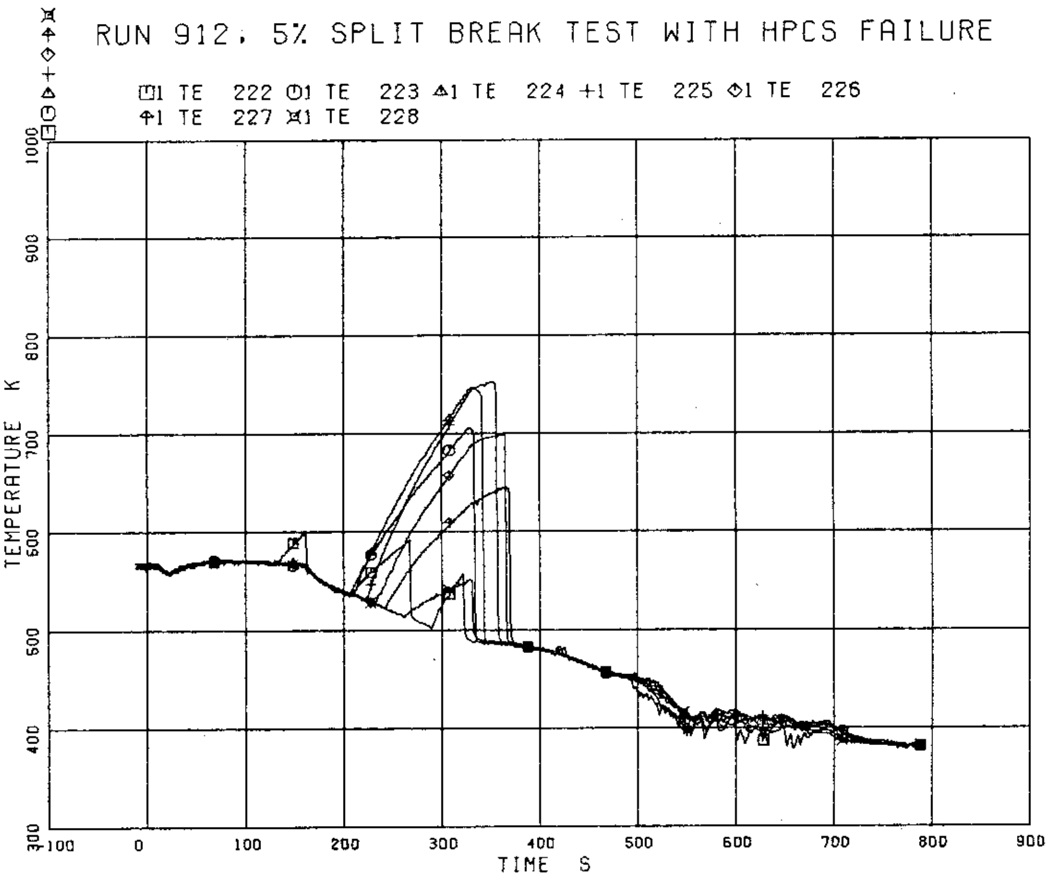


Fig. 5.94 Heater Rod Surface Temperature of A14 Rod

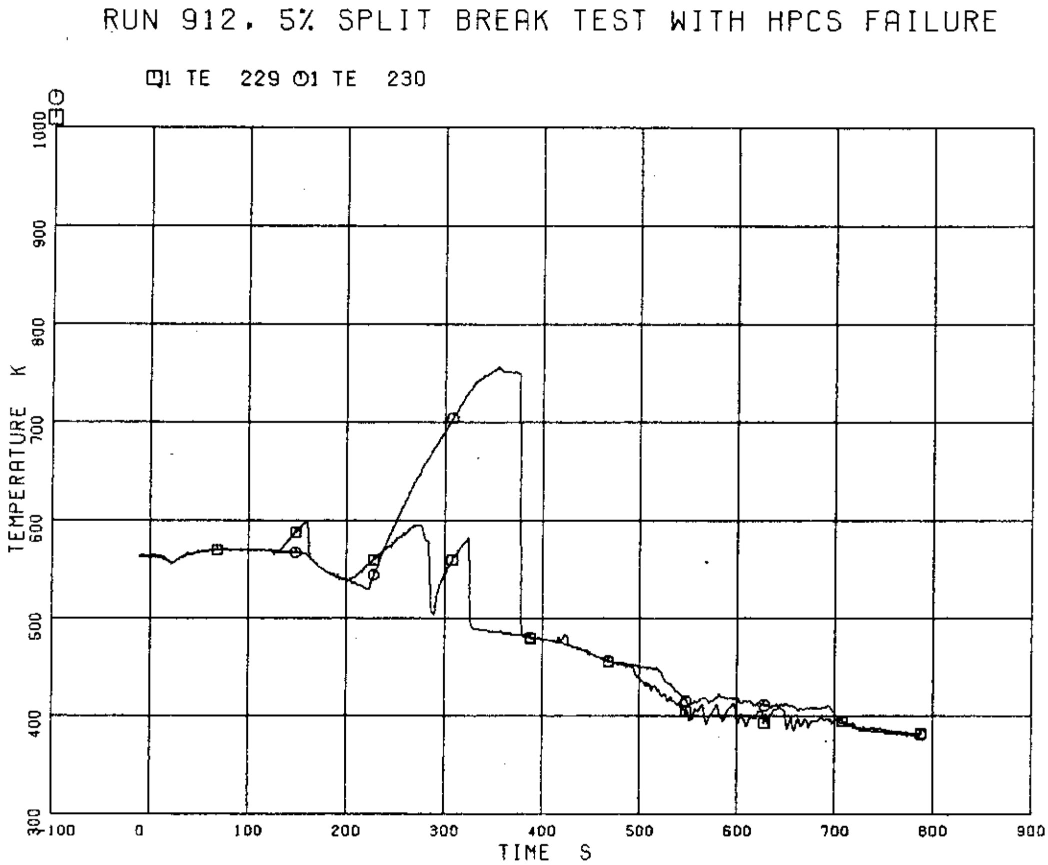


Fig. 5.95 Heater Rod Surface Temperature of A15 Rod

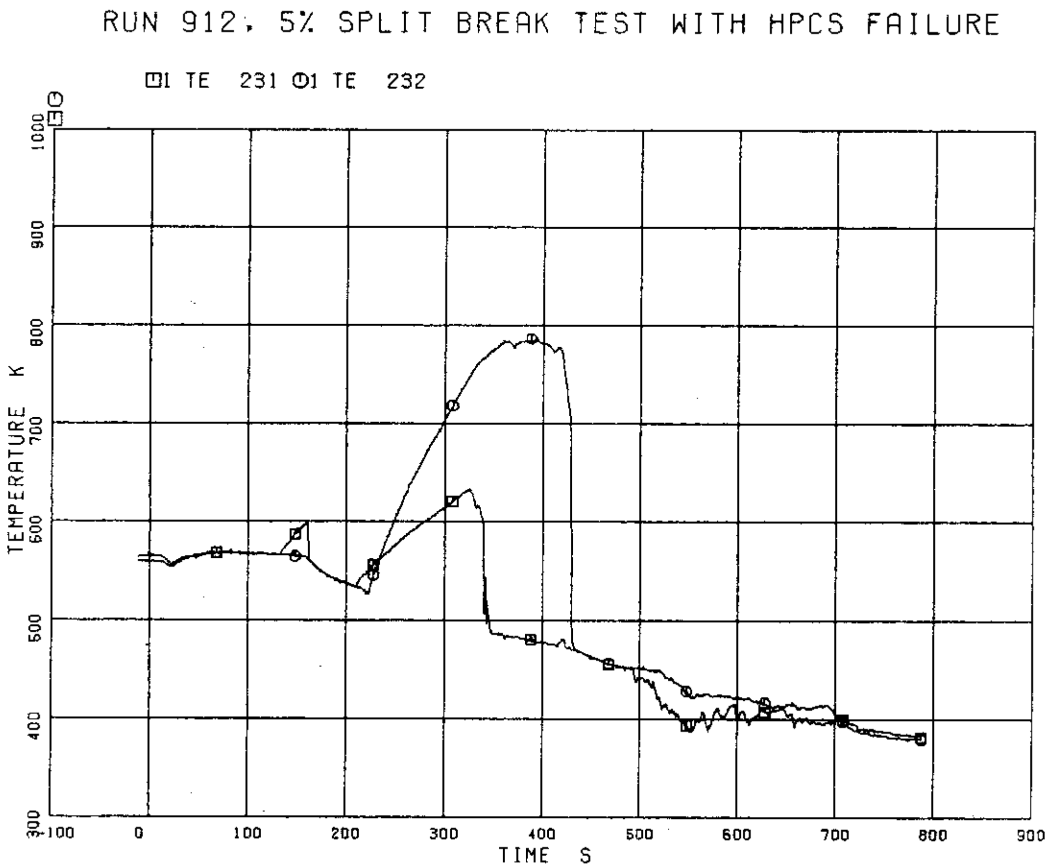


Fig. 5.96 Heater Rod Surface Temperature of A17 Rod

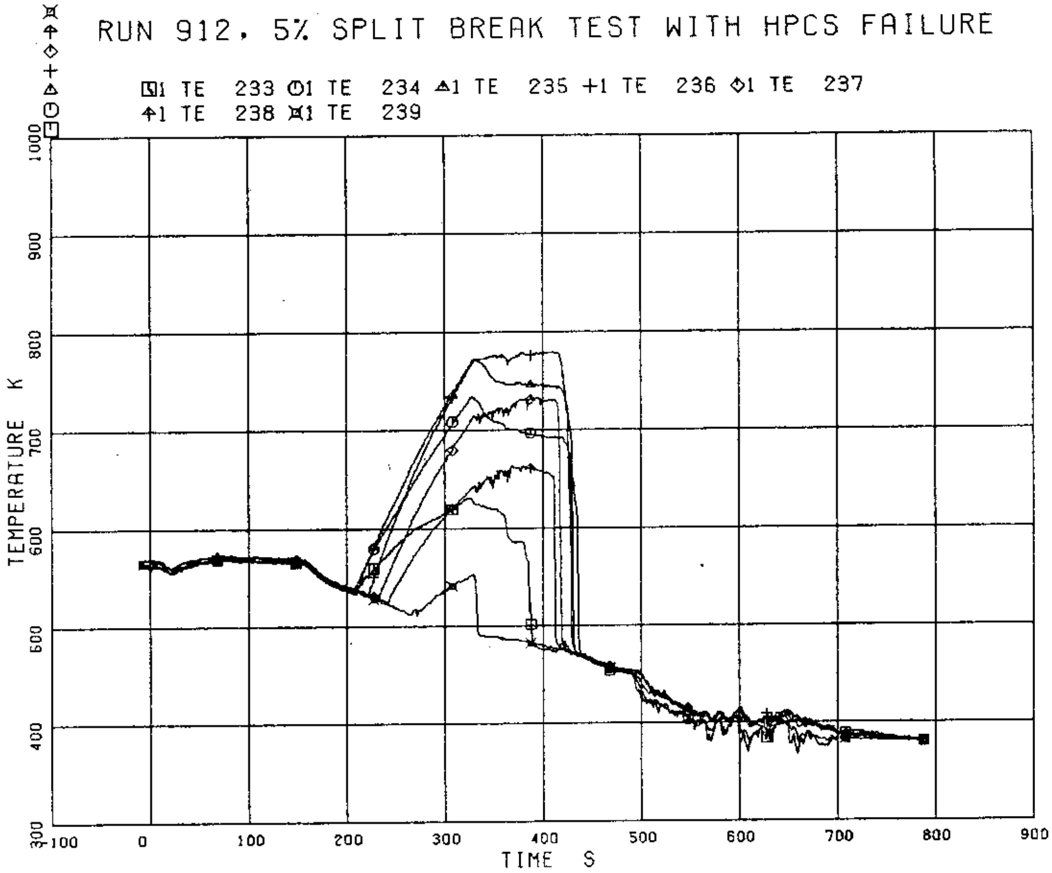


Fig. 5.97 Heater Rod Surface Temperature of A22 Rod

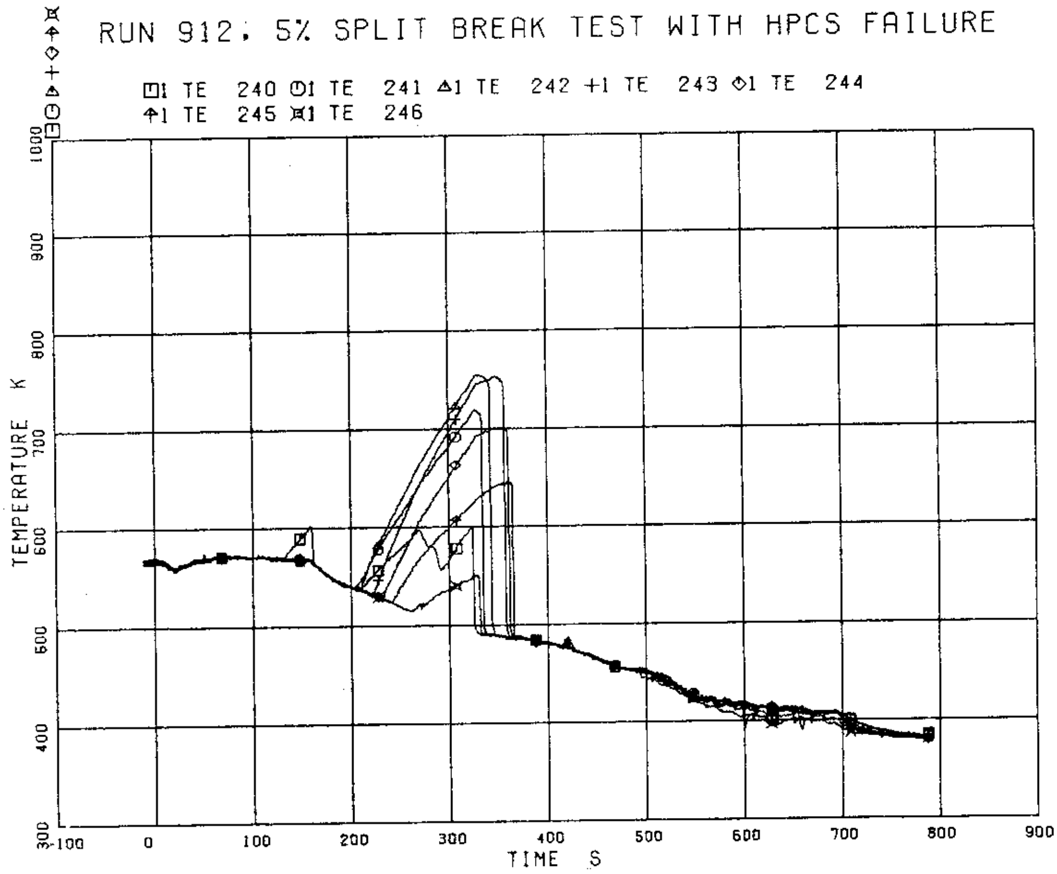


Fig. 5.98 Heater Rod Surface Temperature of A24 Rod

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

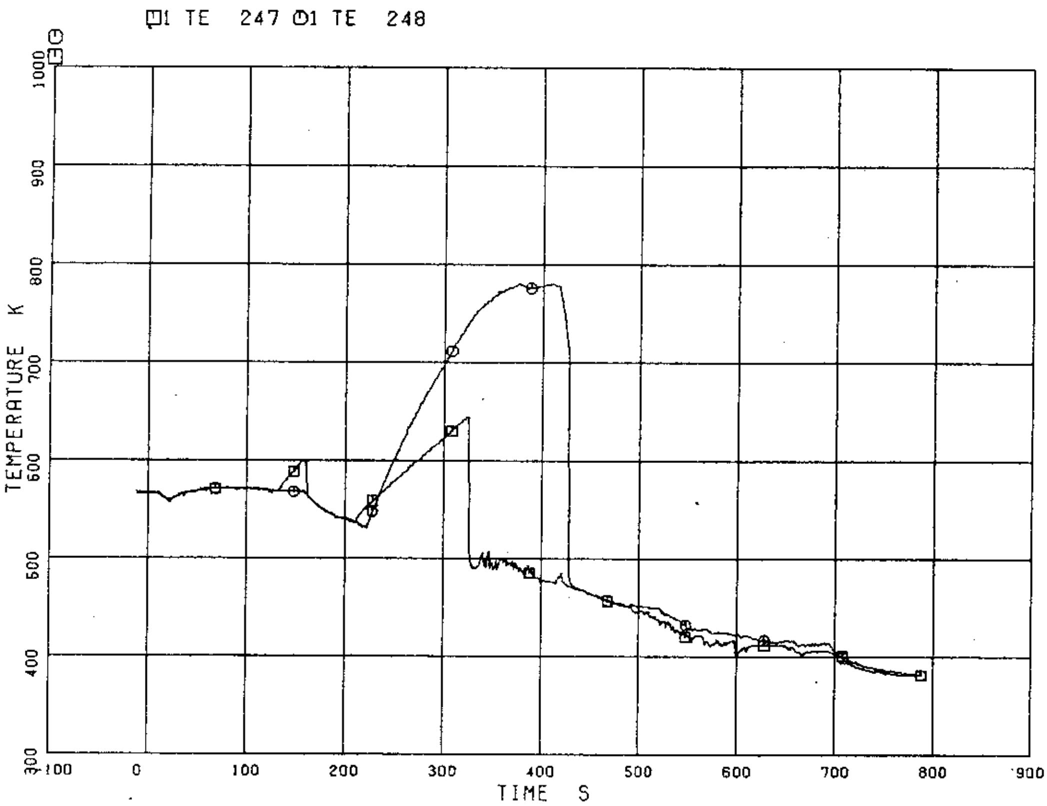


Fig. 5.99 Heater Rod Surface Temperature of A26 Rod

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

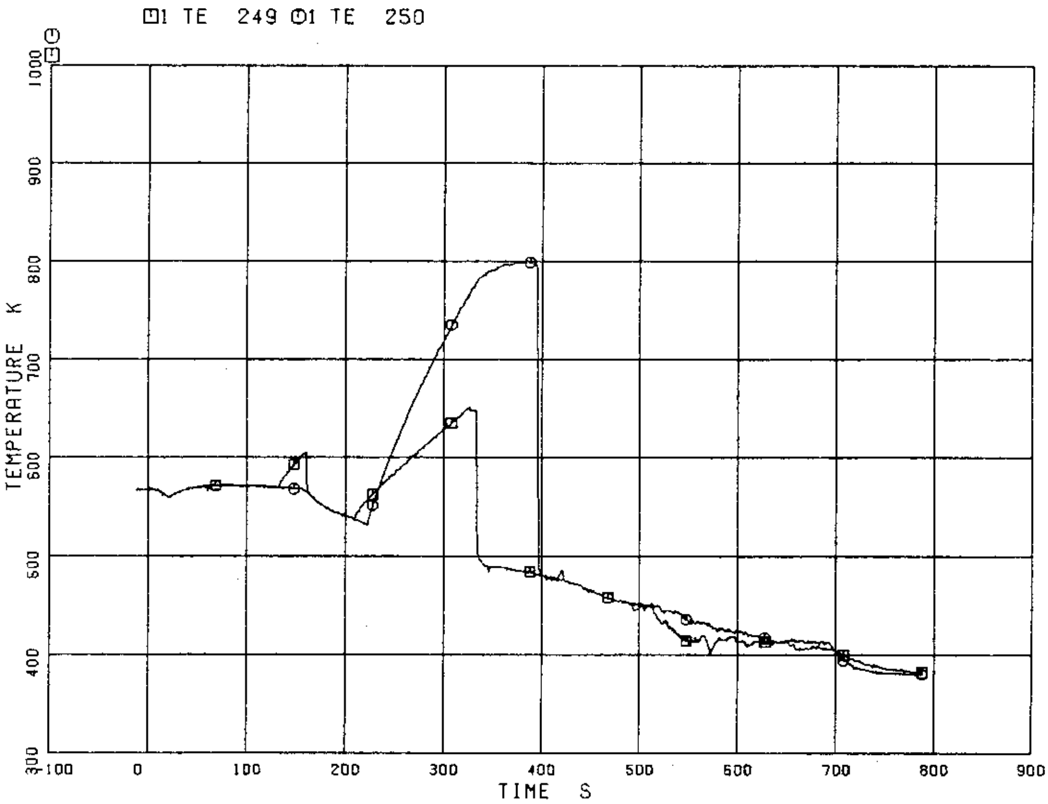


Fig. 5.100 Heater Rod Surface Temperature of A28 Rod

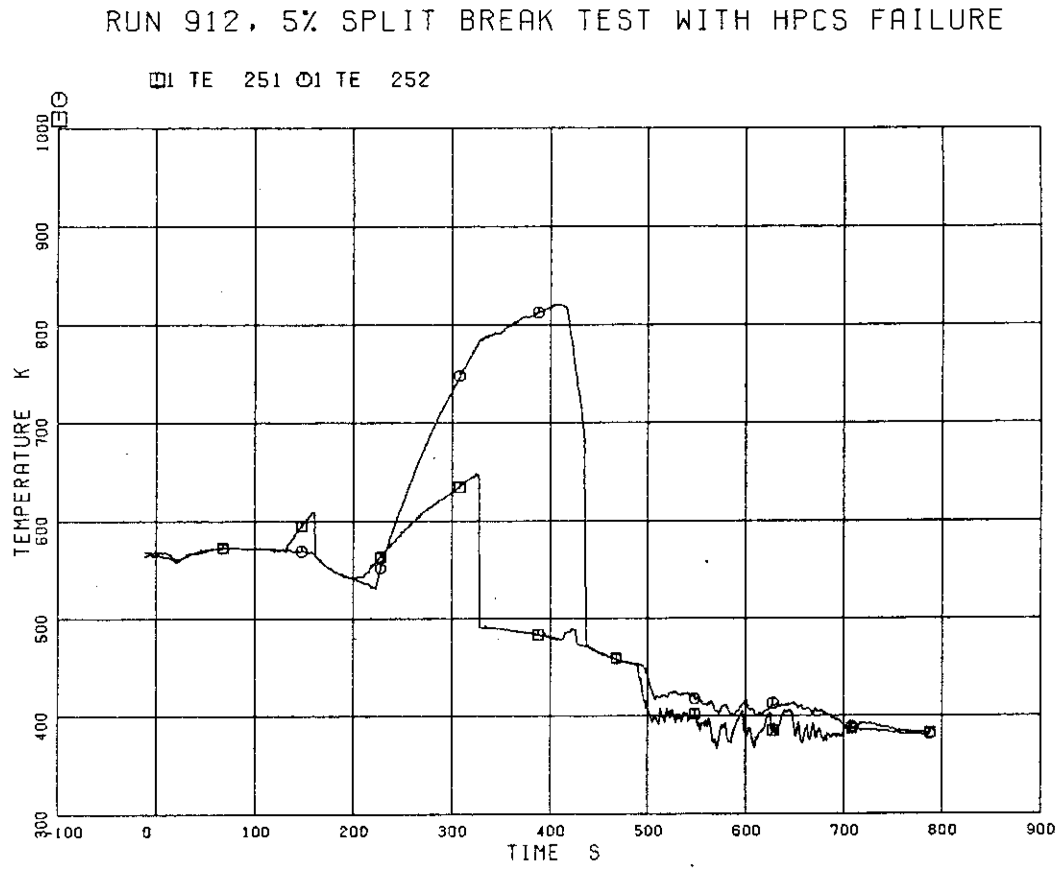


Fig. 5.101 Heater Rod Surface Temperature of A31 Rod

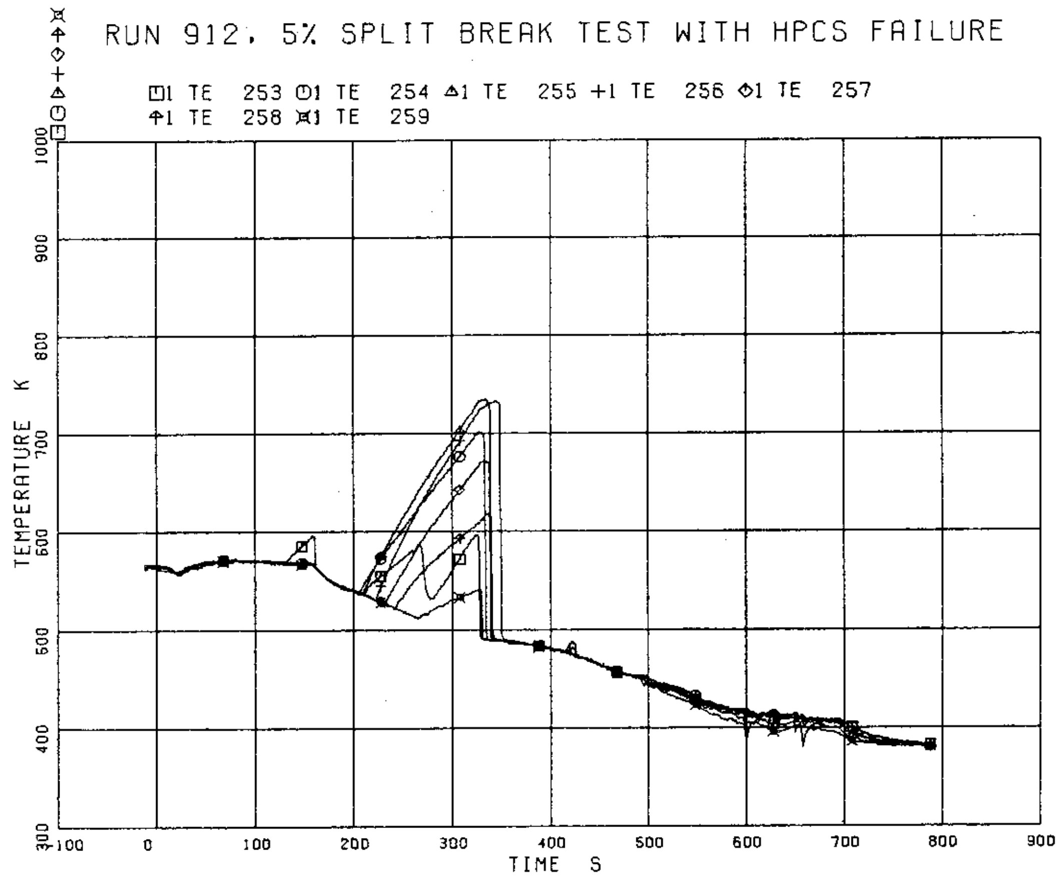


Fig. 5.102 Heater Rod Surface Temperature of A33 Rod

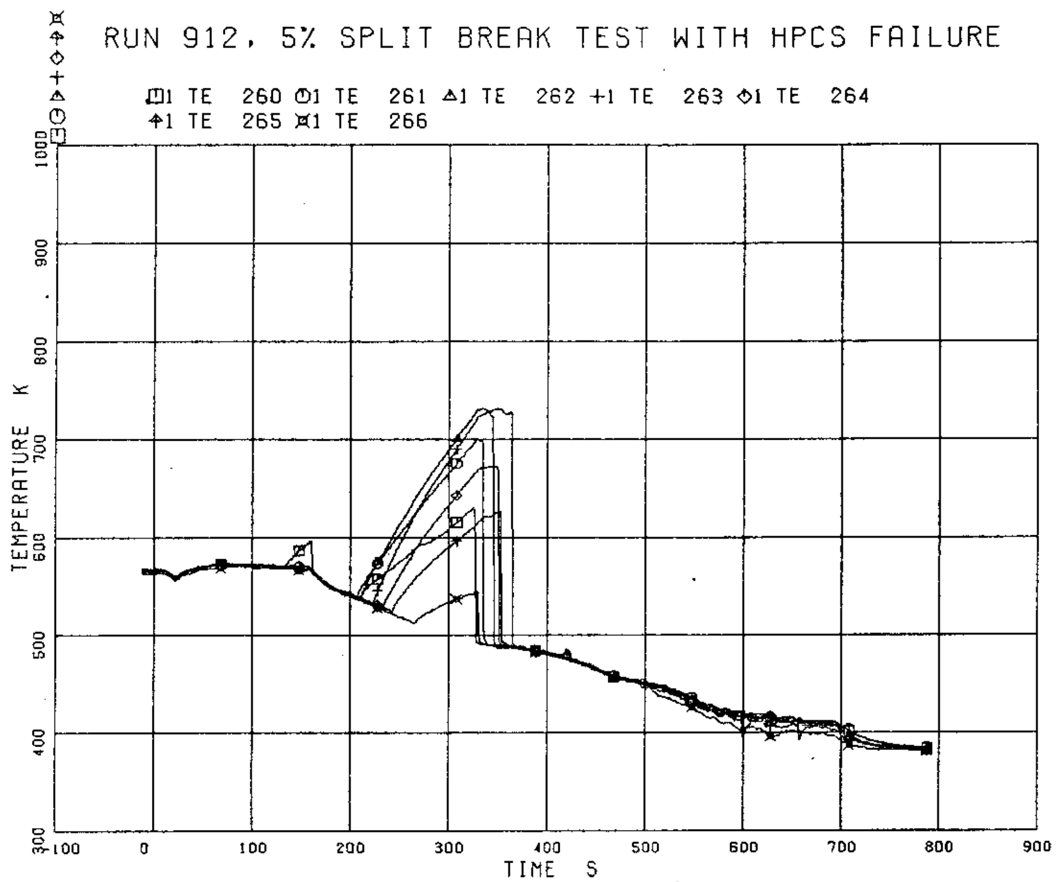


Fig. 5.103 Heater Rod Surface Temperature of A34 Rod

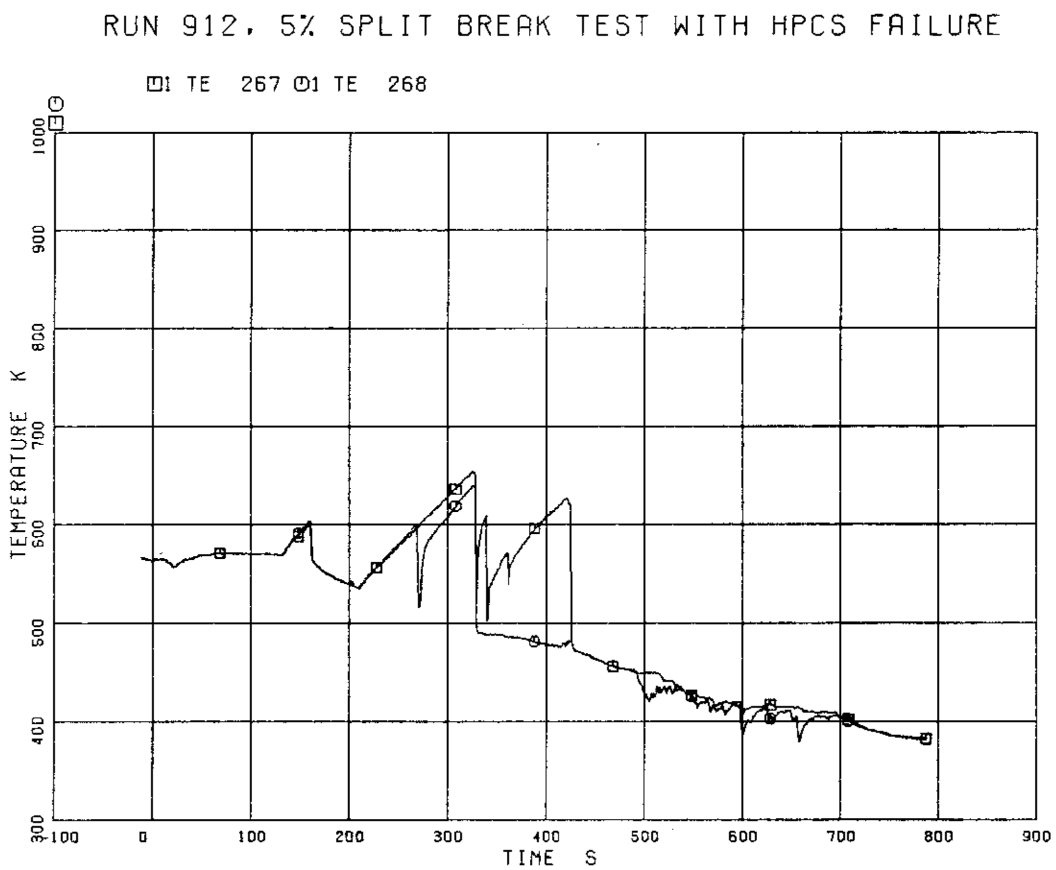


Fig. 5.104 Heater Rod Surface Temperature of A37 Rod

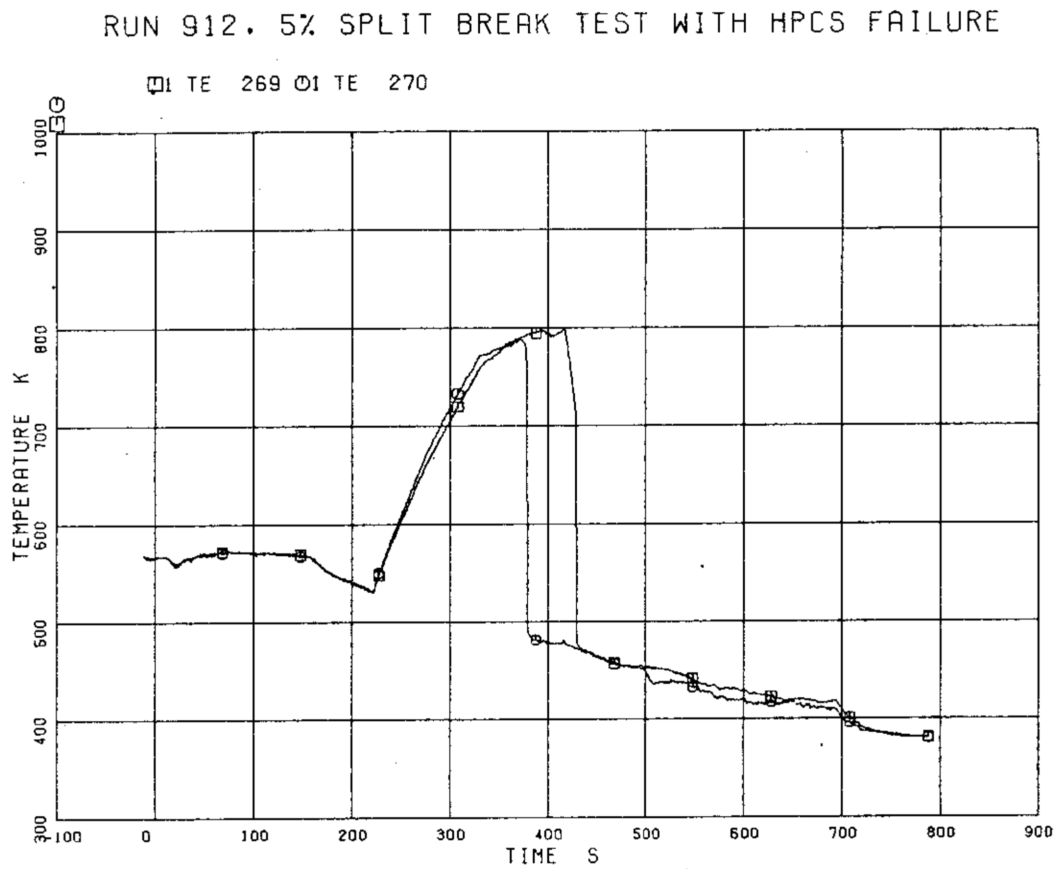


Fig. 5.105 Heater Rod Surface Temperature of A42 Rod

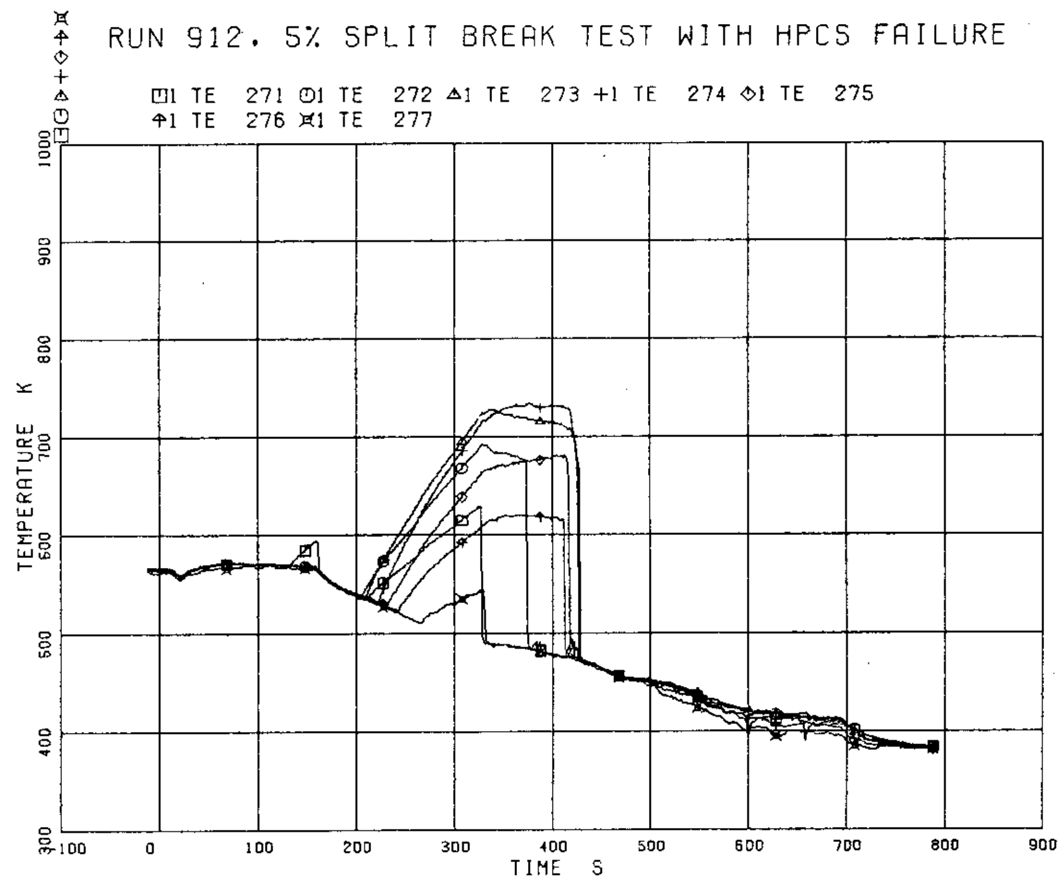


Fig. 5.106 Heater Rod Surface Temperature of A44 Rod

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

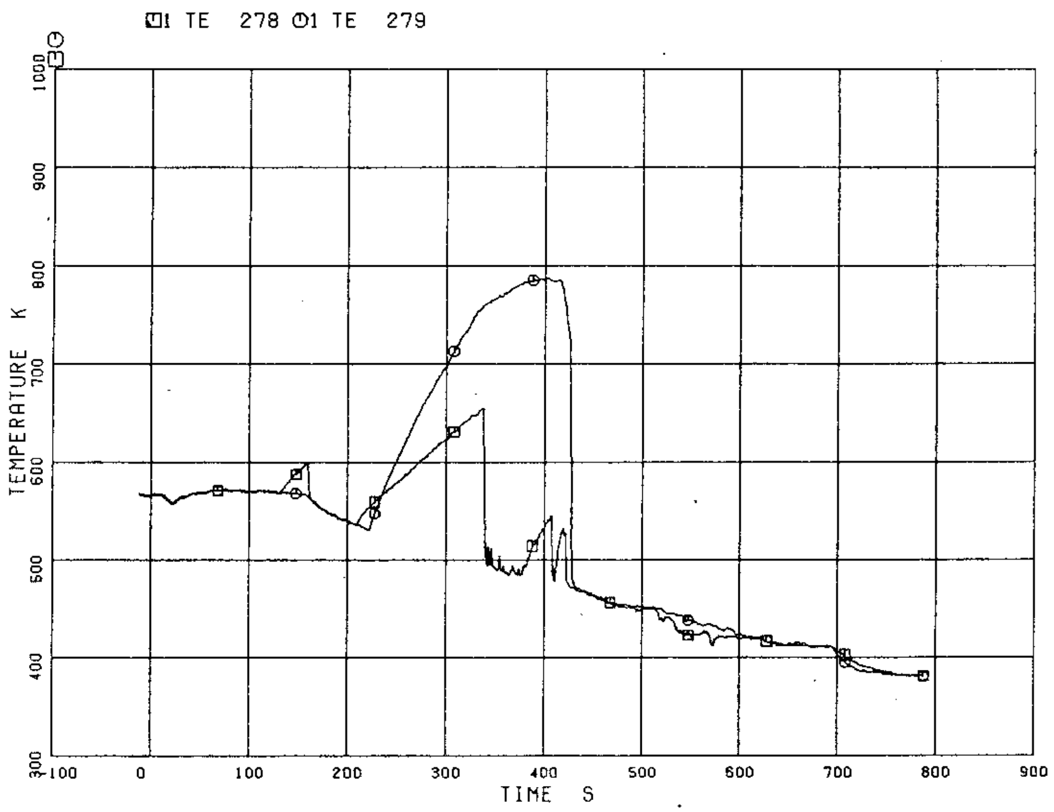


Fig. 5.107 Heater Rod Surface Temperature of A48 Rod

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

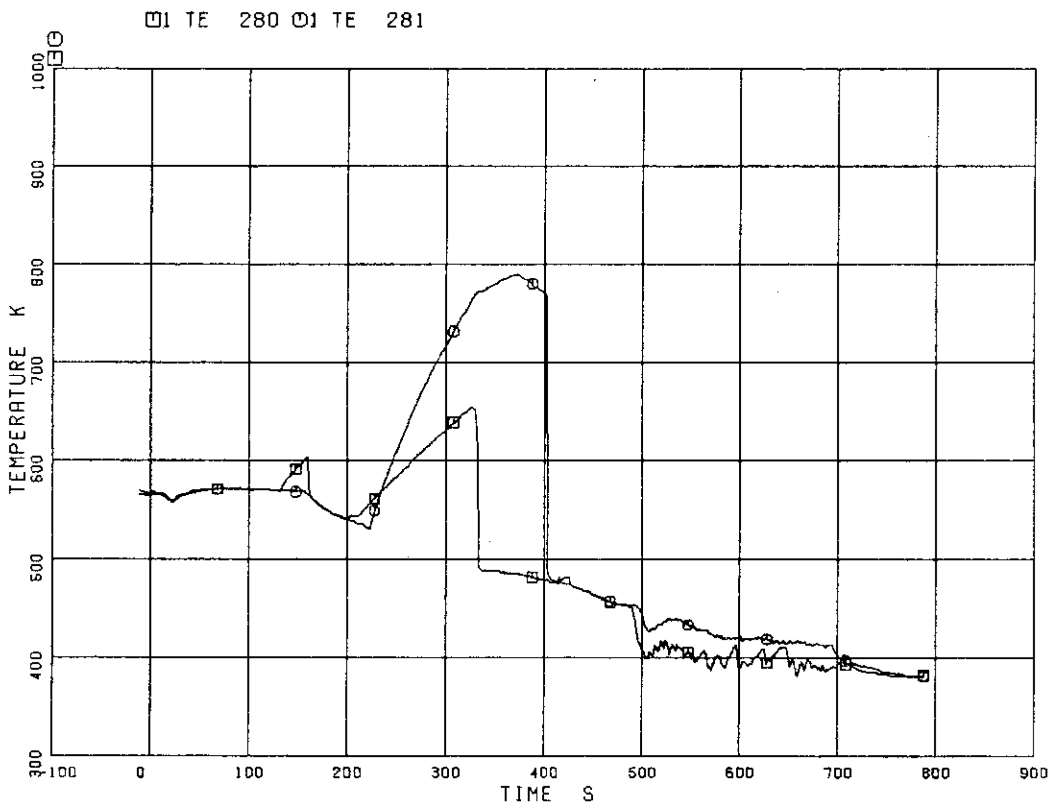


Fig. 5.108 Heater Rod Surface Temperature of A51 Rod

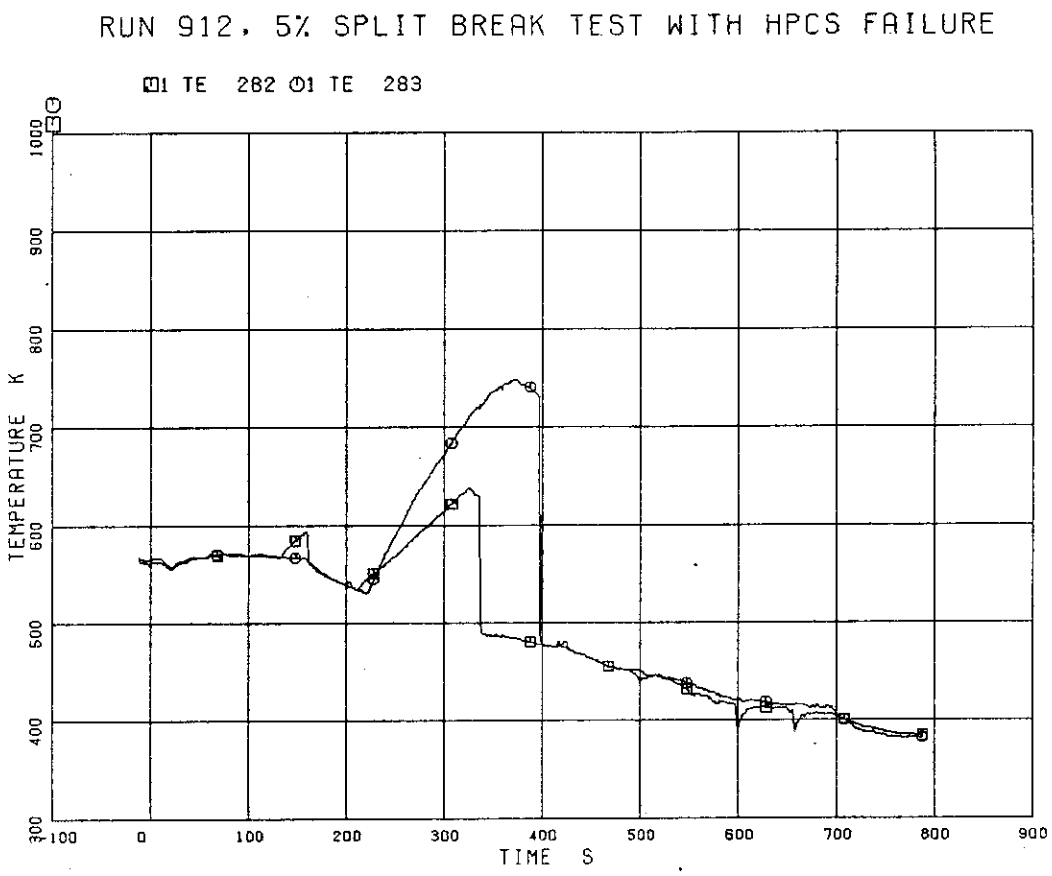


Fig. 5.109 Heater Rod Surface Temperature of A53 Rod

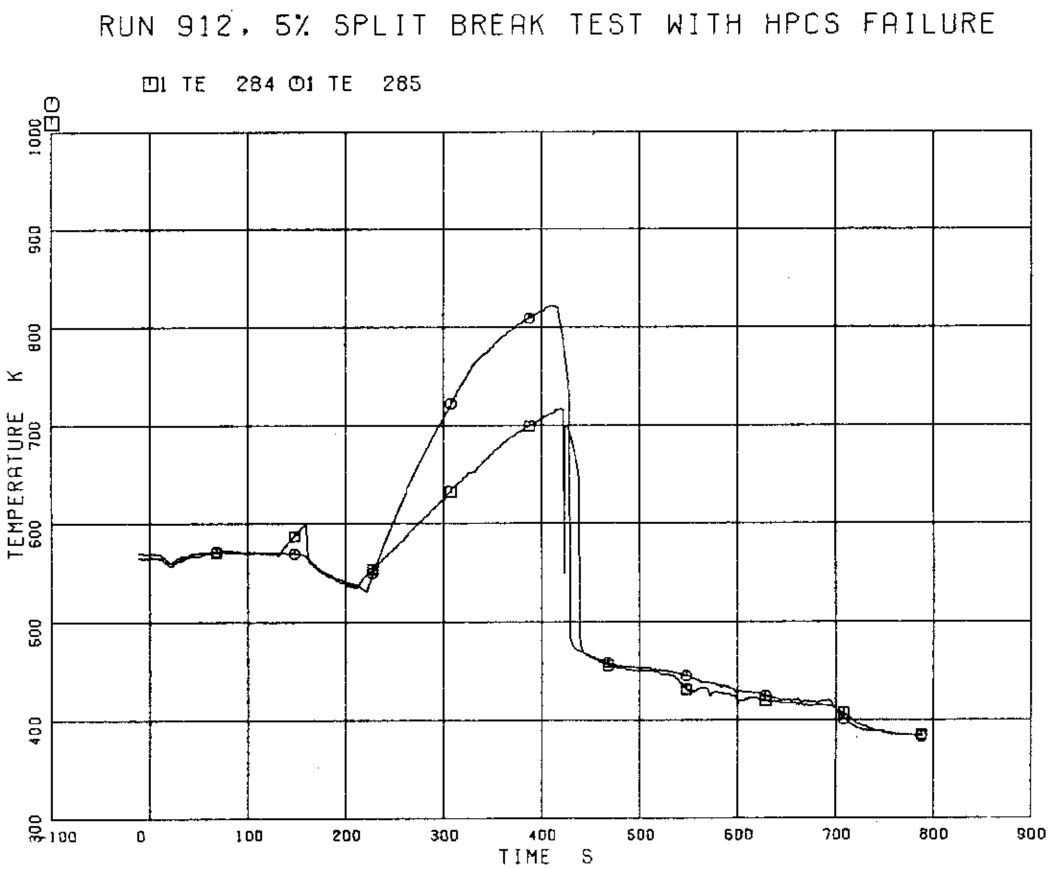


Fig. 5.110 Heater Rod Surface Temperature of A57 Rod

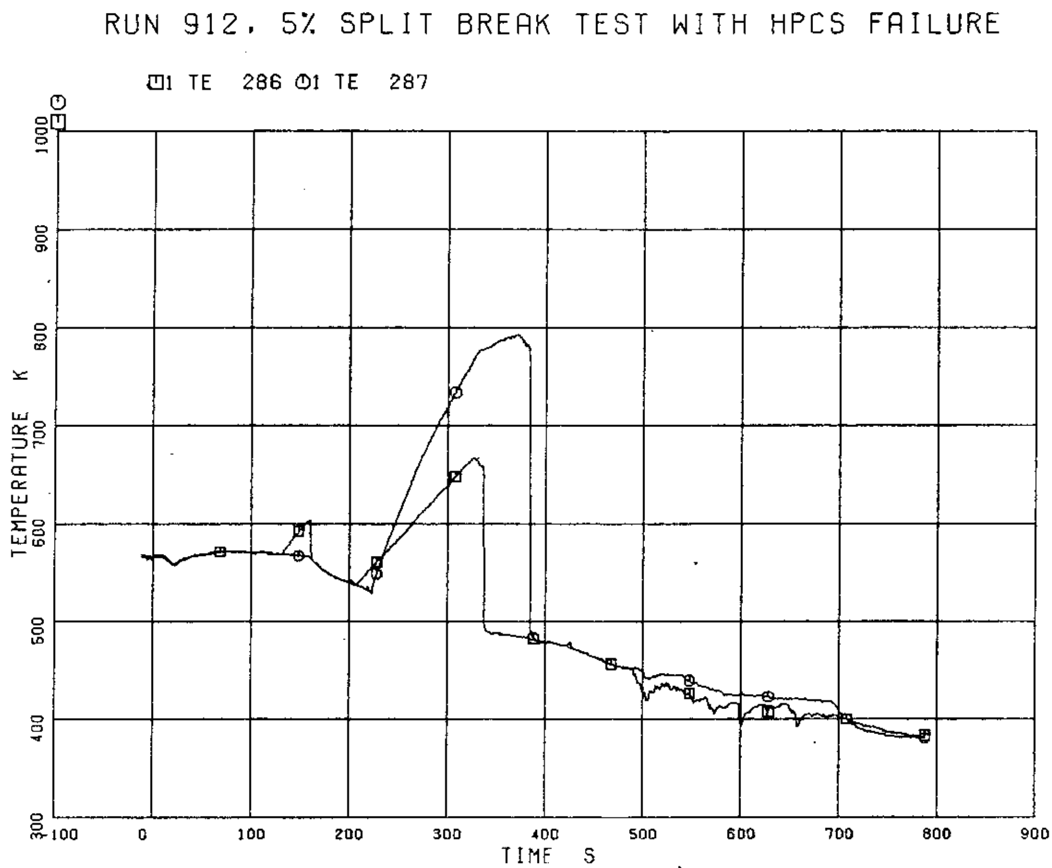


Fig. 5.111 Heater Rod Surface Temperature of A62 Rod

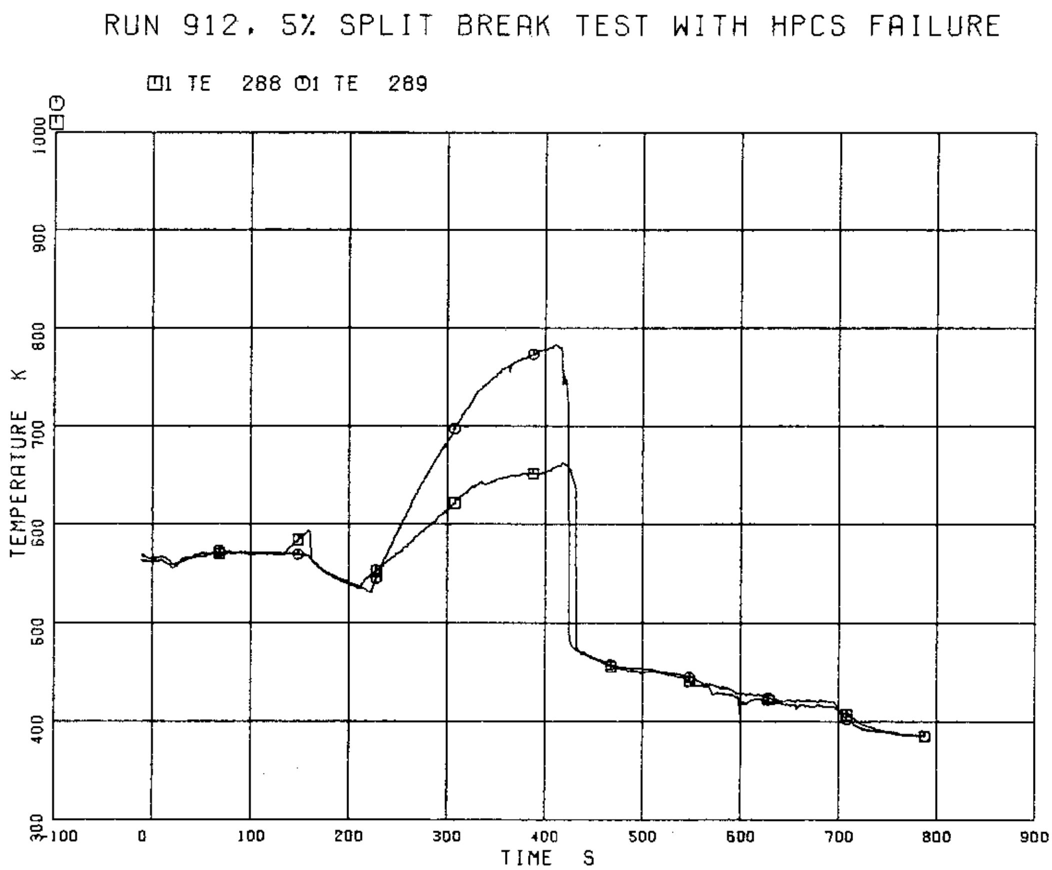


Fig. 5.112 Heater Rod Surface Temperature of A66 Rod

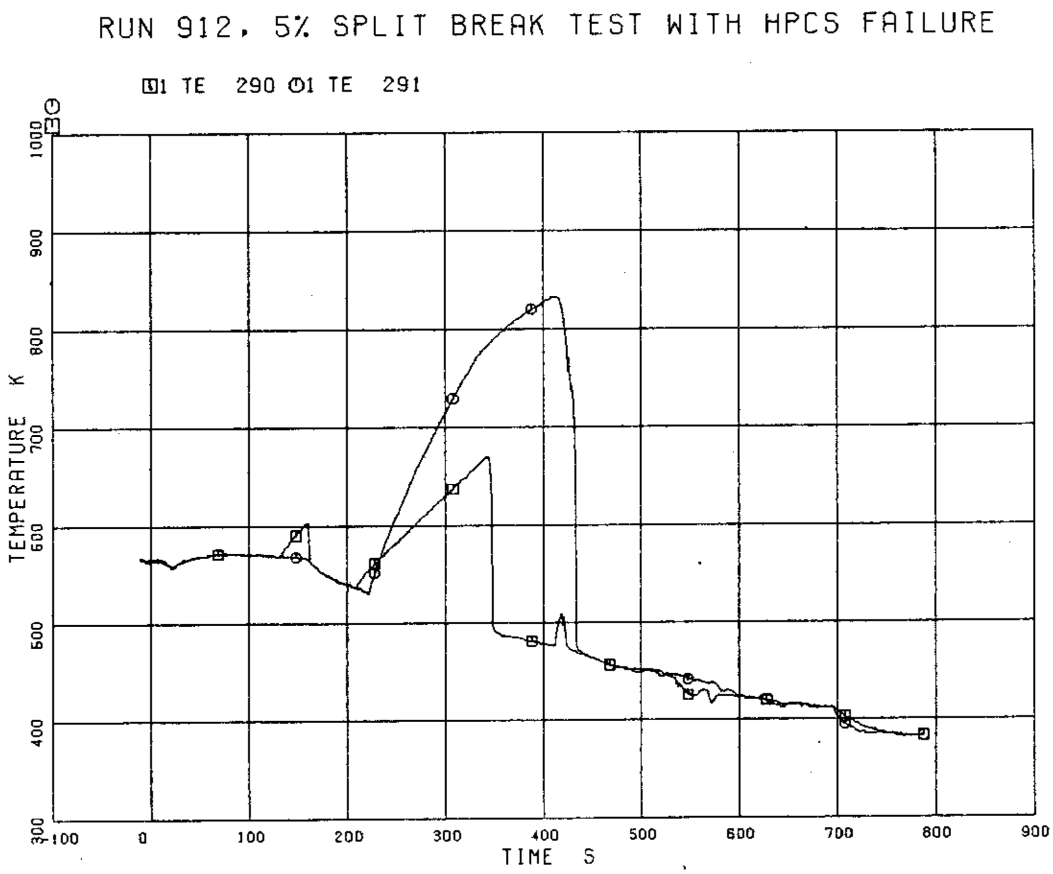


Fig. 5.113 Heater Rod Surface Temperature of A68 Rod

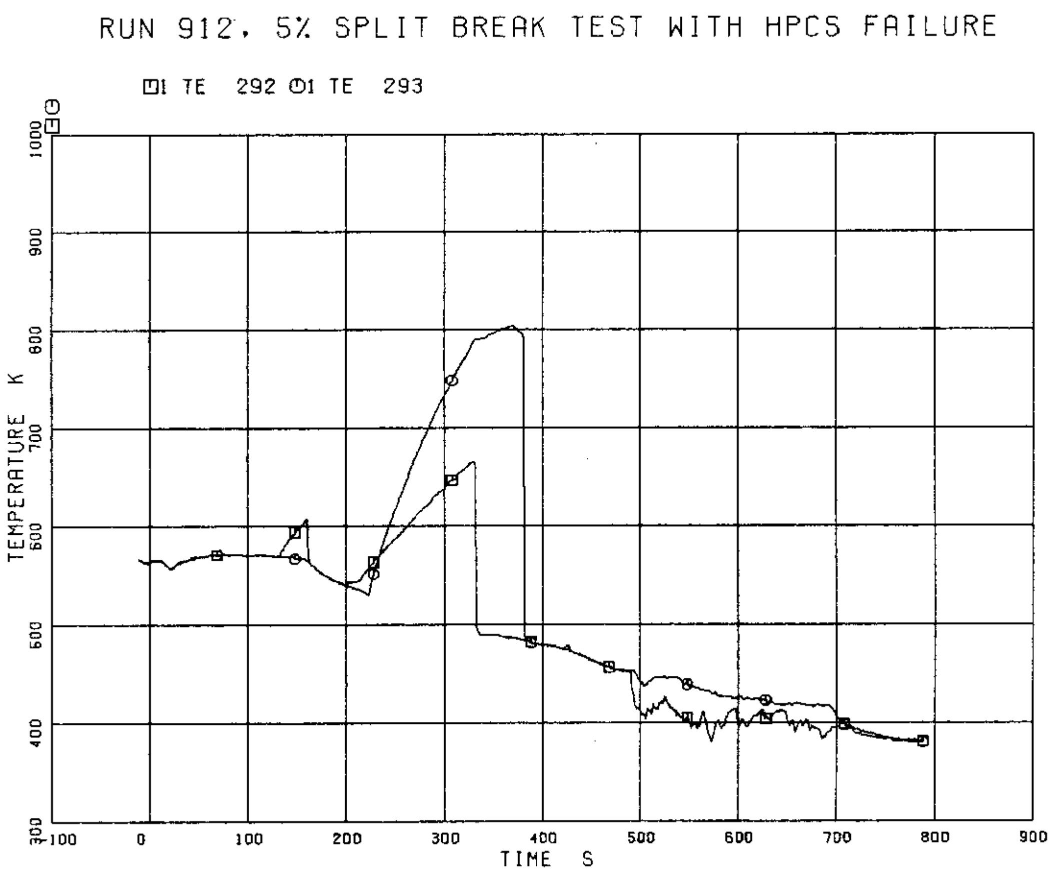


Fig. 5.114 Heater Rod Surface Temperature of A71 Rod

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

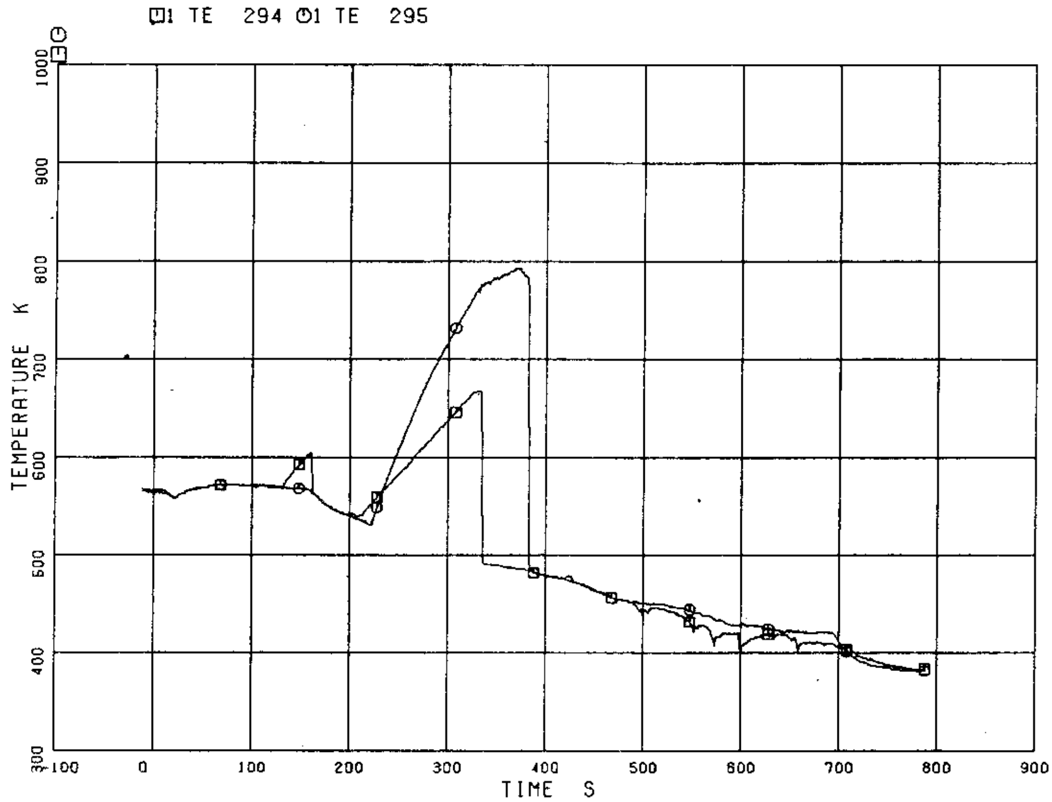


Fig. 5.115 Heater Rod Surface Temperature of A73 Rod

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

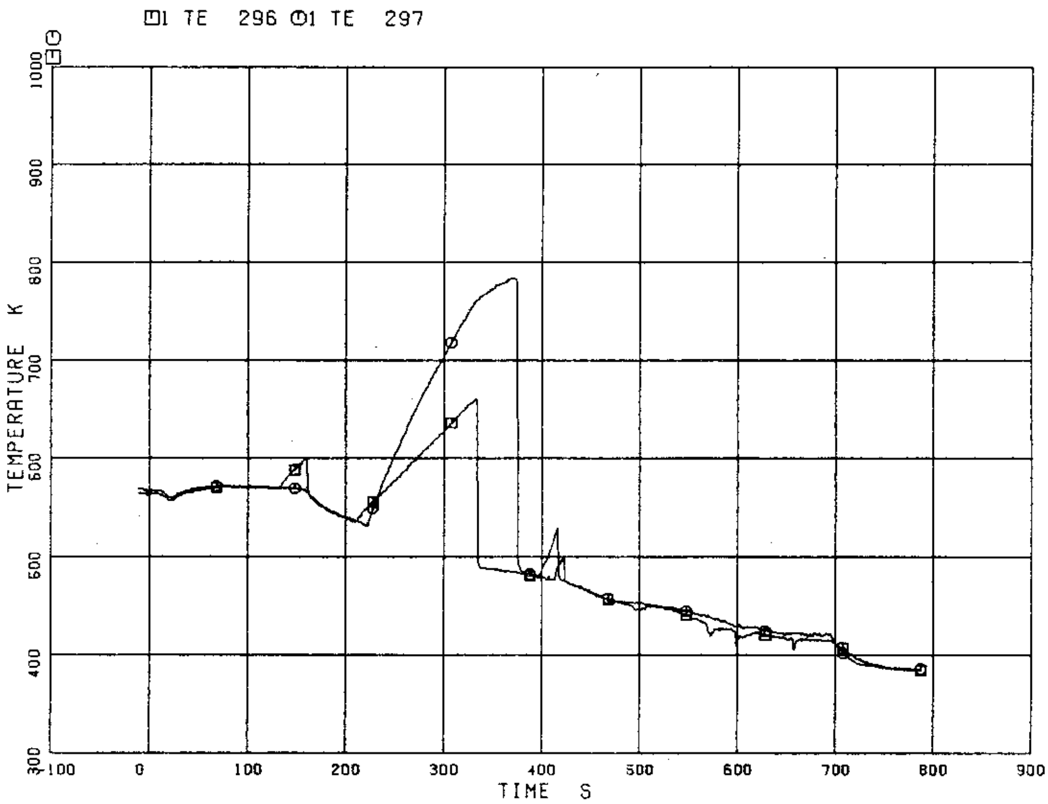


Fig. 5.116 Heater Rod Surface Temperature of A75 Rod

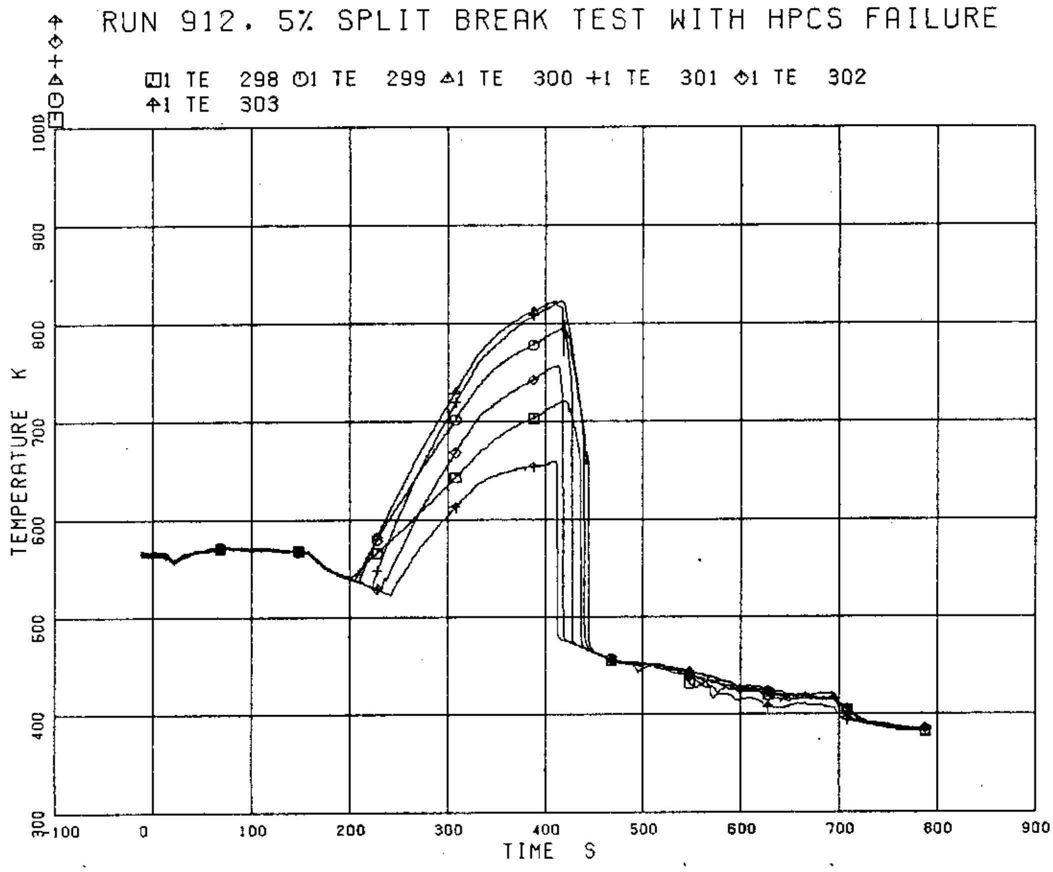


Fig. 5.117 Heater Rod Surface Temperature of A77 Rod

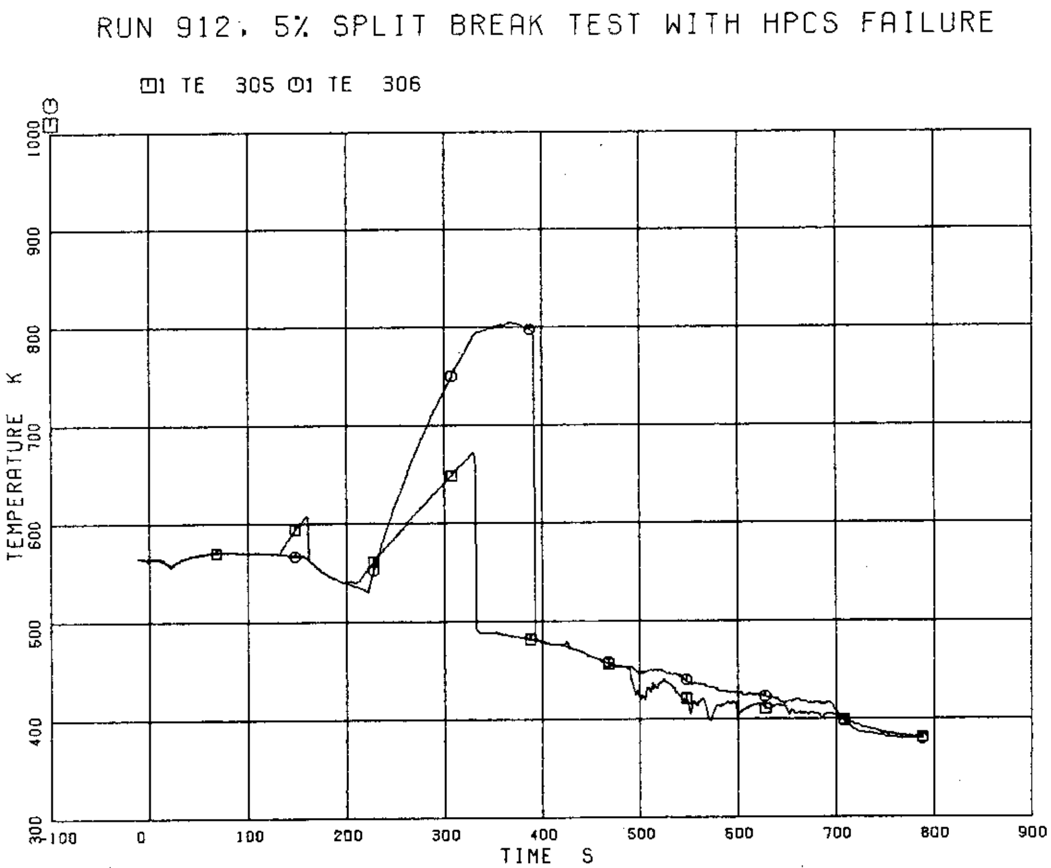


Fig. 5.118 Heater Rod Surface Temperature of A82 Rod

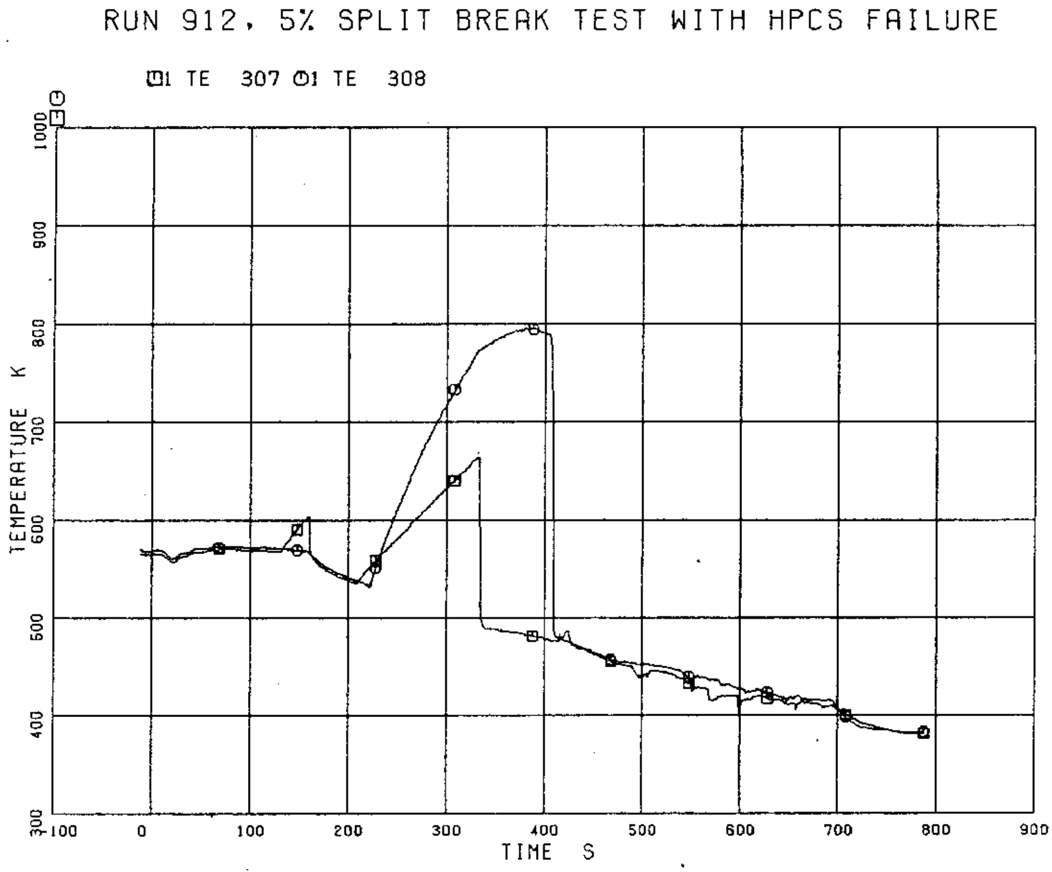


Fig. 5.119 Heater Rod Surface Temperature of A84 Rod

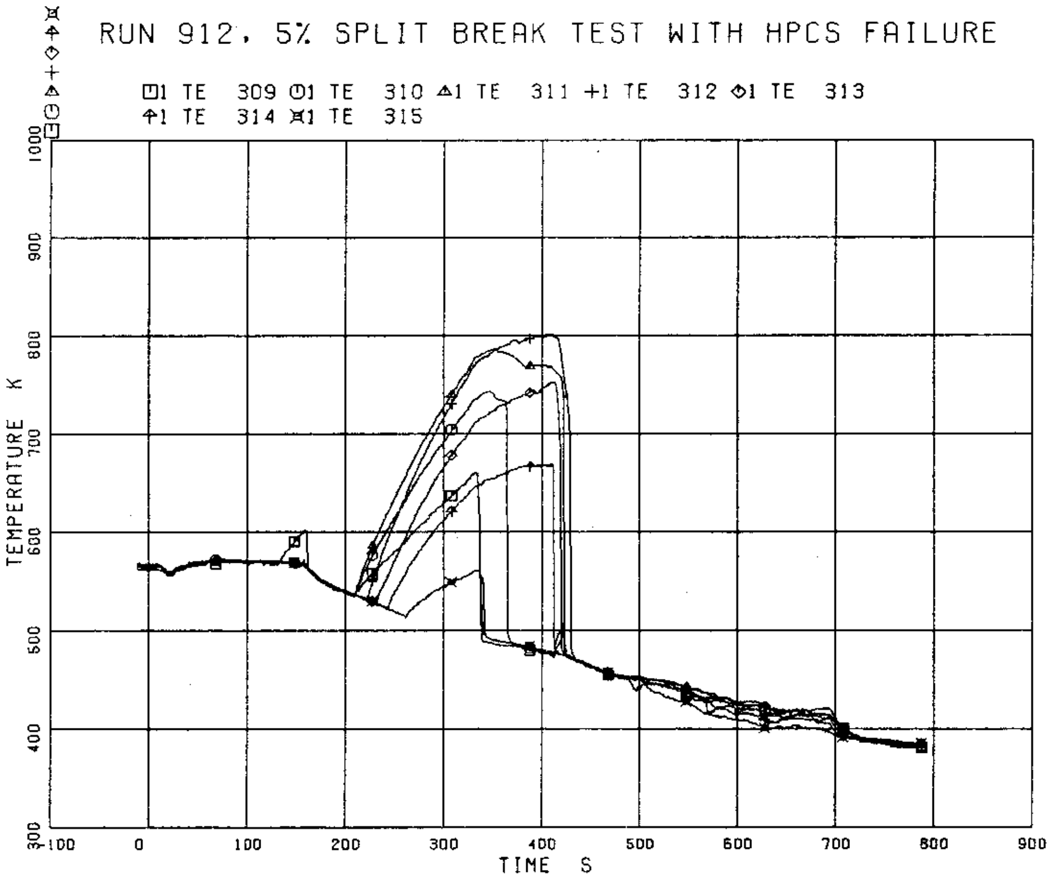


Fig. 5.120 Heater Rod Surface Temperature of A85 Rod

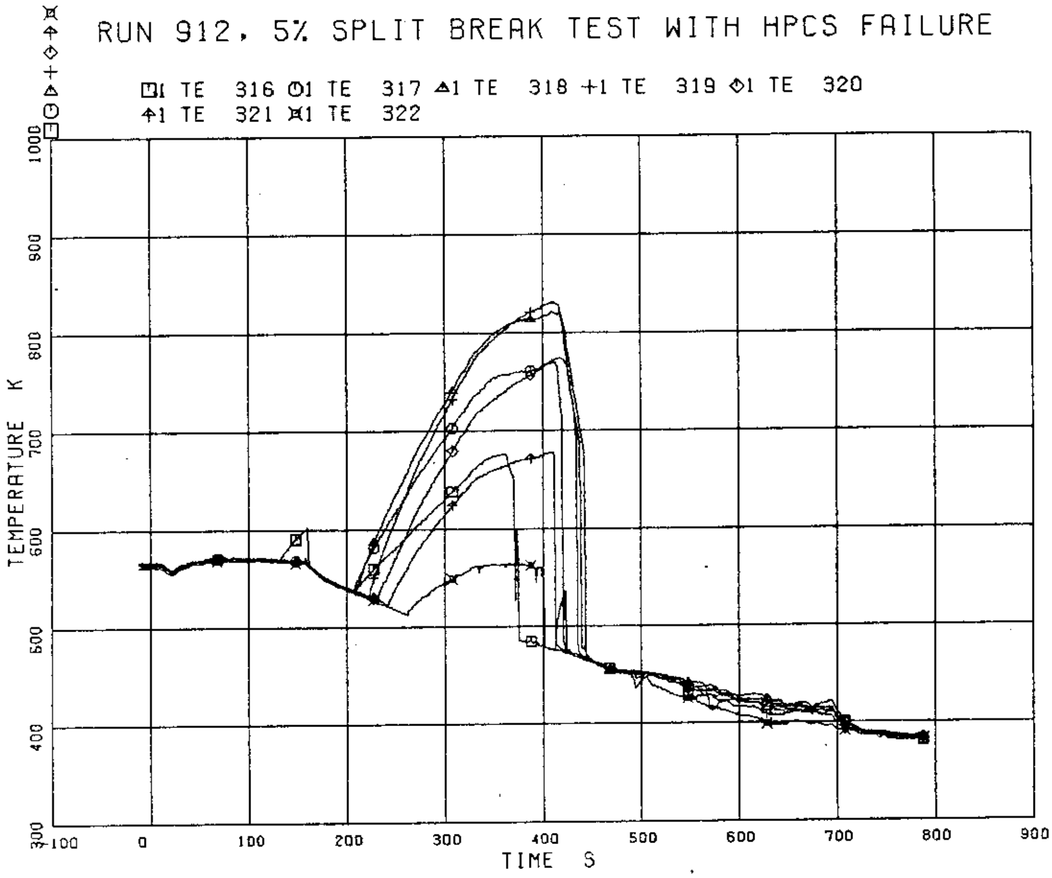


Fig. 5.121 Heater Rod Surface Temperature of A87 Rod

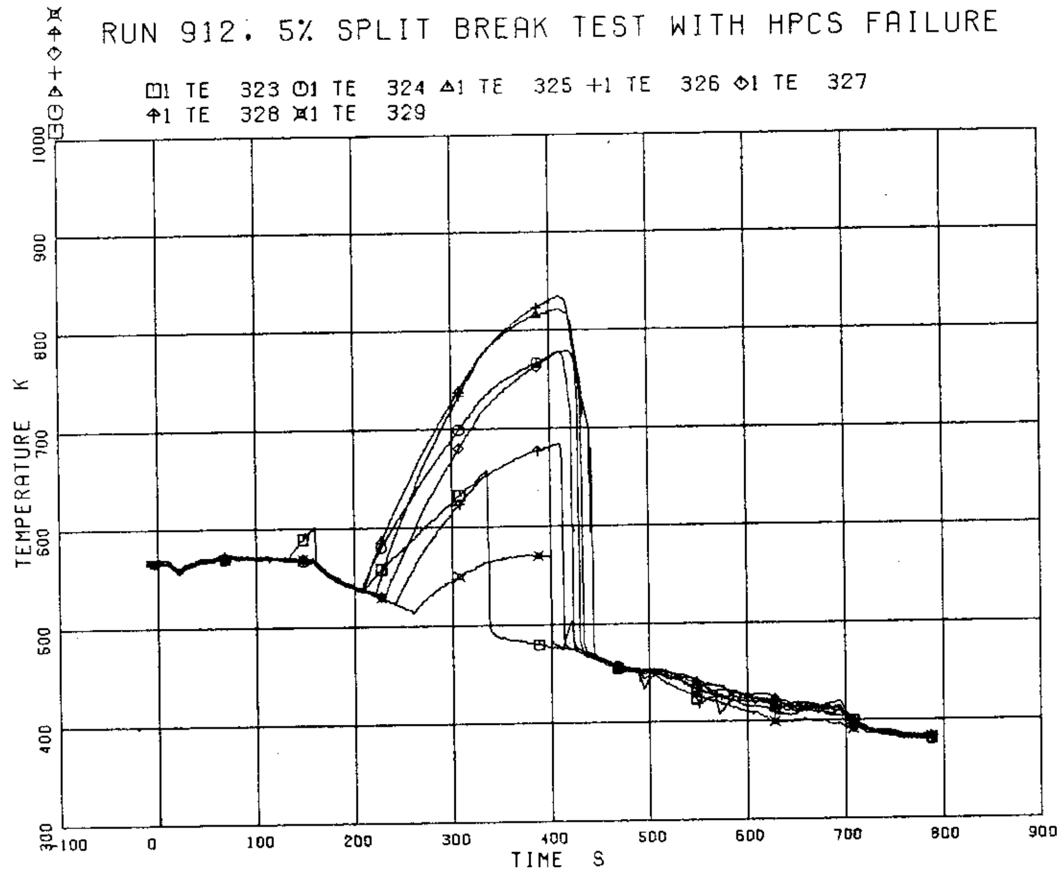


Fig. 5.122 Heater Rod Surface Temperature of A88 Rod

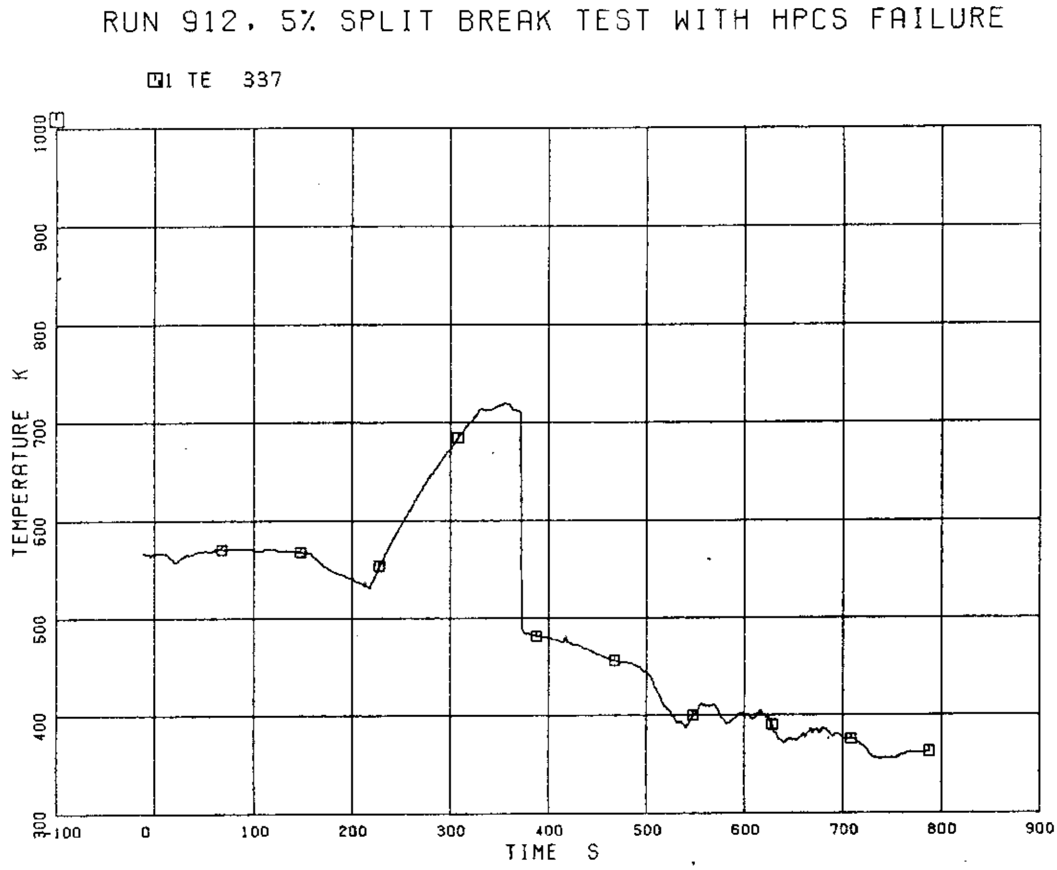


Fig. 5.123 Heater Rod Surface Temperature of B13 Rod

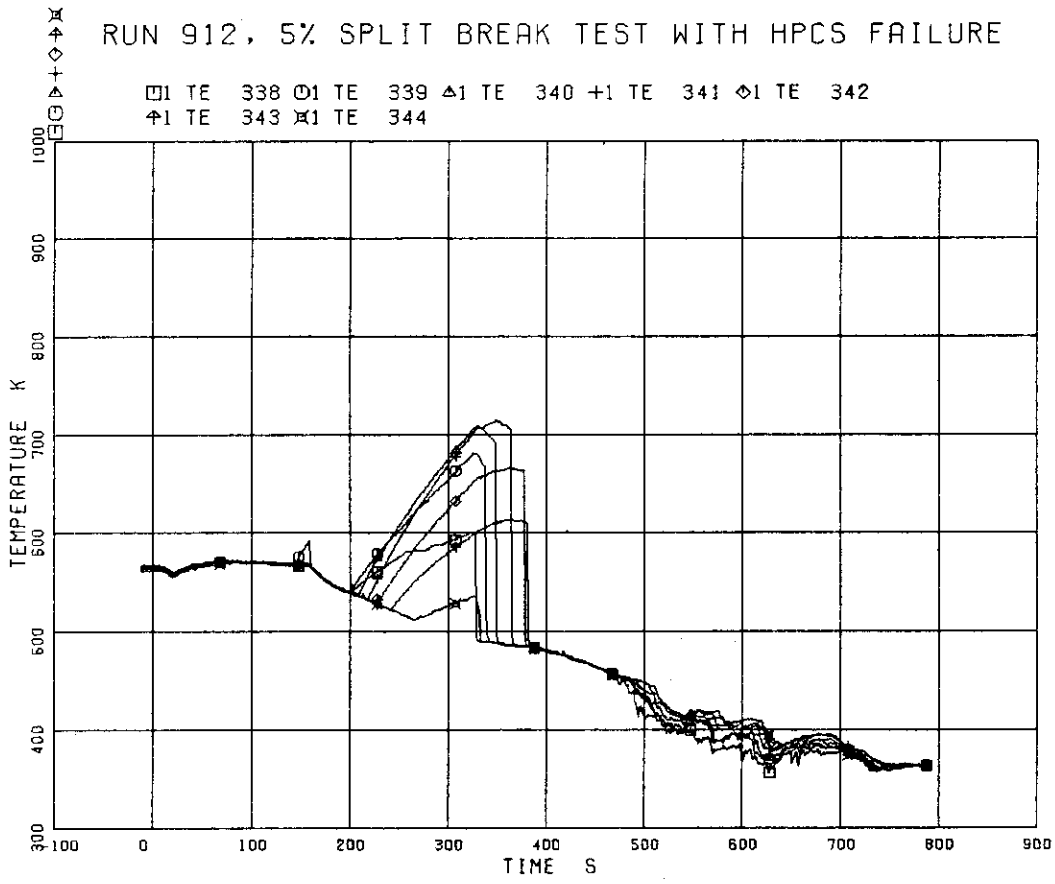


Fig. 5.124 Heater Rod Surface Temperature of B22 Rod

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

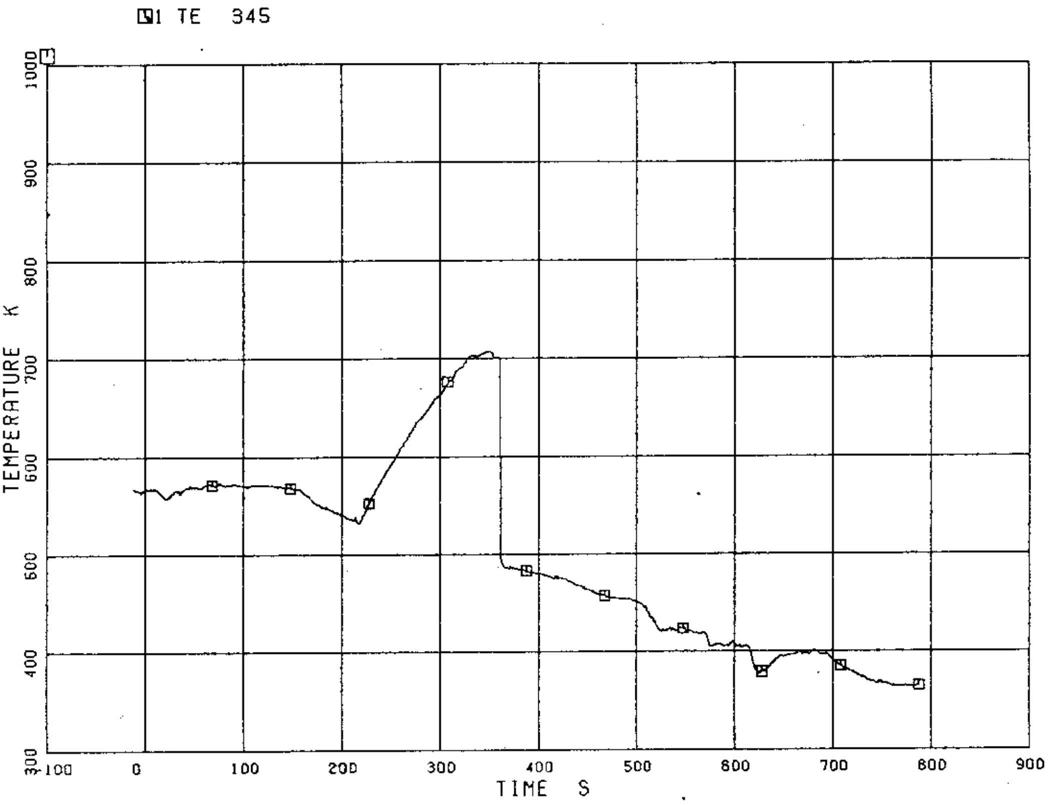


Fig. 5.125 Heater Rod Surface Temperature of B31 Rod

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

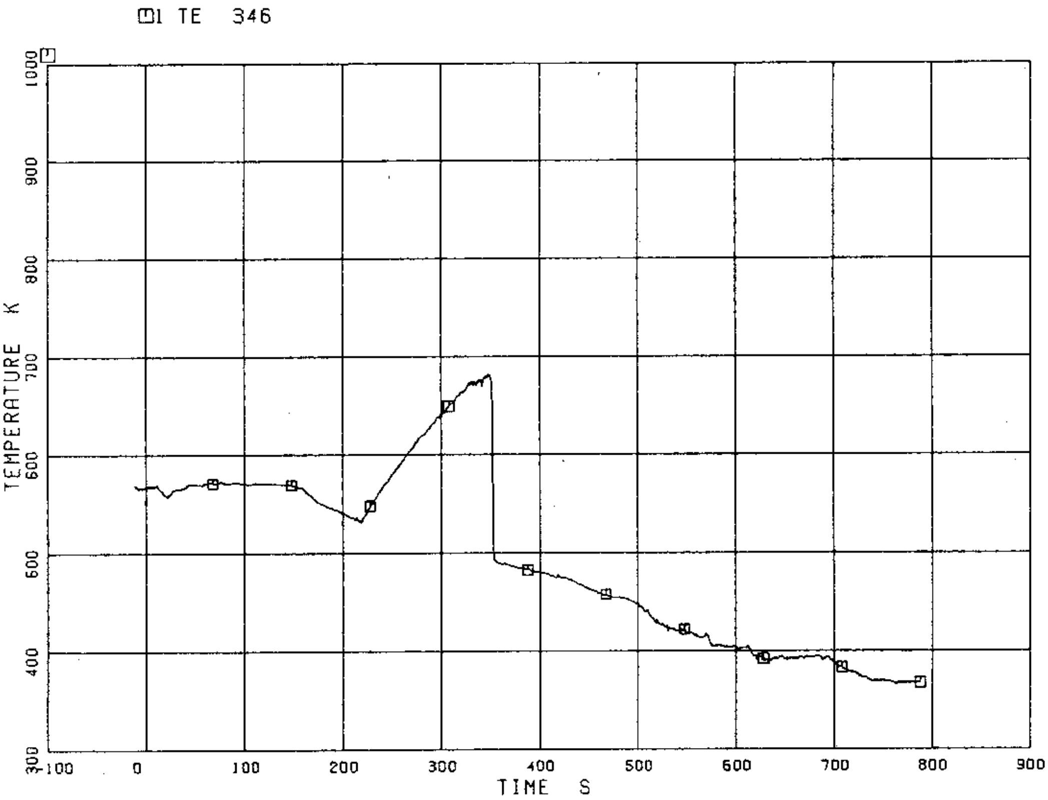


Fig. 5.126 Heater Rod Surface Temperature of B33 Rod

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

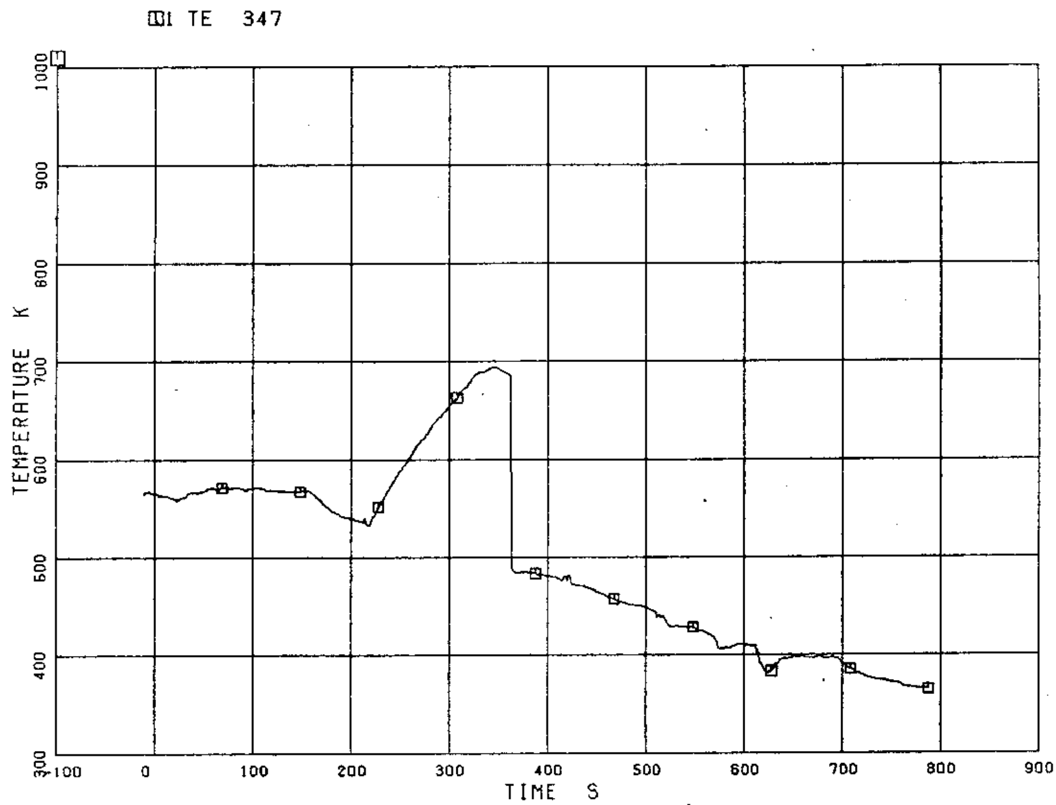


Fig. 5.127 Heater Rod Surface Temperature of B51 Rod

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

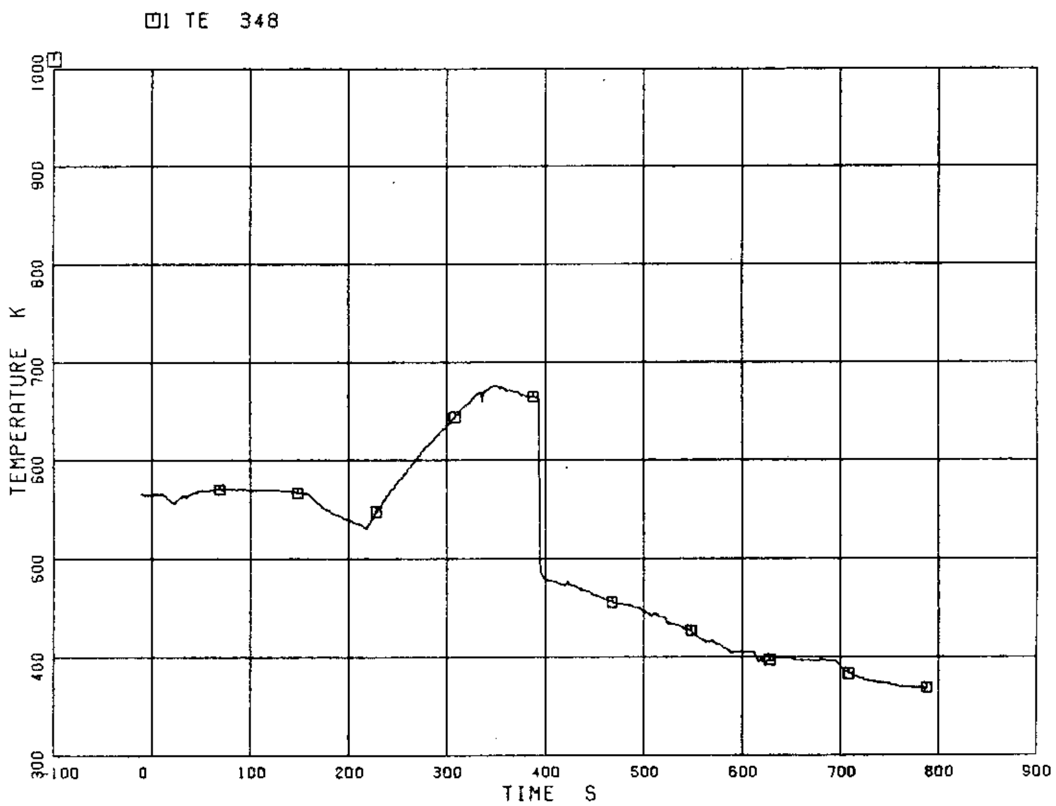


Fig. 5.128 Heater Rod Surface Temperature of B53 Rod

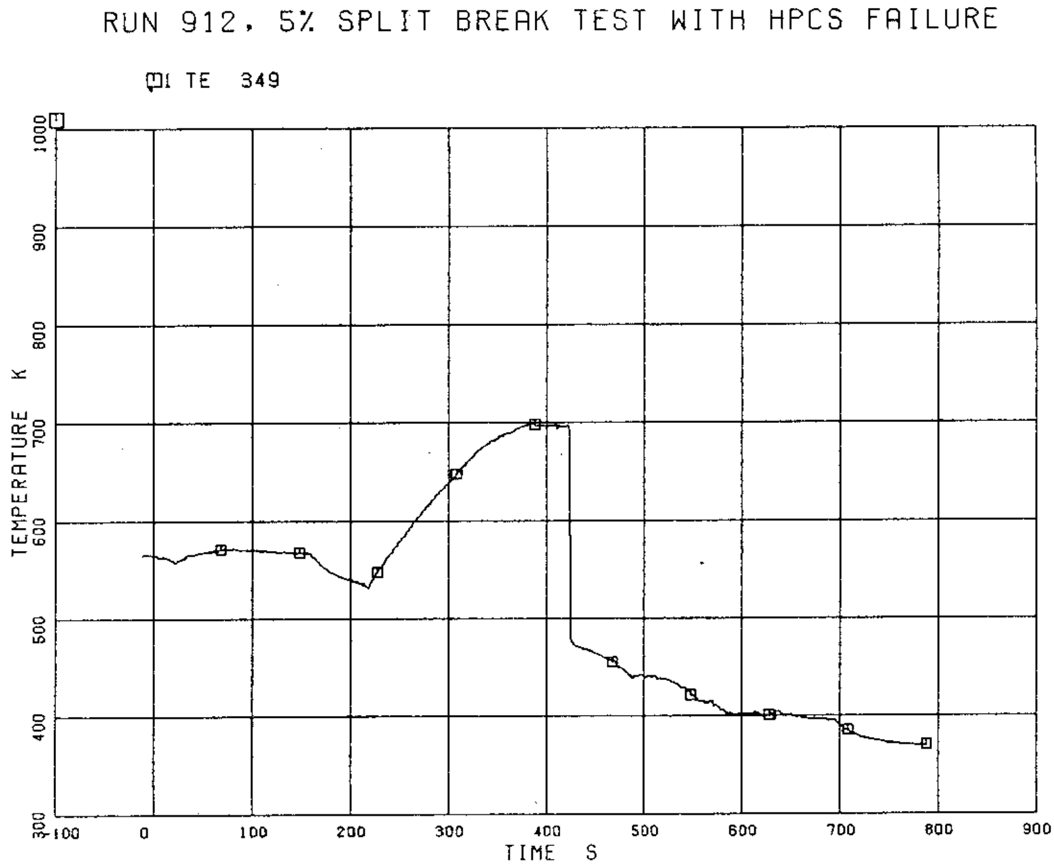


Fig. 5.129 Heater Rod Surface Temperature of B66 Rod

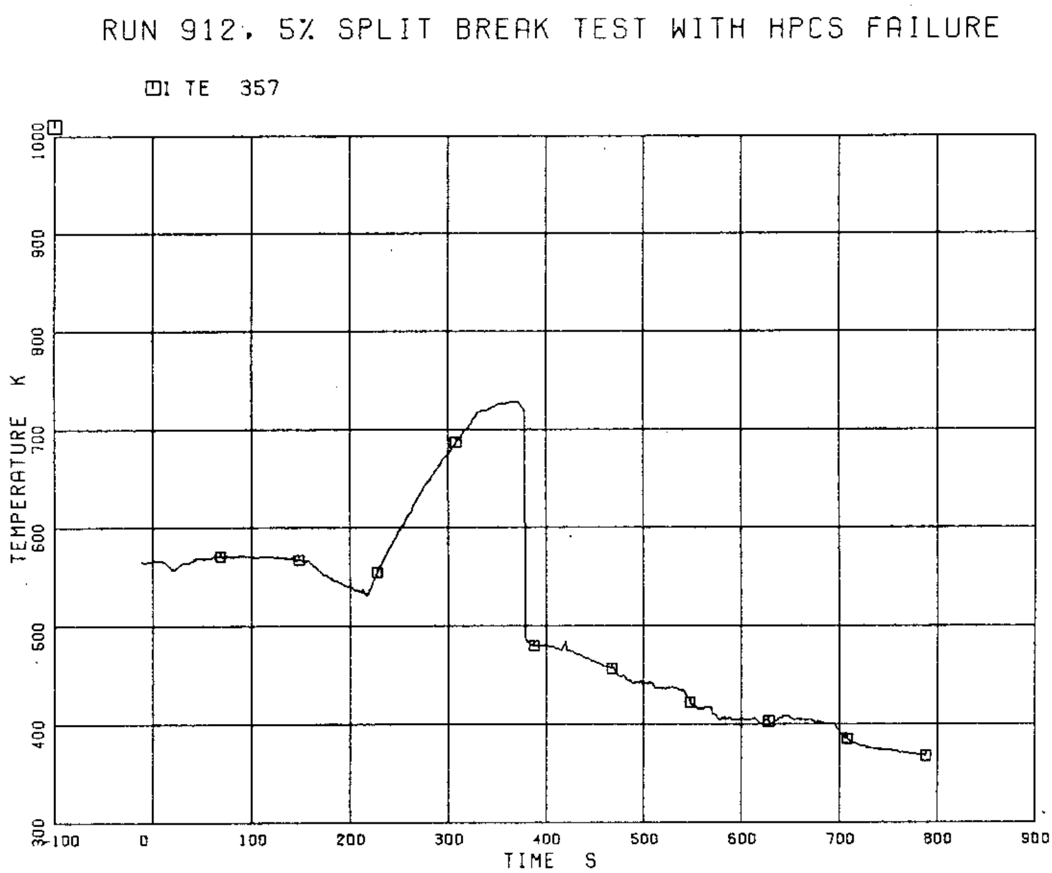


Fig. 5.130 Heater Rod Surface Temperature of B86 Rod

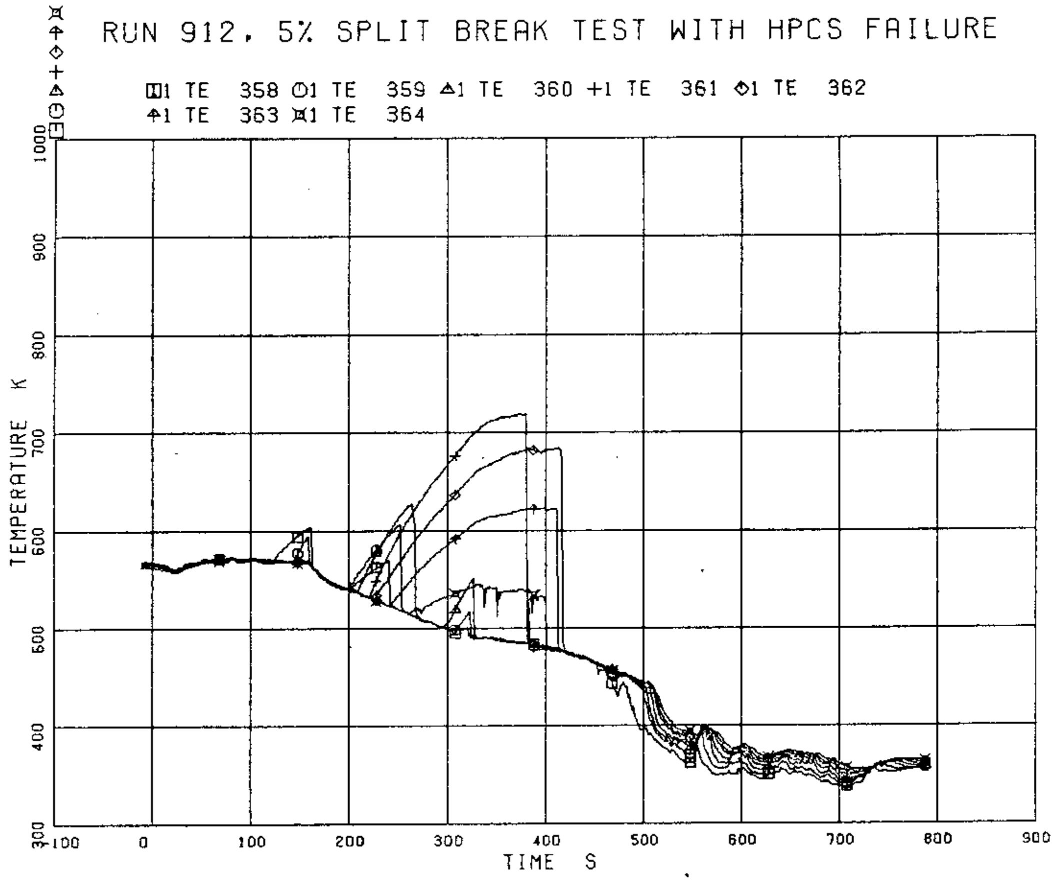


Fig. 5.131 Heater Rod Surface Temperature of C11 Rod

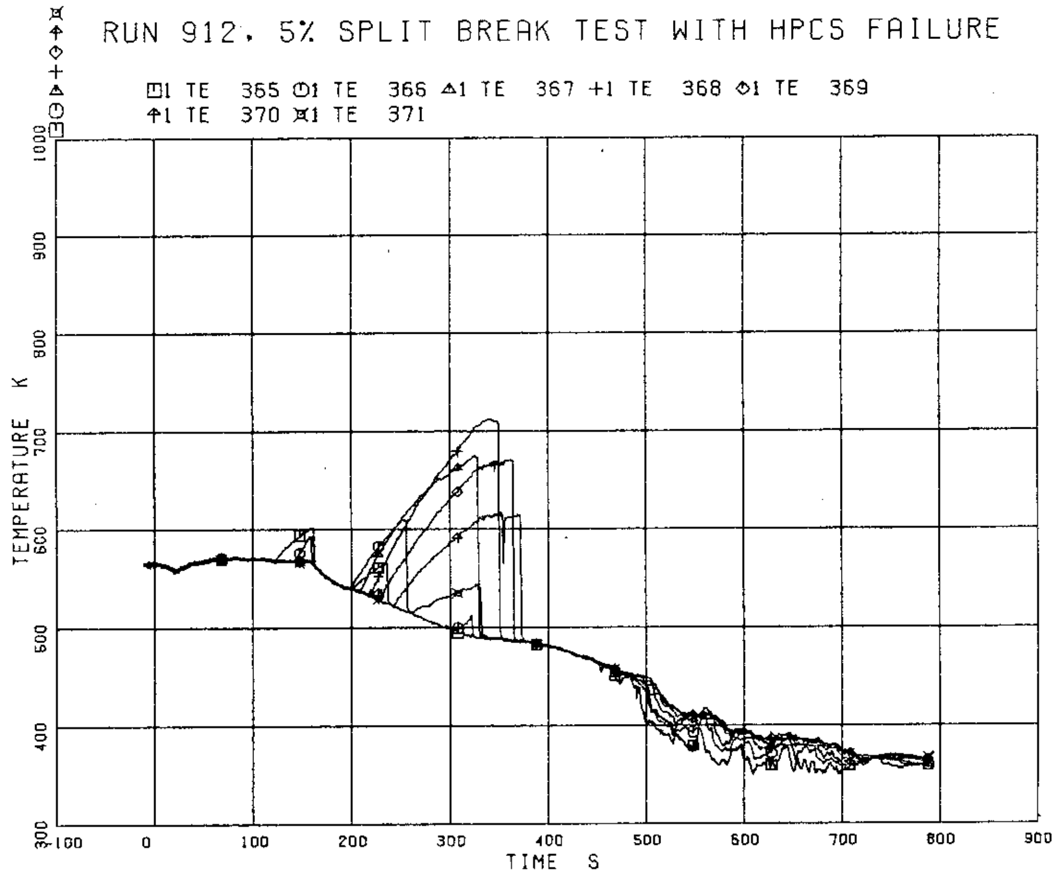


Fig. 5.132 Heater Rod Surface Temperature of C13 Rod

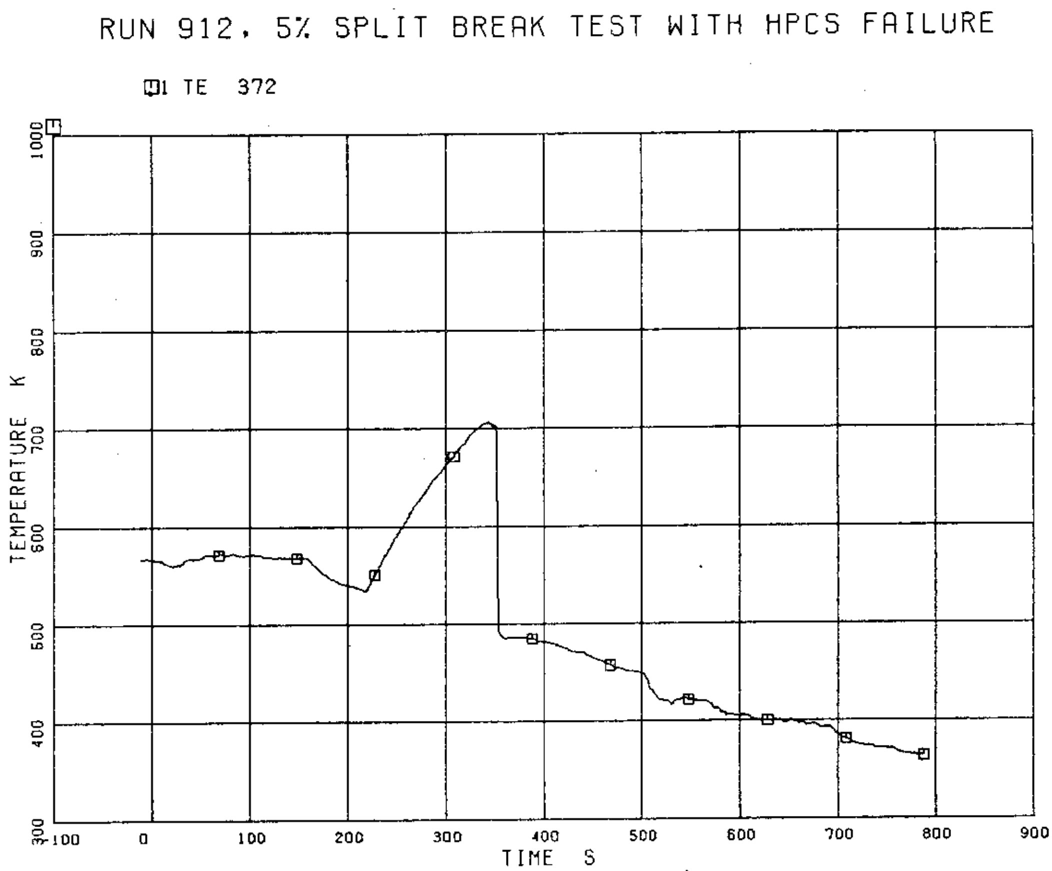


Fig. 5.133 Heater Rod Surface Temperature of C15 Rod

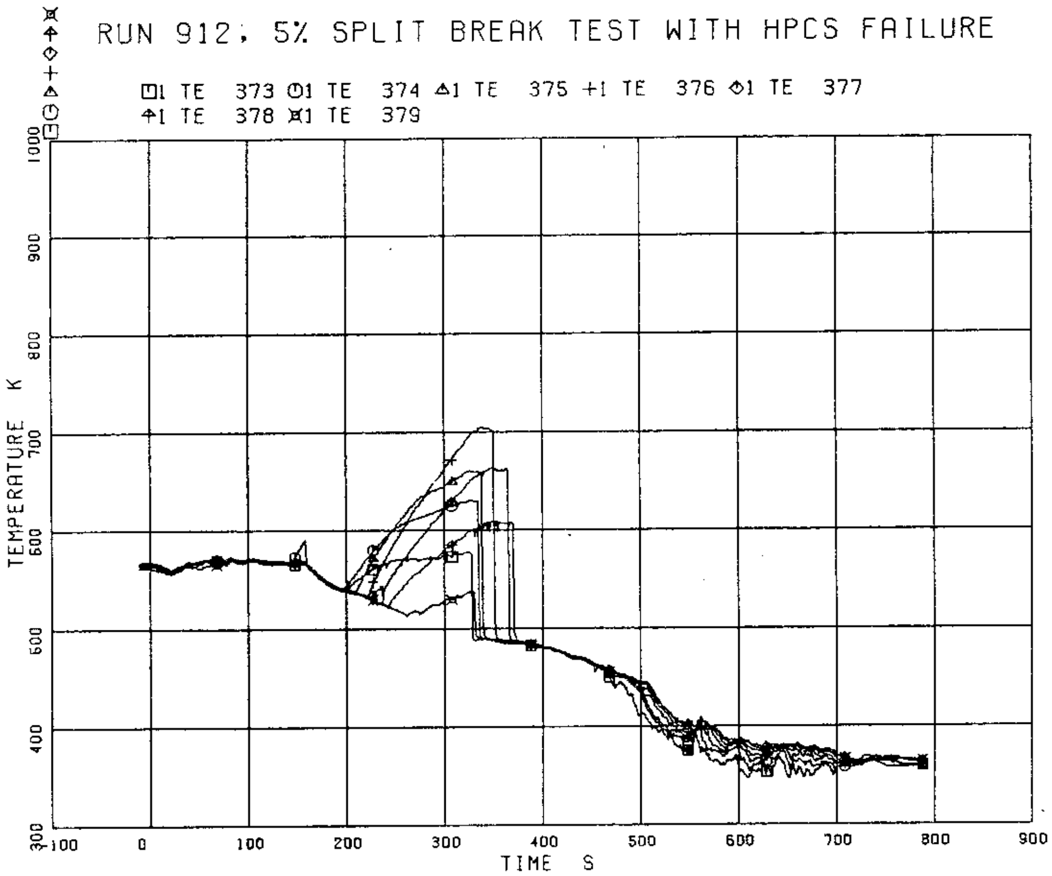


Fig. 5.134 Heater Rod Surface Temperature of C22 Rod

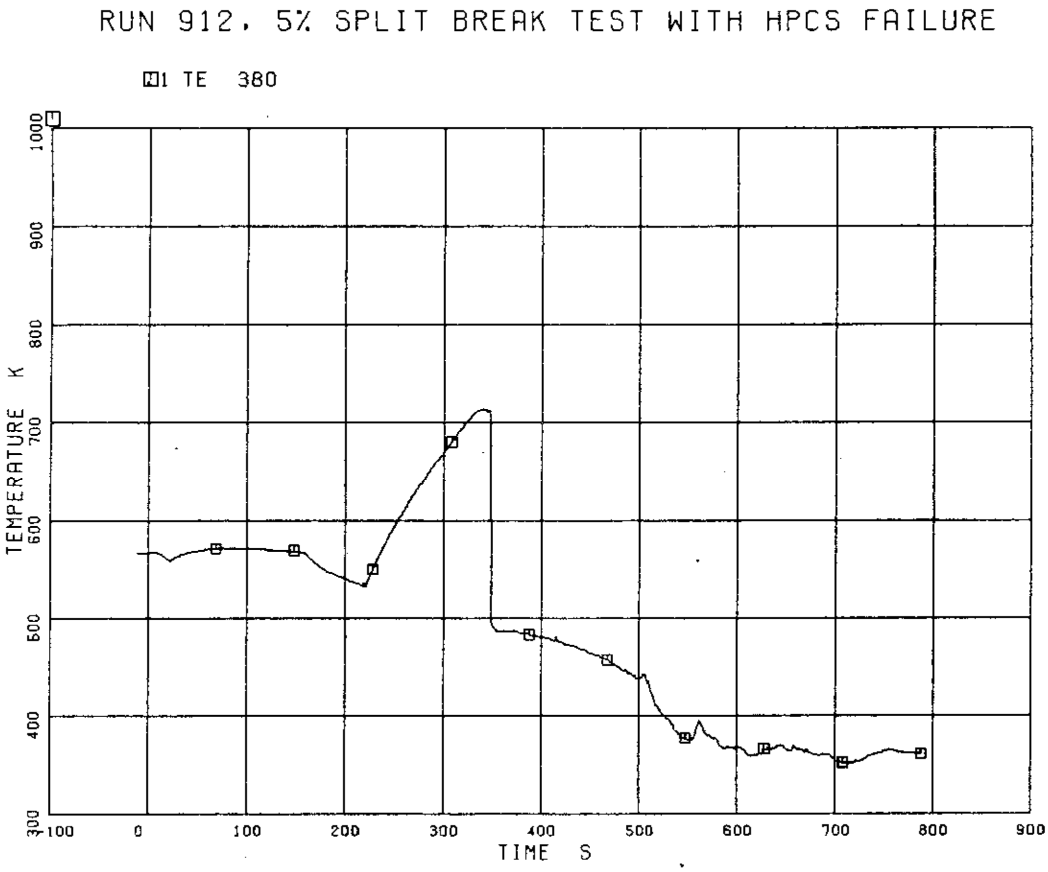


Fig. 5.135 Heater Rod Surface Temperature of C31 Rod

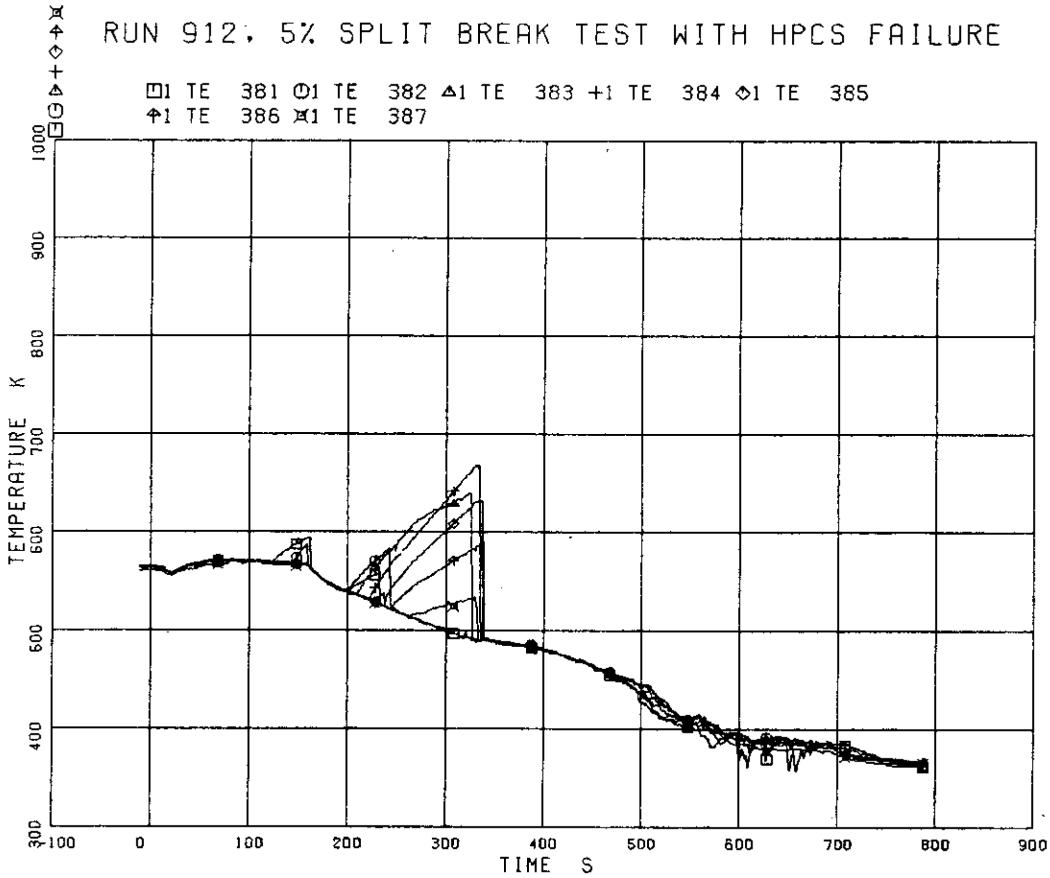


Fig. 5.136 Heater Rod Surface Temperature of C33 Rod

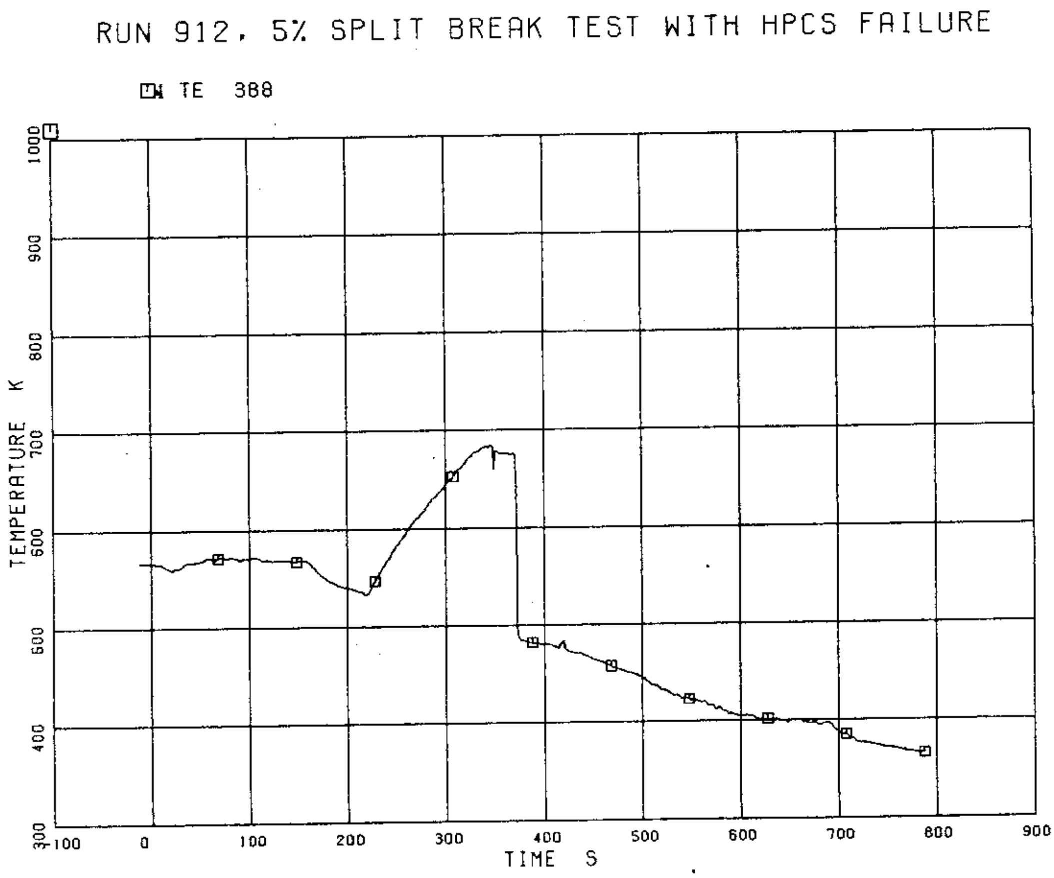


Fig. 5.137 Heater Rod Surface Temperature of C35 Rod

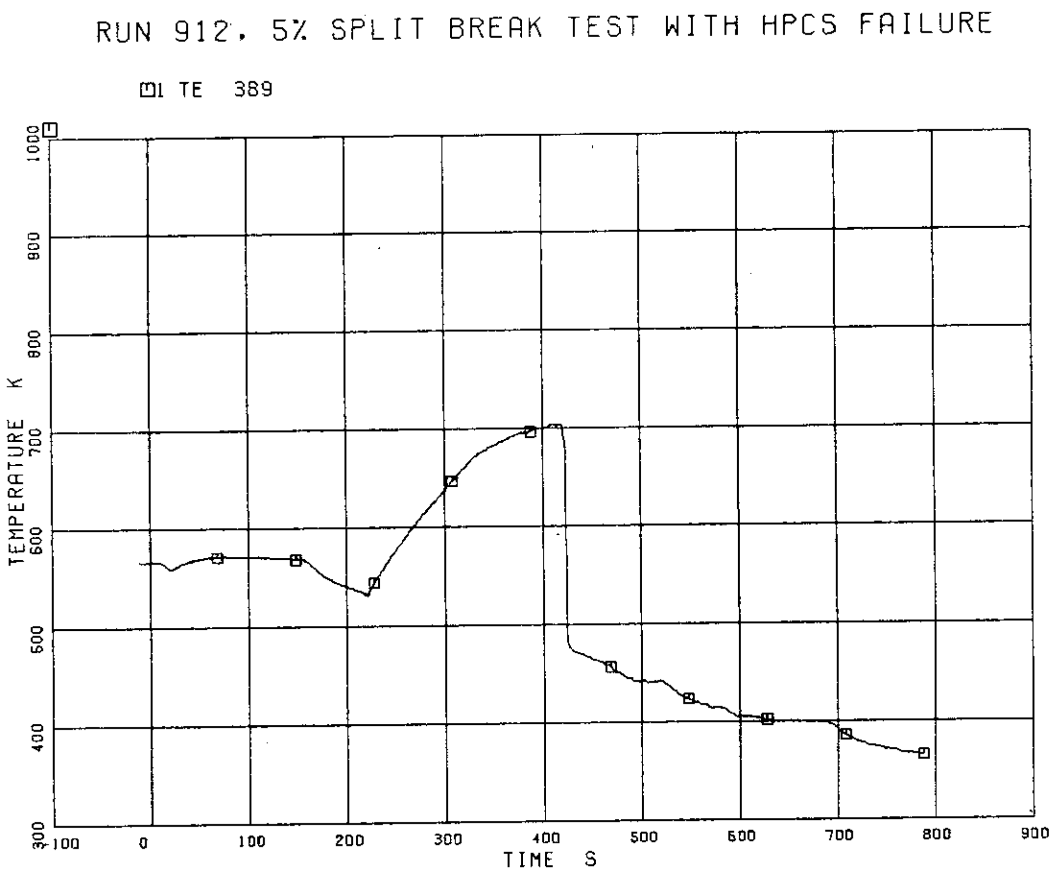


Fig. 5.138 Heater Rod Surface Temperature of C66 Rod

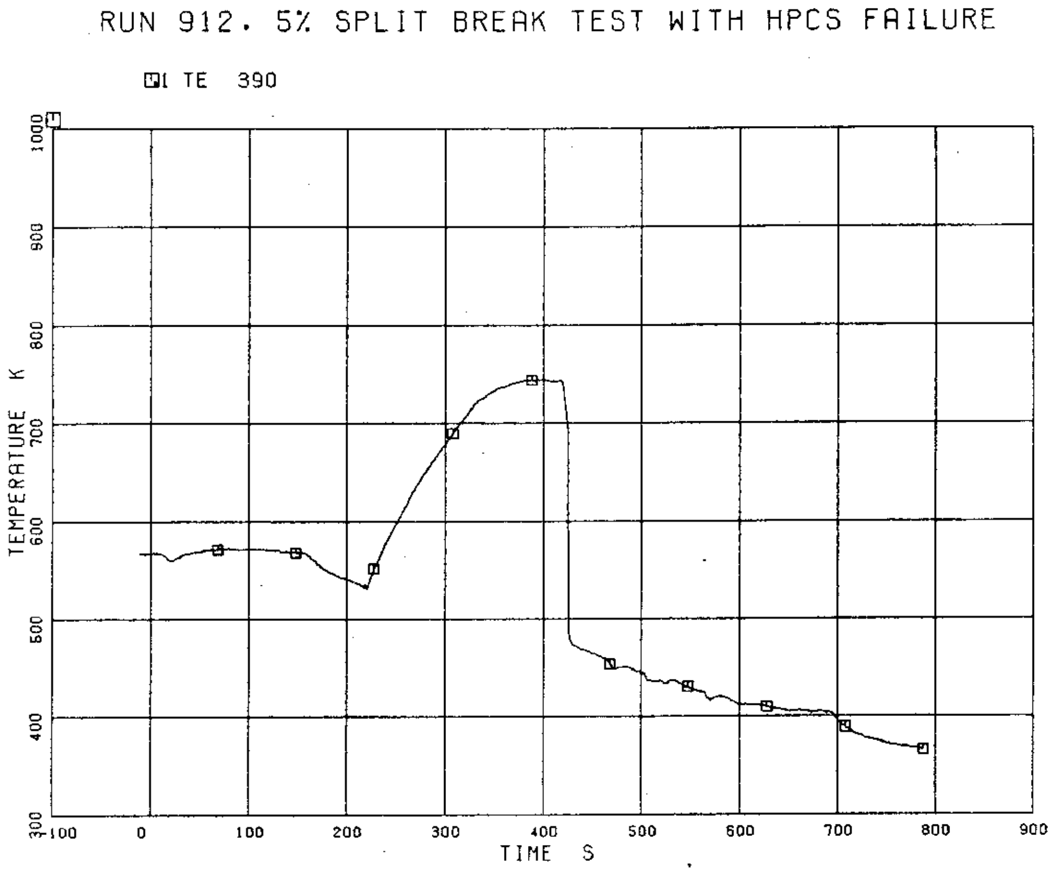


Fig. 5.139 Heater Rod Surface Temperature of C68 Rod

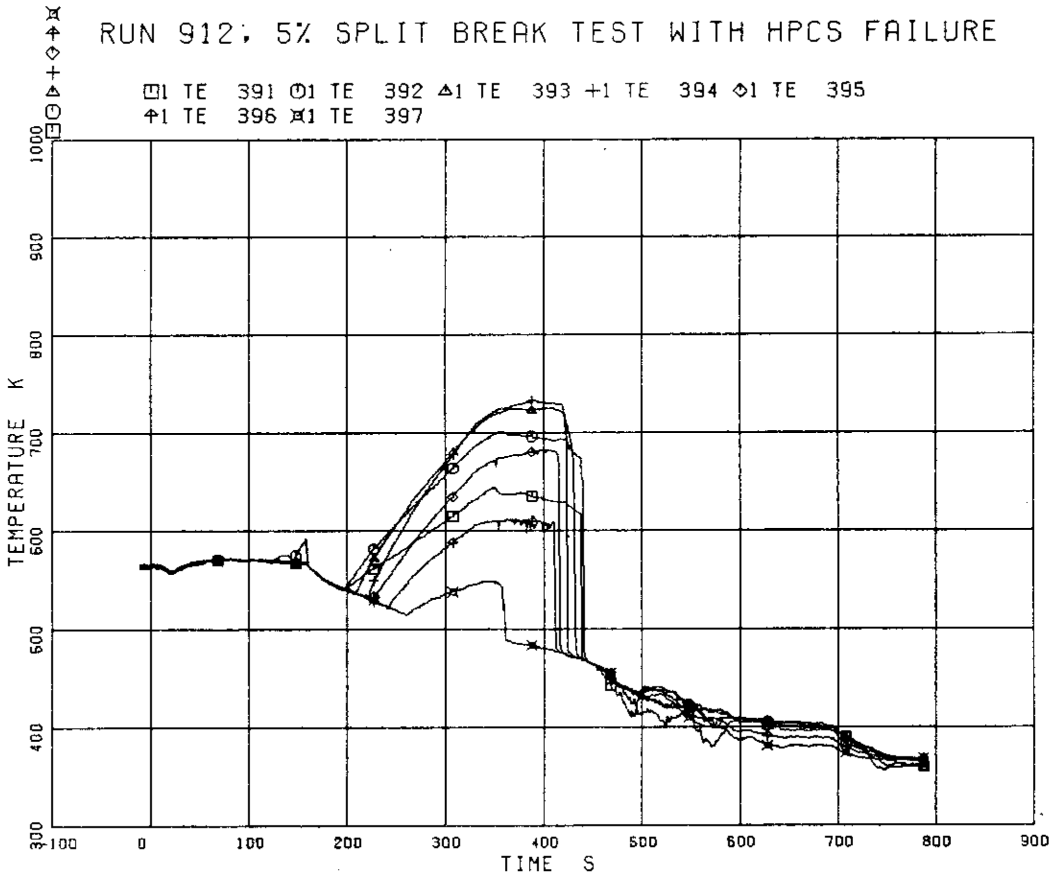


Fig. 5.140 Heater Rod Surface Temperature of C77 Rod

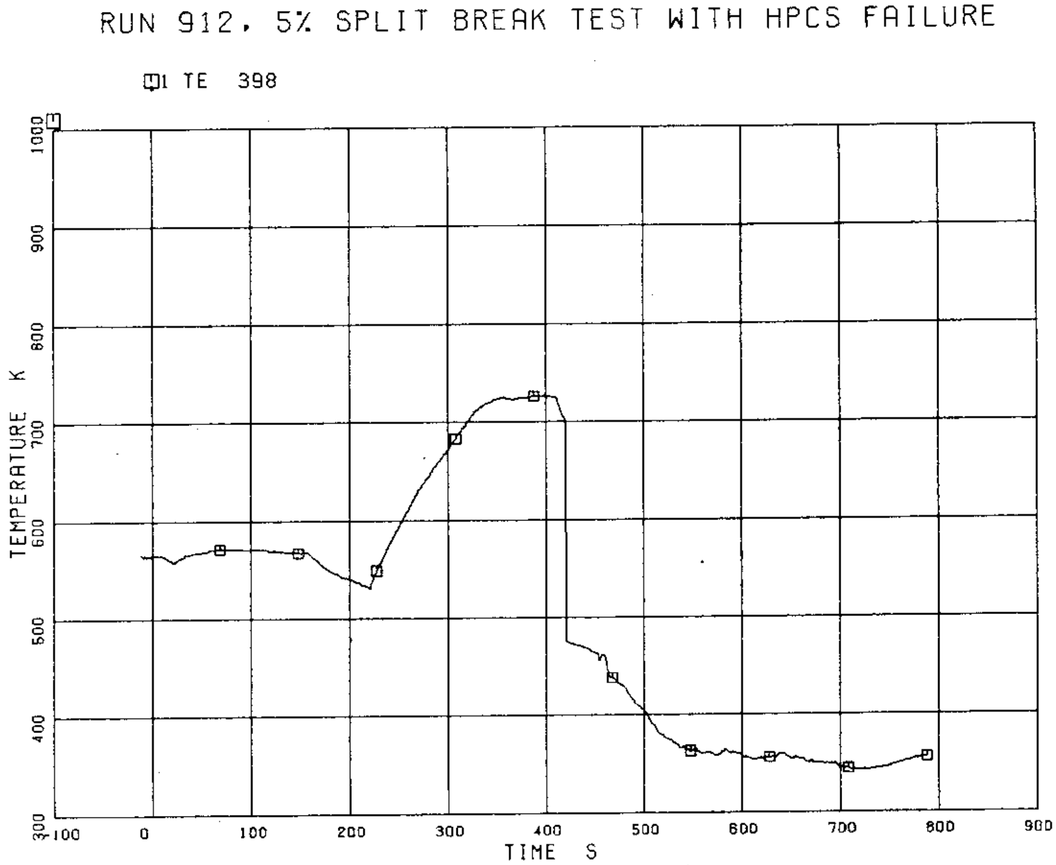


Fig. 5.141 Heater Rod Surface Temperature of D11 Rod

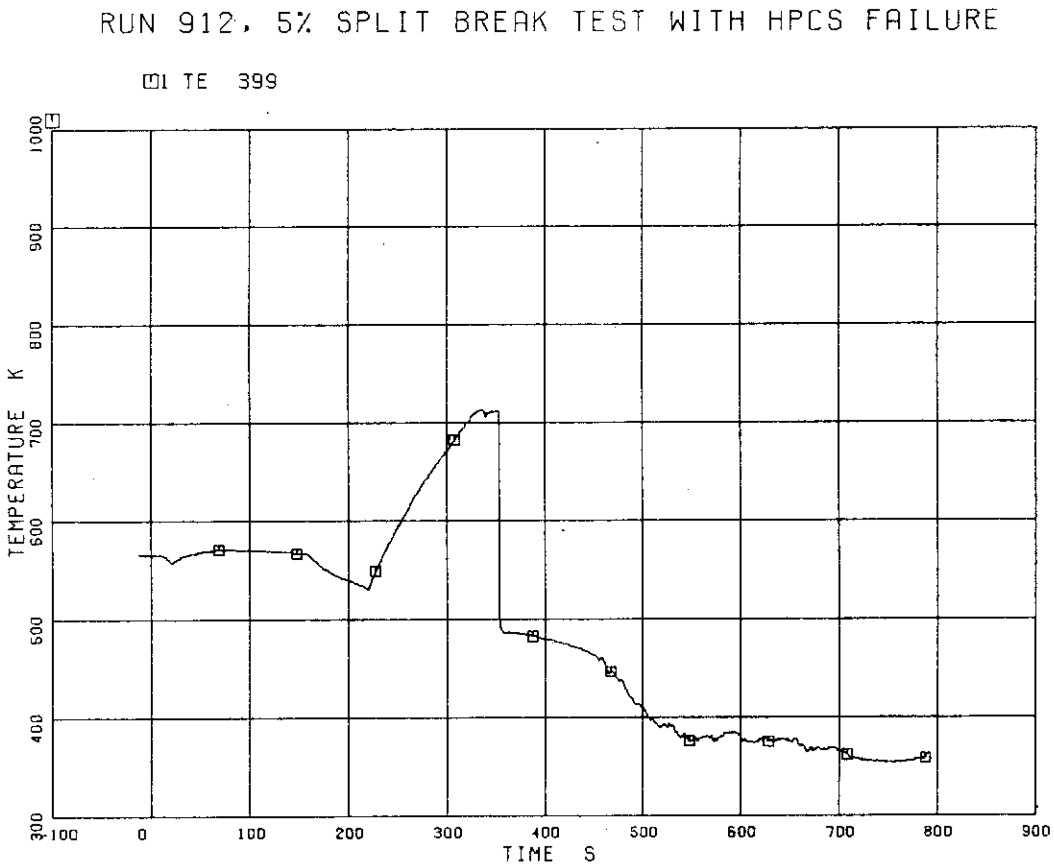


Fig. 5.142 Heater Rod Surface Temperature of D13 Rod

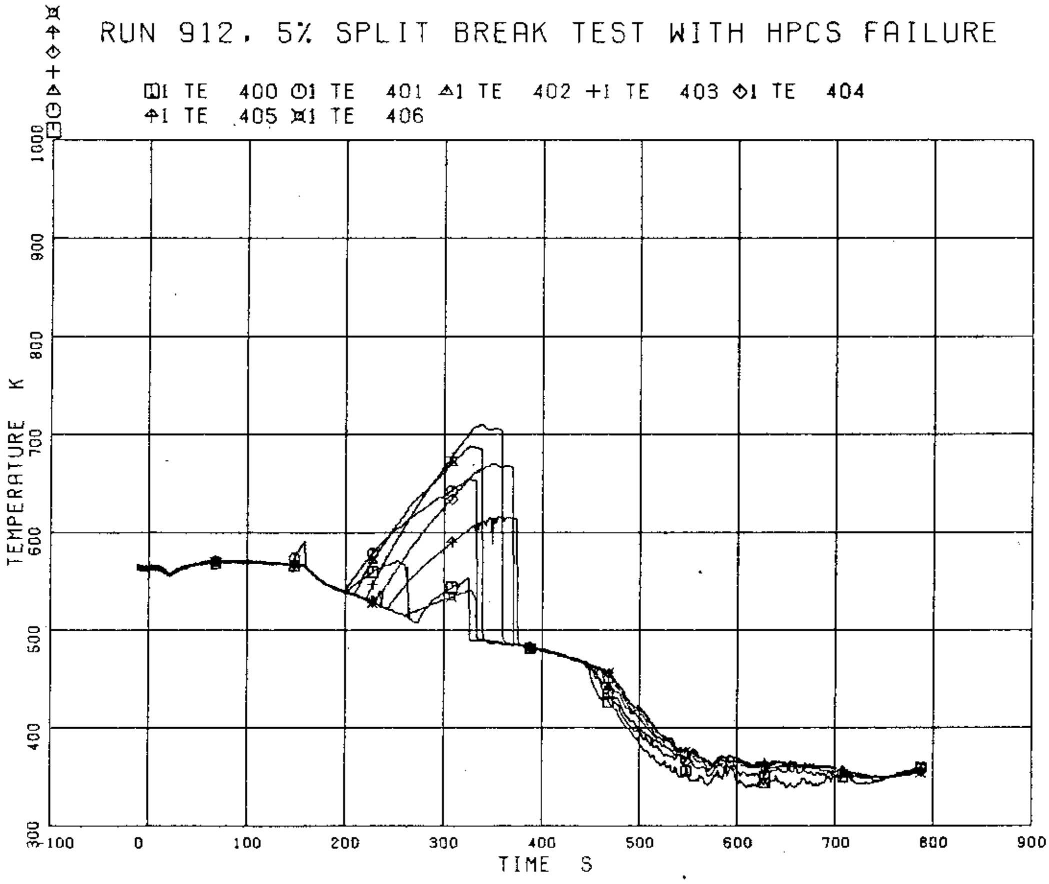


Fig. 5.143 Heater Rod Surface Temperature of D22 Rod

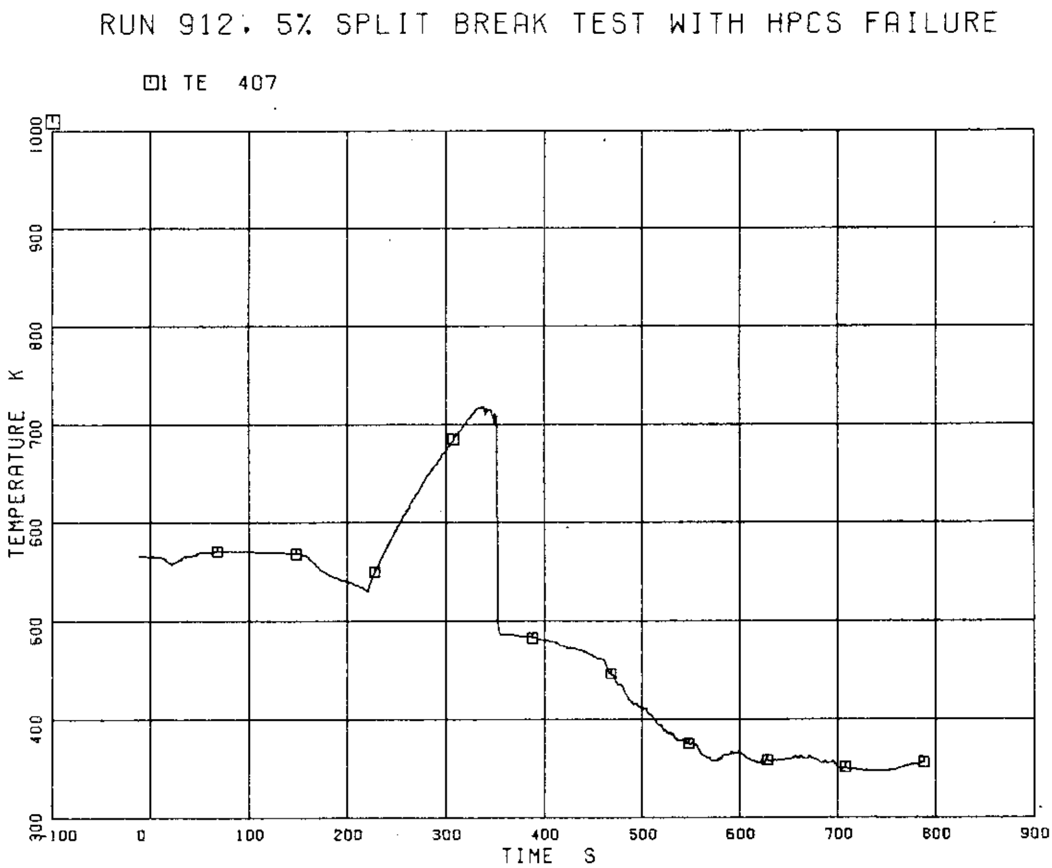


Fig. 5.144 Heater Rod Surface Temperature of D31 Rod

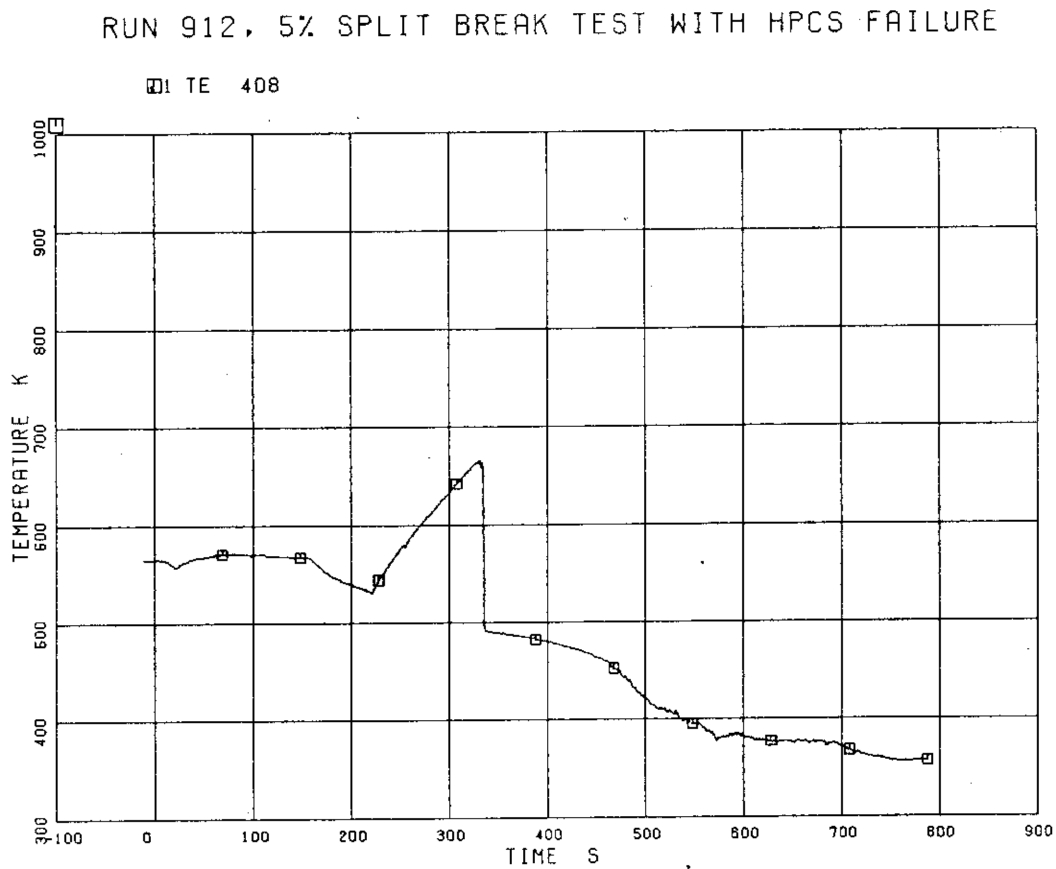


Fig. 5.145 Heater Rod Surface Temperature of D33 Rod

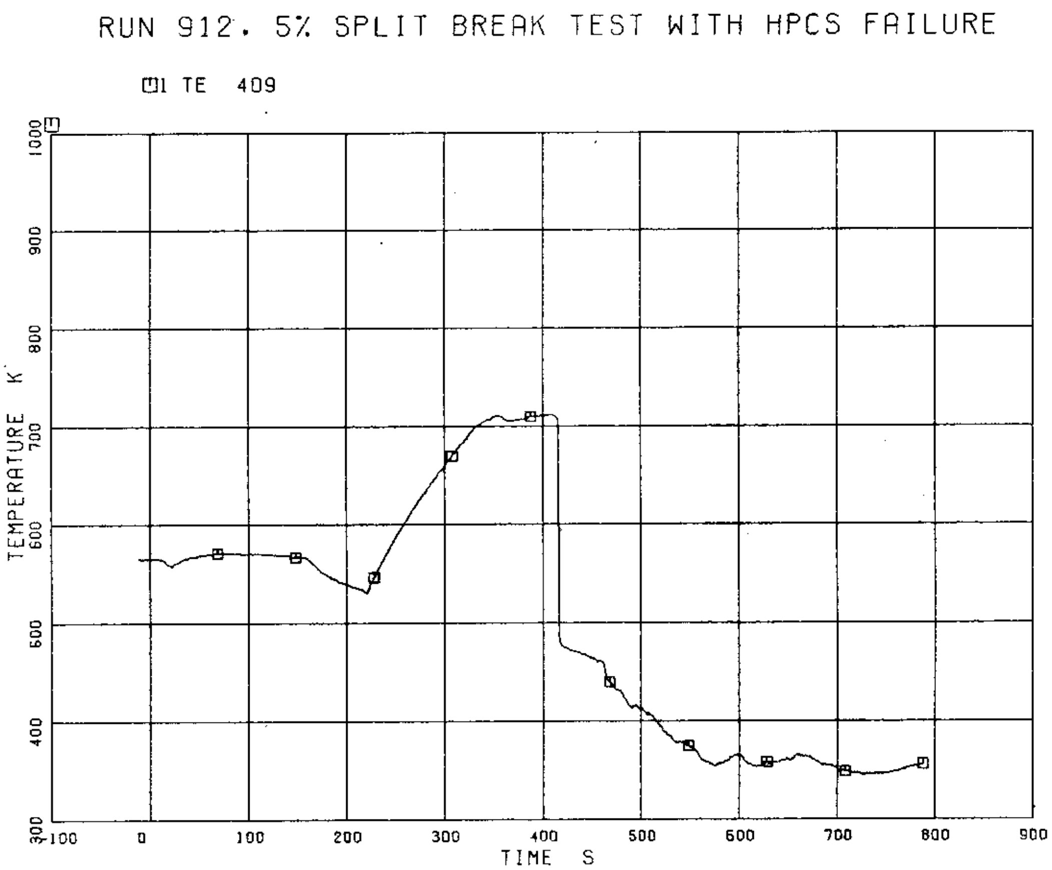


Fig. 5.146 Heater Rod Surface Temperature of D51 Rod

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

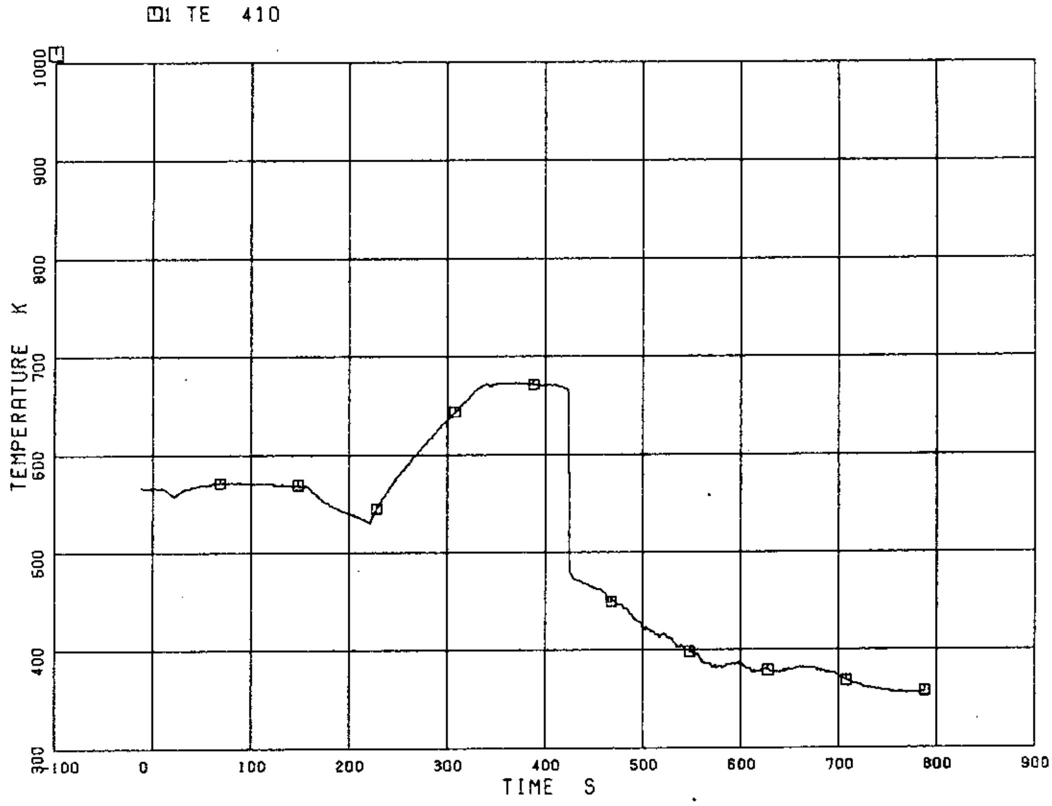


Fig. 5.147 Heater Rod Surface Temperature of D53 Rod

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

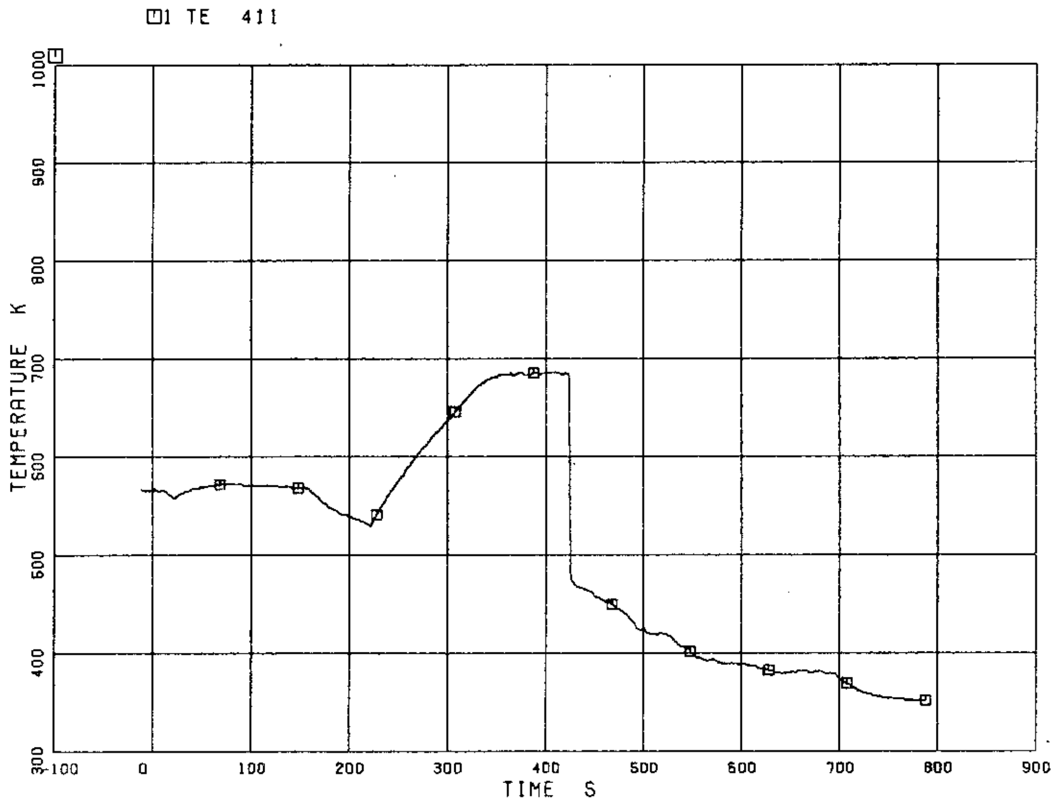


Fig. 5.148 Heater Rod Surface Temperature of D66 Rod

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

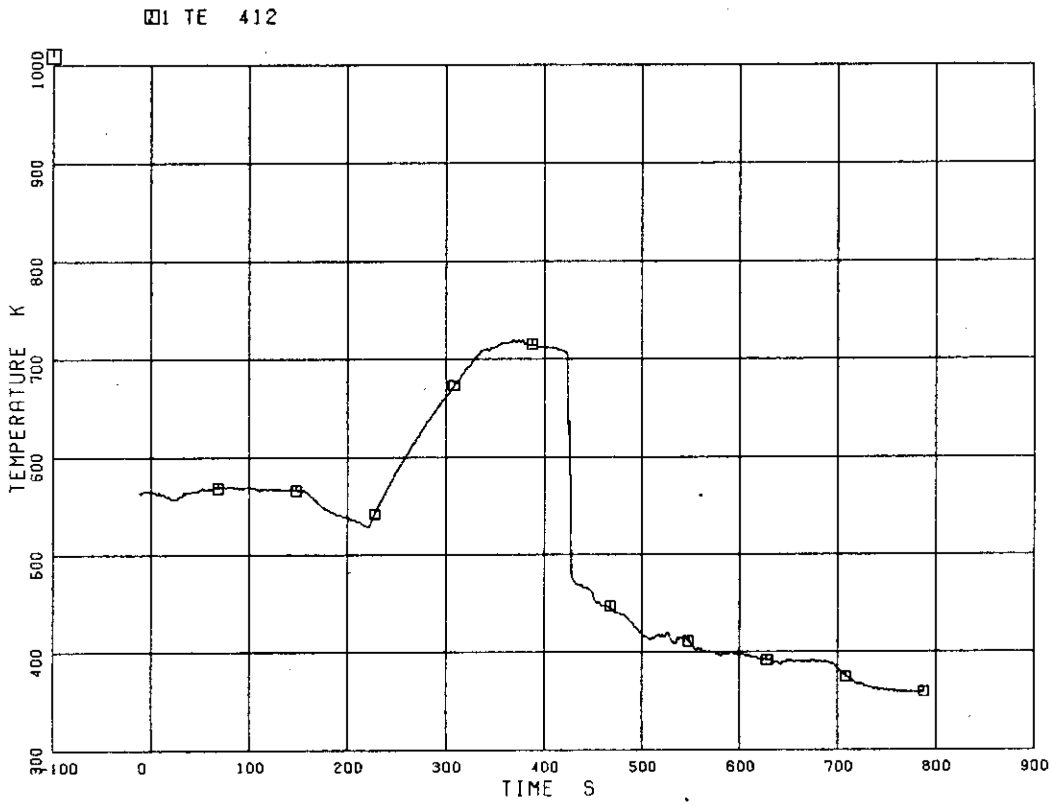


Fig. 5.149 Heater Rod Surface Temperature of D77 Rod

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

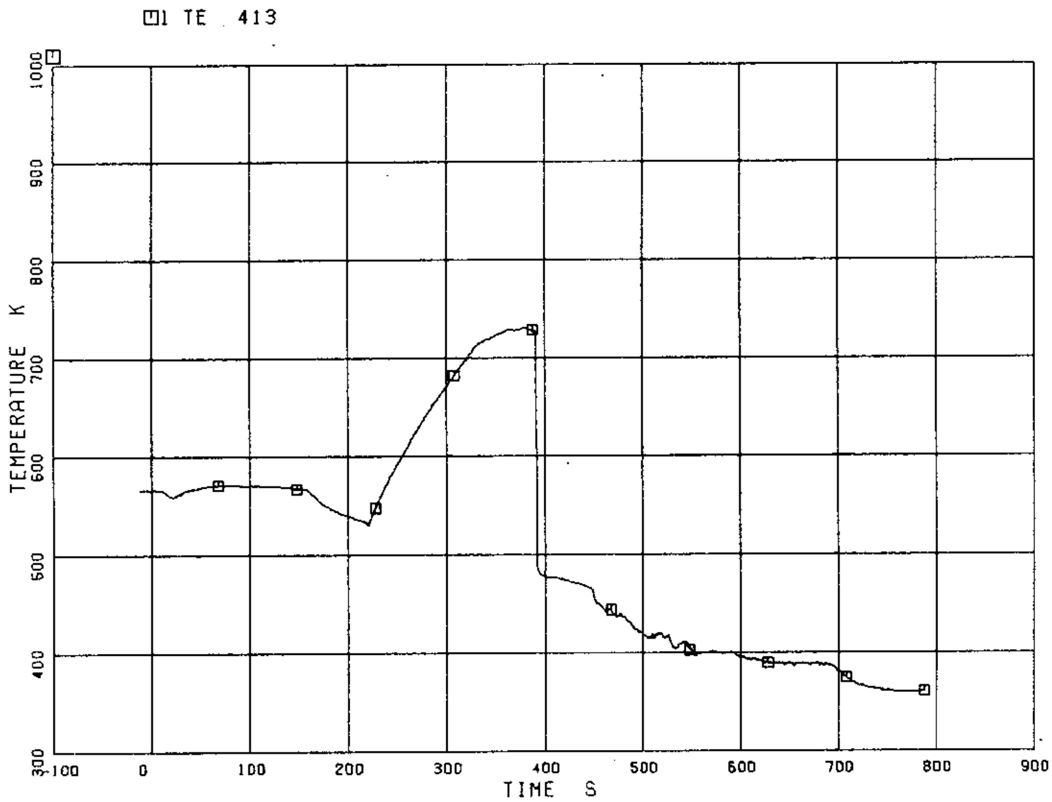


Fig. 5.150 Heater Rod Surface Temperature of D86 Rod

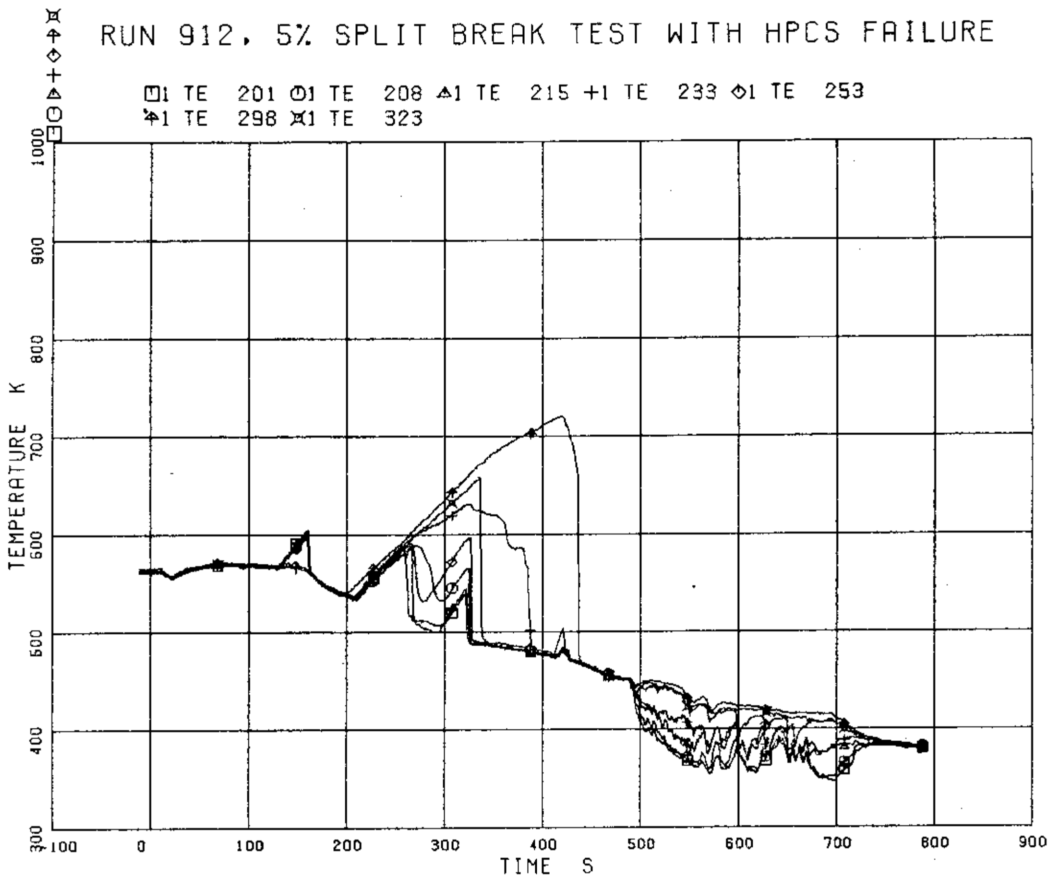


Fig. 5.151 Heater Rod Surface Temprature at Position 1 of Rods A11,A12,A13,A22,A33,A77,A88

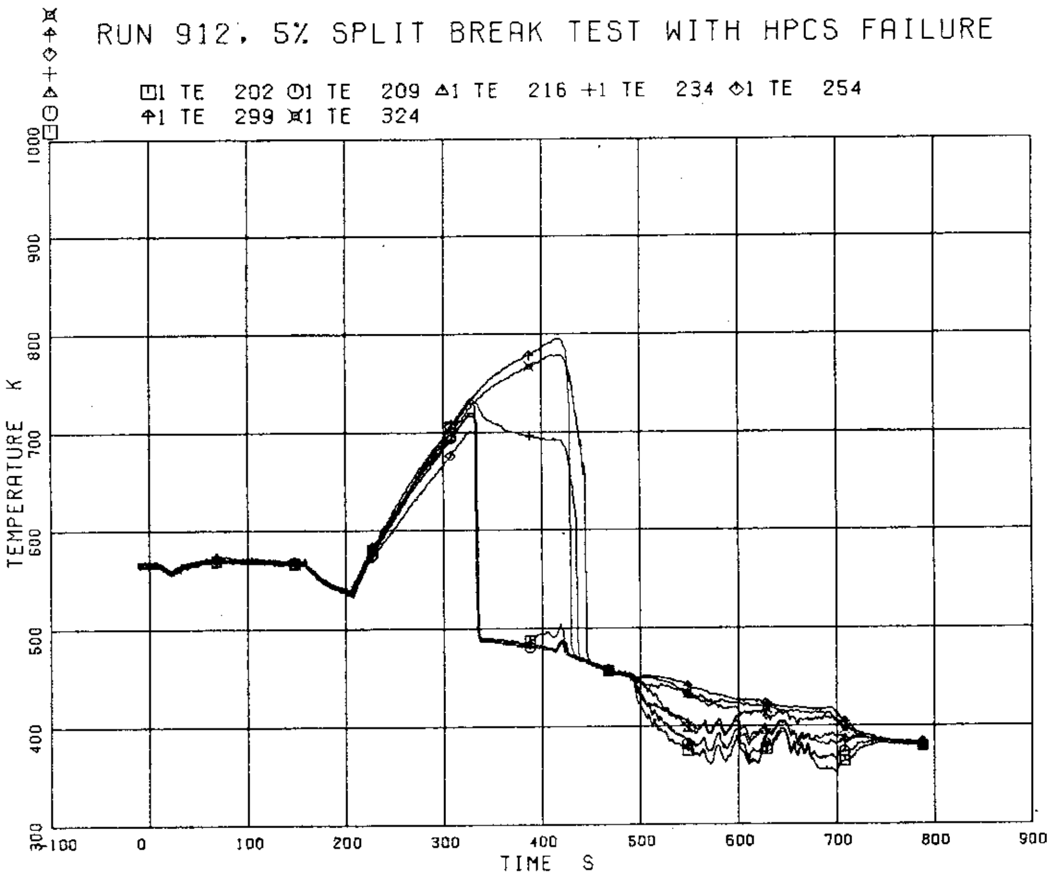


Fig. 5.152 Heater Rod Surface Temprature at Position 2 of Rods A11,A12,A13,A22,A33,A77,A88

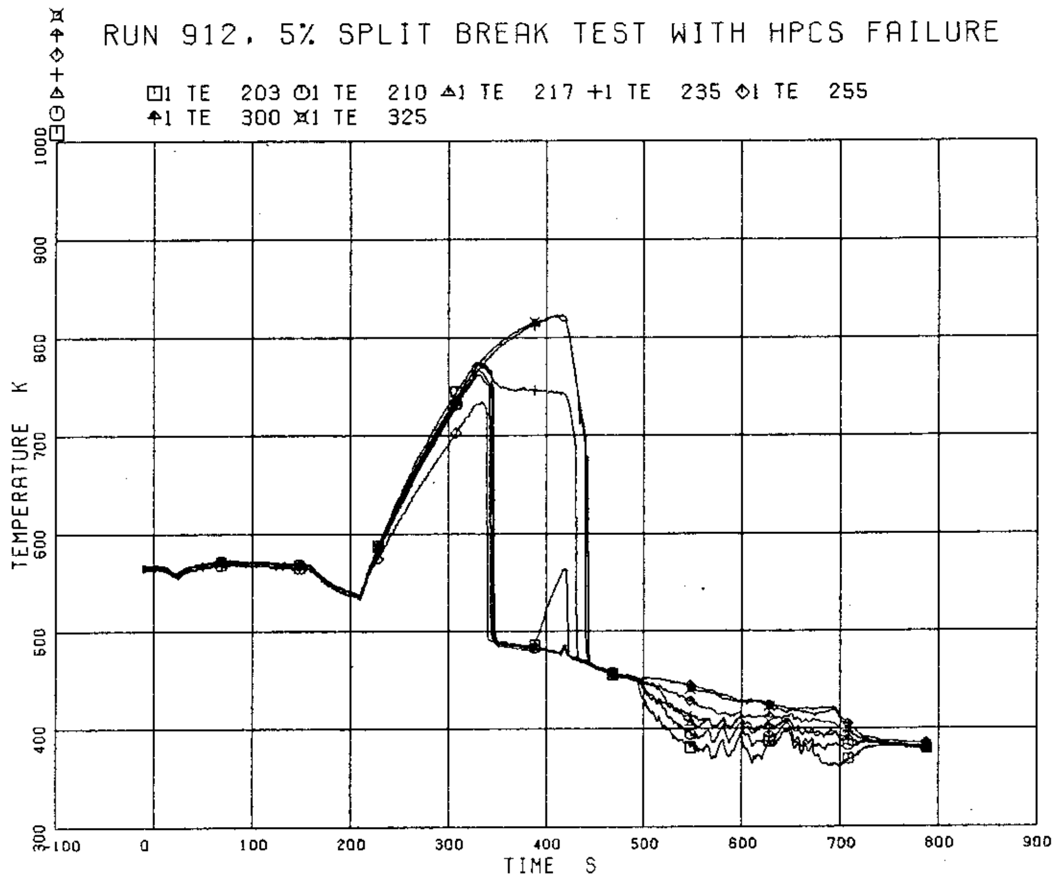


Fig. 5.153 Heater Rod Surface Temprature at Position 3 of Rods A11,A12,A13,A22,A33,A77,A88

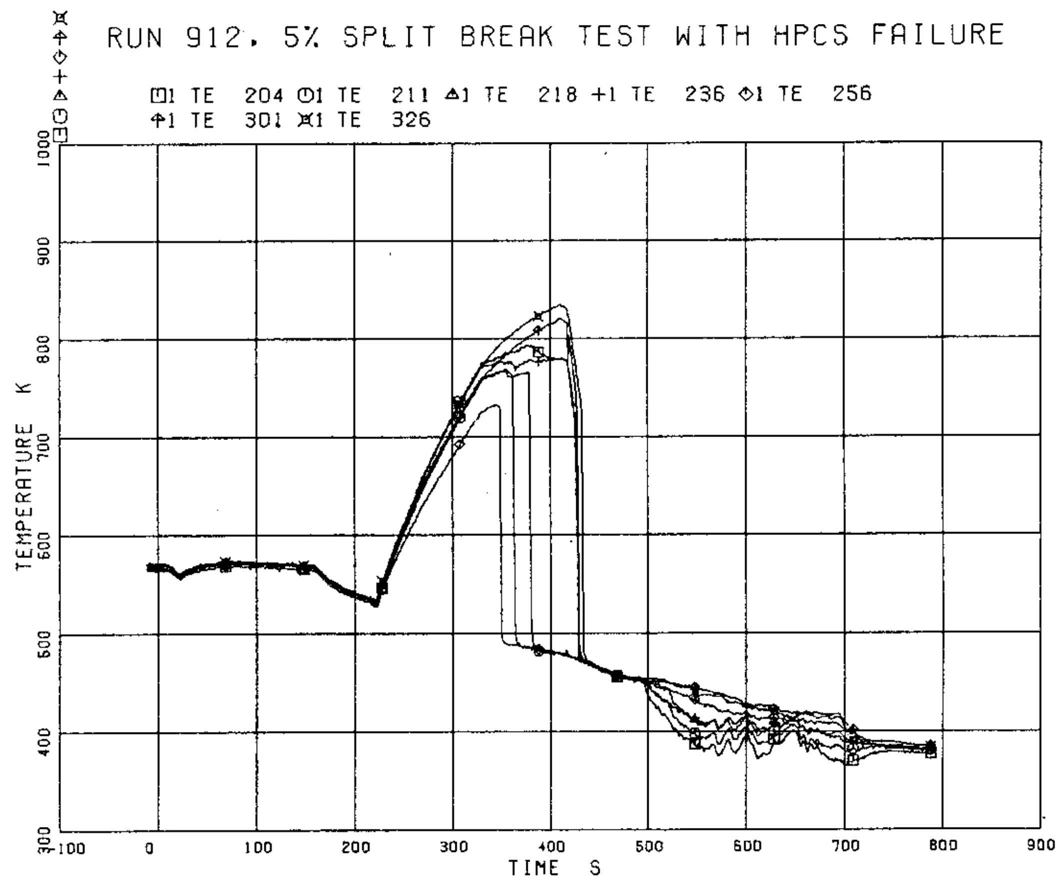


Fig. 5.154 Heater Rod Surface Temprature at Position 4 of Rods A11,A12,A13,A22,A33,A77,A88

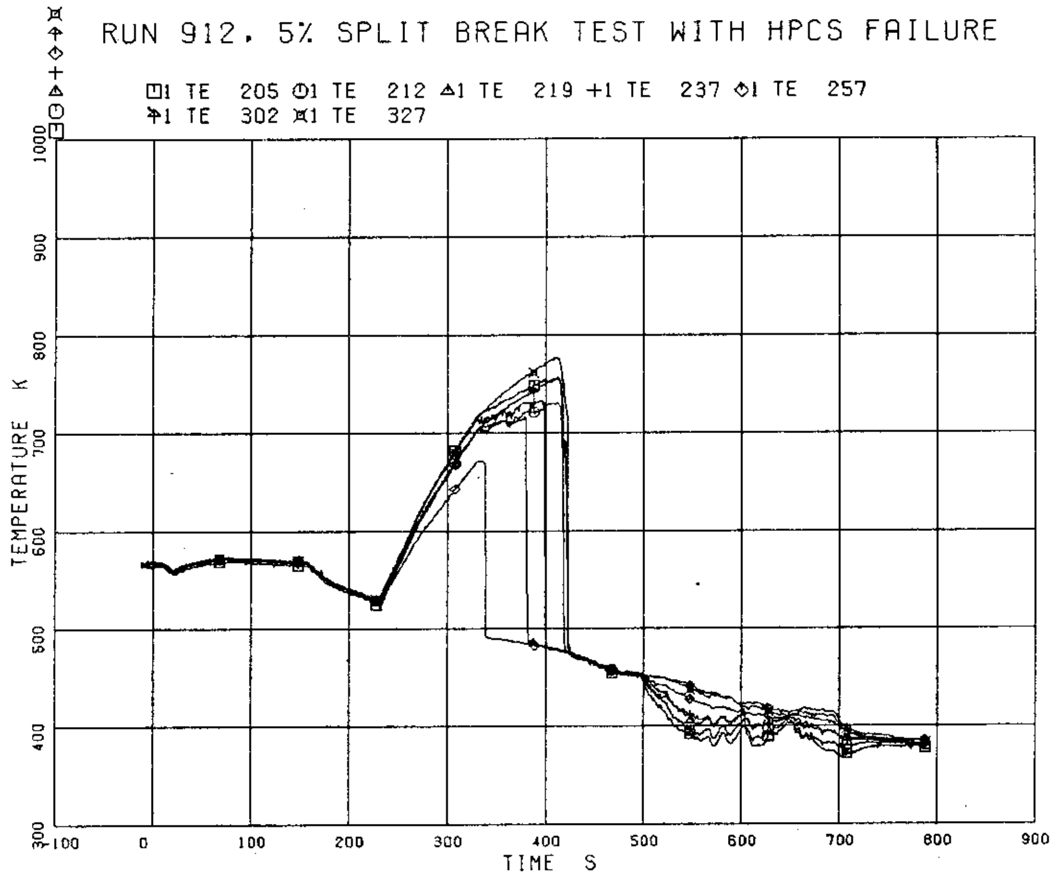


Fig. 5.155 Heater Rod Surface Temprature at Position 5 of Rods A11,A12,A13,A22,A33,A77,A88

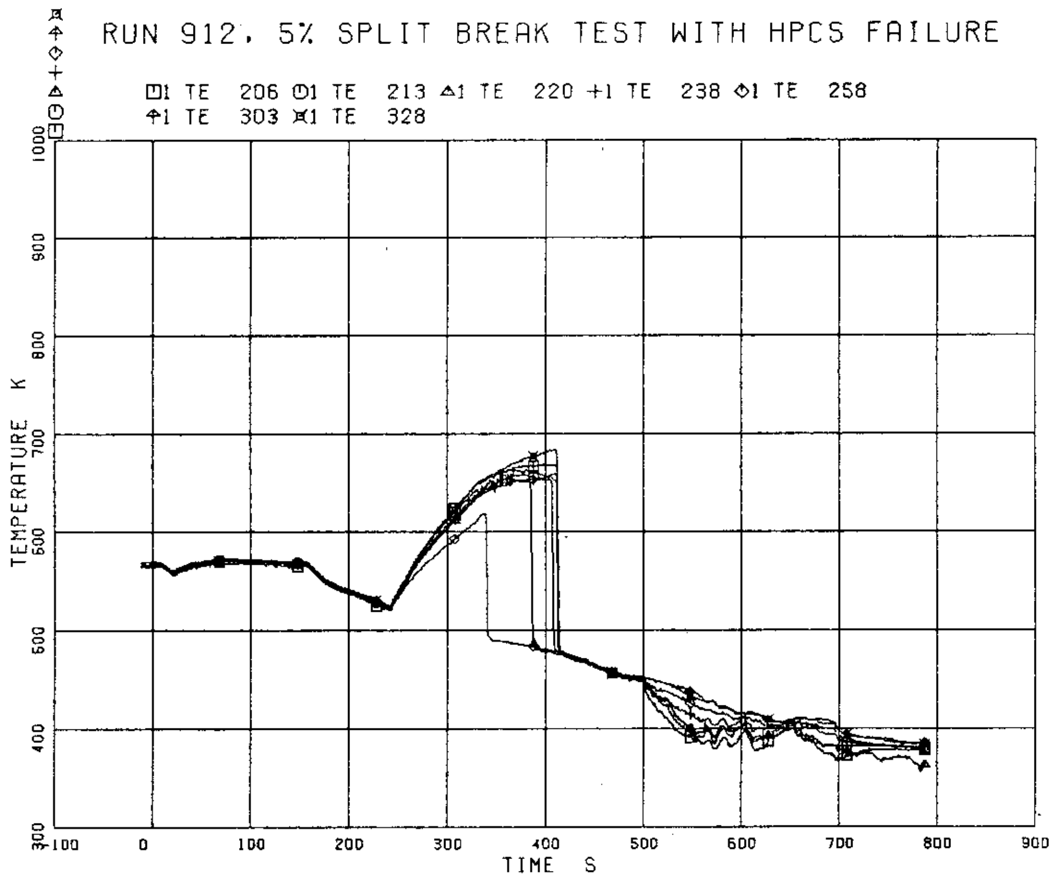


Fig. 5.156 Heater Rod Surface Temprature at Position 6 of Rods A11,A12,A13,A22,A33,A77,A88

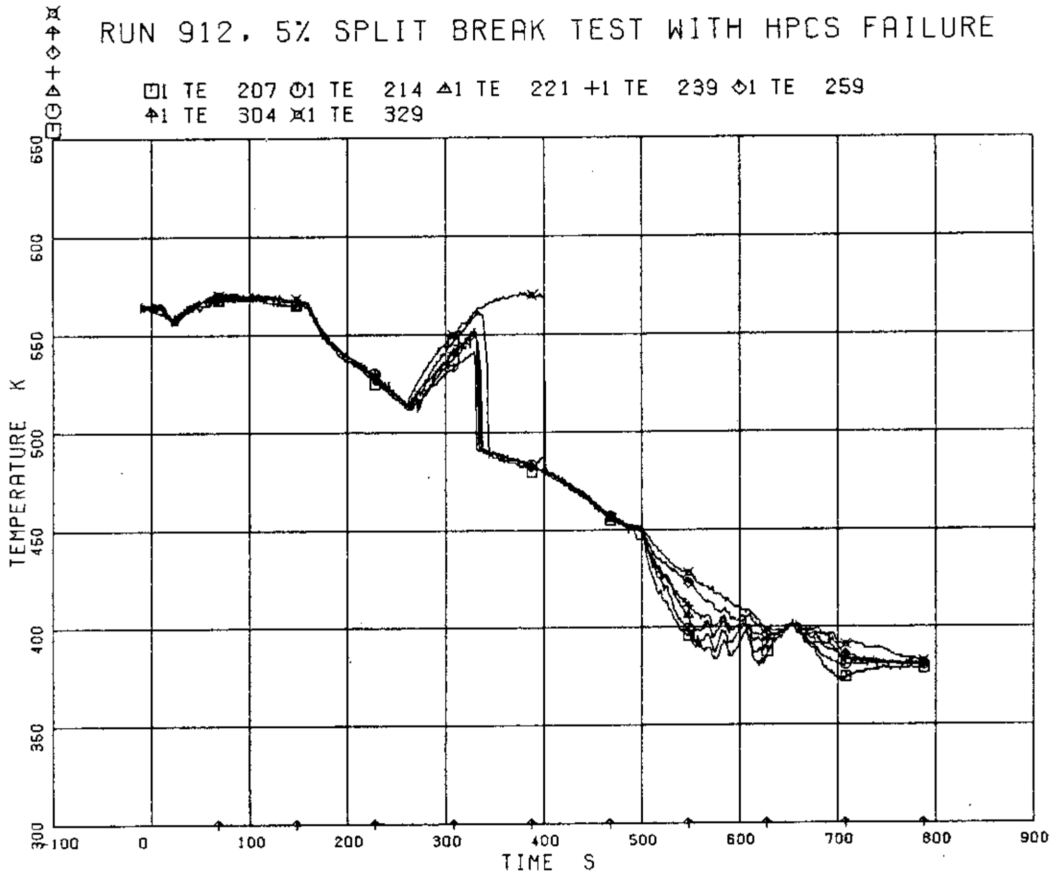


Fig. 5.157 Heater Rod Surface Temprature at Position 7 of Rods A11,A12,A13,A22,A33,A77,A88

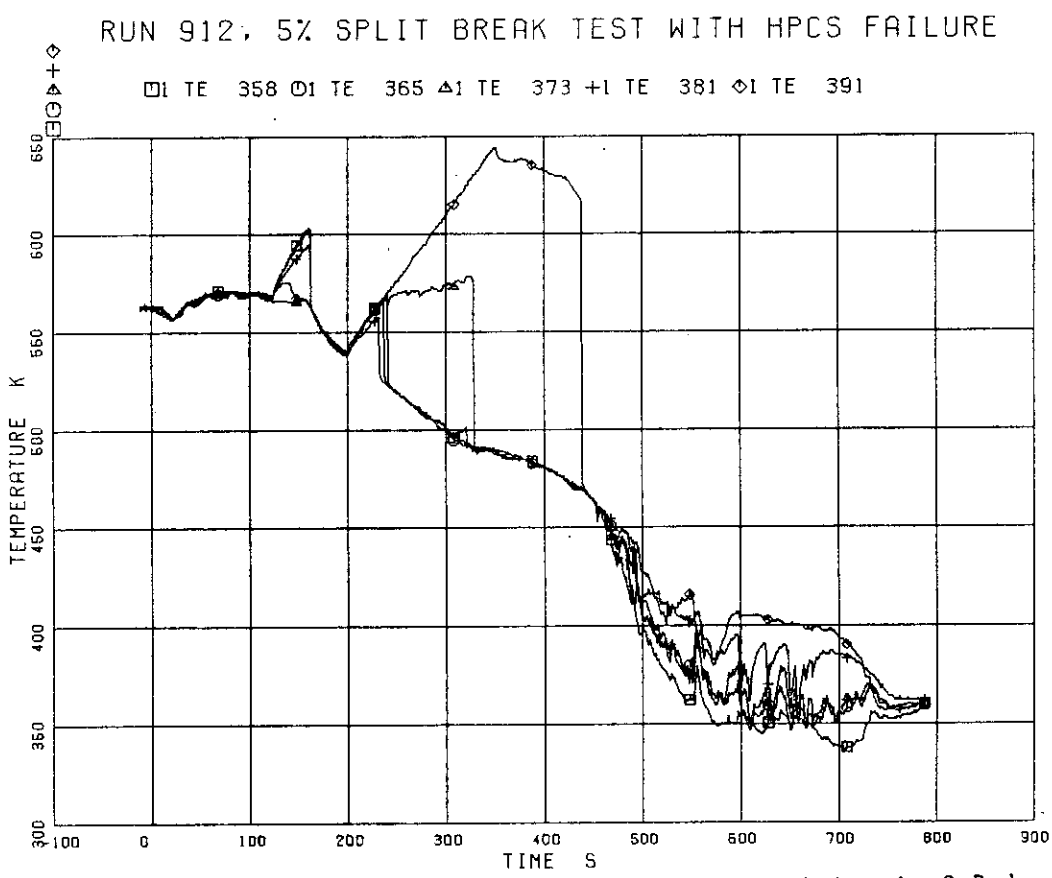


Fig. 5.158 Heater Rod Surface Temprature at Position 1 of Rods C11,C13,C22,C33,C77

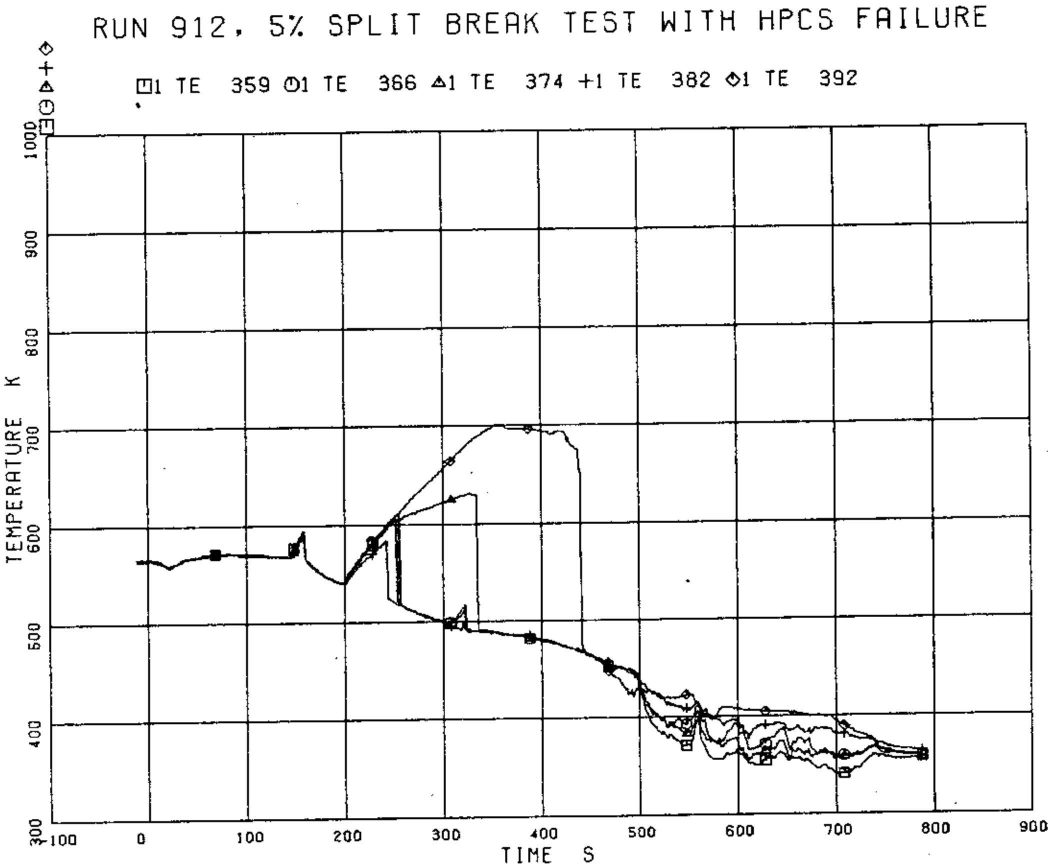


Fig. 5.159 Heater Rod Surface Temprature at Position 2 of Rods C11,C13,C22,C33,C77

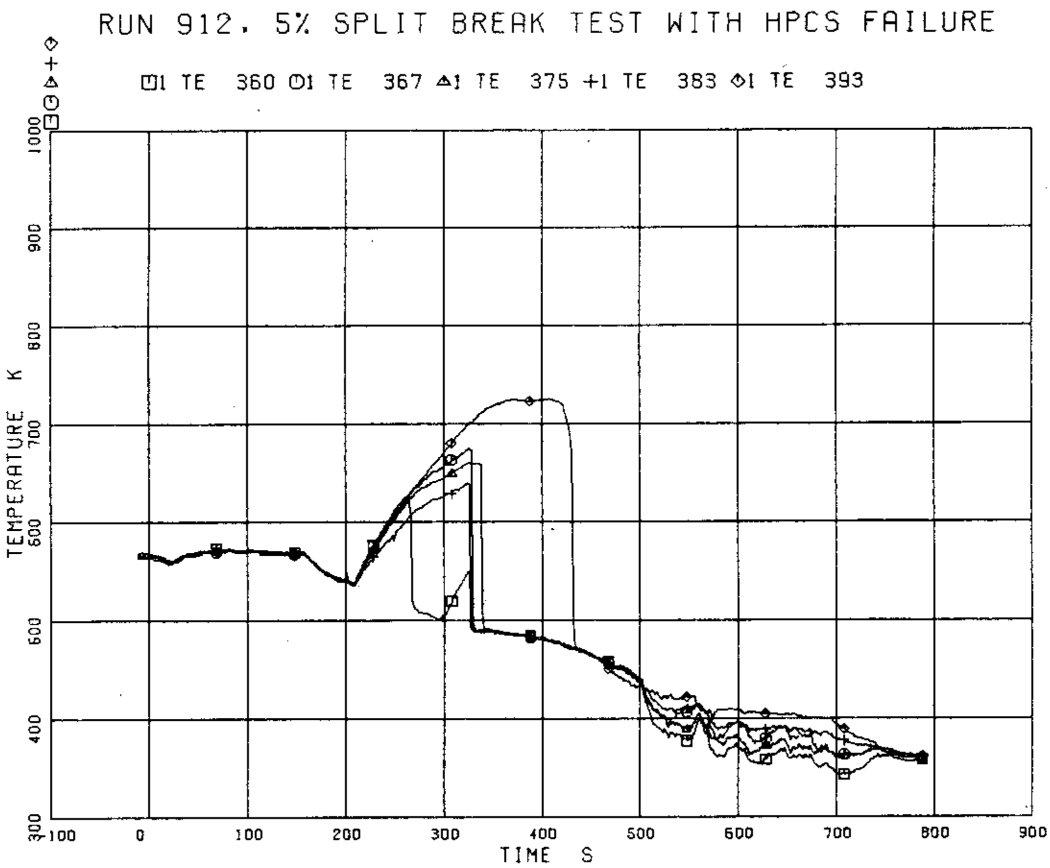


Fig. 5.160 Heater Rod Surface Temprature at Position 3 of Rods C11,C13,C22,C33,C77

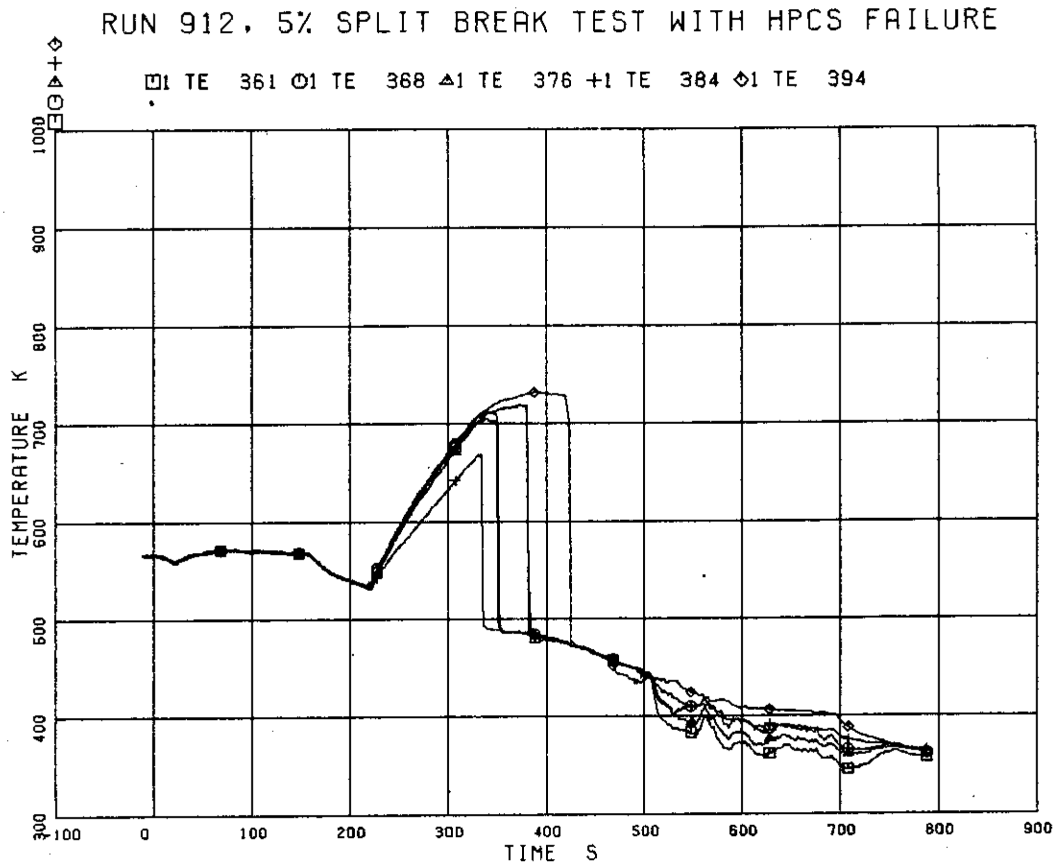


Fig. 5.161 Heater Rod Surface Temprature at Position 4 of Rods C11,C13,C22,C33,C77

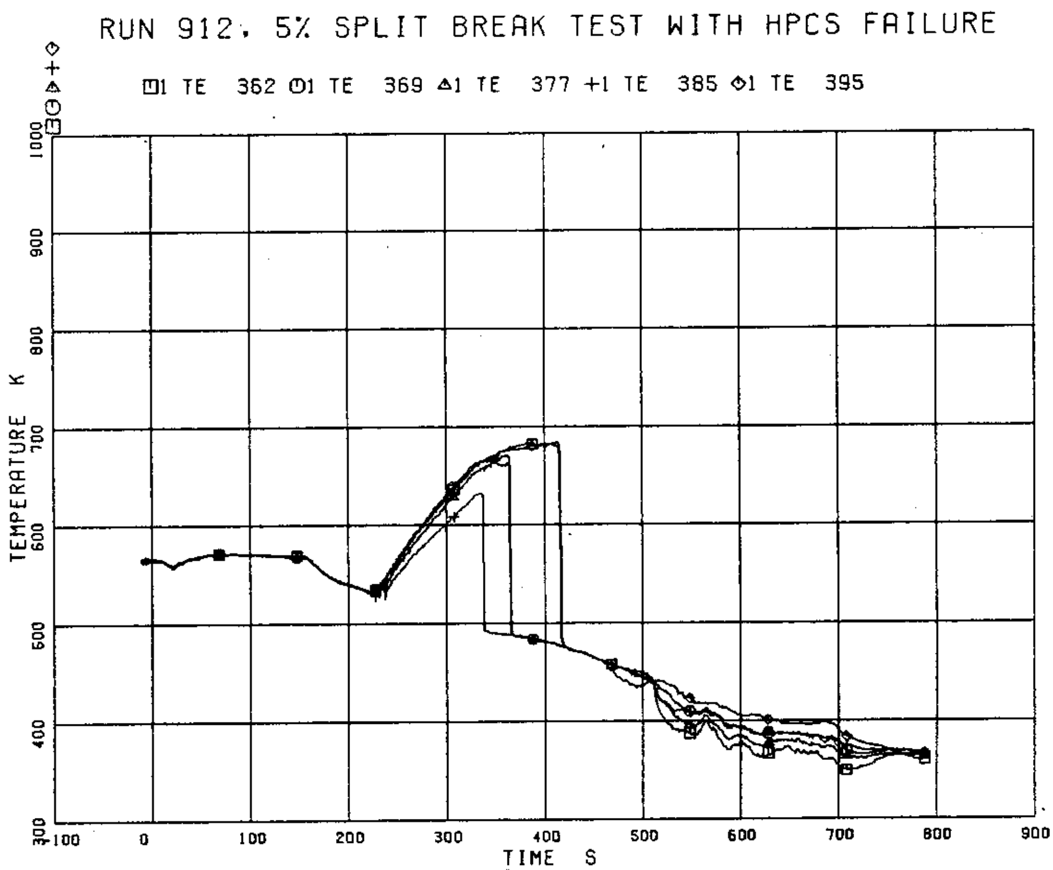


Fig. 5.162 Heater Rod Surface Temprature at Position 5 of Rods C11,C13,C22,C33,C77

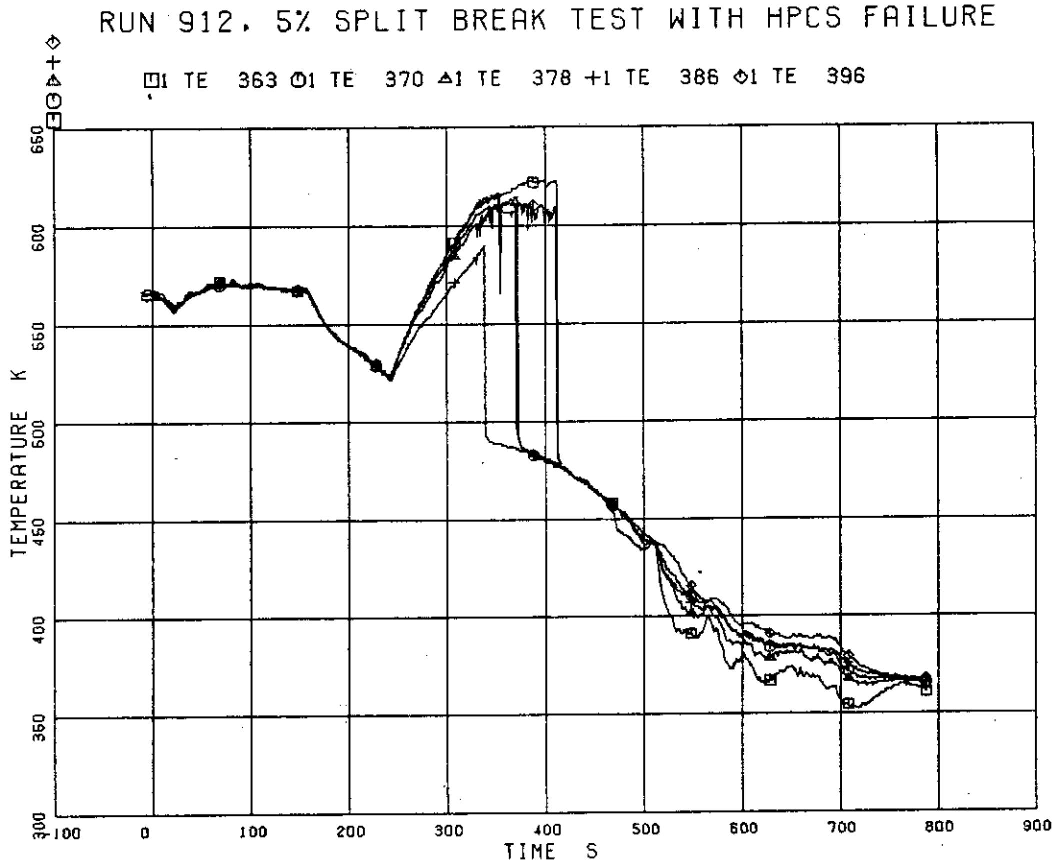


Fig. 5.163 Heater Rod Surface Temprature at Position 6 of Rods C11,C13,C22,C33,C77

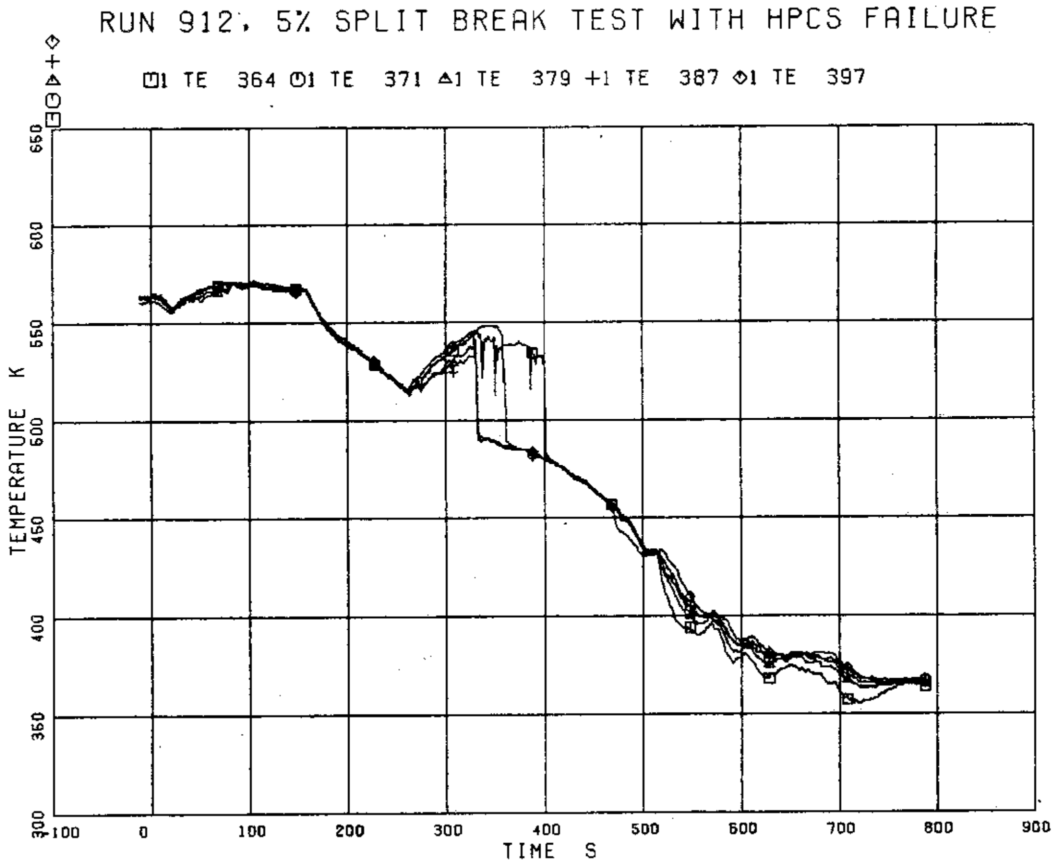


Fig. 5.164 Heater Rod Surface Temprature at Position 7 of Rods C11,C13,C22,C33,C77

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

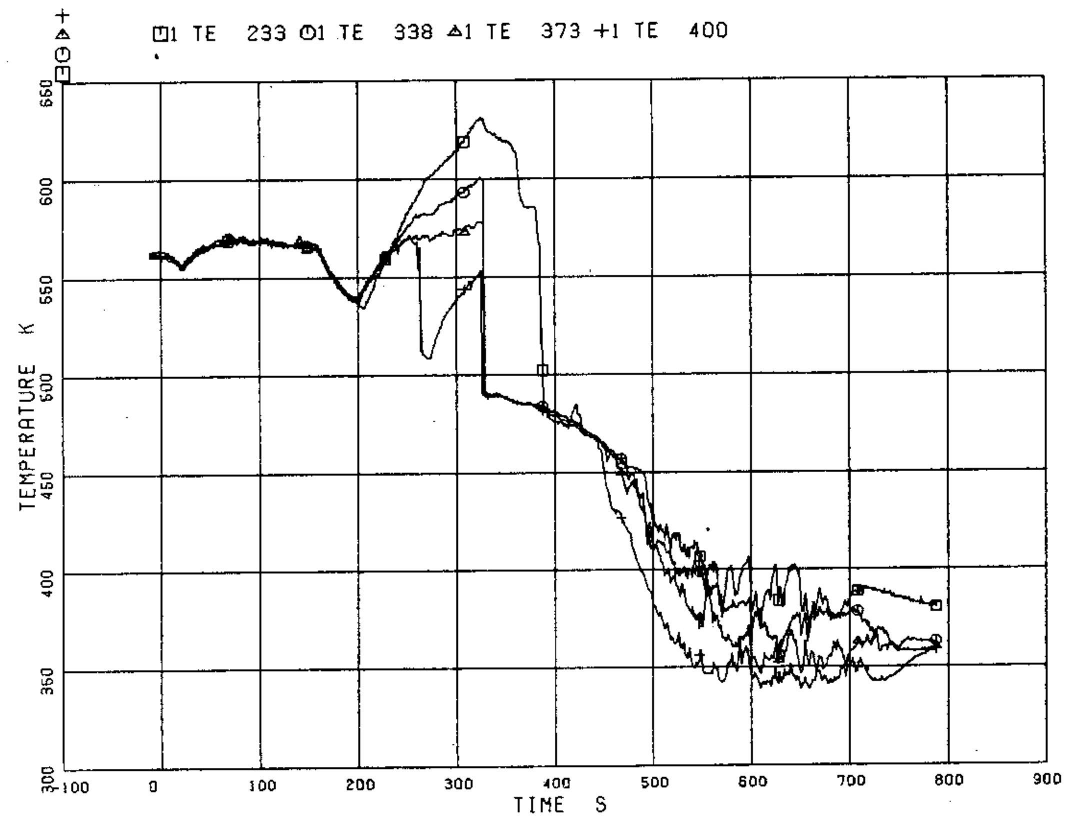


Fig. 5.165 Heater Rod Surface Temprature at Position 1 of Rods A22,B22,C22,D22

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

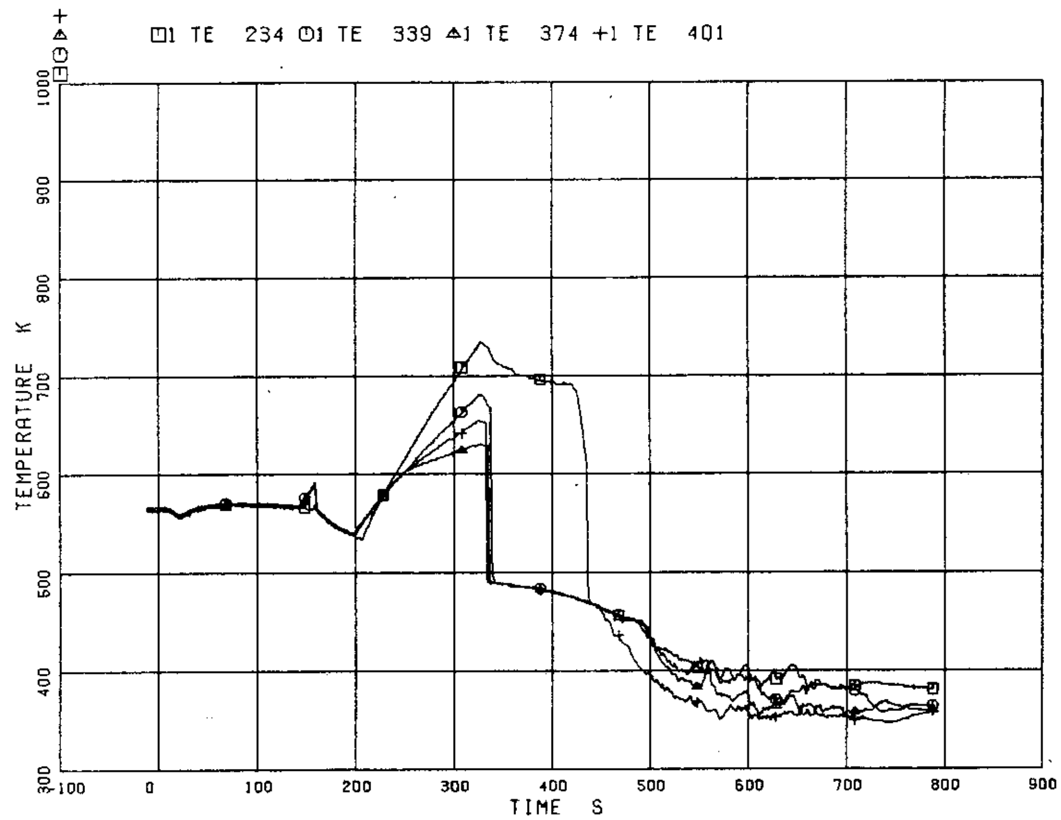


Fig. 5.166 Heater Rod Surface Temprature at Position 2 of Rods A22,B22,C22,D22

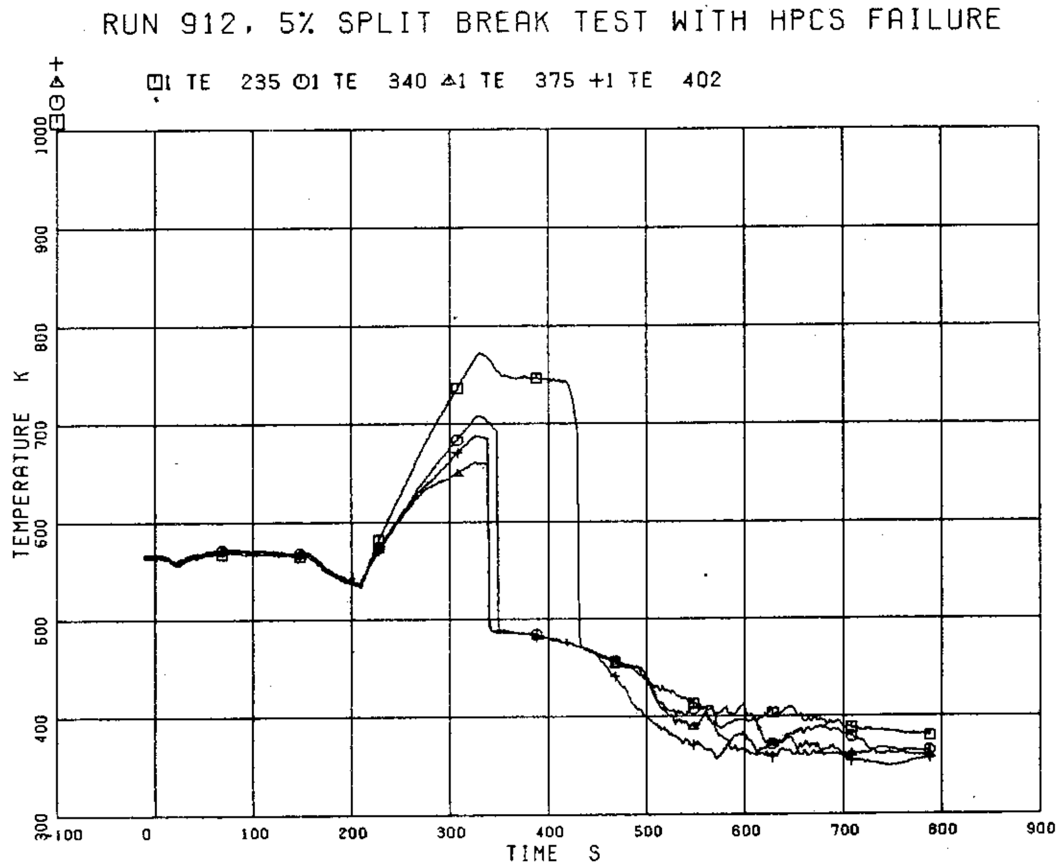


Fig. 5.167 Heater Rod Surface Temprature at Position 3 of Rods A22,B22,C22,D22

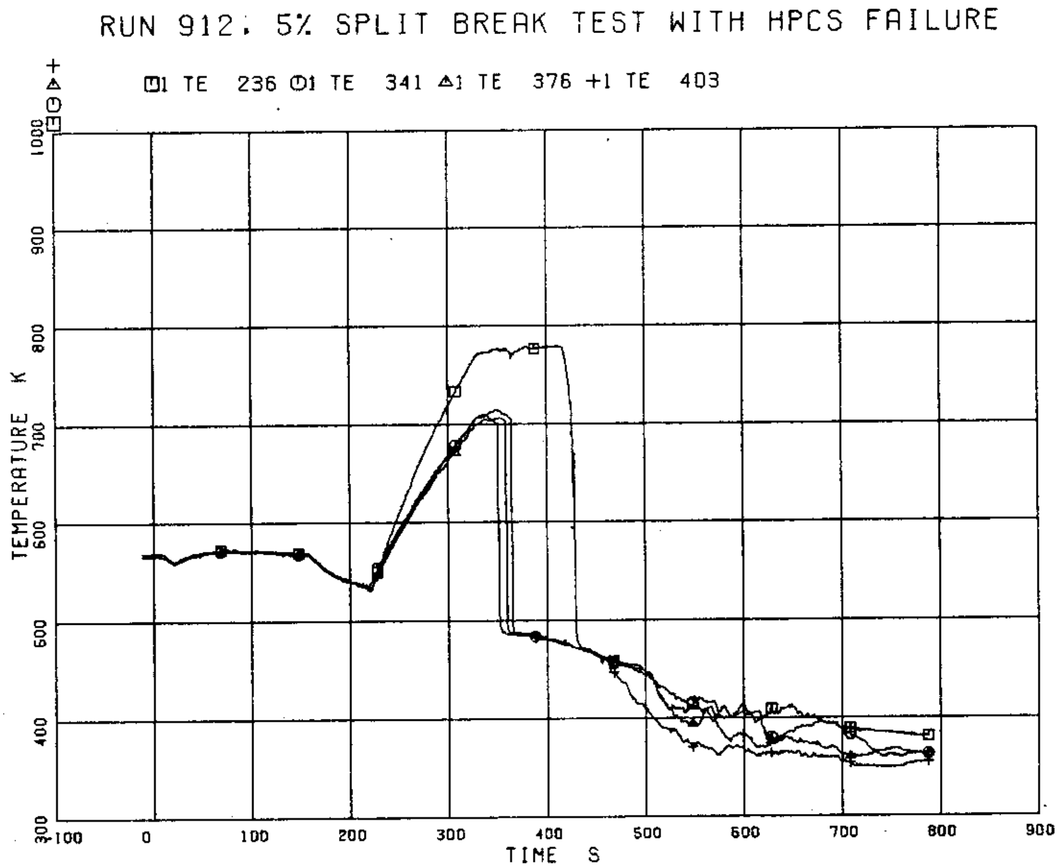


Fig. 5.168 Heater Rod Surface Temprature at Position 4 of Rods A22,B22,C22,D22

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

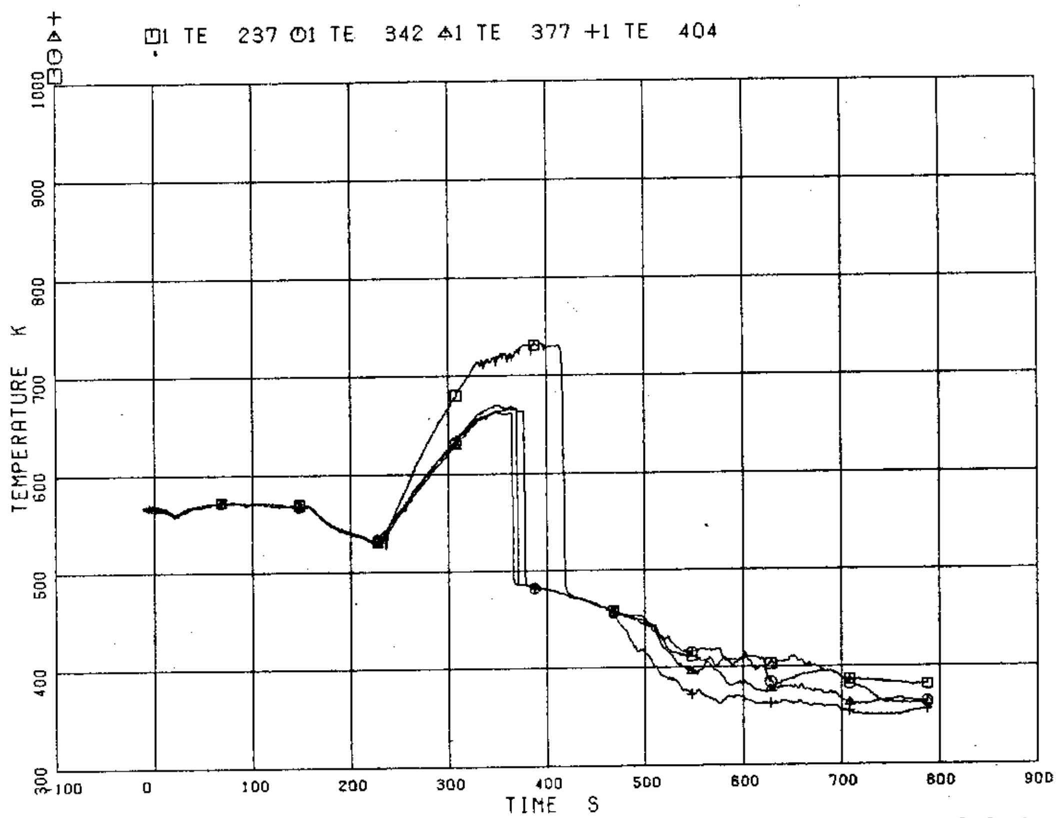


Fig. 5.169 Heater Rod Surface Temprature at Position 5 of Rods A22,B22,C22,D22

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

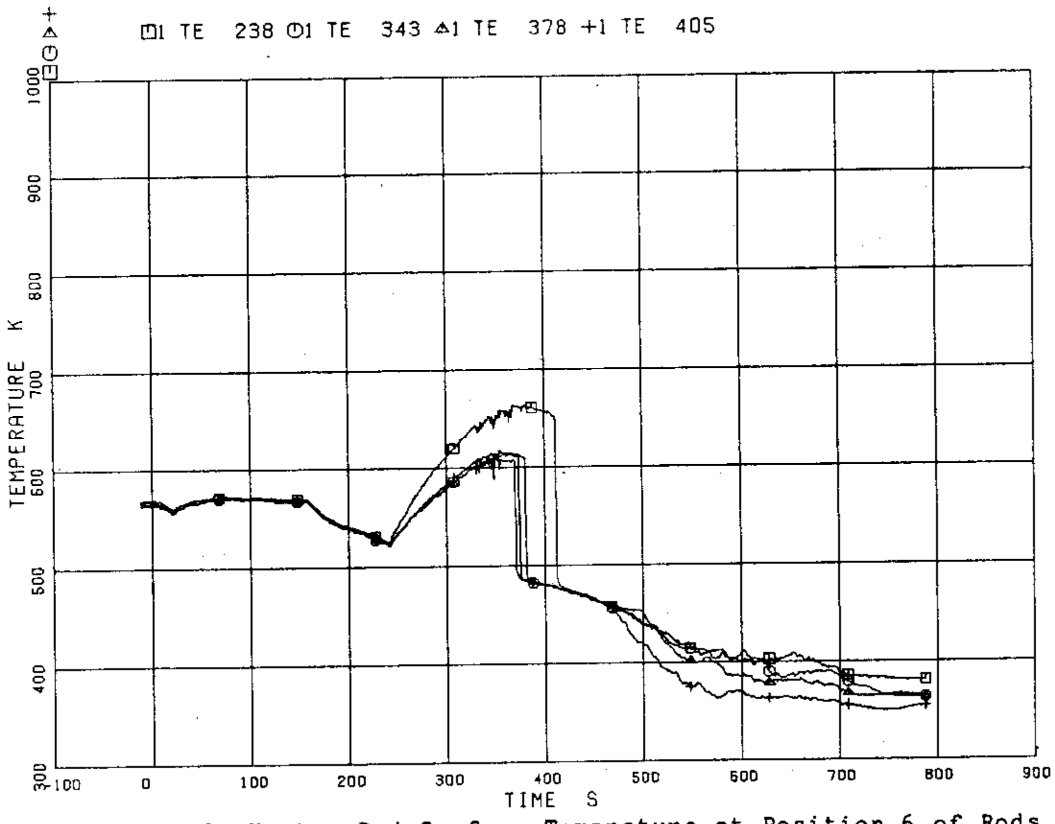


Fig. 5.170 Heater Rod Surface Temprature at Position 6 of Rods A22,B22,C22,D22

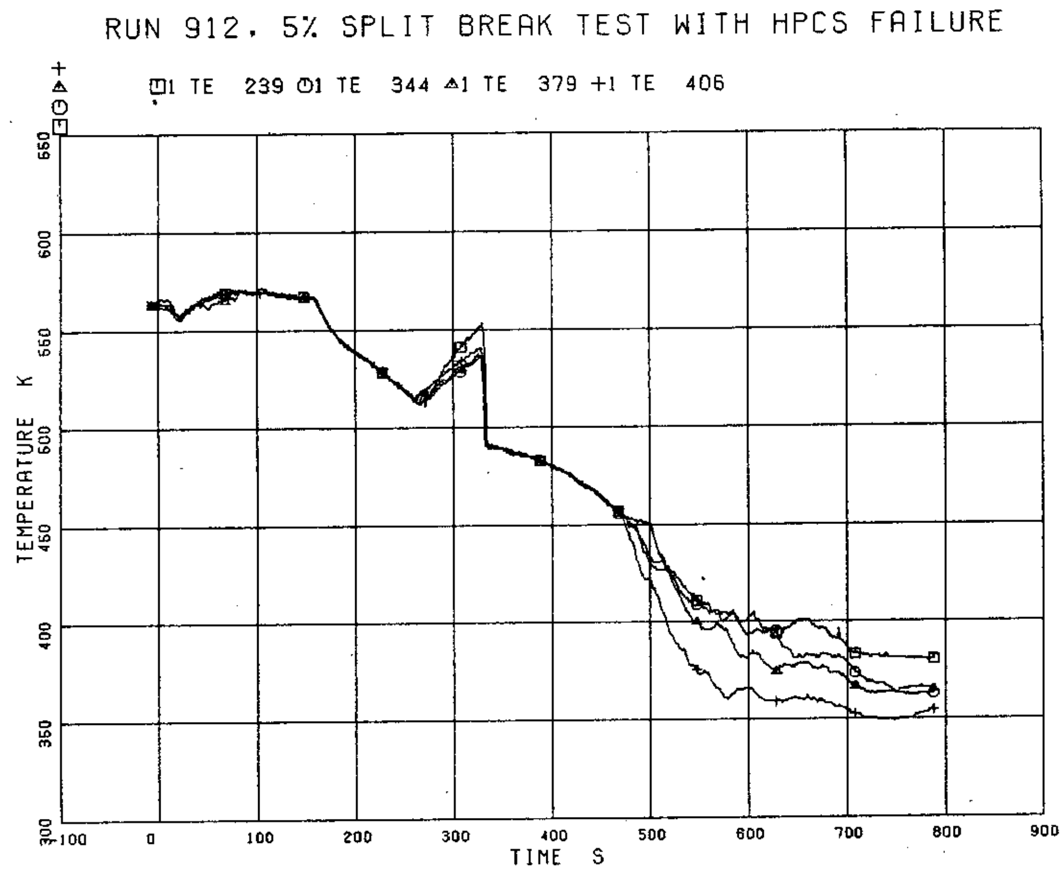


Fig. 5.171 Heater Rod Surface Temprature at Position 7 of Rods A22,B22,C22,D22

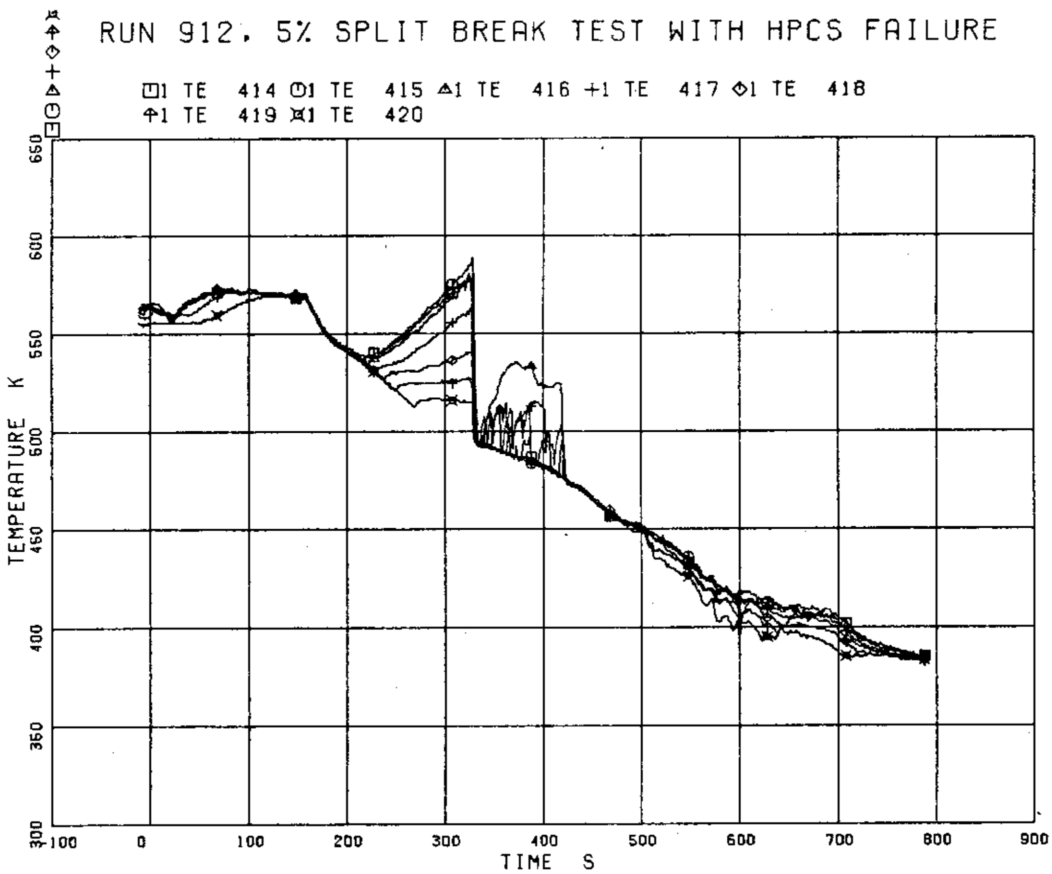


Fig. 5.172 Surface Temperture of Water Rod Simulator A45

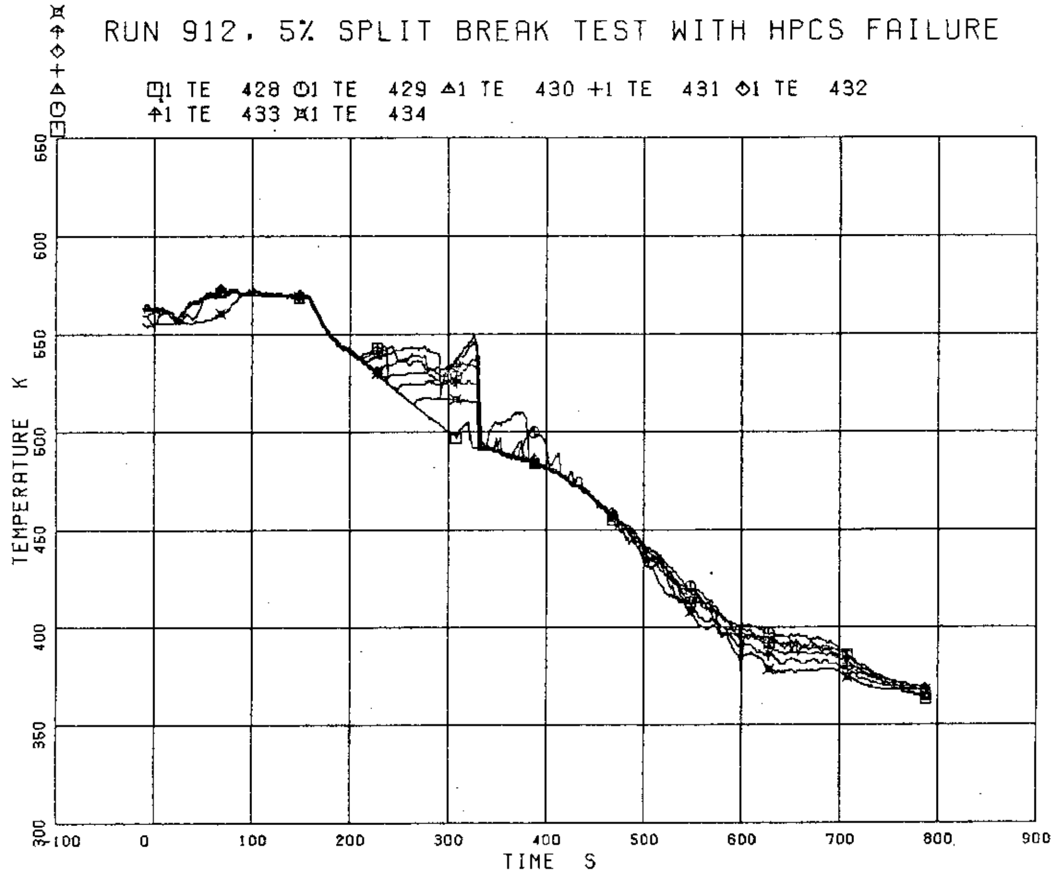


Fig. 5.173 Surface Temperture of Water Rod Simulator C45

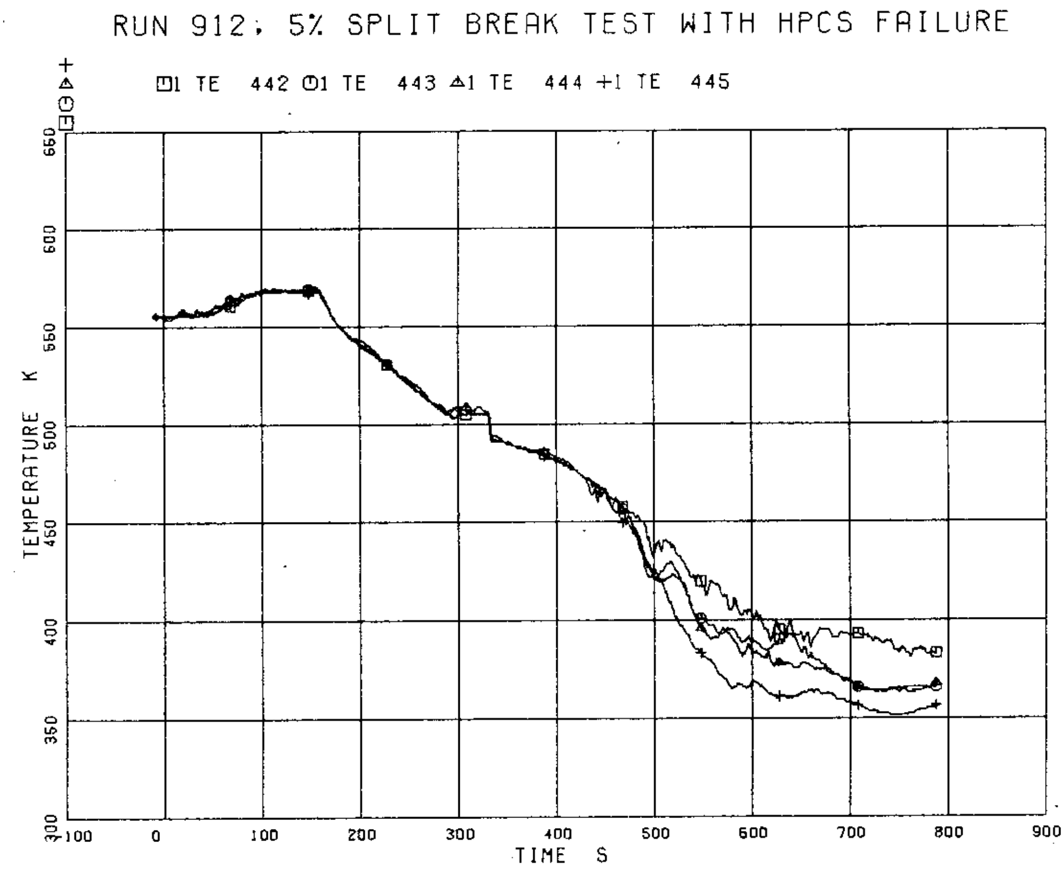


Fig. 5.174 Fluid Temperature at Channel Box Inlet

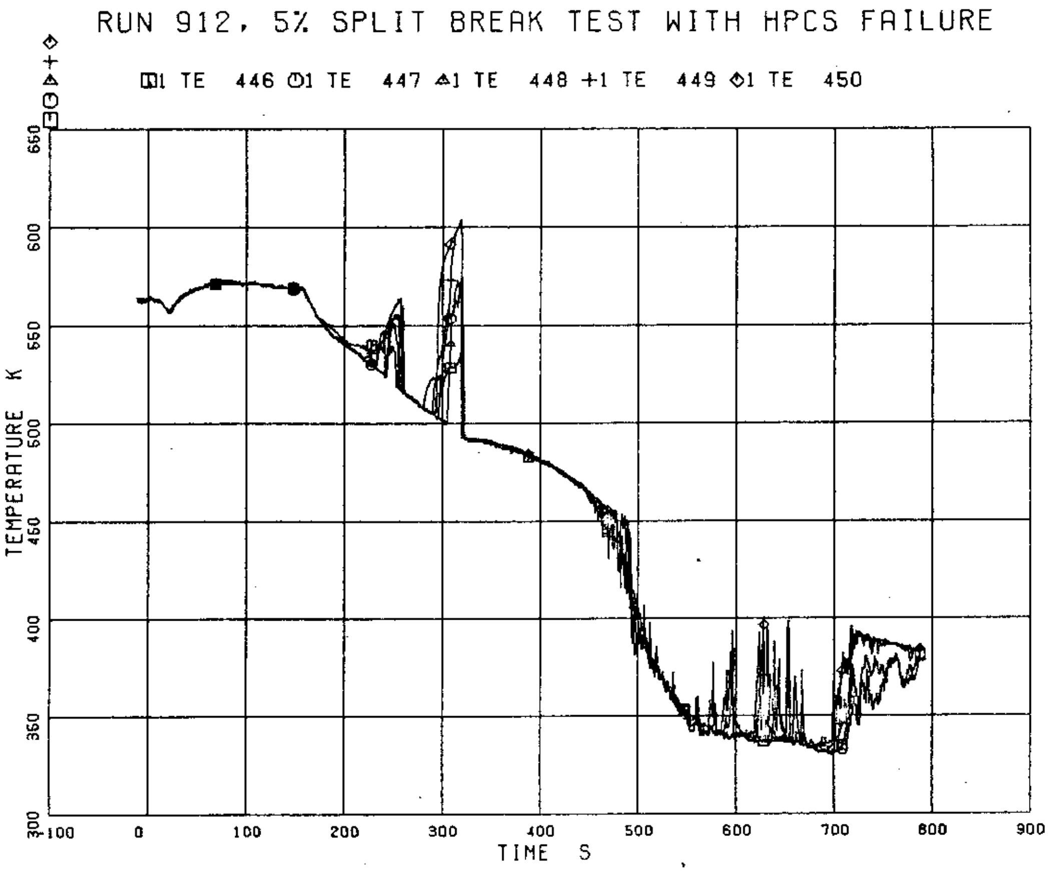


Fig. 5.175 Fluid Temperature at Channel Box A Outlet

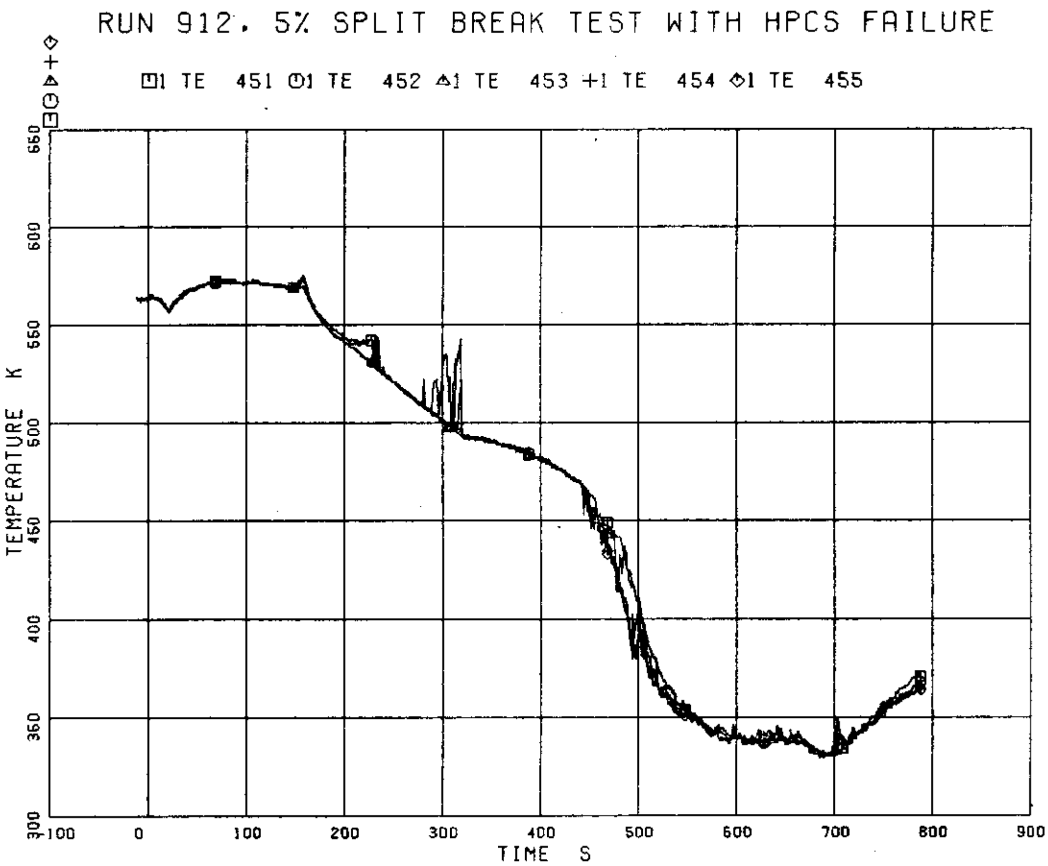


Fig. 5.176 Fluid Temperature at Channel Box C Outlet

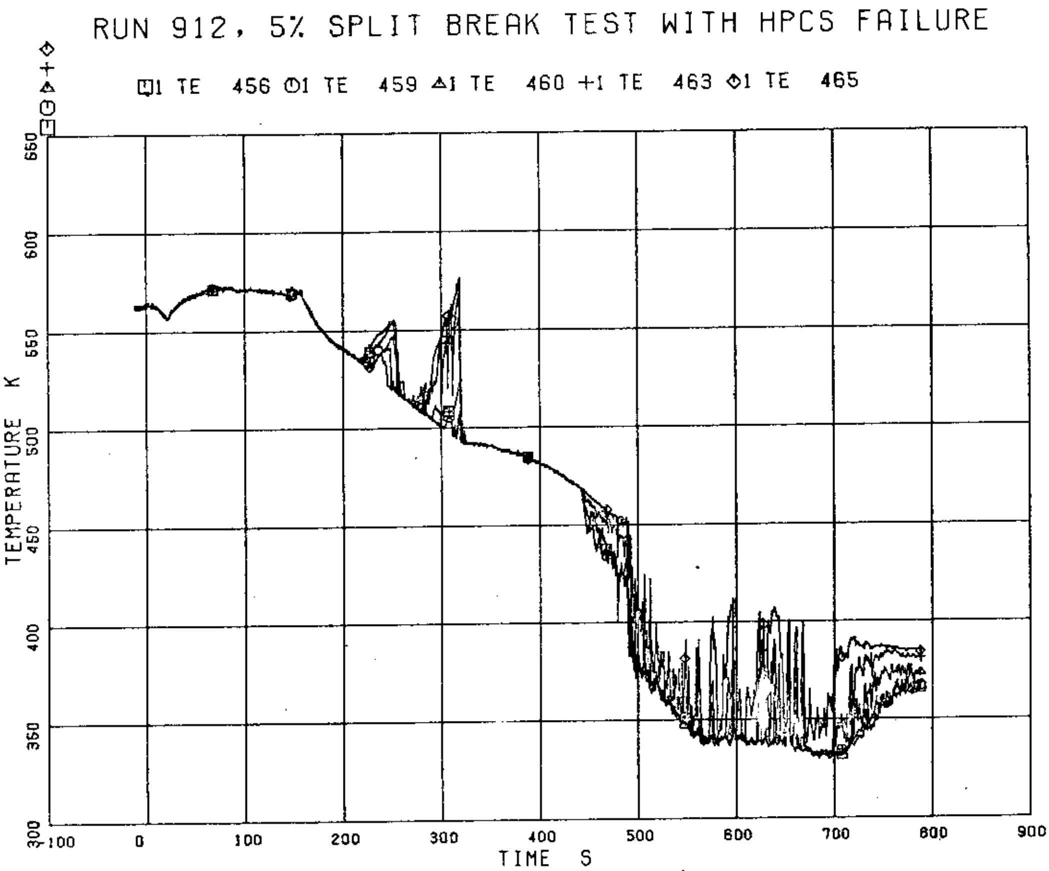


Fig. 5.177 Fluid Temperature above the Upper Tieplate A

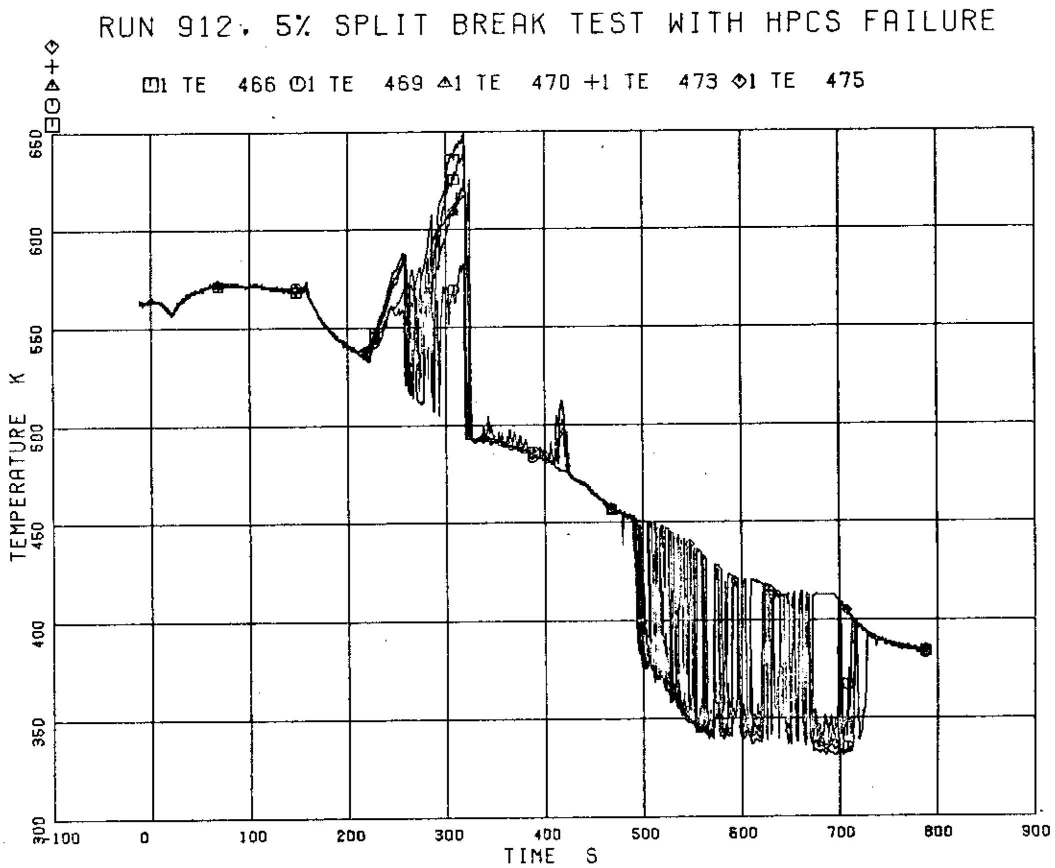


Fig. 5.178 Fluid Temperature below the Upper Tieplate A

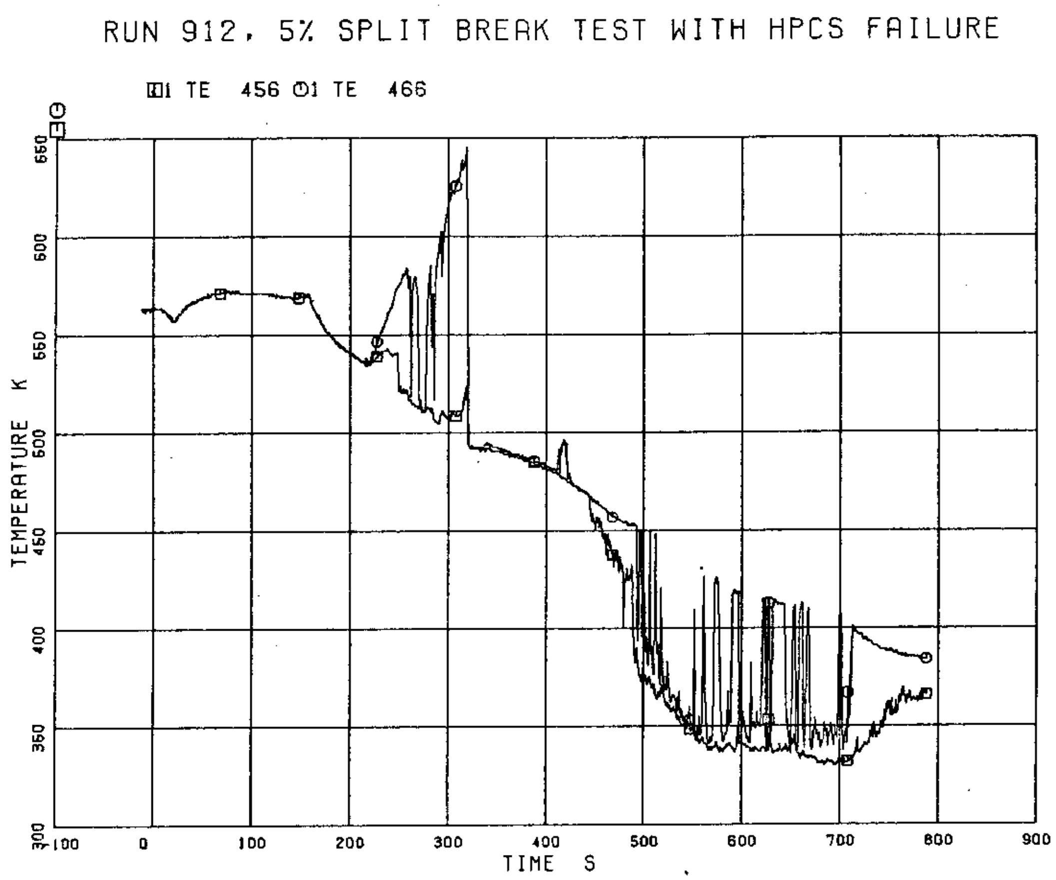


Fig. 5.179 Fluid Temperature in the Upper Tieplate A, Opening 1

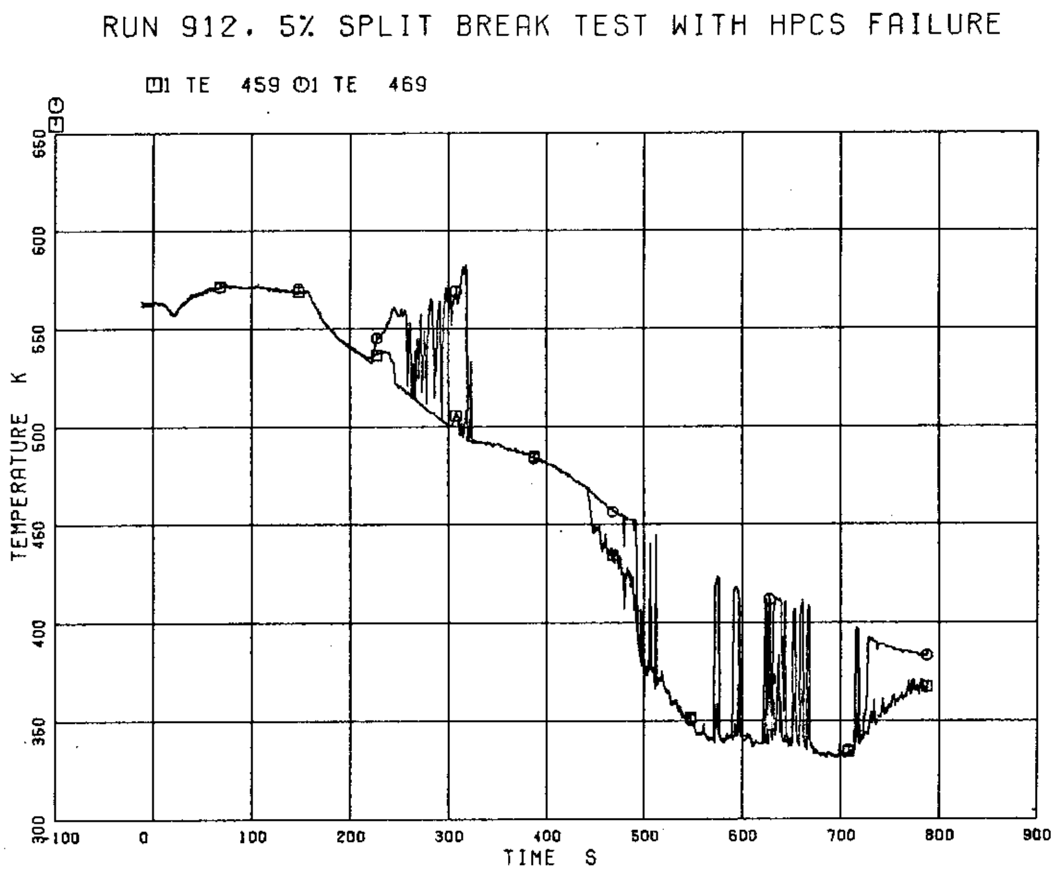


Fig. 5.180 Fluid Temperature in the Upper Tieplate A, Opening 4

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

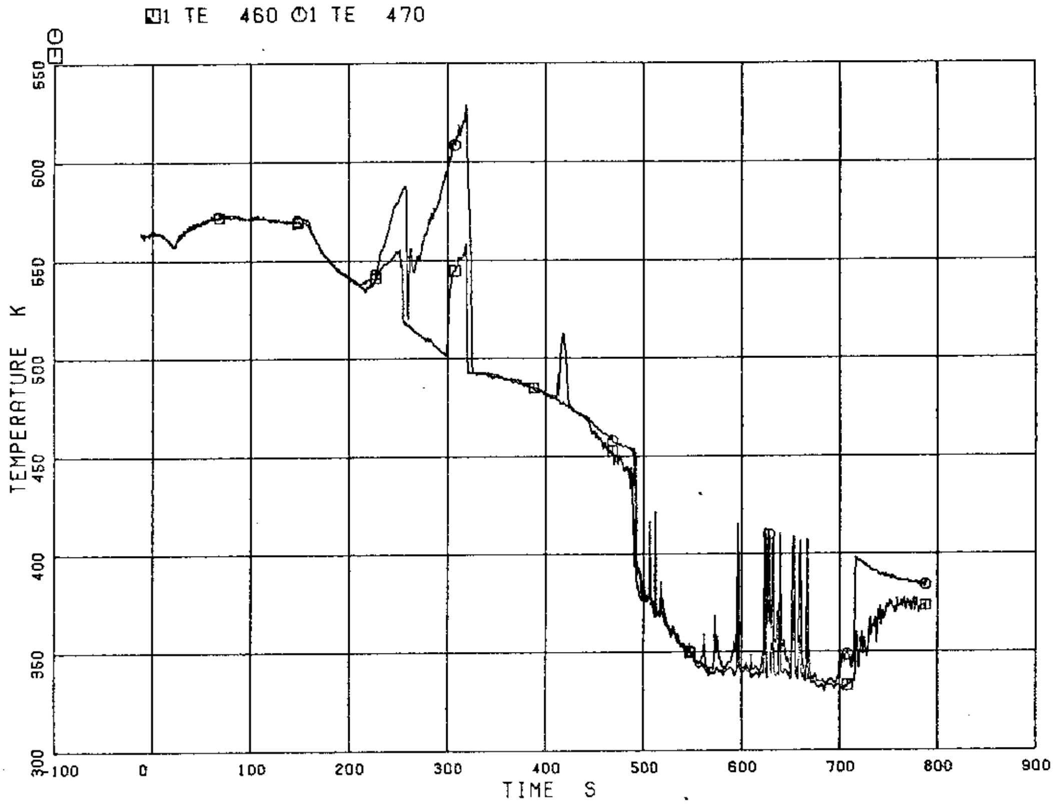


Fig. 5.181 Fluid Temperature in the Upper Tieplate A, Opening 5

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

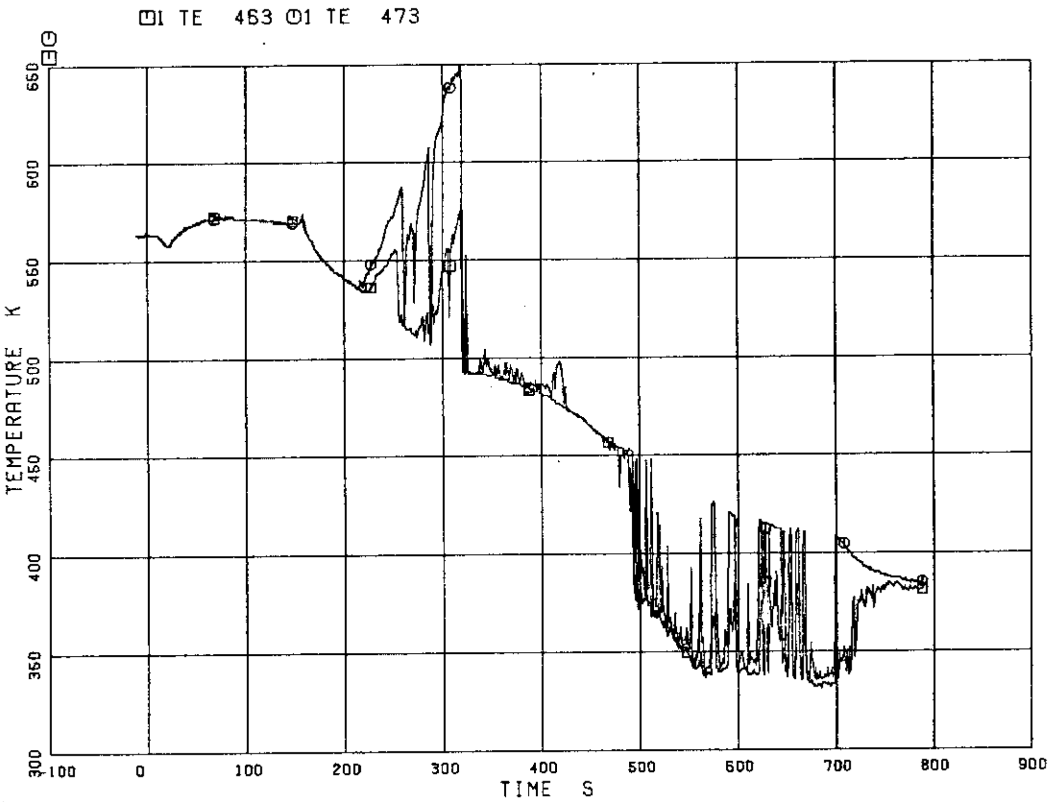


Fig. 5.182 Fluid Temperature in the Upper Tieplate A, Opening 8

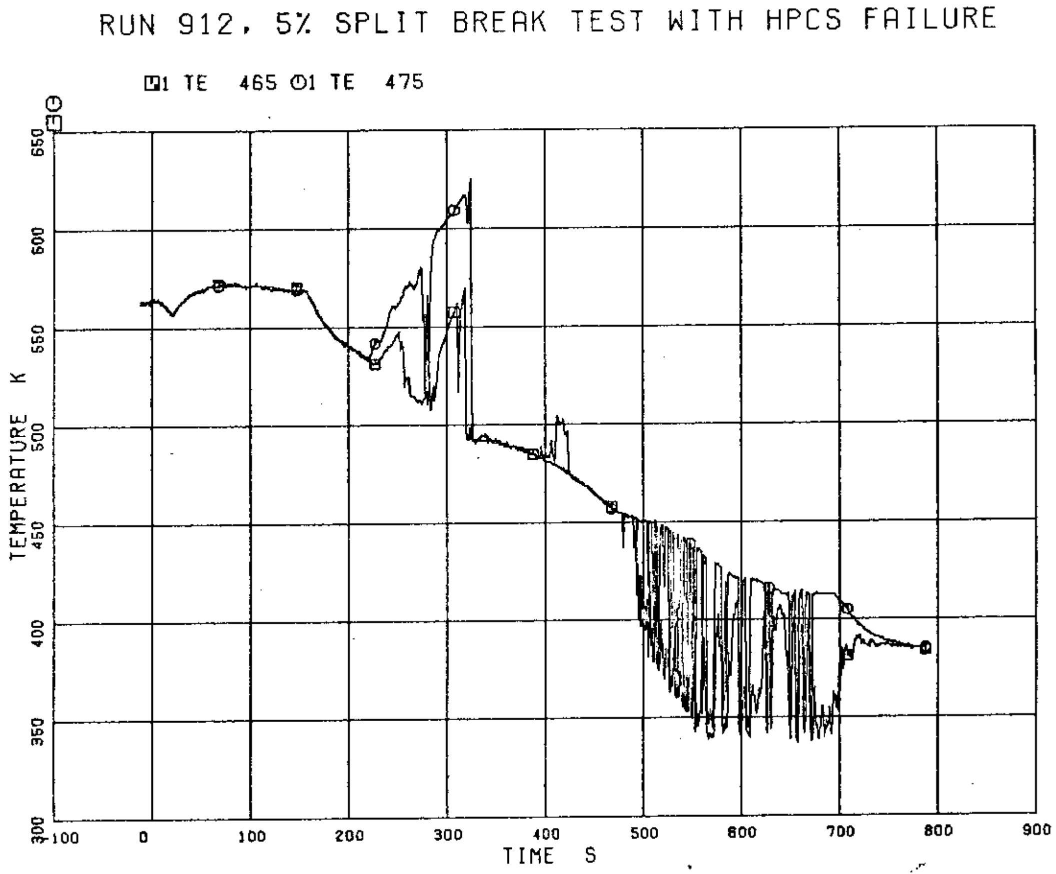


Fig. 5.183 Fluid Temperature in the Upper Tieplate A, Opening 10

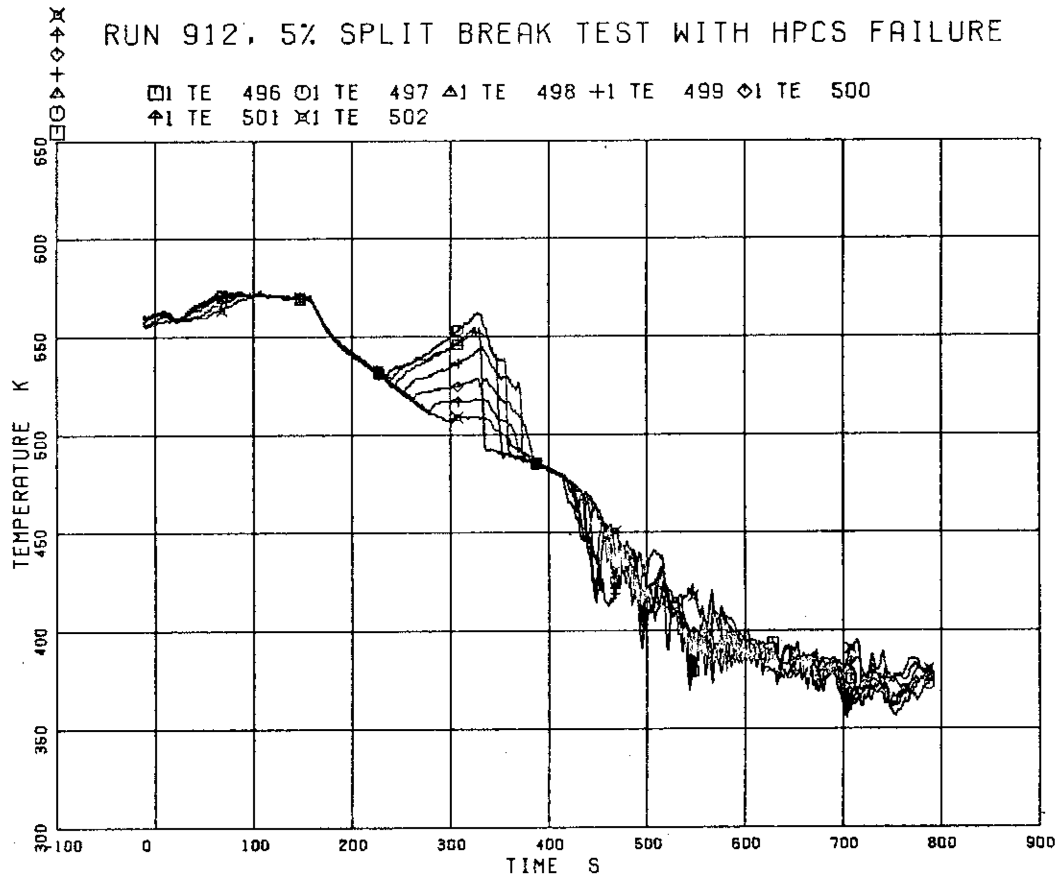


Fig. 5.184 Inner Surface Temperature of Channel Box A at A1 Location

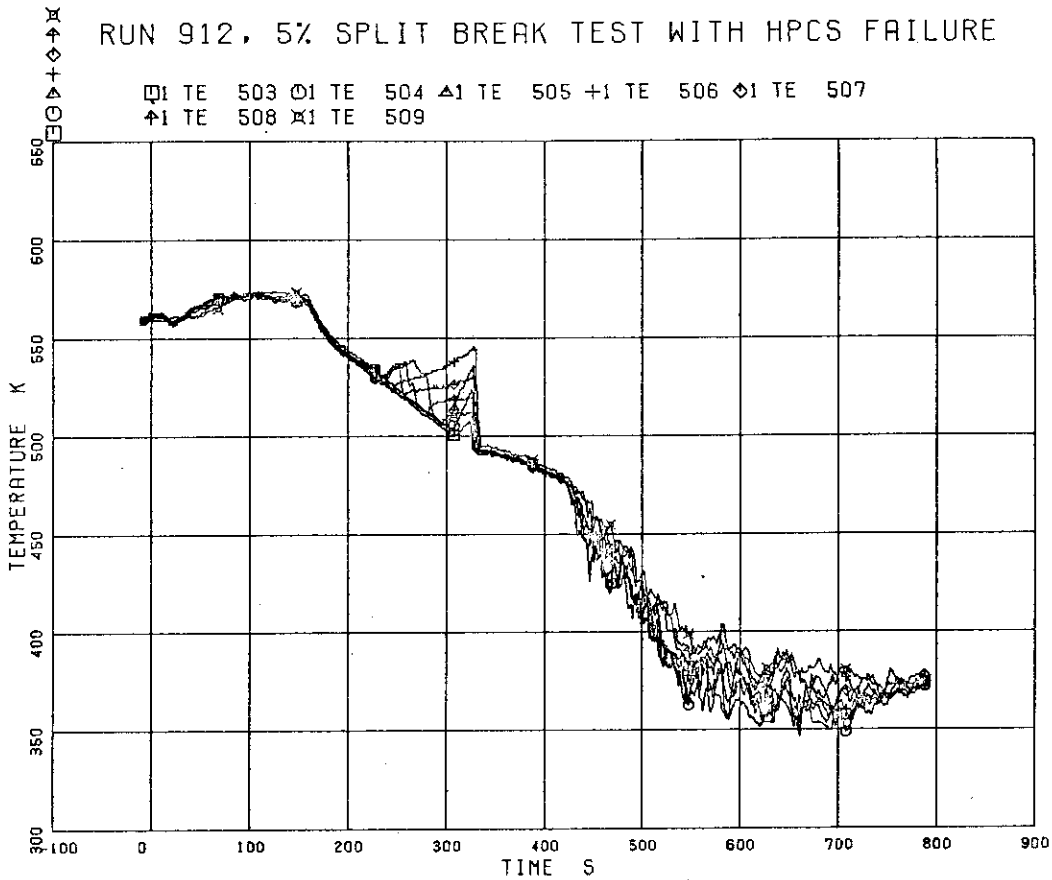


Fig. 5.185 Inner Surface Temperature of Channel Box A at A2 Location

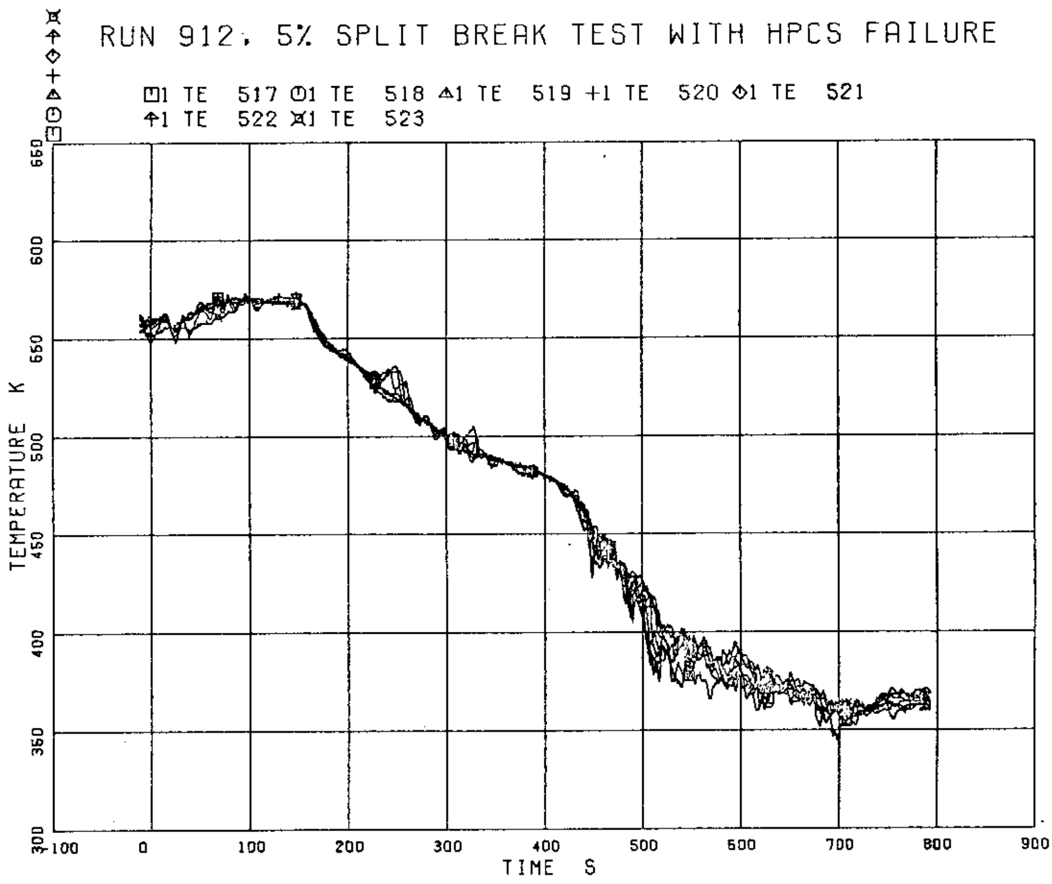


Fig. 5.186 Inner Surface Temperature of Channel Box C

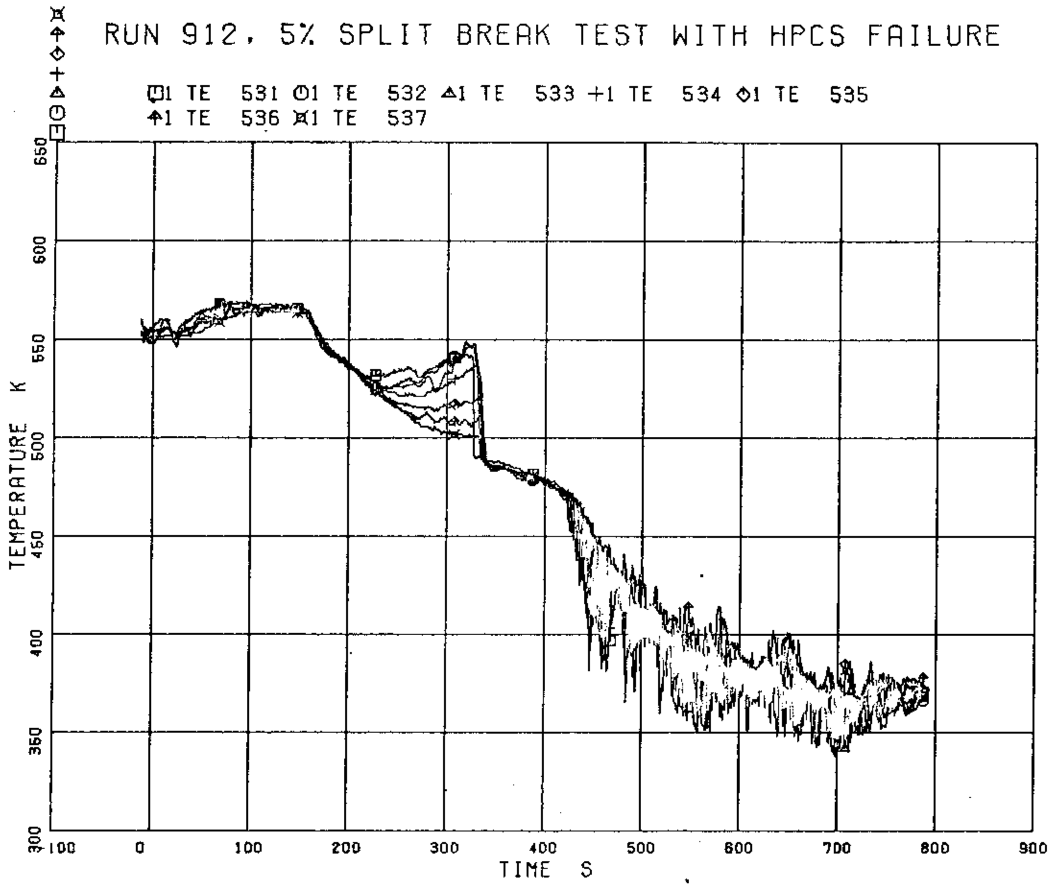


Fig. 5.187 Outer Surface Temperature of Channel Box A

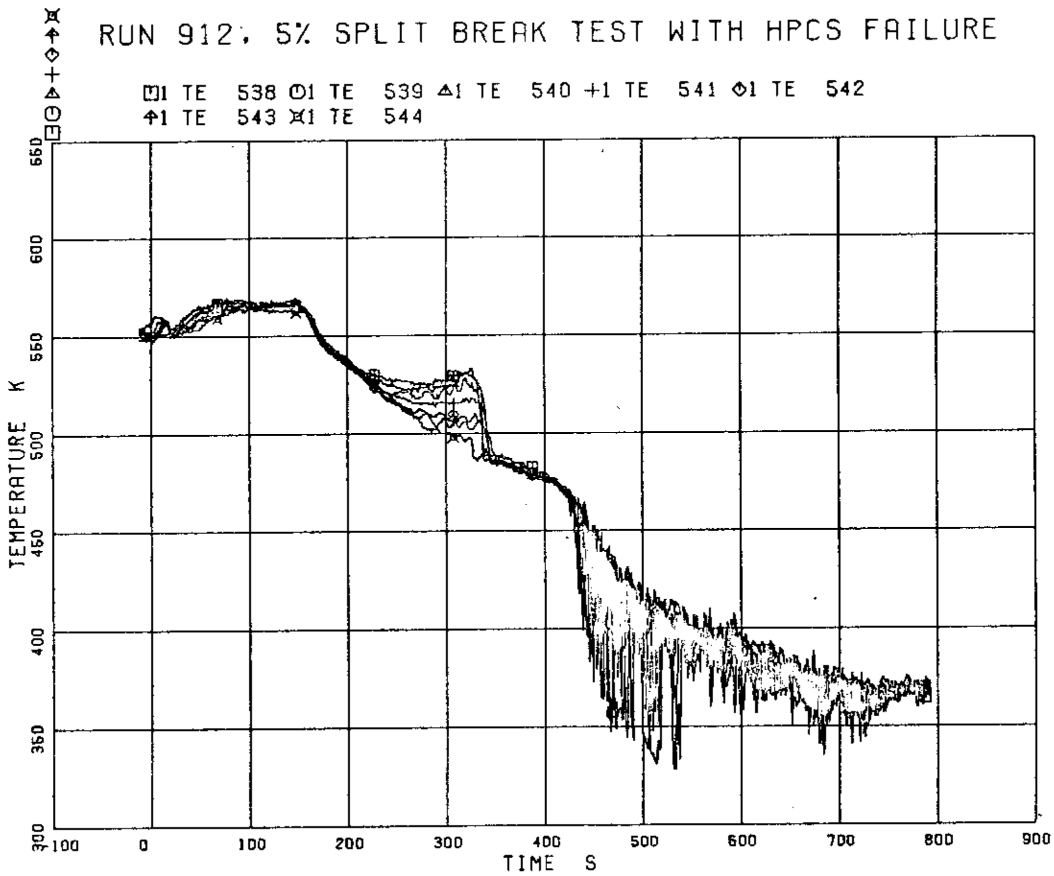


Fig. 5.188 Outer Surface Temperature of Channel Box C

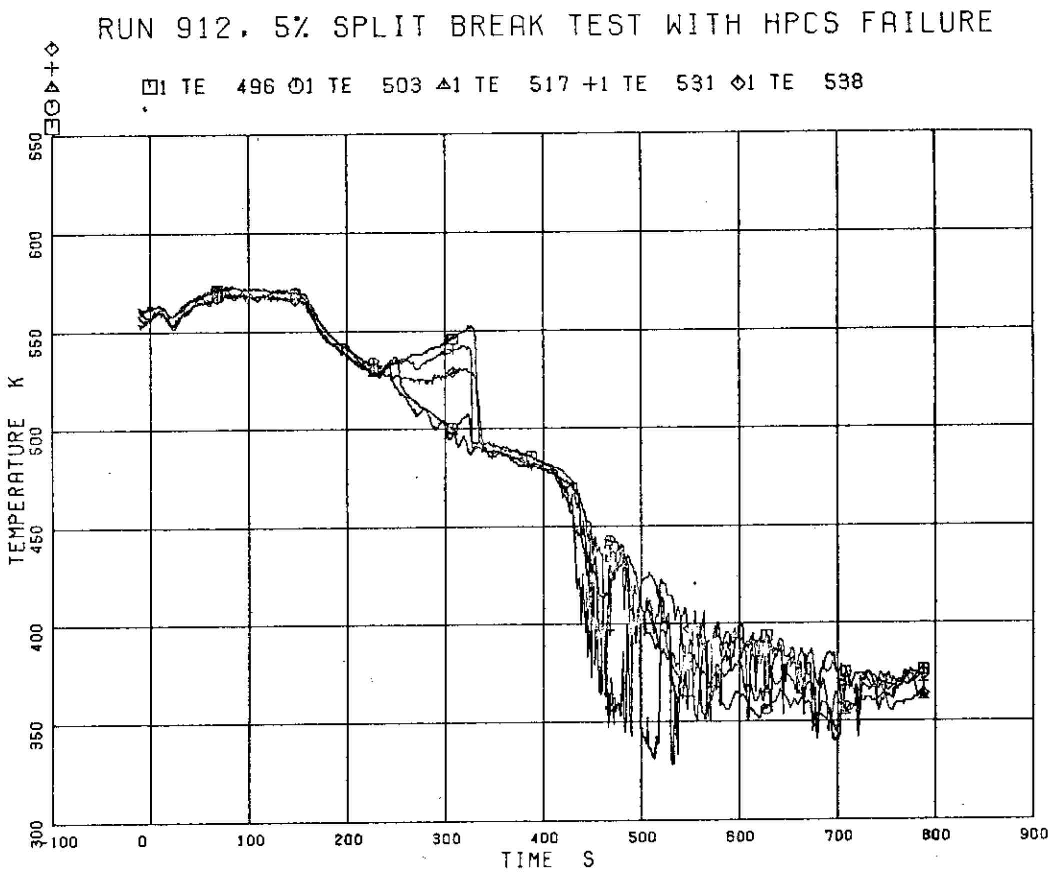


Fig. 5.189 Inner and Outer Surface Tempratures of Channel Box at Position 1

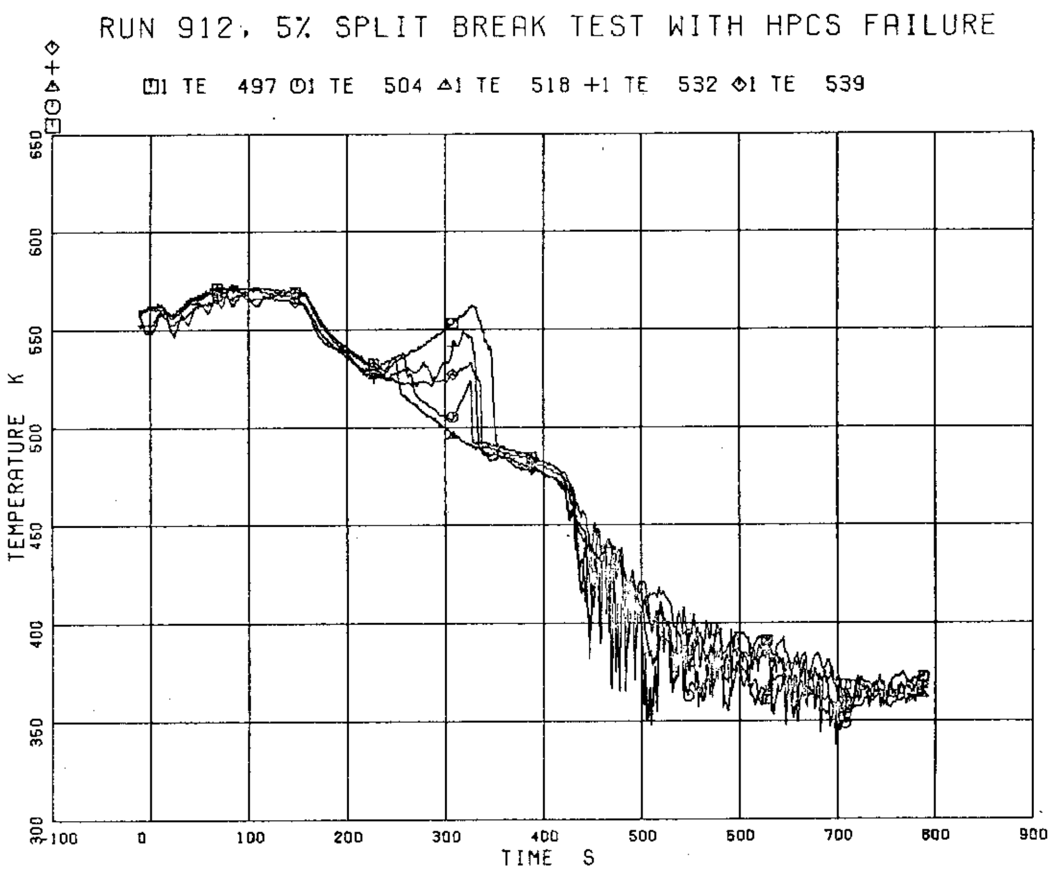


Fig. 5.190 Inner and Outer Surface Tempratures of Channel Box at Position 2

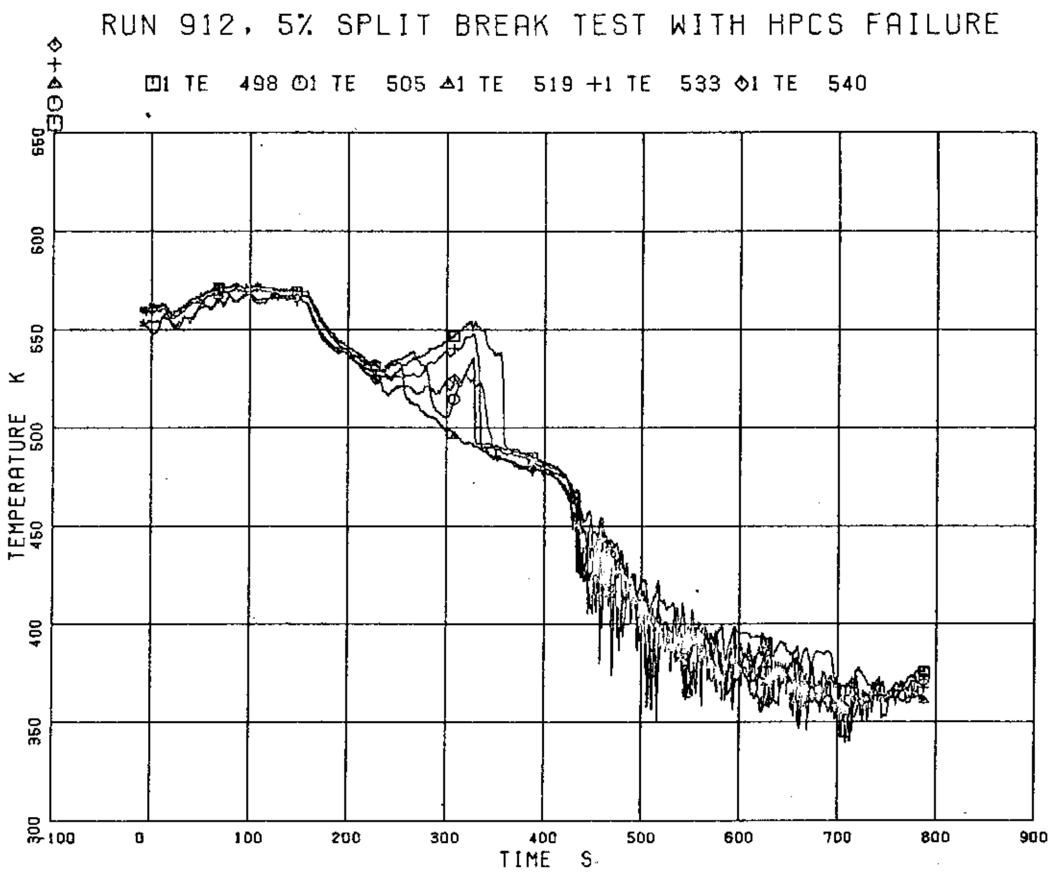


Fig. 5.191 Inner and Outer Surface Tempratures of Channel Box at Position 3

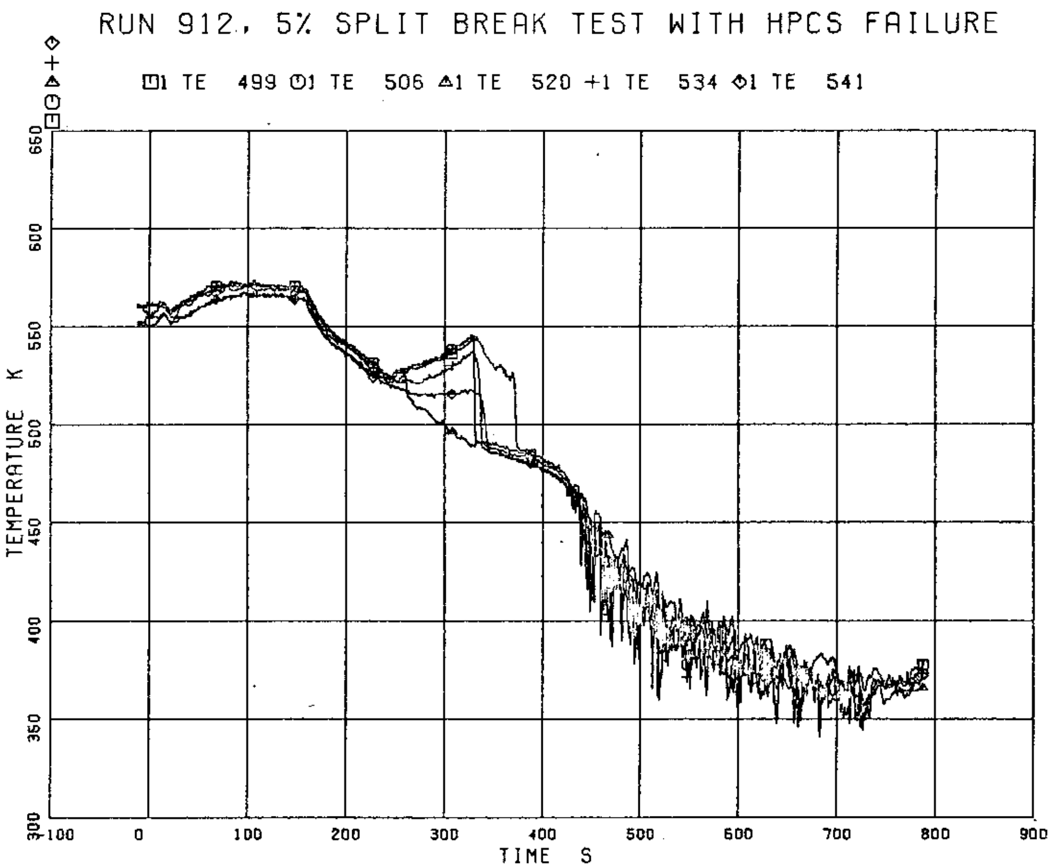


Fig. 5.192 Inner and Outer Surface Tempratures of Channel Box at Position 4

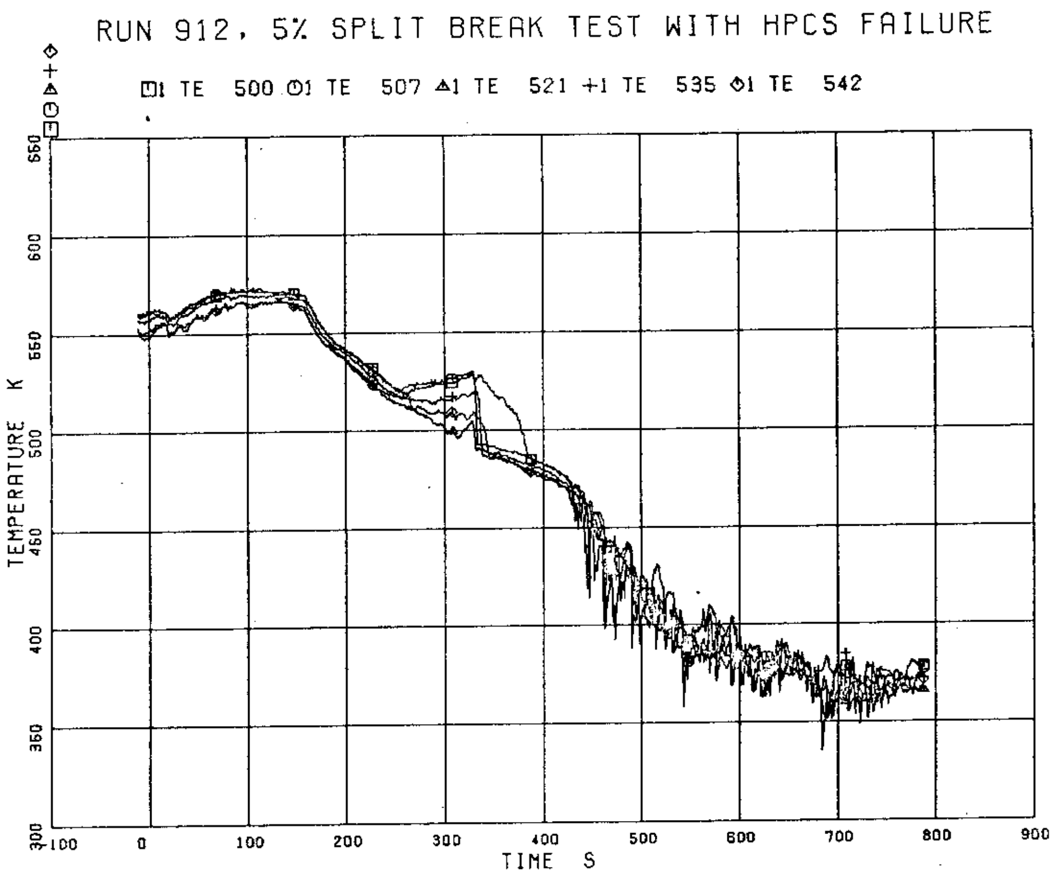


Fig. 5.193 Inner and Outer Surface Tempratures of Channel Box at Position 5

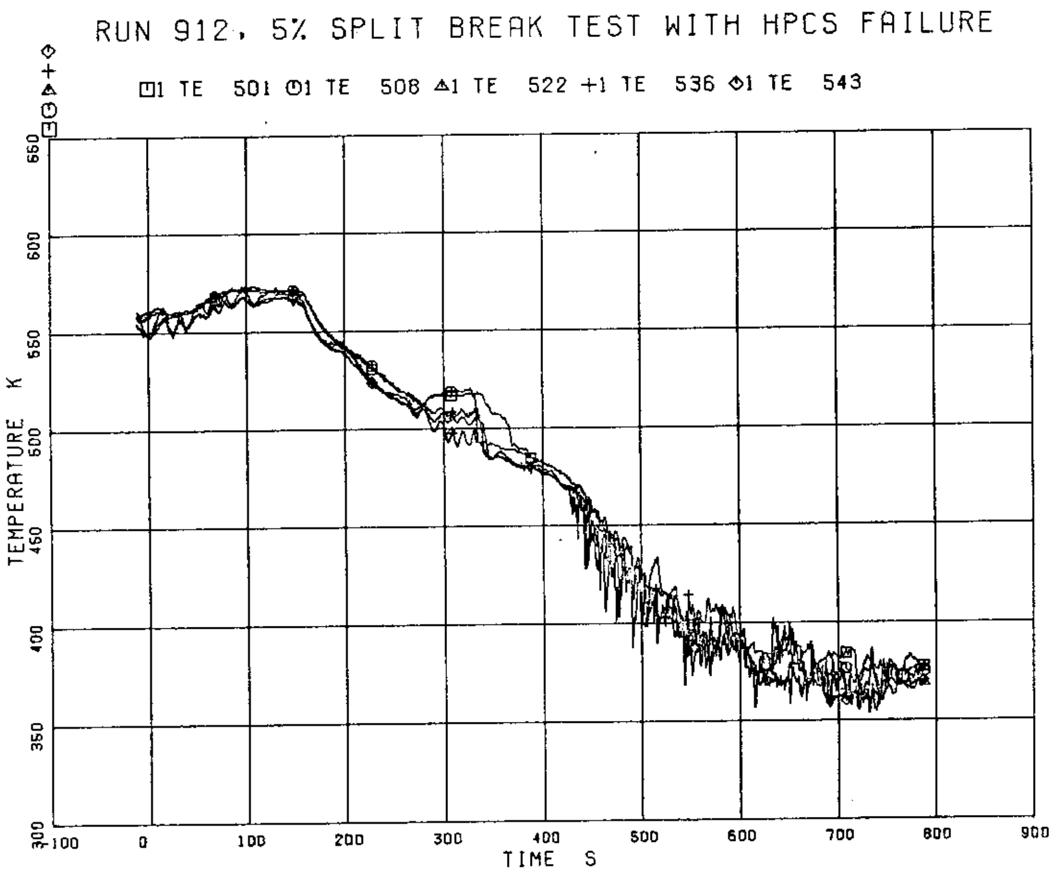


Fig. 5.194 Inner and Outer Surface Tempratures of Channel Box at Position 6

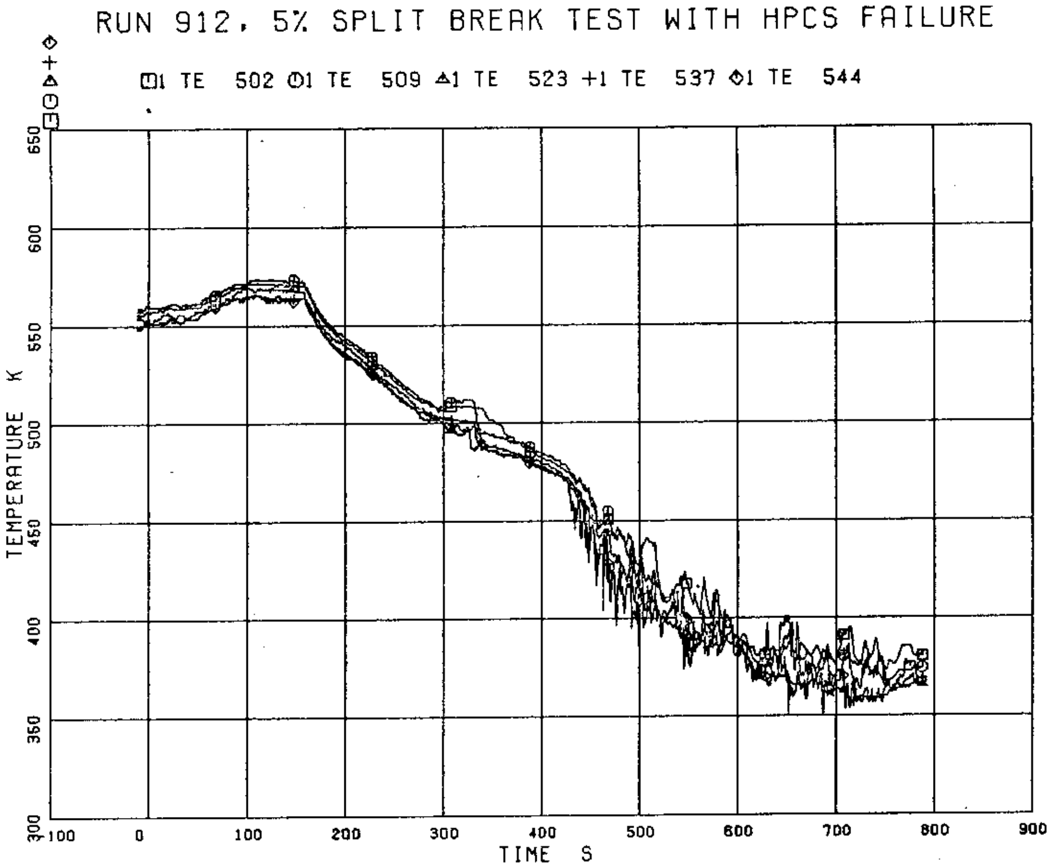


Fig. 5.195 Inner and Outer Surface Tempratures of Channel Box at Position 7

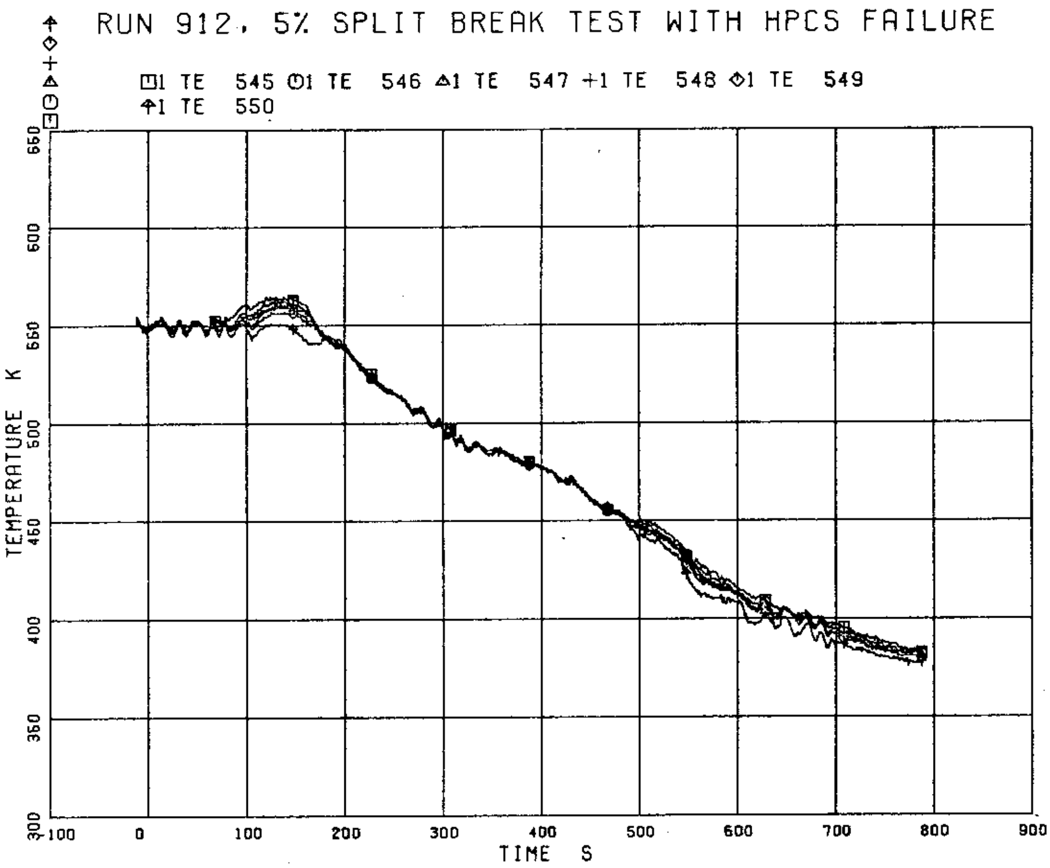


Fig. 5.196 Fluid Temperatures at Center of Lower Plenum

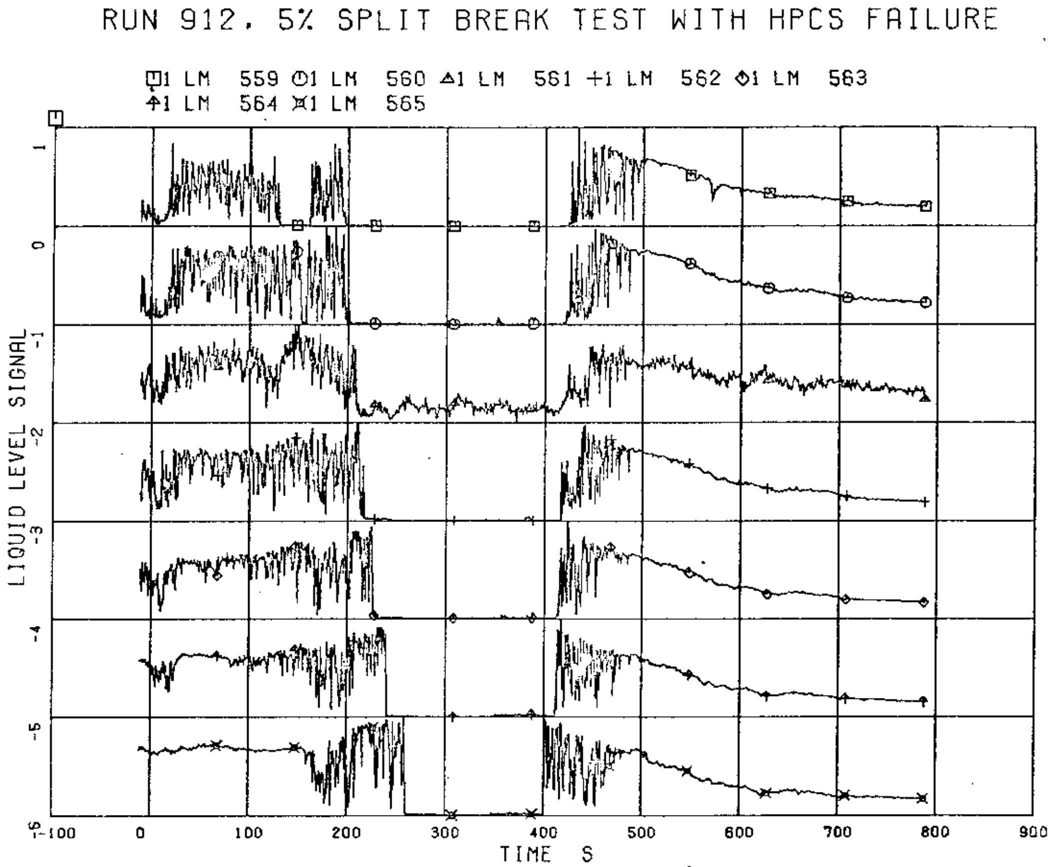


Fig. 5.197 Liquid Level Signal at Location A1 in Channel Box A

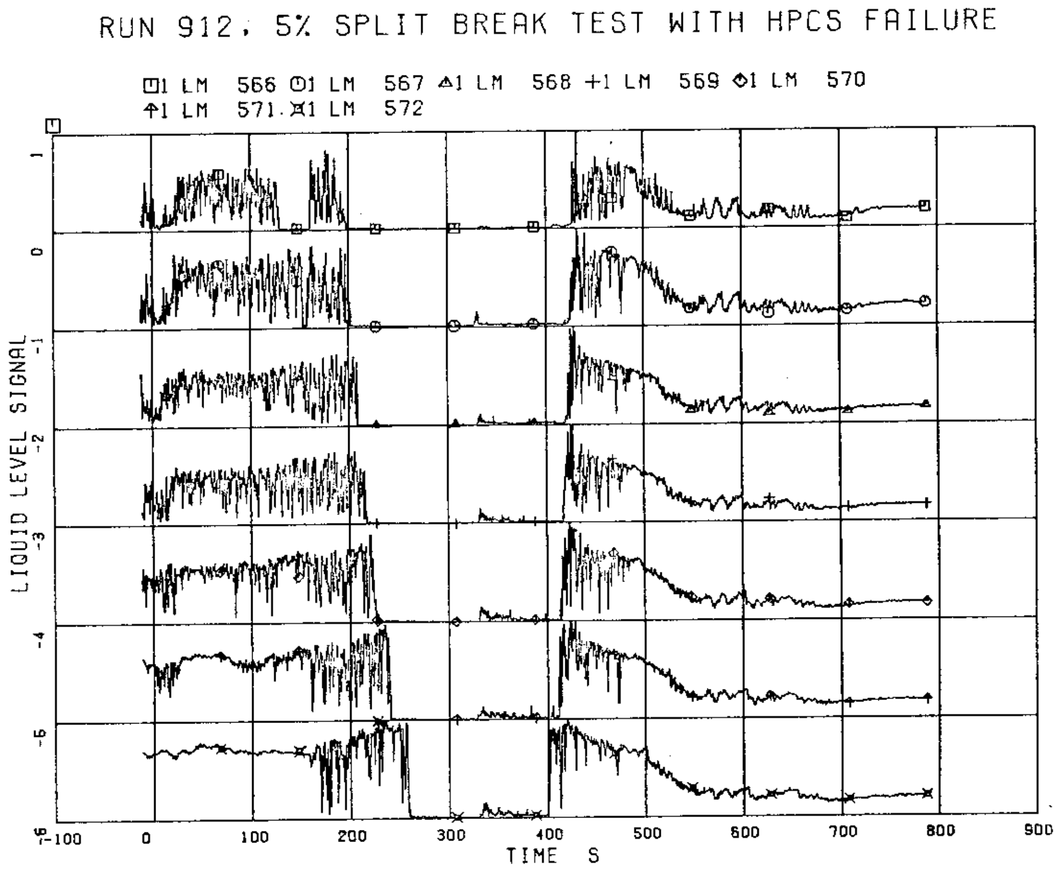


Fig. 5.198 Liquid Level Signal at Location A2 in Channel Box A

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

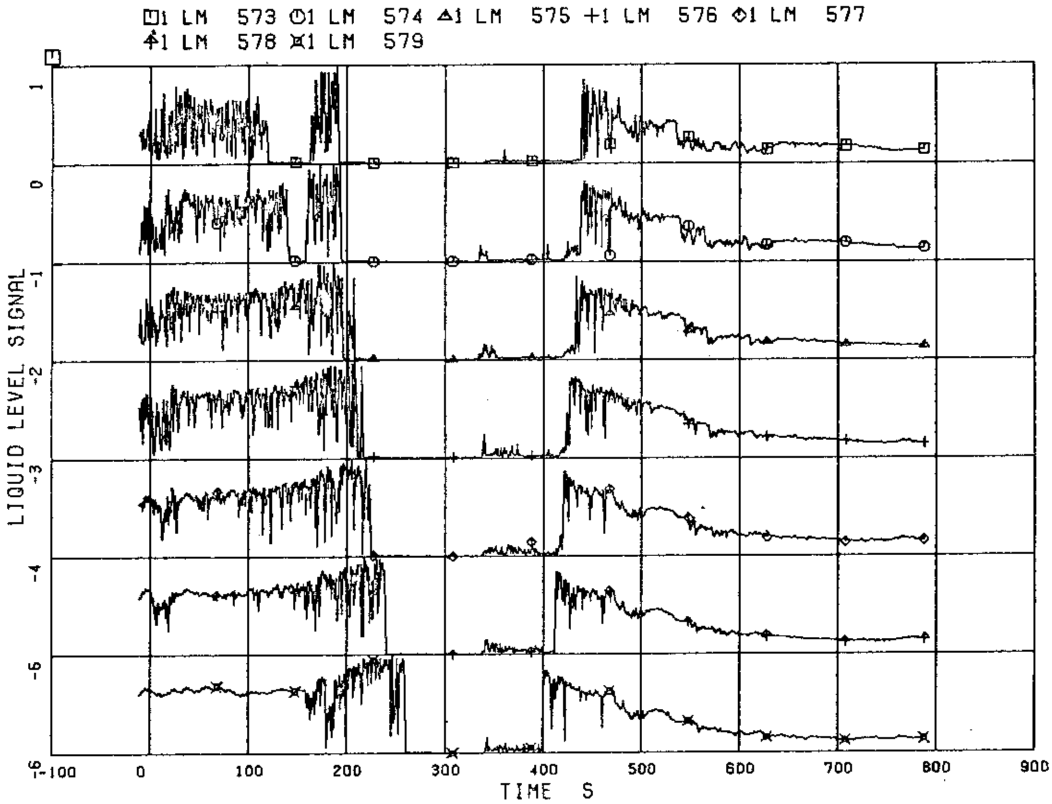


Fig. 5.199 Liquid Level Signal in Channel Box B

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

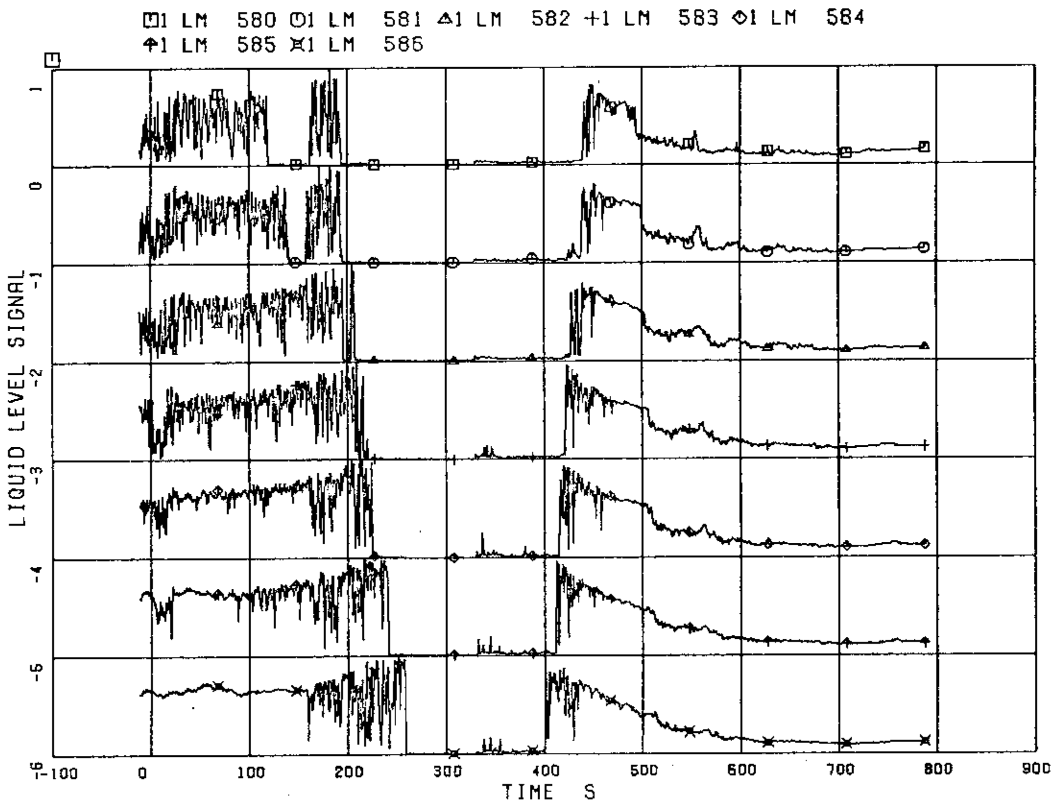


Fig. 5.200 Liquid Level Signal in Channel Box C

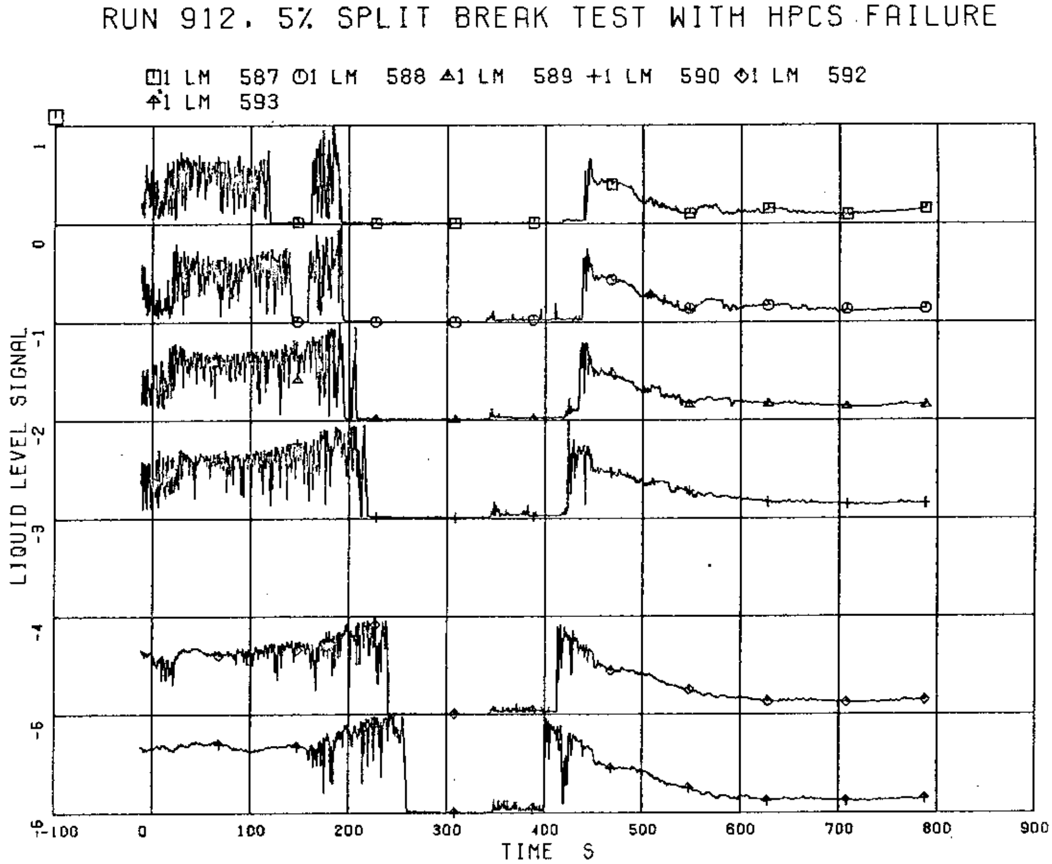


Fig. 5.201 Liquid Level Signal in Channel Box D

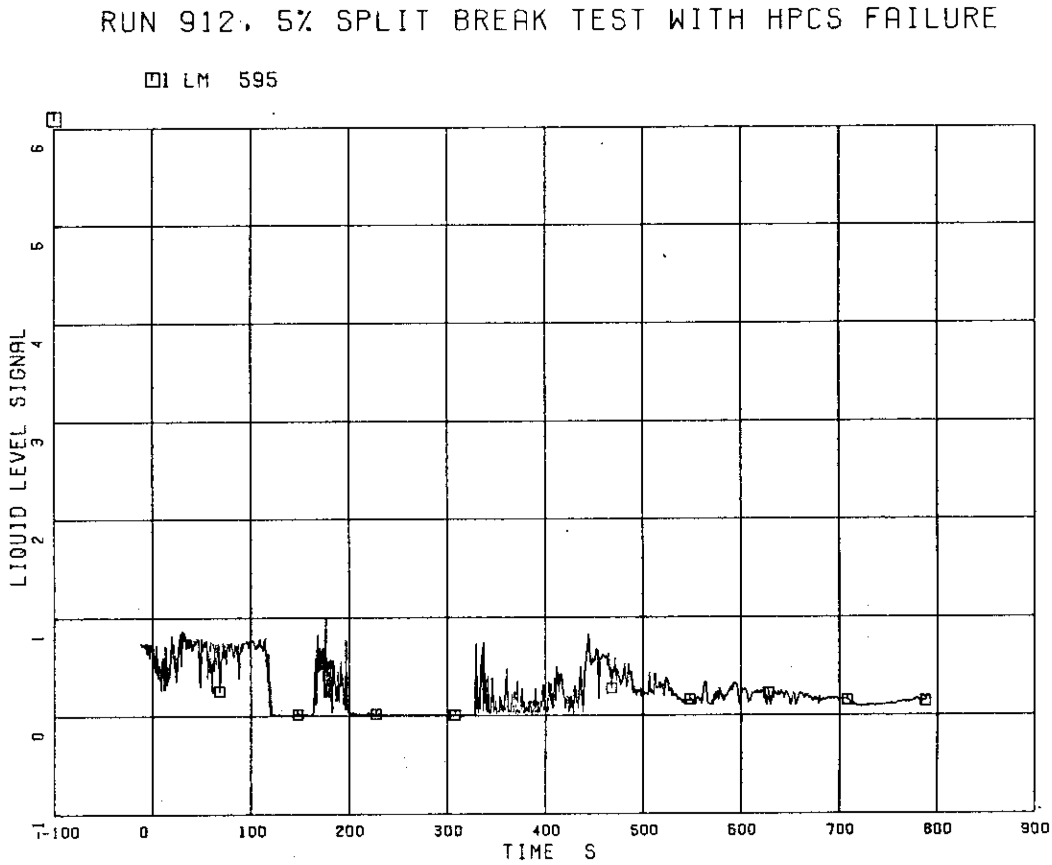


Fig. 5.202 Liquid Level Signal in Channel Box A Outlet, A1 Location

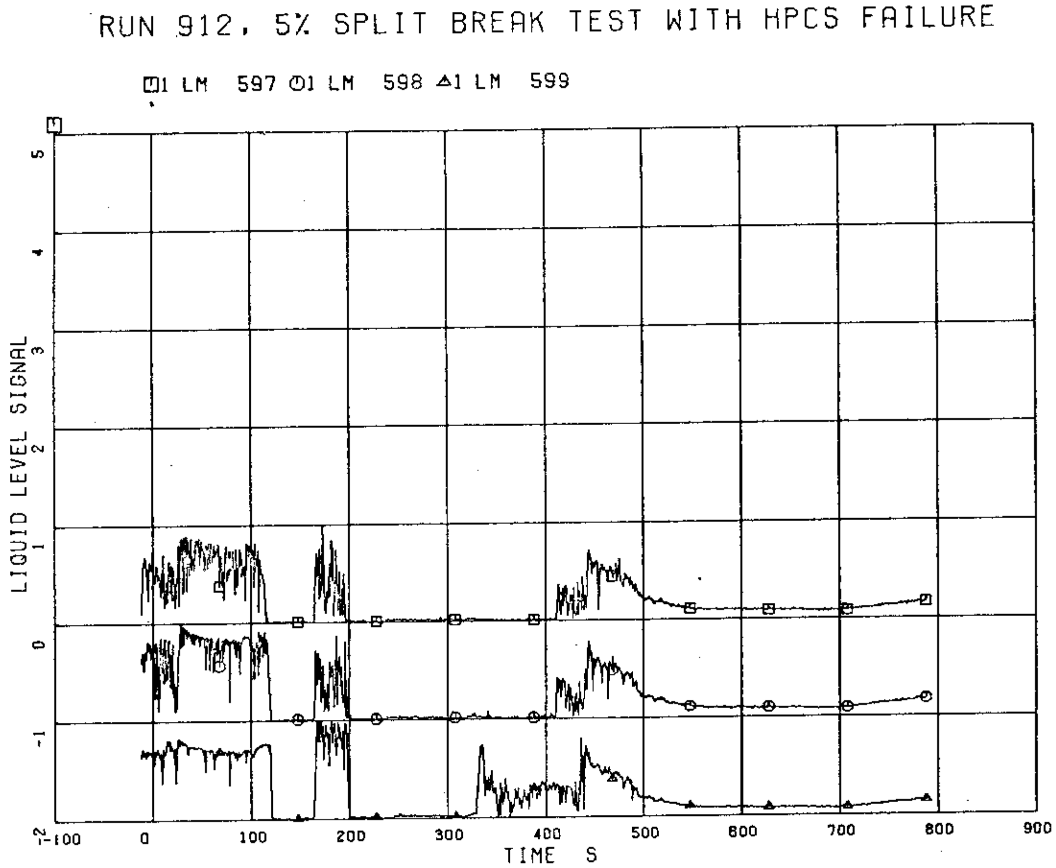


Fig. 5.203 Liquid Level Signal in Channel Box A Outlet, A2 Location

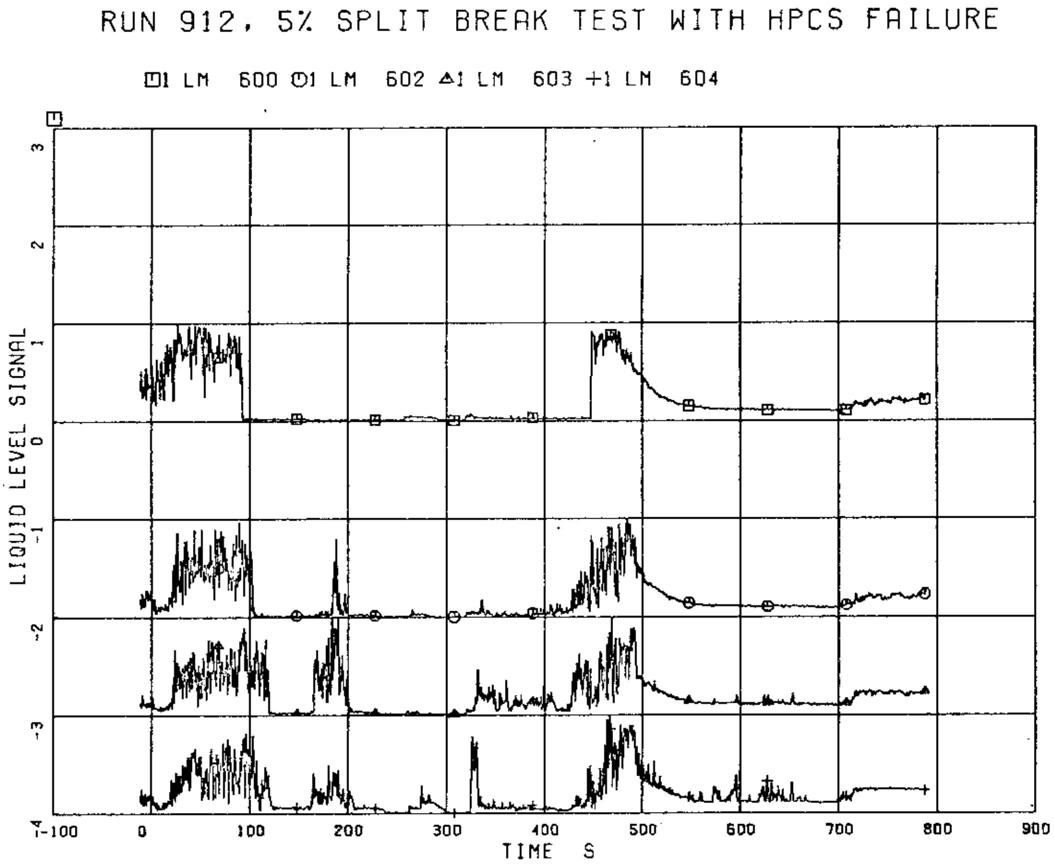


Fig. 5.204 Liquid Level Signal in Channel Box A Outlet, Center

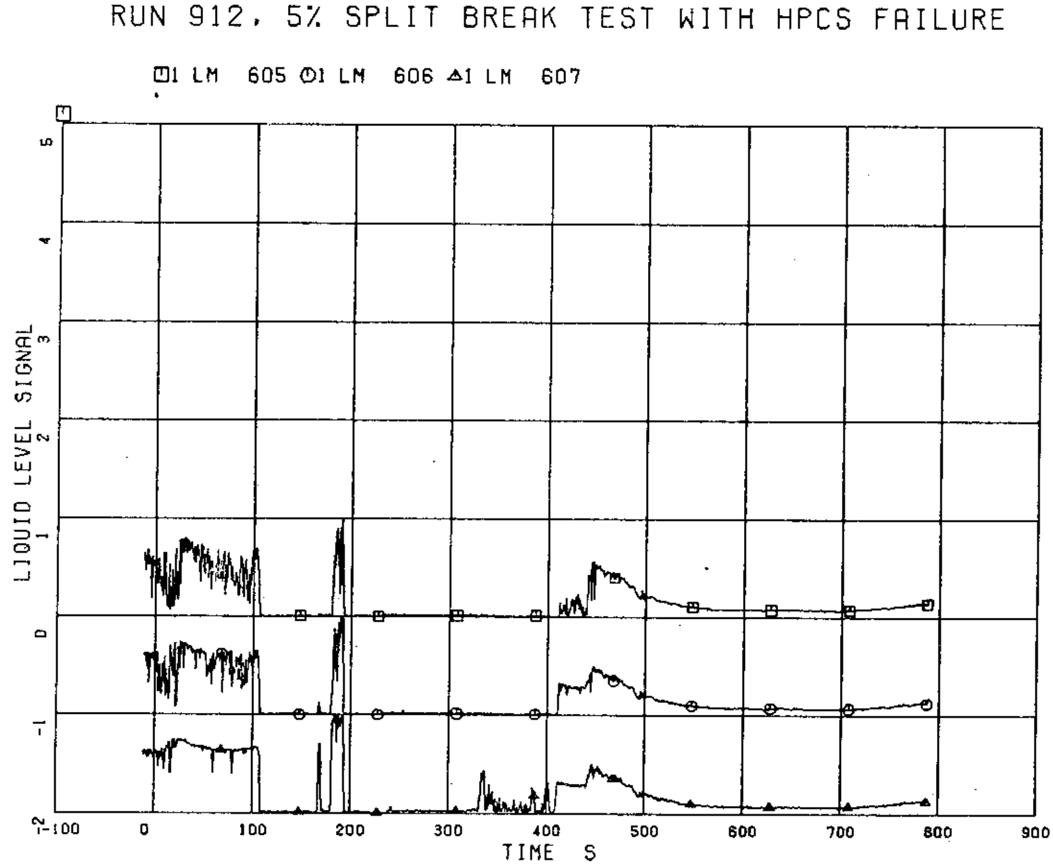


Fig. 5.205 Liquid Level Signal in Channel Box C Outlet, C1 Location

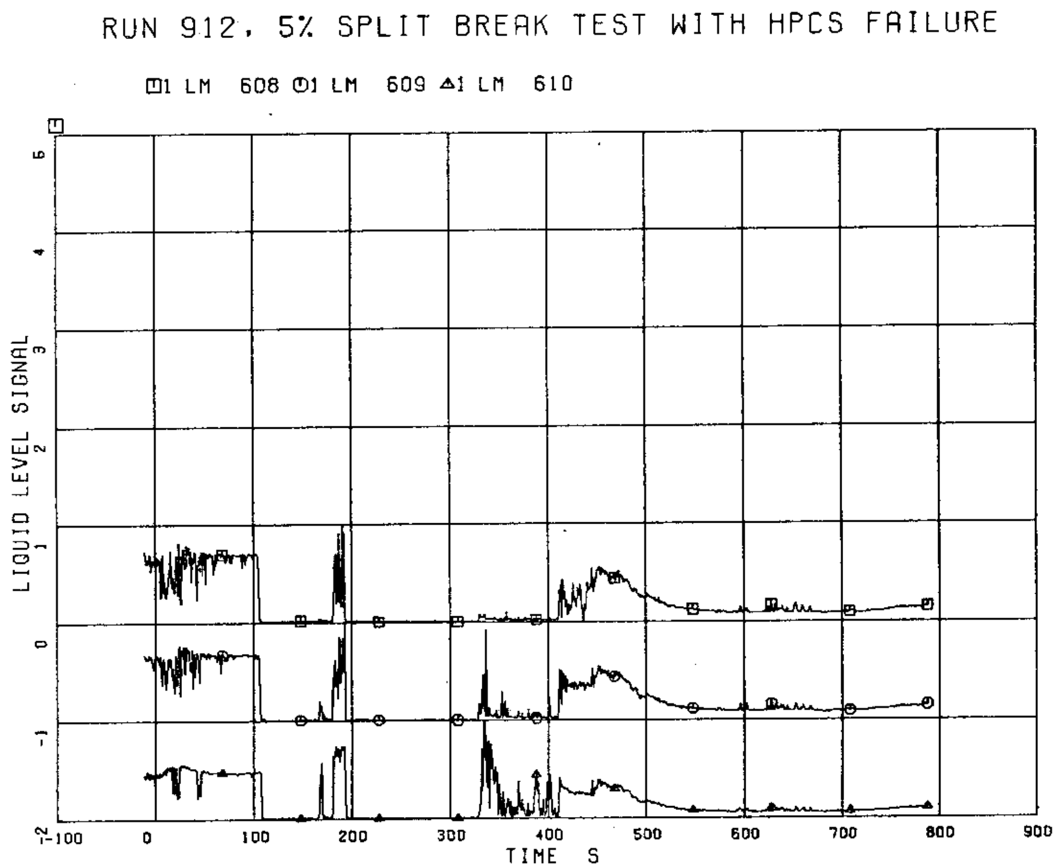


Fig. 5.206 Liquid Level Signal in Channel Box C Outlet, C2 Location

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

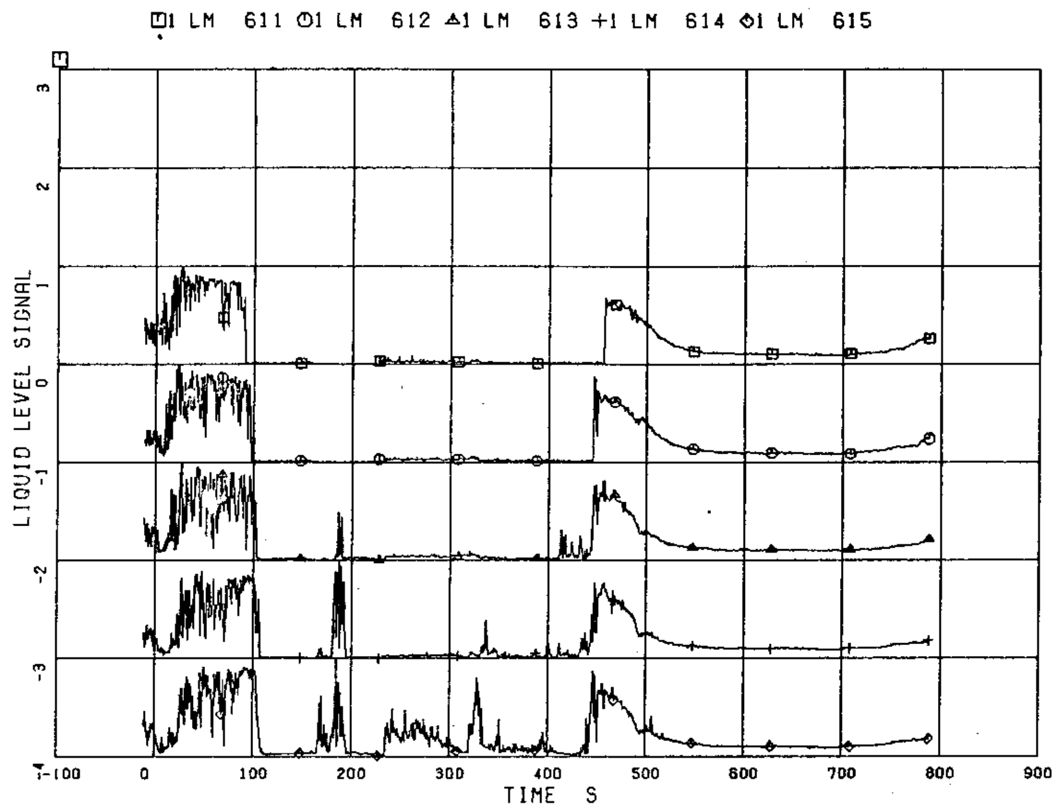


Fig. 5.207 Liquid Level Signal in Channel Box C Outlet, Center

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

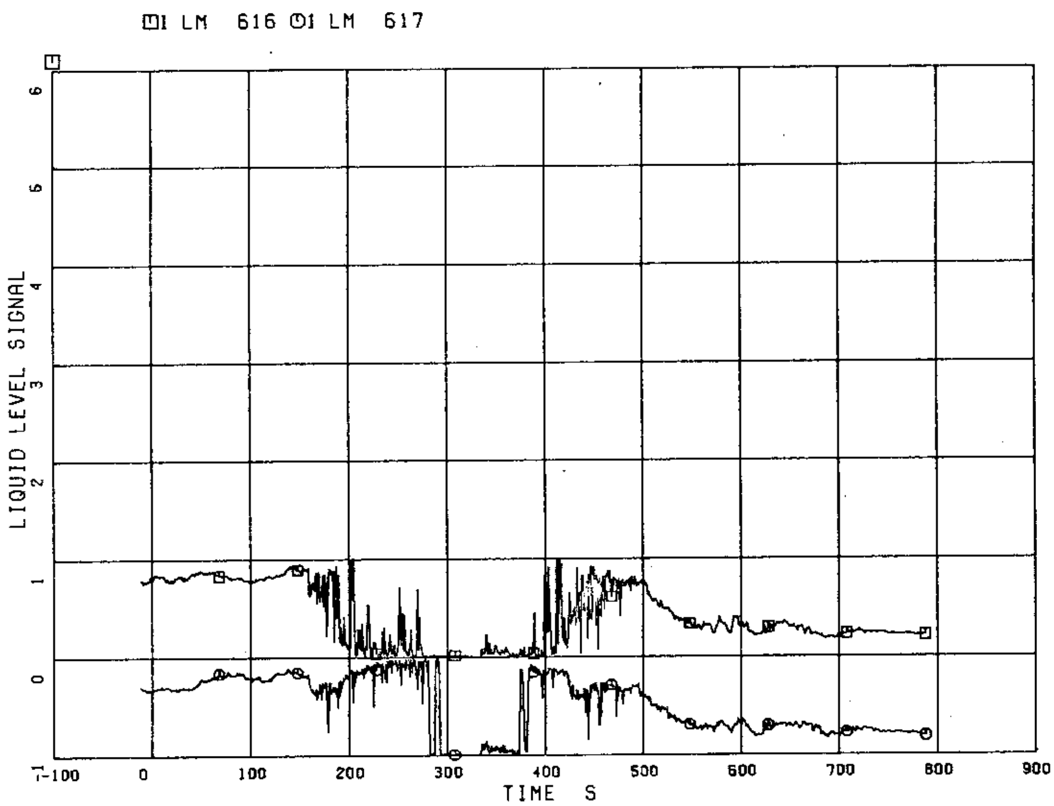


Fig. 5.208 Liquid Level Signal in Channel Box A Inlet

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

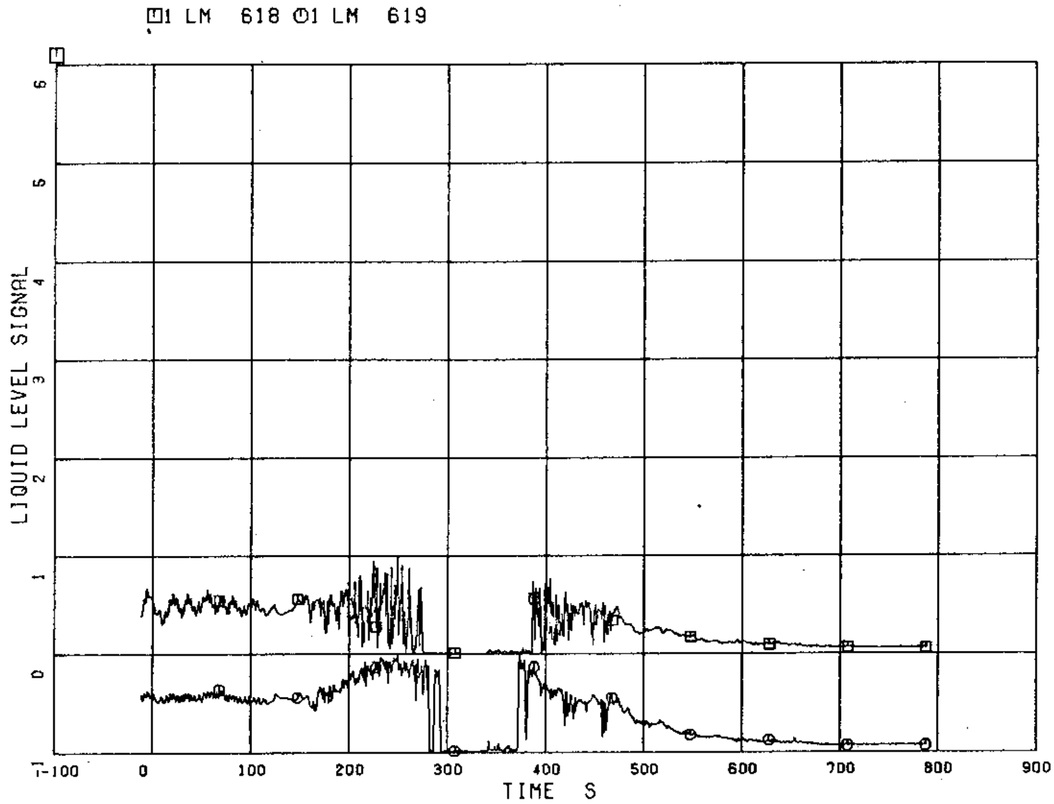


Fig. 5.209 Liquid Level Signal in Channel Box B Inlet

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

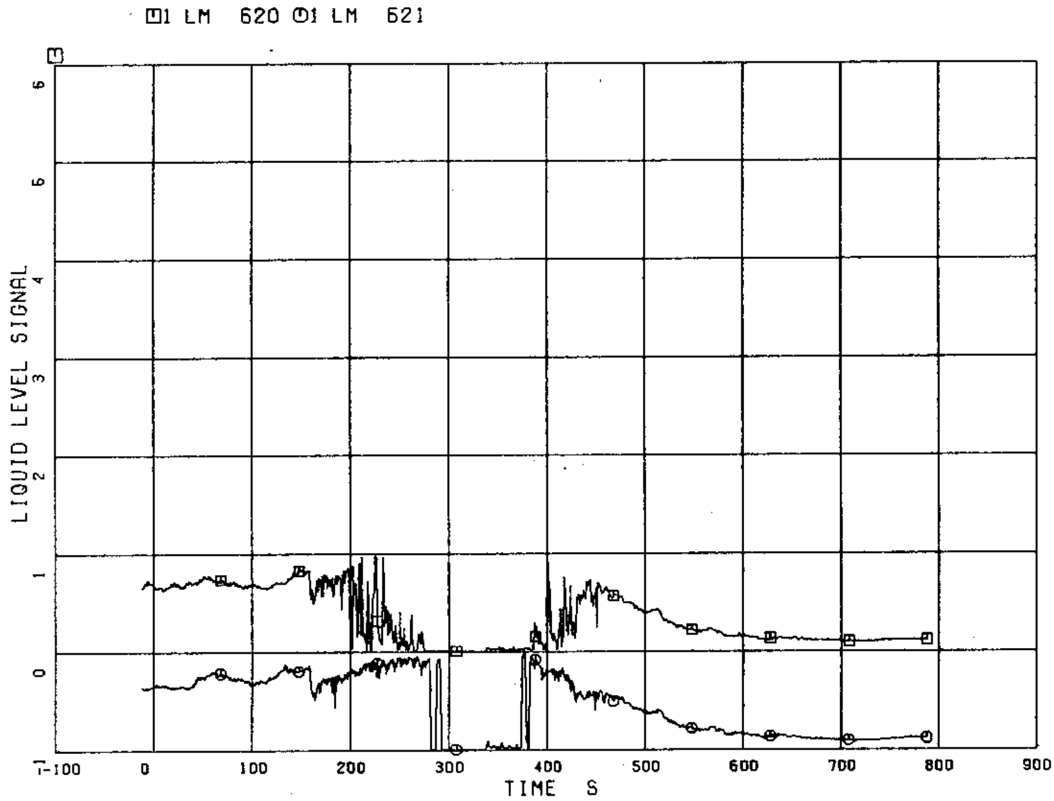


Fig. 5.210 Liquid Level Signal in Channel Box C Inlet

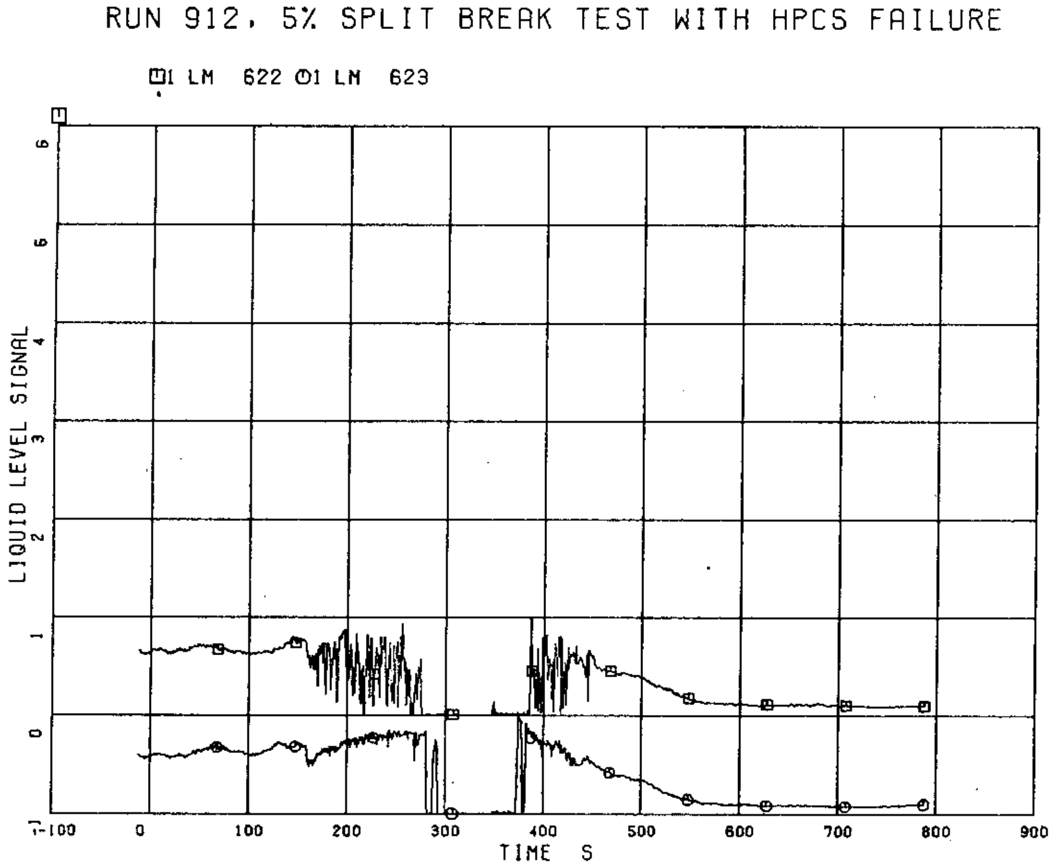


Fig. 5.211 Liquid Level Signal in Channel Box D Inlet

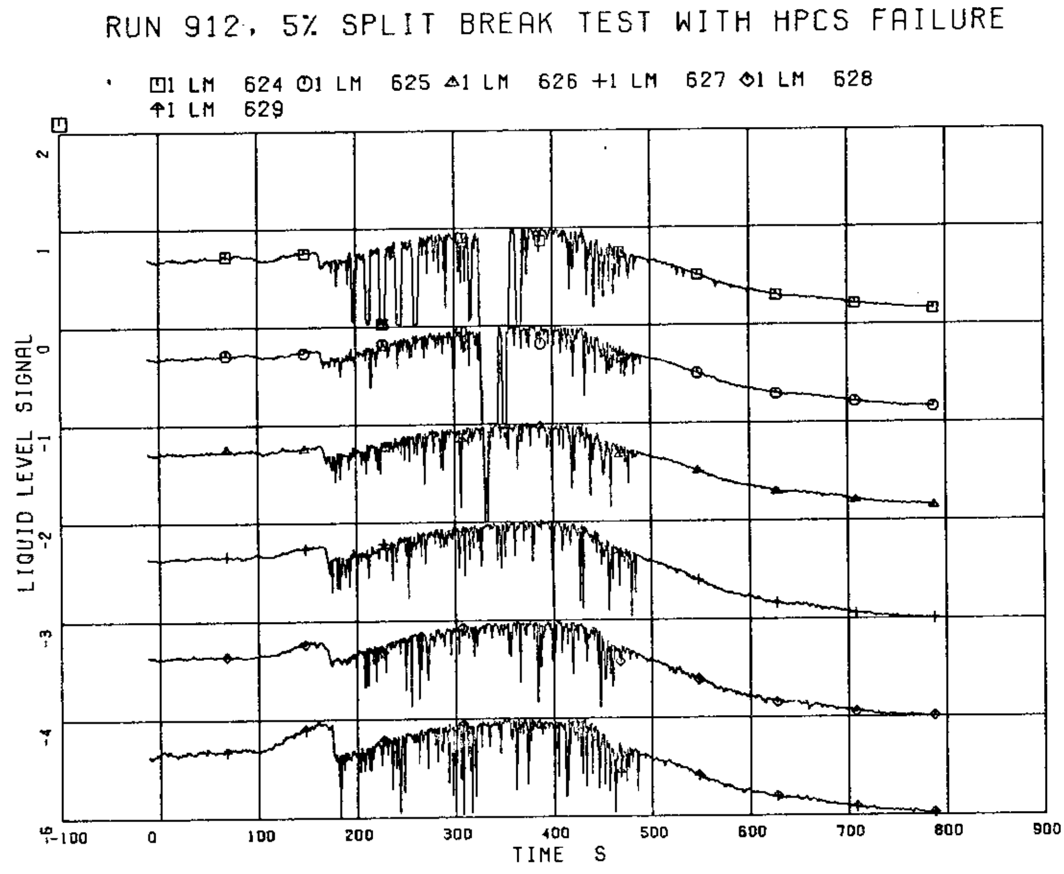


Fig. 5.212 Liquid Level Signal in Lower Plenum, North

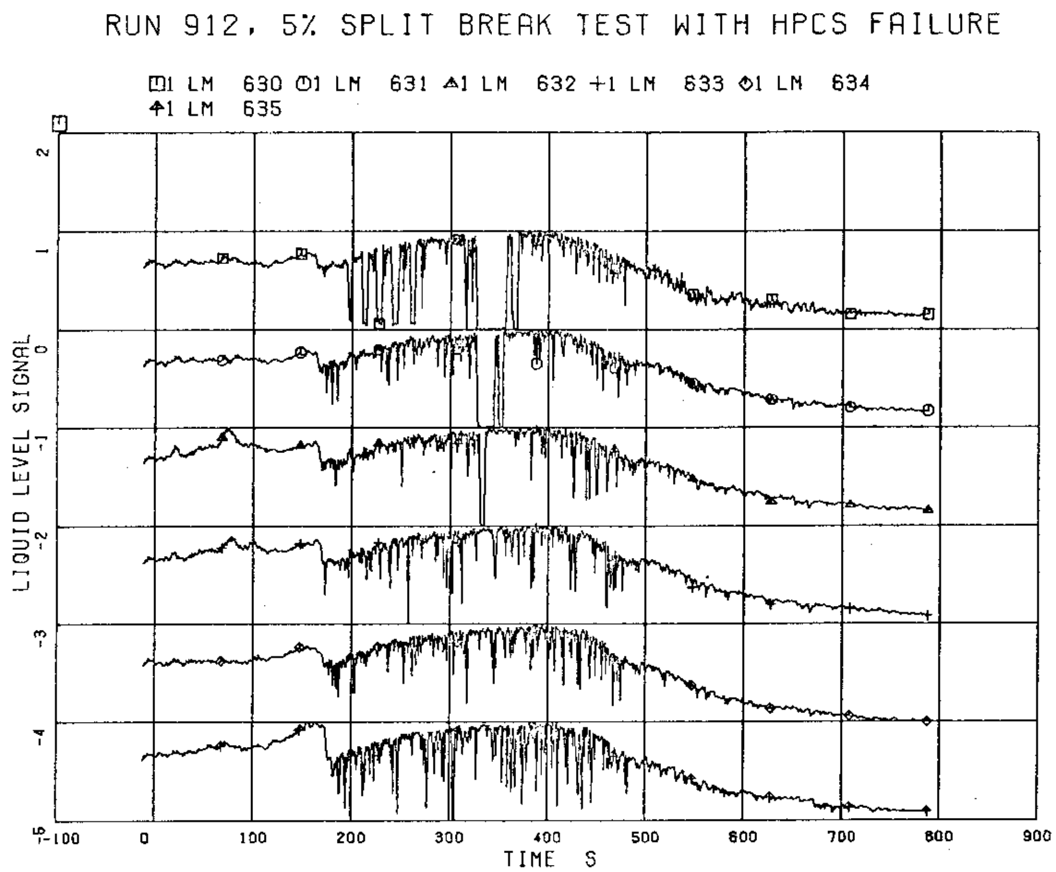


Fig. 5.213 Liquid Level Signal in Lower Plenum, South

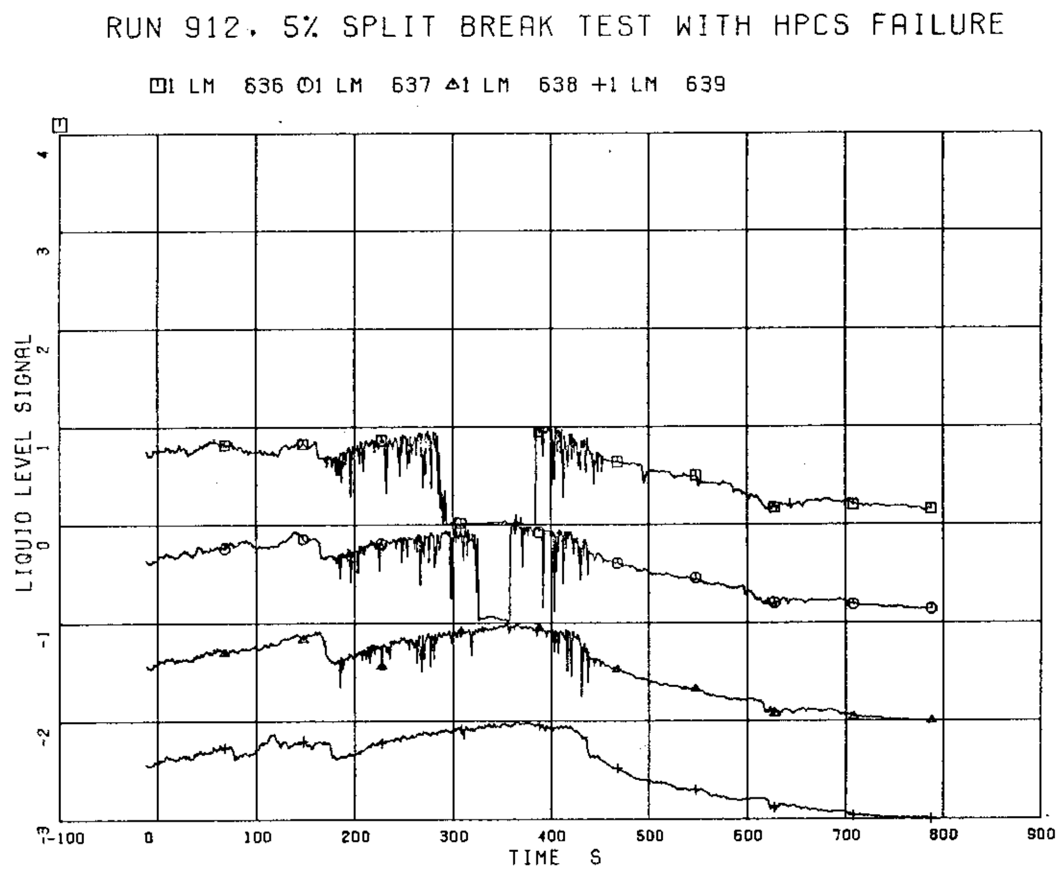


Fig. 5.214 Liquid Level Signal in Guide Tube, North

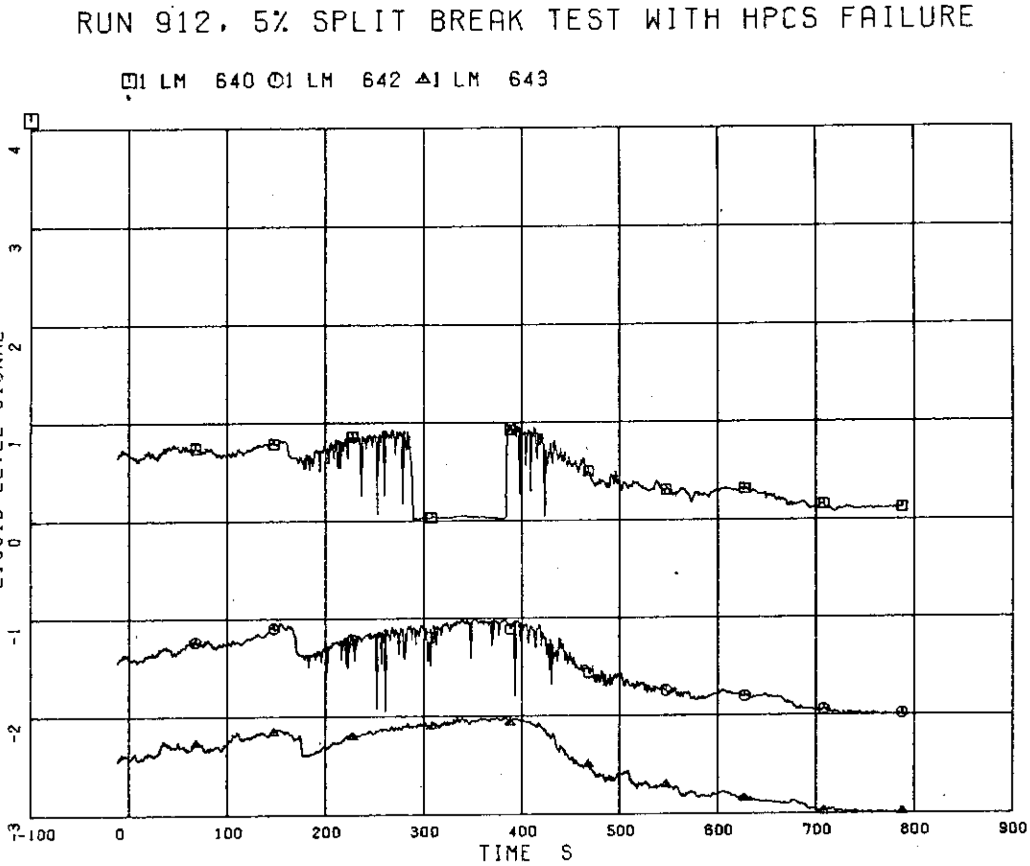


Fig. 5.215 Liquid Level Signal in Guide Tube, South

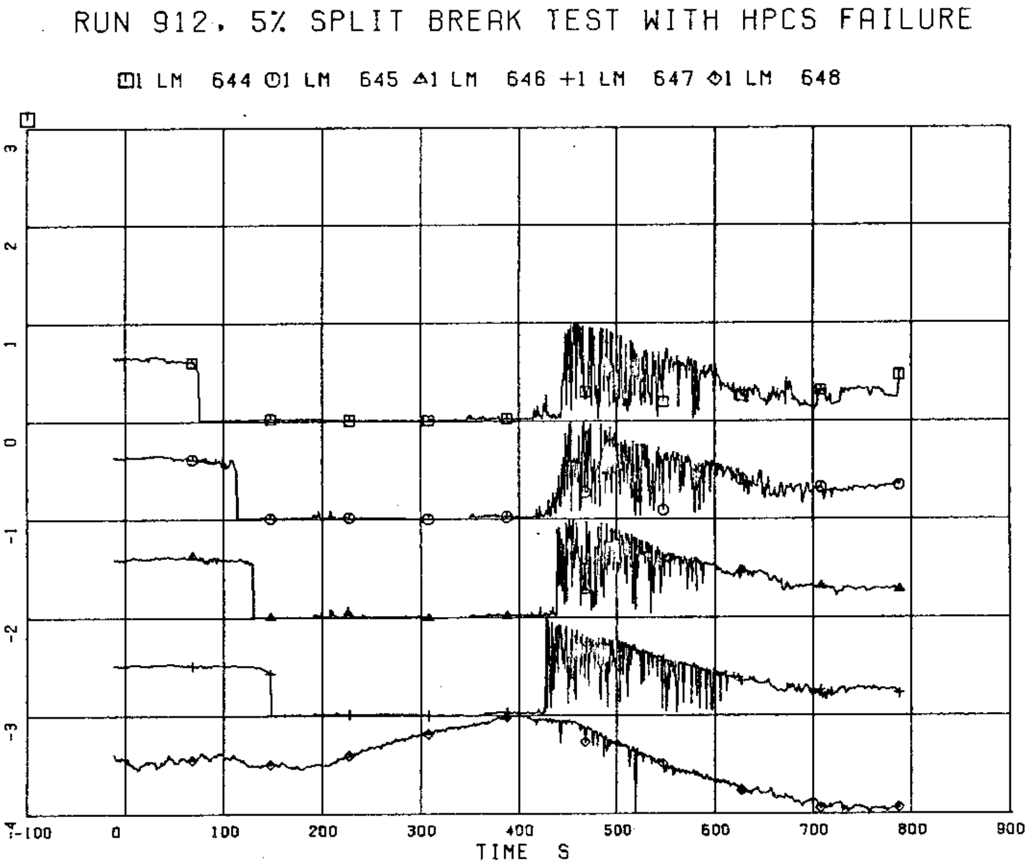


Fig. 5.216 Liquid Level Signal in Downcomer

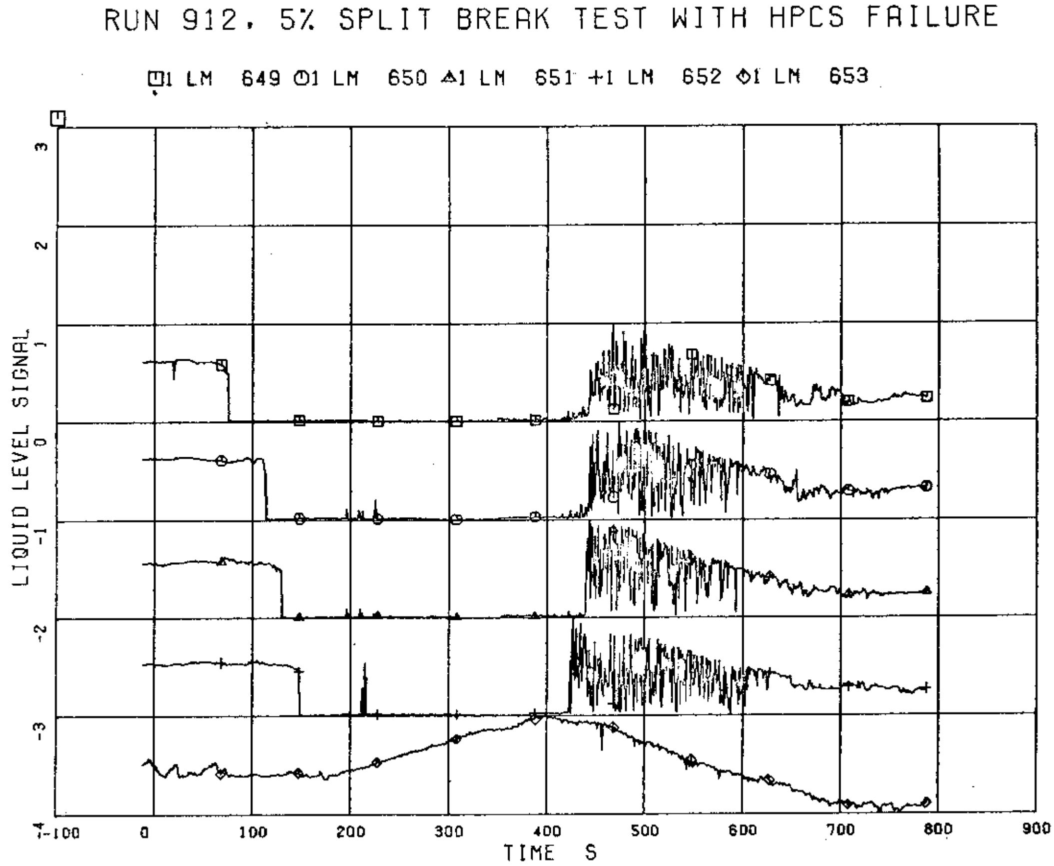


Fig. 5.217 Liquid Level Signal in Downcomer

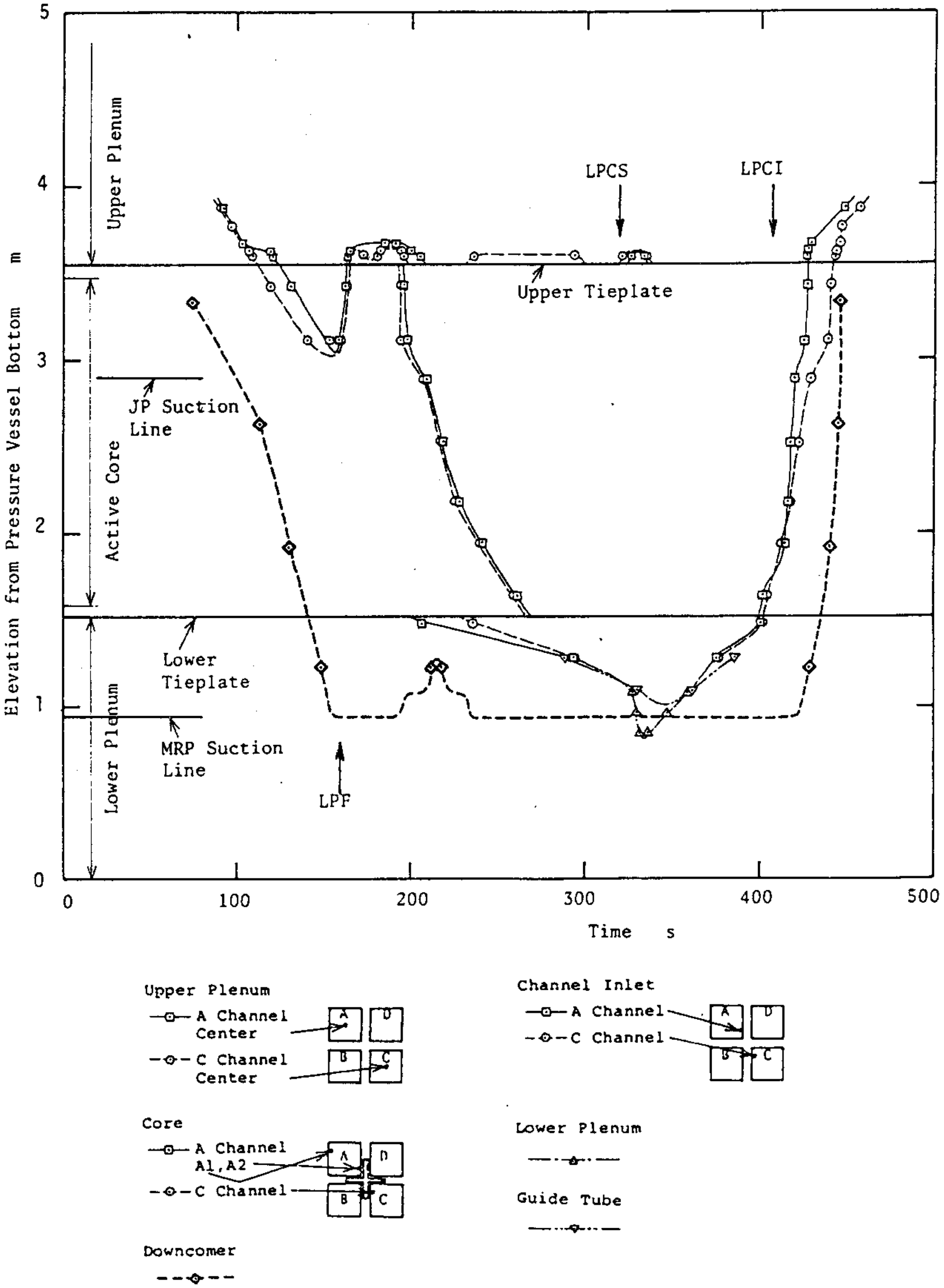


Fig. 5.218 Estimated Liquid Level in Pressure Vessel

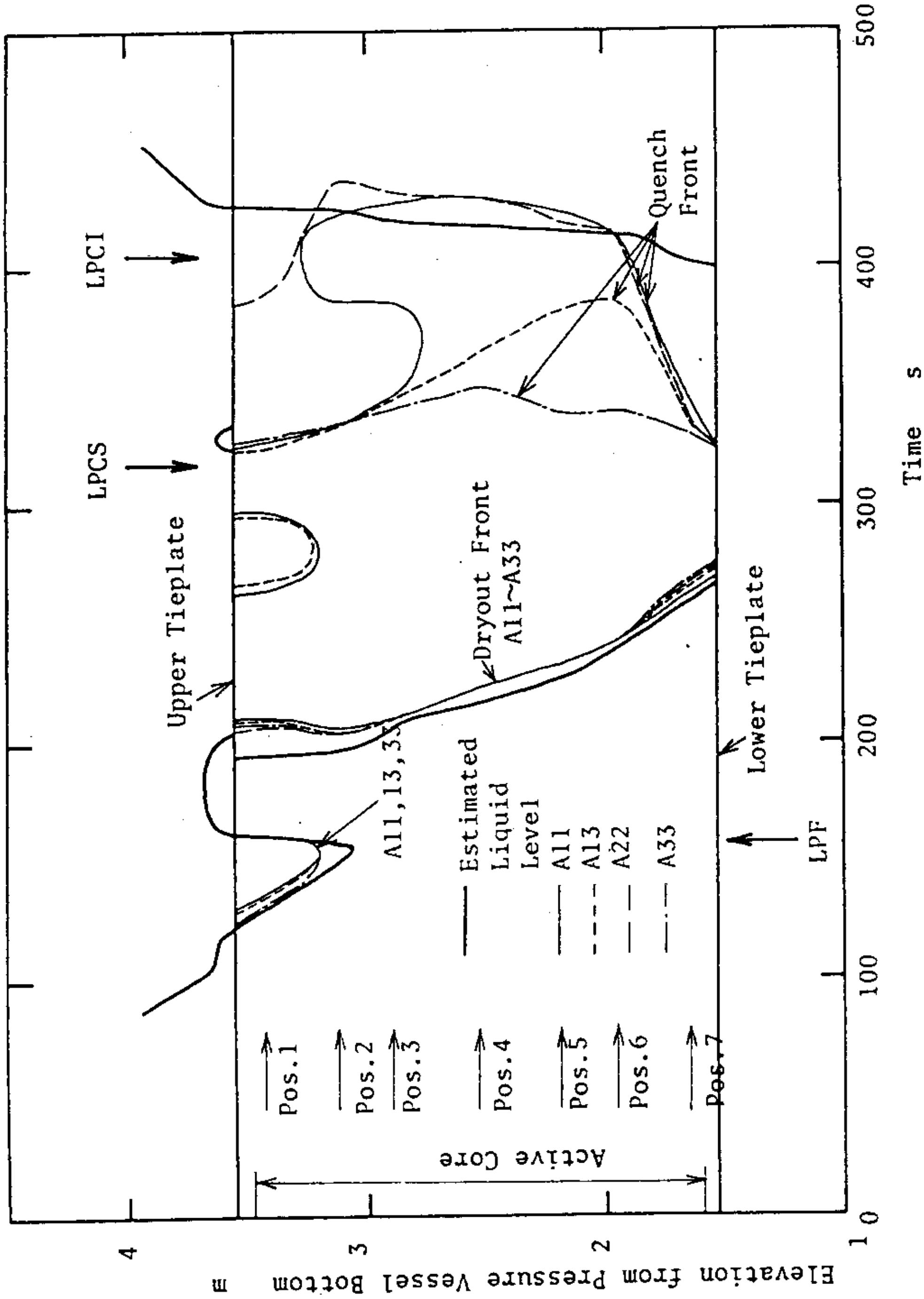


Fig. 5.219 Dryout and Quenching Transients in Channel A

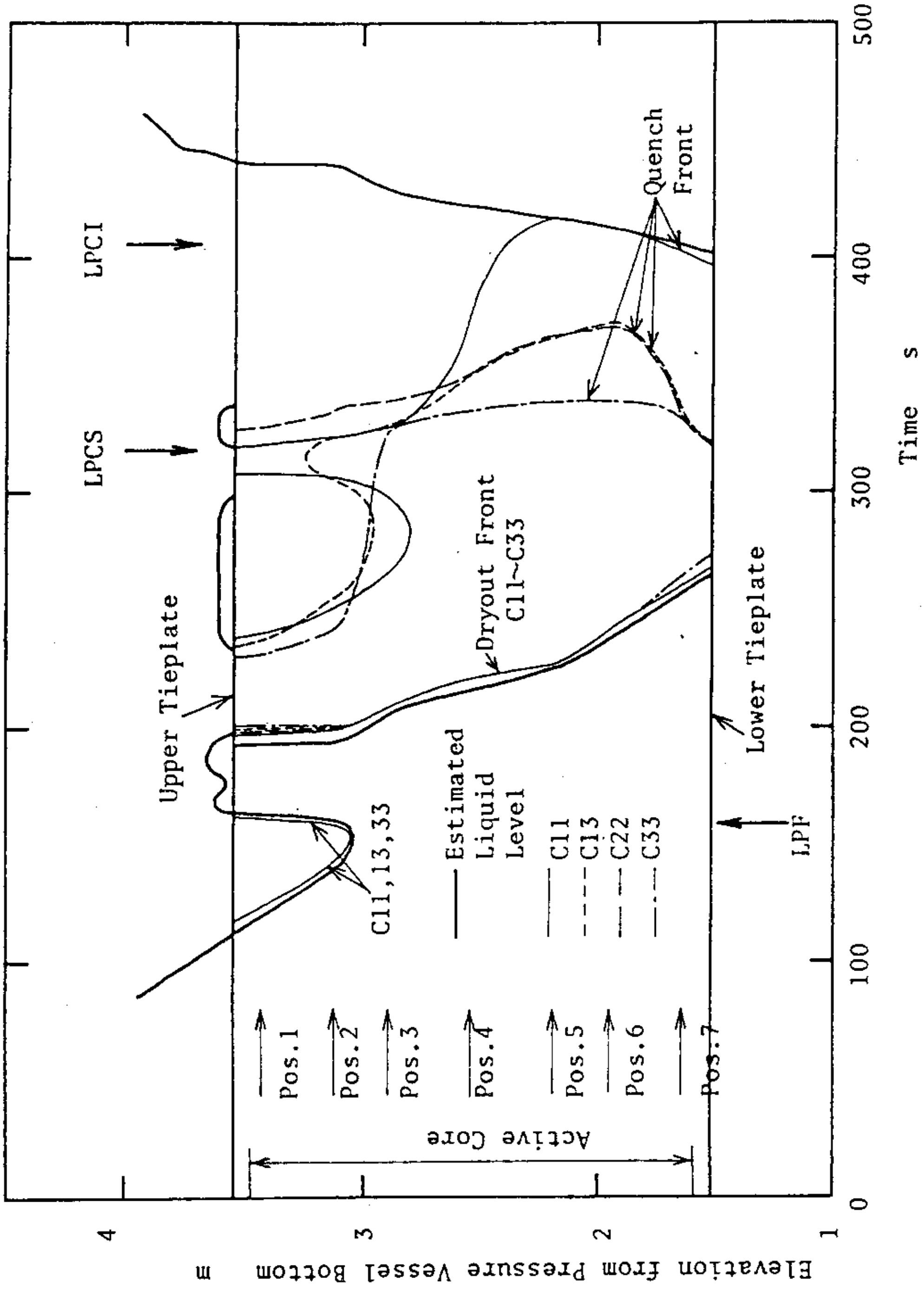


Fig. 5.220 Dryout and Quenching Transients in Channel C

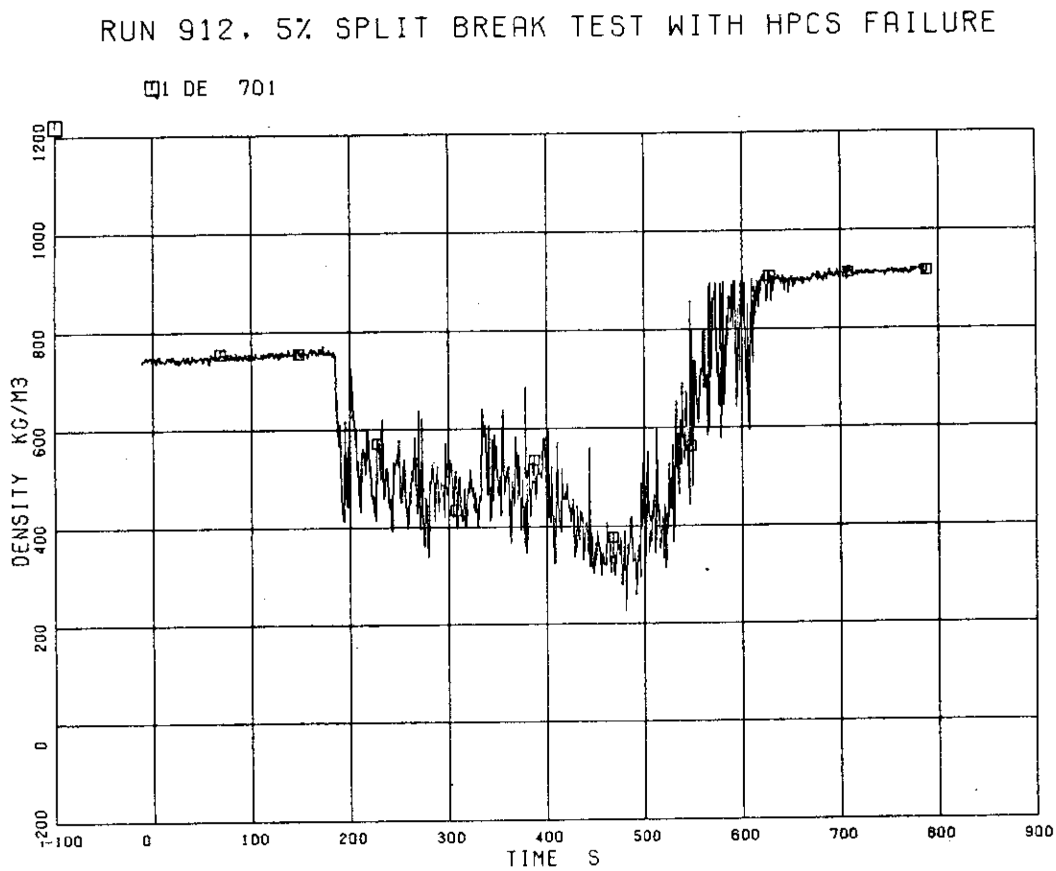


Fig. 5.221 Average Density at Intact Loop Jet Pump Outlet

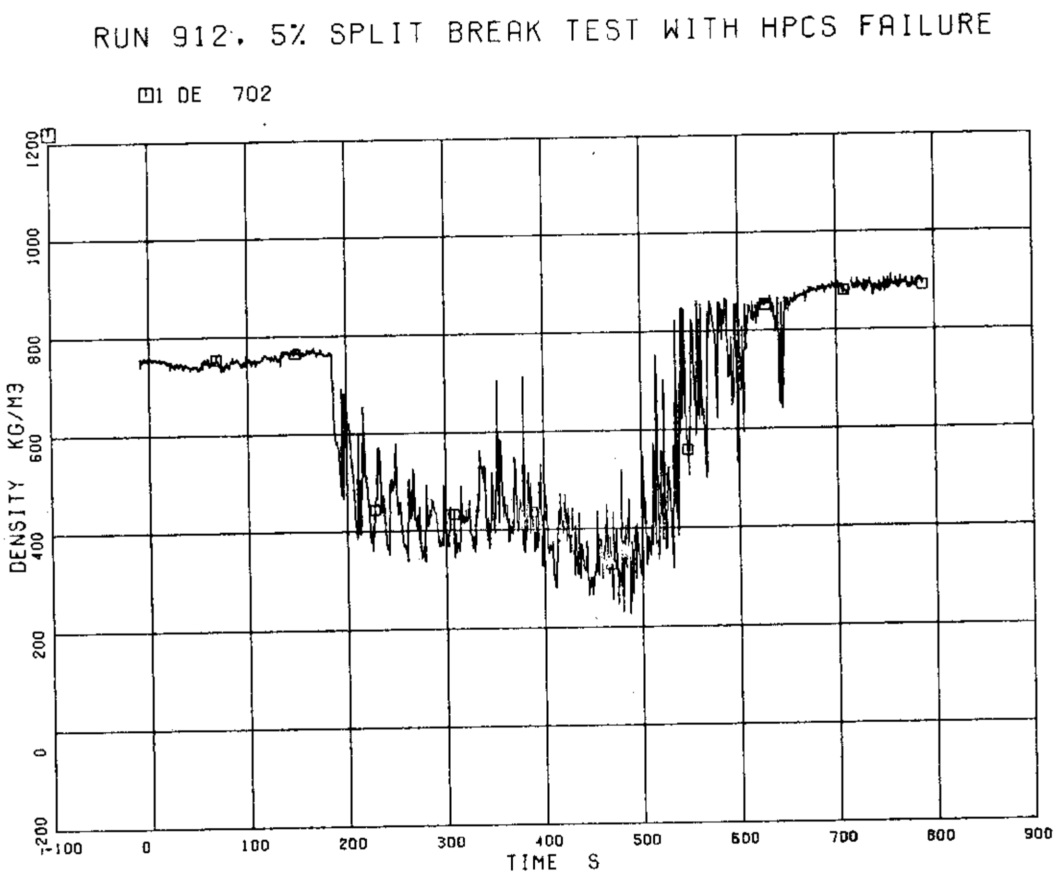


Fig. 5.222 Average Density at Broken Loop Jet Pump Outlet

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

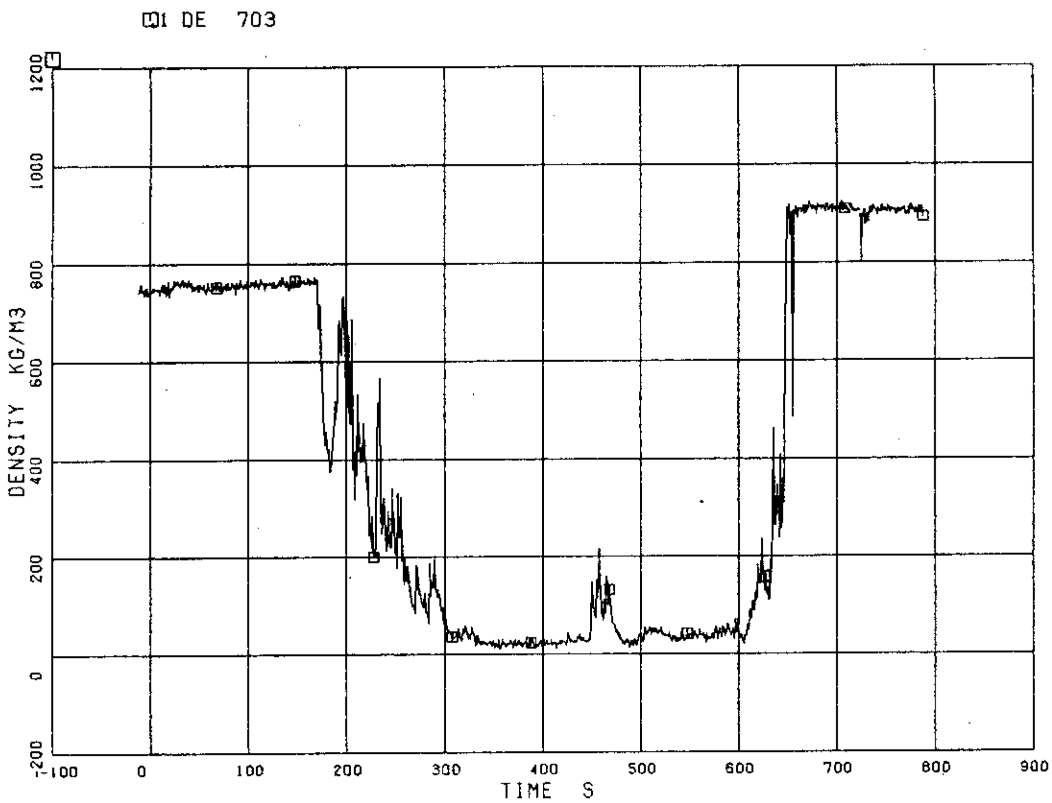


Fig. 5.223 Average Density at Pump Side of the Break

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

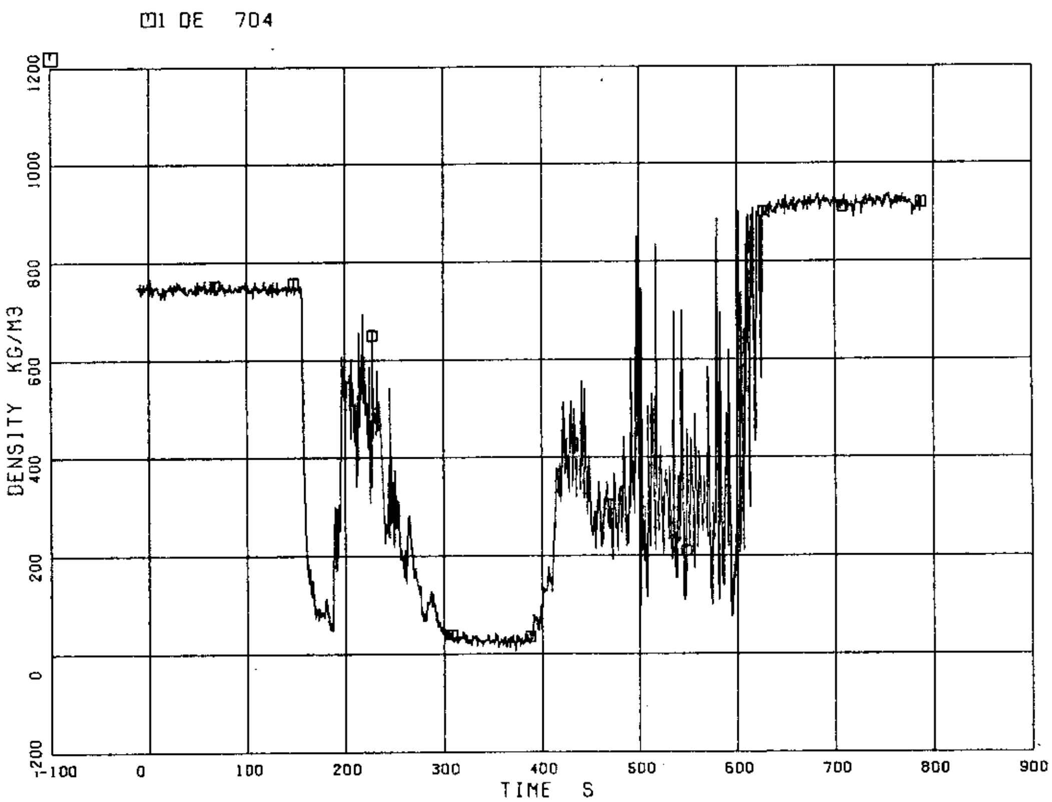


Fig. 5.224 Average Density at Vessel Side of the Break

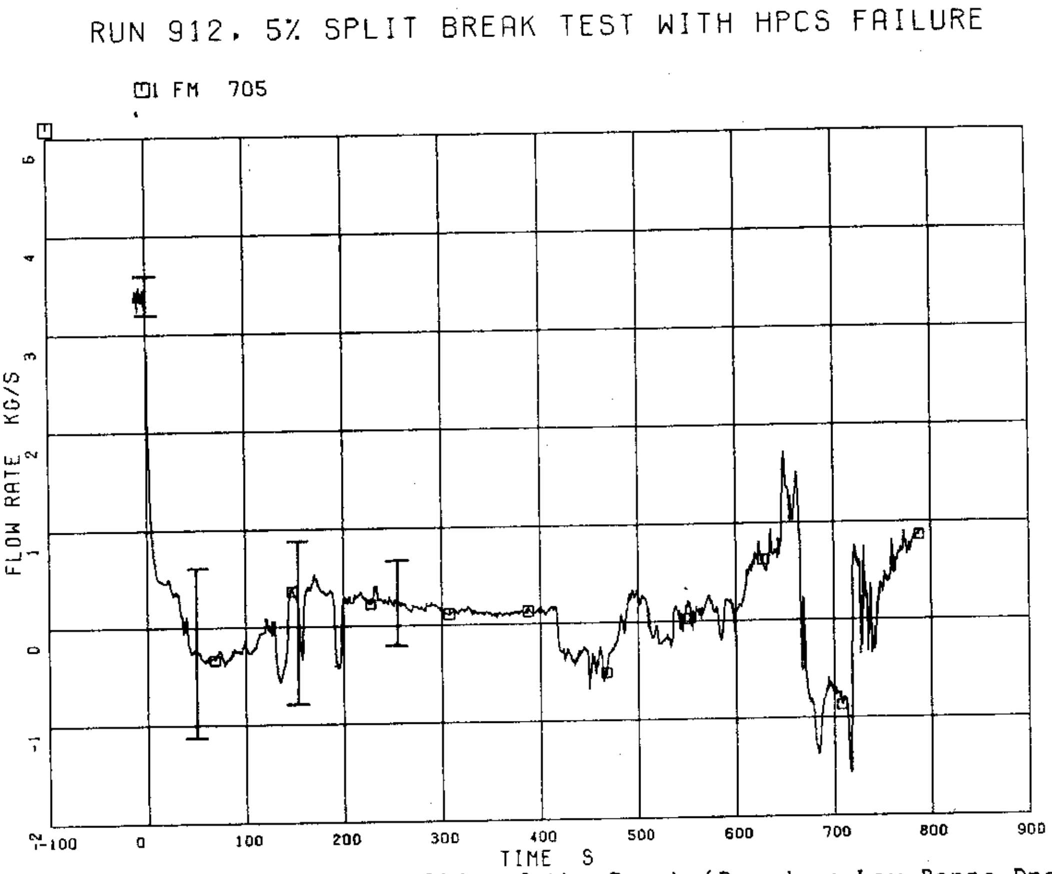


Fig. 5.225 Flow Rate at Pump Side of the Break (Based on Low Range Drag Disk Data)

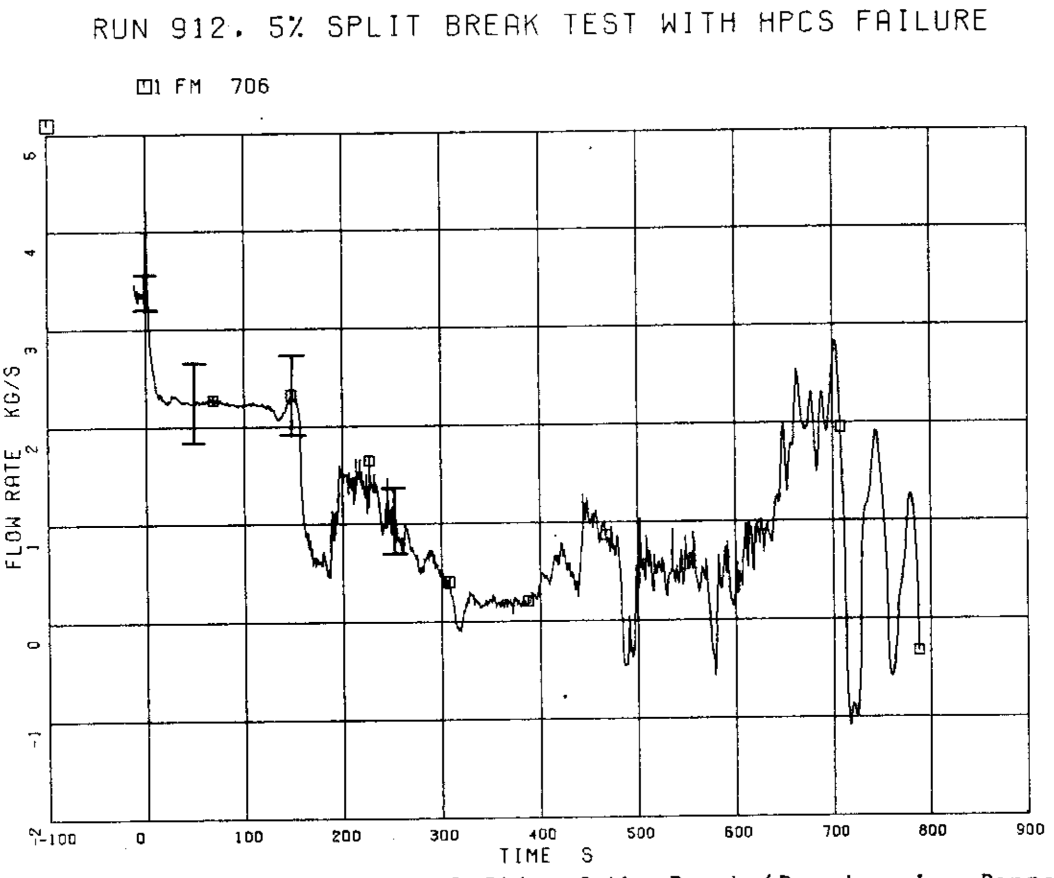


Fig. 5.226 Flow Rate at Vessel Side of the Break (Based on Low Range Drag Disk Data)

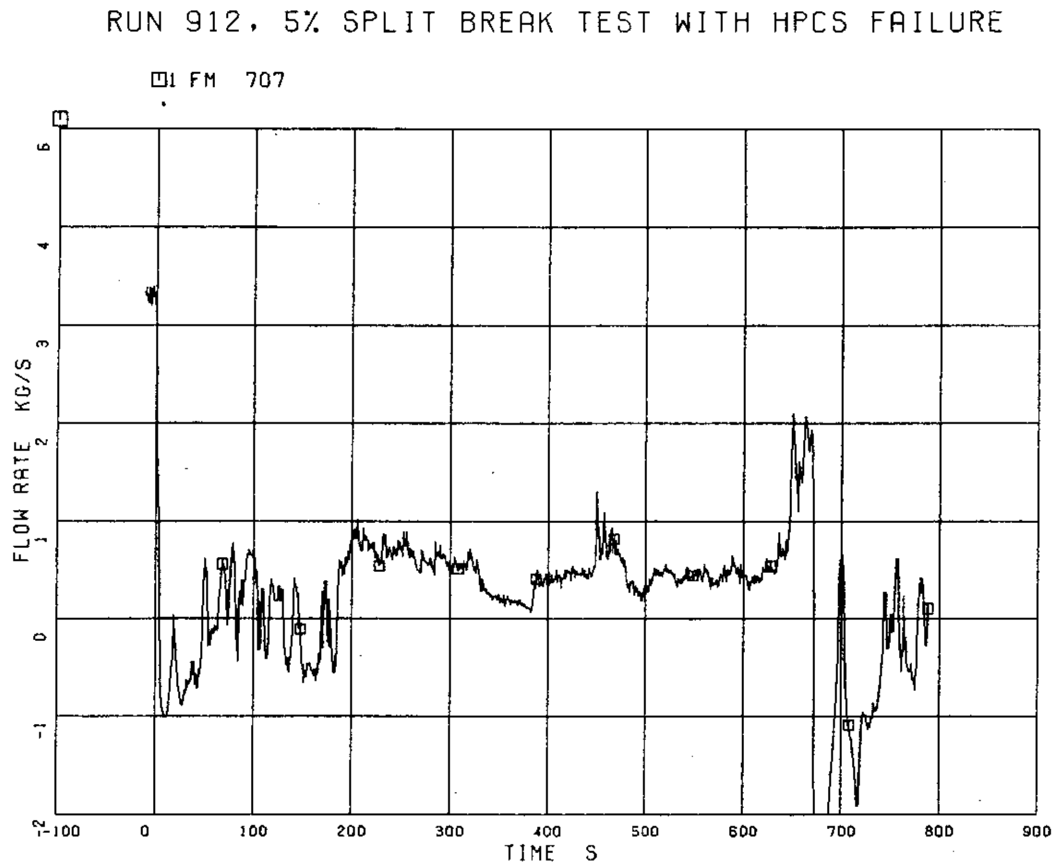


Fig. 5.227 Flow Rate at Pump Side of the Break (Based on High Range Drag Disk Data)

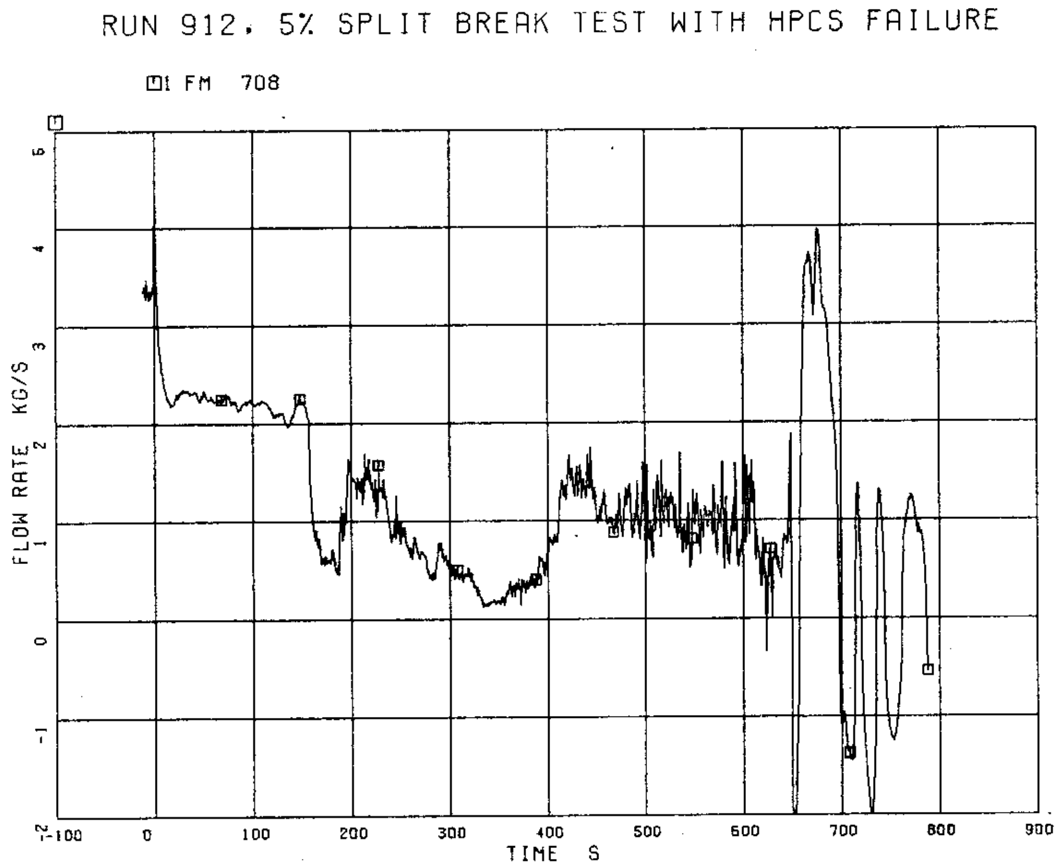


Fig. 5.228 Flow Rate at Vessel Side of the Break (Based on High Range Drag Disk Data)

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

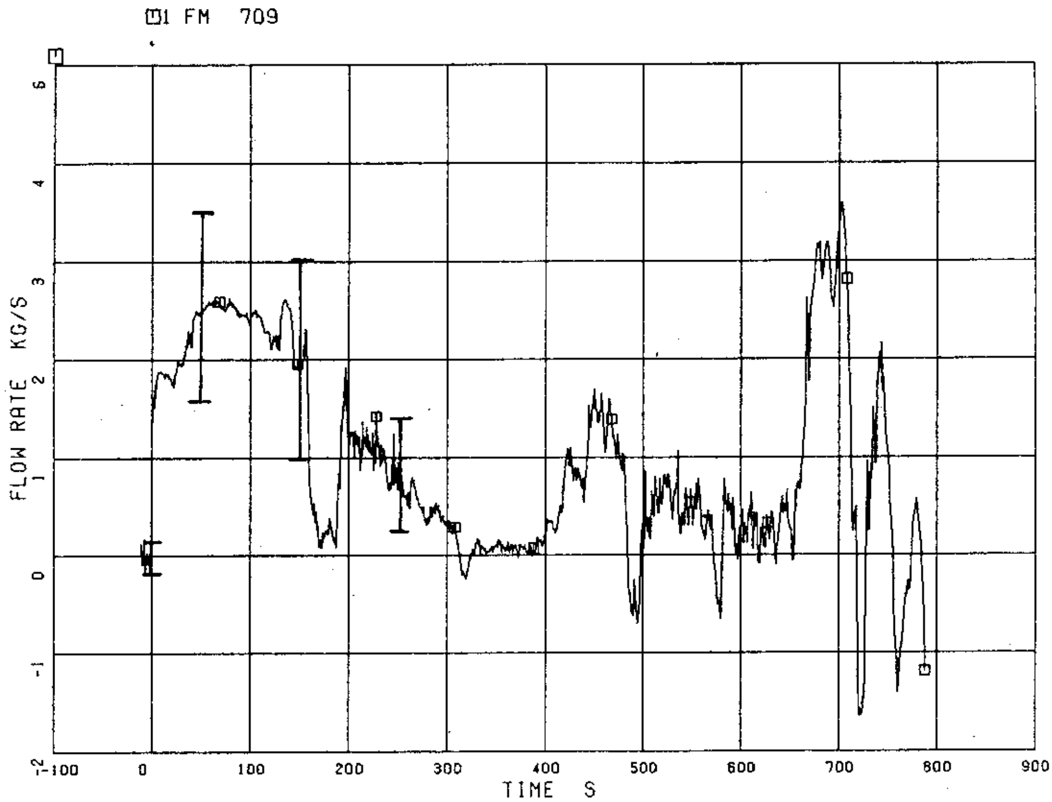


Fig. 5.229 Discharge Flow Rate from the Break (Based on Low Range Drag Disk Data)

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

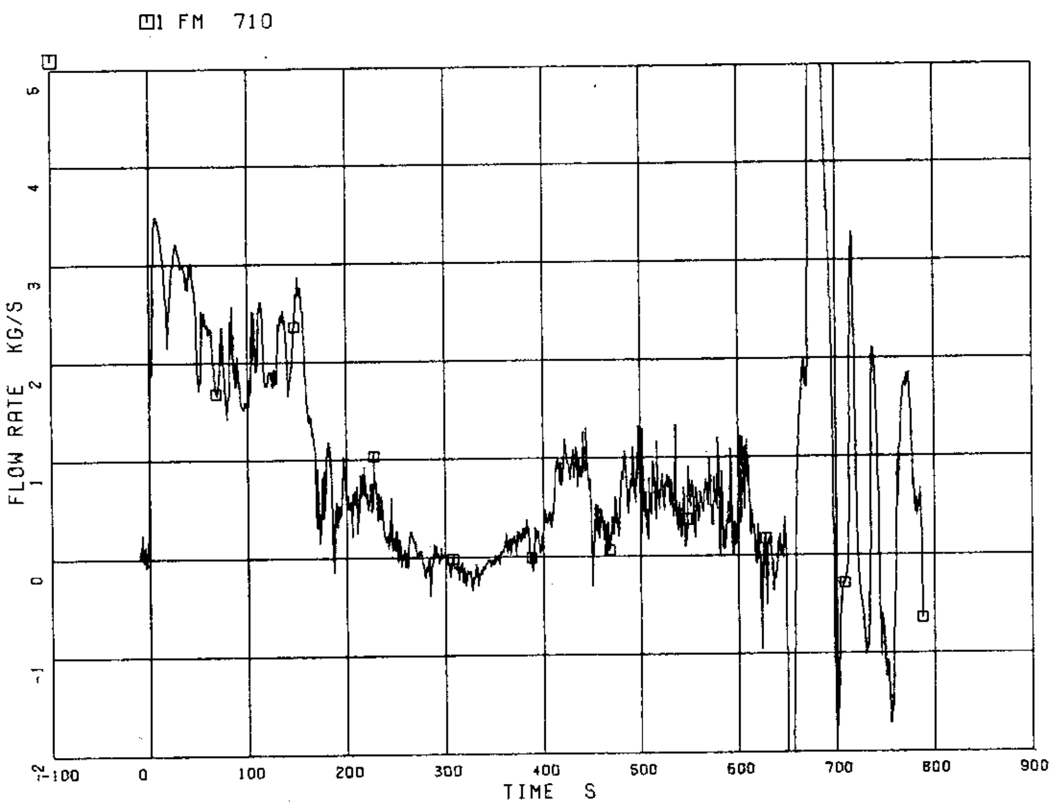


Fig. 5.230 Discharge Flow Rate from the Break (Based on High Range Drag Disk Data)

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

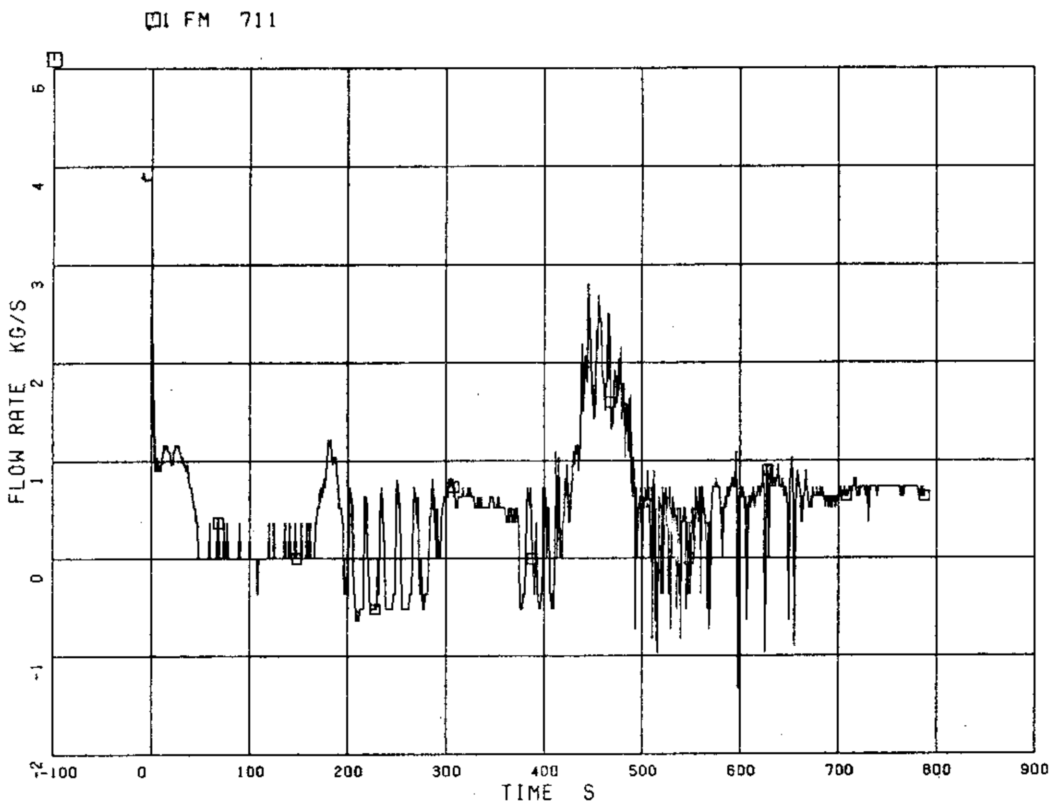


Fig. 5.231 Flow Rate at Channel A Inlet

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

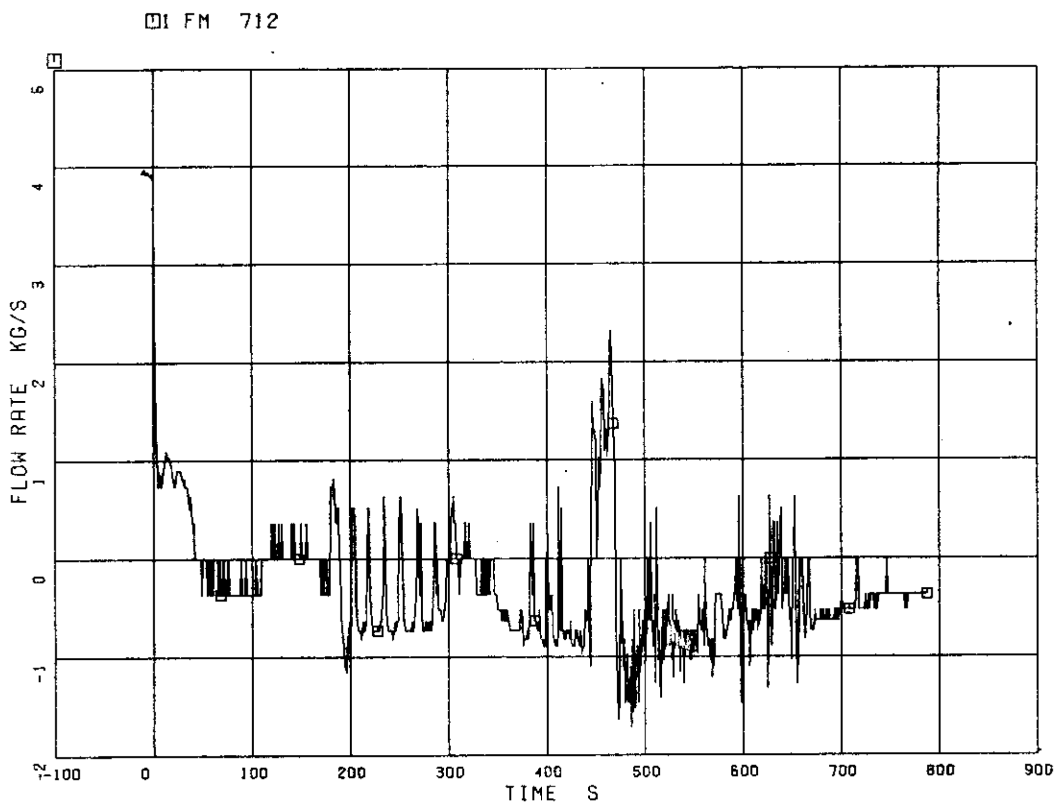


Fig. 5.232 Flow Rate at Channel B Inlet

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

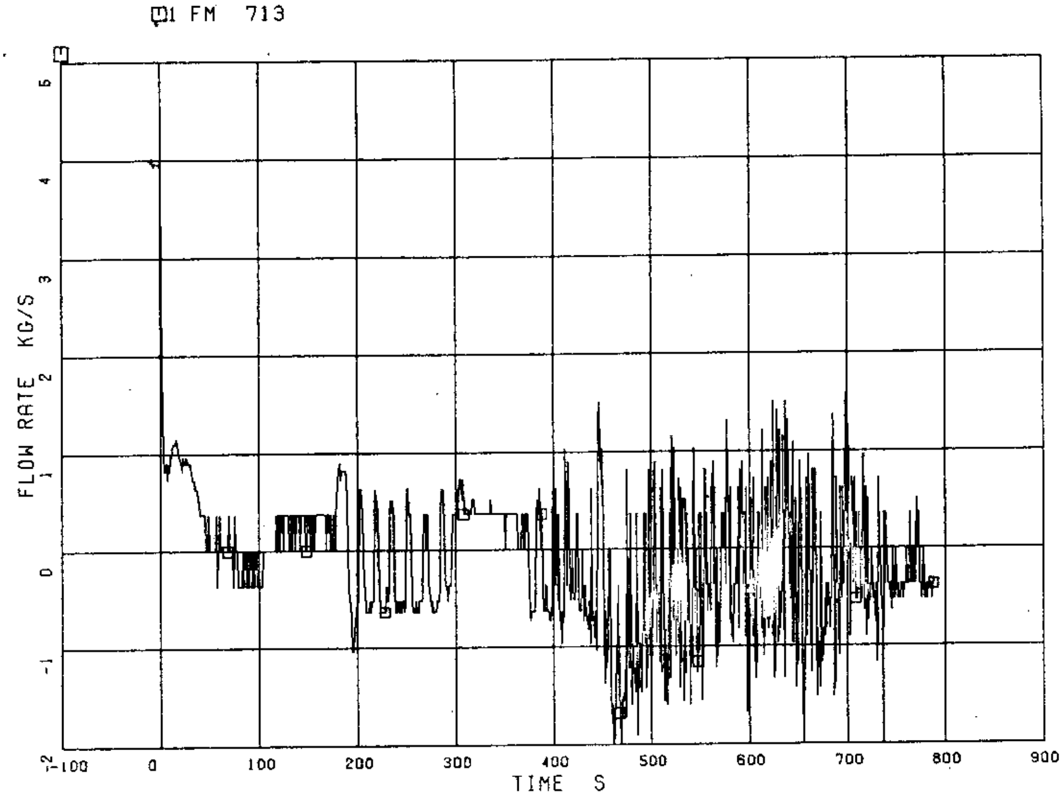


Fig. 5.233 Flow Rate at Channel C Inlet

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

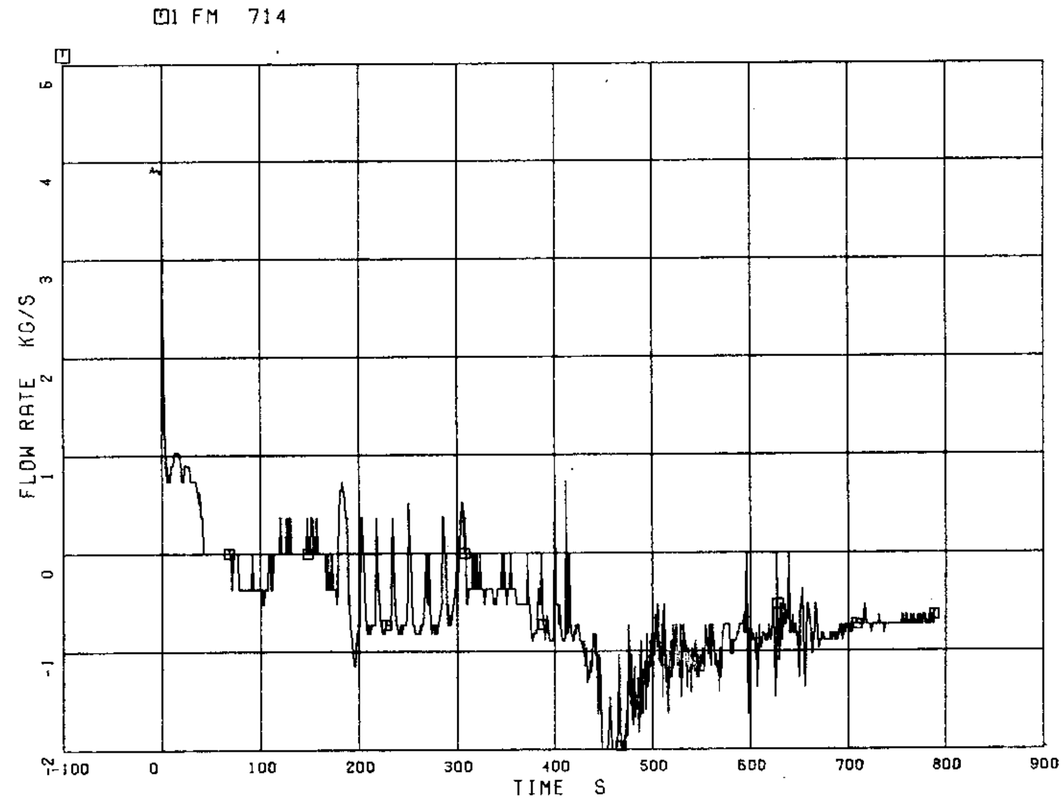


Fig. 5.234 Flow Rate at Channel D Inlet

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

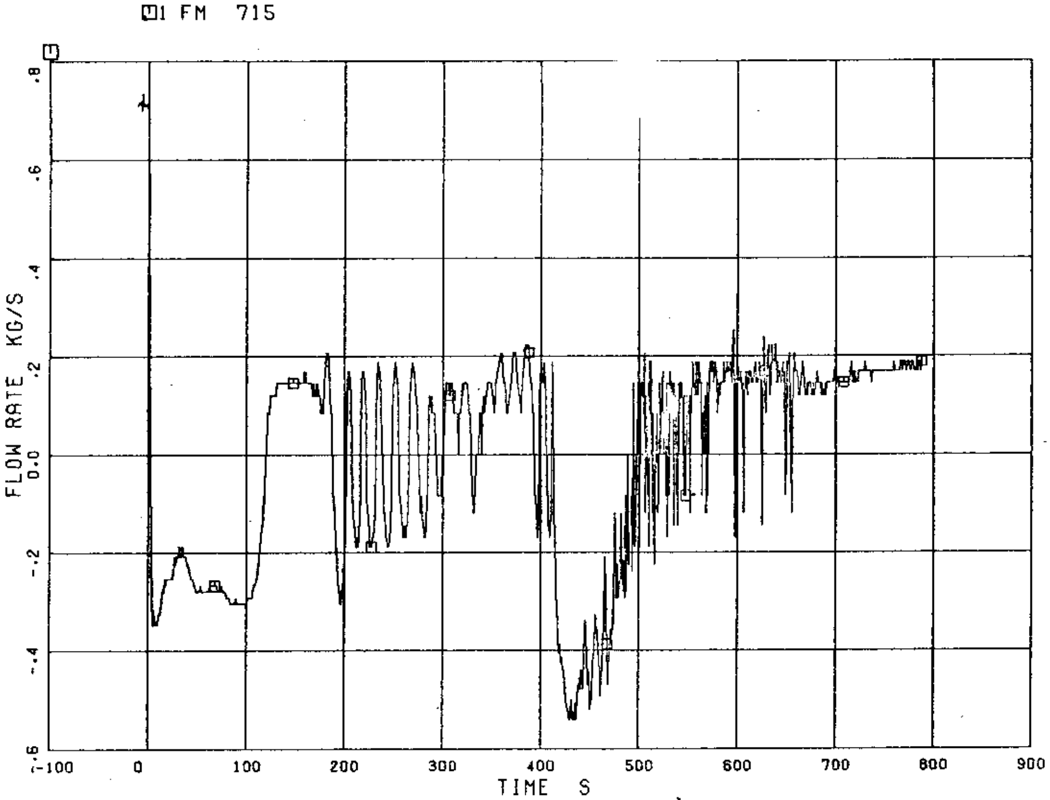


Fig. 5.235 By-Pass Flow

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

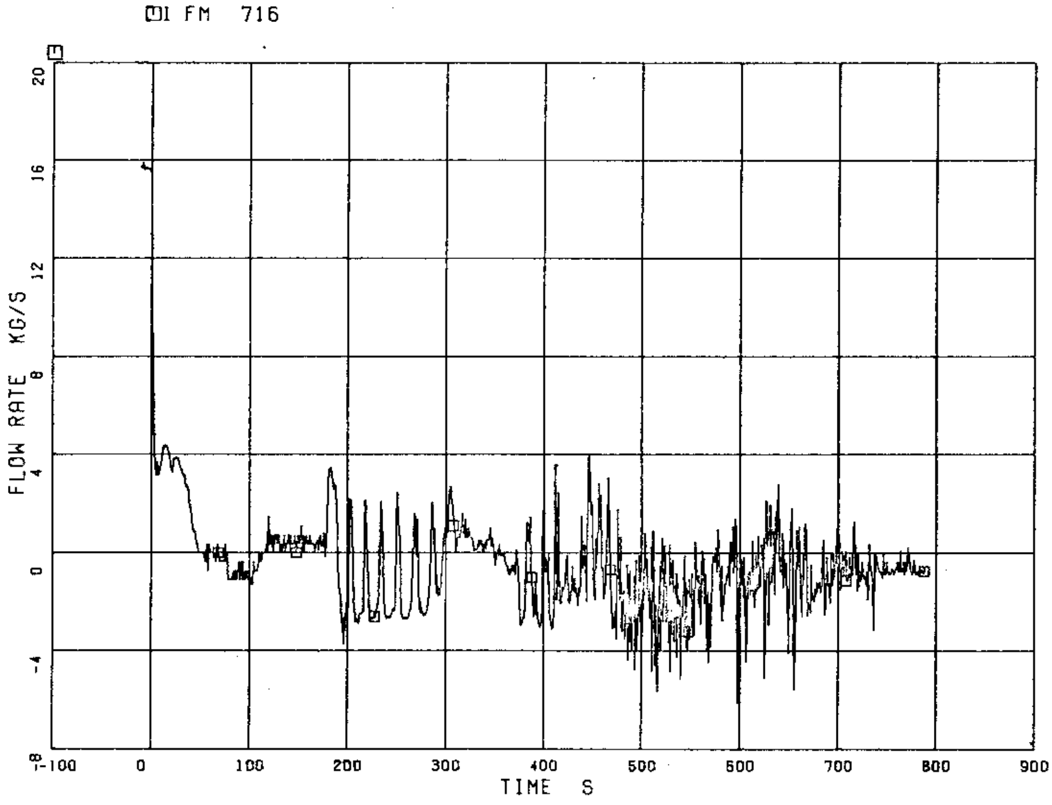


Fig. 5.236 Core Inlet Flow

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

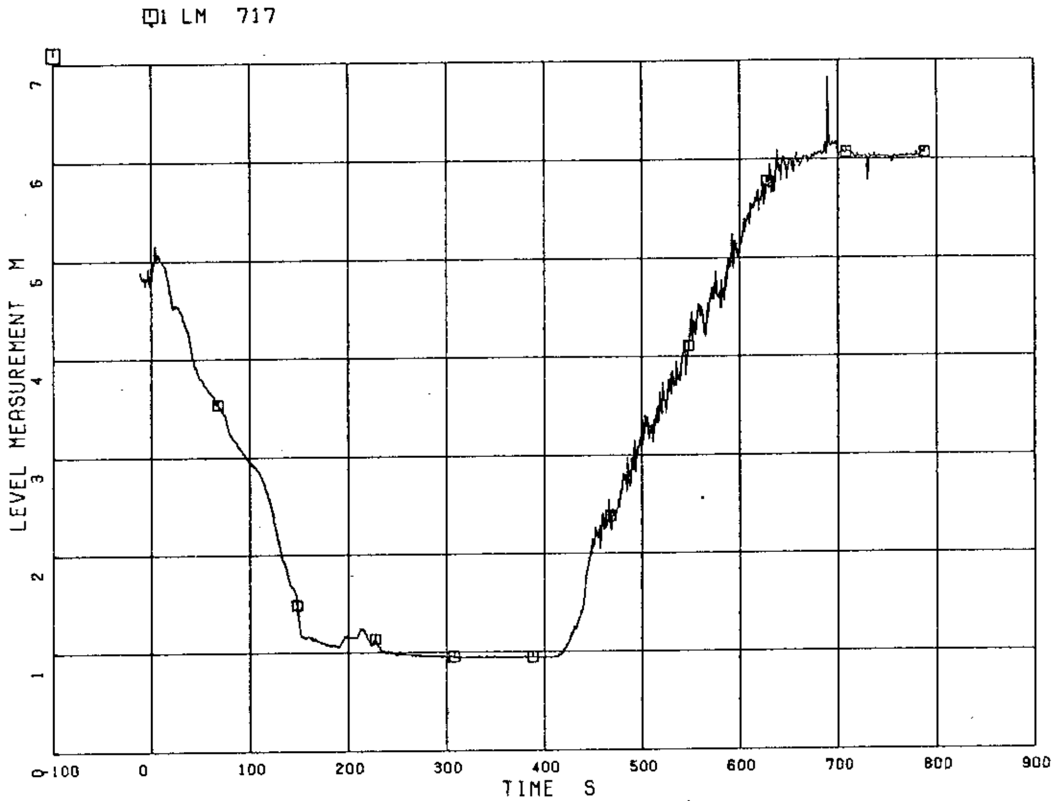


Fig. 5.237 Liquid Level Outside Shroud

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

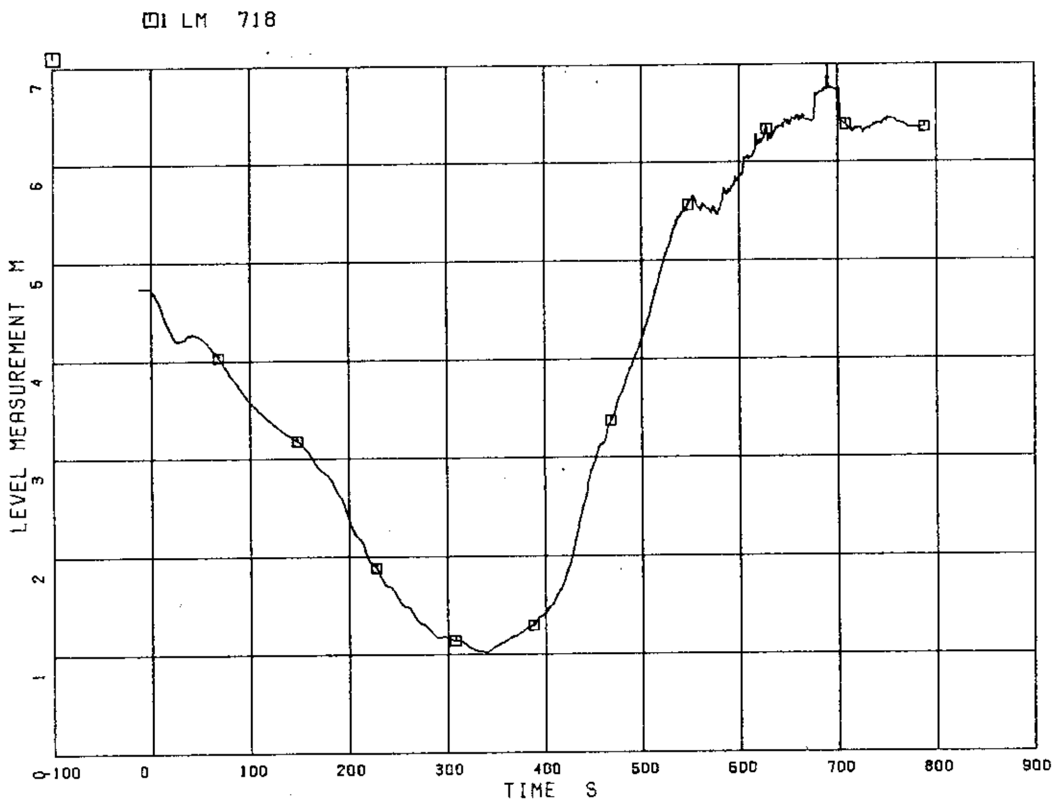


Fig. 5.238 Liquid Level Inside Shroud

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

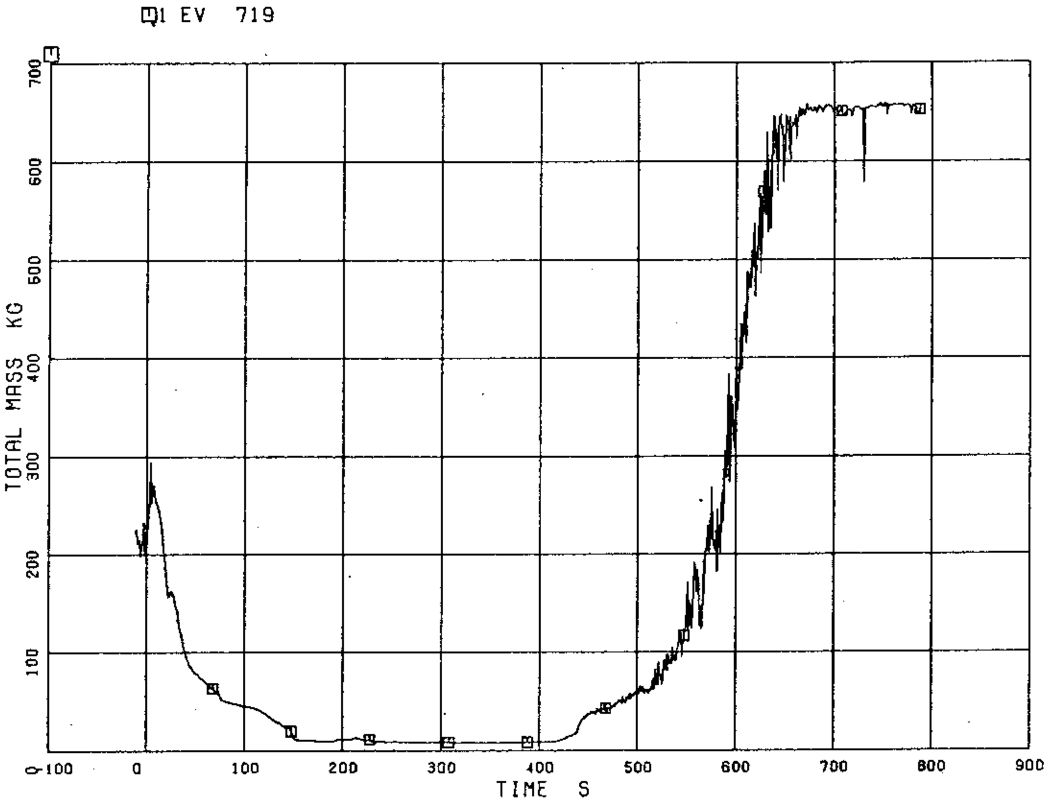


Fig. 5.239 Fluid Inventory Outside Shroud

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

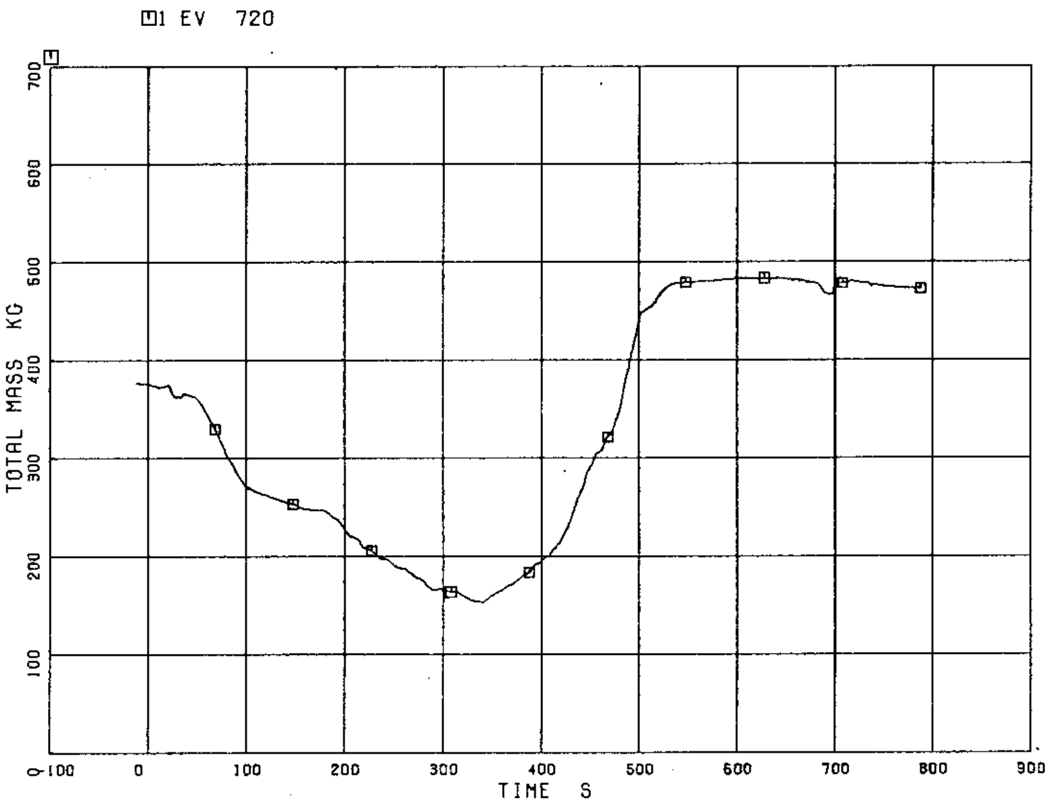


Fig. 5.240 Fluid Inventory Inside Shroud

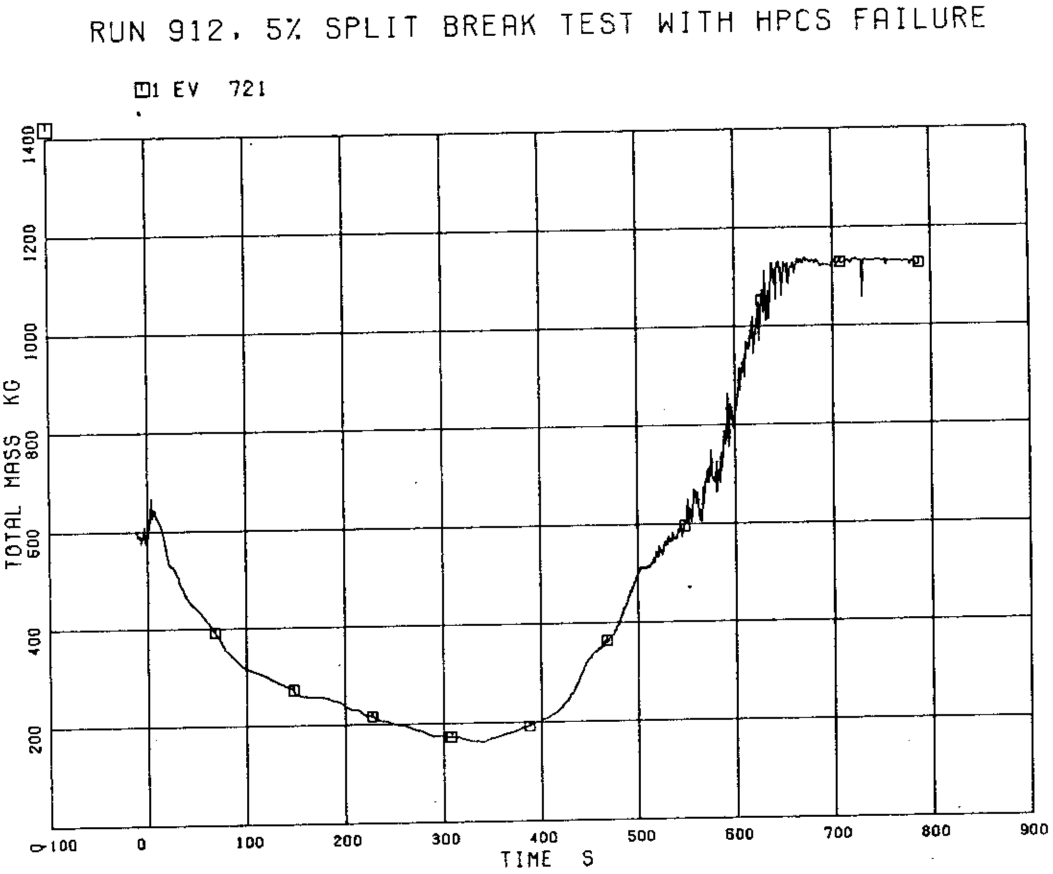


Fig. 5.241 Total Fluid Mass in Pressure Vessel

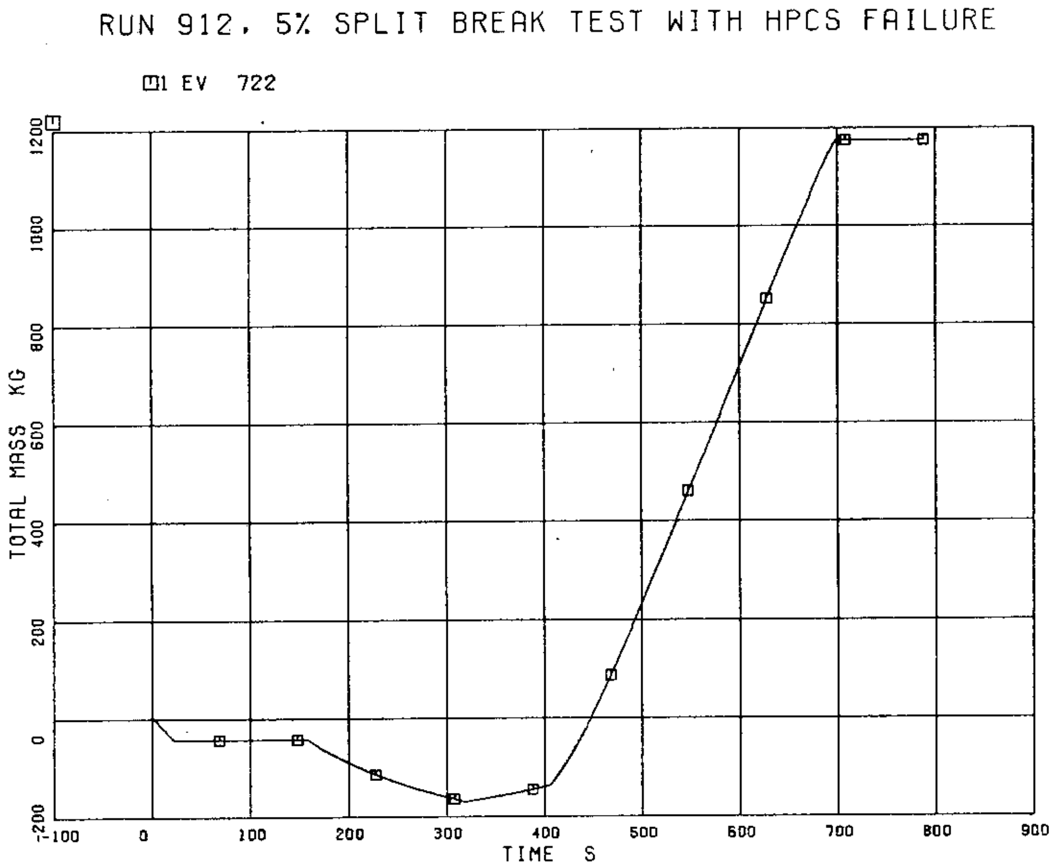


Fig. 5.242 Fluid Mass Increase by the ECCS and the Feedwater Flow and Decrease by the Steam Discharge Flow

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

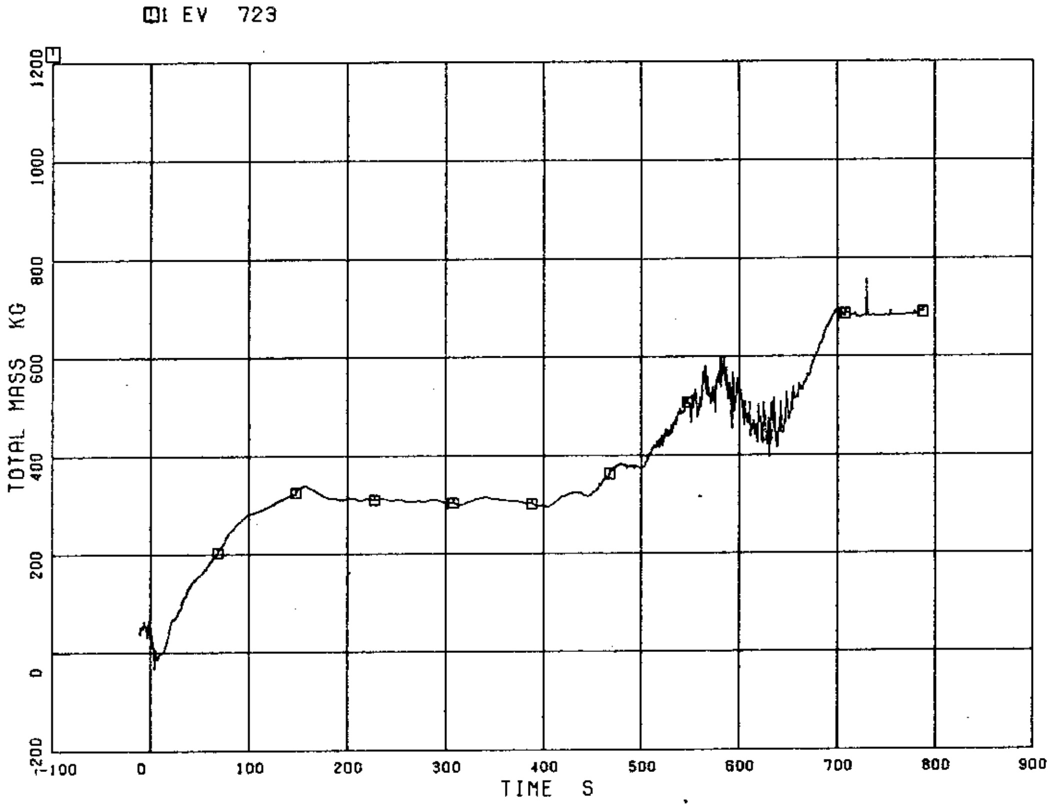


Fig. 5.243 Fluid Mass Discharged from the Break

RUN 912, 5% SPLIT BREAK TEST WITH HPCS FAILURE

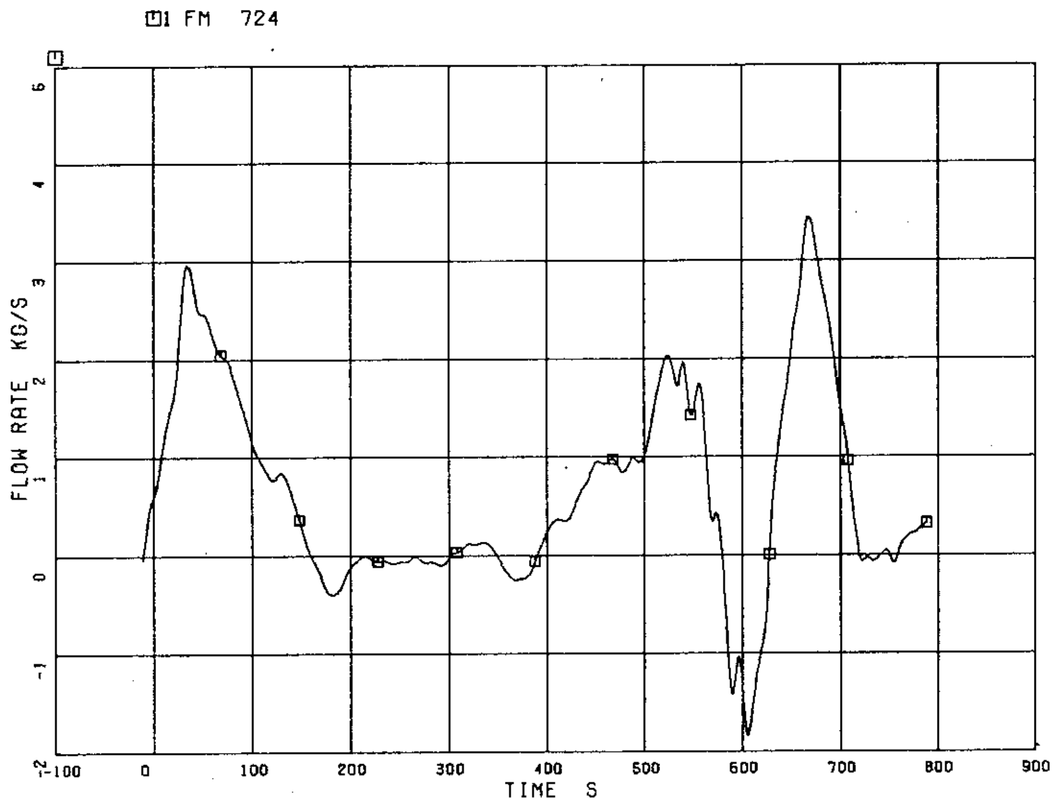


Fig. 5.244 Discharged Flow Rate from the Break