



MODE "A1" REACTOR NORMAL OPERATION ( 10 PUMPS OPERATING )  
 ALL PUMPS ARE AT SAME SPEED  
 CORE FLOW = 11% --- RATED DESIGN  
 PUMP SPEED  $\leq$  100% OF RATED (NOTE 6) SEE NOTE 5

POSITION	1	2	3	4	5	6	7	8
FLOW M <sup>3</sup> /HR	7700	7700	8	8	30	30	13/17	130/170
TEMP (°C)	279	279	55	39	35		30/70	40/60
PRESS. Kg/cm <sup>2</sup> a	73.9	76.6	77.4	77.2	$\Delta P = 1.0 \text{ MAX}$			
TDH = 40.0 M								
AVAILABLE NPSH (M)	121							156

MODE "A2" REACTOR NORMAL OPERATION ( 10 PUMPS OPERATING )  
 ALL PUMPS ARE AT SAME SPEED  
 CORE FLOW = 100% --- RATED DESIGN  
 PUMP SPEED  $\leq$  90% OF RATED (NOTE 6) SEE NOTE 5

POSITION	1	2	3	4	5	6	7	8
FLOW M <sup>3</sup> /HR	6912	6912	7	7	30	30	13/17	130/170
TEMP (°C)	278	278	49	38	35		30/70	40/60
PRESS. Kg/cm <sup>2</sup> a	73.9	76.6	77.4	77.2	$\Delta P = 1.0 \text{ MAX}$			
TDH = 37.8 M								
AVAILABLE NPSH (M)	134							156

MODE "B1" REACTOR NORMAL OPERATION ( 9 PUMPS OPERATING )  
 ONE PUMP OUT OF SERVICE  
 CORE FLOW = 100% --- (RUNNING PUMP DATA)  
 PUMP SPEED  $\leq$  100% OF RATED (NOTE 6) SEE NOTE 5

POSITION	1	2	3	4	5	6	7	8
FLOW M <sup>3</sup> /HR	8291	8291	8	8	30	30	13/17	130/170
TEMP (°C)	278	278	55	39	35		30/70	40/60
PRESS. Kg/cm <sup>2</sup> a	73.9	76.6	77.4	77.2	$\Delta P = 1.0 \text{ MAX}$			
TDH = 38.8 M								
AVAILABLE NPSH (M)	134							156

MODE "B2" REACTOR NORMAL OPERATION --- ( 9 PUMPS OPERATING )  
 DATA SHOWN FOR THE PUMP OUT OF SERVICE  
 CORE FLOW = 100%  
 PUMP SPEED = 90% OF RATED SEE NOTE 5

POSITION	1	2	3	4	5	6	7	8
FLOW M <sup>3</sup> /HR	5370	5370	NAT. CIRC.		30	30	13/17	130/170
TEMP (°C)	278	278			35		30/70	40/60
PRESS. Kg/cm <sup>2</sup> a	73.9	76.6	77.4	77.2	$\Delta P = 1.0 \text{ MAX}$			
TDH = 37.8 M								
AVAILABLE NPSH (M)	134							156

MODE "C" REACTOR HOT STANDBY --- ( 10 PUMPS OPERATING )  
 ALL PUMPS ARE AT SAME SPEED  
 CORE FLOW = 32.2%  
 PUMP SPEED = 450 RPM SEE NOTE 5

POSITION	1	2	3	4	5	6	7	8
FLOW M <sup>3</sup> /HR	2295	2295	2	2	30	30	13/17	130/170
TEMP (°C)	282	282	36	35	35		30/70	40/60
PRESS. Kg/cm <sup>2</sup> a	68.3	88.8	70.3	70.0	$\Delta P = 1.0 \text{ MAX}$			
TDH = 3.8 M								
AVAILABLE NPSH (M)	16							156

MODE "D" REACTOR COLD STARTUP --- ( 10 PUMPS OPERATING )  
 ALL PUMPS ARE AT SAME SPEED  
 CORE FLOW = 32.2%  
 PUMP SPEED = 450 RPM SEE NOTE 5

POSITION	1	2	3	4	5	6	7	8
FLOW M <sup>3</sup> /HR	2250	2250	2	2	30	30	13/17	130/170
TEMP (°C)	<100	<100	36	35	35		10/70	40/60
PRESS. Kg/cm <sup>2</sup> a	1.8	2.2	1.8	2.2	$\Delta P = 1.0 \text{ MAX}$			
TDH = 3.8 M								
AVAILABLE NPSH (M)	20							156

- NOTES:
- ALL VALVES SHOWN IN THEIR NORMAL PLANT OPERATING POSITION AND ARE IN THE SAME POSITION FOR ALL OPERATING MODES.
  - THE PURGE FLOW (RNP) FLOWS IN TO THE REACTOR AT 2.
  - THE RECIRCULATION MOTOR INFLATABLE SHAFT SEAL SUBSYSTEM IS USED ONLY DURING SHUTDOWN.
  - XX/YY MEANS MIN/MAX CONDITIONS.
  - VALUES GIVEN FOR POSITION 1-7 ARE FOR EACH ONE OF THE PUMPS OPERATING IN THE DEFINED MODE CONDITION 19 OR 10 PUMPS OPERATING.
  - PUMP RATED SPEED ASSUMED AT 1500 RPM.
  - THIS VALUE IS MAXIMUM REVERSE FLOW.
  - TDH VALUES INCLUDE 5 PERCENT MARGIN.
  - POSITION "9" CREATED EXCLUSIVELY FOR DEFINING DESIGN PRESSURE/TEMPERATURE CONDITIONS ( NOT PROCESS CONDITIONS ).
  - RCW (P21) FOR RIP'S B,D,F,H,K, IS SIMILAR TO RIP'S A,C,E,G,J.
  - POSITIONS 7 & 8 FLOW IS GRAMS/SECOND FOR ALL MODES.

- REFERENCE DOCUMENTS UNDER THE FOLLOWING IDENTITIES ARE TO BE USED IN CONJUNCTION WITH THIS DRAWING.
- | IDENTITY                                   | MPL NO.  |
|--|----------|
| 1. CONTROL ROD DRIVE SYS. PFD              | C12-1020 |
| 2. REAC BUILDING COOLING WATER SYSTEM, PFD | P21-1020 |
| 3. REAC RECIRC SYS P&ID                    | B31-1010 |
| 4. PIPING AND INSTRUMENT SYMBOLS DIAGRAM   | A10-3030 |

FIG. 5.4-5

SI APERTURE CARD

EQUIPMENT CLASS CODE

SAFETY RELATED	THIS ITEM IS OR CONTAINS A SAFETY RELATED ITEM	CLASS 1E	CLASS 1F
YES	NO	YES	NO

APPROVED BY: [Signature] DATE: 12/16/77

REACTOR RECIRCULATION SYSTEM

107E5195

PDR RIDS

9202270132

