VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

November 5, 2002

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Serial No. 02-688
NLOS/GDM R0
Docket Nos. 50-280
50-281
License Nos. DPR-32
DPR-37

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 AND 2
PROPOSED TECHNICAL SPECIFICATION CHANGE
DELETION OF MONTHLY ANALOG ROD POSITION TEST

Pursuant to 10 CFR 50.90, Virginia Electric and Power Company (Dominion) requests amendments, in the form of changes to the Technical Specifications (TS) to Facility Operating Licenses Numbers DPR-32 and DPR-37 for Surry Power Station Units 1 and 2, respectively. The proposed change will delete the monthly analog rod position test for the control rod bottom bistables. A digital upgrade modification to the Rod Position Indication (RPI) System is being implemented during the next refueling outage for each unit, thus making the monthly analog rod position test no longer necessary. A discussion of the proposed Technical Specifications change is provided in Attachment 1. The marked-up and proposed TS pages reflecting the proposed change are provided in Attachments 2 and 3, respectively.

We have evaluated the proposed Technical Specifications change and have determined that it does not involve a significant hazards consideration as defined in 10 CFR 50.92. The basis for this determination is provided in Attachment 1. We have also determined that operation with the proposed change will not result in any significant increase in the amount of effluents that may be released offsite and no significant increase in individual or cumulative occupational radiation exposure will occur. Therefore, the proposed amendment is eligible for categorical exclusion as set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment is needed in connection with the approval of the proposed change.

The typical time frame for implementing Surry operating license amendments is 30 days after issuance. As noted above, the deletion of the monthly analog rod position test for the control rod bottom bistables is dependent upon the implementation of the digital upgrade modification to the RPI System being implemented during the next refueling outage for each unit. Consequently, a different implementation schedule is requested

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for the license amendments associated with the proposed change. Specifically, we request implementation of the license amendment to delete the monthly analog rod position test to coincide with the completion of the Spring 2003 refueling outage for Surry Unit 1 and the Fall 2003 refueling outage for Surry Unit 2. We will contact the NRC Project Manager to discuss the implementation schedule prior to NRC approval of the proposed change.

If you have any further questions or require additional information, please contact us.

Very truly yours,

Leslie N. Hartz
Vice President – Nuclear Engineering
Attachments

Commitment made in this letter: None

cc: U.S. Nuclear Regulatory Commission
Region II
Sam Nunn Atlanta Federal Center
Suite 23T85
61 Forsyth Street, SW
Atlanta, Georgia 30303

Mr. R. A. Musser
NRC Senior Resident Inspector
Surry Power Station

Commissioner
Bureau of Radiological Health
1500 East Main Street
Suite 240
Richmond, VA 23218

SN: 02-688
Docket Nos.: 50-280/281
Subject: Proposed TS Change
Deletion of Monthly Analog Rod Position Test

COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Leslie N. Hartz, who is Vice President - Nuclear Engineering, of Virginia Electric and Power Company. She has affirmed before me that she is duly authorized to execute and file the foregoing document in behalf of that Company, and that the statements in the document are true to the best of her knowledge and belief.

Acknowledged before me this 5th day of November, 2002.

My Commission Expires: March 31, 2004.

Maggie McClure
Notary Public

(SEAL)

Attachment 1

Discussion of Change

Surry Power Station
Units 1 and 2

Virginia Electric and Power Company
(Dominion)

DISCUSSION OF CHANGE

Introduction

Pursuant to 10 CFR 50.90, Virginia Electric and Power Company (Dominion) requests a change to Technical Specifications (TSs) Table 4.1-1, Item 9, Analog Rod Position, for Surry Power Station Units 1 and 2. The proposed change will delete the monthly analog rod position test that verifies the operability of the rod bottom bistables, since the current TS-required shiftly check and channel calibration are sufficient to verify the operability of the Individual Rod Position Indication (IRPI) System. This proposed TS change is appropriate since a modification to the IRPI System, being implemented during the next refueling outage for each unit, makes verification of the rod bistable action on a monthly basis no longer necessary. The monthly test is no longer necessary because the design of the new system includes self-test features and eliminates the concern of electronic drift.

The proposed change has been reviewed, and it has been judged to involve no significant hazards consideration, as defined in 10 CFR 50.92, in that elimination of the rod bottom bistable surveillance will not adversely affect the design functions of rod bottom detection or indication. In addition, it has been determined that the change qualifies for categorical exclusion from an environmental assessment as set forth in 10 CFR 51.22(c)(9). Therefore, no environmental impact statement or environmental assessment is needed in connection with the approval of the proposed change.

Background

Control and shutdown rod position accuracy is essential during power operation. Power peaking, ejected rod worth, or shutdown margin limits may be violated in the event of a design basis accident with control or shutdown rods operating outside their limits and being undetected. Therefore, the acceptance criteria for rod position indication is that rod positions must be known with sufficient accuracy to verify the core is operating within the group sequence, overlap, design peaking limits, ejected rod worth and with minimum shutdown margin. The rod positions must also be known to verify the alignment limits are preserved. Rod positions are continuously monitored via the Rod Position Demand Counter System (commonly called the group step demand counters) and the Individual Rod Position Indication (IRPI) System to provide operators with information that ensures the unit is operating within the bounds of the accident analysis assumptions. TS 3.12.E provides the Limiting Conditions for Operation for the two control rod position indication systems.

Technical Specifications Table 4.1-1 specifies the minimum frequencies for performing channel checks, calibrations and functional tests of instrument channels. Item No. 9 in this table relates to the Analog Rod Position channels associated with the Rod Position Indication System. (Item No. 10 addresses the group step demand counters.) In the Remarks section of Item No. 9, it states that a monthly channel functional test is required to verify proper rod bottom bistable action. This test is performed to ensure

that the rod bottom setpoint has not "drifted" from its calibrated value.

As discussed in greater detail below, a modification is being implemented during the next respective refueling outages for Surry Unit 1 and Surry Unit 2 that will replace the electronic components in the IRPI cabinets, including the rod bottom bistable modules. The design of the new digital-based electronic equipment being installed includes self-test features and effectively removes the concern of rod bottom setpoint drift, thus eliminating the need to perform the existing monthly rod bottom bistable action surveillance test required by TSs.

Description of Proposed Change

Technical Specifications Table 4.1-1, Minimum Frequencies for Check, Calibrations and Test of Instrument Channels, Item No. 9, Analog Rod Position, is being revised to delete the requirement to perform a monthly channel functional test. The accompanying Item No. 3 in the Remarks section of the table associated with the Analog Rod Position channel, which notes that the monthly test is for verifying the operability of the rod bottom bistables, is also being deleted. Remark No. 4 in this same section will be renumbered as Remark No. 3.

Existing TS

9. Analog Rod Position	*S(1,2) (4)	R	M(3)	1) With step counters 2) Each six inches of rod motion when data logger is out of service 3) Rod bottom bistable action 4) N.A. when reactor is in HOT, INTERMEDIATE OR COLD SHUTDOWN

Proposed TS

9. Analog Rod Position	*S(1,2) (3)	R	N.A.	1) With step counters 2) Each six inches of rod motion when data logger is out of service 3) N.A when reactor is in HOT, INTERMEDIATE OR COLD SHUTDOWN

Safety Implications of the Proposed Change

Reactivity control for the reactor core is provided by boron dissolved in the reactor coolant, movable neutron-absorbing control rod assemblies and fixed burnable poison rods. The control rod assemblies provide reactivity control for fast shutdown, reactivity changes associated with changes in the average coolant temperature above hot-zero temperature conditions (since core average coolant temperature is increased with power level), reactivity associated with any void area, and any reactivity changes associated with power coefficient of reactivity. The control rod assemblies are divided into two categories according to their function. Thirty-two control rod assemblies compensate for changes in reactivity due to variations in operating conditions, such as power or temperature. They are divided into four control banks, containing two groups, each consisting of four rod assemblies. Sixteen rod assemblies, in two shutdown banks

containing two groups each, provide additional shutdown reactivity, and are termed shutdown assemblies. The total shutdown worth of all the control rod assemblies is specified to provide adequate shutdown with the most reactive assembly stuck out of the core.

When the reactor is critical, means for showing the relative reactivity status are provided by control rod assembly bank positions displayed in the control room. The position of the control rod assembly banks is directly related to the reactivity status of the reactor when at power. The axial position of the control rod assembly banks is determined by two separate and independent systems: the Rod Position Demand Counter System and the Individual Rod Position Indication (IRPI) System. These two systems provide the control room operator with redundant rod position indication to ensure compliance with the rod alignment and insertion limits specified in TS 3.12 and assumed in the plant accident analyses.

The Rod Position Demand Counter System counts the pulses from the Rod Control System that moves the rods. There is one group step demand counter for each group of rods. Individual rods in a group all receive the same signal to move and should therefore all be at the same position indicated by the group step demand counter for that group. The Rod Position Demand Counter System is considered highly precise ($\pm$2 steps).

The IRPI system provides an accurate indication of actual rod position, but at a lower precision than the group step demand counters. This system is based on inductive analog signals from a series of coils based along a hollow tube and is capable of monitoring rod position as specified in TS 3.12.E.

Rod bottom bistables are used in the IRPI System to annunciate an alarm in the Main Control Room (MCR), as well as actuate rod bottom lights locally at the IRPI panels and on the benchboard in the control room. The MCR rod bottom lights are located below each of the individual rod position indicators on the benchboard.

A design change is being implemented that will replace the electronic components in the existing Surry Units 1 and 2 IRPI System cabinets. The present rod bottom bistables, which are the subject of the monthly surveillance for each control rod, are Magnetics Micro-Sentry modules located in the IRPI cabinets. These modules are analog circuit boards that have potentiometers and other electrical components that provide the rod bottom setpoint to which the rod position signal is compared to generate a rod bottom alarm and light indication for the rod experiencing the rod bottom condition. The monthly surveillance verifies that the rod bottom setpoint has not "drifted" from its calibrated value. The new replacement digital-based IRPI System has redundant programmable logic controllers (PLCs) that receive the analog signal (voltage) from the individual IRPI detectors via a detector interface board and compensate the signal for the detector temperature. The rod position signal is then linearized. (Note: There is a different linearization table for each rod). This rod position signal is then compared to a rod bottom setpoint that is a digital input to the PLCs via an interface on the maintenance and test panel (MTP) that will be located in the IRPI system cabinets. The self-test features, internal diagnostics, and supervisory functions

continuously monitor the system for correct operation, thus assuring rapid fault detection of detectable failures. Application software is exercised and tested by a series of structured software engineering and factory acceptance tests. The new digital-based IRPI System, is continuously self-tested and the rod bottom setpoint is not subject to drift. Consequently, it is proposed that the monthly test for verification of the operability of the rod bottom bistable action contained in Item No. 9 of TS Table 4.1-1 be deleted.

Although this proposed change deletes the monthly rod bottom bistable test, the once per shift check that verifies rod position (by comparing IRPI and group step demand counter positions) and the 18-month channel calibration will continue to be performed. These surveillances, in addition to the continuous self-test capability discussed above, will continue to provide assurance of the operability of the IRPI System.

It should be noted that the equipment and self-test functions incorporated into the new digital-based IRPI System at Surry are similar to those discussed in CE Nuclear Power Topical Report CENPD-396-P for the Common Qualified Platform (Common Q). The CE Topical Report was reviewed by the NRC, and the NRC's Safety Evaluation (SE) is documented in Reference 7. The SE states in Section 4.1.1.3 that the self-testing features of Common Q were determined to be adequate with respect to the self-test issues in NRC Branch Technical Position HICB-17, titled Guidance on Self-test and Surveillance Test Provisions. The NRC's SE accepted the use of Common Q in different applications (i.e., PAMS, CPCS, RPS, PPS, and ESFAS), however its acceptability in those applications supports the proposed TS change associated with our use of similar equipment in the IRPI System.

In addition, this proposed TS change is consistent with NUREG-1431 for the (Improved) Standard Technical Specifications for Westinghouse Plants. The change is also consistent with the North Anna Power Station Technical Specifications, which were recently converted to Improved Technical Specifications (ITS) and approved by the NRC on April 5, 2002 by Amendments 231/212.

No Significant Hazards Consideration

The proposed change to the Technical Specifications deletes the unnecessary monthly analog rod position test for the rod bottom bistables. Dominion has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The proposed change deletes the monthly analog rod position test that verifies the operation of the rod bottom bistables. However, the TSs still require bistable action to be functionally verified to ensure operability on an 18-month frequency as part of the overall analog rod position indication system calibration. Furthermore, the TS-required monthly rod bottom bistable action test was being performed to address

instrument drift in the rod bottom setpoint, which will essentially be eliminated by the design of new digital-based IRPI electronics being installed. Consequently, elimination of the monthly rod bottom bistable action test will not result in the failure of any plant structures, systems, or components and does not have a detrimental impact on the integrity of any plant structure, system, or component that initiates an analyzed event. The proposed change will not alter the operation of or otherwise increase the failure probability of any plant equipment that initiates an analyzed accident. As a result, the probability of any accident previously evaluated is not significantly increased.

Consequences of analyzed events are the result of the plant being operated within assumed parameters at the onset of any event, and the successful functioning of at least one train or division of the equipment credited with mitigating the event. These changes do not impact the capability of the credited equipment to perform, nor is there any change in the likelihood that credited equipment will fail to perform. Deletion of the monthly rod bottom bistable action test does not affect the ability of the control rods to perform their function. Surveillance tests to verify the operability of the IRPI System are still being performed. Furthermore, the Rod Position Demand Counter System provides redundant control rod position indication. As a result, the consequences of any accident previously evaluated are not significantly affected by the proposed change.

2. Does the proposed license amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change deletes the monthly surveillance of rod bottom bistable action in the Individual Rod Position Indication system. This change does not alter the methods governing normal plant operation. The IRPI provides indication of rod position, is one of two independent systems that are provided to detect a rod drop and is the backup to detection by rapid reduction of ex-core neutron flux. The dropping of a rod assembly can occur when the rod drive mechanism is de-energized from the Rod Control System. This accident has been evaluated in the UFSAR and in all cases the DNB design bases is met by demonstration that the DNBR is greater than the limiting value. Thus, this change deleting the monthly analog rod position test does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

   The digital-based IRPI system continues to meet the design function of providing reliable control rod position indication. The proposed change and associated replacements with digital-based IRPI system electronics provides enhanced testing through the automatic self-testing diagnostic features. Consequently, the overall ability to detect failures is not degraded. Therefore, the change deleting the monthly analog rod position test does not involve a significant reduction in the margin of safety.

Based on the above, Dominion concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

Environmental Assessment

This amendment request meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) as follows:

(i) The amendment involves no significant hazards consideration.

As described above, the proposed change to delete a monthly rod position surveillance test that no longer provides any meaningful information does not involve a significant hazards consideration.

(ii) There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

The proposed change to delete the monthly analog rod position test does not involve the installation of any new equipment or the modification of any equipment that may affect the types or amounts of effluents that may be released offsite. Therefore, there is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

(iii) There is no significant increase in individual or cumulative occupation radiation exposure.

The proposed change to delete the monthly analog rod position test does not involve plant physical changes that affect radiation exposure or introduce any new mode of plant operation. Therefore, there is no significant increase in individual or cumulative occupational radiation exposure.

Based on the above, Dominion concludes that the proposed change meets the criteria specified in 10 CFR 51.22 for a categorical exclusion from the requirements of 10 CFR 51.22 relative to requiring a specific environmental assessment by the Commission.

Conclusion

The proposed TS change deletes the monthly analog rod position test for the rod bottom bistables, which is no longer necessary due to an IRPI System modification. The design of the new system eliminates the concern for electronic drift and includes self-test features. Enhanced failure detection by the automatic self-testing features of the replacement digital based IRPI system will not alter assumptions relative to the mitigation of an accident or transient event and will not adversely affect normal plant operation and testing. Therefore, the proposed change is consistent with the current

safety analysis assumptions.

The Station Nuclear Safety and Operating Committee (SNSOC) and the Management Safety Review Committee (MSRC) have reviewed the proposed change to delete the monthly analog rod position test and have concluded that this change does not involve a significant hazards consideration and will not endanger the health and safety of the public.

References

1. UFSAR Section 1.4.12 - Instrumentation and Control Systems
2. UFSAR Section 7.2.2.4 - Rod Drop Detection
3. UFSAR Section 7.3.2.3.2 - Rod Position Indication System
4. UFSAR Section 14.2.4 - Control-Rod Assembly Drop/Misalignment
5. Surry Power Station Units 1 and 2 Technical Specifications, Section 3.12 - Control Rod Assemblies and Power Distribution Limits, and associated Basis
6. NUREG 1431, Standard Technical Specifications Westinghouse Plants, Rev. 2
7. Safety Evaluation by the Office of NRR, CE Nuclear Power Topical Report CENPD-396-P Common Qualified Platform, transmitted by an August 11, 2000 letter from S. A. Richards, NRC, to P. Richardson, Westinghouse.

Attachment 2

Mark-up of Technical Specifications Changes

Surry Power Station
Units 1 and 2

Virginia Electric and Power Company
(Dominion)

TABLE 4.1-1

MINIMUM FREQUENCIES FOR CHECK, CALIBRATIONS AND TEST OF INSTRUMENT CHANNELS

	Channel Description	Check	Calibrate	Test	Remarks
1.	Nuclear Power Range	S	D(1,5) Q(3,5) R(4)	Q(2)	1) Against a heat balance standard, above 15% RATED POWER 2) Signal at ΔT; bistable action (permissive, rod stop, trip) 3) Upper and lower chambers for symmetric offset by means of the movable incore detector system 4) Neutron detectors may be excluded from CHANNEL CALIBRATION 5) The provisions of Specification 4.0.4 are not applicable
2.	Nuclear Intermediate Range (below P-10 setpoint)	*S	R(2,3)	P(1)	1) Log level; bistable action (permissive, rod stop, trip) 2) Neutron detectors may be excluded from CHANNEL CALIBRATION 3) The provisions of Specification 4.0.4 are not applicable
3.	Nuclear Source Range (below P-6 setpoint)	*S	R(2,3)	P(1)	1) Bistable action (alarm, trip) 2) Neutron detectors may be excluded from CHANNEL CALIBRATION 3) The provisions of Specification 4.0.4 are not applicable
4.	Reactor Coolant Temperature	*S	R	Q(1) Q(2)	1) Overtemperature ΔT 2) Overpower ΔT
5.	Reactor Coolant Flow	S	R	Q	
6.	Pressurizer Water Level	S	R	Q	
7.	Pressurizer Pressure (High & Low)	S	R	Q	
8.	4 KV Voltage and Frequency	N.A.	R	Q(1)	1) Setpoint verification not required
9.	Analog Rod Position	*S(1,2) (4) 3	R	M(3) N.A.	1) With step counters 2) Each six inches of rod motion when data logger is out of service 3) Rod bottom bistable action 4) N.A. when reactor is in HOT, INTERMEDIATE OR COLD 3 SHUTDOWN

Attachment 3

Proposed Technical Specifications Changes

Surry Power Station
Units 1 and 2

Virginia Electric and Power Company
(Dominion)

TABULATION OF CHANGES

License No. DPR-32 / Docket No. 50-280
License No. DPR-37 / Docket No. 50-281

Summary of Changes:

The proposed change to the Surry Power Station Technical Specifications is being made to delete the monthly analog rod position test for the control rod bottom bistables. This test will no longer be necessary based on a digital upgrade modification to the Individual Rod Position Indication System.

DELETE	DATED	SUBSTITUTE
TS 4.1-6	08-31-01	TS 4.1-6

TABLE 4.1-1

MINIMUM FREQUENCIES FOR CHECK, CALIBRATIONS AND TEST OF INSTRUMENT CHANNELS

	Channel Description	Check	Calibrate	Test	Remarks
1.	Nuclear Power Range	S	D(1,5) Q(3,5) R(4)	Q(2)	1) Against a heat balance standard, above 15% RATED POWER 2) Signal at ΔT; bistable action (permissive, rod stop, trip) 3) Upper and lower chambers for symmetric offset by means of the movable incore detector system 4) Neutron detectors may be excluded from CHANNEL CALIBRATION 5) The provisions of Specification 4.0.4 are not applicable
2.	Nuclear Intermediate Range (below P-10 setpoint)	*S	R(2,3)	P(1)	1) Log level; bistable action (permissive, rod stop, trip) 2) Neutron detectors may be excluded from CHANNEL CALIBRATION 3) The provisions of Specification 4.0.4 are not applicable
3.	Nuclear Source Range (below P-6 setpoint)	*S	R(2,3)	P(1)	1) Bistable action (alarm, trip) 2) Neutron detectors may be excluded from CHANNEL CALIBRATION 3) The provisions of Specification 4.0.4 are not applicable
4.	Reactor Coolant Temperature	*S	R	Q(1) Q(2)	1) Overtemperature ΔT 2) Overpower ΔT
5.	Reactor Coolant Flow	S	R	Q	
6.	Pressurizer Water Level	S	R	Q	
7.	Pressurizer Pressure (High & Low)	S	R	Q	
8.	4 KV Voltage and Frequency	N.A.	R	Q(1)	1) Setpoint verification not required
9.	Analog Rod Position	*S(1,2) (3)	R	N.A.	1) With step counters 2) Each six inches of rod motion when data logger is out of service 3) N.A. when reactor is in HOT, INTERMEDIATE OR COLD SHUTDOWN

Amendment Nos.