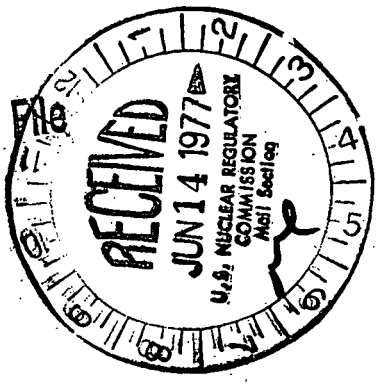
Commonwealth Edison
One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690

June 6, 1977



Mr. Edson G. Case, Deputy Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Dresden Station Unit 2
Proposed Amendment to Facility
Operating License No. DPR-19 to
Permit Power Coastdown from 70%
Power to 40% Power
NRC Docket No. 50-237

References (a): J. S. Abel letter to D. L. Ziemann dated February 27, 1975, NRC Docket No. 50-265.

(b): R. L. Bolger letter to B. C. Rusche dated March 15, 1977, NRC Docket No. 50-237.

Dear Mr. Case:

Pursuant to 10 CFR 50.59, Commonwealth Edison Company proposes to amend Section 3.F of Facility Operating License No. DPR-19. The proposed amendment (Attachment 1) would eliminate the restriction which prohibits operation after coastdown to 70% power, Reference (b).

The amendment is needed to permit continued operation of the Unit from the 70% power level down to 40% power and is supported by the enclosed General Electric Company analysis (Attachment 2). This analysis shows that coastdown operation following the all rods out condition results in increased margin to the operating limits. Specifically, the pressure and MCPR margins as calculated, from the turbine trip without bypass transient were shown to increase as the power was reduced during coastdown.

The proposed operating plan for Dresden Unit 2 is conservative when compared to the current operating limit requirements. No unreviewed safety hazards are introduced and no Technical Specification changes are required.

Under present operating conditions, the 70% power limit will be reached about July 8, 1977.

The amendment has received on-site and off-site review and approval. Please direct any additional questions to this office.

Three (3) signed originals and 37 copies of this letter are provided for your use.

Very truly yours,

R. L. Bolger
Assistant Vice President

Attachments

SUBSCRIBED and SWORN to before me this 7th day of June, 1977.

Nancy M. Hollingsworth
NOTARY PUBLIC

Attachment 1

DRESDEN STATION UNIT 2

DPR-19

B. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 28, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

C. Reports

Commonwealth Edison shall make certain reports in accordance with the requirements of the Technical Specifications.

D. Records

Commonwealth Edison shall keep facility operating records in accordance with the requirements of the Technical Specifications.

E. For the purpose of repairing a crack in the recirculation bypass line in the "A" loop, the licensee may perform the repair program as described in a report entitled "Commonwealth Edison Company Dresden Station 2A Recirculation Pump 4 Equalizing Line Repair Program" transmitted by letter dated September 23, 1974.

F. Restrictions

At the point in the operating cycle at which the reactivity reduction rate during a scram is less than that of Curve B in Figure 1 of "Supplement B to Dresden Station Special Report 29," dated March 29, 1974, coastdown to 90% power with a fixed rod pattern shall commence. Rod withdrawal following coastdown may resume in order to maintain 90% power until the all-rods-out condition has been reached. Coastdown below 90% power may then continue. Operation at 90% power level shall not exceed the power vs. flow conditions defined by the nominal 90% flow control line. The flow control line during the coastdown periods shall be limited to that which is consistent with the steady state power level achievable at full flow. Operation of the reactor is not permitted after coastdown to 40% power pending further analyses.

G. Equalizer Valve Restriction

The valves in the equalizer piping between the recirculation loops shall be closed at all times during reactor operation.

4. This license is effective as of the date of issuance and shall expire eighteen (18) months from said date, unless extended for good cause shown, or upon the earlier issuance of a superseding operating license.

FOR THE ATOMIC ENERGY COMMISSION

Peter A. Morris

Appendix A - Technical Specifications

Date of Issuance: DEC 22 1969

Attachment 2

DRESDEN 2 CYCLE 5

EXTENDED CYCLE OPERATION

I. INTRODUCTION

Analyses have been completed in support of Dresden 2, Cycle 5, extended cycle operation. The operating plan is shown in Figure 1. The analyses have verified that application of previous operating limits to operation of the plant as shown in Figure 1 is conservative. The analyses consist of the Turbine Trip Without Bypass, trip scram, for the all rods out condition at 90%, 70%, 55%, and 40% of rated power.

II. DISCUSSION

The Turbine Trip Without Bypass transient has been analyzed for four specific cases. These four cases cover the reduced power operation as shown in Figure 1. Each analysis was done at a specific power and exposure point. The three points are as follows: 1) 90% power at 4803 MWd/t, 2) 70% power at 5776 MWd/t, 3) 55% power at 6624 MWd/t, and 4) 40% power at 7481 MWd/t. The exposure values are cycle increment values. The analysis covering the 100% power operation and the first coastdown have previously been submitted and are not changed.

The primary cycle-dependent input parameters for the transient analyses are given in the attached figures and tables. Figure 2 shows the scram reactivity curves, Table 1 gives the dynamic void coefficient of reactivity, and Table 2 gives the Doppler coefficient.

The transient analysis results are given in Table 3 and Figures 3, 4, 5, and 6. The pressure margin results given in Table 3 compare to the previous EOC margin of 39 psi. The required margin is 25 psi. Thus, the pressure margin is larger for the four cases than the required margin resulting in a conservative operating basis. The previously calculated, current value, MCPR's for the fuel are 1.29/1.35 (7x7/8x8). Since these are minimum allowable operating values, any values calculated to be lower would be conservative. The MCPR values for the four cases have been evaluated and found to be less than or equal to the current operating values. Thus, operation with the current values for the new plan is conservative. The system transient responses for the three cases are shown in Figures 3, 4, 5 and 6.

III. CONCLUSION

The planned operation is to operate the plant at 100% power out to the "B" curve at an approximate cycle exposure of 3750 MWd/t; locking the control rods in position at this exposure and coasting down in power to a power level of 90% of rated; then pulling control rods to maintain 90% power until the all rods out condition is achieved at a calculated cycle exposure of 4803 MWd/t, and finally, a coastdown with all rods out to 40% power at a calculated cycle exposure of 7481 MWd/t. All coastdowns are to be done at 100% of rated core flow.

TABLE 1

VOID COEFFICIENT

POWER LEVEL, %	CYCLE INCREMENTAL EXPOSURE, MWD/T	VOID COEFFICIENT CALCULATED, c/%	VOID COEFFICIENT USED IN TRANSIENT ANALYSIS, c/%
90	4803	-5.938	-7.422
70	5776	-4.195	-5.243
55	6624	-3.060	-4.502
40	7481	-2.076	-3.491

TABLE 2

DOPPLER COEFFICIENT

POWER LEVEL, %	CYCLE INCREMENTAL EXPOSURE, MWD/T	AVERAGE FUEL TEMPERATURE, °F	DOPPLER COEFFICIENT CALCULATED, c/°F	DOPPLER COEFFICIENT USED IN TRANS. ANALYSIS, c/°F
90	4803	1053	-0.217	-0.206
70	5776	925	-0.261	-0.248
55	6624	836	-0.266	-0.253
40	7481	751	-0.271	-0.256

TABLE 3

TRANSIENT ANALYSIS RESULTS

POWER LEVEL, %	NEUTRON FLUX % OF INITIAL	HEAT FLUX, % OF INITIAL	LINE PRESSURE, PSIG	MARGIN TO SV, PSI
90	261.8	104.1	1204	36
70	153.9	77.1	1161	79
55	115.6	61.0	1141	99
40	62.3	42.0	1097	143

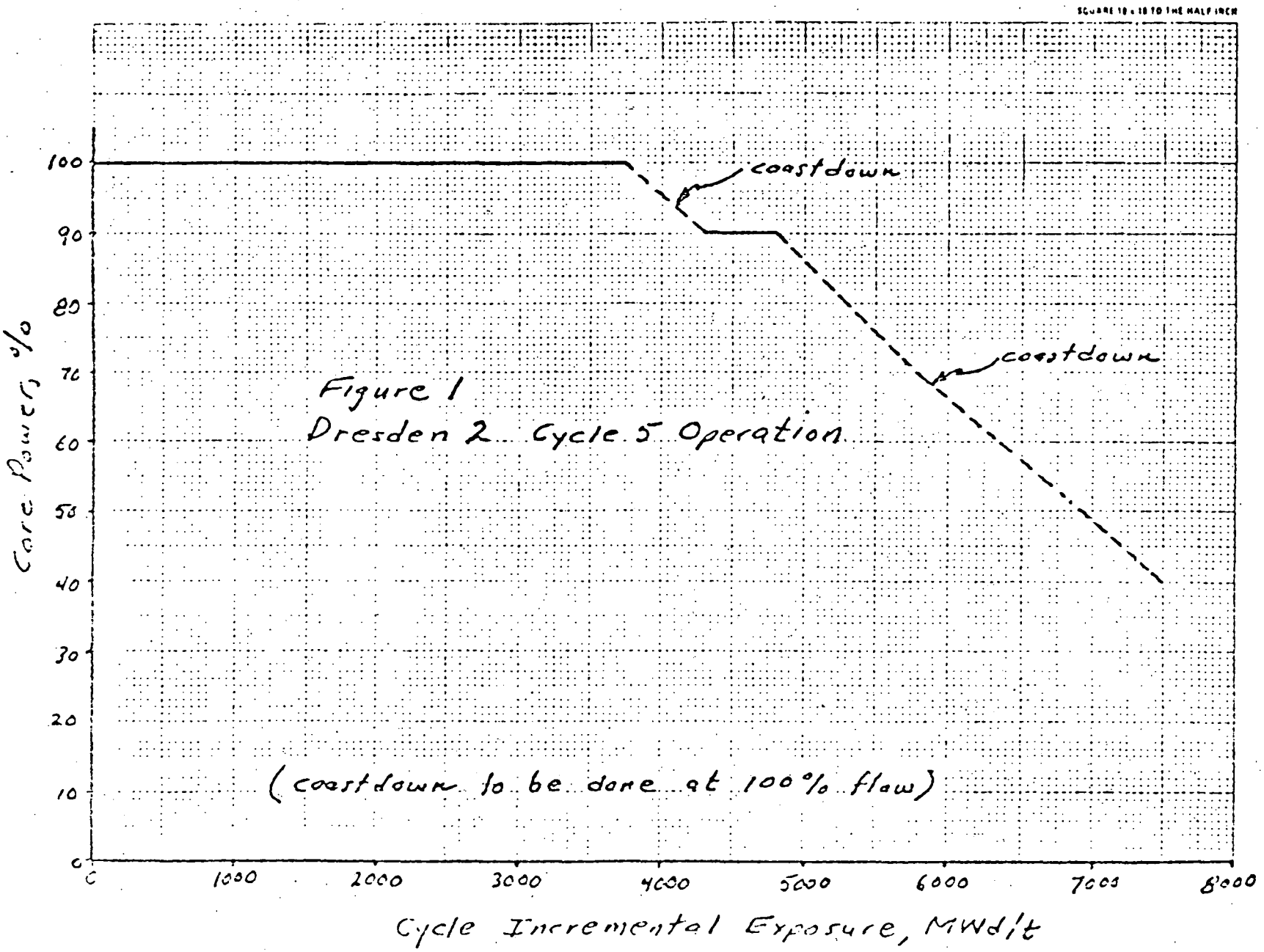


Figure 1
Dresden 2 Cycle 5 Operation

(coastdown to be done at 100% flow)

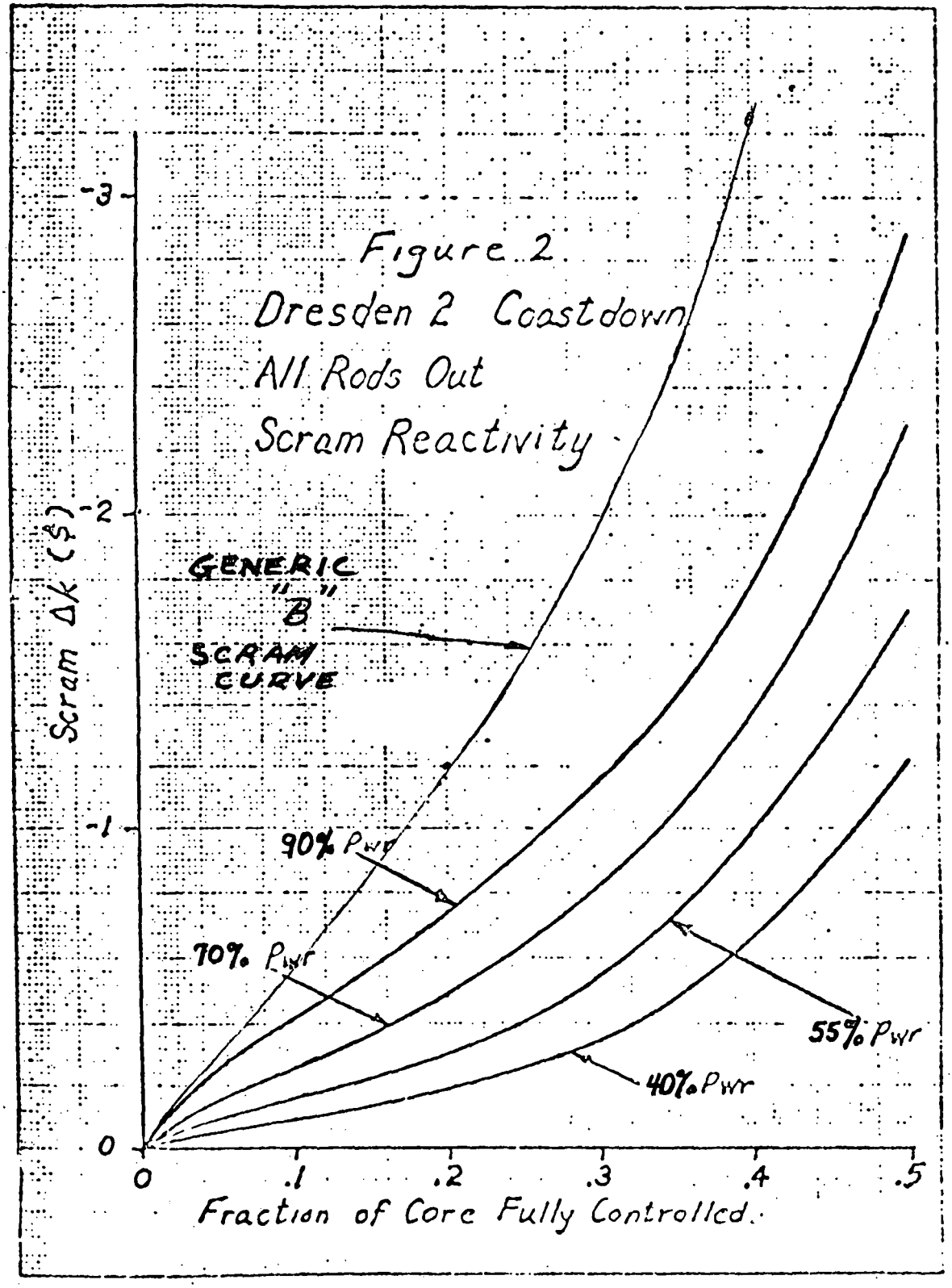


Figure 2
Dresden 2 Coastdown
All Rods Out
Scram Reactivity
GENERIC "B" SCRAM CURVE
90% Pwr
70% Pwr
55% Pwr
40% Pwr
Scram Δk (¢)
-3
-2
-1
0
0
.1
.2
.3
.4
.5
Fraction of Core Fully Controlled

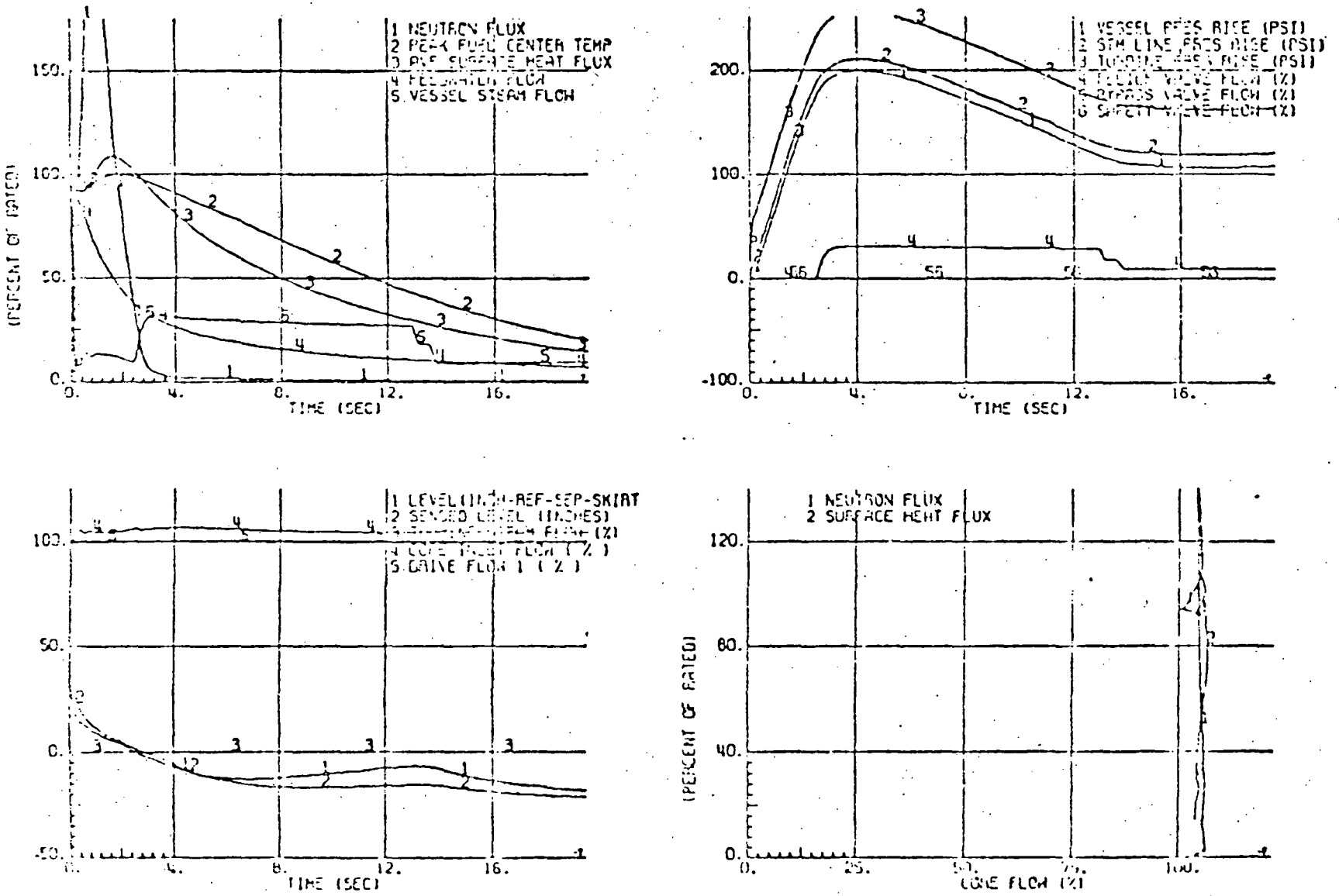
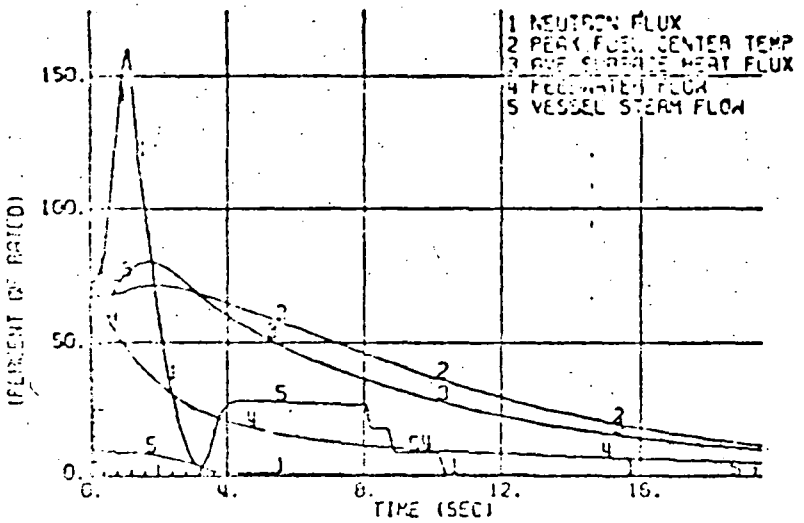
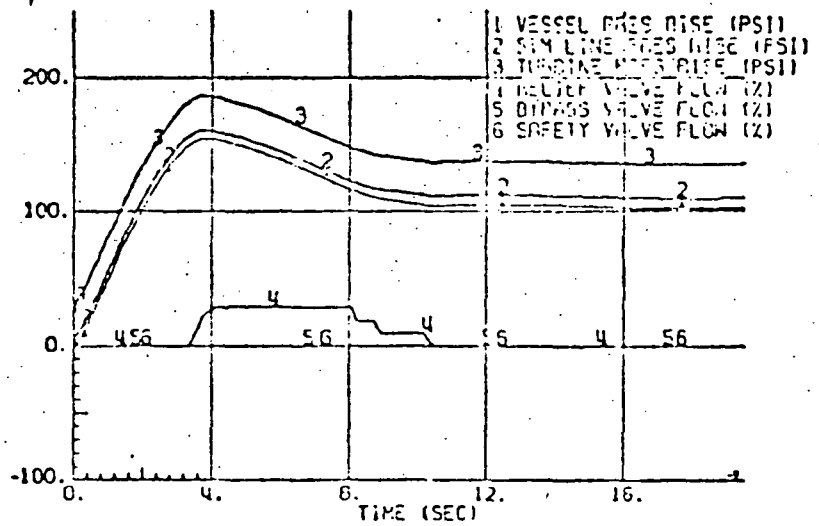
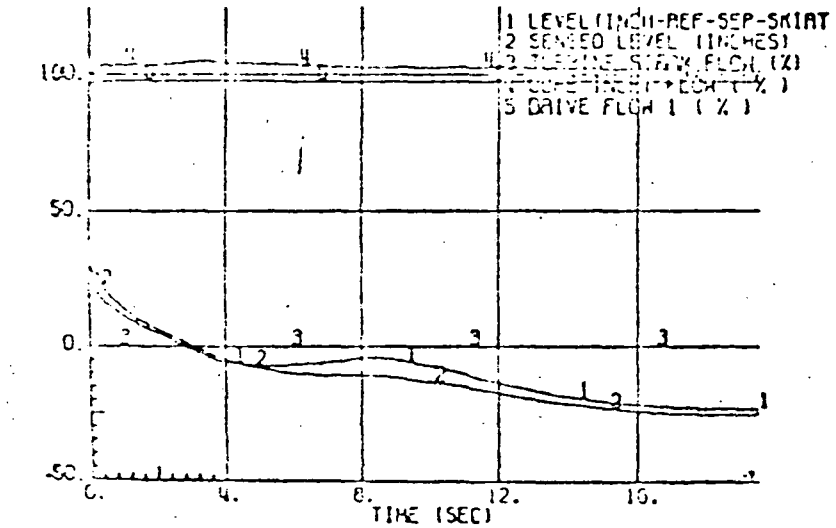

1 NEUTRON FLUX
2 PEAK FUEL CENTER TEMP
3 AVG SURFACE HEAT FLUX
4 FEEDWATER FLOW
5 VESSEL STEAM FLOW
(PERCENT OF RATED)
150.
100.
50.
0.
0.
4.
8.
12.
16.
TIME (SEC)
1 VESSEL PRES RISE (PSI)
2 STM LINE PRES RISE (PSI)
3 TURBINE PRES RISE (PSI)
4 TURBINE VALVE FLOW (%)
5 BYPASS VALVE FLOW (%)
6 SAFETY VALVE FLOW (%)
200.
100.
0.
-100.
0.
4.
8.
12.
16.
TIME (SEC)
1 LEVEL (IN-REF-SEP-SKIRT
2 SENSED LEVEL (INCHES)
3 [illegible] FLOW (%)
4 CORE INLET FLOW (%)
5 DRIVE FLOW 1 (%)
100.
50.
0.
-50.
0.
4.
8.
12.
16.
TIME (SEC)
1 NEUTRON FLUX
2 SURFACE HEAT FLUX
(PERCENT OF RATED)
120.
80.
40.
0.
0.
25.
50.
75.
100.
CORE FLOW (%)

Figure 3


1 NEUTRON FLUX
2 PEAK FUEL CENTER TEMP
3 AVE SURFACE HEAT FLUX
4 FEEDWATER FLOW
5 VESSEL STEAM FLOW
150.
100.
50.
0.
0.
4.
8.
12.
16.
TIME (SEC)


1 VESSEL PRES RISE (PSI)
2 STM LINE PRES RISE (PSI)
3 TURBINE PRES RISE (PSI)
4 RELIEF VALVE FLOW (%)
5 BYPASS VALVE FLOW (%)
6 SAFETY VALVE FLOW (%)
200.
100.
0.
-100.
0.
4.
8.
12.
16.
TIME (SEC)


1 LEVEL (INCH-REF-SEP-SKIRT
2 SENSED LEVEL (INCHES)
3 TURBINE STEAM FLOW (%)
4 FEEDWATER FLOW (%)
5 DRIVE FLOW 1 (%)
100.
50.
0.
-50.
0.
4.
8.
12.
16.
TIME (SEC)

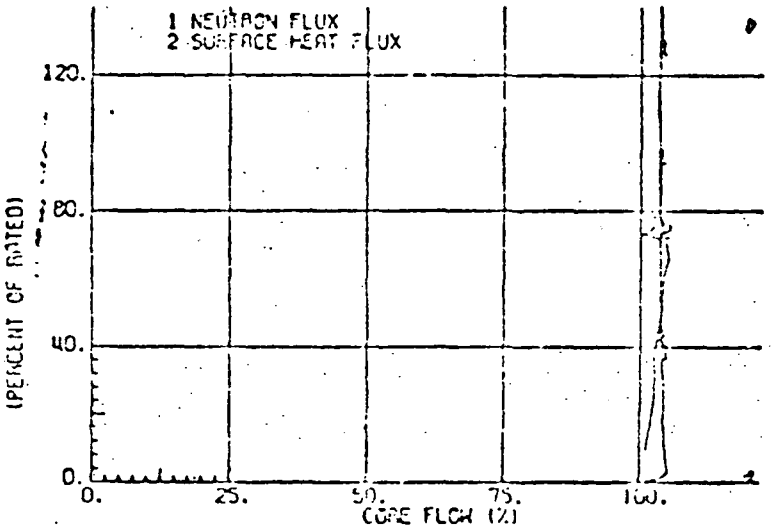

1 NEUTRON FLUX
2 SURFACE HEAT FLUX
(PERCENT OF RATED)
120.
80.
40.
0.
0.
25.
50.
75.
100.
CORE FLOW (%)

Figure 4

[illegible]

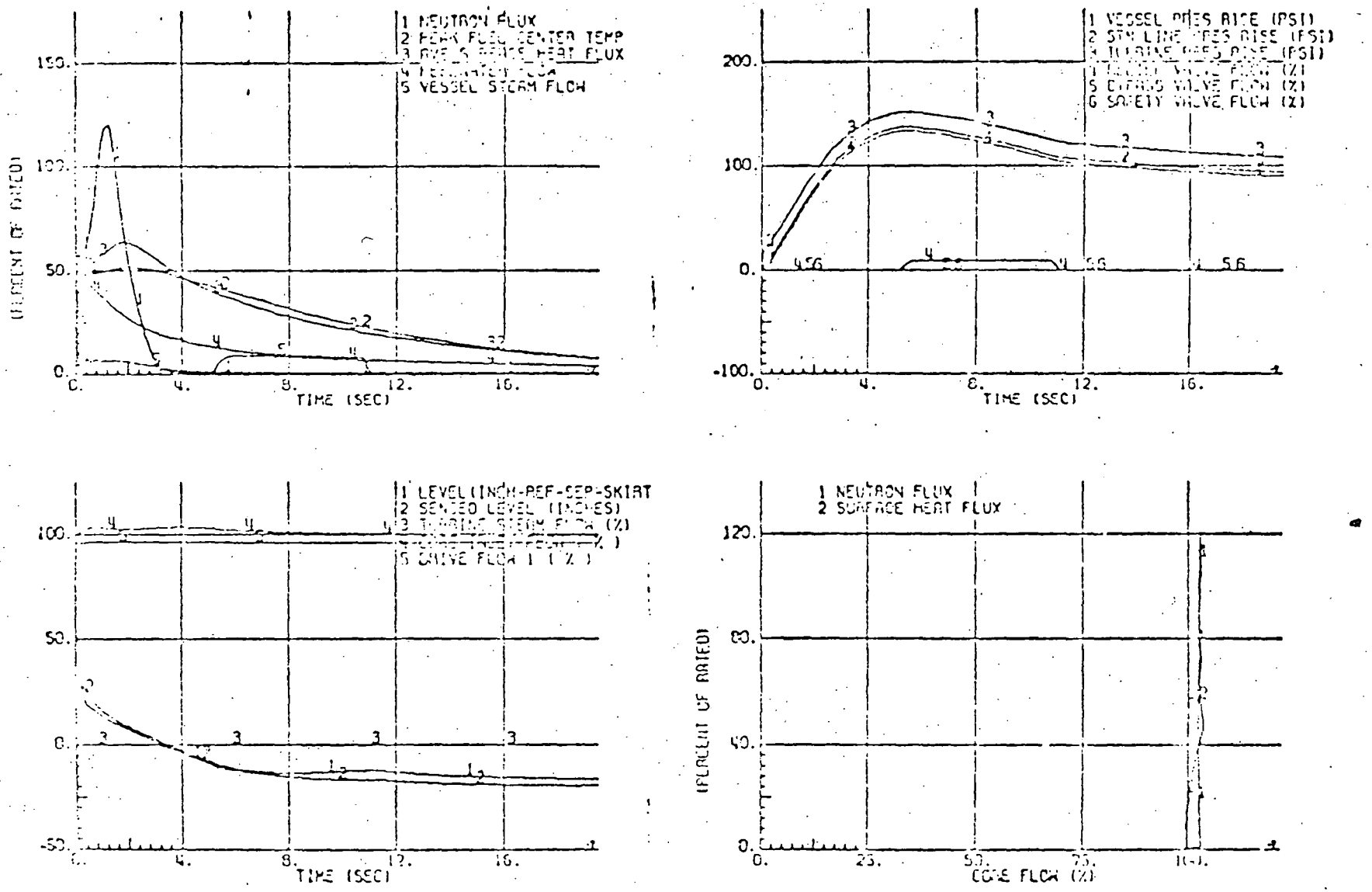

1 NEUTRON FLUX
2 PEAK FUEL CENTER TEMP
3 AVE. SURFACE HEAT FLUX
4 FEEDWATER FLOW
5 VESSEL STEAM FLOW
150.
100.
50.
0.
0.
4.
8.
12.
16.
TIME (SEC)
1 VESSEL PRES RISE (PSI)
2 STM LINE PRES RISE (PSI)
3 TURBINE PRES RISE (PSI)
4 FEEDWATER FLOW (%)
5 BYPASS VALVE FLOW (%)
6 SAFETY VALVE FLOW (%)
200.
100.
0.
-100.
0.
4.
8.
12.
16.
TIME (SEC)
1 LEVEL (INCH-REF-SEP-SKIRT
2 SENSED LEVEL (INCHES)
3 TURBINE STEAM FLOW (%)
5 DRIVE FLOW 1 (%)
100.
50.
0.
-50.
0.
4.
8.
12.
16.
TIME (SEC)
1 NEUTRON FLUX
2 SURFACE HEAT FLUX
120.
80.
40.
0.
0.
25.
50.
75.
100.
CORE FLOW (%)

Figure 5

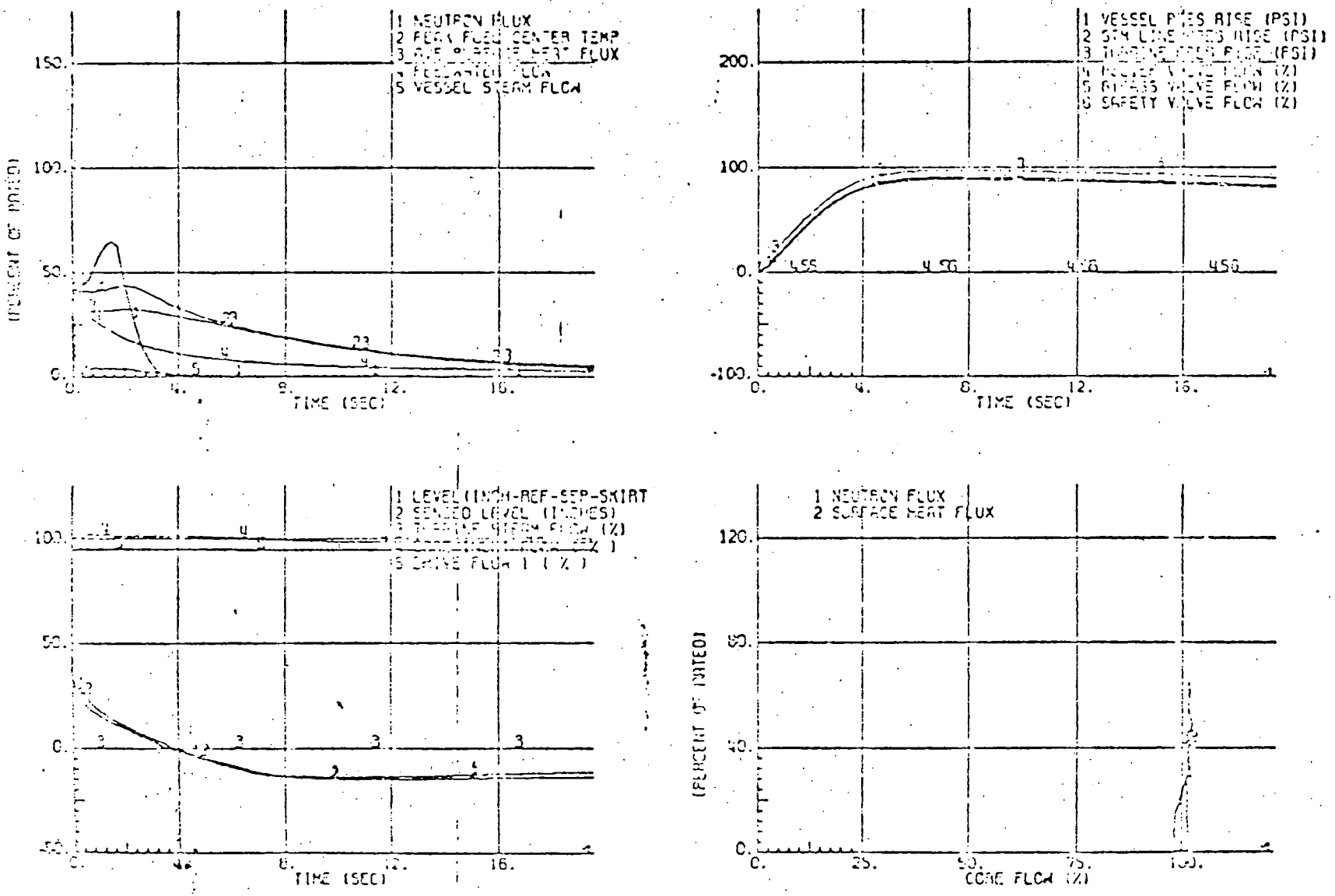

1 NEUTRON FLUX
5 VESSEL STEAM FLOW
150.
100.
50.
0.
0.
4.
8.
12.
16.
TIME (SEC)
1 VESSEL P[illegible] RISE (PSI)
200.
100.
0.
-100.
TIME (SEC)
1 LEVEL (NOM-REF-SEP-SKIRT
100.
50.
0.
TIME (SEC)
1 NEUTRON FLUX
2 SURFACE HEAT FLUX
120.
80.
40.
0.
0.
25.
50.
75.
100.
CORE FLOW (%)

Figure 6