Public Service Company of Colorado

January 29, 1985
Fort St. Vrain
Unit No. 1
NLO-85-1

Regional Administrator
REGION IV
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011

Attn: Mr. Richard Ireland

SUBJECT: Fort St. Vrain Technical
Specification Upgrade Program
Sections 2.0, 4.0, and 5.0

Dear Mr. Ireland:

In accordance with the agreements reached during the November 29-30, 1984 meeting regarding the Fort St. Vrain Technical Specification Upgrade Program, the attached Technical Specification Sections are submitted for your information. Please note that additional minor changes to these sections are expected, as the Technical Specification Upgrade Program progresses. We will continue to provide these changes to you as they are developed.

If you have any questions concerning the attached information, please call me at (303) 785-2223, extension 251.

Very Truly yours,

Jim Gramling

Jim Gramling
Supervisor,
Nuclear Licensing-Operation

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2.0 DEFINITIONS

The defined terms of this section appear in capitalized type and are applicable throughout these Technical Specifications.

ACTION

2.1 ACTION shall be that part of a Specification which prescribes remedial measures required under designated conditions.

CHANNEL CALIBRATION

2.2 A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel such that it responds within the required range and with the required accuracy to known values of input. The CHANNEL CALIBRATION shall encompass the entire channel including the sensors and alarm, interlock and/or trip functions and may be performed by any series of sequential, overlapping, or total channel steps such that the entire channel is calibrated.

CHANNEL CHECK

2.3 A CHANNEL CHECK shall be the qualitative assessment of channel behavior during operation by observation. This determination shall include, where possible, comparison of the channel indication and/or status with other indications and/or status derived from independent instrument channels measuring the same parameter.

CHANNEL FUNCTIONAL TEST

2.4 A CHANNEL FUNCTIONAL TEST shall be the injection of a simulated 'gnal into the channel as close to the sensor as practicable, considering systems design, to verify OPERABILITY including alarm, interlock and/or trip functions.

COMPARISON REGION

2.5 A COMPARISON REGION shall be a core refueling region that is used to determine the INDIVIDUAL REFUELING REGION OUTLET TEMPERATURE for another region whose measured temperature is unreliable. It is defined in Specification LCO 4.1.7.

2.0 DEFINITIONS

CORE ALTERATION

2.6 CORE ALTERATION shall be the movement or manipulation of any component within the PCRV that alters the core reactivity, while fuel is in the vessel. Suspension of CORE ALTERATION shall not preclude completion of movement of a component to a safe conservative position or condition.

CORE AVERAGE TEMPERATURE

2.7 a) During SHUTDOWN and REFUELING, CORE AVERAGE TEMPERATURE shall be the arithmetic average of the CORE AVERAGE INLET TEMPERATURE and the CORE AVERAGE OUTLET TEMPERATURE.

b) During STARTUP, LOW POWER, and POWER OPERATION, CORE AVERAGE TEMPERATURE shall be a calculated value based on average core inlet and outlet temperature, primary coolant flow adjusted for bypass flow, and reactor power.

CORE AVERAGE INLET TEMPERATURE

2.8 The CORE AVERAGE INLET TEMPERATURE shall be the arithmetic average of the operating circulator inlet temperatures, with appropriate corrections for circulator power input, steam generator regenerative heat load, and PCRV liner cooling system heat loss.

CORE AVERAGE OUTLET TEMPERATURE

2.9 The CORE AVERAGE OUTLET TEMPERATURE ($\overline{T}$ out) shall be the arithmetic average of the INDIVIDUAL REFUELING REGION OUTLET TEMPERATURES.

2.0 DEFINITIONS

DOSE EQUIVALENT I-131

2.10 DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microcurie/gram) which alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in Table III of TID-14844, "Calculation of Distance Factors for Power and Test Reactor Sites." (or in Table E-7 of Nuclear Regulatory Commission Regulatory Guide 1.109, Revision 1, October 1977.)

$\overline{E}$ - AVERAGE DISTINTEGRATION ENERGY

2.11 $\overline{E}$ is defined in Specification LCO 4.2.8.

FREQUENCY NOTATION

2.12 The FREQUENCY NOTATION specified for the performance of Surveillance Requirements shall correspond to the intervals defined in Specification SR 5.0.3, or as otherwise specified in the Surveillance Requirement.

2.0 DEFINITIONS

INDIVIDUAL REFUELING REGION OUTLET TEMPERATURE

2.13 The INDIVIDUAL REFUELING REGION OUTLET TEMPERATURE shall be defined as follows:

a) For Regions 1 through 19 and 21 through 31, the measured refueling outlet temperature.

b) For Regions 20 and 32 through 37, whichever of the following temperatures is hottest: 1) the measured refueling region outlet temperature or 2) the refueling region outlet temperature based upon the following quantities:

1) The ratio of the relative power in each of these regions to that in their COMPARISON REGIONS as determined from physics calculations.

2) The ratio of the helium flow rate through each of these regions to that through their COMPARISON REGIONS as determined based upon inlet orifice valve positions.

3) The measured refueling region outlet temperatures of their COMPARISON REGION.

IRRADIATED FUEL

2.14 IRRADIATED FUEL shall be fuel that has a radiation level ≥100 mr/hr measured perpendicularly one foot from a fuel element surface.

LIMITING SAFETY SYSTEM SETTING

2.15 Limiting Safety System Settings shall be the trip settings specified in Specification SL 3.3, for the automatic protective devices that ensure corrective action to prevent exceeding the SAFETY LIMITS.

2.0 DEFINITIONS

OPERABLE - OPERABILITY

2.16 A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s), and when all necessary attendant instrumentation, controls, electrical power, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its function(s) are also capable of performing their related support function(s).

OPERATING - IN OPERATION

2.17 A system, subsystem, train, component or device shall be OPERATING or IN OPERATION when it is actually performing its specified function(s).

OPERATIONAL MODE - MODE

2.18 An OPERATIONAL MODE (i.e. MODE) shall correspond to any one inclusive combination of Reactor Mode Switch Setting, Interlock Sequence Switch Setting, and power level, specified in Table 2.1.

PLANT PROTECTIVE SYSTEM

2.19 The PLANT PROTECTIVE SYSTEM shall be the reactor protective circuitry and the circuitry that protects various plant components from major damage. This system includes (1) scram, (2) loop shutdown, (3) circulator trip, and (4) rod withdraw prohibit functions.

PRIMARY COOLANT FLOW

2.20 The PRIMARY COOLANT FLOW shall be the sum of the helium massflow (lb/hr) for each of the operating circulators. The design primary coolant flow at full power is 3.5×10^6 lb/hr. See Specification SL 3.1. Core Flow is defined in Specification LCO 4.1.9.

2.0 DEFINITIONS

REACTOR PRESSURES

2.21 REACTOR PRESSURES shall be;

a) Normal Working Pressure (NWP) = 688 psig
(Normal Operating Pressure(NOP))

b) Peak Working Pressure (PWP) = 704 psig

c) Reference Pressure (RP) = 845 psig

RP is the maximum internal pressure allowed over the PCRV 30-year operating life except for the initial pressure test.

RATED THERMAL POWER

2.22 RATED THERMAL POWER shall be the maximum design reactor core heat generated by nuclear fission, equal to 842 MWt.

REFUELING CYCLE

2.23 REFUELING CYCLE shall be that interval of time between successive scheduled refuelings of a significant (≥ one-tenth) portion of the core.

REPORTABLE EVENT

2.24 A REPORTABLE EVENT shall be any of those conditions that require NRC notification or written report under the requirements of 10 CFR 50.72 and 10 CFR 50.73. See Specification AC 7.5.2.

SAFE SHUTDOWN COOLING

2.25 SAFE SHUTDOWN COOLING shall be the removal of core stored energy and decay heat using Safe Shutdown Equipment. The reactivity condition in the core during SAFE SHUTDOWN COOLING shall be $K_{eff} \leq 0.99$.

2.0 DEFINITIONS

SAFETY LIMIT

2.26 SAFETY LIMITS shall be limitations on process variables as identified in Specifications SL 3.1 and SL 3.2. These limitations are defined to protect the fuel particle integrity and the integrity of the reactor coolant system boundaries.

SHUTDOWN MARGIN

2.27 SHUTDOWN MARGIN shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming that all OPERABLE control rod pairs are fully inserted.

2.0 DEFINITIONS

STAGGERED TEST BASIS

2.28 A STAGGERED TEST BASIS shall consist of:

a. A test schedule for n systems, subsystems, trains, or other designated components obtained by dividing the specified test interval into n equal subintervals,

b. The testing of one system, subsystem, train, or other designated component at the beginning of each subinterval.

SURVEILLANCE INTERVAL

2.29 The SURVEILLANCE INTERVAL shall be the period of time between performance of Surveillance Requirements. Specific intervals are indentified in Specification SR 5.0.3.

THERMAL POWER

2.30 THERMAL POWER shall be the total reactor core heat generated by nuclear fission, as determined by an appropriate heat balance calculation, or from calibrated nuclear instrumentation.

THREE ROOM CONTROL COMPLEX

2.31 The THREE ROOM CONTROL COMPLEX shall be that area of the turbine building which includes the Control Room, the Auxiliary Electric Room, and the 480 Volt Switchgear Room.

TRIP

2.32 TRIP shall be the switching of an instrument or a device with two stable states from its normal state to its abnormal state. The result of a TRIP on a system level may be control rod scram, pressure relief, loop shutdown, etc.

TABLE 2.1

OPERATIONAL MODES

MODE	INTERLOCK SEQUENCE SWITCH SETTINGS	REACTOR MODE SWITCH SETTING	% RATED THERMAL POWER*
1. POWER OPERATION	POWER	RUN	>30%
2. LOW POWER	LOW POWER	RUN	5%< PWR ≤30%
3. STARTUP	STARTUP	RUN	≤5%
4. SHUTDOWN	**	OFF	0
5. REFUELING ***	**	FUEL LOADING	0

*Excluding decay heat.
**ISS may be in any postion in MODES 4 and 5.
***Includes Reactor Internal Maintenance. See Specification LCO 4.7.1.

4.0 LIMITING CONDITIONS FOR OPERATION

4.0.1 The limiting Conditions for Operation specified in this section define the lowest functional capability or performance levels necessary to assure safe operation of the facility. These Limiting Conditions for Operation provide for operation with sufficient redundancy so that further, but limited, degradation of equipment capability or performance, or the occurrence of a postulated incident will not prevent a safe reactor shutdown.

4.0.2 These Limiting Conditions for Operation do not replace plant operating procedures. Plant operating procedures establish plant operating conditions with at least the capability and performance specified in these Limiting Conditions for Operation.

4.0.3 Compliance with the Limiting Conditions for Operation contained in the succeeding Specifications is required during the OPERATIONAL MODES or other conditions specified therein, except that upon failure to meet the Limiting Conditions for Operation, the associated ACTION requirements shall be met.

4.0.4 Noncompliance with a Specification shall exist when the requirements of the Limiting Condition for Operation and associated ACTION requirements are not met within the specified time intervals. If the Limiting Condition for Operation is restored prior to expiration of the specified time intervals, completion of the ACTION requirements is not required.

4.0.5 When a Limiting Condition for Operation is not met, except as provided in the associated ACTION requirements, within 24 hours, the unit shall be placed in a MODE in which the Specification does not apply, either at least STARTUP or SHUTDOWN, as applicable. This Specification is not applicable in SHUTDOWN or REFUELING.

4.0.6 Entry into an OPERATIONAL MODE or other specified condition shall not be made unless the conditions for the Limiting Condition for Operation are met without reliance on provisions contained in the ACTION requirements. This provision shall not prevent passage through or to OPERATIONAL MODES as required to comply with ACTION requirements. Exceptions to these requirements are stated in the individual Specifications.

5.0 SURVEILLANCE REQUIREMENTS

5.0.1 The Surveillance Requirements specified in this section define the tests, calibrations, and inspections which are necessary to verify the performance and OPERABILITY of equipment essential to safety during designated OPERATIONAL MODES, or required to prevent or mitigate the consequences of abnormal situations.

5.0.2 Surveillance Requirements shall be applicable only during the OPERATIONAL MODES or other conditions specified for individual Limiting Conditions for Operation unless otherwise stated in an individual Surveillance Requirement.

5.0.3 SURVEILLANCE FREQUENCIES

Where surveillance frequencies or FREQUENCY NOTATIONS are identified, surveillances shall be performed at least once per SURVEILLANCE INTERVAL as specified below. Any surveillance frequency preceded by "at least" shall be considered a nominal time interval to which the extension permitted by SR 5.0.4 may be applied. Other intervals may be specified in the Surveillance Requirements.

FREQUENCY NOTATION	SURVEILLANCE INTERVAL
S	12 hours
D	24 hours
W	Weekly interval
M	31 days
Q	92 days
SA	184 days
A	366 days
R	Refueling cycle
S/U	Prior to each reactor startup, if not performed within previous 7 days.

5.0.4 Each Surveillance Requirement shall be performed within the specified time interval with:

a. A maximum allowable extension not to exceed 25% of the surveillance interval, and

b. The combined time interval for any 3 consecutive surveillance intervals not to exceed 3.25 times the specified surveillance interval.

5.0.5 Failure to perform a Surveillance Requirement within the specified time interval shall constitute a failure to meet the OPERABILITY requirements for a Limiting Condition for Operation. Exceptions to these Surveillance Requirements are stated in the individual specifications. Surveillance Requirements do not have to be performed on inoperable equipment.

5.0.6 Entry into an OPERATIONAL MODE or other specified condition shall not be made unless the Surveillance Requirement(s) associated with the Limiting Condition for Operation have been performed within the stated surveillance interval except surveillances that require entry into the applicable OPERATIONAL MODE shall be performed within 72 hours after entry into that MODE.

5.0.7 Implementation of the in-service inspection (ISI) surveillance requirements shall be per one of the following criteria, unless otherwise indicated:

ISI Criterion A: Requirements have been satisfied.

ISI Criterion B: Requirements have been satisfied.

ISI Criterion C: The surveillance requirement shall be implemented before the beginning of fuel cycle 5.

ISI Criterion D: The surveillance requirement shall be implementated in the existing schedule of surveillance tests.