UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 1000
ARLINGTON, TEXAS 76011

PUBLIC SERVICE COMPANY OF COLORADO

DOCKET 50-267

FORT ST. VRAIN NUCLEAR GENERATING STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 43
License DPR-34

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Public Service Company of Colorado (the licensee) dated March 14, 1984, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, Facility Operating License DPR-34 is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.D.(2) is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 43, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Richard P. Ireland
for Eric H. Johnson, Chief
Reactor Project Branch 1

Attachment:
Changes to the Technical Specifications

Date of Issuance: June 5, 1984

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 43 TO FACILITY OPERATING LICENSE DPR-34

DOCKET 50-267

Replace the following pages of the Appendix A Technical Specifications with the attached pages as indicated. The revised pages are identified by amendment number and contain vertical lines indicating the areas of change.

Remove	Insert
ii	ii
4.4-1	4.4-1
4.4-2	4.4-2
4.4-8	4.4-8
4.4-8a	---
4.4-9	4.4-9*
4.4-10	4.4-10
4.4-11	4.4-11*
4.4-12	4.4-12*
4.4-13	4.4-13*
4.4-14	4.4-14
4.4-15	4.4-15*
4.4-16	4.4-16
4.4-17	4.4-17
---	4.4-18*

*page number change only

PAGE

4.4 INSTRUMENTATION AND CONTROL SYSTEMS - LIMITING CONDITIONS FOR OPERATION

Applicability

Applies to the plant protective system and other critical instrumentation and controls.

Objective

To assure the operability of the plant protective system and other critical instrumentation by defining the minimum operable instrument channels and trip settings.

Specification LCO 4.4.1 - Plant Protective System Instrumentation, Limiting Conditions for Operation

The limiting conditions for the plant protective system instrumentation are shown on Tables 4.4-1 through 4.4-4. These tables utilize the following definitions:

Degree of Redundancy - Difference between the number of operable channels and the minimum number of operable channels which when tripped will cause an automatic system trip.

Operable Channel - A channel is operable if it is capable of fulfilling its design functions.

Inoperable Channel - Opposite of operable channel.

Tables 4.4-1 through 4.4-4 are to be read in the following manner: If the minimum operable channels or the minimum degree of redundancy for each functional unit of a table cannot be met or cannot be bypassed under the stated permissible bypass conditions, the following action shall be taken:

For Table 4.4-1, the reactor shall be shut down within 12 hours, except that to facilitate maintenance on the Plant Protective System (PPS) moisture monitors, the moisture monitor input trip functions to the Plant Protective System which cause scram, loop shutdown, circulator trip, and steam water dump may be disabled for up to 72 hours. During the time that the Plant Protective System moisture monitor trips are disabled, an observer in direct communication with the reactor operator shall be positioned in the control room in the location of pertinent instrumentation. The observer shall continuously monitor the primary coolant moisture levels indicated by at least two moisture monitors and the primary coolant pressure indications, and shall alert the reactor operator to any indicated moisture or pressure change.

For Table 4.4-2, the affected loop shall be shut down within 12 hours.

For Table 4.4-3, the affected helium circulator shall be shut down within 12 hours.

For Table 4.4-4, the reactor shall be shut down within 24 hours.

If, within the indicated time limit, the minimum number of operable channels and the minimum degree of redundancy can be reestablished, the system is considered normal and no further action needs to be taken.

Specification LCO 4.4.1

NOTES FOR TABLES 4.4.1 THROUGH 4.4-4

(a) See Specification LSSS3.3 for trip setting.

(b) Two thermocouples from each loop, total of four, constitute one channel. For each channel, two thermocouples must be operable in at least one operating loop for that channel to be considered operable.

(c) With one primary coolant high level moisture monitor tripped, trips of either loop primary coolant moisture monitors will cause full scram. Hence, number of operable channels (1) minus minimum number required to cause scram (0) equals one, the minimum degree of redundancy.

(d) Both 480 volt buses 1A and 1C loss of voltage for no longer than 35 seconds.

(e) One channel consists of one undervoltage relay from each of the two 480 volt buses (two undervoltage relays per channel). These relays fail open which is the direction required to initiate a scram.

(f) The inoperable channel must be in the tripped condition, unless the trip of the channel will cause the protective action to occur. Failure to trip the inoperable channel requires taking the appropriate corrective action as listed on Pages 4.4-1 and 4.4-2 within the specified time limit.

(g) RWP bypass permitted if the bypass also causes associated single channel scram.

(h) Permissible Bypass Conditions:

I. Any circulator buffer seal malfunction.
II. Loop hot reheat header high activity.
III. As stated in LCO 4.9.2

(j) Items 1a., 1c., or 1d. accompanied by 2a., 2b., 2c., or 2d. on Table 4.4-2 are required for loop 1 shutdown.. Items 1b., 1e. or 1f., accompanied by 2a., 2b., 2c., or 2d. on Table 4.4-2 are required for loop 2 shutdown.

(k) One operable helium circulator inlet thermocouple in an operable loop is required for the channel to be considered operable.

(m) Low Power RWP bistable resets at 4% after reactor power initially exceeds 5%.

(n) Power range RWP bistables automatically reset at 10% after reactor power is decreased from greater than 30%. The RWP may be manually reset between 10% and 30% power.

(p) Item 7a. must be accompanied by item 7c for loop 1 shutdown.
Item 7b. must be accompanied by item 7c for loop 2 shutdown.

NOTES FOR TABLES 4.4-1 through 4.4-4 (continued)

(r) Separate instrumentation is provided on each circulator for this functional unit. Only the affected helium circulator shall be shut down within 12 hours if the indicated requirements are not met.

(s) Each channel has 2 microphones running in parallel with one ultrasonic amplifier. For the channel to be considered operable, both microphones and the amplifier must be operable.

(t) A primary coolant dew point moisture monitor shall not be considered operable unless the following conditions are met:

1)

Reactor Power Range	Minimum Sample Flow
Startup to 2%	1 scc/sec.
>2% - 5%	5 scc/sec.
>5% - 20%	15 scc/sec.
>20% - 35%	30 scc/sec.
>35% - 100%	50 scc/sec.

2) Minimum flow of item 1) is alarmed in the control room and the alarm is set in accordance with the power ranges specified.

3) The ambient temperatures indicated by both temporary thermocouples mounted on the flow sensors in penetrations B1 and B3 are less tha 185°F.

4) Fixed alarms of 1 scc/sec. and 75 scc/sec. are operable.

Basis for Specification LCO 4.4-1

The plant protection system automatically initiates protective functions to prevent established limits from being exceeded. In addition, other protective instrumentation is provided to initiate action which mitigates the consequences of accidents. This specification provides the limiting conditions for operation necessary to preserve the effectiveness of these instrument systems.

If the minimum operable channels or the minimum degrees of redundancy for each functional unit of a table cannot be met or cannot be bypassed under the stated permissible bypass conditions, the following actions shall be taken:

For Table 4.4-1, the reactor shall be shut down within 12 hours.

For Table 4.4-2, the affected loop shall be shut dowr within 12 hours.

For Table 4.4-3, the affected helium circulator shall be shut down within 12 hours.

For Table 4.4-4, the reactor shall be shut down within 24 hours.

If, within the indicated time limit, the minimum number of operable channels and the minimum degree of redundancy can be reestablished, the system is considered normal and no further action needs to be taken.

The trip level settings are included in this section of the specification. The bases for these settings are briefly discussed below. Additional discussions pertaining to the scram, loop shutdown and circulator trip inputs may be found in Section 7.1 of the FSAR. High moisture instrumentation is discussed in Section 7.3 of the FSAR.

a) Scram Inputs

Manual Scram is provided to give the operator means for emergency shutdown of the reactor independent of the automatic reactor protective system.

Startup Channel-High Countrate is provided as a scram input during fuel loading and zero power operations.

Linear Channel Flux-High (See Technical Specification LSSS 3.3).

High Reactor Moisture (See Technical Specification LSSS 3.3).

High Reheat System Temperature (See Technical Specification LSSS 3.3).

Low Reactor Pressure is an indication of possible helium leakage from the system. A scram is required because the reactor is in danger of being inadequately cooled which would increase the hazard associated with activity release from the PCRV. The trip is programmed with plant load (similar to the high pressure trip) to reduce the response time when the plant is at high power. The low pressure trip point is 50 psi below normal during operation between 30% and 100% rated power which is lower than the pressures reached on normal transient conditions.

High Primary Coolant Pressure (See Technical Specification LSSS 3.3).

Low Hot Reheat Steam Pressure is an indication of either a cold reheat steam line rupture or a hot reheat steam line rupture and necessitates plant shutdown due to the potential loss of steam turbine circulator motive power. The trip point is selected to be below normal operating levels which vary over a wide range.

Low Main Steam Pressure is an indication of main steam line rupture or loss of feedwater flow and necessitates plant shutdown due to potential loss of steam turbine circulator motive power. The trip point is selected to be below normal operating levels.

Plant Electrical System Power Loss requires a scram to prevent any power-to-flow mismatches from occurring. A 30-second delay is provided following a power loss before the scram is initiated to allow the emergency diesel generator to start. If it does start, the scram is avoided.

Two-Loop Trouble. Operation on one loop at a maximum of about 50% power may continue following the shutdown of the other loop (unless preceded by scram as in the case of high moisture.) Onset of trouble in the remaining loop (two-loop trouble) results in a scram. Trouble is defined as a signal which normally initiates a loop shutdown. Similarly, simultaneous shutdown signals to both loops result in shutdown of one of the two loops only and a reactor scram.

High Temperature in the pipe cavity would indicate the presence of an undetected steam leak or the failure of the steam pipe rupture detection system to differentiate in which loop the leak had occurred and to shut the faulty loop down.

The setpoint has been set above the temperature that would be expected to occur in the pipe cavity if the steam leak were detected and the faulty loop shutdown for all steam leaks except those of major proportion or due to an offset rupture of one of the steam lines.

An undetected steam leak or pipe rupture under the PCRV within the support ring would also be detectable in the pipe cavity, therefore only one set of sensors and logic is required to monitor both areas.

b) Loop Shutdown Inputs

Steam Pipe Rupture In The Reactor Building necessitates shutdown of the leaky loop to terminate the pressure and temperature buildup within the building. Ultrasonic noise caused by escaping steam in conjunction with a pressure or temperature rise will cause the appropriate loop to shutdown.

The trip of the ultrasonic detection system is set at a level which corresponds to 9 v. dc. output from the ultrasonic amplifier. The pressure and temperature trips are set above normal operating building pressure and temperature levels.

Shutdown of Both Circulators is a loop shutdown input which is necessary to insure proper action of the reactor protective (scram) system (through the two-loop trouble scram) in the event of the loss of all circulators and low feedwater flow.

The remaining loop shutdown inputs are equipment protection items which are included because their malfunction could prevent a scram due to loss of the two-loop trouble scram input.

c) Circulator Shutdown Inputs

All circulator shutdown inputs (except circulator speed high on water turbines) are equipment protection items which are tied to two loop trouble through the loop shutdown system. These items are included in Table 4.4-3 because a malfunction could prevent a scram due to loss of the two loop trouble scram input. Circulator speed high on water turbines is included to assure continued core cooling capability on loss of steam drive.

d) Rod Withdraw Prohibit Inputs

Startup Channel Countrate-Low is provided to prevent control rod withdrawal and reactor startup without adequate neutron flux indication. The trip level is selected to be above the background noise level.

Linear Channel (5% Power) directs the operator's attention to either a downscale failure of a power range channel or improper positioning of the I.S.S.

Linear Channel (30% Power) is provided to prevent control rod withdrawal if reactor power exceeds the I.S.S. limit for the "Low Power" position.

Specification LCO 4.4-2 - Control Room Temperature - Limiting Condition for Operation

The reactor shall not be operated at power if the control room temperature exceeds 120°F.

Basis for Specification LCO 4.4.2

The limiting temperature in the control room is established to assure no over temperature condition which might cause damage to essential instrumentation and control equipment. Satisfactory operation of safety related control and electrical equipment located in the control room for temperatures up to 120°F is discussed in FSAR Amendment No. 19, Question 7.5.

Specification LCO 4.4-3 - Area Radiation Monitors - Limiting Condition for Operation

At least one area radiation monitor from each group shall be operable. If any area monitor becomes inoperable, a portable monitor equipped with an alarm shall be placed in the area, and all personnel notified of the condition.

Basis for Specification LCO 4.4.3

The grouping of area radiation monitors is such that each monitor in the group supplements the others in the group.

The notification of personnel of any malfunction, coupled with the provision of a portable instrument, or a replacement, adequately ensures protection for personnel, and detection of abnormalities.

The detectors are grouped as follows:

GROUP NO.	DETECTOR NO.	LOCATION
1	RT-93250-1	4881 Refueling Machine Control Room
1	RT-93252-1	4881 East Wall
1	RT-93251-1	4864 Reactor Plant Exhaust Filter Room
1	RT-93252-2	4864 South Stairwell
2	RT-93250-3	4856 Hot Service Facility
2	RT-93251-3	4368 Hot Service Facility
3	RT-93250-2	4854 East Walkway
3	RT-93250-4	4839 East Walkway
3	RT-93251-4	4816 Office Building
3	RT-93252-4	4829 Analytic Instrument Room
4	RT-93250-13	4791 Condensate Demineralizers
4	RT-93250-5	4829 Main Control Room
4	RT-93251-6	4791 Grade Floor North
4	RT-93252-6	4791 South Stairwell
5	RT-93251-5	4781 East Walkway
5	RT-93251-7	4781 Valve Operating Station - West
5	RT-93252-7	4781 Valve Operating Station - East
6	RT-93250-8	4771 Northeast Walkway
6	RT-93251-8	4771 Radiochem Lab
6	RT-93251-9	4740 North Stairwell

Specification LCO 4.4-4 - Seismic Instrumentation - Limiting Conditions for Operation

The reactor shall not be operated at power unless three (3) of the six (6) seismic instruments are operable.

Basis for Specification LCO 4.4.4

The monitoring provided by three (3) seismic instruments, in the event of an earthquake, is adequate to determine the ground acceleration at the site.

Specification LCO 4.4.5 - Analytical System Primary Coolant Moisture Instrumentation - Limiting Condition for Operation

The reactor shall not be operated between a shutdown condition and 5% power during startup unless the primary coolant is being sampled by two monitors, normally from the Analytical System.

If one of the two moisture monitors above becomes inoperable while increasing reactor power between shutdown and 5%, a second monitor shall be made operable or the reactor shall be shut down within 12 hours.

If all available moisture monitors become inoperable, during the above-mentioned power increase, the reactor shall be shut down immediately.

During reactor power reduction from 5% power to shutdown conditions, at least one moisture monitor must be in operation. If all available moisture monitors become inoperable, the reactor shall be shut down immediately.

Basis for Specification LCO 4.4.5

During reactor operation, primary coolant moisture monitors are required below 5% reactor power for administration of LCO 4.2.11. One moisture monitor is sufficient to detect primary coolant moisture content on a continual basis.

Two analytical system moisture monitors will normally be in service sampling primary coolant. These analytical moisture monitors do not provide any automatic action (other than an alarm function). Alternate moisture monitors can also be placed in service sampling primary coolant, such as through re-alignment of a moisture monitor in the analytical system or utilization of operable (as defined in LCO 4.4.1, Note (t)) plant protective system dewpoint moisture monitors placed in the "indicate" mode (note that in the "indicate" mode a trip is input to the PPS). Operator action is required to take corrective action in the event of high moisture levels in the primary coolant in the shutdown to 5% reactor power range.

Operator reaction time to shut down the reactor in the event of high moisture levels in the primary coolant system at reactor power levels of 5% or less are acceptable. As indicated by Figure 4-2 in Document GA-A13677, Test and Evaluation of the Fort St. Vrain Dew Point Moisture Monitors System, one of the limiting parameters for determining required response times to shut the reactor down in the event of high primary coolant moisture is graphite oxidation. The allowable weight loss of the hottest fuel element in the core is 1%.

At operating temperatures experienced at 5% reactor power, response times to scram the reactor to limit oxidation to 1% by weight is approximately 6700 seconds, well within the carabilities of an operator.

Specification LCO 4.4.6 - Room Temperature, 480 Volt Switchgear

The reactor shall not be operated at power if the 480 V switchgear room temperature exceeds 120°F.

Basis for Specification LCO 4.4.6

The most limiting temperature in the 480 V switchgear room is 120°F. This limit is established to assure satisfactory operation of safety-related control and electrical equipment located there during reactor power operation.