

PRELIMINARY
ANNOTATED SEQUENCE OF EVENTS
MARCH 29, 1979 THRU APRIL 30, 1979

This report provides the sequence of events for the period March 29 through April 30, 1979 following the March 28, 1979 accident at Three Mile Island Unit 2. This report should still be considered as preliminary since investigation and data analysis is ongoing and continues to provide new insights into the TMI-2 accident. As such new information and/or understanding is developed this report will be updated.

The figures included in this report represent the compilation of data from various installed instrumentation and recording sources. The main sources of information in this report include the following.

- a. Shift Foreman's Log
- b. Control Room Operator's Log
- c. Daily Plant Status Sheets
- d. NRC Preliminary Notification Sheets
- e. Babcock and Wilcox Logs

Annotations included along with the chronology of events, in addition to providing periodic assessments of the plant status, represent input culled from General Public Utility interviews of the operating staff.

The figures listed in the Table of Contents and attached to this report present data plots of various plant parameters such as pressure, temperature, and flow during the 33 days covered by this sequence of events.

POOR ORIGINAL

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564 219

PRELIMINARY ANNOTATED SEQUENCE OF EVENTS
MARCH 29, 1979 THRU APRIL 30, 1979
(DAY 2 TO DAY 34)

TABLE OF CONTENTS

<u>DAY</u>	<u>DATE</u>	<u>PAGE</u>
2	3/29/79	1
3	3/30/79	6
4	3/31/79	9
5	4/01/79	13
6	4/02/79	15
7	4/03/79	18
8	4/04/79	21
9	4/05/79	23
10	4/06/79	25
11	4/07/79	28
12	4/08/79	30
13	4/09/79	32
14	4/10/79	34
15	4/11/79	36
16	4/12/79	38
17	4/13/79	40
18	4/14/79	42
19	4/15/79	44
20	4/16/79	46
21	4/17/79	48
22	4/18/79	50
23	4/19/79	52
24	4/20/79	54
25	4/21/79	56
26	4/22/79	58
27	4/23/79	60
28	4/24/79	62
29	4/25/79	64
30	4/26/79	66
31	4/27/79	68
32	4/28/79	71
33	4/29/79	73
34	4/30/79	75

ANNOTATED SEQUENCE OF EVENTS
(MARCH 29, 1979 THRU APRIL 30, 1979 DAY 2 THRU DAY 34)

LIST OF FIGURES

<u>FIGURE NO.</u>	<u>TITLE</u>
1	TMI Unit 2 Incore Thermocouple Reading 3-29-79 thru 4-30-79.
2	TMI Unit 2 Reactor Coolant Gas Bubble 3-29-79 thru 4-4-79.
3	TMI Unit 2 A Loop Temp-Hot 3-29-79 thru 4-30-79.
4	TMI Unit 2 A Loop Temp-Cold 3-29-79 thru 4-30-79.
5	TMI Unit 2 B Loop Temp-Hot 3-29-79 thru 4-30-79.
6	TMI Unit 2 B Loop Temp-Cold 3-29-79 thru 4-30-79.
7	TMI Unit 2 Reactor Coolant Pressure 3-29-79 thru 4-30-79.
8	TMI Unit 2 Pressurizer Level 3-29-79 thru 4-30-79.
9	TMI Unit 2 Pressurizer Temp 3-29-79 thru 4-30-79.
10	TMI Unit 2 Letdown Temp 3-29-79 thru 4-30-79.
11	TMI Unit 2 Letdown Flow 3-29-79 thru 4-30-79.
12	TMI Unit 2 Makeup Tank Level 3-29-79 thru 4-30-79.
13	TMI Unit 2 Makeup Tank Temp 3-29-79 thru 4-30-79.
14	TMI Unit 2 Steam Generator A Pressure 3-29-79 thru 4-30-79.
15	TMI Unit 2 Steam Generator A Level 3-29-79 thru 4-30-79.
16	TMI Unit 2 Steam Generator B Pressure 3-29-79 thru 4-30-79.
17	TMI Unit 2 Steam Generator B Level 3-29-79 thru 4-30-79.
18	TMI Unit 2 Waste Gas Decay Tank A 3-29-79 thru 4-30-79.
19	TMI Unit 2 Waste Gas Decay Tank B 3-29-79 thru 4-30-79.
20	TMI Unit 2 Reactor Building Temp 3-29-79 thru 4-30-79.
21	TMI Unit 2 Reactor Building Pressure 3-29-79 thru 4-30-79.

POOR ORIGINAL

56A

221

6/22/79

Rev. 0

PLANT CONDITIONS

DAY 2 TIME 0000 DATE 03/29/79

<u>REACTOR COOLANT SYSTEM</u>	<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	1165 psig		
TEMPERATURE T(HOT)		NR *F	NR *F
T(COLD)		243 F	240 F
PRESSURIZER LEVEL		389 inches	
INCORE THERMOCOUPLES**	> 700 F AT	H-08	
(FIVE HIGHEST)	> 700 F AT	H-05	
	> 700 F AT	E-09	
	603 F AT	E-07	
	602 F AT	K-11	
OPERATING PUMPS		LA	NONE

STEAM GENERATORS

LEVEL	373 inches	368 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	117.0 F
PRESSURE	-0.2 psig
HYDROGEN	Not Sampled

ADDITIONAL CONDITIONS

- The reactor was shutdown. A non-condensable gas bubble existed in the reactor vessel head but this was not known by the operators at 0000 hours. Decay heat was being removed by steaming Steam Generator A to the main condenser. Steam Generator B was isolated and was suspected to have a Reactor Coolant side to Feedwater side leak. The reactor fuel cladding had been breached and radioactive material had been released to the Reactor Building through the Reactor Coolant Drain Tank rupture diaphragm. Radioactive material had been transported to the Auxiliary Building.

*(Note: NR - Not Recorded)

**First data was not taken until 0700.

POOR ORIGINAL

564 228

6/22/79
Rev. 0

3/29/79
Day 2

2. Radiation levels in the Auxiliary and Fuel Handling Buildings were much higher than normal; airborne radioactive material was being released (through charcoal filters and absolute filters) to the environment through the station vent by the Auxiliary Building Ventilation System exhaust.
3. The Reactor Building was isolated except for essential services.
4. The Reactor Coolant latdown flow had been lost. This was believed to be due to plugging of either the latdown coolers, the latdown block orifices or the makeup and purification demineralizer filters.

DOOR ORIGINAL

564 223

6/22/79

Rev. 0

3/29/79

Day 2

SUMMARY OF MAJOR EVENTS ON DAY 2

1. To reduce tank pressure the Makeup Tank (MU-T-1) was vented three times (at 0435, 2045 and 2350) to the waste gas vent header. The vent header normally discharges to the Waste Gas Decay Tanks (WDG-T-1A and 1B); however, due to leakage in the system some airborne radioactive material was released to the environment from the Auxiliary Building Ventilation System (through absolute and charcoal filters) via the station vent. When the ventilation system is operating, the Auxiliary Building atmosphere is exhausted through the station vent to the environment. Therefore, any increase in airborne activity in the Auxiliary Building resulted in an increase in activity released to the environment via the station vent.
2. The Auxiliary Building and Fuel Handling Building Ventilation Systems were shutdown at about 0055 hours. After securing the ventilation system, radiation levels in the Auxiliary Building and Fuel Handling Building increased. At about 0210 hours high radiation alarms from the Control Room air intake (HPR-220) and Control and Service Building (HPR-234) radiation monitors were received. The Auxiliary and Fuel Handling Building Ventilation Systems were re-started. This resulted in the continued release of airborne radioactive material to the environment via the station vent. The HPR-220 and HPR-234 monitor levels decreased following restart of the ventilation systems. Personnel in the Control Room were required to wear respirators for approximately one hour (0211 hours - 0315 hours).

POOR ORIGINAL

564 224

POOR ORIGINAL

6/22/79

Rev. 0

3/29/79

Day 2

3. Water that was in Unit 2 Auxiliary Building tanks prior to the incident was transferred to Unit 1. In particular, the following transfers are noted in the logbooks:
 - a. The contents of Neutralizer Tank B (WDL-T-8B) were transferred to Unit 1.
 - b. The contents of the Auxiliary Building Sump Tank (WDL-T-5) were transferred to Neutralizer Tank B (WDL-T-8B).
 - c. The contents of Neutralizer Tank A (WDL-T-8A) were transferred to Unit 1.
 - d. The contents of the Auxiliary Building Sump Tank (WDL-T-5) were transferred to Neutralizer Tank A (WDL-T-8A).
 - e. The contents of the Auxiliary Building Sump were pumped to the Auxiliary Building Sump Tank (WDL-T-5).

4. A 100 milliliter sample of Reactor Coolant was obtained from the Reactor Coolant System letdown line. This sample was the first sample taken after the fuel had been breached. The radiation levels of the sample measured greater than 1000 R/hr on contact (70 - 80 R/hr at one foot and 10 - 30 R/hr at three feet). Analysis of this Reactor Coolant System sample was performed by Bettis Laboratory to determine fuel status. They concluded that most of the volatiles in the fuel were released to the Reactor Coolant with an estimated 2 to 12 percent of the fuel reaching 3000F to 4000F. Based on this and the amount of Strontium, Barium and Uranium present in the coolant they felt that little if any fuel melt occurred.

5. Engineers evaluating the accident first hypothesized that a non-condensable hydrogen bubble existed in the Reactor Coolant System. Based on Boyle's Gas Law a formula was developed at approximately 1100 hours to calculate

56A 225

POOR ORIGINAL

6/22/79

Rev. 0

3/29/79

Day 2

the size of the gas space in the system. This formula is stated below and assumes no hydrogen solubility.

$$V_g = P_f \frac{dV}{dP}$$

V_g = Volume of gas in Reactor Coolant System, ft^3

P_f = Final Reactor Coolant System Pressure, -sig

dP = Change in Reactor Coolant System Pressure, psig

dV = Change in Reactor Coolant System liquid volume, ft^3

The first estimate of the bubble volume and subsequent volume estimates are plotted on Figure 2.0.

6. The Pressurizer level transmitter (RC-1-LT2) failed. This was the first Pressurizer level instrument failure. The Pressurizer level is sensed by three transmitters, RC-1-LT1, RC-1-LT2 and RC-1-LT3. RC-1-LT2 provided signals to low low level and high high level alarms. Failure of this instrument at this time did not affect level control or indication.
7. The controlled release of slightly contaminated industrial waste water to the Susquehanna River was terminated at approximately 1800 hours as requested by NRC. The NRC made this request because of concern expressed by Pennsylvania State Representatives.
8. Reactor Coolant laddown discharge was shifted between the Makeup Tank (MU-T-1) and Reactor Coolant Bleed Holdup Tanks B and C (WDL-T-1B, 1C) to assist in minimizing the pressure buildup in the Makeup Tank.
9. Engineers on shift started monitoring the trends of the Incore Thermocouples to ensure that the Reactor Core was cooling down.

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 3

TIME 0000

DATE 02/20/79

REACTOR COOLANT SYSTEM

PRESSURE

SYSTEM 1060 psig

LOOP A

LOOP B

TEMPERATURE T(HOT)

NR* F

NR* F

T(COLD)

275 F

NR* F

PRESSURIZER LEVEL

335 inches

INCORE THERMOCOUPLES
(FIVE HIGHEST)

> 700 F	AT	H-08
613 F	AT	D-10
575 F	AT	E-09
555 F	AT	K-11
458 F	AT	G-09

OPERATING PUMPS

LA

NONE

STEAM GENERATORS

LEVEL

POOR ORIGINAL

NR* inches

NR* inches

STATUS

Steaming to the
main condenser

Isolated

REACTOR BUILDING

TEMPERATURE

NR* F

PRESSURE

NR* psig

HYDROGEN

Not Sampled

ADDITIONAL CONDITIONS

1. A non-condensable gas bubble was believed to be present in the reactor vessel head.
2. The Reactor Building basement was flooded. It was believed that the water level was rising at the rate of approximately one inch per day.
3. Incore Thermocouple readings of Reactor Coolant temperature at the outlet of the instrumented fuel assemblies indicated potential local core damage to the center of the core. Possibly one fourth of the total of 177 fuel assemblies were involved.

*(Note: NR - Not Recorded)

564 227

POOR ORIGINAL

6/22/79
Rev. 0

3/30/79
Day 3

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 3

1. To provide a path for transferring the contents of Waste Gas Decay Tanks A and B (WDG-T-1A & 1B) to the Reactor Building a bypass line was installed from the Waste Gas Decay Tank Discharge Header to the Reactor Building via a line through penetration R-554C. An attempt was then made to transfer gases containing radioactive material from the Waste Gas Decay Tank (WDG-T-1B) to the Reactor Building. When valve WDG-V-30B was opened to make this transfer, the radiation levels in the Auxiliary Building increased and the valve was closed.
2. Measurements of Reactor Coolant pressure, differential pressure and differential volume were made. This data was used to make calculations of the non-condensable gas bubble size. Between 0625 hours and 1807 hours these measurements and calculations were logged seven times. The average of the seven calculations logged was 752 cubic feet* at a reference pressure of 875 psig.
3. To reduce Makeup Tank pressure, the Makeup Tank (MU-T-1) was vented four times (at 0150, 0330, 0710 and 0901) to the Waste Gas Vent Header. Due to leakage in the Waste Gas System each venting resulted in the release of airborne radioactive material to the Auxiliary Building and subsequent releases to the environment. Thus it was decided to vent the Makeup Tank continuously in order to maintain a slight negative pressure. The blowdown of the Makeup Tank at 0901 hours to achieve this resulted in a release measured at the station vent of 1200 mR/hr.

* Based on an Error Analysis, the uncertainty in this value is projected at approximately 100 cubic feet.

564 228

6/22/79

Rev. 0

3/30/79

Day 3

4. At about 1215 hours, permission was received from Nuclear Regulatory Commission to resume release of slightly contaminated waste water to the Susquehanna River. This action was coordinated with the office of the Governor of Pennsylvania and a press release was made by state officials.
6. A sample of feedwater from Steam Generator B was obtained at 2045 hours. Radiochemical analysis of this sample indicated a small leak between the Reactor Coolant System and the Feedwater System.
6. Approximately 2120 gallons of water were added to the Makeup Tank (MU-T-1).

POOR ORIGINAL

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 4

TIME 0000

DATE 03/31/79

REACTOR COOLANT SYSTEM

	<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	1090 psig		
TEMPERATURE T(HOT)		280 F	280 F
T(COLD)		280 F	275 F
PRESSURIZER LEVEL		200 inches	
INCORE THERMOCOUPLES (FIVE HIGHEST)	695 F AT E-08 587 F AT D-10 465 F AT E-09 447 F AT K-11 385 F AT G-09		
OPERATING PUMPS		LA	NONE

STEAM GENERATORS

LEVEL	199 inches	353 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	NR* F
PRESSURE	1.1 psig
HYDROGEN	1.7 % (Sampled at 0518)

ADDITIONAL CONDITIONS

1. Reactor Coolant System degasification was in progress.
2. The Makeup Tank (MU-T-1) was being continuously vented to the Waste Gas Vent Header. The lower pressure in the Makeup Tank had resulted in a decrease in the amount of radioactive material released.

*(Note: NR - Not Received).

DOOR ORIGINAL

564 230

06/22/79

Rev. 0

03/31/79

Day 4

3. Steam Generator 3 remained isolated due to the radioactive materials introduced into the Feedwater System during the Reactor Coolant System to Feedwater System leak on March 28.
4. The non-condensable gas bubble is still present in the reactor vessel head.

POOR ORIGINAL

POOR ORIGINAL

06/22/79

Rev. 0

03/31/79

Day 4

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 4

1. To degass the Reactor Coolant System, the Pressurizer spray valve was periodically cycled and the Pressurizer was vented to the Reactor Coolant Drain Tank (WDL-T-3). At each venting radioactive gasses were released to the Reactor Building via the Reactor Coolant Drain Tank Rupture Diaphragm which had bursted.
2. Calculations of the volume of non-condensable gas in the Reactor Coolant System were performed numerous times during the day as degassing continued. The calculated volume of non-condensable gas was approximately 823 cubic feet* at a reference pressure of 875 psia.
3. A Reactor Building gas sample was obtained on two separate occasions using the Reactor Building Air Sample Line to HP-R-227. The first sample contained 1.7% hydrogen and the second sample contained 1.9% hydrogen. Analysis of the first Reactor Building gas sample was performed by Bettis Laboratory to determine fuel status. They concluded that approximately 90 percent of the fuel rods were perforated with about 30 percent of fuel reaching greater than 3500F. Further, it was concluded that little, if any fuel melt had occurred.
4. A radiation survey of the Reactor Building Equipment Hatch indicated a dose rate of 40 R per hour on contact with the outside of the door. Dose rates of 60 R per hour on contact with the Waste Gas Decay Tanks (WDG-T-1A, 1B) were measured.

* Based on an Error Analysis, the uncertainty in this value is projected at approximately 100 cubic feet.

564 232

06/22/79
Rev. 0

03/31/79
Day 4

5. Turbine Bypass Valves 25A and 26A (MS-V25A and MS-V26A) were repositioned from 47% open to 44% open to increase Reactor Coolant System temperature slightly.
6. Based a radiochemical analysis of the feedwater sample taken from Steam Generator B at 2045 hours on March 30, B&W decided that Steam Generator B could be used to remove decay heat.
7. The Hydrogen Recombiner was warmed up on Refueling Building air but the decision was made that additional lead shielding would be required for continuous operation on the Reactor Building.
8. Approximately 6330 gallons were added to the Makeup Tank (MU-T-1).
9. The Unit 2 Borated Water Storage Tank (DH-T-1) was being filled from the Halliburton Boric Acid Mix Tank (CA-T-1) complex. Additional borated water was being transferred from the Unit 1 Borated Water Storage Tank to the Unit 2 Borated Water Storage Tank using Special Operating Procedure Number 79-18 (SOP79-18). The flow path was from the Unit 1 Borated Water Storage Tank to the Unit 1 Spent Fuel Pool, then to Unit 1 Spent Fuel Storage Pool Surge Tank and then to the Unit 2 Borated Water Storage Tank.
10. The contents of the Unit 2 Contaminated Drain Tank A were transferred to the Unit 1 Miscellaneous Waste Storage Tank for processing.

POOR ORIGINAL

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 5

TIME 0000

DATE 04/01/79

REACTOR COOLANT SYSTEM

	<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	1000 psig		
TEMPERATURE T(HOT)		280 F	280 F
T(COLD)		280 F	277 F
PRESSURIZER LEVEL		180 inches	
INCORE THERMOCOUPLES (FIVE HIGHEST)	496 F AT D-10 432 F AT G-11 430 F AT H-08 417 F AT E-09 417 F AT E-11		
OPERATING PUMPS		LA	NONE

STEAM GENERATORS

LEVEL	181 inches	379 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	NR* F
PRESSURE	NR* psig
HYDROGEN	2.6 % (sampled at 0700)

ADDITIONAL CONDITIONS

1. Reactor Coolant System degasification was in progress.
2. The Makeup Tank (MU-T-1) was being continuously vented to the Waste Gas Vent Header. The lower pressure in the Makeup Tank had resulted in a decrease in the radioactive material releases.
3. The non-condensable gas bubble was still present in the reactor vessel head.

*(Note: NR - Not Recorded)

POOR ORIGINAL

564 234

06/22/79

Rev. 0

04/01/79

Day 5

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 5

1. Calculations of the volume of non-condensable gas bubble in the Reactor Coolant System were performed numerous times during the day as degassing continued. The average calculated volume of non-condensable gas was approximately 524 cubic feet* at a reference pressure of 875 psia.
2. The Reactor Building hydrogen concentration was measured eight times from 0700 hours to 2200 hours to determine its time dependent characteristics. The values observed were relatively constant at $2.3 \pm 0.3\%$ hydrogen.
3. The President of the United States toured TMI Unit 2.
4. Work continued on connecting and shielding two Hydrogen Recombiners prior to placing them in service. It was estimated that it would require about 24 hours before they would be in operation.
5. Approximately 7540 gallons of water were added to the Makeup Tank (MU-T-1).
6. Efforts continued on the installation and sealing of the bypass line for discharging the contents of the Waste Gas Decay Tanks to the Reactor Building. When the discharge valve (WDG-V-30B) from Waste Gas Decay Tank B (WDG-7-1B) was opened, a leak to the Auxiliary Building atmosphere occurred. This resulted in a release of radioactivity to the environment.
7. The first attempt to insert a pre-installed movable incore detector (N-08) into the core was made. During periods when not in use, the detector was parked at a position of approximately 3 feet beneath the core. Using the normal torque the detector did not move from this position.

* Based on an Error Analysis, the uncertainty in this value is projected at approximately 200 cubic feet.

564 235

06/22/79

Rev. 0

04/01/79

Day 5

8. The first feedwater sample from Steam Generator A was obtained at 2130 hours. Radiochemical analysis of this sample revealed only low levels of radionuclides present.

POOR ORIGINAL

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 6

TIME 0010

DATE 04/02/79

REACTOR COOLANT SYSTEM

<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	1000 psig	
TEMPERATURE T(HOT)	280 F	281 F
T(COLD)	280 F	275 F
PRESSURIZER LEVEL	215 inches	
INCORE THERMOCOUPLES (FIVE HIGHEST)	479 F AT D-10 432 F AT G-11 424 F AT E-11 380 F AT E-09 378 F AT H-08	
OPERATING PUMPS	LA	NONE

STEAM GENERATORS

LEVEL	187 inches	318 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	90.0 F
PRESSURE	-1.2 psig
HYDROGEN	2.3 % (sampled at 2200)

ADDITIONAL CONDITIONS

1. Reactor Coolant System degasification was in progress.
2. The non-condensable gas bubble was still present in the reactor vessel head.

POOR ORIGINAL

POOR ORIGINAL

564 237

06/22/79
Rev. 0

04/02/79
Day 6

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 6

1. Calculations of the volume of the non-condensable gas bubble in the Reactor Coolant System were performed numerous times during the day as degassing continued. The average calculated volume of non-condensable gas was approximately 202 cubic feet* at a reference pressure of 875 psia.
2. The Makeup Tank (MU-T-1) was vented to the Radwaste Gas Vent Header eleven times by opening valve MU-V-13. The periodic closure of MU-V-13 resulted in a slight positive pressure in the Makeup Tank which was necessary in order to obtain a gas sample.
3. Approximately 6550 gallons of water were added to the Makeup Tank (MU-T-1). A small portion came from the Boric Acid Mix Tank (CA-T-1) while the majority of the added water came from the Reactor Coolant Bleed Holdup Tanks (WDL-T-1A, 1B, 1C).
4. One Hydrogen Recombiner was put in operation and a flow rate of approximately 60 cfm was established.
5. The Auxiliary Boiler was out of service for approximately two minutes.
6. A sample was taken from Waste Gas Decay Tank B (WDG-T-1B) via the bypass connected from the Waste Gas Decay Tanks to the Reactor Building. No release of radioactive gases to the atmosphere was apparent. This sample was to be analyzed for hydrogen content prior to venting the contents of the tank to the Reactor Building.

* Based on an Error Analysis, the uncertainty in this value is projected at approximately 100 cubic feet.

POOR ORIGINAL

564 238

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 7

TIME 0000

DATE 04/03/79

REACTOR COOLANT SYSTEM

<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	1000 psig	
TEMPERATURE T(HOT)	280 F	280 F
T(COLD)	279 F	274 F
PRESSURIZER LEVEL	195 inches	
INCORE THERMOCOUPLES (FIVE HIGHEST)	474 F AT D-10 433 F AT G-11 419 F AT E-11 367 F AT E-09 361 F AT K-11	
OPERATING PUMPS	LA	NONE

STEAM GENERATORS

LEVEL	247 inches	347 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	88.0 F
PRESSURE	-1.1 psig
HYDROGEN	1.9 % (Sampled at 2100)

ADDITIONAL CONDITIONS

1. Reactor Coolant System degasification was in progress.
2. The Makeup Tank (MU-T-1) was being periodically vented to the Radwaste Gas Vent Header. This allowed the Makeup Tank to maintain a slight positive pressure in order that a gas sample could be taken.
3. The non-condensable gas bubble in the reactor vessel head had been removed except for minor gas pockets which were felt to be present in the control rod drive mechanisms.

13 POOR ORIGINAL 564 239

06/22/79
Rev. 0

04/03/79
Day 7

4. Plant Radiation Monitor Readings:

HP-R-211 Personnel Access Hatch; 4 M-/hr

HP-R-214 (Corrected)* Dome Monitor; 35000 R/hr

HP-R-219 Primary Plant Vent Stack;

(a) Particulate, 2.0×10^5 counts per minute

(b) Iodine, 2.3×10^5 counts per minute

(c) GAS, $> 1.0 \times 10^6$ counts per minute

5. One Hydrogen Recombiner was in operation with the second unit on standby.

*Note: The dome monitor is a shielded unit. Data noted (corrected) on this page and subsequent pages is corrected to give the unshielded readings.

POOR ORIGINAL

POOR ORIGINAL

06/22/79

Rev. 0

04/03/79

Day 7

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 7

1. Calculations of the non-condensable gas volume in the Reactor Coolant System were performed numerous times during the day as degassing continued. The average calculated non-condensable gas volume was approximately 87 cubic feet* at a reference pressure of 875 psig.
2. Water was added to the Makeup Tank (MU-T-1) fourteen times during the day to give a total addition of approximately 6300 gallons of water. The majority of the water came from the Reactor Coolant Bleed Holdup Tanks (WDL-T-LA, 1B, 1C); however, log notations indicate some water came from the Boric Acid Mix Tank (CA-T-1).
3. At 0021 hours the Makeup Tank Vent Valve (MU-V-13) was shut due to increased radiation levels in the Auxiliary Building. This valve was then opened at 0039 hours and closed at 0047 hours with no apparent increase in radiation levels. MU-V-13 was then opened at 0100 hours and remained open for the rest of the day.
4. Steam Generator A was isolated from the Main Turbine by closing isolation valves MS-V-4A and MS-V-7A. Steam Generator A level was increased from 134 inches at 0000 hours to 359 inches at 2300 hours. Reactor Coolant System temperature was controlled during the day by adjusting the setpoints of the Turbine Bypass Control Valves (MS-V-25A and MS-V-26A).
5. Several Reactor Building air samples were taken using RP-R-227. The samples were taken to determine Reactor Building hydrogen content.
6. Pressurizer Level Transmitter (RC-1-LT1) failed at 1405 hours and was deenergized.
7. The Sodium Hydroxide Tank level was increased from 30.50 feet to 40.25 feet.

* Based on an Error Analysis, the uncertainty in this value is projected at approximately 100 cubic feet.

564 211

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 8

TIME 0000

DATE 04/04/79

REACTOR COOLANT SYSTEM

	<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	1048 psig		
TEMPERATURE T(HOT)		281 F	283 F
T(COLD)		280 F	278 F
PRESSURIZER LEVEL		230 inches	
INCORE THERMOCOUPLES (FIVE HIGHEST)	463 F AT D-10 438 F AT G-11 406 F AT E-11 371 F AT H-08 360 F AT K-11		
OPERATING PUMPS		1A	NONE

STEAM GENERATORS

LEVEL	362 inches	336 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	88.0 F
PRESSURE	-1.1 psig
HYDROGEN	2.0 % (sampled at 2030)

ADDITIONAL CONDITIONS

1. Reactor Coolant System degasification was in progress.
2. The Makeup Tank (MU-T-1) was being continuously vented to the Radwaste Gas Vent Header. The lower pressure in the Makeup Tank had resulted in a decrease in the radioactive material releases.

POOR ORIGINAL

564 242

06/22/79
Rev. 0

04/04/79
Day 8

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 8

1. The Pressurizer was vented eight times during the day to degas the Reactor Coolant System. A typical venting was approximately fifteen minutes in duration.
2. A Reactor Building gas sample was obtained and contained approximately 2.01% hydrogen.
3. One Hydrogen Recombiner was operated and an 11-day time period was projected for reduction of the hydrogen concentration from approximately 2% to approximately 1%.
4. Approximately 2730 gallons of water were added to the Makeup Tank (MU-T-1).
5. A Heise pressure gauge was installed to provide an alternate method of determining Pressurizer level. Testing procedures were under review.

POOR ORIGINAL

06/22/79

Rev. 0

PLANT CONDITIONSDAY 9 TIME 0000 DATE 04/05/79

<u>REACTOR COOLANT SYSTEM</u>	<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	1025 psig		
TEMPERATURE T(HOT)		286 F	289 F
T(COLD)		286 F	281 F
PRESSURIZER LEVEL		220 inches	
INCORE THERMOCOUPLES (FIVE HIGHEST)	458 F AT D-10 444 F AT G-11 409 F AT E-11 376 F AT H-08 360 F AT K-11		
OPERATING PUMPS		LA	NONE

STEAM GENERATORS

LEVEL	340 inches	300 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	86.0 F
PRESSURE	-1.2 psig
HYDROGEN	2.0%

ADDITIONAL CONDITIONS

1. Plant Radiation Monitor readings:

HP-R-211 Personnel Access Hatch; 3.7 MR/hr

HP-R-214 (corrected) Dome Monitor; 30,000 R/hr

HP-R-219 Primary Plant Vent Stack;

(a) Particulate, 6.0×10^4 counts per minute(b) Iodine, 1.9×10^5 counts per minute(c) Gas, $> 1.0 \times 10^5$ counts per minute

POOR ORIGINAL
564 244

06/22/79
Rev. 0

04/05/79
Day 9

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 9

1. The Pressurizer was vented twice, by opening and closing the Pressurizer Vent Valve (RC-V-137).
2. Water was added to the Makeup Tank (MU-T-1) from the Reactor Coolant Bleed Holdup Tanks (WDL-T-1A, 1B, 1C) and the Boric Acid Mix Tank (CA-T-1). A total of 1360 gallons was added during the day.
3. Pressurizer level was controlled during the day by opening and closing valve MU-V-18. (MU-V-18 controls Makeup water flow from Makeup Pump B.)
4. Attempts were made to increase letdown flow by cycling valve MU-V-2B.
5. Preparations for transferring the contents of Waste Gas Decay Tank B (WDG-T-1B) to the Reactor Building were in progress.
6. A tank truck was connected to the overflow of Condensate Storage Tank (CO-T-1B). This tank contained slightly contaminated water.

POOR ORIGINAL

564 245

06/22/79

Rev. 0

PLANT CONDITIONS

DAY <u>10</u>	TIME <u>0000</u>	DATE <u>04/06/79</u>
<u>REACTOR COOLANT SYSTEM</u>	<u>SYSTEM</u>	<u>LOOP A</u> <u>LOOP B</u>
PRESSURE	1075 psig	
TEMPERATURE T(HOT)		286 F 289 F
T(COLD)		285 F 283 F
PRESSURIZER LEVEL		242 inches
INCORE THERMOCOUPLES	450 F AT D-10	
(FIVE HIGHEST)	439 F AT G-11	
	407 F AT E-11	
	373 F AT H-08	
	359 F AT K-11	
OPERATING PUMPS		LA NONE

STEAM GENERATORS

LEVEL	365 inches	307 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	82.0 F
PRESSURE	-1.2 psig
HYDROGEN	2.0%

ADDITIONAL CONDITIONS

1. Condensate Tank (CO-T-13) level was 29.5 feet and the tank contained slightly contaminated water. A tank truck was connected to the tank overflow which is located at the 31 foot level on the tank.
2. The Pressurizer was being vented to the containment for about 15 minutes every shift to further degas the Reactor Coolant System.

POOR ORIGINAL

564 246

POOR ORIGINAL

06/22/79
Rev. 0

04/06/79
Day 10

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 10

1. The contents of Waste Gas Decay Tanks A and B (WDG-T-1A and 1B) were transferred to the Reactor Building. The tank pressure was reduced from approximately 90 psig to 30 psig. This was the first successful transfer of the contents of these tanks to the Reactor Building. The transfer was not completed until 0305 hours on April 7.
2. At 1315 hours, Reactor Coolant Pump 1A (RC-P-1A) tripped and within two minutes Reactor Coolant Pump 2A (RC-P-2A) was started. A shift in the readings of the Incore Thermocouples was observed (See Figure 1.0). The three highest Thermocouple readings (D-10, G-11 and E-11) decreased from about 450 F, 439 F and 407 F to 294 F, 315 F and 288 F, respectively. The largest increase occurred on the core center Thermocouple (H-8) which changed from 375 F to 455 F.
3. A release of industrial waste water to the Susquehanna River was started at 0310 hours. The calculated concentration was about two-thirds of the maximum permissible concentration value for continuous discharge of Iodine 131 for both units. The discharge was stopped at approximately 0400 hours for collection and analysis of a sample. This release was resumed at 0615 hours.
4. About 0120 hours letdown flow decreased from 19.5 gallons per minute to 10 gallons per minute. In an unsuccessful attempt to increase flow the valves in the letdown lines were cycled; then the Reactor Coolant pressure was increased to 1200 psig. The Intermediate Closed Cooling Water System temperature was increased resulting in an increase of letdown flow. At 0800 hours letdown flow was about 17 gallons per minute.

06/22/79

Rev. 0

04/06/79

Day 10

5. The tank truck connected to the overflow of Condensate Storage Tank B (CO-T-1B) was approximately half full.
6. Approximately 950 gallons of water were added to the Makeup Tank (MU-T-1).
7. The initial test of the Heise pressure gauge for alternate Pressurizer level indication was unsatisfactory.

POOR ORIGINAL

06/22/79

Rev. C

PLANT CONDITIONS

DAY 11

TIME 0000

DATE 04/07/79

REACTOR COOLANT SYSTEM

	<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	980 psig		
TEMPERATURE T(HOT)		286 F	288 F
T(COLD)		284 F	280 F
PRESSURIZER LEVEL		200 inches	
INGORE THERMOCOUPLES (FIVE HIGHEST)	455 F AT H-08 377 F AT G-05 337 F AT G-06 336 F AT G-09 332 F AT M-09		
OPERATING PUMPS		2A	NONE

STEAM GENERATORS

LEVEL	380 inches	362 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	81.5 F
PRESSURE	-1.3 psig
HYDROGEN	2%

ADDITIONAL CONDITIONS

1. The contents of Waste Gas Decay Tanks A and B (WDG-T-1A, 1B) were being discharged to the Reactor Building.
2. The Sodium Hydroxide Storage Tank (DH-T-2) was placed on recirculation.

POOR ORIGINAL

564 249

POOR ORIGINAL

06/22/79
Rev. 0

04/07/79
Day 11

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 11

1. Calculation of the non-condensable gas volume in the Reactor Coolant System yielded a consistent value of approximately 0 cubic feet.
2. The transfer of the contents of Waste Gas Decay Tanks A and B (WDG-T-1A, 1B) to the Reactor Building using Special Operating Procedure Number Z-2 was completed. Following completion of the transfer, pressures in Waste Gas Decay Tanks A and B (WDG-T-1A, 1B) were 32 psig and 30 psig, respectively, and the hydrogen gas concentration in the Reactor Building was approximately 2%.
3. The contents of the Miscellaneous Waste Holdup Tank (WDL-T-2) were transferred to Reactor Coolant Bleed Holdup Tank B (WDL-T-1B) through WDL-V-1067 in accordance with Special Operating Procedure Number Z-69. The purpose of this transfer was to make volume available for receiving the contents of the Auxiliary Building Sump Tank.
4. The Boric Acid Mix Tank (CA-T-1) was filled from the Halleburton Boric Acid Mix Tank System.
5. Degasification of the Reactor Coolant System was started by pressure reduction per Special Operating Procedure Number Z-57. The procedure called for reduction in Reactor Coolant pressure in 50 psig increments down to approximately 500 psig. As part of this procedure Reactor Coolant Pump 2A (RC-P-2A) vibration and coolant system noises were monitored continuously.
6. Approximately 900 gallons of water were added to the Makeup Tank (MU-T-1).

564 250

FOOK ORIGINAL

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 12 TIME 0100 DATE 04/08/79

REACTOR COOLANT SYSTEM

	<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	747 psig		
TEMPERATURE T(HOT)		285 F	285 F
T(COLD)		281 F	279 F
PRESSURIZER LEVEL		221 inches	
INCORE THERMOCOUPLES (FIVE HIGHEST)	442 F AT H-08 370 F AT G-05 347 F AT H-05 331 F AT M-09 324 F AT G-06		
OPERATING PUMPS		2A	NONE

STEAM GENERATORS

LEVEL	370 inches	350 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	81.5 F
PRESSURE	-1.3 psig
HYDROGEN	1.9 % (sample at 0230)

ADDITIONAL CONDITIONS

1. Reactor Coolant System degasification by pressure reduction was in progress in accordance with Special Operating Procedure Number Z-57.
2. Letdown flow was being increased by raising letdown cooler temperature and bypassing the Makeup and Purification Demineralizers in accordance with Special Operating Procedure Z-75.

564 251

06/22/79
Rev. 0

04/08/79
Day 12

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 12

1. Approximately 1470 gallons of water was added to Makeup Tank (MU-T-1).
2. At about 1745 hours an empty tank truck was connected to the Condensate Storage Tank (CO-T-LA). The tank truck was to be used to contain the water pumped from CO-T-LA because of the possibility of contamination with radioactive material.
3. Using Special Operating Procedure Z-57, the operators continued degassing the Reactor Coolant System by lowering Reactor Coolant System pressure from 747 psig to 555 psig.

GOOD ORIGINAL

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 13

TIME 0000

DATE 04/09/79

REACTOR COOLANT SYSTEM

<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	555 psig	
TEMPERATURE T(HOT)	282 F	284 F
T(COLD)	282 F	280 F
PRESSURIZER LEVEL	198 inches	
INCORE THERMOCOUPLES : (FIVE HIGHEST)	425 F AT H-08 364 F AT G-05 364 F AT H-05 343 F AT M-09 320 F AT G-06	
OPERATING PUMPS	2A	NONE

STEAM GENERATORS

LEVEL	359 inches	381 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	79.0 F
PRESSURE	-1.2 psig
HYDROGEN	1.85% (Sample at 0230)

ADDITIONAL CONDITIONS

1. Reactor Coolant System degasification by pressure reduction was in progress in accordance with Special Operating Procedure Number Z-57.

POOR ORIGINAL

564 253

06/22/79
Rev. 0

04/09/79
Day 13

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 13

1. A 24-hour period of additional degasification by reducing Reactor Coolant System pressure to 400 psig in small decrements was completed.
2. Approximately 1490 gallons of water was added to the Makeup Tank (MU-T-1).
3. The second attempt to insert a pre-installed movable incore detector (N-08) into the core was made. During periods when not in use, the detector was parked at a position of approximately 8 feet beneath the core. Using the maximum torque, the detector was inserted about one inch from the parked position.

POOR ORIGINAL

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 14

TIME 0000

DATE 04/10/79

REACTOR COOLANT SYSTEM

<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	889 psig	
TEMPERATURE T(HOT)	280 F	281 F
T(COLD)	280 F	279 F
PRESSURIZER LEVEL	130 inches	
INCORE THERMOCOUPLES (FIVE HIGHEST)	402 F AT E-08 376 F AT H-05 353 F AT G-05 339 F AT M-09 316 F AT L-06	
OPERATING PUMPS	2A	NONE

STEAM GENERATORS

LEVEL	350 inches	*inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	82.0 F
PRESSURE	-0.9 psig
HYDROGEN	1.7%

ADDITIONAL CONDITIONS

There were none of any significance.

*(Note: Out of Service)

POOR ORIGINAL

564 255

06/22/79
Rev. 0

04/10/79
Day 14

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 14

1. Degasification of the Reactor Coolant System by depressurization using Special Operating Procedure Number Z-57 was continued. Starting pressure was 750 psig. Reactor Coolant System pressure was slowly reduced to approximately 425 psig. The Reactor Coolant System pressure was then increased to approximately 900 psig in order to re-establish letdown flow. During the depressurization and repressurization sequence no abnormal conditions occurred.
2. Reactor Building Emergency Cooling River Water Pump LD (RR-P-LD) was secured due to overheated packing.
3. The contents of Waste Gas Decay Tank A (WDG-T-1A) were transferred to the Reactor Building using Special Operating Procedure Number Z-2.
4. A 60 ml Reactor Coolant System letdown sample was collected and portions of the sample sent for analysis by Bettis, Babcock and Wilcox, Oak Ridge National Laboratory and Savannah River Laboratories. Direct radiation readings from the sample container was 17 R per hour at 5 inches.
5. Approximately 2500 gallons of water were added to the Makeup Tank (MU-T-1).
6. The final attempt to insert a pre-installed movable incora detector (N-08) into the core was made. During period when not in use, the detector was parked at a position of approximately 8 feet beneath the core. Using the maximum torque and a in/out alternating motion the detector was inserted 11 feet from the parked position (i.e. approximately 3 feet into the bottom of the core) until it became stuck. The detector was withdrawn and then inserted again but became stuck at 7.67 feet where it was left.
7. The Heise pressure gauge for alternate Pressurizer level indication was again tested with unsatisfactory results.

564 256

POOR ORIGINAL

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 15

TIME 0000

DATE 04/11/79

REACTOR COOLANT SYSTEM

<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	931 psig	
TEMPERATURE T(HOT)	285 F	288 F
T(COLD)	285 F	283 F
PRESSURIZER LEVEL	186 inches	
INCORE THERMOCOUPLES (FIVE HIGHEST)	401 F AT H-08 384 F AT H-05 355 F AT G-05 343 F AT M-09 321 F AT L-06	
OPERATING PUMPS	2A	NONE

STEAM GENERATORS

LEVEL	350 inches	353 inches
STATUS	Steaming to the main condenser	Isolated

RFACOR BUILDING

TEMPERATURE	90.0 F
PRESSURE	-0.6 psig
HYDROGEN	1.8 % (Sampled at 0030)

ADDITIONAL CONDITIONS

1. Pressurizer Level Transmitter (RC-1-LT2) was periodically failing.

POOR ORIGINAL

564 257

06/22/79
Rev. 0

04/11/79
Day 15

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 15

1. Attempts to obtain a Makeup Tank (MU-T-1) gas sample through MU-V-13 were not successful because of no flow through the sample line. To resolve this, it was decided to increase the Makeup Tank pressure in 5 psig increments up to a maximum of 40 psig to obtain flow.
2. The Pressurizer level transmitter (RC-1-LT2) channel selector relay was replaced. It was determined that the spurious losses of this Pressurizer level indication were due to a faulty switch.
3. MU-V-18 was cycled at various times early in the day to bring Pressurizer level from 186 inches to 126 inches. The intent was to have sufficient volume available in the Pressurizer to adjust for the increased Reactor Coolant System volume which resulted from the reduced lutdown flow during the pressure reduction used in degassing the Reactor Coolant.
4. Using Special Operating Procedure Z-57, the operators restarted degasification of the Reactor Coolant System by lowering Reactor Coolant System pressure from 931 psig to 326 psig. Periodically the Pressurizer vent valve (RC-V-137) was cycled to assist in degassing and to verify that gas bubbles were not present in the Reactor Coolant.
5. Reactor Building Emergency Cooling River Water Pump 1A (RR-P-1A) was put in service. The Reactor Building temperature decreased from about 93F to about 85F.
6. Approximately 2380 gallons of water were added to the Makeup Tank (MU-T-1).

564 258

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 16

TIME 0000

DATE 04/12/79

REACTOR COOLANT SYSTEM

<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	326 psig	
TEMPERATURE T(HOT)	282 F	283 F
T(COLD)	280 F	278 F
PRESSURIZER LEVEL	207 inches	
INCCORE THERMOCOUPLES (FIVE HIGHEST)	401 F AT H-08 388 F AT H-05 357 F AT G-05 344 F AT M-09 316 F AT G-06	
OPERATING PUMPS	2A	NONE

STEAM GENERATORS

LEVEL	375 inches	351 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	84.0 F
PRESSURE	-1.0 psig
HYDROGEN	1.6%

ADDITIONAL CONDITIONS

1. Reactor Coolant System degasification by pressure reduction was in progress in accordance with Special Operating Procedure Number 2-57.

564 259

POOR ORIGINAL

06/22/79
Rev. 0

04/12/79
Day 16

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 16

1. Following depressurization to 326 psig during degassing, Reactor Coolant System pressure was raised to 1000 psig.
2. Approximately 3680 gallons of water was added to the Makeup Tank (MU-T-1).
3. Reactor Coolant System leakrate was calculated and recorded in the Control Room Operators logbook several times during the day. The lowest leakrate calculated was 0.3 gallons per minute and the highest was 4 gallons per minute.
4. After having been out of operation since 3/29/79, Pressurizer level transmitter (RC-1-LT2) resumed operation.
5. Replacement of the charcoal filters in Train A of the Auxiliary Building Ventilation System was begun.

POOR ORIGINAL

06/22/79

Rev. C

PLANT CONDITIONS

DAY 17

TIME 0000

DATE 04/13/79

REACTOR COOLANT SYSTEM

	<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	977 psig		
TEMPERATURE T(HOT)		281 F	286 F
T(COLD)		283 F	279 F
PRESSURIZER LEVEL		209 inches	
INCORE THERMOCOUPLES (FIVE HIGHEST)	380 F AT	H-08	
	380 F AT	H-05	
	349 F AT	G-05	
	341 F AT	M-09	
	310 F AT	G-06	
OPERATING PUMPS		2A	NONE

STEAM GENERATORS

LEVEL	370 inches	324 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	88.0 F
PRESSURE	-0.6 psig
HYDROGEN	1.5%

ADDITIONAL CONDITIONS

There were none of any significance.

POOR ORIGINAL

564 261

POOR ORIGINAL

06/22/79

Rev. 0

04/13/79

Day 17

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 17

1. At about 0110 hours the Hydrogen Recombiner tripped off. This was due to burned out electric heaters.
2. The reactor coolant average leak rate was determined to be 2.28 gallons per minute with a standard deviation of 1.05 gallons per minute. This leak rate was calculated by using the water level decrease in the Pressurizer and the Makeup Tank.
3. Approximately 2750 gallons of water was added to the Makeup Tank (MU-T-1). Most of this water was from the Reactor Coolant Bleed Tanks (WDL-T-1A, 1B, 1C); however, some was from the Boric Acid Mix Tank (CA-T-1).
4. Pressurizer Level Transmitter (RC-1-LT2) which was returned to service on April 12 was still tracking but noise analysis indicated some signs of fatigue which could lead to failure. Noise analysis indicated that (RC-1-LT3) output was still valid.
5. Cooldown of the Reactor Coolant System was initiated at about 1000 hours. The T_{cold} at start of cooldown was 283F, by 1900 hours T_{cold} was 250F. The hottest Incore Thermocouple (H8) was initially reading 380.7F; at 1900 hours this thermocouple was reading 350F. During this decrease in Reactor Coolant temperature, the plant entered Technical Specification Mode 4* at 1005 hours.
6. A primary coolant sample was taken for transmittal to Idaho Falls, Idaho for analysis by Allied Chemical Co.

* Technical Specification Mode 4 is defined as reactor hot shutdown with:
 $k_{\text{eff}} < 0.99$, % rated power = 0 and average Reactor Coolant temperature
< 280F but > 100 F.

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 18

TIME 0000

DATE 04/14/79

REACTOR COOLANT SYSTEM

<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	838 psig	
TEMPERATURE T(HOT)	251 F	251 F
T(COLD)	250 F	247 F
PRESSURIZER LEVEL	158 inches	
INCORE THERMOCOUPLES (FIVE HIGHEST)	350 F AT H-05 340 F AT H-08 321 F AT G-05 310 F AT M-09 282 F AT G-06	
OPERATING PUMPS	2A	NONE

STEAM GENERATORS

LEVEL	375 inches	326 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	85.0 F
PRESSURE	-1.0 psig
HYDROGEN	1.35% (Sampled at 0100)

ADDITIONAL CONDITIONS

There were none of any significance.

PGOR ORIGINAL

564 263

06/22/79
Rev. 0

04/14/79
Day 18

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 18

1. A Reactor Building air sample was obtained by opening Air Handling Equipment Valves 101 through 108 (AH-V-101 through AH-V-108) to Radiation Detection and Sampling Monitor 227 (HP-R-227). Reactor Building hydrogen gas concentration was approximately 1.35%.
2. Pressurizer Level Transmitter (RC-1-LT3) failed high, returned to normal indication and then became erratic.
3. Approximately 3470 gallons of water were added to the Makeup Tank (MU-T-1).

POOR ORIGINAL

564 264

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 19

TIME 0000

DATE 04/15/79

REACTOR COOLANT SYSTEM

	<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	821 psig		
TEMPERATURE T(HOT)		248 F	244 F
T(COLD)		248 F	244 F
PRESSURIZER LEVEL		147 inches	
INCORE THERMOCOUPLES (FIVE HIGHEST)	348 F AT H-05 346 F AT H-08 316 F AT G-05 305 F AT M-09 379 F AT G-06		
OPERATING PUMPS		2A	NONE

STEAM GENERATORS

LEVEL	370 inches	370 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	82.0 F
PRESSURE	-1.0 psig
HYDROGEN	Not Sampled

ADDITIONAL CONDITIONS

1. There were none of any significance.

POOR ORIGINAL

564 265

6/22/79

Rev. 0

4/15/79

Day 19

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 19

1. Approximately 3560 gallons of water were added to the Makeup Tank (MU-T-1).
2. The Hydrogen Recombiner that tripped due to a burned out electrical heater on April 13 had been repaired and was returned into service.

POOR ORIGINAL

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 20

TIME 0000

DATE 04/16/79

REACTOR COOLANT SYSTEM

<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	811 psig	
TEMPERATURE T(HOT)	250 F	250 F
T(COLD)	247 F	244 F
PRESSURIZER LEVEL	157 inches	
INCORE THERMOCOUPLES (FIVE HIGHEST)	345 F AT H-05 339 F AT H-08 314 F AT G-05 301 F AT M-09 276 F AT G-06	
OPERATING PUMPS	2A	NONE

STEAM GENERATORS

LEVEL	345 inches	373 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	82.3 F
PRESSURE	-1.0 psig
HYDROGEN	Not Sampled

ADDITIONAL CONDITIONS

1. There were none of any significance.

564 267

6/22/79

Rev. 0

4/16/79

Day 20

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 20

1. Approximately 2130 gallons of demineralized water were added to the Reactor Coolant System via the Makeup Tank (MU-T-1).

POOR ORIGINAL

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 21

TIME 0000

DATE 04/17/79

REACTOR COOLANT SYSTEM

	<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	875 psig		
TEMPERATURE T(HOT)		248 F	249 F
T(COLD)		246 F	243 F
PRESSURIZER LEVEL		192 inches	
IN CORE THERMOCOUPLES (FIVE HIGHEST)	340 F AT H-05 329 F AT H-08 310 F AT G-05 298 F AT M-09 274 F AT G-06		
OPERATING PUMPS		2A	NONE

STEAM GENERATORS

LEVEL	395 inches	383 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	81.5 F
PRESSURE	-1.1 psig
HYDROGEN	1.36%

ADDITIONAL CONDITIONS

There were none of any significance.

554 209

06/22/79
Rev. 0

04/17/79
Day 21

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 21

1. Approximately 2830 gallons of demineralized water was added to the Makeup Tank (MU-T-1).
2. The Reactor Coolant temperature was decreased from 248F at 0000 hours to 234F at 2000 hours and then increased to 235F at 2300 hours. The hottest Incore Thermocouple decreased from 340F at 0000 hours to 331F at 2400 hours.
3. Twenty of ninety charcoal filters in Train A of the Auxiliary Building Ventilation System were changed.

POOR ORIGINAL

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 22

TIME 0000

DATE 04/18/79

REACTOR COOLANT SYSTEM

	<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	859 psig		
TEMPERATURE T(HOT)		238 F	238 F
T(COLD)		235 F	232 F
PRESSURIZER LEVEL		178 inches	
INCORE THERMOCOUPLES (FIVE HIGHEST)	331 F AT H-05 317 F AT H-08 300 F AT G-05 282 F AT L-06 281 F AT H-09		
OPERATING PUMPS		2A	NONE

STEAM GENERATORS

LEVEL	382 inches	365 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	80.0 F
PRESSURE	-1.2 psig
HYDROGEN	Not Sampled

ADDITIONAL CONDITIONS

There were none of any significance.

06/22/79
Rev. 0

04/18/79
Day 22

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 22

1. Steam Generator B level was increased from approximately 359 inches to approximately 376 inches.
2. A total of 3760 gallons of water were added to the Makeup Tank (MU-T-1).
3. Reactor Coolant Pressurizer Level Transmitter (RC-1-LT2) failed.
4. A reactor coolant sample was obtained and sent to Babcock and Wilcox in Lynchburg, VA for analysis.
5. Fifty of the ninety charcoal filters in Train A of the Auxiliary Building Ventilation System were charged.
6. The Heise pressure gauge for alternate Pressurizer level indication was again tested with unsatisfactory results.

POOR ORIGINAL

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 23 TIME 0000 DATE 04/19/79

REACTOR COOLANT SYSTEM

	<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	308 psig		
TEMPERATURE T(HOT)		232 F	230 F
T(COLD)		238 F	239 F
PRESSURIZER LEVEL		257 inches	
INCORE THERMOCOUPLES (FIVE HIGHEST)	329 F AT H-05 313 F AT H-08 298 F AT G-05 291 F AT M-09 265 F AT G-06		
OPERATING PUMPS		2A	NONE

STEAM GENERATORS

LEVEL	382 inches	370 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	84.0 F
PRESSURE	-1.0 psig
HYDROGEN	Not Sampled

ADDITIONAL CONDITIONS

1. Pressurizer level was being controlled by transmitter (RC-1-LT3).* The other two level transmitters (RC-1-LT1 and LT2) had failed. Test on the alternate Heise gage level indication yielded unsatisfactory results.

*Note that on 4/14, RC-1-LT3 failed high, returned to normal then became erratic. On April 17, RC-1-LT2 was lost then returned 15 minutes later. On April 18, RC-1-LT2 again was lost.

PCRB ORIGINAL

554 273

06/22/79
Rev. 0

04/19/79
Day 23

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 23

1. At 1320 hours the Main Turbine was put in service to further cooldown the Reactor Coolant System. By 1415 hours the Main Turbine was in manual* at 82 rpm with a primary cooldown rate of approximately $2^{\circ}/\text{hr}$. During the day the average coolant temperature was decreased from 235F to 197F.
2. At 2259 hours the unit entered Technical Specification Mode 5** (i.e., less than 200F).
3. The Reactor Coolant letdown temperature was increased to 180F by closing Intermediate Closed Cooling Water Valve (IC-V-1A).
4. Approximately 2070 gallons of water were added to the Makeup Tank (MU-T-1).

*Operator maintaining RPM control through manual operation of flow control valve.

**Technical Specification Mode 5 was defined as a reactor cold shutdown condition with: $K_{\text{eff}} < 0.99$, % rated power = 0, and average coolant temperature $\leq 200^{\circ}\text{F}$.

POOR ORIGINAL

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 24

TIME 0000

DATE 04/20/79

REACTOR COOLANT SYSTEM

	<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	850 psig		
TEMPERATURE T(HOT)		197 F	195 F
T(COLD)		198 F	196 F
PRESSURIZER LEVEL		209 inches	
INCORE THERMOCOUPLES (FIVE HIGHEST)	298 F AT H-05 279 F AT H-08 268 F AT G-05 252 F AT M-09 239 F AT C-06		
OPERATING PUMPS		2A	NONE

STEAM GENERATORS

LEVEL	398 inches	362 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	84.0 F
PRESSURE	-0.7 psig
HYDROGEN	Not Sampled

ADDITIONAL CONDITIONS

1. The Main Turbine was on line providing an additional heat sink.

564 275

06/22/79
Rev. 0

04/20/79
Day 24

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 24

1. The replacement of the charcoal filters in Train A of the Auxiliary Building Ventilation System was complete. Replacement of several HEPA filters was performed.
2. Approximately 2200 gallons of demineralized water were added to the Makeup Tank (MU-T-1).
3. The Heise pressure gauge for alternate Pressurizer level indication was again tested with unsatisfactory results.

POOR ORIGINAL

564 276

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 25

TIME 0000

DATE 04/21/79

REACTOR COOLANT SYSTEM

<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	892 psig	
TEMPERATURE T(HOT)	180 F	180 F
T(COLD)	175 F	174 F
PRESSURIZER LEVEL	161 inches	
INCORE THERMOCOUPLES (FIVE HIGHEST)	275 F AT H-10 254 F AT H-08 244 F AT G-05 288 F AT M-09 214 F AT G-06	

OPERATING PUMPS

2A

NONE

STEAM GENERATORS

LEVEL	395 inches	365 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	96.0 F
PRESSURE	-0.7 psig
HYDROGEN	Not Sampled

ADDITIONAL CONDITIONS

1. The Main Turbine was on line providing an additional heat sink.

06/22/79
Rev. 0

04/21/79
Day 25

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 25

1. The estimated Reactor Coolant System leak rate at 0415 hours was 2.8 gallons per minute.
2. Train A of the Auxiliary Building Ventilation System was placed in service and Train B was removed. Charcoal filter replacement in Train A of the Fuel Handling Building Ventilation System was initiated.
3. A Pressurizer level test was conducted. A wide variation in calculated Pressurizer level, readings from level transmitter RC-1-LT3 and the Reize gage level indication lead to a decision to use the calculated levels for Pressurizer level control.
4. Approximately 4540 gallons of water were added to the Makeup Tank (MU-T-1).

POOR ORIGINAL

564 278

06/22/79

Rev. 0

PLANT CONDITIONSDAY 26TIME 0000DATE 04/22/79REACTOR COOLANT SYSTEM

<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	895 psig	
TEMPERATURE T(HOT)	180 F	180 F
T(COLD)	175 F	174 F
PRESSURIZER LEVEL	241 inches	
ENCORE THERMOCOUPLES (FIVE HIGHEST)	274 F AT H-05 254 F AT H-09 243 F AT G-05 230 F AT M-09 214 F AT G-06	
OPERATING PUMPS	2A	NONE

STEAM GENERATORS

LEVEL	420 inches	355 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	94.0 F
PRESSURE	-0.8 psig
HYDROGEN	Not Sampled

ADDITIONAL CONDITIONS

The Main Turbine was on line providing an additional heat sink.

564 279

06/22/79
Rev. 0

04/22/79
Day 26

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 26

1. Steam Generator B level was increased from approximately 359 inches to approximately 376 inches by the Control Room Operator.
2. The contents of Neutralizer Tank B (WDL-T-8B) was transferred to Unit 1.
3. The Hydrogen Recombiner was out-of-service for approximately 18 hours due to an open heater breaker in the Hydrogen Recombiner. The Hydrogen Recombiner was later returned to service.
4. A Reactor Coolant sample was obtained and sent to Babcock and Wilcox in Lynchburg, VA for analysis. The sample was collected using Special Operating Procedure Number Z-95 (SOP Z-95).
5. Approximately 2100 gallons of water were added to the Makeup Tank (MU-T-1).

POOR ORIGINAL

564 200

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 27

TIME 0000

DATE 04/23/79

REACTOR COOLANT SYSTEM

	<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	915 psig		
TEMPERATURE T(HOT)		179 F	179 F
T(COLD)		175 F	175 F
PRESSURIZER LEVEL		213 inches	
INCORE THERMOCOUPLES (FIVE HIGHEST)	273 F AT H-05 254 F AT H-08 241 F AT G-05 231 F AT M-09 212 F AT G-06		
OPERATING PUMPS		2A	NONE

STEAM GENERATORS

LEVEL	390 inches	376 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	98.0 F
PRESSURE	-0.7 psig
HYDROGEN	Not Sampled

ADDITIONAL CONDITIONS

The Main Turbine was on line providing an additional heat sink.

564 201

06/22/79
Rev. 0

04/23/79
Day 27

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 27

1. Neutralizer Tank B (WDL-T-8B) overflowed during the process of pumping the contents of the Miscellaneous Waste Holdup Tank to the Neutralizer Tank.
2. Approximately 2190 gallons of water were added to the Makeup Tank (MU-T-1).
3. The Heise gauge for alternate Pressurizer level indication was again tested with unsatisfactory results.
4. The replacement of charcoal filters in Train A of the Fuel Handling Building Ventilation was completed. Replacement of the charcoal filters in Train B of the Auxiliary Building Ventilation System was initiated.

POOR ORIGINAL

564 232

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 28

TIME 0000

DATE 04/24/79

REACTOR COOLANT SYSTEM

<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	902 psig	
TEMPERATURE T(HOT)	180 F	180 F
T(COLD)	175 F	174 F
PRESSURIZER LEVEL	159 inches	
ENCORE THERMOCOUPLES (FIVE HIGHEST)	271 F AT H-05	
	254 F AT H-08	
	241 F AT G-05	
	232 F AT M-09	
	212 F AT G-06	

OPERATING PUMPS 2A NONE

STEAM GENERATORS

LEVEL	388 inches	370 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	94.3 F
PRESSURE	-0.7 psig
HYDROGEN	Not Sampled

ADDITIONAL CONDITIONS

The Main Turbine was on line providing an additional heat sink.

564 203

06/22/79
Rev. 0

04/24/79
Day 28

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 28

1. Train A of the Fuel Handling Building Ventilation System was placed in service and Train B was removed. Twenty-eight of the ninety charcoal filters in Train B of the Auxiliary Building Ventilation System were replaced.
2. Approximately 2,780 gallons of water were added to Makeup Tank (MU-T-1).
3. At about 1500 hours the Main Turbine was manually tripped because of a water hammer. An attempt was made to restart the Main Turbine; however, this was not successful and the Reactor Coolant temperature increased from 188F until it stabilized at 220F. The hottest Incore Thermocouple (H-5) reading increased from 285F at 1700 hours to 309F at 2400 hours. During this increase in Reactor Coolant temperature, the plant entered Technical Specification Mode 4* at 1730 hours.
4. Source Range Nuclear Instrument NI-2 failed; this is one of two instrument channels used to monitor the nuclear source range.
5. The Hydrogen Recombiner tripped off line and remained off for approximately 10 minutes before it was reset and returned to operation.

* Technical Specification Mode 4 is defined as reactor hot shutdown with:
 $k_{eff} < 0.99$, $\% \text{ rated power} = 0$, and average Reactor Coolant temperature
< 230F but > 200F.

06/22/79

Rev. 0

PLANT CONDITIONSDAY 29TIME 0000DATE 04/25/79REACTOR COOLANT SYSTEM

	<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	930 psig		
TEMPERATURE T(HOT)		221 F	223 F
T(COLD)		220 F	219 F
PRESSURIZER LEVEL		278 inches	
INCORE THERMOCOUPLES (FIVE HIGHEST)	309 F AT H-05 293 F AT H-08 278 F AT G-05 274 F AT M-09 245 F AT G-06		
OPERATING PUMPS		2A	NONE

STEAM GENERATORS

LEVEL	405 inches	376 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	99.0 F
PRESSURE	-0.7 psig
HYDROGEN	Not Sampled

ADDITIONAL CONDITIONS

There were none of any significance.

564 235

06/22/79

Rev. 0

04/25/79

Day 29

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 29

1. Replacement of the charcoal filters in Train B train of the Auxiliary Building Ventilation System was completed and Train B was returned to service.
2. Approximately 1500 gallons of water were added to the Makeup Tank (MU-T-1).
3. The Heise pressure gauge for alternate Pressurizer level indication was again tested with unsatisfactory results.

POOR ORIGINAL

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 30

TIME 0000

DATE 04/26/79

REACTOR COOLANT SYSTEM

<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	905 psig	
TEMPERATURE T(HOT)	227 F	228 F
T(COLD)	224 F	223 F
PRESSURIZER LEVEL	222 inches	
INCORE THERMOCOUPLES (FIVE HIGHEST)	312 F AT H-05 296 F AT H-08 283 F AT G-05 276 F AT M-09 252 F AT G-06	
OPERATING PUMPS	2A	NONE

STEAM GENERATORS

LEVEL	420 inches	370 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	*F
PRESSURE	-0.8 psig
HYDROGEN	Not Sampled

ADDITIONAL CONDITIONS

The main turbine was not turning.

*(Note: Out of Service)

564 207

06/22/79

Rev. 0

04/26/79

Day 30

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 30

1. Approximately 1200 gallons of water were added to Makeup Tank (MU-T-1).
2. The wide range level indicator for the "A" steam generator failed.
3. The alternate Pressurizer level indication was again tested with unsatisfactory results. Based on the test results, the Heise gauge was regarded as an unusable level indicator and no further tests were attempted.

POOR ORIGINAL

564 208

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 31

TIME 0000

DATE 04/27/79

REACTOR COOLANT SYSTEM

	<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	881 psig		
TEMPERATURE T(HOT)		227 F	227 F
T(COLD)		224 F	223 F
PRESSURIZER LEVEL		258 inches	
INCORE THERMOCOUPLES (FIVE HIGHEST)	311 F AT H-05 295 F AT H-08 282 F AT G-05 275 F AT M-09 252 F AT C-06		
OPERATING PUMPS		2A	NONE

STEAM GENERATORS

LEVEL	*inches	318 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	*F
PRESSURE	-0.8 psig
HYDROGEN	Not Sampled

ADDITIONAL CONDITIONS

1. Full range level indication on Steam Generator A had failed.

*(Note: Out of Service)

564 209

06/22/79
Rev. 0

04/27/79
Day 31

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 31

1. Pressurizer Level Transmitter (RC-1-LT3) failed. The operator commenced Emergency Procedure EP-21, "Total Loss of Pressurizer Level Indication" to determine level.
2. In preparation for natural circulation, Steam Generator B was steamed to the condenser using the Turbine Bypass Valves at 25% open. Due to this steaming, increases in airborne radioactivity were detected. Respirators were required in the Control Room for several minutes and in the Turbine Building for between three to four hours. All unnecessary personnel were evacuated from Unit 2 Control and Turbine Buildings. Initially it was thought that the high airborne activity was Iodine. Later events showed that the activity was mostly Xenon 133 with traces of Xenon 131 and 135 which had saturated the SAM-2 detectors and gave a false Iodine indication.
3. The transition to natural circulation was accomplished at 1408 hours by stopping Reactor Coolant Pump 2A (RC-P-2A). Steam Generators A and B were used to pass steam to the condenser through the Turbine Bypass Valves (MS-V25A, 26A) which were 100 % and 25% open, respectively. Natural circulation and cooldown at 5° F per hour went smoothly with $dT^*_{A} = 10F$ and $dT^*_{B} = 14F$. Due to low steaming rate on Steam Generator B the dT_{B} ultimately increased to approximately 44F. Because of the degradation of the Pressurizer and Steam Generator level instrumentation the transition to natural circulation was initiated ahead of schedule.

*Note: dT_{A} and dT_{B} represent the temperature difference across the primary sides of Steam Generators "A" and "B", respectively.

4. The Hydrogen Recombiner tripped off line and was off for 20 minutes before it was reset and put back into operation.
5. Average Reactor Coolant temperature decreased from 225F to 182F during the day due to natural circulation. This temperature decrease caused the plant to enter Technical Specification Mode 5* at 1900 hours.
6. Approximately 3850 gallons of water were added to the makeup tank (MU-T-1).

*Technical Specification Mode 5 is defined as a reactor cold shutdown condition with: $K_{eff} < 0.99$, % rated power = 0, and average coolant temperature $\leq 200^{\circ}\text{F}$.

POOR ORIGINAL

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 32

TIME 0000

DATE 04/28/79

REACTOR COOLANT SYSTEM

	<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	900 psig		
TEMPERATURE T(HOT)		188 F	205 F
T(COLD)		174 F	161 F
PRESSURIZER LEVEL		262 inches	
INCORE THERMOCOUPLES (FIVE HIGHEST)	306 F AT H-08 266 F AT G-05 243 F AT G-06 217 F AT H-05 217 F AT M-09		
OPERATING PUMPS		NONE	NONE

STEAM GENERATORS

LEVEL	410 inches	382 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	*F
PRESSURE	-0.8 psig
HYDROGEN	Not Sampled

ADDITIONAL CONDITIONS

1. The Reactor Core decay heat was being removed by natural circulation of the Reactor Coolant.

*(Note: Out of Service)

564 292

06/22/79
Rev. 0

04/28/79
Day 32

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 32

1. At 0110 hours the Turbine Bypass Valves for Steam Generator B (MS-V-25B and 26B) were isolated. This was initiated when the Station Vent Radiation Monitor HPR-219 increased. It was later determined that the increase was due to changing the charcoal filters. This was scheduled to be done at midnight (0000 hours), but due to delays it was done around 0100 hours.
2. Pressurizer level was being calculated using Emergency Procedure EP-21, "Total Loss of Pressurizer Level Indication." This value was being compared with Pressurizer Level Transmitter (RC-1-LT3) which was back in service. The decision was made not to use the back-up Heise gauge due to its poor correlation to the measured level.
3. Average Reactor Coolant temperature decreased from 182F to 175F during the day as natural circulation continued.
4. Approximately 2940 gallons of water were added to the Makeup Tank (MU-T-1).

POOR ORIGINAL

564 293

06/22/79

Rev. 0

PLANT CONDITIONS

DAY 33

TIME 0000

DATE 04/29/79

REACTOR COOLANT SYSTEM

<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	913 psig	
TEMPERATURE T(HOT)	181 F	192 F
T(COLD)	167 F	145 F
PRESSURIZER LEVEL	351 inches (calculated)	
INCORE THERMOCOUPLES (FIVE HIGHEST)	322 F AT H-09	
	301 F AT H-08	
	259 F AT M-07	
	258 F AT G-05	
	241 F AT G-09	
OPERATING PUMPS	NONE	NONE

STEAM GENERATORS

LEVEL	419 inches	382 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	*F
PRESSURE	-0.9 psig
HYDROGEN	Not Sampled

ADDITIONAL CONDITIONS

1. The Reactor Core decay heat was being removed by natural circulation of the Reactor Coolant.

*(Note: Out of Service)

564 294

06/22/79

Rev. 0

04/29/79

Day 33

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 33

1. Pressurizer level was calculated several times during the day in accordance with EP-21, "Total Loss of Pressurizer Level Indication". Comparisons were made with indications from level transmitter RC-1-LT3 readings. Since the readings from the level transmitter (RC-1-LT3) were very erratic, the calculated levels were being used for pressurizer level control.
2. Approximately 1480 gallons of water were added to the Makeup Tank (MU-T-1).

POOR ORIGINAL

564 295

06.22/79

Rev. 0

PLANT CONDITIONS

DAY 34

TIME 0000

DATE 04/30/79

REACTOR COOLANT SYSTEM

<u>SYSTEM</u>	<u>LOOP A</u>	<u>LOOP B</u>
PRESSURE	911 psig	
TEMPERATURE T(HOT)	180 F	180 F
T(COLD)	166 F	139 F
PRESSURIZER LEVEL	241 Inches (Calculated)	
INCORE THERMOCOUPLES (FIVE HIGHEST)	324 F AT E-09	
	300 F AT E-08	
	257 F AT G-05	
	256 F AT M-07	
	240 F AT G-09	
OPERATING PUMPS	NONE	NONE

STEAM GENERATORS

LEVEL	429 inches	382 inches
STATUS	Steaming to the main condenser	Isolated

REACTOR BUILDING

TEMPERATURE	*F
PRESSURE	-0.9 psig
HYDROGEN	Not Sampled

ADDITIONAL CONDITIONS

1. The Reactor Core decay heat was being removed by natural circulation of the Reactor Coolant.

*(Note: Out of Service)

564 296

06/22/79
Rev. 0

04/30/79
Day 34

SUMMARY OF MAJOR EVENTS OCCURRING ON DAY 34

1. Approximately 2130 gallons of water were added to the Makeup Tank (MU-T-1).
2. Steam Generator B cold leg temperature was dropping. Between 0000 hours and 0800 hours the temperature dropped 3.9F (0.49 F per hour) and between 0800 and 2400 hours the temperature dropped 23.8 F (1.49 F per hour).

POOR ORIGINAL

554 297

FIGURE 1

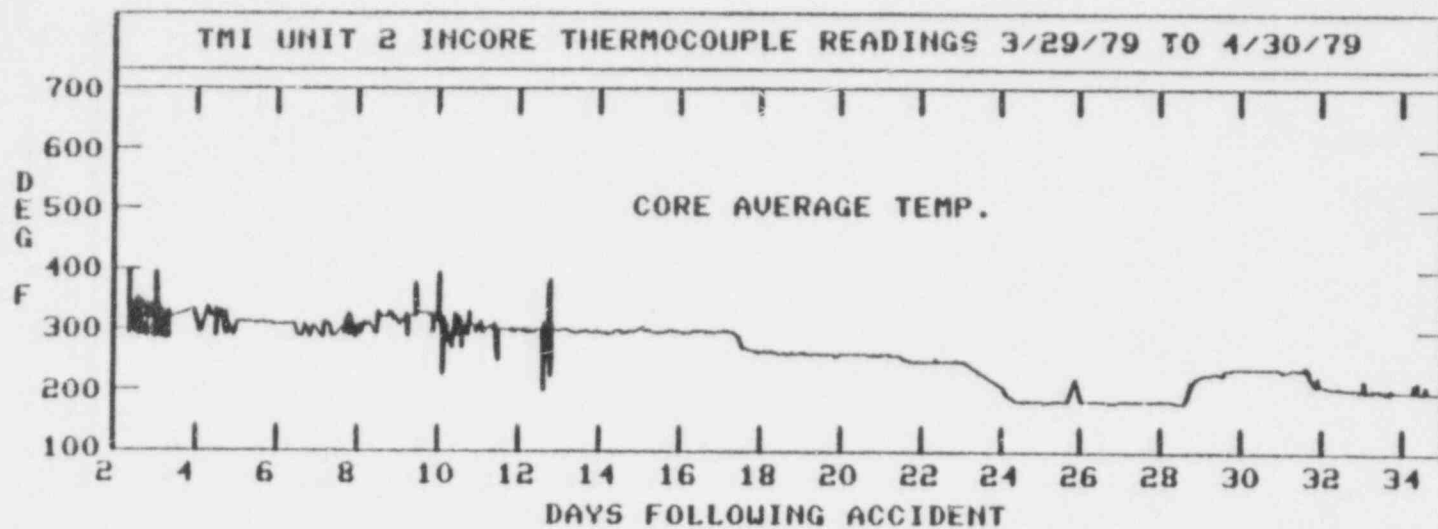
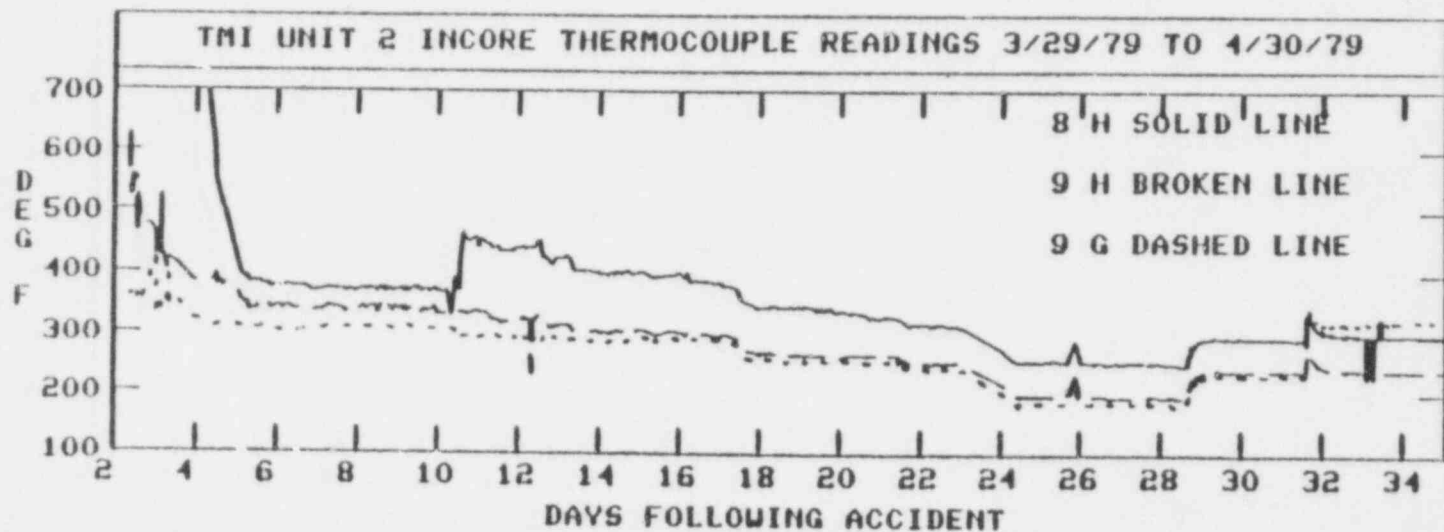


FIGURE 1 (CONT'D)



564 298

FIGURE 1 (CONT'D)

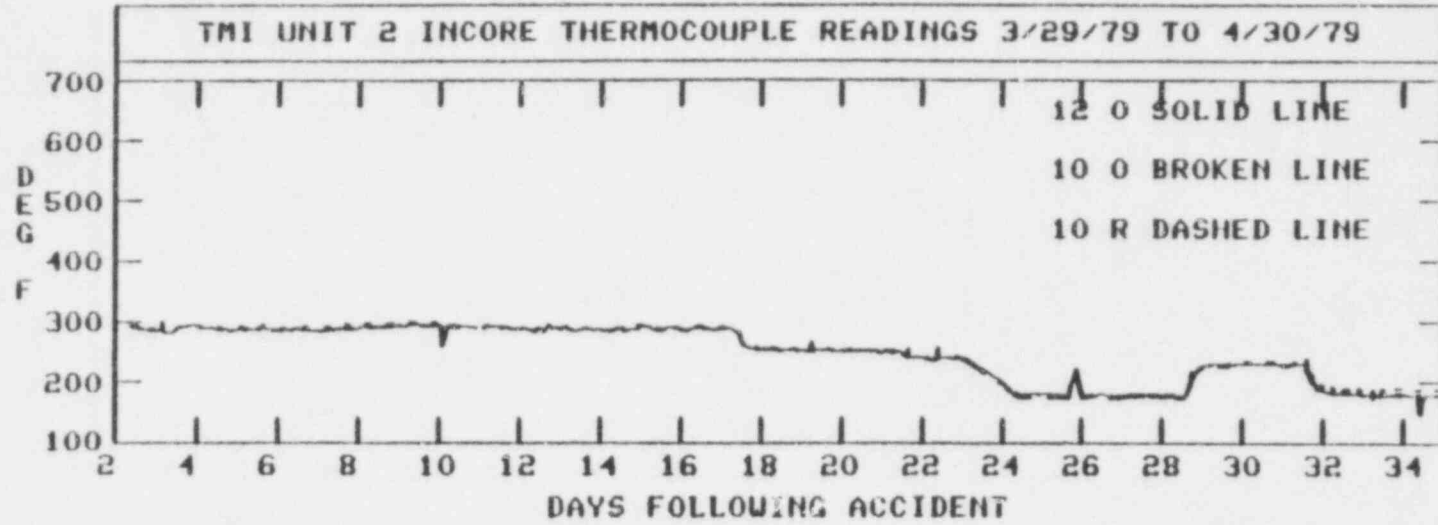
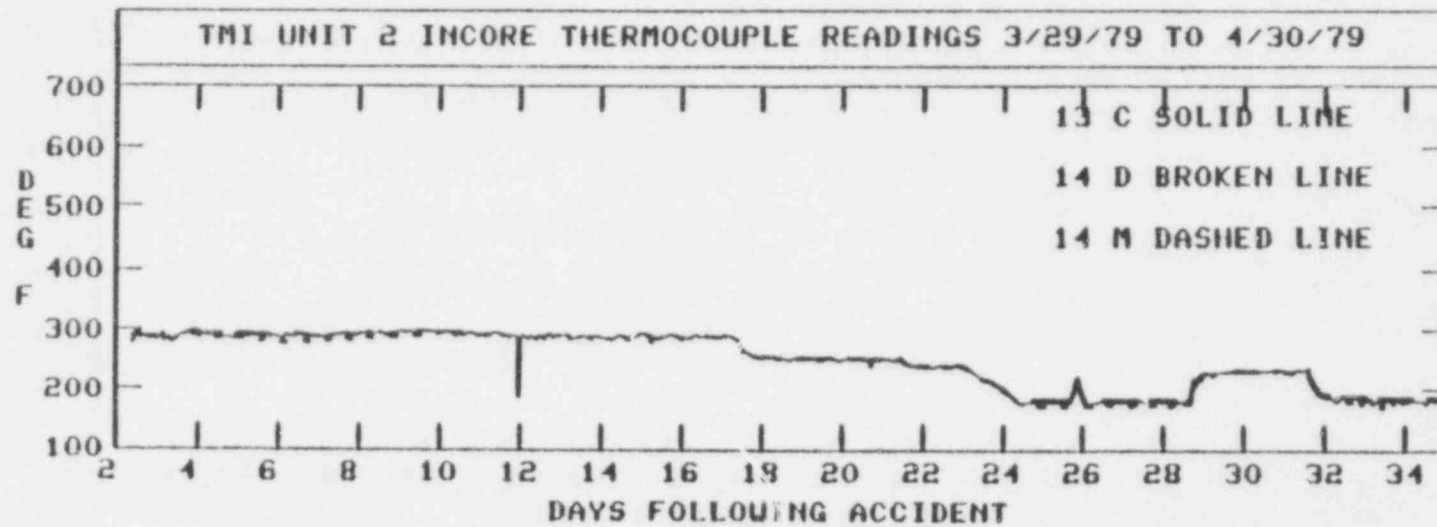


FIGURE 1 (CONT'D)



564 299

FIGURE 1 (CONT'D)

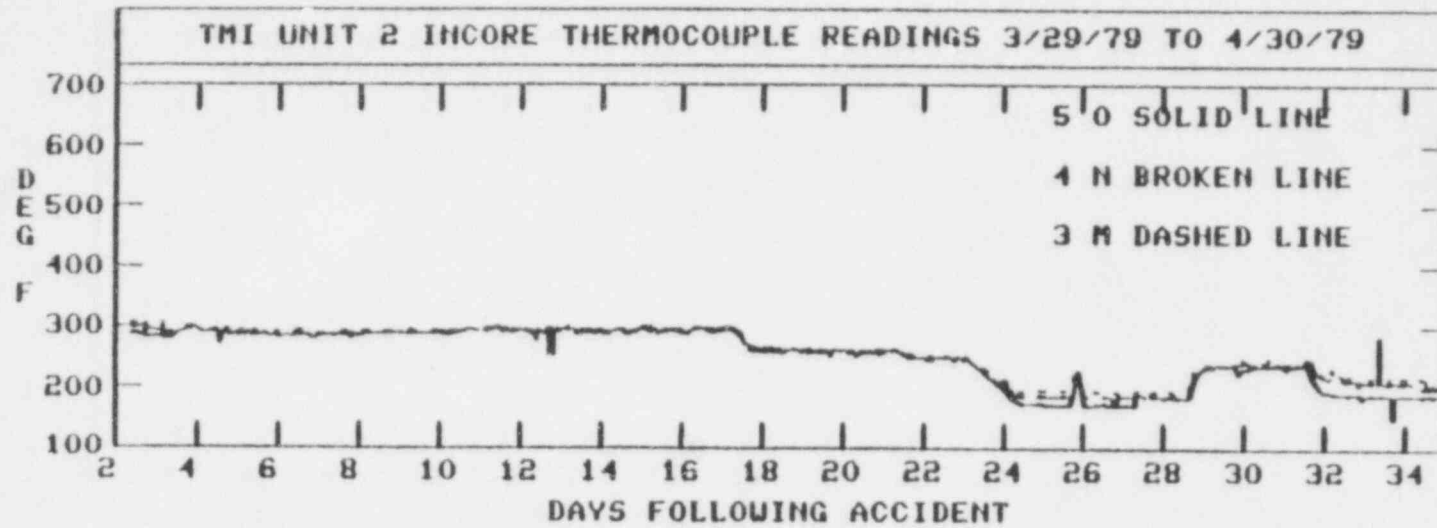
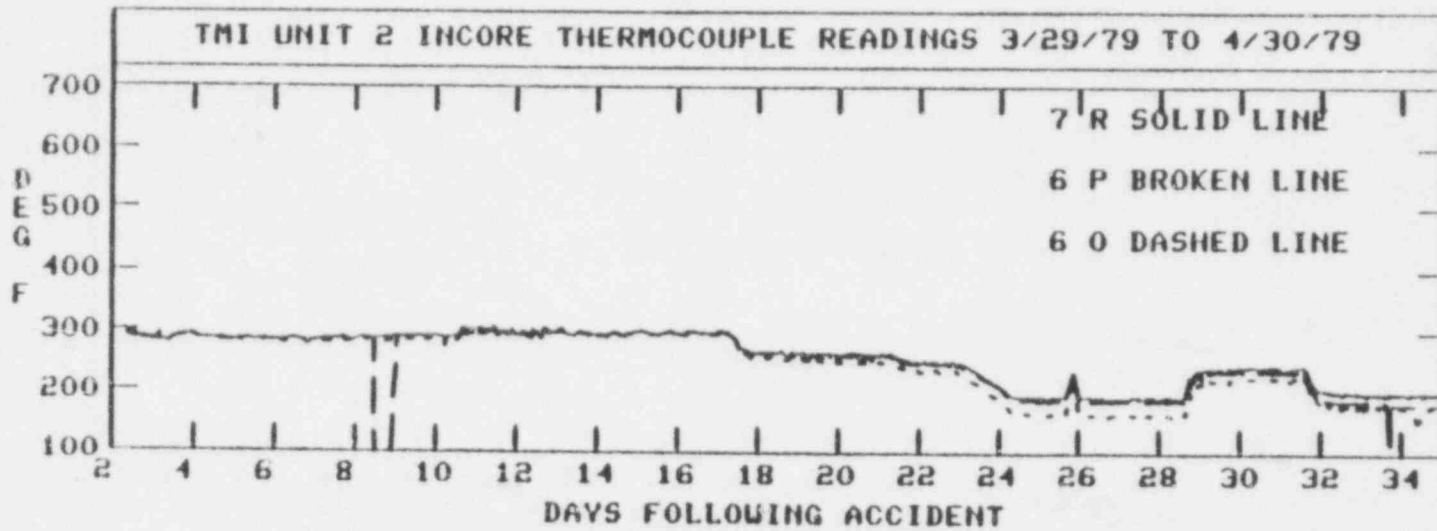


FIGURE 1 (CONT'D)



564 300

FIGURE 1 (CONT'D)

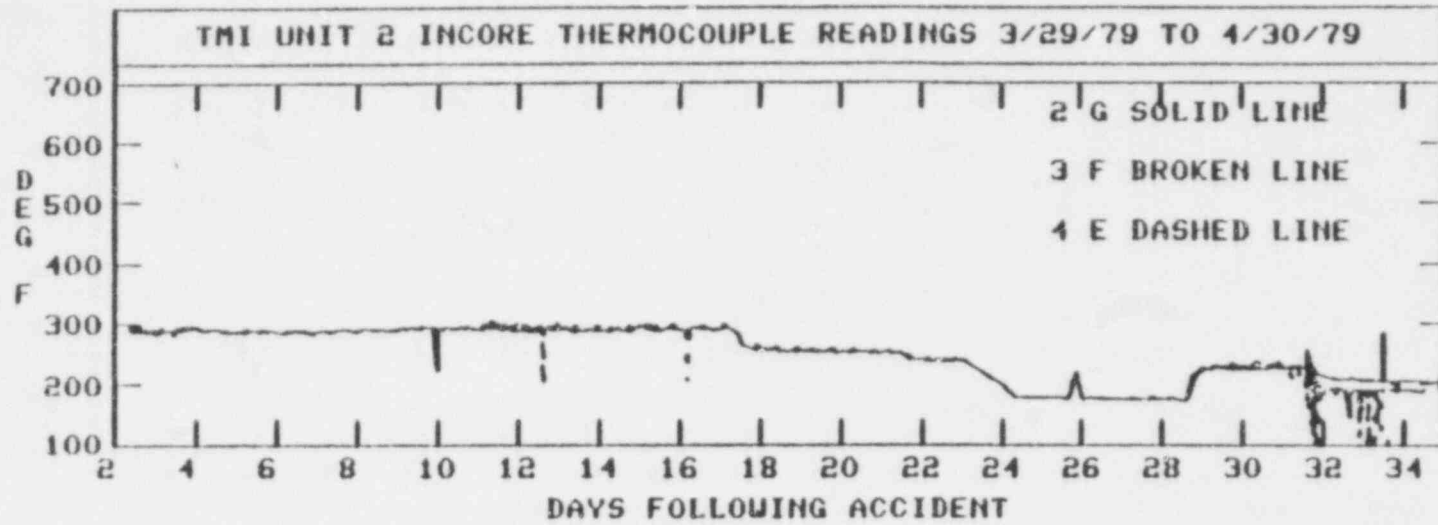
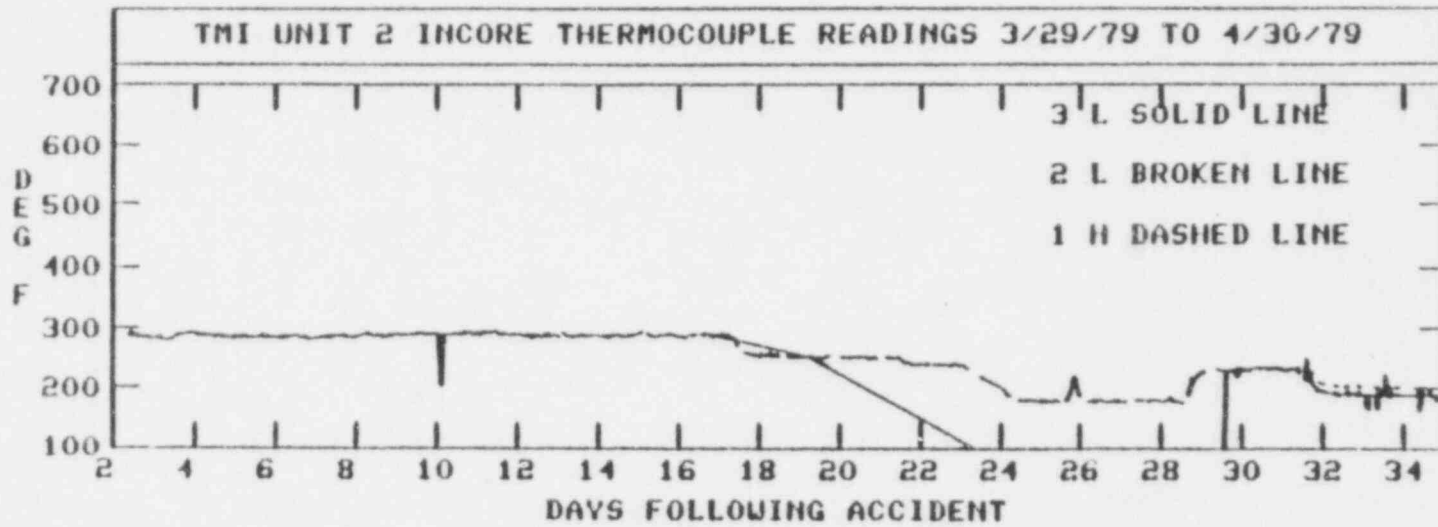


FIGURE 1 (CONT'D)



564 301

FIGURE 1 (CONT'D)

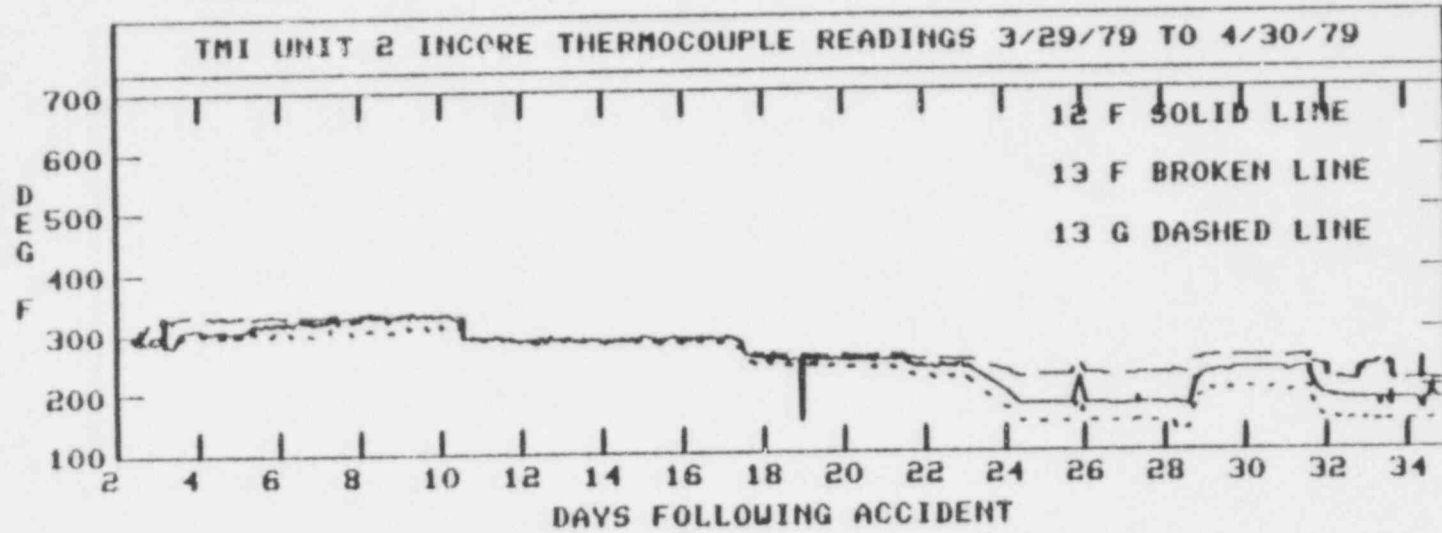
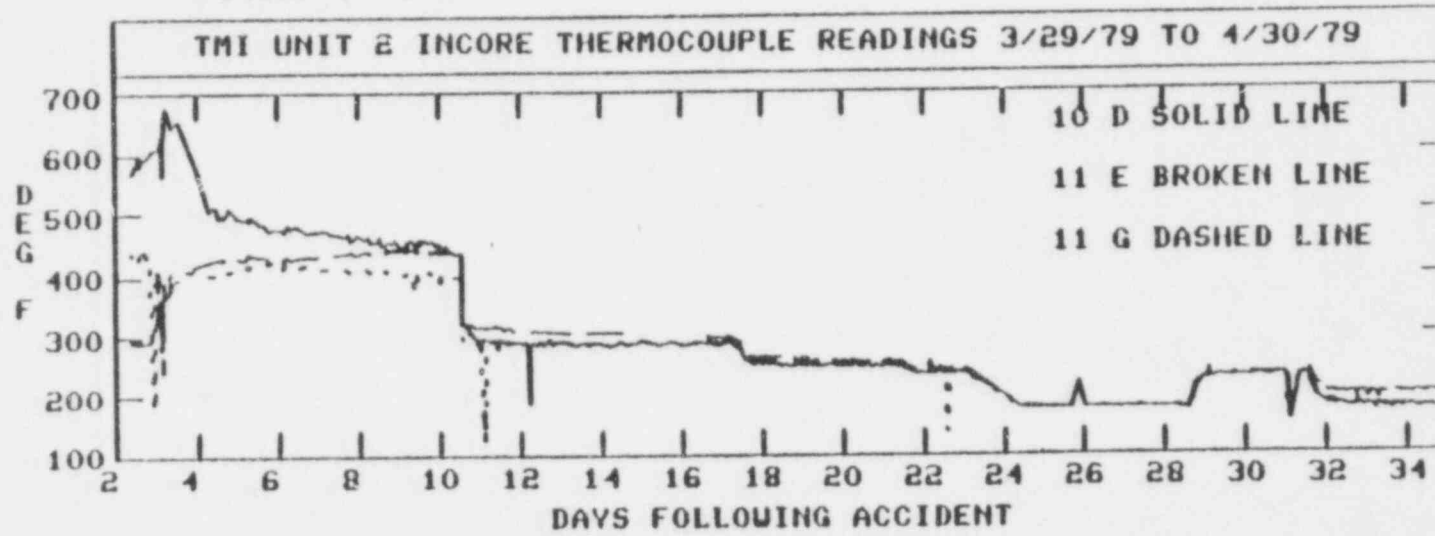


FIGURE 1 (CONT'D)



564
302

FIGURE 1 (CONT'D)

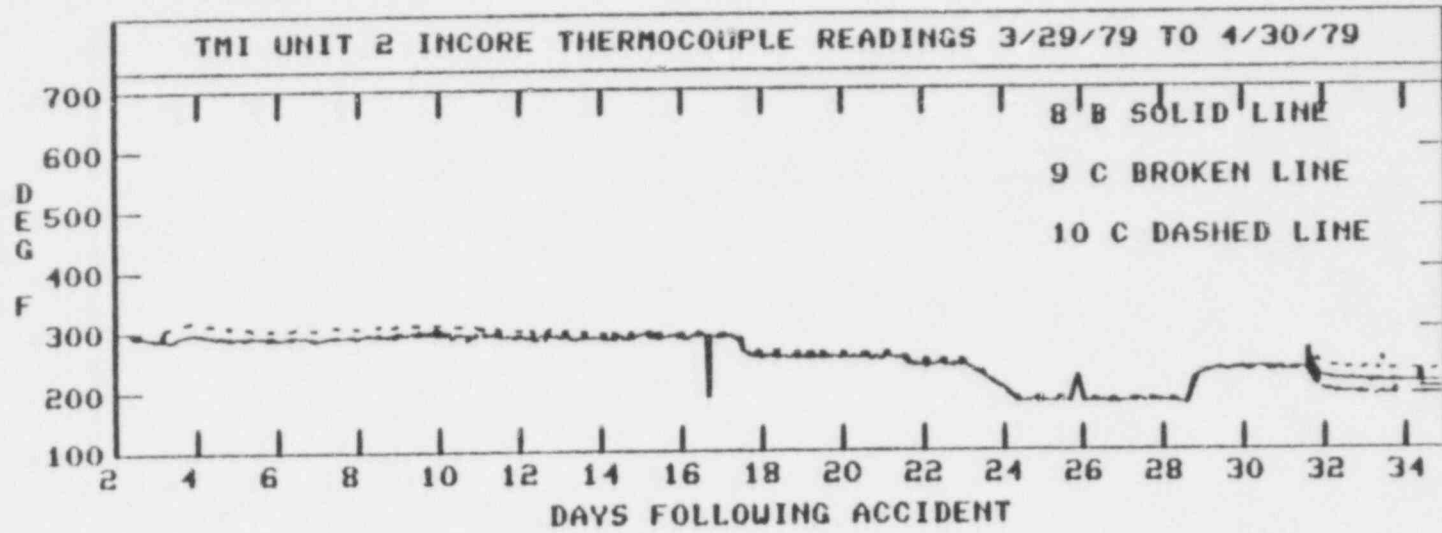
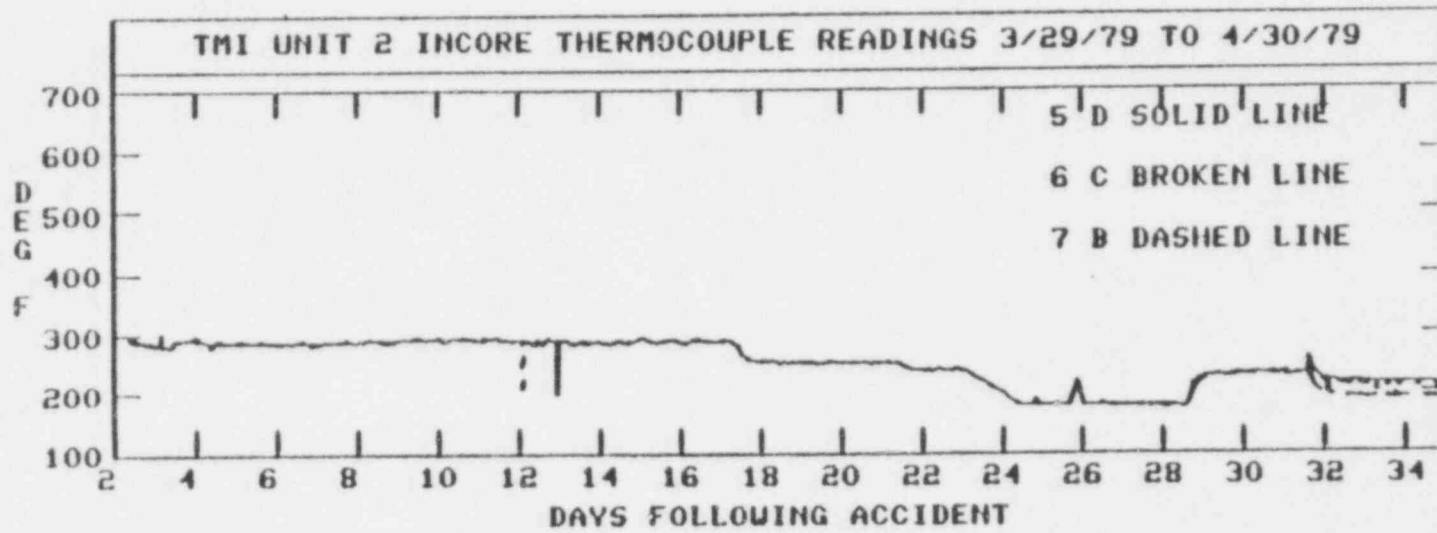


FIGURE 1 (CONT'D)



564 333

FIGURE 1 (CONT'D)

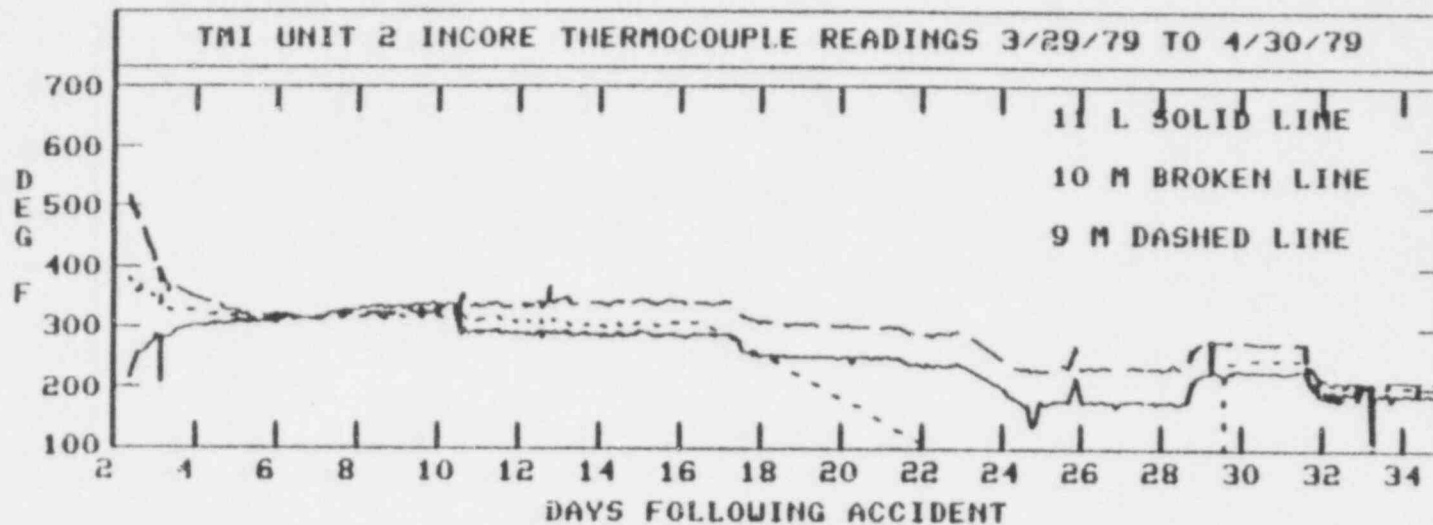
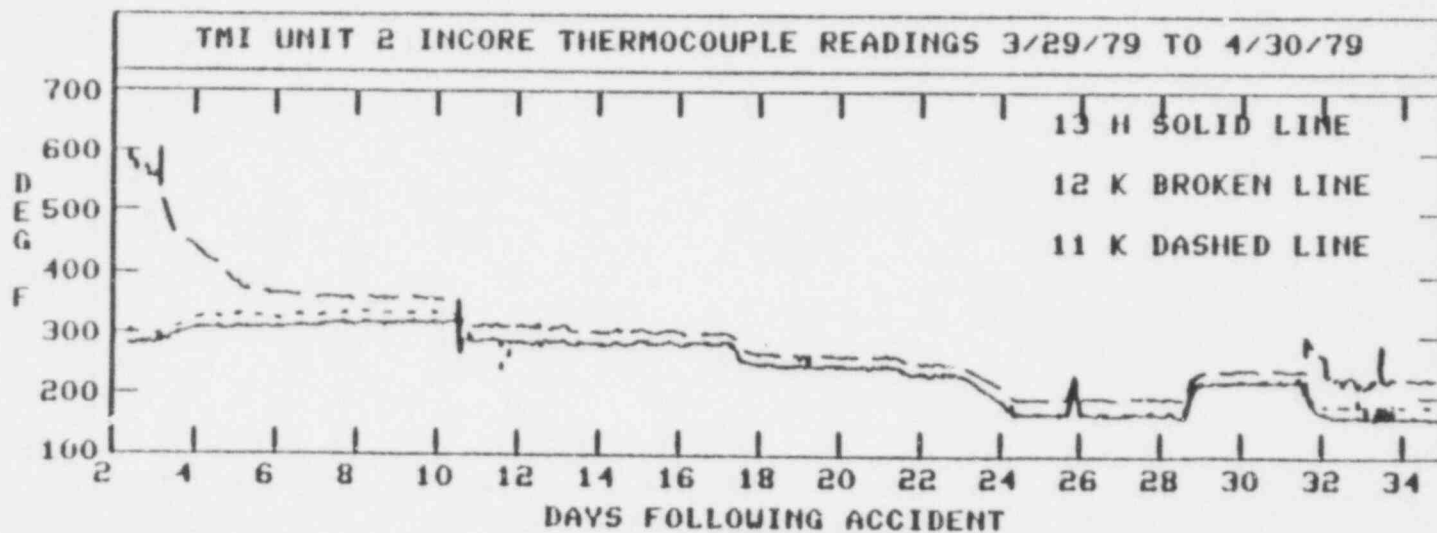


FIGURE 1 (CONT'D)



564
304

FIGURE 1 (CONT'D)

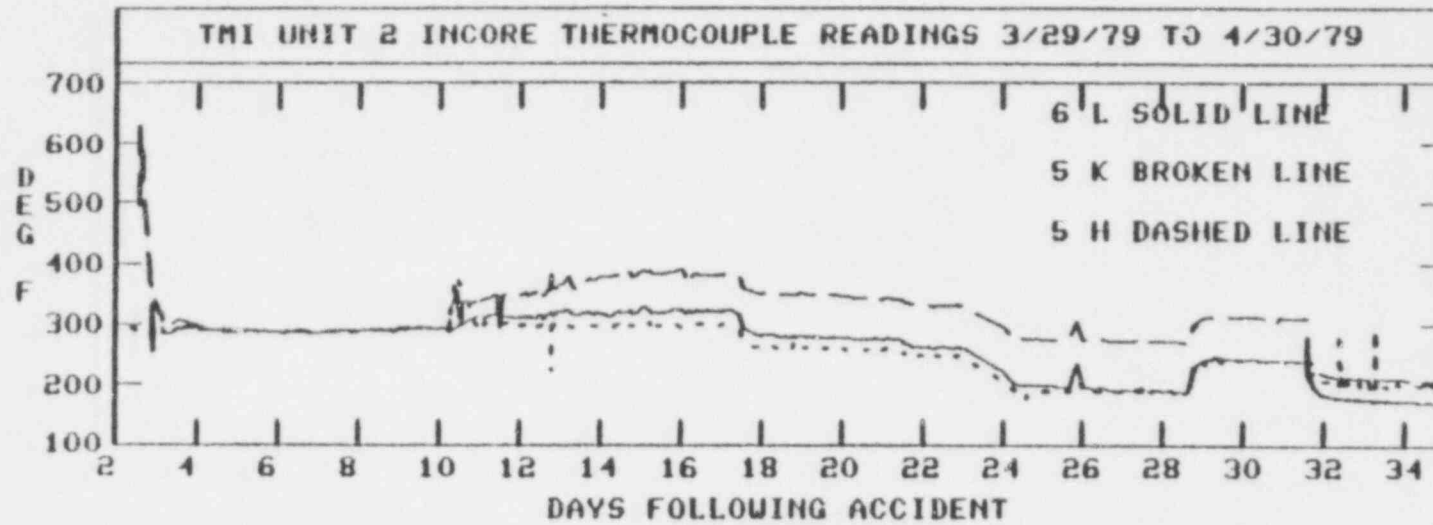
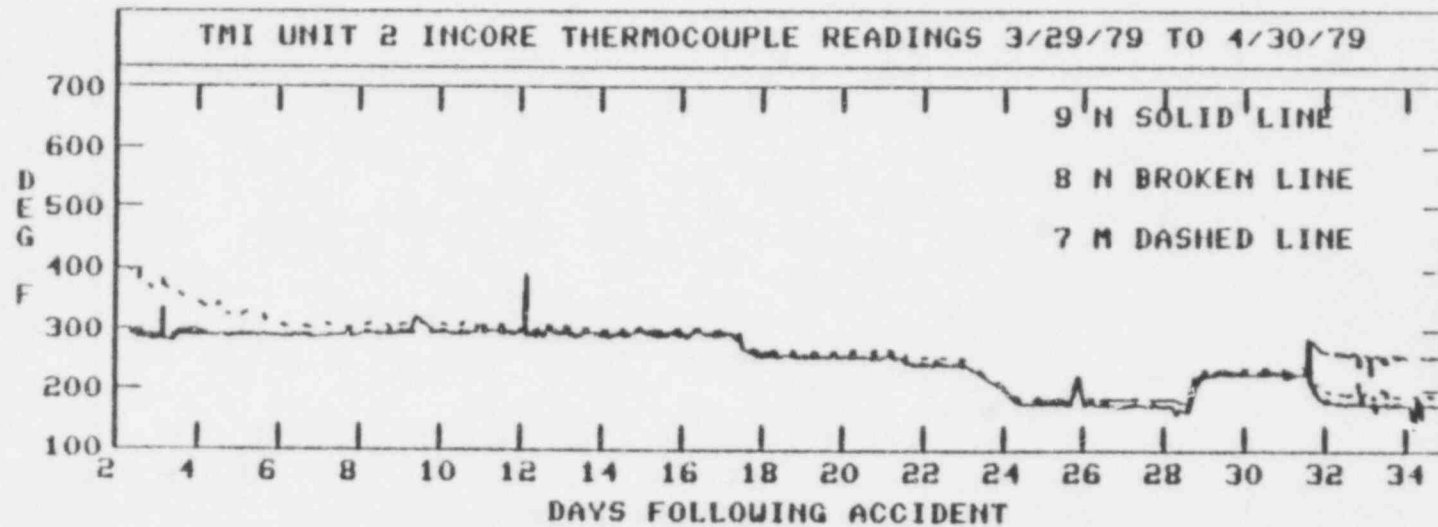


FIGURE 1 (CONT'D)



564 305

FIGURE 1 (CONT'D)

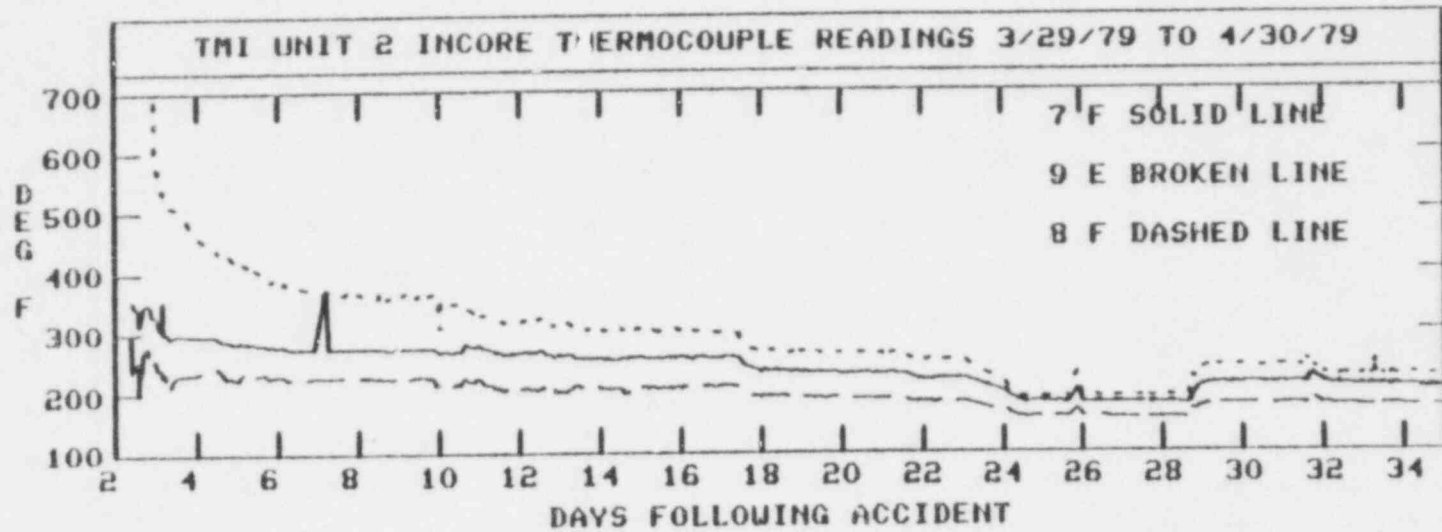
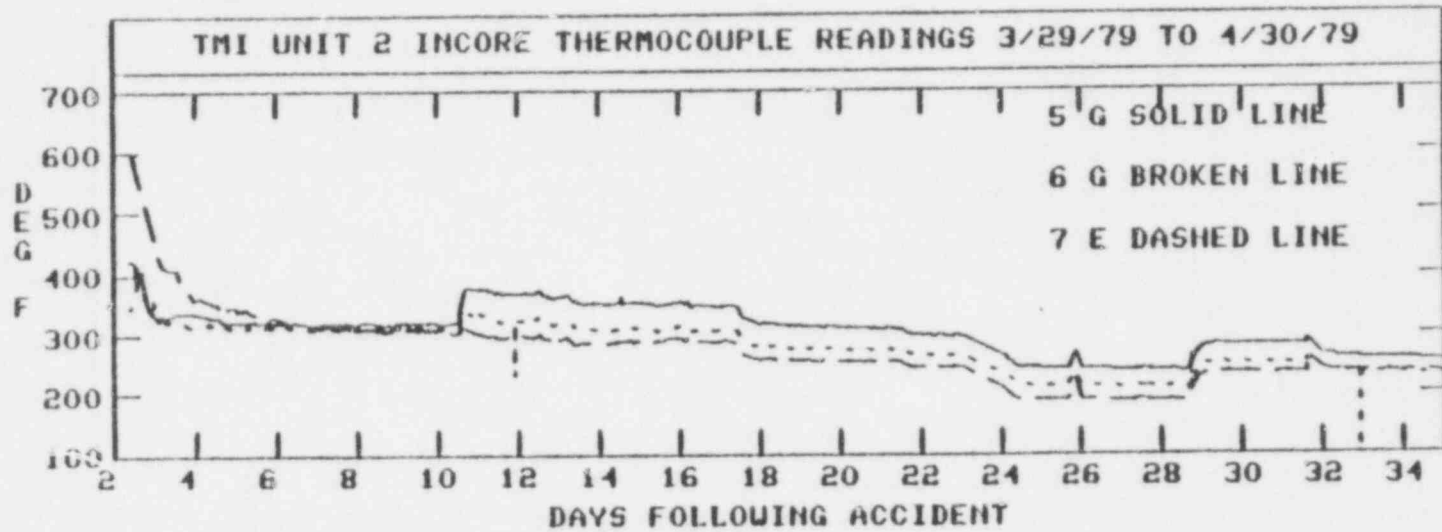
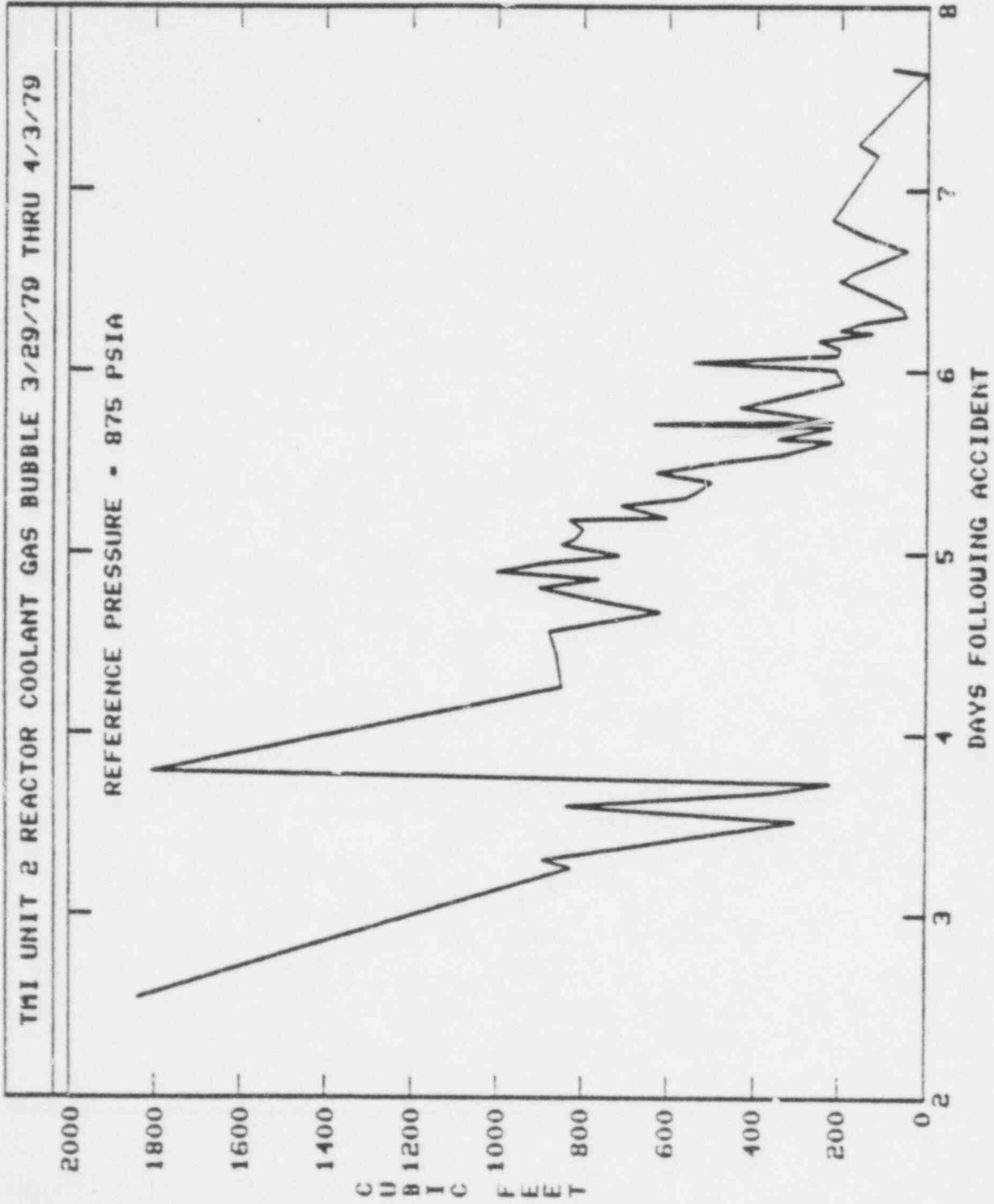


FIGURE 1 (CONT'D)



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306

FIGURE 2



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FIGURE 3

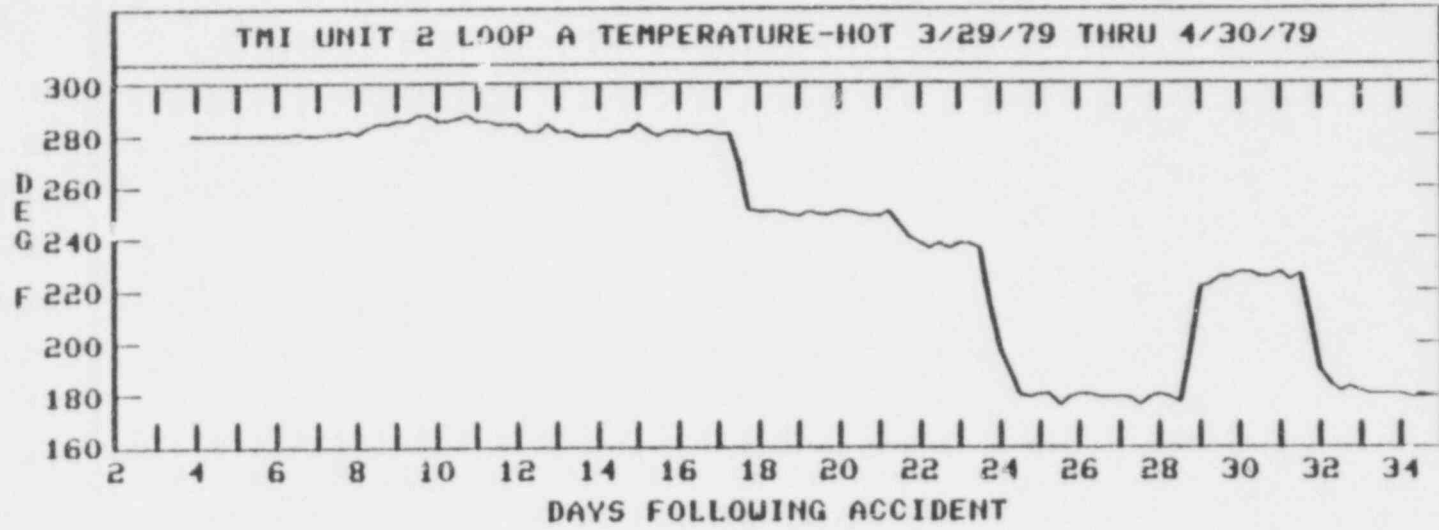
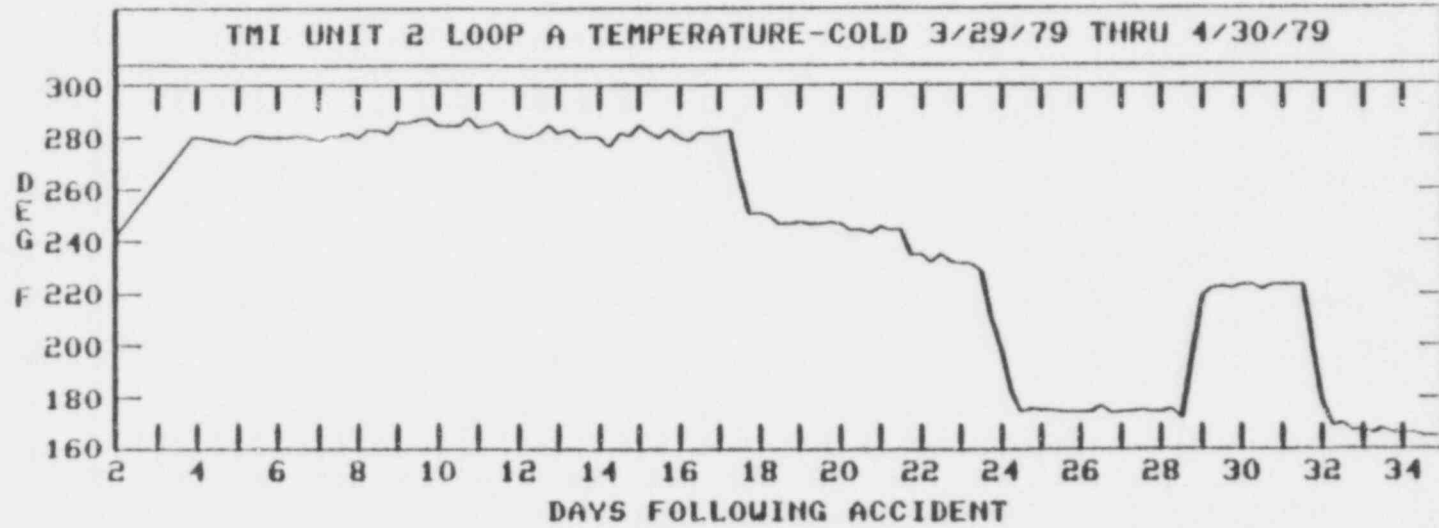


FIGURE 4



564 308

FIGURE 5

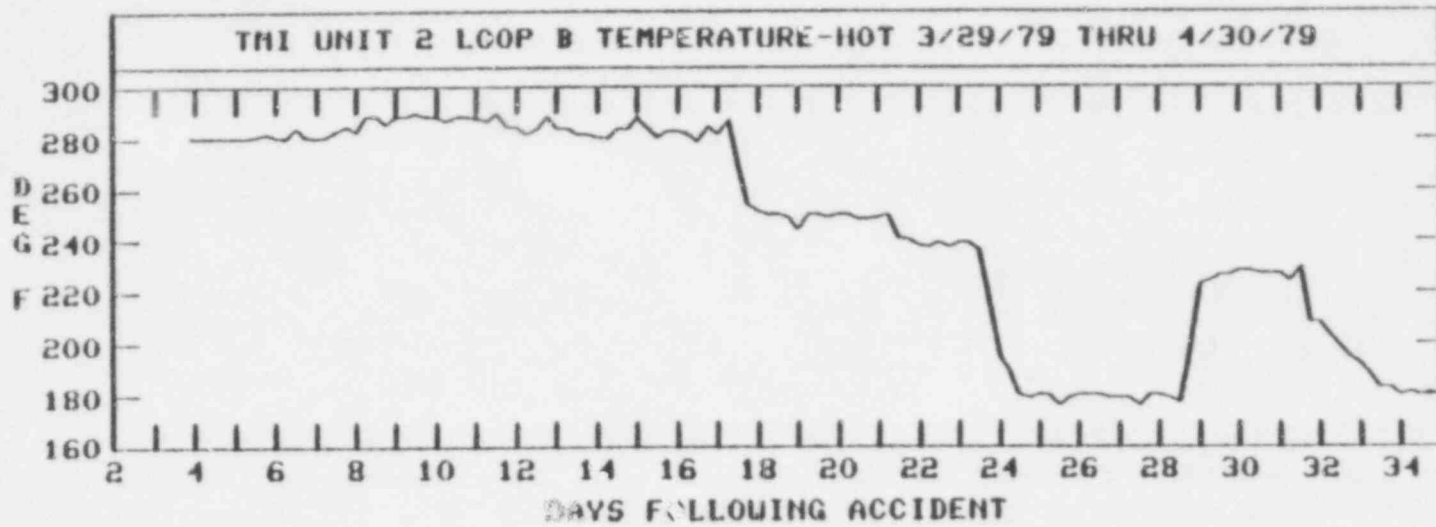
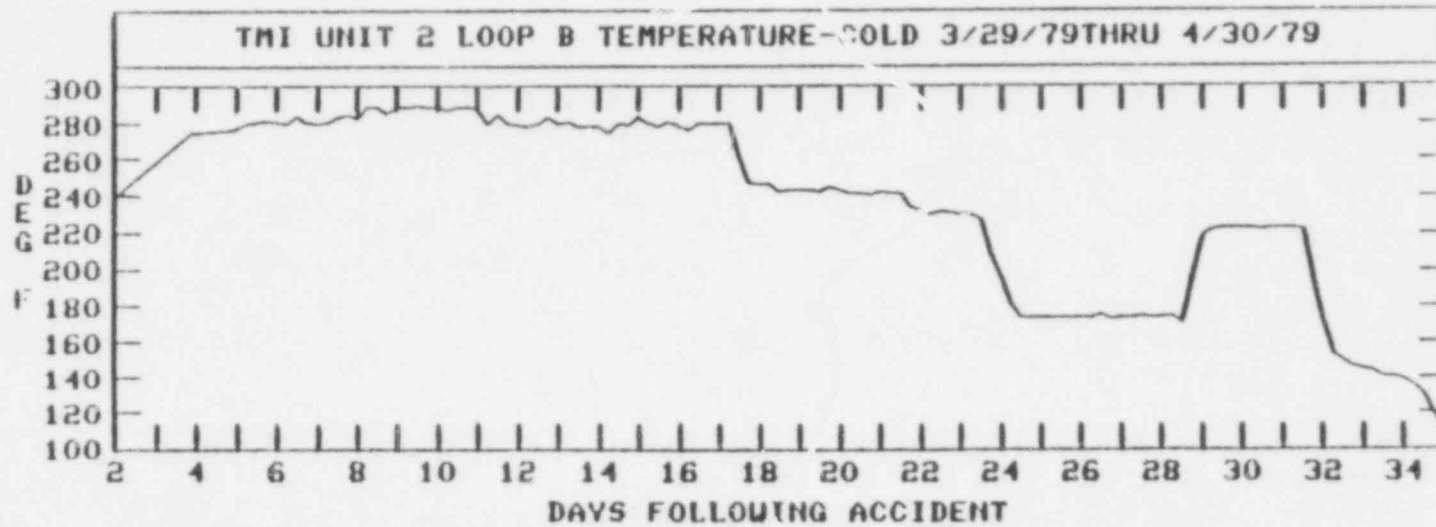
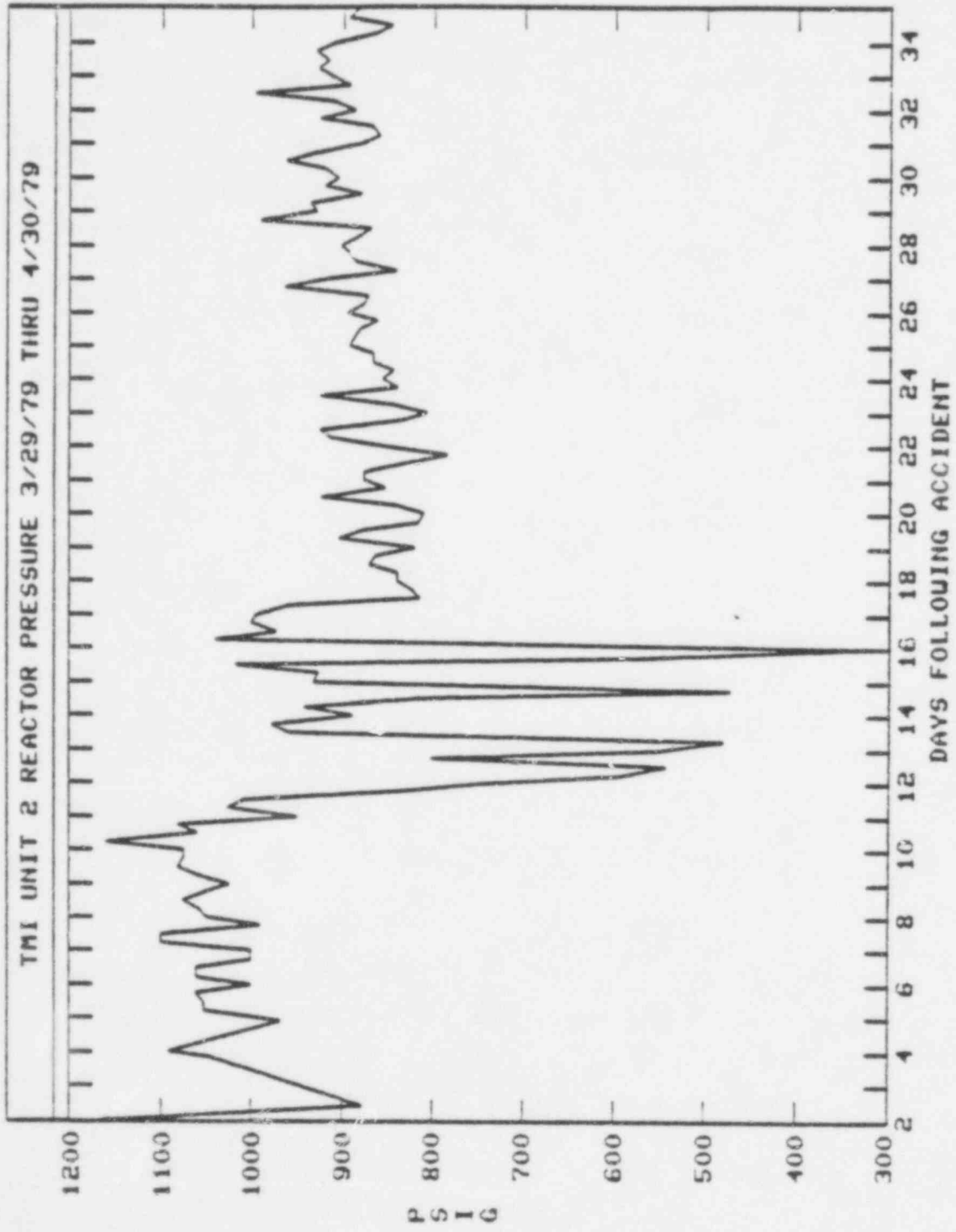


FIGURE 6



564 309

FIGURE 7



564 310

FIGURE 8

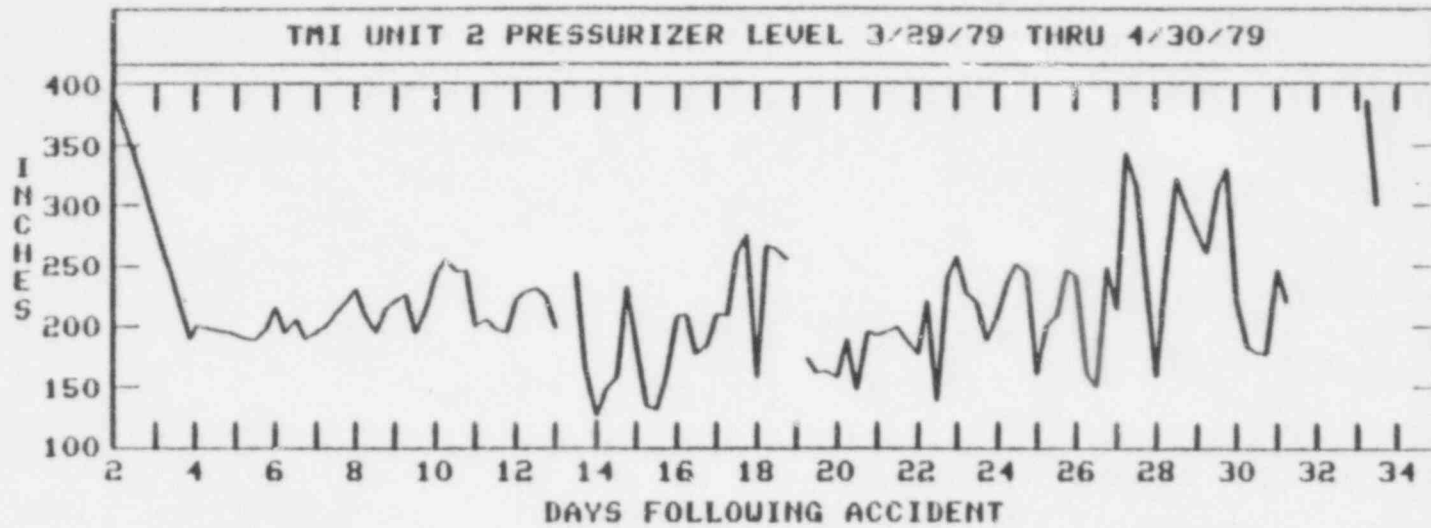
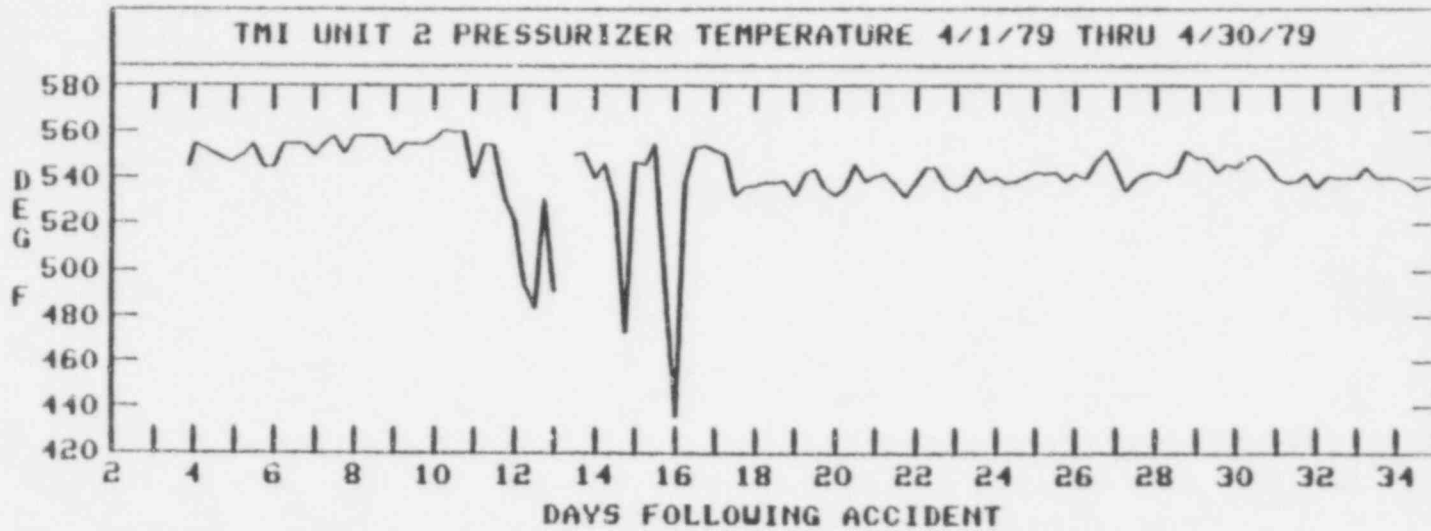


FIGURE 9



564 311

FIGURE 10

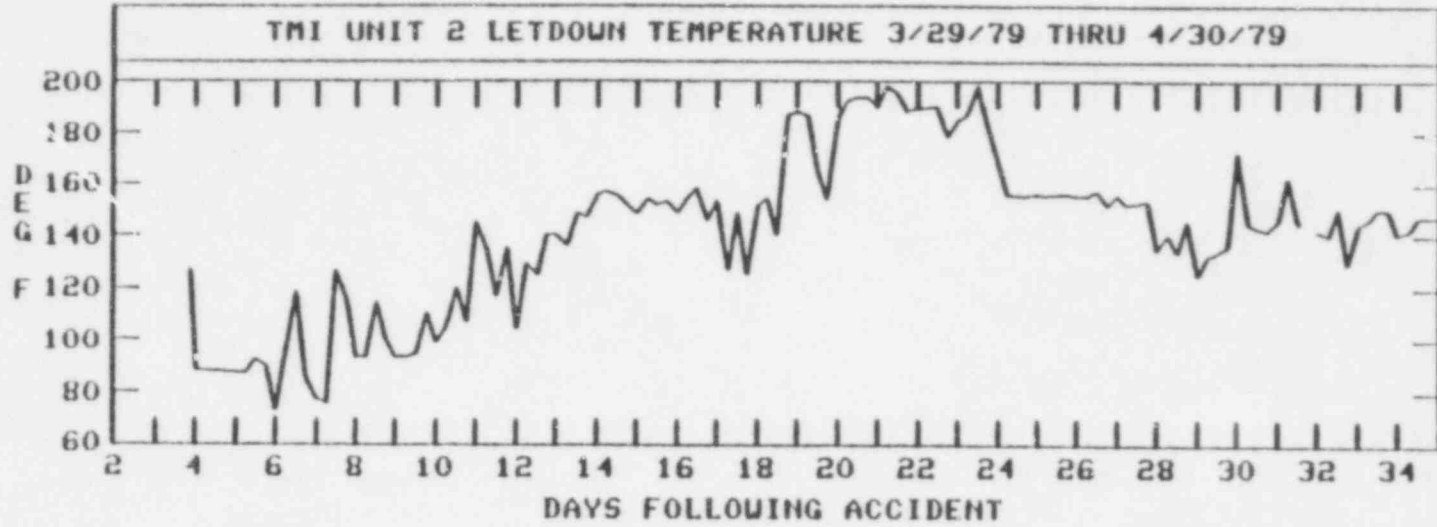
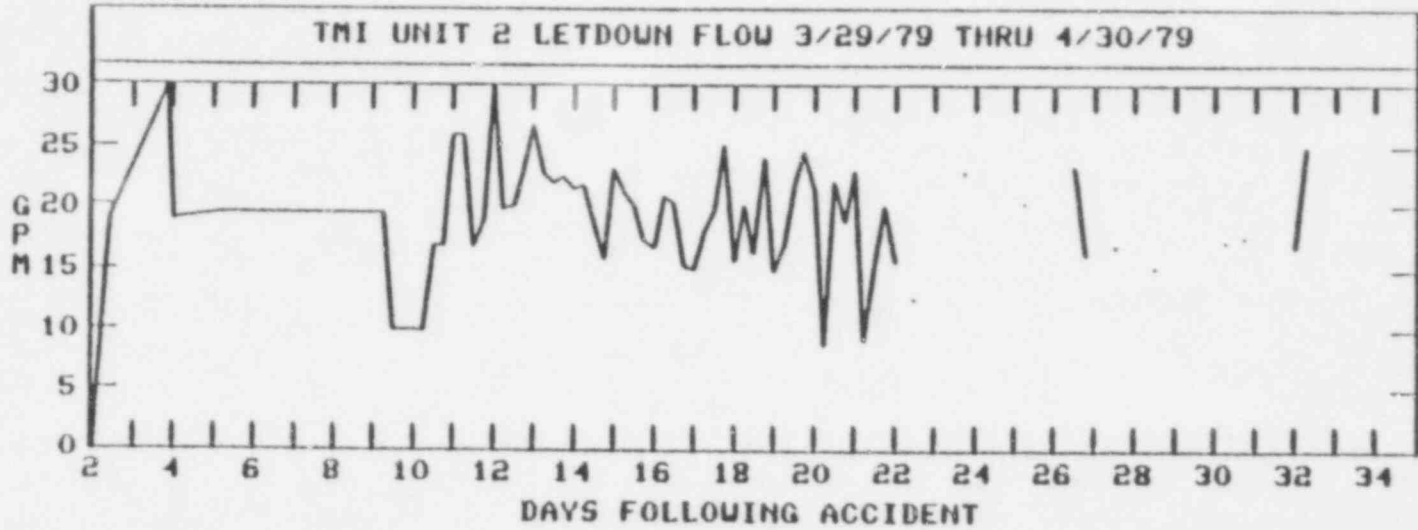


FIGURE 11



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312

FIGURE 12

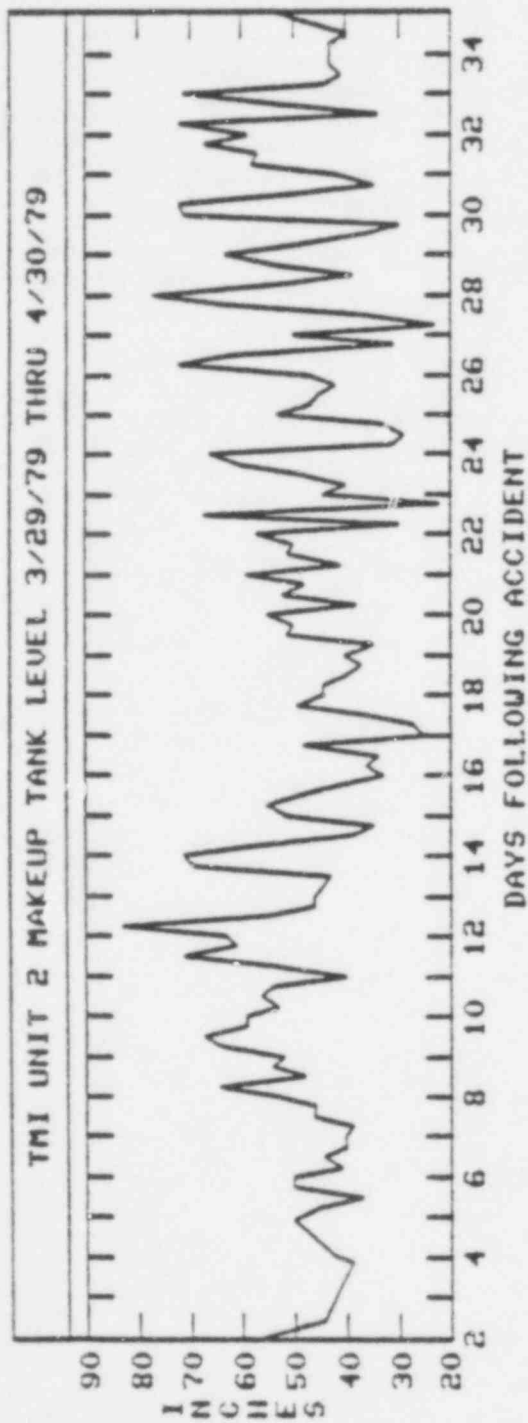
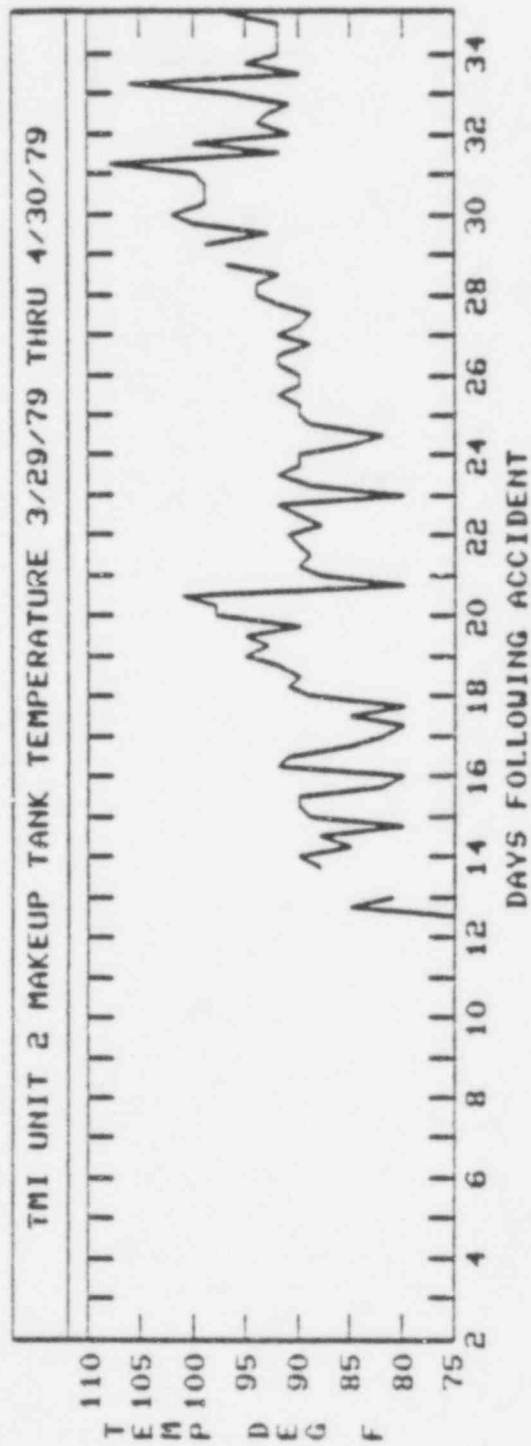


FIGURE 13



564 313

FIGURE 14

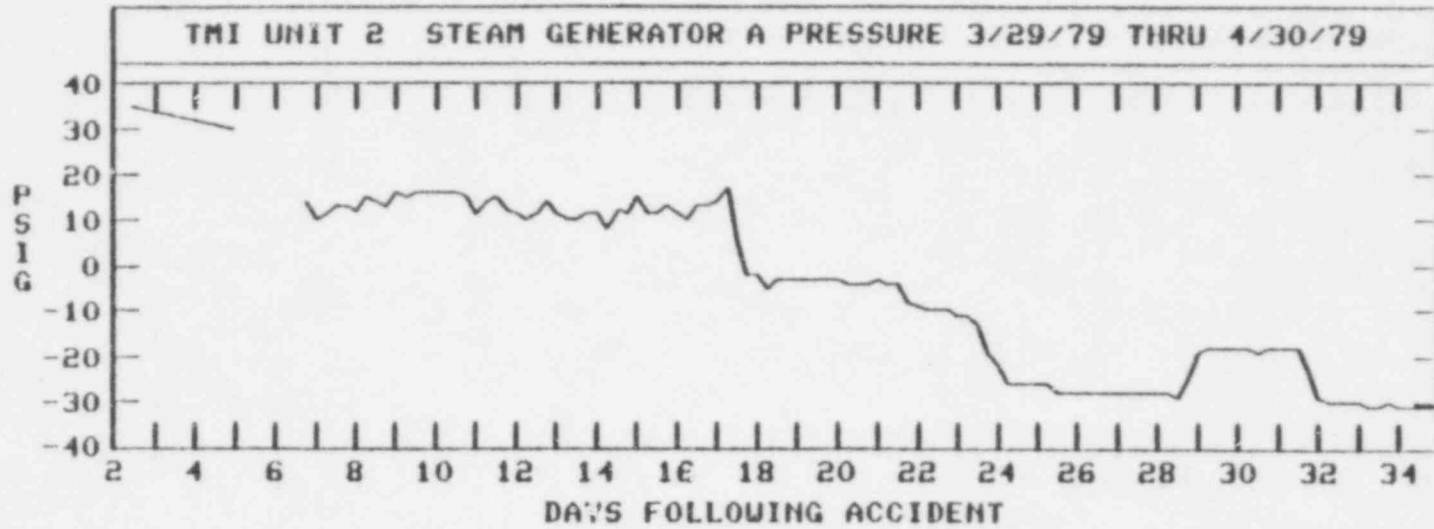
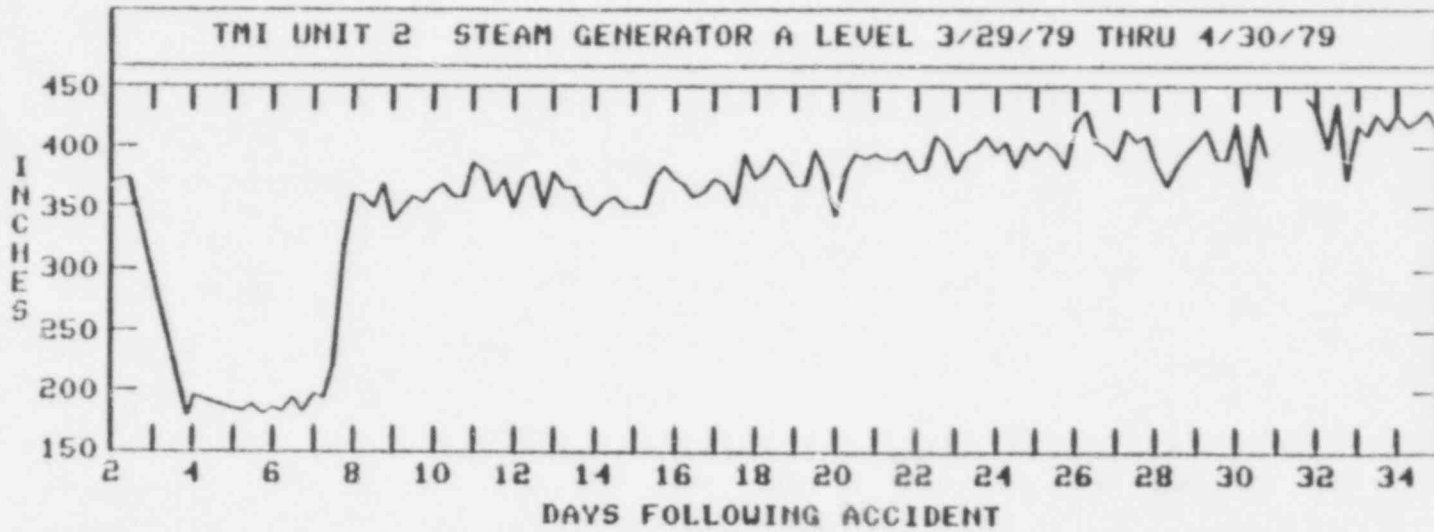


FIGURE 15



564 314

FIGURE 16

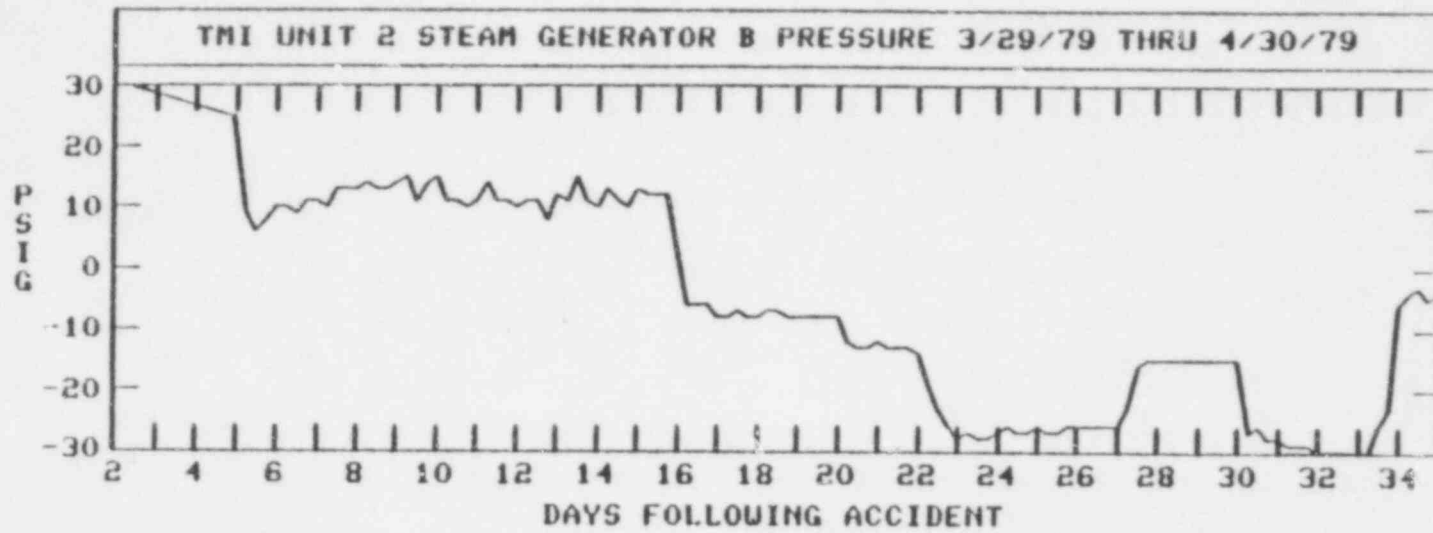
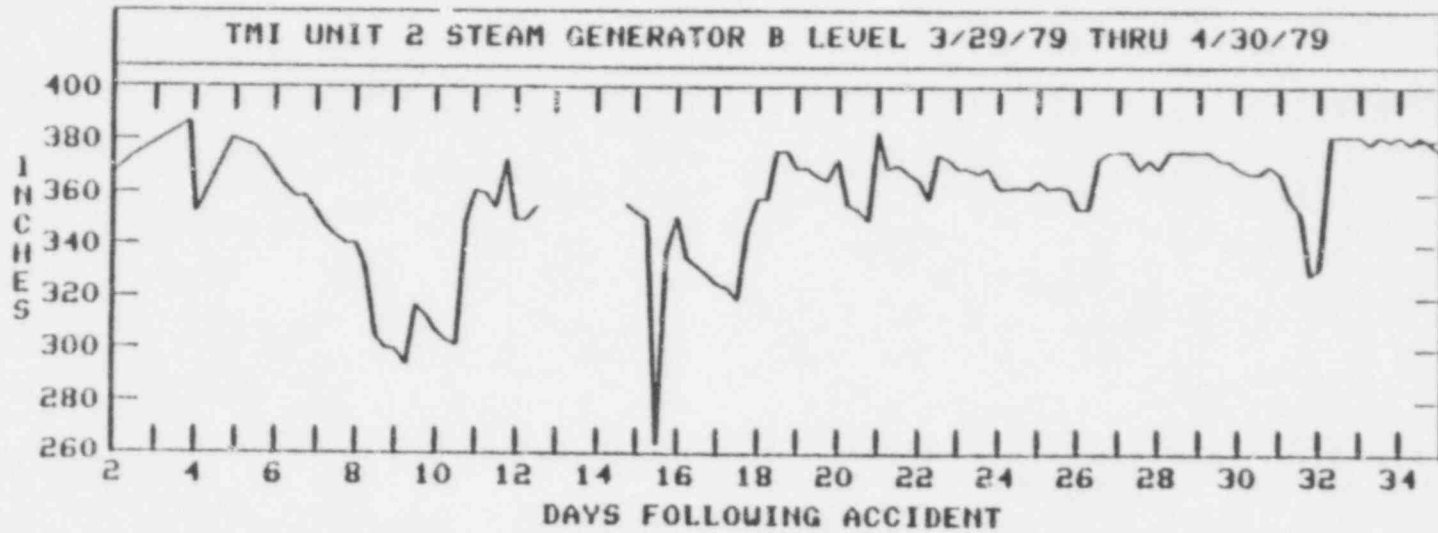


FIGURE 17



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FIGURE 18

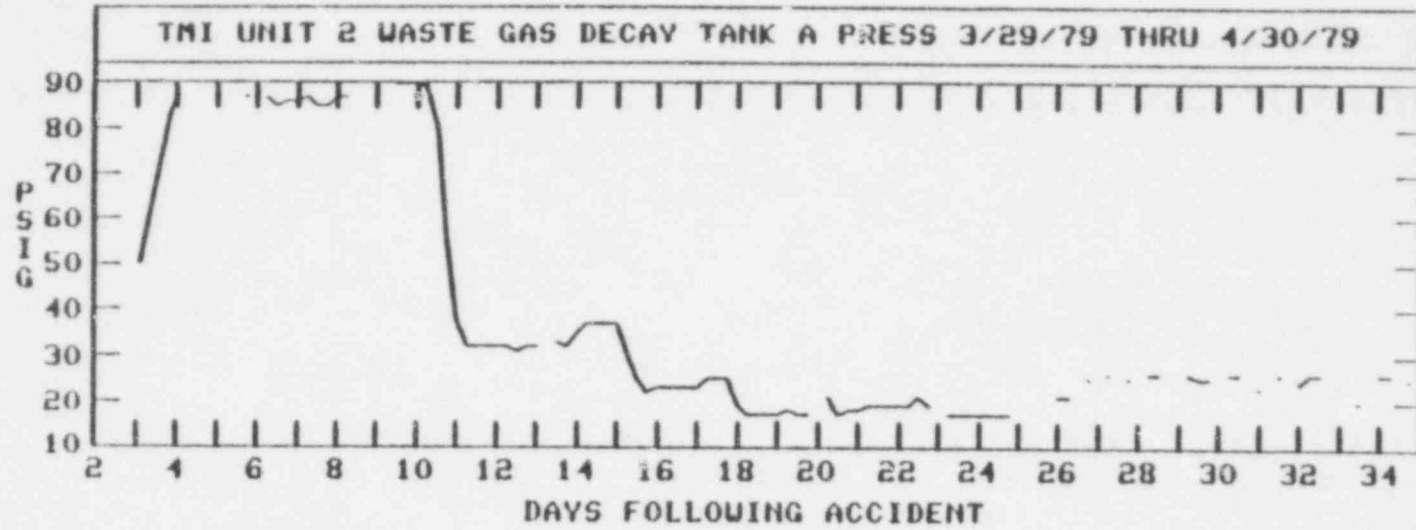
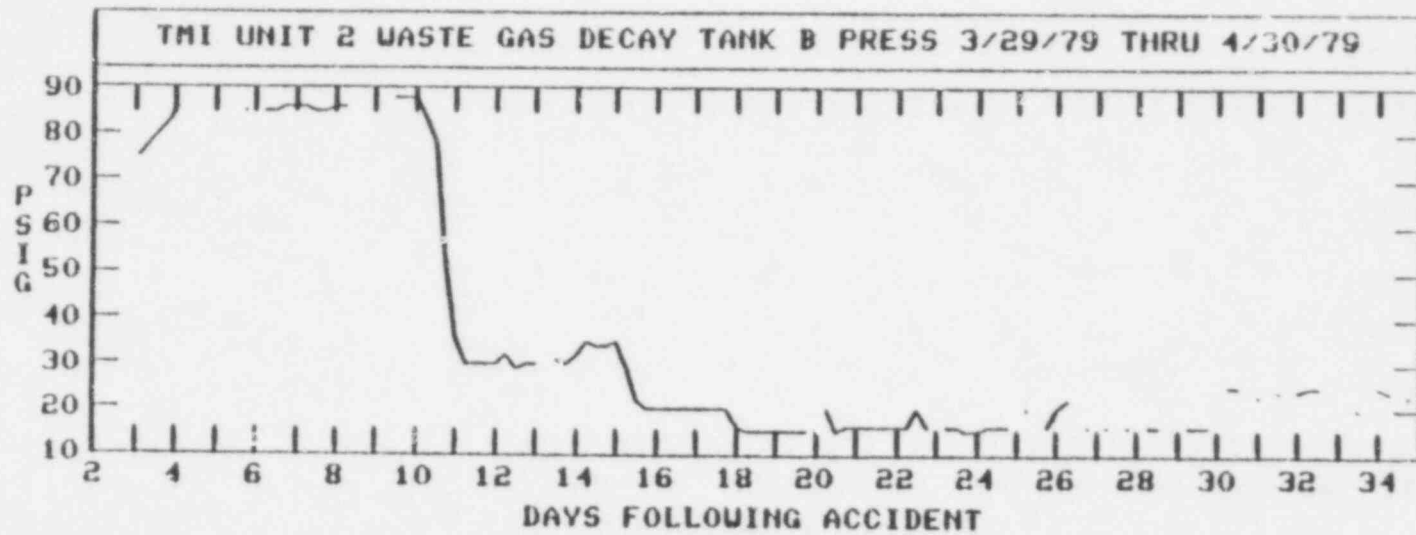


FIGURE 19



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317

FIGURE 20

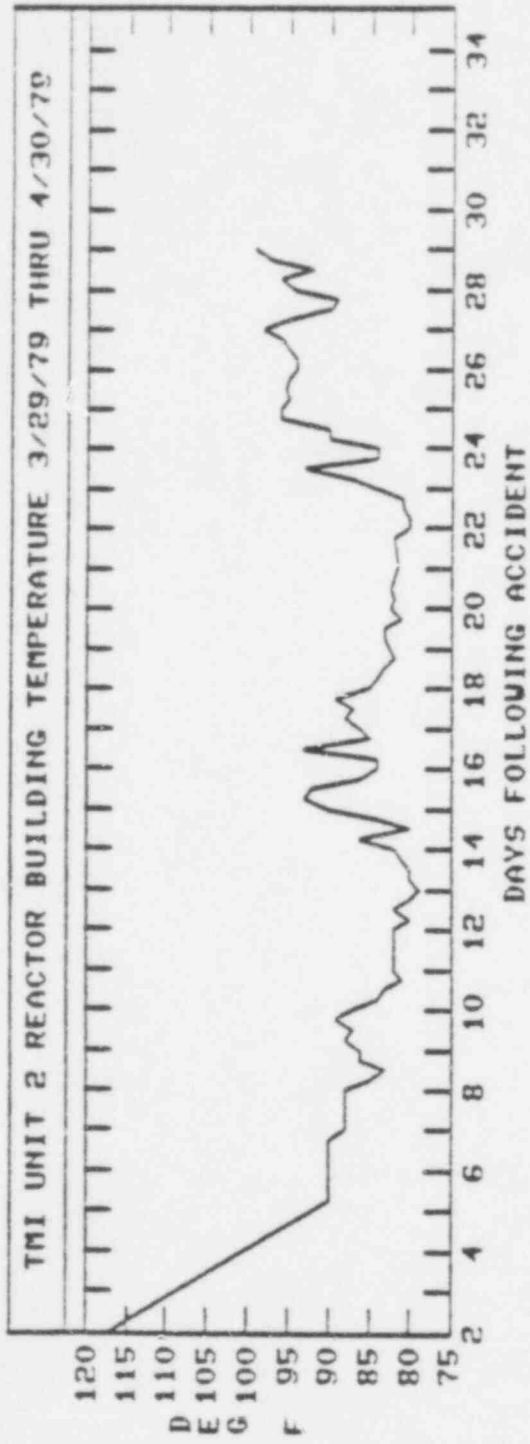


FIGURE 21

