ATTACHMENT

Consumers Power Company
Palisades Plant
Docket 50-255

PROPOSED TECHNICAL SPECIFICATIONS PAGE CHANGES

May 3, 1988

9 Pages

1.1 REACTOR OPERATING CONDITIONS (Continued)

Low Power Physics Testing

Testing performed under approved written procedures to determine control rod worths and other core nuclear properties. Reactor power during these tests shall not exceed 2% of rated power, not including decay heat and primary system temperature and pressure shall be in the range of 371°F to 538°F and 415 psia to 2150 psia, respectively. Certain deviations from normal operating practice which are necessary to enable performing some of these tests are permitted in accordance with the specific provisions therefore in these Technical Specifications.

Shutdown Boron Concentrations

Boron concentration sufficient to provide $k_{eff} \leq 0.98$ with all control rods in the core and the highest worth control rod fully withdrawn.

Refueling Boron Concentration

Boron concentration sufficient to ensure that the more restrictive of the following conditions is met:

1. Either a keff of 0.95 or less (which includes a 1% delta k/k conservative allowance for uncertainties) with all control rods fully withdrawn, or

2. A boron concentration greater than or equal to 1720 ppm (which includes a 50 ppm conservative allowance for uncertainties).

Quadrant Power Tilt

The difference between nuclear power in any core quadrant and the average in all quadrants.

Assembly Radial Peaking Factor - F_r^A

The assembly radial peaking factor is the maximum ratio of individual fuel assembly power to core average assembly power integrated over the total core height, including tilt.

Total Radial Peaking Factor - F_r^T

The total radial peaking factor is the maximum product of the ratio of individual assembly power to core average assembly power times the local peaking factor for that assembly integrated over the total core height, including tilt. Local peaking factor is defined as the maximum ratio of the power in an individual fuel rod to assembly average rod power.

Interior Fuel Rod

Any fuel rod of any assembly that is not on that assembly's periphery.

Total Interior Rod Radial Peaking Factor - $F_r^{\Delta H}$

The maximum product of the ratio of individual assembly power to core average assembly power times the highest interior local peaking factor integrated over the total core height including tilt.

Axial Offset

The difference between the power in the lower half of the core and the upper half of the core divided by the sum of the powers in the lower half and upper half of the core.

Narrow Water Gap Fuel Rod

A fuel rod adjacent to the narrow interfuel assembly water gap (a gap not containing a control rod).

Narrow Water Gap Fuel Rod Peaking Factor - F_r^N

The maximum product of the ratio of individual fuel assembly power to core average fuel assembly power times the highest narrow water gap fuel rod local peaking factor integrated over the total core height including tilt.

Basis (Continued)

The setting listed in Table 2.3.1 assures that the heat transfer surface (tubes) is covered with water when the reactor is critical.

6. Low Steam Generator Pressure - A reactor trip on low steam generator secondary pressure is provided to protect against an excessive rate of heat extraction from the steam generators and subsequent cooldown of the primary coolant. The setting of 500 psia is sufficiently below the rated load operating point of 739 psia so as not to interfere with normal operation, but still high enough to provide the required protection in the event of excessively high steam flow. This setting was used in the accident analysis.(8)

7. Containment High Pressure - A reactor trip on containment high pressure is provided to assure that the reactor is shut down upon the initiation of the safety injection system. The setting of this trip is identical to that of the containment high-pressure safety injection signal.(10)

8. Low Power Physics Testing - For low power physics tests, certain tests will require the reactor to be critical at low temperature ($\geq$ 371°F) and low pressure ($\geq$ 415 psia). For these certain tests only, the thermal margin/low pressure, and low steam generator pressure trips may be bypassed in order that reactor power can be increased for improved data acquisition. Special operating precautions will be in effect during these tests in accordance with approved written testing procedures. At reactor power levels below 10^{-1}% of rated power, the thermal margin/low-pressure trip is not required to prevent fuel rod thermal limits from being exceeded. The low steam generator pressure trip is not required because the low steam generator pressure will not allow a severe reactor cooldown, should a steam line break occur during these tests.

References

(1) FSAR, Section 4.1.
(2) FSAR, Section 7.2.3.2.
(3) FSAR, Section 7.2.3.3.
(4) XN-NF-77-18, Section 3.3
(5) FSAR, Section 3.3.3.
(6) Deleted.
(7) FSAR, Section 3.3.6.

severity to the design basis accident is not possible and the engineered safeguards' systems are not required.

The SIRW tank contains a minimum of 250,000 gallons of water containing 1720 ppm boron. The limits on SIRW tank minimum volume and boron concentration ensure that in the event of a LOCA sufficient water would be available within containment to permit recirculation cooling flow to the core, 2) the reactor would remain subcritical in the cold condition following a mixing of the SIRW tank and the PCS water volumes with all control rods inserted except for the most reactive control rod, and 3) sufficient water would be available to meet hydrazine concentration requirements

Heating steam is provided to maintain the tank above 40°F to prevent freezing. The 1% boron (1720 ppm) solution will not precipitate out above 32°F. The source of steam during normal plant operation is extraction steam line in the turbine cycle.

The limits for the safety injection tank pressure and volume assure the required amount of water injection during an accident and are based on values used for the accident analyses. The minimum 186-inch level corresponds to a volume of 1103 ft^3 and the maximum 198-inch level corresponds to a volume of 1166 ft^3.

Prior to the time the reactor is brought critical, the valving of the safety injection system must be checked for correct alignment and appropriate valves locked. Since the system is used for shutdown cooling, the valving will be changed and must be properly aligned prior to start-up of the reactor.

The operable status of the various systems and components is to be demonstrated by periodic tests. A large fraction of these tests will be performed while the reactor is operating in the power range. If a component is found to be inoperable, it will be possible in most cases to effect repairs and restore the system to full operability within a relatively short time. For a single component to be inoperable does not negate the ability of the system to perform its function, but it reduces the redundancy provided in the reactor design and thereby limits the ability to tolerate additional equipment failures. To provide maximum assurance that the redundant component(s) will operate if required to do so, the redundant component(s) is to be tested prior to initiating repair of the inoperable component. If it develops that (a) the inoperable component is not repaired within the specified allowable time period; or (b) a second component in the same or related system is found to be inoperable, the reactor will initially be put in the hot shutdown

g. With fuel in the reactor vessel and with the vessel head closure bolts less than fully tensioned or with the head removed, refueling boron concentration shall be maintained in all filled portions of the primary coolant system and the refueling canal.

h. Direct communication between personnel in the control room and at the refueling machine shall be available whenever changes in core geometry are taking place.

3.8.2 If any of the conditions in 3.8.1 are not met, all refueling operations shall cease immediately, work shall be initiated to satisfy the required conditions and no operations that may change the reactivity of the core shall be made.

3.8.3. Refueling operation shall not be initiated before the reactor core has decayed for a minimum of 48 hours if the reactor has been operated at power levels in excess of 2% rated power.

3.8.4 The ventilation system and charcoal filter in the fuel storage building shall be operating whenever irradiated fuel which has decayed less than 30 days is being handled by either of the following operations:

a. Refueling operation with the equipment door open, or

b. Fuel handling in the fuel storage building.

If both fans are unavailable, any fuel movements in progress shall be completed and further fuel movements over the spent fuel storage pool shall be terminated until one fan is returned to service.

3.8.5. When spent fuel which has decayed less than one year is placed in the tilt pit storage racks, the bulk water temperature in the tilt pit storage area must be monitored continuously to assure that the water temperature does not exceed 150°F. Monitoring will continue for 24 hours after any addition of fuel to the main pool or the tilt pit or when a failure of the spent fuel pool cooling system occurs.

Basis

The equipment and general procedures to be utilized during refueling are discussed in the FSAR. Detailed instructions, the above specifications, and the design of the fuel handling equipment incorporating built-in interlocks and safety features provide assurance that no incident could occur during the refueling operations that would result in a hazard to public health and safety.(1) Whenever changes are not being made in core geometry, one flux monitor is sufficient. This permits maintenance of the instrumentation. Continuous monitoring of radiation levels and neutron flux provides immediate indication of an unsafe condition. The shutdown cooling pump is used to maintain a uniform boron concentration.

3.8 REFUELING OPERATIONS (Continued)

The shutdown margin as indicated will keep the core subcritical, even if all control rods were withdrawn from the core. During refueling, the reactor refueling cavity is filled with approximately 250,000 gallons of borated water. The boron concentration of this water is sufficient to maintain the reactor at least 5% subcritical in the cold condition with all rods withdrawn.(2) Periodic checks of refueling water boron concentration insure the proper shutdown margin. Communication requirements allow the control room operator to inform the refueling machine operator of any impending unsafe condition detected from the main control board indicators during fuel movement.

In addition to the above engineered safety features, interlocks are utilized during refueling to insure safe handling. An excess weight interlock is provided on the lifting hoist to prevent movement of more than one fuel assembly at a time. In addition, interlocks on the auxiliary building crane will prevent the trolley from being moved over storage racks containing spent fuel, except as necessary for the handling of fuel.(3) The restriction of not moving fuel in the reactor for a period of 48 hours after the power has been removed from the core takes advantage of the decay of the short half-life fission products and allows any failed fuel to purge itself of fission gases, thus reducing the consequences of a fuel handling accident.

The charcoal filter installed in the fuel handling building exhaust will handle the full (approximately 10,000) cfm capacity of the normal ventilation flow with both exhaust fans operating.(4) The normal mode of operation will require that the ventilation supply fan and one exhaust fan be manually tripped following a radioactivity release with a resulting flow of 7300 cfm through the filter. Any radioactivity which should inadvertently, during a refueling operation, pass through the normally opened equipment door would be handled by the charcoal filter in the fuel handling building. The several radiation monitors installed in the containment building and the fuel handling building will give adequate warning to the refueling crew if radioactivity is released. The efficiency of the installed charcoal filters is at least 90% for inorganic species and 70% for organic species with rated flows.(5) The offsite thyroid dose in the fuel handling accidents analyzed will be less than 15 Rem using these efficiencies should an irradiated fuel bundle be damaged in handling.(5) The fuel handling accident analysis assures that the charcoal adsorbers will perform to remove a minimum of 70% and 90% (organic and inorganic, respectively) iodine activity. Following a period of 30 days, the I-131 will have decayed by a factor of 10 and adsorption by charcoal will no longer be required. Valve alignment check sheets are completed to protect against sources of unborated water or draining of the system.

TABLE 4.2.1
Minimum Frequencies for Sampling Tests

	Test	Frequency	FSAR Section Reference
1. Reactor Coolant Samples	Gross Activity Determination	3 Times/7 days with a maximum of 72 hours between samples (T avg greater than 500°F).	None
	Gross Gamma by Fission Product Monitor	Continuous when T avg is greater thant 500°F(1).	None
	Isotopic analysis for dose equivalent I-131 concentration	1/14 days during power operation	None
	Radio chemical for E determination	1/6 months (2)	None
	Isotopic analysis for iodine, including I-131, 133, 135	a) Once/4 hours, whenever dose equivalent I-131 exceeds 1.0 μCI/gram, and b) One sample between 2 and 6 hours following a thermal power change exceeding 15% of rated thermal power within a one hour period.	
	Chemistry (Cl and 02)	3 times/7 days with a maximum of 72 hours between samples (T avg greater than 210°F).	
	Chemistry (Fl)	Once/30 days and following modifications or repair to the primary coolant system involving welding.	
2. Reactor Coolant Boron	Boron Concentration	Twice/Week	None
	Refueling Boron Concentration(8)	a) Once/12 hours during reactor head removal and during refueling operations in the reactor, and b) Twice/week with fuel in the reactor vessel and vessel closure bolts less than fully tensioned or with the head removed	3.3.2.1

Table 4.2.1
Minimum Frequencies for Sampling Tests

	Test	Frequency	FSAR Section Reference
3. SIRW Tank Water Sample	Boron Concentration	Monthly	None
4. Concentrated Boric Acid Tanks	Boron Concentration	Monthly	None
5. SI Tanks	Boron Concentration	Monthly	6.1.2
6. Spent Fuel Pool	Boron Concentration	Monthly(7)	9.4
	Bulk Water Temperature	Continuously when bundles are stored in tilt pit racks with less than one year decay(6)	None
7. Secondary Coolant	Gas Radioactivity be Air Ejector Gas Monitor	Continuous(5) during power operation	None
	Coolant Gross Radioactivity	3 times/7 days with a maximum of 72 hours between samples	None
	Isotopic Analysis for Dose Equivalent I-131 Concentration	a) 1 per 31 days, whenever the gross activity determination indicates iodine concentrations greater than 10% of the allowable limit b) 1 per 6 months, whenever the gross activity determination indicates iodine concentrations below 10% of the allowable limit.	

Table 4.2.1
Minimum Frequencies for Sampling Tests

		Test	Frequency	FSAR Section Reference
8.	Liquid Radwaste	Radioactivity Analysis	Prior to release of each batch	11.1
9.	Radioactive Gas Decay	Radioactivity Analysis	Prior to release of each batch	11.1
10.	Stack-Gas Monitor Particulate Samples	Iodine 131 and Particulate Radioactivity	Weekly(4)	11.1

(1) A daily sample shall be obtained and analyzed if fission product monitor is out of service.

(2) After at least 2 EFPD and at least 20 days since the last shutdown of longer than 48 hours.

(4) When iodine or particulate radioactivity levels exceed 10 percent of limit in Specification 3.9.6 and 3.9.9, the sampling frequency shall be increased to a minimum of once each day.

(5) If the air ejector gas monitor is out of service, the secondary coolant gross radioactivity shall be measured once per day to evaluate steam generator leak tightness.

(6) Reference Specification 3.8.5 for maximum bulk water temperature and monitoring requirements.

(7) Reference Section 5.4.2f of the Design Features for minimum boron concentration (≥ 1720 ppm).

(8) Reference Section 1.1 Reactor Operating Conditions and Specification 3.8 for refueling boron requirements.