VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

July 21, 2005

10CFR50.92

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

Serial No. 05-422
SPS-LIC/CGL R0'
Docket Nos. 50-280
50-281
License Nos. DPR-32
DPR-37

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 AND 2
PROPOSED TECHNICAL SPECIFICATION CHANGE
REVISION OF ACCIDENT MONITORING INSTRUMENTATION LISTING, ALLOWED OUTAGE TIMES, REQUIREMENTS, AND SURVEILLANCES

Pursuant to 10CFR50.90, Virginia Electric and Power Company (Dominion) requests an amendment to Facility Operating License Numbers DPR-32 and DPR-37 in the form of changes to the Technical Specifications (TS) for Surry Power Station Units 1 and 2, respectively. The proposed change revises the accident monitoring instrumentation listing, allowed outage times (AOTs), requirements, and surveillances to be consistent with the requirements of the Improved Technical Specifications (ITS) for post accident monitoring instrumentation. TS 3.7.E, TS Table 3.7-6, and TS Table 4.1-2 are affected by this change. Likewise, the TS 3.7 Basis is being revised to address the proposed revision of TS 3.7.E and Table 3.7-6. Editorial changes are also being made in the Bases for TS 3.7 and 4.1 for clarity. The TS Basis changes are provided to the NRC for information only. A discussion of the proposed TS change is provided in Attachment 1. The marked-up and proposed TS pages are provided in Attachments 2 and 3, respectively.

The proposed change has been reviewed and approved by the Station Nuclear Safety and Operating Committee, as well as the Management Safety Review Committee.

We have evaluated the proposed TS change and have determined that it does not involve a significant hazards consideration as defined in 10CFR50.92. The basis for our 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. Therefore, the proposed amendment is eligible for categorical exclusion as set forth in 10CFR51.22(c)(9). Pursuant to

10CFR51.22(b), no environmental impact statement or environmental assessment is needed in connection with the approval of the proposed change.

Approval of the proposed change is requested by May 31, 2006, with a 60-day implementation period following issuance of the TS amendments.

If you have any questions or require additional information regarding this TS change request, please contact Mr. Gary Miller at (804) 273-2771.

Very truly yours,

L. N. Hartz
Vice President – Nuclear Engineering

Attachments:
1. Discussion of Change
2. Marked-up Technical Specifications Pages
3. Proposed Technical Specifications Pages

Commitments made in this letter: None

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

Mr. N. P. Garrett
NRC Senior Resident Inspector
Surry Power Station

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

Mr. S. R. Monarque
NRC Project Manager
U. S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Mail Stop 8-H12
Rockville, MD 20852

Mr. R. E. Martin
NRC Lead Project Manager – North Anna and Surry
U. S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Mail Stop 8-G9A
Rockville, MD 20852

Serial No. 05-422
Docket Nos. 280, 281
Subject: TS Change Request – PAM Instrumentation

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 the 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 forgoing document in behalf of that Company, and that the statements in the document are true and correct to the best of her knowledge, information, and belief.

Acknowledged before me this 21ST day of July, 2005.

My Commission Expires: May 31, 2006

Vicki L. Hull
Notary Public

(SEAL)

Attachment 1

Discussion of Change

Revision of Accident Monitoring Instrumentation Listing, Allowed Outage Times, Requirements, and Surveillances

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 the Technical Specifications (TS) for Surry Power Station Units 1 and 2. The proposed change revises the accident monitoring instrumentation listing, allowed outage times (AOTs), requirements, and surveillances to be consistent with the requirements of the Improved Technical Specifications (ITS) for post accident monitoring instrumentation. TS 3.7.E, TS Table 3.7-6, and TS Table 4.1-2 are affected by this change. In addition, the TS 3.7 Basis is being revised to address the proposed revision to TS 3.7.E and Table 3.7-6. Editorial changes are also being made in the Bases for TS 3.7 and 4.1 for clarity. The TS Basis changes are provided to the NRC for information only.

The proposed change has been reviewed with respect to 10CFR50.92, and it has been determined that no significant hazards consideration exists. In addition, it has been determined that the change qualifies for categorical exclusion from an environmental assessment as set forth in 10CFR51.22(c)(9); therefore, no environmental impact statement or environmental assessment is needed in connection with the approval of the proposed change.

Background

The current AOTs and requirements in TS 3.7.E for items 1 through 9 in TS Table 3.7-6 are consistent with the requirements in NUREG-0452, Revision 4, titled Standard Technical Specifications for Westinghouse Pressurized Water Reactors. Like NUREG-0452, TS 3.7.E allows 7 days to restore an inoperable accident monitoring instrumentation channel to operable status; if the instrument channel cannot be restored to operable status within 7 days, plant shutdown is required. If the number of operable channels is less than the minimum operable channels specified in TS Table 3.7-6, 48 hours is allowed to restore the inoperable channel(s) to operable status; if the channel(s) cannot be restored to operable status within 48 hours, plant shutdown is required.

For items 10 through 15 in TS Table 3.7-6, the current requirements in the Note 1 to TS Table 3.7-6 parallel the requirements in NUREG-1431, Revision 3.0, titled Standard (Improved) Technical Specifications – Westinghouse Plants. Similar to NUREG-1431, for the number of operable channels less than the specified minimum operable channels, the Note 1 to TS Table 3.7-6 requires initiation of a preplanned alternate method of monitoring, restoration of the inoperable channel to operable status within 7 days; if the channel cannot be restored to operable status within 7 days, preparation and submittal of a Special Report to the NRC is required within 30 days; the Special Report shall outline the action taken, the cause of the inoperability, and the plans and schedule for restoring the system to operable.

As noted in the Introduction and as detailed herein, the proposed TS change revises the accident monitoring instrumentation listing, AOTs, requirements, and surveillances for consistency with ITS.

Design Basis

The primary purpose of accident monitoring instrumentation is to display unit parameters that provide information required by the control room operators during and following accident conditions. In response to NUREG-0737 and RG 1.97, Revision 3, a programmatic approach was developed in defining the RG 1.97-required equipment for Surry. The Surry RG 1.97 program review examined existing instrumentation with respect to the RG 1.97 design and qualification requirements. The operability of RG 1.97 instrumentation ensures that sufficient information is available on selected unit parameters to monitor and assess unit status and response during and following an accident. The availability of accident monitoring instrumentation is important so that the consequences of corrective actions can be observed and the need for and magnitude of further actions can be determined.

The proposed change expands the accident monitoring instrumentation listed in TS Table 3.7-6 to include the Category 1 Regulatory Guide (RG) 1.97 variables (except the containment hydrogen analyzers, which were removed from the TS by TS Amendments 239/238 dated March 22, 2005). RG 1.97 applied a graded approach to post-accident indication by using a matrix of variable types verses variable categories. RG 1.97 delineates design and qualification criteria for the instrumentation used to measure five variable types (Types A, B, C, D, and E). These criteria are divided into three separate categories (Categories 1, 2, and 3), providing a graded approach that depended on the importance to safety of the measurement of a specific variable. Consistent with NUREG-1431 (Specification 3.3.3 Bases addressing Post Accident Monitoring Instrumentation), Category 1 variables are defined as follows:

Category 1 - are the key variables deemed risk significant because they are needed to:

- Determine whether other systems important to safety are performing their intended functions,
- Provide information to the operators that will enable them to determine the likelihood of a gross breach of the barriers to radioactivity release, and
- Provide information regarding the release of radioactive materials to allow early indication of the need to initiate action necessary to protect the public and to estimate the magnitude of any impending threat.

The RG 1.97 criteria on redundancy requirements apply to Category 1 variables only and address single-failure criteria and supporting features, including power sources. Failures of the instrumentation, its supporting features, and/or its power source resulting in less than the required number of channels necessitate entry into the required actions.

The proposed change also deletes the Category 2 RG 1.97 variables from the TS Table 3.7-6. The Categories 2 and 3 RG 1.97 variables are addressed in a licensee controlled document and are defined as follows:

Category 2 – provides less stringent requirements and generally applies to instrumentation designated for indicating system operating status.

Category 3 – is the least stringent and is applied to backup and diagnostic instrumentation.

Licensing Basis

The original Surry TS 3.7 included no accident monitoring instrumentation requirements. Subsequent to the Three Mile Island Unit 2 incident in March 1979 and in response to NUREG-0578, TS 3.7 was revised by TS Amendments 72/73, dated September 29, 1981, to include accident monitoring instrumentation requirements. TS Table 3.7-6 was added and included auxiliary feedwater flow rate, reactor coolant system subcooling margin monitor, power operated relief valve (PORV) position indicator (primary and backup detectors), PORV block valve position indicator, and safety valve position indicator (primary and backup detectors). The associated AOTs and requirements added in TS 3.7 were:

- With the number of operable channels less than the total number of channels shown in TS Table 3.7-6, either restore the inoperable channel(s) to operable status within 7 days or be in at least hot shutdown within the next 12 hours.
- With the number of operable channels less than the minimum operable channels specified in TS Table 3.7-6, either restore the inoperable channel(s) to operable status within 48 hours or be in at least hot shutdown within the next 12 hours.

In addition, TS Table 4.1-2 was added with surveillance requirements for the instrumentation in TS Table 3.7-6.

TS Amendments 100/99, dated October 15, 1984, added TS requirements related to NUREG-0737. TS Table 3.7-6 was revised to add reactor vessel coolant level monitor, containment pressure, containment water level (narrow range and wide range), containment high range radiation monitor, process vent high range effluent monitor, ventilation vent high range effluent monitor, main steam high range radiation monitors (Units 1 and 2), and auxiliary feed pump steam turbine exhaust radiation monitor. The AOTs and requirements from TS Amendments 72/73 were applicable for the level and pressure instrumentation. For the radiation monitors, Note 1 to Table 3.7-6 identified actions to be taken with the number of operable channels less than the specified minimum operable channels; the actions were to a) initiate the preplanned alternate method of monitoring the appropriate parameter(s) within 72 hours, b) either restore the inoperable channel to operable status within 7 days of the event, or c) prepare and submit a Special Report to the NRC (outlining the action taken, the cause of the inoperability, and the plans and schedule for restoring to operable) within 30 days following the event. In addition, TS Table 4.1-2 was revised to add surveillance requirements for reactor vessel coolant level monitor, containment pressure, and

containment water level (narrow range and wide range); surveillance requirements were not added for the various radiation monitors because TS Table 4.1-1 at that time specified surveillance requirements for process and effluent radiation monitoring systems.

To further address NUREG-0737, Item II.F.2, TS Amendment 118/118, dated March 15, 1988, added core exit thermocouples in the accident monitoring instrumentation listed in TS Table 3.7-6. Note 2 was also added to TS Table 3.7-6 indicating that a minimum of 2 core exit thermocouples per quadrant is required for the channel to be operable. The AOTs and requirements from TS Amendments 72/73 were applicable for this instrumentation. This amendment also made editorial changes in TS Table 3.7-6 to reflect the consolidation of the existing reactor vessel coolant level monitor, the existing reactor coolant system subcooling margin monitor, and the added core exit thermocouples into one system called the inadequate core cooling monitor. TS Table 4.1-2 was revised to add surveillance requirements for the inadequate core cooling monitor.

As part of the recirculation mode transfer function TS changes in TS Amendments 180/180, dated July 8, 1993, TS Table 3.7-6 items for PORV position indicator (primary and backup detectors) were combined into one item for PORV position indicator to accurately reflect the valve position indication devices for the PORVs. To meet environmental qualification requirements, redundant limit switches were installed to provide the required position indication.

TS Amendment 193/193, dated October 27, 1994, added the recirculation spray heat exchanger service water outlet radiation monitors to TS Table 3.7-6 with the Note 1 actions being applicable. TS Table 4.1-2 was also revised to include surveillance requirements for the recirculation spray heat exchanger service water outlet radiation monitors, as well as for the other radiation monitors in TS Table 3.7-6. Note that the surveillance requirements for the process and effluent radiation monitoring systems were incorporated into TS Table 4.1-1 as part of the Radiological Effluent Technical Specifications (RETS) change by TS Amendments 97/96, dated June 19, 1984. Subsequently, TS Amendments 155/154, dated April 17, 1991, removed RETS from the TS and inadvertently deleted the accident monitoring radiation monitor surveillance requirements from the TS.

Description of Proposed TS Revisions

Details of the specific revisions are provided as follows:

TS 3.7.E currently states:

E. The accident monitoring instrumentation listed in Table 3.7-6 shall be OPERABLE in accordance with the following:

1. *With the number of OPERABLE accident monitoring instrumentation channels less than the Total Number of Channels shown in Table 3.7-6, items 1 through 9, either restore the inoperable channel(s) to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours.*

2. *With the number of OPERABLE accident monitoring instrumentation channels less than the Minimum OPERABLE Channels requirement of Table 3.7-6, items 1 through 9, either restore the inoperable channel(s) to OPERABLE status within 48 hours or be in at least HOT SHUTDOWN within the next 12 hours.*

In addition to the TS 3.7.E requirements, with the number of operable channels less than required by the Minimum OPERABLE Channels requirements, Note 1 of TS Table 3.7-6 currently requires the following:

a. *Initiate the preplanned alternate method of monitoring the appropriate parameter(s), within 72 hours*
b. *Either restore the inoperable channel to operable status within 7 days of the event, or*
c. *Prepare and submit a Special Report to the commission pursuant to specification 6.2 within 30 days following the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to operable.*

TS Table 3.7-6 item 10 currently requires the actions in Note 1, b and c only. Items 11 through 15 currently require the actions in Note 1, a, b, and c.

TS 3.7.E is revised as follows:

E. Prior to the Reactor Coolant System temperature and pressure exceeding 350°F and 450 psig, respectively, the accident monitoring instrumentation listed in Table 3.7-6 shall be OPERABLE in accordance with the following:

1. With one required channel inoperable, either restore the inoperable channel to OPERABLE status within 30 days or submit a report to the NRC within the next 14 days. The report shall outline the cause of inoperability and the plans and schedule for restoring the inoperable channel to OPERABLE status.

2. With two required channels inoperable, either:
   a. Restore an inoperable channel(s) to OPERABLE status within 7 days or initiate the preplanned alternate method of monitoring the appropriate function and submit a report to the NRC within the next 14 days. The report shall outline the preplanned alternate method of monitoring the function, the cause of inoperability, and the plans and schedule for restoring an inoperable channel to OPERABLE status.
   b. If no preplanned alternate method of monitoring the function is available, restore an inoperable channel(s) to OPERABLE status within 7 days or be in

HOT SHUTDOWN within the next 6 hours and be less than 350°F and 450 psig within the following 12 hours.

The TS 3.7 Basis regarding Accident Monitoring Instrumentation currently states:

The operability of the accident monitoring instrumentation in Table 3.7-6 ensures that sufficient information is available on selected plant parameters to monitor and assess these variables during and following an accident. On the pressurizer PORVs, the pertinent channels consist of redundant limit switch indication. The pressurizer safety valves utilize an acoustic monitor channel and a downstream high temperature indication channel. This capability is consistent with the recommendations of Regulatory Guide 1.97, "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plant Conditions During and Following an Accident," December 1975, and NUREG-0578, "TMI-2 Lessons Learned Task Force Status Report and Short Term Recommendations." Potential gaseous effluent release paths are equipped with radiation monitors to detect and measure concentrations of noble gas fission products in plant gaseous effluents during and following an accident. The gaseous effluent release paths monitored are the process vent stack, ventilation vent stack, main steam safety valve and atmospheric dump valve discharge and the AFW pump turbine exhaust. The potential liquid effluent release paths via the service water discharge from the recirculation spray heat exchangers are equipped with radiation monitors to detect leakage of recirculated containment sump fluid. These radiation monitors and the associated sample pumps are required to operate during the recirculation heat removal phase following a loss of coolant accident in order to detect a passive failure of a recirculation spray heat exchanger tube. These monitors meet the requirements of NUREG-0737.

The TS 3.7 Basis regarding Accident Monitoring Instrumentation is revised as follows:

The primary purpose of accident monitoring instrumentation is to display unit parameters that provide information required by the control room operators during and following accident conditions. In response to NUREG-0737 and Regulatory Guide (RG) 1.97, Revision 3, a programmatic approach was developed in defining the RG 1.97-required equipment for Surry. The Surry RG 1.97 program review examined existing instrumentation with respect to the RG 1.97 design and qualification requirements. The operability of RG 1.97 instrumentation ensures that sufficient information is available on selected unit parameters to monitor and assess unit status and response during and following an accident. The availability of accident monitoring instrumentation is important so that the consequences of corrective actions can be observed and the need for and magnitude of further actions can be determined.

RG 1.97 applied a graded approach to post-accident indication by using a matrix of variable types versus variable categories. RG 1.97 delineates design and qualification criteria for the instrumentation used to measure five variable types (Types A, B, C, D, and E). These criteria are divided into three separate categories

(Categories 1, 2, and 3), providing a graded approach that depended on the importance to safety of the measurement of a specific variable. Category 1 variables, listed in Table 3.7-6, are defined as follows:

Category 1 - are the key variables deemed risk significant because they are needed to:

- Determine whether other systems important to safety are performing their intended functions,
- Provide information to the operators that will enable them to determine the likelihood of a gross breach of the barriers to radioactivity release, and
- Provide information regarding the release of radioactive materials to allow early indication of the need to initiate action necessary to protect the public and to estimate the magnitude of any impending threat.

The RG 1.97 criteria on redundancy requirements apply to Category 1 variables only and address single-failure criteria and supporting features, including power sources. Failures of the instrumentation, its supporting features, and/or its power source resulting in less than the required number of channels necessitate entry into the required actions.

The 30 day allowed outage time applies when one (or more) function(s) in Table 3.7-6 has one required channel that is inoperable. The 30 day allowed outage time to restore one inoperable required channel to OPERABLE status is appropriate considering the remaining channel is OPERABLE, the passive nature of the instrument (i.e., no automatic action is assumed to occur from this instrumentation), and the low probability of an event requiring accident monitoring instrumentation during this interval. The 7 day allowed outage time applies when one (or more) function(s) in Table 3.7-6 has two required channels that are inoperable. The 7 day allowed outage time to restore one of the two inoperable required channels to OPERABLE status is appropriate based on providing a reasonable time for the repair and the low probability of an event requiring accident monitoring instrument operation. Long-term operation with two required channels inoperable in a function and with an alternate indication is not acceptable because the alternate indication may not fully meet the performance qualification requirements applied to the accident monitoring instrumentation. Requiring restoration of one of the two inoperable channels limits the risk that the accident monitoring instrumentation function could be in a degraded condition should an accident occur. If there is no preplanned alternate, the 7 day allowed outage time is followed by a requirement to be in hot shutdown within the next 6 hours and be less than 350°F and 450 psig within the following 12 hours. If the 30 day allowed outage time or 7 day allowed outage time to restore an inoperable channel to OPERABLE status is exceeded and either a redundant channel or a preplanned alternate method of monitoring is OPERABLE, a report to the NRC within the next 14 days is required. The report to the NRC in lieu of a shutdown is appropriate because the instrument functional capability has not been lost and given the low likelihood of unit conditions that would require the information provided by the accident monitoring instrumentation.

Note that the Categories 2 and 3 RG 1.97 variables are addressed in a licensee

controlled document and are defined as follows:

Category 2 – provides less stringent requirements and generally applies to instrumentation designated for indicating system operating status.

Category 3 – is the least stringent and is applied to backup and diagnostic instrumentation.

In the TS 3.7 Basis, an "Explosive Gas Monitoring" heading is added for the paragraph discussing explosive gas monitoring for clarity.

The revisions made to TS Table 3.7-6 are shown on the marked-up page TS 3.7-29 and Insert C in Attachment 2. For consistency with ITS, the following revisions are made in TS Table 3.7-6:

- A Note is added stating that separate entry into Specification 3.7.E is allowed for each function listed in the table.
- The listing of accident monitoring instrumentation in these tables is expanded to reflect the Category 1 RG 1.97 variables (except the containment hydrogen analyzers). The instrumentation functions being deleted from TS Table 3.7-6 are Category 2 RG 1.97 variables, which will be addressed in a licensee controlled document. Note that Category 3 RG 1.97 variables are also addressed in the licensee controlled document.
- The current listings of total number of channels and minimum operable channels are replaced with the (number of) required channels.

In the TS 4.1 Basis, a "Testing" heading, which was deleted by an earlier TS amendment, is added for clarity.

The revisions made to TS Table 4.1-2 are shown on the marked-up page TS 4.1-9a and Insert D in Attachment 2. The listing of accident monitoring instrumentation in TS Table 4.1-2 is revised to match the TS Table 3.7-6 list. The surveillance requirements are consistent with ITS surveillance requirements.

Discussion of Proposed TS Revisions

As noted above, the proposed change expands the accident monitoring instrumentation listed in TS Table 3.7-6 to include the Category 1 RG 1.97 variables (except the containment hydrogen analyzers) and revises the AOTs and requirements in TS 3.7.E and Table 3.7-6 to be consistent with the requirements of the Improved Technical Specifications (ITS) for post accident monitoring instrumentation. The proposed 30 day AOT applies when one (or more) function(s) in TS Table 3.7-6 has one required channel that is inoperable. The 30 day AOT to restore one inoperable required channel to

operable status is appropriate considering the remaining channel is operable, the passive nature of the instrument (i.e., no automatic action is assumed to occur from this instrumentation), and the low probability of an event requiring accident monitoring instrumentation during this interval. Furthermore, accident monitoring instrumentation has been screened out of the probabilistic risk analysis (PRA) model due to its low risk significance; thus, the proposed change has no risk impact from a PRA perspective. The proposed 7 day AOT applies when one (or more) function(s) in TS Table 3.7-6 has two required channels that are inoperable. The 7 day AOT to restore one of the two inoperable required channels to operable status is appropriate based on providing a reasonable time for the repair and the low probability of an event requiring accident monitoring instrument operation. Long-term operation with two required channels inoperable in a function and with an alternate indication is not acceptable because the alternate indication may not fully meet the performance qualification requirements applied to the accident monitoring instrumentation. Requiring restoration of one of the two inoperable channels limits the risk that the accident monitoring instrumentation function could be in a degraded condition should an accident occur. If there is no preplanned alternate, the 7 day AOT is followed by a requirement to be in hot shutdown within the next 6 hours and be less than 350°F and 450 psig within the following 12 hours. If the 30 day AOT or 7 day AOT to restore an inoperable channel to operable status is exceeded and either a redundant channel or a preplanned alternate method of monitoring is operable, a report to the NRC within the next 14 days is required. The report to the NRC in lieu of a shutdown is appropriate because the instrument functional capability has not been lost and given the low likelihood of unit conditions that would require the information provided by the accident monitoring instrumentation.

The proposed change also deletes the Category 2 RG 1.97 variables from TS Table 3.7-6. The Categories 2 and 3 RG 1.97 variables are addressed in a licensee controlled document.

In addition, the proposed change also revises the TS Table 4.1-2 listing of accident monitoring instrumentation to match the Table 3.7-6 listing, and the surveillance requirements are consistent with ITS. The ITS surveillance requirements for post accident monitoring instrumentation include performance of a channel check monthly and channel calibration on an 18 month frequency. The neutron detectors are excluded from the 18 month channel calibration requirements, as currently noted in TS Table 4.1-1 and consistent with ITS.

Industry Precedents

The proposed Surry TS change is similar in nature to other NRC approved license amendments associated with accident monitoring instrumentation AOTs. The similar approved amendments are:

- TS Amendment 207 for Vermont Yankee Power Station date May 10, 2002
- TS Amendments 227/223 for Turkey Point Plant Units 3 and 4 dated January 6, 2005

No Significant Hazards Consideration

The proposed change revises the accident monitoring instrumentation listing, allowed outage times, requirements, and surveillances to be consistent with the requirements of the Improved Technical Specifications for post accident monitoring instrumentation. The requirements of 10CFR50.92 have been reviewed as they relate to the proposed change to Technical Specification (TS) 3.7.E, TS Table 3.7-6, and TS Table 4.1-2 for Surry Units 1 and 2. The proposed change does not involve a significant hazards consideration because operation of Surry Units 1 and 2 in accordance with this change would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated.

   The proposed change revises the allowed outage times and requirements for accident monitoring instrumentation. The proposed change expands the instrumentation listing in the Technical Specifications to include the Category 1 RG 1.97 variables and deletes the Category 2 RG 1.97 variables, which are addressed in a licensee controlled document. The revised requirements continue to require the accident monitoring instrumentation to be operable. The required operability will continue to ensure that sufficient information is available on selected unit parameters to monitor and assess unit status and response during and following an accident. Accident monitoring instrumentation is not an initiator of any accident previously evaluated. The consequences of an accident during the extended allowed outage times would be the same as the consequences during the current allowed outage times. Therefore, the proposed change does not involve a significant increase in either the probability or consequences of an accident previously evaluated.

2. Create the possibility of a new or different kind of accident from any accident previously identified.

   The proposed change involves no physical changes to the plant, nor is there any impact on the design of the plant or the accident monitoring instrumentation. There is also no impact on the capability of the instrumentation to provide post accident data for plant operator use, the accident monitoring instrumentation initiates no automatic action, and there is no change in the likelihood that the instrumentation will fail since surveillance tests will continue to be performed. Therefore, the proposed change does not introduce any new failures that could create the possibility of a new or different kind of accident from any accident previously identified.

3. Involve a significant reduction in a margin of safety.

   The proposed change provides more appropriate times to restore inoperable accident monitoring instrumentation to operable status and does not impact the level

of assurance that the instrumentation will be available to perform its function. Accident monitoring instrumentation has been screened out of the probabilistic risk analysis (PRA) model due to its low risk significance, so the proposed change has no risk impact from a PRA perspective. The proposed change does not alter the condition or performance of equipment or systems used in accident mitigation or assumed in any accident analysis. Therefore, this proposed change does not involve a significant reduction in the margin of safety.

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 TS 3.7.E, TS Table 3.7-6, and TS Table 4.1-2 requirements 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 TS change 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. The accident monitoring instrumentation function of providing post accident data for plant operator use is not compromised by the proposed revision of AOTs and requirements. 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 occupational radiation exposure.

The proposed TS change does not involve plant physical changes that affect radiation exposure. The accident monitoring instrumentation function of providing post accident data for plant operator use is not compromised by the proposed revision of AOTs and requirements. Therefore, there is no significant increase in individual or cumulative occupational radiation exposure.

Based on the above assessment, 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 or impact statement by the Commission.

Conclusion

The proposed change revises the accident monitoring instrumentation listed in TS Table 3.7-6, the AOTs and requirements in TS 3.7.E and TS Table 3.7-6, and the TS Table 4.1-2 listing and surveillance requirements to be consistent with the requirements of ITS for post accident monitoring instrumentation. The TS 3.7 Basis is revised to reflect the TS 3.7.E and TS Table 3.7-6 revisions. The Station Nuclear Safety and Operating Committee (SNSOC) and the Management Safety Review Committee (MSRC) have reviewed the proposed change 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. Surry Updated Final Safety Analysis Report Section 7.10, Inadequate Core Cooling (ICC) System
2. NRC Letter to Virginia Electric and Power Company, September 29, 1981 - Issuance of Amendment 72 to Facility Operating License DPR-32 and Amendment 73 to Facility Operating License DPR-37 for Surry Power Station Units 1 and 2 – Revision of Technical Specifications Related to the Requirements for Implementation of the TMI-2 Lessons Learned Category "A" Items
3. NRC Letter to Virginia Electric and Power Company, October 15, 1984 - Issuance of Amendment 100 to Facility Operating License DPR-32 and Amendment 99 to Facility Operating License DPR-37 for Surry Power Station Units 1 and 2 – Revision of Technical Specifications to Add Requirements Related to NUREG-0737 Items
4. NRC Letter to Virginia Electric and Power Company, March 15, 1988 - Issuance of Amendment 118 to Facility Operating License DPR-32 and Amendment 118 to Facility Operating License DPR-37 for Surry Power Station Units 1 and 2 – Revision of Technical Specifications to Include the Core Exit Thermocouple System in Accident Monitoring Instrumentation
5. NRC Letter to Virginia Electric and Power Company, July 8, 1993 - Issuance of Amendment 180 to Facility Operating License DPR-32 and Amendment 180 to Facility Operating License DPR-37 for Surry Power Station Units 1 and 2 – Recirculation Mode Transfer Function
6. NRC Letter to Virginia Electric and Power Company, October 27, 1994 - Issuance of Amendment 193 to Facility Operating License DPR-32 and Amendment 193 to Facility Operating License DPR-37 for Surry Power Station Units 1 and 2 – Recirculation Spray Heat Exchangers Service Water Outlet Radiation Monitors
7. NRC Letter to Virginia Electric and Power Company, June 19, 1984 - Issuance of Amendment 97 to Facility Operating License DPR-32 and Amendment 96 to Facility Operating License DPR-37 for Surry Power Station Units 1 and 2 – Incorporation of Radiological Effluent Technical Specifications (RETS)
8. NRC Letter to Virginia Electric and Power Company, April 17, 1991 - Issuance of Amendment 155 to Facility Operating License DPR-32 and Amendment 154 to Facility Operating License DPR-37 for Surry Power Station Units 1 and 2 – Relocation of Radiological Effluent Technical Specifications (RETS)
9. NUREG-0452, Revision 4, Standard Technical Specifications for Westinghouse Pressurized Water Reactors – Section 3/4.3.3.6, Accident Monitoring Instrumentation
10. NUREG-1431, Revision 3, Standard (Improved) Technical Specifications for Westinghouse Plants – Section 3.3.3, Post Accident Monitoring (PAM) Instrumentation
11. NRC Letter to Virginia Electric and Power Company, June 19, 1984 - Issuance of Amendment 239 to Facility Operating License DPR-32 and Amendment 238 to Facility Operating License DPR-37 for Surry Power Station Units 1 and 2 – Elimination of Requirements for Hydrogen Monitors Using the Consolidated Line Item Improvement Process

Attachment 2

Marked-up Technical Specifications Pages

Revision of Accident Monitoring Instrumentation Listing, Allowed Outage Times, Requirements, and Surveillances

Surry Power Station Units 1 and 2
Virginia Electric and Power Company
(Dominion)

NO CHANGES ON THIS PAGE - PROVIDED FOR INFO AND REVIEW CONVENIENCE

3.7 INSTRUMENTATION SYSTEMS

Operational Safety Instrumentation

Applicability

Applies to reactor and safety features instrumentation systems.

Objectives

To ensure the automatic initiation of the Reactor Protection System and the Engineered Safety Features in the event that a principal process variable limit is exceeded, and to define the limiting conditions for operation of the plant instrumentation and safety circuits necessary to ensure reactor and plant safety.

Specification

A. The Reactor Protection System instrumentation channels and interlocks shall be OPERABLE as specified in Table 3.7-1.

B. The Engineered Safeguards Actions and Isolation Function Instrumentation channels and interlocks shall be OPERABLE as specified in Tables 3.7-2 and 3.7-3, respectively.

C. The Engineered Safety Features initiation instrumentation setting limits shall be as stated in Table 3.7-4.

D. The explosive gas monitoring instrumentation channel shown in Table 3.7-5(a) shall be OPERABLE with its alarm setpoint set to ensure that the limits of Specification 3.11.A.1 are not exceeded.

1. With an explosive gas monitoring instrumentation channel alarm setpoint less conservative than required by the above specification, declare the channel inoperable and take the action shown in Table 3.7-5(a).

2. With less than the minimum number of explosive gas monitoring instrumentation channels OPERABLE, take the action shown in Table 3.7-5(a). Exert best efforts to return the instruments to operable status within 30 days and, if unsuccessful, prepare and submit a Special Report to the Commission (Region II) to explain why the inoperability was not corrected in a timely manner.

INSERT A

E. The accident monitoring instrumentation listed in Table 3.7-6 shall be OPERABLE in accordance with the following:

1. With the number of OPERABLE accident monitoring instrumentation channels less than the Total Number of Channels shown in Table 3.7-6, items 1 through 9, either restore the inoperable channel(s) to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours.

2. With the number of OPERABLE accident monitoring instrumentation channels less than the Minimum OPERABLE Channels requirement of Table 3.7-6, items 1 through 9, either restore the inoperable channel(s) to OPERABLE status within 48 hours or be in at least HOT SHUTDOWN within the next 12 hours.

INSERT A as revised TS 3.7.E:

E. Prior to the Reactor Coolant System temperature and pressure exceeding 350°F and 450 psig, respectively, the accident monitoring instrumentation listed in Table 3.7-6 shall be OPERABLE in accordance with the following:

1. With one required channel inoperable, either restore the inoperable channel to OPERABLE status within 30 days or submit a report to the NRC within the next 14 days. The report shall outline the cause of inoperability and the plans and schedule for restoring the inoperable channel to OPERABLE status.

2. With two required channels inoperable, either:
   a. Restore an inoperable channel(s) to OPERABLE status within 7 days or initiate the preplanned alternate method of monitoring the appropriate function and submit a report to the NRC within the next 14 days. The report shall outline the preplanned alternate method of monitoring the function, the cause of inoperability, and the plans and schedule for restoring an inoperable channel to OPERABLE status.
   b. If no preplanned alternate method of monitoring the function is available, restore an inoperable channel(s) to OPERABLE status within 7 days or be in HOT SHUTDOWN within the next 6 hours and be less than 350°F and 450 psig within the following 12 hours.

steam line pressure setting limit is set below the full load operating pressure. The safety analysis shows that these settings provide protection in the event of a large steam line break.[3]

Accident Monitoring Instrumentation

INSERT B

The operability of the accident monitoring instrumentation in Table 3.7-6 ensures that sufficient information is available on selected plant parameters to monitor and assess these variables during and following an accident. On the pressurizer PORVs, the pertinent channels consist of redundant limit switch indication. The pressurizer safety valves utilize an acoustic monitor channel and a downstream high temperature indication channel. This capability is consistent with the recommendations of Regulatory Guide 1.97, "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plant Conditions During and Following an Accident," December 1975, and NUREG-0578, "TMI-2 Lessons Learned Task Force Status Report and Short Term Recommendations." Potential gaseous effluent release paths are equipped with radiation monitors to detect and measure concentrations of noble gas fission products in plant gaseous effluents during and following an accident. The gaseous effluent release paths monitored are the process vent stack, ventilation vent stack, main steam safety valve and atmospheric dump valve discharge and the AFW pump turbine exhaust. The potential liquid effluent release paths via the service water discharge from the recirculation spray heat exchangers are equipped with radiation monitors to detect leakage of recirculated containment sump fluid. These radiation monitors and the associated sample pumps are required to operate during the recirculation heat removal phase following a loss of coolant accident in order to detect a passive failure of a recirculation spray heat exchanger tube. These monitors meet the requirements of NUREG-0737.

Explosive Gas Monitoring

Instrumentation is provided for monitoring (and controlling) the concentrations of potentially explosive gas mixtures in the Waste Gas Holdup System. The operability and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63 and 64 of Appendix A to 10 CFR Part 50.

INSERT B in TS 3.7 Basis (page TS 3.7-3) – Accident Monitoring Instrumentation:

The primary purpose of accident monitoring instrumentation is to display unit parameters that provide information required by the control room operators during and following accident conditions. In response to NUREG-0737 and Regulatory Guide (RG) 1.97, Revision 3, a programmatic approach was developed in defining the RG 1.97-required equipment for Surry. The Surry RG 1.97 program review examined existing instrumentation with respect to the RG 1.97 design and qualification requirements. The operability of RG 1.97 instrumentation ensures that sufficient information is available on selected unit parameters to monitor and assess unit status and response during and following an accident. The availability of accident monitoring instrumentation is important so that the consequences of corrective actions can be observed and the need for and magnitude of further actions can be determined.

RG 1.97 applied a graded approach to post-accident indication by using a matrix of variable types versus variable categories. RG 1.97 delineates design and qualification criteria for the instrumentation used to measure five variable types (Types A, B, C, D, and E). These criteria are divided into three separate categories (Categories 1, 2, and 3), providing a graded approach that depended on the importance to safety of the measurement of a specific variable. Category 1 variables, listed in Table 3.7-6, are defined as follows:

Category 1 - are the key variables deemed risk significant because they are needed to:

- Determine whether other systems important to safety are performing their intended functions,
- Provide information to the operators that will enable them to determine the likelihood of a gross breach of the barriers to radioactivity release, and
- Provide information regarding the release of radioactive materials to allow early indication of the need to initiate action necessary to protect the public and to estimate the magnitude of any impending threat.

The RG 1.97 criteria on redundancy requirements apply to Category 1 variables only and address single-failure criteria and supporting features, including power sources. Failures of the instrumentation, its supporting features, and/or its power source resulting in less than the required number of channels necessitate entry into the required actions.

The 30 day allowed outage time applies when one (or more) function(s) in Table 3.7-6 has one required channel that is inoperable. The 30 day allowed outage time to restore one inoperable required channel to OPERABLE status is appropriate considering the remaining channel is OPERABLE, the passive nature of the instrument (i.e., no automatic action is assumed to occur from this instrumentation), and the low probability of an event requiring accident monitoring instrumentation during this interval. The 7 day allowed outage time applies when one (or more) function(s) in Table 3.7-6 has two required channels that are inoperable. The 7 day allowed outage time to restore one of the two inoperable required channels to OPERABLE status is appropriate based on

providing a reasonable time for the repair and the low probability of an event requiring accident monitoring instrument operation. Long-term operation with two required channels inoperable in a function and with an alternate indication is not acceptable because the alternate indication may not fully meet the performance qualification requirements applied to the accident monitoring instrumentation. Requiring restoration of one of the two inoperable channels limits the risk that the accident monitoring instrumentation function could be in a degraded condition should an accident occur. If there is no preplanned alternate, the 7 day allowed outage time is followed by a requirement to be in HOT SHUTDOWN within the next 6 hours and be less than 350°F and 450 psig within the following 12 hours. If the 30 day allowed outage time or 7 day allowed outage time to restore an inoperable channel to OPERABLE status is exceeded and either a redundant channel or a preplanned alternate method of monitoring is OPERABLE, a report to the NRC within the next 14 days is required. The report to the NRC in lieu of a shutdown is appropriate because the instrument functional capability has not been lost and given the low likelihood of unit conditions that would require the information provided by the accident monitoring instrumentation.

Note that the Categories 2 and 3 RG 1.97 variables are addressed in a licensee controlled document and are defined as follows:

Category 2 – provides less stringent requirements and generally applies to instrumentation designated for indicating system operating status.

Category 3 – is the least stringent and is applied to backup and diagnostic instrumentation.

NOTE: Separate entry into Specification 3.7.E is allowed for each Function.

TABLE 3.7-6

ACCIDENT MONITORING INSTRUMENTATION

Function ~~Instrument~~	Total No. Of Channels	Required Channels	Minimum OPERABLE Channels
1. Auxiliary Feedwater Flow ~~Rate~~	1 per S/G	2	1 per S/G
2. Inadequate Core Cooling ~~Monitor~~			
a. Reactor Vessel Coolant Level ~~Monitor~~	2	2	1
b. Reactor Coolant System Subcooling Margin ~~Monitor~~	2	2	1
c. Core Exit ~~Thermocouples~~ Temperature	2 (Note 2)	2 (a)	1 (Note 2)
~~3. PORV Position Indicator~~	2/valve		1/valve
~~4. PORV Block Valve Position Indicator~~	1/valve		1/valve
~~5. Safety Valve Position Indicator (Primary Detector)~~	1/valve		1/valve
~~6. Safety Valve Position Indicator (Backup Detector)~~	1/valve		0
3. ~~X~~ Containment Pressure (Wide Range)	2	2	1
4. Containment Pressure	2	2	1
~~8. Containment Water Level (Narrow Range)~~ Sump	2	2	1
5. ~~8~~ Containment Water Level (Wide Range) Area	2	2	1
6. ~~10.~~ Containment ~~High Range~~ Radiation ~~Monitor~~ (High Range) INSERT C	2	2	1 (Note 1, b and c only)
~~11. Process Vent High Range Effluent Monitor~~	2		2 (Note 1, a, b, and c)
~~12. Ventilation Vent High Range Effluent Monitor~~	2		2 (Note 1, a, b, and c)
~~13. Main Steam High Range Radiation Monitors (Units 1 and 2)~~	3		3 (Note 1, a, b, and c)
~~14. Aux. Feed Pump Steam Turbine Exhaust Radiation Monitor~~	1		1 (Note 1, a, b, and c)
~~15. Recirculation Spray Heat Exchanger Service Water Outlet Radiation Monitors~~	1 per RSHX		1 per RSHX (Note 1, a, b, and c)

Note 1: With the number of operable channels less than required by the Minimum OPERABLE Channels requirements
a. Initiate the preplanned alternate method of monitoring the appropriate parameter(s), within 72 hours
b. Either restore the inoperable channel to operable status within 7 days of the event, or
c. Prepare and submit a Special Report to the commission pursuant to specification 6.2 within 30 days following the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to operable.

Note 2: A minimum of 2 core exit thermocouples per quadrant are required for the channel to be operable.

Amendment Nos. 193 and 193

INSERT C – add to TS Table 3.7-6:

Function	Required Channels
7. Power Range Neutron Flux	2 (b)
8. Source Range Neutron Flux	2 (b)
9. Reactor Coolant System (RCS) Hot Leg Temperature (Wide Range)	2
10. RCS Cold Leg Temperature (Wide Range)	2
11. RCS Pressure (Wide Range)	2
12. Penetration Flow Path Containment Isolation Valve Position	2 per penetration flow path (c)(d)
13. Pressurizer Level	2
14. Steam Generator (SG) Water Level (Wide Range)	2
15. SG Water Level (Narrow Range)	2 per SG
16. SG Pressure	2 per SG
17. Emergency Condensate Storage Tank Level	2
18. High Head Safety Injection Flow to Cold Leg	2

(a) A minimum of 2 core exit thermocouples per quadrant are required for the channel to be OPERABLE.

(b) This indication is provided by the Gammametric channels.

(c) Not required for isolation valves whose associated penetration is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

(d) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

NO CHANGES ON THIS PAGE—PROVIDED FOR INFO AND REVIEW CONVENIENCE

4.1 OPERATIONAL SAFETY REVIEW

Applicability

Applies to items directly related to safety limits and limiting conditions for operation.

Objective

To specify the minimum frequency and type of surveillance to be applied to unit equipment and conditions.

Specification

A. Calibration, testing, and checking of instrumentation channels and interlocks shall be performed as detailed in Tables 4.1-1, 4.1-A, and 4.1-2.

B. Equipment tests shall be performed as detailed in Table 4.1-2.A and as detailed below.

1. In addition to the requirements of 4.0.5, each Pressurizer PORV and block valve shall be demonstrated OPERABLE by:

   a. Performing a complete cycle of each PORV with the reactor coolant average temperature >350°F once per 18 months.

   b. Performing a complete cycle of the solenoid air control valve and check valves on the air accumulators in the PORV control system once per 18 months.

   c. Operating each block valve through one complete cycle of travel at least once per 92 days. This surveillance is not required if the block valve is closed in accordance with 3.1.6.a, b, or c.

   d. Verifying that the pressure in the PORV backup air supply is greater than the surveillance limit at least once per 92 days.

   e. Performing functional testing and calibration of the PORV backup air supply instrumentation and alarm setpoints at least once per 18 months.

Other channels are subject only to the "drift" errors induced within the instrumentation itself and, consequently, can tolerate longer intervals between calibration. Process systems instrumentation errors resulting from drift within the individual instruments are normally negligible.

During the interval between periodic channel tests and daily check of each channel, a comparison between redundant channels will reveal any abnormal condition resulting from a calibration shift, due to instrument drift of a single channel.

During the periodic channel test, if it is deemed necessary, the channel may be tuned to compensate for the calibration shift. However, it is not expected that this will be required at any fixed or frequent interval.

Thus, minimum calibration frequencies of once-per-day for the nuclear flux (power level) channels, and once per 18 months for the process system channels are considered acceptable.

Testing

The OPERABILITY of the Reactor Trip System and ESFAS instrumentation systems and interlocks ensures that 1) the associated ESF action and/or reactor trip will be initiated when the parameter monitored by each channel or combination thereof exceeds its setpoint, 2) the specified coincidence logic and sufficient redundancy are maintained to permit a channel to be out of service for testing or maintenance consistent with maintaining an appropriate level of reliability of the RTS and ESFAS instrumentation, and 3) sufficient system functional capability is available from diverse parameters.

TABLE 4.1-2

ACCIDENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK (1)	~~CHANNEL FUNCTIONAL TEST~~	CHANNEL CALIBRATION
1. Auxiliary Feedwater Flow ~~Rate~~	~~P~~ M		R
2. Inadequate Core Cooling ~~Monitor~~	M		R
~~3. PORV Position Indicator (Primary Detector)~~	~~M~~		~~R~~
~~4. PORV Position Indicator (Backup Detector)~~	~~M~~		~~R~~
~~5. PORV Block Valve Position Indicator~~	~~M~~		~~R~~
~~6. Safety Valve Position Indicator~~	~~M~~		~~R~~
~~7. Safety Valve Position Indicator (Backup Detector)~~	~~M~~		~~R~~
3. ~~8.~~ Containment Pressure (Wide Range)	M		R
4. Containment Pressure	M		R
~~9. Containment Water Level (Narrow Range)~~	~~M~~		~~R~~
5. ~~10.~~ Containment Sump Water Level (Wide Range)	M		R
6. ~~11.~~ Containment Area ~~High Range~~ Radiation ~~Monitor~~ (High Range)	M	~~Q~~	R
~~12. Process Vent High Range Effluent Monitor~~	~~M~~	~~Q~~	~~R~~
~~13. Ventilation Vent High Range Effluent Monitor~~	~~M~~	~~Q~~	~~R~~
~~14. Main Steam High Range Radiation Monitor~~	~~M~~	~~Q~~	~~R~~
~~15. Auxiliary Feedwater Pump Turbine Exhaust Radiation Monitor~~	~~M~~	~~Q~~	~~R~~
~~16. Recirculation Spray Heat Exchanger Service Water Outlet Radiation Monitors~~	~~M~~	~~Q(1)~~	~~R~~

INSERT D →

(1) Channel Functional testing shall include the associated sample pump.

M - Monthly

P - Prior to each startup if not done the previous week

Q - Quarterly

R - Once per 18 months

Amendment Nos. 213 and 213

TS 4.1-9a
06-11-98

INSERT D – add to TS Table 4.1-2:

INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION
7. Power Range Neutron Flux	M	R (2)
8. Source Range Neutron Flux	M	R (2)
9. Reactor Coolant System (RCS) Hot Leg Temperature (Wide Range)	M	R
10. RCS Cold Leg Temperature (Wide Range)	M	R
11. RCS Pressure (Wide Range)	M	R
12. Penetration Flow Path Containment Isolation Valve Position	M	R (3)
13. Pressurizer Level	M	R
14. Steam Generator (SG) Water Level (Wide Range)	M	R
15. SG Water Level (Narrow Range)	M	R
16. SG Pressure	M	R
17. Emergency Condensate Storage Tank Level	M	R
18. High Head Safety Injection Flow to Cold Leg	M	R

---

(1) Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.

(2) Neutron detectors are excluded from CHANNEL CALIBRATION.

(3) Rather than CHANNEL CALIBRATION, this surveillance shall be an operational test, consisting of verification of operability of all devices in the channel.

M – Monthly

R – Once per 18 months

Attachment 3

Proposed Technical Specifications Pages

Revision of Accident Monitoring Instrumentation Listing, Allowed Outage Times, Requirements, and Surveillances

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 Change:

The proposed change revises the accident monitoring instrumentation listing, allowed outage times (AOTs), requirements, and surveillances to be consistent with the requirements of the Improved Technical Specifications (ITS) for post accident monitoring instrumentation. TS 3.7.E, TS Table 3.7-6, and TS Table 4.1-2 are affected by this change. In addition, the TS 3.7 Basis is revised to reflect the TS 3.7.E and Table 3.7-6 revisions, and editorial changes are made in the Bases for TS 3.7 and 4.1 for clarity.

DELETE	DATED	SUBSTITUTE
TS 3.7-2	03-22-05	TS 3.7-2
TS 3.7-7	03-22-05	TS 3.7-7
TS 3.7-8	03-22-05	TS 3.7-8
TS 3.7-9	08-31-01	TS 3.7-9
TS 3.7-29	10-27-94	TS 3.7-29
TS 4.1-3	08-31-01	TS 4.1-3
TS 4.1-9a	06-11-98	TS 4.1-9a

2. With less than the minimum number of explosive gas monitoring instrumentation channels OPERABLE, take the action shown in Table 3.7-5(a). Exert best efforts to return the instruments to OPERABLE status within 30 days and, if unsuccessful, prepare and submit a Special Report to the Commission (Region II) to explain why the inoperability was not corrected in a timely manner.

E. Prior to the Reactor Coolant System temperature and pressure exceeding 350°F and 450 psig, respectively, the accident monitoring instrumentation listed in Table 3.7-6 shall be OPERABLE in accordance with the following:

1. With one required channel inoperable, either restore the inoperable channel to OPERABLE status within 30 days or submit a report to the NRC within the next 14 days. The report shall outline the cause of inoperability and the plans and schedule for restoring the inoperable channel to OPERABLE status.

2. With two required channels inoperable, either:

   a. Restore an inoperable channel(s) to OPERABLE status within 7 days or initiate the preplanned alternate method of monitoring the appropriate function and submit a report to the NRC within the next 14 days. The report shall outline the preplanned alternate method of monitoring the function, the cause of inoperability, and the plans and schedule for restoring an inoperable channel to OPERABLE status.

   b. If no preplanned alternate method of monitoring the function is available, restore an inoperable channel(s) to OPERABLE status within 7 days or be in HOT SHUTDOWN within the next 6 hours and be less than 350°F and 450 psig within the following 12 hours.

steam line pressure setting limit is set below the full load operating pressure. The safety analysis shows that these settings provide protection in the event of a large steam line break.[3]

Accident Monitoring Instrumentation

The primary purpose of accident monitoring instrumentation is to display unit parameters that provide information required by the control room operators during and following accident conditions. In response to NUREG-0737 and Regulatory Guide (RG) 1.97, Revision 3, a programmatic approach was developed in defining the RG 1.97-required equipment for Surry. The Surry RG 1.97 program review examined existing instrumentation with respect to the RG 1.97 design and qualification requirements. The operability of RG 1.97 instrumentation ensures that sufficient information is available on selected unit parameters to monitor and assess unit status and response during and following an accident. The availability of accident monitoring instrumentation is important so that the consequences of corrective actions can be observed and the need for and magnitude of further actions can be determined.

RG 1.97 applied a graded approach to post-accident indication by using a matrix of variable types versus variable categories. RG 1.97 delineates design and qualification criteria for the instrumentation used to measure five variable types (Types A, B, C, D, and E). These criteria are divided into three separate categories (Categories 1, 2, and 3), providing a graded approach that depended on the importance to safety of the measurement of a specific variable. Category 1 variables, listed in Table 3.7-6, are defined as follows:

Category 1 - are the key variables deemed risk significant because they are needed to:

- Determine whether other systems important to safety are performing their intended functions,
- Provide information to the operators that will enable them to determine the likelihood of a gross breach of the barriers to radioactivity release, and
- Provide information regarding the release of radioactive materials to allow early indication of the need to initiate action necessary to protect the public and to estimate the magnitude of any impending threat.

The RG 1.97 criteria on redundancy requirements apply to Category 1 variables only and address single-failure criteria and supporting features, including power sources. Failures of the instrumentation, its supporting features, and/or its power source resulting in less than the required number of channels necessitate entry into the required actions.

The 30 day allowed outage time applies when one (or more) function(s) in Table 3.7-6 has one required channel that is inoperable. The 30 day allowed outage time to restore one inoperable required channel to OPERABLE status is appropriate considering the remaining channel is OPERABLE, the passive nature of the instrument (i.e., no automatic action is assumed to occur from this instrumentation), and the low probability of an event requiring accident monitoring instrumentation during this interval. The 7 day allowed outage time applies when one (or more) function(s) in Table 3.7-6 has two required channels that are inoperable. The 7 day allowed outage time to restore one of the two inoperable required channels to OPERABLE status is appropriate based on providing a reasonable time for the repair and the low probability of an event requiring accident monitoring instrument operation. Long-term operation with two required channels inoperable in a function and with an alternate indication is not acceptable because the alternate indication may not fully meet the performance qualification requirements applied to the accident monitoring instrumentation. Requiring restoration of one of the two inoperable channels limits the risk that the accident monitoring instrumentation function could be in a degraded condition should an accident occur. If there is no preplanned alternate, the 7 day allowed outage time is followed by a requirement to be in HOT SHUTDOWN within the next 6 hours and be less than 350°F and 450 psig within the following 12 hours. If the 30 day allowed outage time or 7 day allowed outage time to restore an inoperable channel to OPERABLE status is exceeded and either a redundant channel or a preplanned alternate method of monitoring is OPERABLE, a report to the NRC within the next 14 days is required. The report to the NRC in lieu of a shutdown is appropriate because the instrument functional capability has not been lost and given the low likelihood of unit conditions that would require the information provided by the accident monitoring instrumentation.

Note that the Categories 2 and 3 RG 1.97 variables are addressed in a licensee controlled document and are defined as follows:

Category 2 - provides less stringent requirements and generally applies to instrumentation designated for indicating system operating status.

Category 3 - is the least stringent and is applied to backup and diagnostic instrumentation.

Explosive Gas Monitoring

Instrumentation is provided for monitoring (and controlling) the concentrations of potentially explosive gas mixtures in the Waste Gas Holdup System. The operability and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63 and 64 of Appendix A to 10 CFR Part 50.

Non-Essential Service Water Isolation System

The operability of this functional system ensures that adequate intake canal inventory can be maintained by the Emergency Service Water Pumps. Adequate intake canal inventory provides design service water flow to the recirculation spray heat exchangers and other essential loads (e.g., control room area chillers, charging pump lube oil coolers) following a design basis loss of coolant accident with a coincident loss of offsite power. This system is common to both units in that each of the two trains will actuate equipment on each unit.

Clarification of Operator Actions

The Operator Actions associated with Functional Units 10 and 16 on Table 3.7-1 require the unit to be reduced in power to less than the P-7 setpoint (10%) if the required conditions cannot be satisfied for either the P-8 or P-7 permissible bypass conditions. The requirement to reduce power below P-7 for a P-8 permissible bypass condition is necessary to ensure consistency with the out of service and shutdown action times assumed in the WCAP-10271 and WCAP-14333P risk analyses by eliminating the potential for a scenario that would allow sequential entry into the Operator Actions (i.e., initial entry into the Operator Action with a reduction in power to below P-8, followed by a second entry into the Operator Action with a reduction in power to below P-7). This scenario would permit sequential allowed outage time periods that may result in an additional 72 hours that was not assumed in the risk analysis to place a channel in trip or to place the unit in a condition where the protective function was not necessary.

References

(1) UFSAR - Section 7.5

(2) UFSAR - Section 14.5

(3) UFSAR - Section 14.3.2

TABLE 3.7-6
ACCIDENT MONITORING INSTRUMENTATION
NOTE: Separate entry into Specification 3.7.E is allowed for each Function.

	Function	Required Channels
1.	Auxiliary Feedwater Flow	2
2.	Inadequate Core Cooling	
	a. Reactor Vessel Coolant Level	2
	b. Reactor Coolant System Subcooling Margin	2
	c. Core Exit Temperature	2 (a)
3.	Containment Pressure (Wide Range)	2
4.	Containment Pressure	2
5.	Containment Sump Water Level (Wide Range)	2
6.	Containment Area Radiation (High Range)	2
7.	Power Range Neutron Flux	2 (b)
8.	Source Range Neutron Flux	2 (b)
9.	Reactor Coolant System (RCS) Hot Leg Temperature (Wide Range)	2
10.	RCS Cold Leg Temperature (Wide Range)	2
11.	RCS Pressure (Wide Range)	2
12.	Penetration Flow Path Containment Isolation Valve Position	2 per penetration flow path (c)(d)
13.	Pressurizer Level	2
14.	Steam Generator (SG) Water Level (Wide Range)	2
15.	SG Water Level (Narrow Range)	2 per SG
16.	SG Pressure	2 per SG
17.	Emergency Condensate Storage Tank Level	2
18.	High Head Safety Injection Flow to Cold Leg	2

(a) A minimum of 2 core exit thermocouples per quadrant are required for the channel to be OPERABLE.
(b) This indication is provided by the Gammametric channels.
(c) Not required for isolation valves whose associated penetration is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.
(d) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

Other channels are subject only to the "drift" errors induced within the instrumentation itself and, consequently, can tolerate longer intervals between calibration. Process systems instrumentation errors resulting from drift within the individual instruments are normally negligible.

During the interval between periodic channel tests and daily check of each channel, a comparison between redundant channels will reveal any abnormal condition resulting from a calibration shift, due to instrument drift of a single channel.

During the periodic channel test, if it is deemed necessary, the channel may be tuned to compensate for the calibration shift. However, it is not expected that this will be required at any fixed or frequent interval.

Thus, minimum calibration frequencies of once-per-day for the nuclear flux (power level) channels, and once per 18 months for the process system channels are considered acceptable.

Testing

The OPERABILITY of the Reactor Trip System and ESFAS instrumentation systems and interlocks ensures that 1) the associated ESF action and/or reactor trip will be initiated when the parameter monitored by each channel or combination thereof exceeds its setpoint, 2) the specified coincidence logic and sufficient redundancy are maintained to permit a channel to be out of service for testing or maintenance consistent with maintaining an appropriate level of reliability of the RTS and ESFAS instrumentation, and 3) sufficient system functional capability is available from diverse parameters.

TABLE 4.1-2
ACCIDENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

	INSTRUMENT	CHANNEL CHECK (1)	CHANNEL CALIBRATION
1.	Auxiliary Feedwater Flow	M	R
2.	Inadequate Core Cooling	M	R
3.	Containment Pressure (Wide Range)	M	R
4.	Containment Pressure	M	R
5.	Containment Sump Water Level (Wide Range)	M	R
6.	Containment Area Radiation (High Range)	M	R
7.	Power Range Neutron Flux	M	R (2)
8.	Source Range Neutron Flux	M	R (2)
9.	Reactor Coolant System (RCS) Hot Leg Temperature (Wide Range)	M	R
10.	RCS Cold Leg Temperature (Wide Range)	M	R
11.	RCS Pressure (Wide Range)	M	R
12.	Penetration Flow Path Containment Isolation Valve Position	M	R (3)
13.	Pressurizer Level	M	R
14.	Steam Generator (SG) Water Level (Wide Range)	M	R
15.	SG Water Level (Narrow Range)	M	R
16.	SG Pressure	M	R
17.	Emergency Condensate Storage Tank Level	M	R
18.	High Head Safety Injection Flow to Cold Leg	M	R

(1) Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.

(2) Neutron detectors are excluded from CHANNEL CALIBRATION.

(3) Rather than CHANNEL CALIBRATION, this surveillance shall be an operational test, consisting of verification of operability of all devices in the channel.

M - Monthly

R - Once per 18 months