ATTACHMENT 2 TO AEP:NRC:0860

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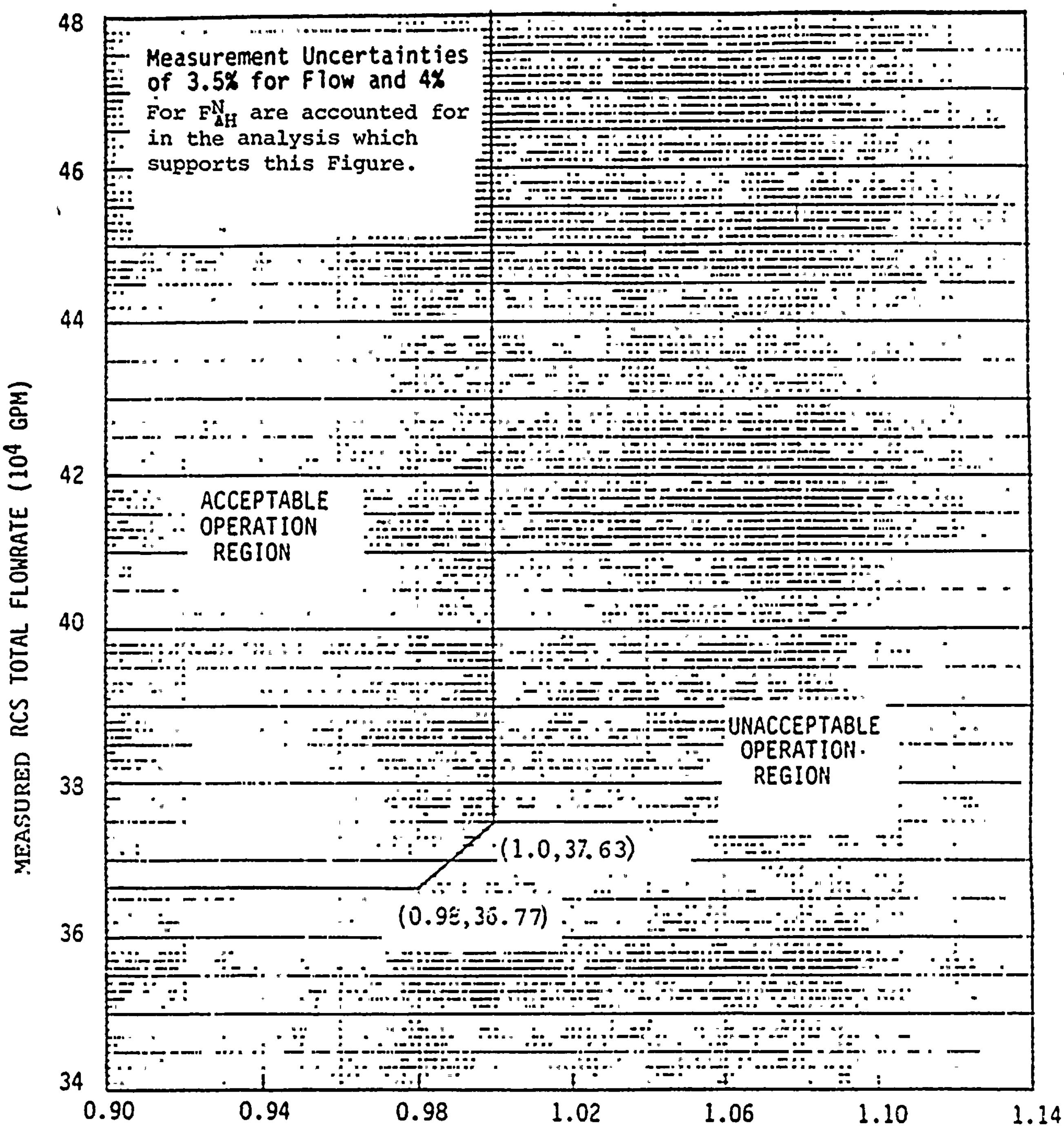
TECHNICAL SPECIFICATION CHANGES

FOR DONALD C. COOK NUCLEAR PLANT

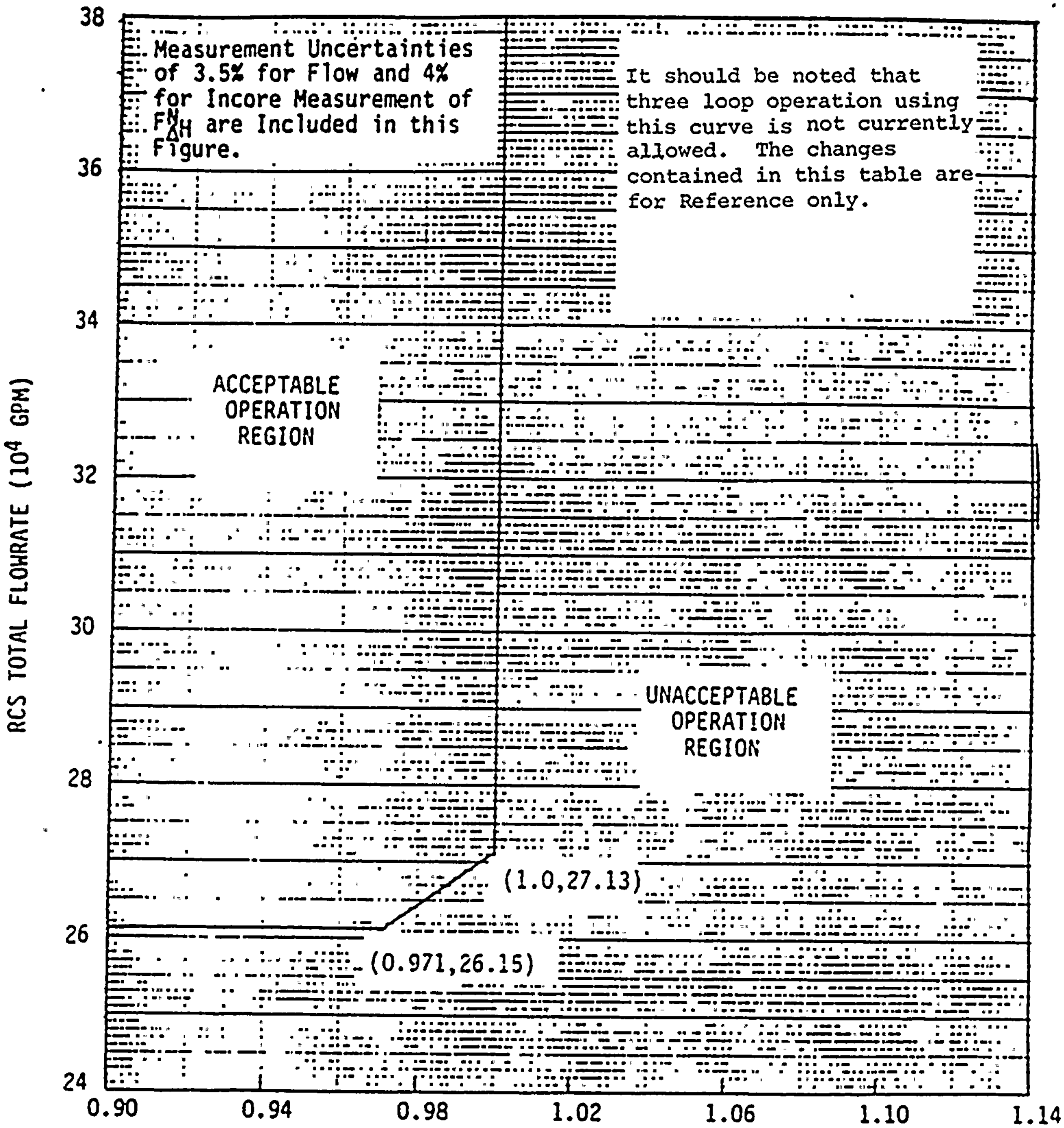
UNIT NO. 2 CYCLE 5



$R=F^N_{\Delta H}/1.48[1.0+0.2(1.0-P)]$ WESTINGHOUSE FUEL

$R=F^N_{\Delta H}/1.49[1.0+0.2(1.0-P)]$ EXXON NUCLEAR CO. FUEL

FIGURE 3.2-4 RCS TOTAL FLOWRATE VERSUS R - FOUR LOOPS IN OPERATION



$R=F^N_{\Delta H}/1.48[1.0+0.2(1.0-P)]$ WESTINGHOUSE FUEL

$R=F^N_{\Delta H}/1.49[1.0+0.2(1.0-P)]$ EXXON NUCLEAR CO. FUEL

FIGURE 3.2-5 RCS TOTAL FLOWRATE VERSUS R - THREE LOOPS IN OPERATION

BASES

The specifications of this section provide assurance of fuel integrity during Condition I (Normal Operation) and II (Incidents of Moderate Frequency) events by: (a) maintaining the calculated DNBR in the core at or above design during normal operation and in short term transients, and (b) limiting the fission gas release, fuel pellet temperature and cladding mechanical properties to within assumed design criteria. In addition, limiting the peak linear power density during Condition I events provides assurance that the initial conditions assumed for the LOCA analyses are met and the ECCS acceptance criteria limit of 2200°F is not exceeded.

The definitions of certain hot channel and peaking factors as used in these specifications are as follows:

$F_Q(Z)$ Heat Flux Hot Channel Factor, is defined as the maximum local heat flux on the surface of a fuel rod at core elevation Z divided by the average fuel rod heat flux, allowing for manufacturing tolerances on fuel pellets and rods.

$F^N_{\Delta H}$ Nuclear Enthalpy Rise Hot Channel Factor, is defined as the ratio of the integral of linear power along the rod with the highest integrated power to the average rod power.

The limits on $F_Q(Z)$ and $F^N_{\Delta H}$ for Westinghouse supplied fuel at a core average power of 3411 MWt are 1.97 and 1.48, respectively, which assure consistency with the allowable heat generation rates developed for a core average thermal power of 3391 MWt. The limits on $F_Q(Z)$ and $F^N_{\Delta H}$ for ENC supplied fuel have been established for a core thermal power of 3411 MWt and are 2.04 and 1.49 respectively. The analyses supporting the Exxon Nuclear Company limits are valid for an average steam generator tube plugging of up to 5% and a maximum plugging of one or more steam generators of up to 10%. In establishing the limits, a plant system description with improved accuracy was employed during the reflood portion of the LOCA Transient. With respect to the Westinghouse supplied fuel the minimum projected excess margin of at least 10% to ECCS limits will more than offset the impact of increased steam generator tube plugging.

3/4.2.1 AXIAL FLUX DIFFERENCE (AFD)

The limits on AXIAL FLUX DIFFERENCE assure that the $F_Q(Z)$ upper bound envelope is not exceeded during either normal operation or in the event of xenon redistribution following power changes. The $F_Q(Z)$ upper bound envelope is 1.97 times the average fuel rod heat flux for Westinghouse supplied fuel and 2.04 times the average fuel rod heat flux for Exxon Nuclear Company supplied fuel.

Target flux difference is determined at equilibrium xenon conditions. The full length rods may be positioned within the core in accordance with their respective insertion limits and should be inserted near their normal position for steady state operation at high power levels. The value of the

3/4.2.2 and 3/4.2.3 HEAT FLUX HOT CHANNEL FACTOR, RCS FLOWRATE AND NUCLEAR ENTHALPY RISE HOT CHANNEL FACTOR

The limits on heat flux hot channel factor, RCS flowrate, and nuclear enthalpy rise hot channel factor ensure that 1) the design limits on peak local power density and minimum DNBR are not exceeded and 2) in the event of a LOCA the peak fuel clad temperature will not exceed the 2200°F ECCS acceptance criteria limit.

Each of these is measurable but will normally only be determined periodically as specified in Specifications 4.2.2 and 4.2.3. This periodic surveillance is sufficient to ensure that the limits are maintained provided:

a. Control rods in a single group move together with no individual rod insertion differing by more than $\pm$12 steps from the group demand position.

b. Control rod groups are sequenced with overlapping groups as described in Specification 3.1.3.6.

c. The control rod insertion limits of Specifications 3.1.3.5 and 3.1.3.6 are maintained.

d. The axial power distribution, expressed in terms of AXIAL FLUX DIFFERENCE, is maintained within the limits.

$F^N_{\Delta H}$ will be maintained within its limits provided conditions a. through d. above are maintained. As noted on Figures 3.2-4 and 3.2-5, RCS flow rate and $F^N_{\Delta H}$ may be "traded off" against one another (i.e., a low measured RCS flow rate is acceptable if the measured $F^N_{\Delta H}$ is also low) to ensure that the calculated DNBR will not be below the design DNBR value. The $F_{\Delta H}$ limit in combination with the F_Q limit of 2.04 ensures compliance with the ECCS acceptance criteria. The relaxation of $F^N_{\Delta H}$ as a function of THERMAL POWER allows changes in the radial power shape for all permissible rod insertion limits.

When an F_Q measurement is taken, both experimental error and manufacturing tolerance must be allowed for. 5% is the appropriate allowance for a full core map taken with the incore detector flux mapping system and 3% is the appropriate allowance for manufacturing tolerance.

When RCS flow rate and $F^N_{\Delta H}$ are measured, no additional allowances are necessary prior to comparison with the limits of Figures 3.2-4 and 3.2-5. Measurement errors of 3.5% for RCS flow total flow rate and 4% for $F^N_{\Delta H}$ have been allowed for in determination of the design DNBR value. Measurement error of 4% for $F_{\Delta H}$ has been allowed for in determination of the ECCS limits.

ICE CONDENSER DOORS

LIMITING CONDITION FOR OPERATION

3.6.5.3 The ice condenser inlet doors, intermediate deck doors, and top deck doors shall be closed and OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With one or more ice condenser doors open or otherwise inoperable, POWER OPERATION may continue for up to 14 days provided the ice bed temperature is monitored at least once per 4 hours and the maximum ice bed temperature is maintained ≤ 27°F; otherwise, restore the doors to their closed positions or OPERABLE status (as applicable) within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.3.1 Inlet Doors - Ice condenser inlet doors shall be:

a. Continuously monitored and determined closed by the inlet door position monitoring system, and

b. Demonstrated OPERABLE during shutdown (MODES 5 and 6) at least once per 9 months by:

1. Verifying that the torque required to initially open each door is ≤ 675 inch pounds.

2. Verifying that opening of each door is not impaired by ice, frost or debris.

3. Testing a sample of at least 50% of the doors and verifying that the torque required to open each door is less than 195 inch-pounds when the door is 40 degrees open. This torque is defined as the "door opening torque" and is equal to the nominal door torque plus a frictional torque component. The doors selected for determination of the "door opening torque" shall be selected to ensure that all doors are tested at least once during two test intervals.

SURVEILLANCE REQUIREMENTS (Continued)

4. Testing a sample of at least 50% of the doors and verifying that the torque required to keep each door from closing is greater than 78 inch-pounds when the door is 40 degrees open. This torque is defined as the "door closing torque" and is equal to the nominal door torque minus a frictional torque component. The doors selected for determination of the "door closing torque" shall be selected to ensure that all doors are tested at least once during two test intervals.

5. Calculation of the frictional torque of each door tested in accordance with 3 and 4, above. The calculated frictional torque shall be ≤ 40 inch-pounds.

4.6.5.3.2 Intermediate Deck Doors - Each ice condenser intermediate deck door shall be:

a. Verified closed and that opening of each door is not impaired by ice, frost or debris by a visual inspection at least once per 7 days, and

b. Demonstrated OPERABLE at least once per 18 months by visually verifying no structural deterioration, by verifying free movement of the vent assemblies, and by ascertaining free movement when lifted with the applicable force shown below:

	Door	Lifting Force
1.	Adjacent to Crane Wall	≤ 37.4 lbs.
2.	Paired with Door Adjacent to Crane Wall	≤ 33.8 lbs.
3.	Adjacent to Containment Wall	≤ 31.8 lbs.
4.	Paired with Door Adjacent to Containment Wall	≤ 31.0 lbs.

4.6.5.3.3 Top Deck Doors - Each ice condenser top deck door shall be determined closed and OPERABLE at least once per 92 days by visually verifying:

TABLE 3.6-1 (Continued)

CONTAINMENT ISOLATION VALVES

VALVE NUMBER		FUNCTION	ISOLATION TIME IN SECONDS
A.	PHASE "A" ISOLATION (Continued)		
67.	NCR-252	Primary Water to Pressurizer Relief Tank	≤ 10
68.	QCM-250	RCP Seal Water Discharge	≤ 15
69.	QCM-350	RCP Seal Water Discharge	≤ 15
70.	QCR-300	Letdown to Letdown Hx.	≤ 10
71.	QCR-301	Letdown to Letdown Hx.	≤ 10
72.	QCR-919	Demin Wtr. Supply for Refueling Cavity	≤ 10
73.	QCR-920	Demin Wtr. Supply for Refueling Cavity	≤ 10
74.	PCR-40	Containment Service Air	≤ 10
75.	RCR-100	PRZ Relief Tank to Gas Anal.	≤ 10
76.	RCR-101	PRZ Relief Tank to Gas Anal.	≤ 10
77.	VCR-10	Glycol Supply to Fan Cooler	≤ 10
78.	VCR-11	Glycol Supply to Fan Cooler	≤ 10
79.	VCR-20	Glycol Supply from Fan Cooler	≤ 10
80.	VCR-21	Glycol Supply from Fan Cooler	≤ 10
81.	XCR-100	Control Air to Containment	≤ 10
82.	XCR-101	Control Air to Containment Isolation	≤ 10

TABLE 3.6-1 (Continued)

CONTAINMENT ISOLATION VALVES

VALVE NUMBER		FUNCTION	ISOLATION TIME IN SECONDS
A.	PHASE "A" ISOLATION (Continued)		
83.	XCR-102	Control Air to Containment Isolation	≤ 10
84.	XCR-103	Control Air to Containment	≤ 10
B.	PHASE "B" ISOLATION		
1.	CCM-451	CCW from RCP Oil Coolers	≤ 60
2.	CCM-452	CCW from RCP Oil Coolers	≤ 60
3.	CCM-453	CCW from RCP Thermal Barrier	≤ 30
4.	CCM-454	CCW from RCP Thermal Barrier	≤ 30
5.	CCM-458	CCW to RCP Oil Coolers & Thermal Barrier	≤ 60
6.	CCM-459	CCW to RCP Oil Coolers & Thermal Barrier	≤ 60
7.	ECR-31	Containment Airborne Rad Monitor	≤ 10
8.	ECR-32	Containment Airborne Rad Monitor	≤ 10
9.	ECR-33	Containment Airborne Rad Monitor	≤ 10
10.	ECR-35	Containment Airborne Rad Monitor	≤ 10
11.	ECR-36	Containment Airborne Rad Monitor	≤ 10

TABLE 3.6-1 (Continued)

CONTAINMENT ISOLATION VALVES

VALVE NUMBER		FUNCTION	ISOLATION TIME IN SECONDS
E.	OTHER (Continued)		
18.	PA-342	Containment Service Air	NA
19.	NPX-151 VI	Dead Weight Calibrator	NA
20.	N-160	N_2 to R. C. Drain Tank	NA
21.	SM-1	Air Particle/Radio Gas Detect Return	NA
22.	N-102	N_2 to Accumulators	NA
23.	SI-171	Safety Injection Test Line	NA
24.	SI-172	Safety Injection Test Line	NA
25.	SI-194	Safety Injection Test Line	NA
26.	PW-275	Primary Wtr. to Pre. Relief Tank	NA
27.	CS-321	R.C.S. Charging	NA

TABLE 3.6-1 (Continued)

CONTAINMENT ISOLATION VALVES

VALVE NUMBER	FUNCTION	ISOLATION TIME IN SECONDS
E. OTHER (Continued)		
40. PPP-300	Instrument Penetration	NA
41. PPP-301	Instrument Penetration	NA
42. PPP-302	Instrument Penetration	NA
43. PPP-303	Instrument Penetration	NA
44. PPA-310 and PPA-311	Instrument Penetration	NA
45. PPA-312 and PPA-313	Instrument Penetration	NA
46. Blind Flange	Fuel Transfer Penetration	NA
47. Blind Flange	Ice Condenser Ice Supply	NA
48. Blind Flange	Ice Condenser Ice Return	NA
49. Blind Flange	In-Core Flux Thimble Access	NA

TABLE 3.2-1

DNB PARAMETERS

PARAMETER	LIMITS 4 Loops in Operation	LIMITS 3 Loops in Operation***
Reactor Coolant System T_{avg}^{**}	$\leq$ 576.7°F (indicated)	$\leq$ 570°F
Pressurizer Pressure	$\geq$ 2220 psia*	$\geq$ 2220 psia*

* Limit not applicable during either a THERMAL POWER ramp in excess of 5% RATED THERMAL POWER per minute or a THERMAL POWER step in excess of 10% RATED THERMAL POWER.

** Indicated average of OPERABLE instrument loops.

*** It should be noted that three loop operation using this curve is not currently allowed. The changes contained in this table are for Reference only.

REACTOR COOLANT SYSTEM

3/4.4.6 REACTOR COOLANT SYSTEM LEAKAGE

LEAKAGE DETECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

3.4.6.1 The following Reactor Coolant System leakage detection systems shall be OPERABLE:

a. One of the containment atmosphere particulate radioactivity monitoring channels (ERS-2301 or ERS-2401),

b. The containment sump level and flow monitoring system, and

c. Either the containment humidity monitor or one of the containment atmosphere gaseous radioactivity monitoring channels (ERS-2305 or ERS-2405).

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With only two of the above required leakage detection systems OPERABLE, operation may continue for up to 30 days provided grab samples of the containment atmosphere are obtained and analyzed at least once per 24 hours when the required gaseous and/or particulate radioactivity monitoring channels are inoperable; otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.4.6.1 The leakage detection systems shall be demonstrated OPERABLE by:

a. Containment atmosphere particulate and gaseous (if being used) monitoring system-performance of CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST at the frequencies specified in Table 4.3-3,

b. Containment sump level and flow monitoring system-performance of CHANNEL CALIBRATION at least once per 18 months,

c. Containment humidity monitor (if being used) - performance of CHANNEL CALIBRATION at least once per 18 months.

EMERGENCY CORE COOLING SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

2. At least once per 18 months.

Boron Injection Throttle Valves	Safety Injection Throttle Valves
Valve Number	Valve Number
1. 2-SI-141 L1	1. 2-SI-121 N
2. 2-SI-141 L2	2. 2-SI-121 S
3. 2-SI-141 L3	
4. 2-SI-141 L4	

h. By performing a flow balance test during shutdown following completion of modifications to the ECCS subsystem that alter the subsystem flow characteristics and verifying the following flow rates:

Boron Injection System Single Pump*	Safety Injection System Single Pump**
Loop 1 Boron Injection Flow 117.5 gpm	Loop 1 and 4 Cold Leg Flow ≥ 300 gpm
Loop 2 Boron Injection Flow 117.5 gpm	Loop 2 and 3 Cold Leg Flow ≥ 300 gpm
Loop 3 Boron Injection Flow 117.5 gpm	**Total SIS (single pump) flow, including miniflow, shall not exceed 700 gpm with no more than 640 gpm being delivered to the core.
Loop 4 Boron Injection Flow 117.5 gpm	

*The flow rate in each Boron Injection (BI) line should be adjusted to provide 117.5 gpm (nominal) flow into each loop. Under these conditions there is zero mini-flow and 80 gpm simulated RCP seal injection line flow. The actual flow in each BI line may deviate from the nominal so long as the difference between the highest and lowest flow is 10 gpm or less and the total flow to the four branch lines does not exceed 470 gpm. Minimum flow (total flow) required is 345.8 gpm to the three most conservative (lowest flow) branch lines.

ATTACHMENT 3

Summary Table for Cycle 5

	Region 5	Region 6	Region 7
Nominal Enrichment (w/o)	3.40	3.65	3.64
Nominal Density (% TD)	95	94	94
Pellet OD (in)	.3225	.3030	.3030
Clad OD (in)	.374	.360	.360
Diametral Gap (in)	.0065	.0070	.0070
Clad Thickness (in)	.0225	.0250	.0250
Rod Pitch (in)	.496	.496	.496
Spacer Material	Inconel	Bi-Metallic	Bi-Metallic
Fuel Supplier	W	ENC	ENC
Fuel Stack Height Nominal (in)	144	144	144
Number of Assemblies	29	72	92
Regionwise Loading (MTU)	13.286	29.077	37.154
Exposure (MWD/MT)			
BOC5	24,069	16,368	0
EOC5	34,866	35,410	19,546
Incremental	10,797	19,042	19,546