VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

May 31, 2001

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

Serial No. 01-299
SPS-Lic/CGL R1
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 CHANGES
PORV BACKUP AIR SUPPLY OPERABILITY AND
SURVEILLANCE REQUIREMENTS

Pursuant to 10CFR50.90, Virginia Electric and Power Company (Dominion) requests amendments in the form of revisions to Facility Operating License Numbers DPR-32 and DPR-37 for Surry Power Station Units 1 and 2, respectively, to the Surry Technical Specifications (TSs), and to the associated TSs Bases. The proposed revision provides a separate allowed outage time (AOT) for the pressurizer power operated relief valve (PORV) backup air supply. The proposed revision includes the following specific changes:

- Addition of a 14-day AOT for the PORV backup air supply in TS 3.1 specifying that if the backup air supply is not returned to service within 14 days, be in at least hot shutdown within the next 6 hours and reduce Reactor Coolant System average temperature to < 350°F within the following 6 hours,

- Addition of a quarterly surveillance to verify backup air bottle pressure in TS 4.1,

- Addition of an 18-month functional test and calibration of instrumentation and alarm setpoints in TS 4.1, and

- Addition of associated Bases discussions in TSs 3.1 and 4.1.

A discussion of the proposed changes to the Technical Specifications and Bases is provided in Attachment 1. The proposed changes have been reviewed and approved by the Station Nuclear Safety and Operating Committee and the Management Safety Review Committee. It has been determined that the proposed changes to the Technical Specifications and Bases do not involve an unreviewed safety question, as defined in

A001

10CFR50.59. Marked-up Technical Specifications and Bases pages that reflect the proposed changes are provided in Attachment 2. Revised Technical Specifications and Bases pages that incorporate the proposed changes are provided in Attachment 3. The basis for our determination that the proposed changes to the Technical Specifications do not involve a significant hazards consideration, as defined in 10CFR50.92, is provided in Attachment 4. We have also determined that the proposed change has no environmental impact.

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

Very truly yours,

L. N. Hartz
Vice President – Nuclear Engineering and Services

Attachments:
1. Discussion of Changes
2. Mark-up of Technical Specifications and Bases Pages
3. Proposed Technical Specifications and Bases Pages
4. Significant Hazards Consideration Determination

Commitments made in this letter: None.

cc: U.S. Nuclear Regulatory Commission
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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 & Services, 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 31st day of May, 2001.

My Commission Expires: 3-31-04.

Maggie McClure
Notary Public

(SEAL)

Attachment 1

Discussion of Changes

Surry Power Station
Units 1 and 2
Dominion

DISCUSSION OF CHANGES

Introduction

Virginia Electric and Power Company (Dominion) is proposing a risk-informed change to Surry Power Station Technical Specifications 3.1.A.6 – Relief Valves, and 4.1.B-Operational Safety Review, governing operation of the pressurizer power operated relief valves (PORVs).

The proposed change provides a separate action statement in Specification 3.1.A.6 for the distinct case of (an) inoperable backup air system(s), with an allowed outage time of 14 days for the PORV backup bottled air supply to be inoperable prior to entering a shutdown action. This change is based on the high reliability and availability of the Surry containment instrument air system, which provides the primary motive power for the pressurizer PORVs.

A quarterly surveillance to verify backup air bottle pressure is added.

Additionally, an eighteen month calibration and functional test interval for the low backup air pressure alarm is specified.

Background

At Surry Power Station, the control and indication circuits for the pressurizer power operated relief valves (PORVs) are powered from redundant safety grade buses. Normal motive power for the PORVs is provided by Containment Instrument Air, a highly reliable non-safety-grade system. Each PORV can be opened by energizing either of two solenoid valves, which admit air to the actuator to open the valve. Deenergizing or loss of power to the solenoid valves causes the PORV to close. The solenoid valves are powered from separate 125 VDC buses. High pressure, seismically supported air bottles (two, plus two spares which are valved out, per PORV) provide a redundant source of motive power to the PORVs.

Each PORV has an associated motor operated block valve. The block valves are powered from 480 VAC emergency busses. The block valve power and 125VDC power to the associated PORV solenoid valves are supplied from opposite trains.

On June 25, 1990, the USNRC issued Generic Letter 90-06, Resolution of Generic Issue 70, "Power-Operated Relief Valve and Block Valve Reliability," and Generic Issue 94, "Additional Low-Temperature Overpressure Protection for Light-Water Reactors," Pursuant to 10 CFR 50.54(f), which addressed the resolution of two Generic Issues:

Generic Issue 70, "Power-Operated Relief Valve and Block Valve Reliability" arose out of the awareness that, as operational experience accumulated in the Nuclear Industry, the pressurizer power-operated relief valves (PORVs) were being relied on to perform certain safety related functions, e.g., for coping with design basis accidents, although the PORVs were originally designed as non-safety components.

Generic Issue 94 involved the reliability of the Low-Temperature Overpressure Protection System (LTOPS). The generic letter provided modified Technical Specifications to be used by utilities as a model for enhancing the LTOPS operability requirements.

The technical findings and analyses related to Generic Issue 70 were documented in NUREG-1316, "Technical Findings and Regulatory Analysis Related to Generic Issue 70--Evaluation of Power-Operated Relief Valve and Block Valve Reliability in PWR Nuclear Power Plants", December 1989.

Generic Letter 90-06 and NUREG-1316 concluded that the use of pressurizer PORVs has evolved such that they are now relied upon to perform one or more of the following safety related functions:

1. Mitigation of a design-basis steam generator tube rupture accident,
2. Low-temperature overpressure protection of the reactor vessel during startup and shutdown, or
3. Plant cooldown in compliance with Branch Technical Position RSB 5-1 to SRP 5.4.7, "Residual Heat Removal (RHR) system."

Item 1 pertains to the ability of the operator to depressurize the RCS in a timely manner in the event of a tube rupture event. Items 2 and 3 relate to overpressure protection of the reactor vessel and/or RHR systems, respectively.

Based on the analysis and findings for Generic Issue 70, the USNRC staff concluded that while it would not be cost-effective to upgrade existing non-safety-grade PORVs and associated control systems to safety grade, certain actions should be taken to improve the reliability of PORVs and block valves. These actions fall in three areas. Utilities should:

1. Include PORVs and block valves within the scope of an operational quality assurance program that is in compliance with 10 CFR Part 50, Appendix B.
2. Include PORVs, valves in PORV control air systems, and block valves within the scope of a program covered by Subsection IWV, "In-service Testing of Valves in Nuclear Power Plants," of Section XI of the ASME Boiler and Pressure Vessel Code.
3. For operating PWR plants, modify the limiting conditions of operation (LCO) of PORVs and block valves in the Technical Specifications for Modes 1, 2 and 3 to incorporate the most recent staff licensing position.

With respect to Action 3 above, the Generic Letter includes model Technical Specifications and Bases. With respect to this evaluation, the following paragraph from the model Bases is pertinent:

> *Surveillance Requirements provide the assurance that the PORVs and block valves can perform their functions. Specification 4.4.4.1 addresses PORVs, 4.4.4.2 the block valves, and 4.4.4.3 the emergency (backup) power sources. The latter are provided for either PORVs or block valves, generally as a consequence of the TMI ACTION requirements to upgrade the operability of PORVs and block valves, where they are installed with non-safety-grade power sources, including instrument air, and are provided with a backup (emergency) power source....*

The backup air bottles for the Surry pressurizer PORVs were initially installed to ensure PORV availability to provide Nil-Ductility-Temperature (NDT) overpressurization protection when the reactor coolant system is water-solid during low temperature shutdown conditions. In response to the events at Three Mile Island, the NRC required a safety grade (or related) backup motive power supply to the PORVs during power operation. The containment instrument air system, which normally powers the PORVs, was modified to meet this commitment by providing a bottled air backup to the system.

Thus in the context of the Surry design, the emergency (backup) power source for the PORVs referred to in the model Bases of GL 90-06 is the backup air system, including the bottles, supply valves and air regulators or Pressure Control Valves (PCVs).

Low air pressure in the backup air bottles is indicated in the control room by an annunciator fed from pressure switches. The control room annunciator is indicative of either (1) bottled air pressure below a preselected setpoint, (2) air pressure downstream of the air bottle regulator (PCV) below a preselected setpoint, or (3) instrumentation failure. Containment entry must be made to determine and address the exact source of the alarm.

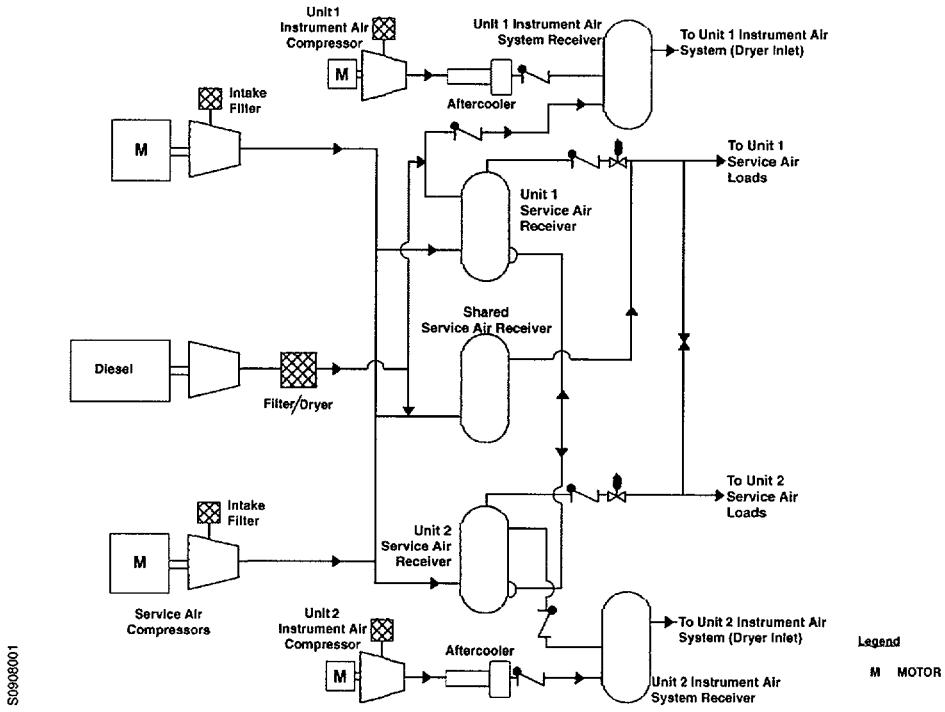
The primary motive force for the Surry PORVs is the containment instrument air system. Each unit has two redundant 100% capacity containment instrument air compressors. These compressors are powered from normal station service buses. In the event of a loss of offsite power or other unavailability of the containment instrument air compressors, the turbine building instrument air is available as a backup. Emergency procedures contain instructions to manually cross-tie the turbine building and containment systems. Each unit's containment instrument air system can be cross-tied to either unit's turbine building system.

The turbine building instrument air system consists of two compressors (one per unit), located in a tornado-, missile-, and earthquake protected area. These compressors are powered from the "J" emergency buses; therefore, in the event of a loss of offsite power and an accident (e.g. tube rupture), the turbine building compressor for the accident unit will receive power from the swing emergency diesel generator (EDG#3).

The service air system receiver for each unit is cross-connected to the turbine building instrument air receiver for that unit. This allows service air to be used as the normal supply for instrument air. When low pressure occurs in the turbine building instrument air receiver, the associated turbine building instrument air compressor automatically starts to maintain header pressure.

Since the two normal service air receivers and an outage service air receiver are cross-connected, and the turbine building instrument air receiver of each unit is cross-connected with its respective service air receiver, each turbine building instrument air receiver is supplied by both normal service air receivers and the outage service air receiver at all times (see UFSAR Figure 9.8-1, below).

Figure 9.8-1
COMPRESSED AIR SYSTEM



Testing of the compressed air subsystems consists of air quality tests and compressor tests. Air quality is monitored through surveillance procedures that ensure air hydrocarbon content, particulate content, and dew point meet acceptable standards. Generally, compressor tests are conducted at refueling, with the exception of a more frequent test of the instrument air compressor. Preventive maintenance and inspection of the systems is performed in accordance with normal station maintenance procedures.

The PORVs, block valves and control air system valves are included in the Inservice Testing Program in accordance with Section XI of the ASME Boiler and Pressure Vessel Code.

Because of the high degree of inherent redundancy in the instrument air system, risk analyses show that unavailability of the backup bottled air system contributes only a small amount to unavailability of the PORVs. This is discussed in more detail later.

A 14-day allowed outage time for the backup air system is desired to provide operational flexibility and adequate time to investigate and address alarms indicating abnormal system conditions. This often involves containment entry. By providing a separate allowed outage time (AOT) for the backup air system, unnecessary block valve closure can be avoided. This will serve to improve the availability of the PORVs to perform their pressure relief function on demand in the event of a transient, since the backup air system would rarely be required to provide motive power to the PORVs. Improved availability of the PORVs is desirable since the PORVs are preferred over the pressurizer safety valves for RCS overpressure protection and act to limit the potential for challenging the pressurizer safety valves.

Monitoring of the existing annunciators for the backup air system will be supplemented by quarterly containment entries for local observation and monitoring of the air bottle pressure.

Technical Basis and Discussion of Change

The following sections provide our technical justification of the proposed request, and in particular our basis for concluding that our request is consistent with the NRC's policy statement, USNRC, "Use of Probabilistic Risk Assessment Methods in Nuclear Activities: Final Policy Statement," Federal Register, Vol. 60, p. 42622, August 16, 1995. This justification is presented in a format which is consistent with the Principle Elements of Risk-Informed, Plant-Specific Decision making set forth in USNRC, Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications", August 1998. That is to say, the technical justification demonstrates that:

1. The proposed change meets the current regulations. No exemption or rule change is being requested.

2. The proposed change is consistent with the defense-in-depth philosophy. Traditional engineering considerations have been used to demonstrate this consistency.

3. The proposed change maintains sufficient safety margins. Traditional engineering considerations have been used to demonstrate that this is the case.

4. The proposed change produces a negligible change in core damage frequency or risk and is consistent with the Commission's Safety Goal Policy Statement.

5. There is no impact on Dominion's Configuration Risk Management Program. PORV availability will continue to be monitored and evaluated in accordance with the requirements of 10 CFR 50.65 a(4).

Design and Licensing Basis

The proposed change meets the current regulations. No exemption or rule change is being requested or proposed. Technical Specification 3.1.A.6 will continue to require operability of the PORVs whenever the reactor coolant system temperature exceeds 350 °F. An allowed outage time for the backup air bottles is being proposed as an addition to the existing requirements. The requirements for the Low Temperature Overpressure Protection System of Specification 3.1.G are not being changed. The design basis functions of the pressurizer PORVs are as follows:

- They provide a backup to the pressurizer safety valves, which function in concert with the reactor protection system to maintain RCS pressure less than 110% of the design pressure during accident and transient conditions. The accident analyses presented in Chapter 14 of the UFSAR demonstrate that the appropriate limits can be met without reliance on the pressurizer PORVs. The proposed changes are consistent with the design basis.

- They are used for mitigation of a design-basis steam generator tube rupture accident. Operator actions to limit offsite releases following a tube rupture event are discussed in Section 14.3.1.5 of the Surry UFSAR.

  Upon completion of identification and isolation of the ruptured generator, the following actions are performed:

  1. Initiate RCS cooldown through the intact steam generators by dumping steam to the main condenser or through the steamline PORV (depending on the availability of offsite power).
  2. Depressurize the RCS to minimize break flow and refill the pressurizer using the pressurizer spray or the pressurizer PORVs. Maintain the RCS pressure within the pressure-temperature limit curve for the Reactor Coolant System.
  3. Terminate safety injection flow upon meeting the SI termination criteria.
  4. Establish normal letdown and charging functions and control RCS pressure to minimize primary-to-secondary leakage.
  5. Initiate appropriate post-SGTR cooldown procedures.

  These additional actions limit the potential for any additional releases from the affected generator following the isolation step.

Note that the pressurizer spray is the preferred method of depressurization. In the event of a loss of offsite power (LOOP), pressurizer spray will not be available because loss of power to the station service buses will result in reactor coolant pump coastdown and loss of driving pressure drop across the normal spray line. In this case, use of the pressurizer PORVs is directed. Instrument air can be made available to the PORVs in the event of a LOOP by manually aligning a turbine building instrument air compressor to the containment system. The turbine building instrument air compressors are powered from the 480 VAC emergency buses. In the event of loss of instrument air, the backup air bottles provide a redundant motive power source to the PORVs. Operability of the backup air system is still required under the proposed changes. However, an allowed outage time consistent with its risk significance is being proposed. The proposed changes continue to support the design basis.

- They provide low-temperature overpressure protection (LTOP) of the reactor vessel during startup and shutdown. This function is governed by Technical Specification 3.1.G. No changes to Specifications governing operation of the LTOP System are proposed by this submittal.

- They provide for plant cooldown in compliance with Branch Technical Position RSB 5-1 to SRP 5.4.7, "Residual Heat Removal (RHR) system." Operational requirements for the PORVs below 350°F are not being changed by this proposal. The availability of the backup air bottles for emergency RCS cooldown and depressurization will be impacted by this change but, as discussed further below, the impact is negligible.

Safety Assessment

The proposed change is consistent with the defense-in-depth philosophy. The original design function of the pressurizer PORVs was to provide backup overpressure protection to the reactor coolant system during upset conditions. Ultimate safety-related protection is provided by the reactor protection system in conjunction with the main steam safety valves and the pressurizer safety valves. The accident analyses presented in Chapter 14 of the UFSAR demonstrate adequate RCS overpressure protection during unit operation without reliance on the PORVs.

For steam generator tube rupture mitigation, the pressurizer PORVs are relied upon for reactor coolant system depressurization in the event of a Loss of Offsite Power (LOOP). The primary motive force for the Surry PORVs is the containment instrument air system. Each unit has two redundant 100% capacity containment instrument air compressors. These compressors are powered from normal station service buses. In the event of a loss of offsite power or other unavailability of the containment instrument air compressors, the turbine building instrument air is available as a backup. The turbine building instrument air system consists of two compressors (one per unit), located in a tornado-, missile-, and earthquake protected area. These compressors are powered from the "J" emergency buses; therefore, in the event of a

loss of offsite power and an accident (e.g. tube rupture), the turbine building compressor for the accident unit will receive power from the swing emergency diesel generator (EDG#3).

The emergency procedures include verification of the availability of instrument air and contingency steps for restoration and recovery of instrument air in advance of the RCS cooldown and depressurization steps. Options available to the operator including restarting a containment instrument air compressor (if offsite power remains available), or cross-tying to the turbine building instrument air system from either unit. In the unlikely event of loss of instrument air with failure to restore the system, the backup air bottles provide motive power. As will be demonstrated, the proposed 14-day Allowed Outage Time for the backup air system will not significantly impact the availability and reliability of the PORVs. It should also be noted that emergency contingency action (ECA) procedures are also available for responding to the highly unlikely case of a tube rupture with no RCS pressure control (i.e. loss of both pressurizer spray and pressurizer PORVs).

In the unlikely event of a required emergency cooldown with normal pressurizer spray unavailable (i.e., natural circulation cooldown), emergency procedures and contingency actions are available. If letdown can be established, RCS depressurization is performed using auxiliary spray. The natural circulation cooldown procedures call for depressurization using the pressurizer PORVs only if normal and auxiliary spray are unavailable.

The proposed change maintains sufficient safety margins. There is no impact on the accident analyses presented in Chapter 14. The pressurizer PORVs will continue to be maintained in a high state of availability for manual operation if required by the operations staff. Operability of the PORVs is not required for mitigation of any of the UFSAR Chapter 14 accident analyses except for the LOOP case of the steam generator tube rupture. For this case, the proposed 14 day Allowed Outage Time for the backup air system will not significantly impact the availability and reliability of the PORVs for tube rupture mitigation. Emergency contingency action (ECA) procedures are available for responding to the highly unlikely case of a tube rupture with no RCS pressure control (i.e. loss of both pressurizer spray and pressurizer PORVs). Training on the tube rupture accident is part of the licensed operator requalification program.

Currently calculated offsite doses for the tube rupture event are reported in Section 14.3.1.4.5 of the UFSAR. Even with the conservative assumption that the reactor coolant system operates at the Technical Specification limit on coolant activity with a concurrent accident iodine spike, the calculated doses are a small fraction of the 10 CFR 100 limits. Surry typically operates at a coolant activity level that is much lower than the Technical Specification limit.

Similarly, the currently calculated control room doses for tube rupture are well below the GDC-19 criteria. The limiting case for control room dose assumes continued availability of offsite power. For this case, normal pressurizer spray is expected to be available and operator reliance on the PORVs for depressurization is unlikely.

The proposed change produces a negligible change in core damage frequency. Review of the Surry PRA models shows that the pressurizer PORVs are marginally risk significant. The impact of a two week allowed outage time for the backup air system on overall PORV availability has been shown to be negligible using risk assessment techniques.

The probability of loss of the PORVs as a function of backup air system allowed outage time (AOT) was generated using standard fault tree techniques. Basic assumptions of the analysis are as follows:

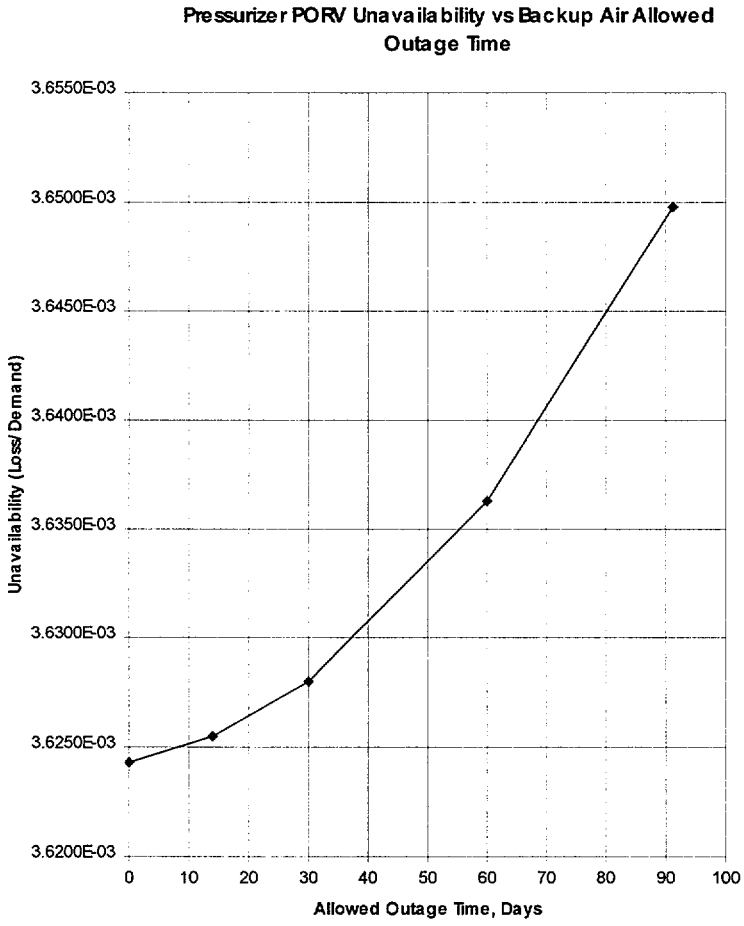
- Backup air allowed outage time (AOT) was varied to determine the sensitivity to assumed AOT
- 4 events/year requiring entry into the AOT were assumed
- The PORV mechanical failure rate (failure to open on demand) was assumed at 0.01/demand
- PORV common cause (2/2) mechanical failure rate = 0.001/demand (Beta=0.1)
- Loss of instrument air rate was taken from NUREG/CR-5472, "A Risk-Based Review of Instrument Air Systems at Nuclear Power Plants", January 1990. =0.092/critical year = 1.05E-5/critical hour
- Steam generator tube rupture depressurization mission time = 2 hours ---> Instrument air failure/demand = 1 – exp(-2*1.0E-5) = 2.1E-5/demand
- Loss of a DC bus =1.0E-3/demand
- Failure of a solenoid valve = 1.81E-2/demand
- PORV block valve closure frequency for PORV seat leakage = 30 days/year
- Failure of a PORV block valve to open = 0.025/demand
- Backup air bottle loss of function = 1.00E-6/demand

The results show that the PORV failure frequencies are dominated by mechanical failure rates for the PORVs and solenoid valves. The normal motive power (instrument air) has a failure rate which is two orders of magnitude below this for a typical RCS depressurization mission time of 2 hours. As a result, the overall reliability of the RCS depressurization function via the PORVs is insensitive to the availability of the backup air bottle system. Summarizing:

1. The risk of loss of the PORV capability is dominated by mechanical failures of the PORVs and associated solenoid valves.
2. Loss of motive power is a minor contributor to PORV unavailability.
3. Because of the high reliability of the instrument air system, backup air bottle system unavailability is a minor contributor to system failure rates resulting from a loss of motive power.
4. PORV unavailability is insensitive to allowed outage time for the air bottle system.

The sensitivity of PORV unavailability to backup air allowed outage time is shown in Figure 1 (below). Since the proposed AOT has negligible impact (less than 0.1%) on PORV unavailability, it follows that the impact of the AOT on the PORV backup air system on core damage frequency (CDF) and large early release frequency (LERF) is negligible.

FIGURE 1



This conclusion was confirmed by using the Surry Safety Monitor, which is the on-line configuration risk management tool used by the Surry operating staff. The Safety Monitor provides a full solution of the plant PRA model at a truncation of 5.0E-9. A Safety Monitor case was executed with both bottled air supplies to both pressurizer PORVs failed. The calculated CDF increased from 2.73E-5 events per year to 2.74E-5 events per year and the LERF did not increase to the limit of roundoff error. The 1.0E-7 increase is well below the 1.00E-6 limit at which Allowed Configuration times of less than 1 year begin to emerge. This observation validates the conclusion drawn above that PORV unavailability is insensitive to the air bottle system allowed outage time (AOT). Consequently, plant risk is also insensitive to the air bottle AOT.

The risk benefit of the proposed change is twofold. First, under the current specifications, the initial response to an inoperable valve which is capable of being manually cycled is to close the associated block valve within one hour. Since in the large majority of cases instrument air remains available to the PORV, the preferable response to an inoperable backup air supply is to leave the block valve open. This leaves the valve available to perform its normal pressure control function in the event of a transient. Second, an inoperable PORV requires that the unit be placed in hot shutdown within 6 hours and a reduction of Reactor Coolant System average temperature to less than 350 °F within the following 6 hours. Thus the proposed change reduced the potential for a forced shutdown action with its attendant risks in response to a condition (loss of the backup air) which has been shown to have very low risk significance.

There is no impact on Dominon's Management of Plant Risk per the Requirements of 10 CFR50.65.

Regulatory Guide 1.177 requires a three-tiered approach for evaluating the risk associated with proposed Technical Specifications Allowed Outage Time Changes. Dominion has applied Regulatory Guide 1.177 as a framework for developing the basis of the proposed change.

- *Tier 1: PRA Capability and Insights.* As noted above, the proposed allowed outage time for the PORV backup air system will have a negligible impact upon the Surry CDF and Large Early Release Frequency (LERF).
- *Tier 2: Avoidance of Risk-Significant Plant Configurations.* Plant risk is monitored and controlled per the requirements of the Maintenance Rule, 10 CFR 50.65. This program already works to minimize risk and avoid risk-significant configurations. Its ability to do so will not be affected by the proposed change. The proposed change does not affect or change the risk significance of any component or group of components.
- *Tier 3: Risk Informed Configuration Risk Management.* The 10 CFR 50.65 a(4) implementation program presently in place continuously reviews planned maintenance configurations to ensure that risk is maintained at acceptable low levels. Emergent configurations are evaluated via the same tools. Typically, the corrective actions imposed by Technical Specifications provide appropriate compensatory measures. Additional compensatory measures will be added as a

part of the 10 CFR 50.65 a(4) implementation program, if ongoing review finds that such measures are warranted.

In conclusion, the proposed changes to the Technical Specifications governing the pressurizer PORVs and their backup air system will have a negligible impact upon the Core Damage Frequency at Surry Power Station and on the risk management process established per 10 CFR 50.65.

The proposed change has a negligible impact on ATWS risk.

Dominion is committed to implementation of the Westinghouse Owners Group (WOG) Risk-Informed anticipated transient without scram (ATWS) rule administration process currently under discussion with the NRC. As such, availability of pressurizer PORVs and support systems for service during power operation will be monitored for impact on ATWS risk. However, as has been demonstrated, the proposed allowed outage time on the backup air system has a negligible impact on PORV availability, it follows that there is also negligible impact upon ATWS risk.

Specific Changes

1. Add new Specification 3.1.A.6.f:

   f. With one or both PORV(s) inoperable (but capable of being manually cycled) because of an inoperable backup air supply, within 14 days either restore the PORV(s) backup air supply(ies) to OPERABLE status or be in at least HOT SHUTDOWN within the next 6 hours and reduce Reactor Coolant System average temperature to < 350°F within the following 6 hours.

2. Add the following TS 3.1 Basis Paragraph

   With one or both PORVs inoperable (but capable of being manually cycled) due to an inoperable backup air supply, continued operation for 14 days is allowed provided the normal motive force for the PORVs, i.e., the instrument air system, continues to be available. Instrument air has a high system reliability, and the likelihood of it being unavailable during a demand for PORV operation is low enough to justify a reasonable length of time (i.e., 14 days) to repair the backup air system.

3. Add new Surveillance Requirements 4.1.B.1.d and e:

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.

Note that the new surveillance requirements with the actual surveillance limit values and the actual setpoint values will be included in the Surry Technical Requirements Manual.

4. Add new paragraphs to Section 4.1, BASIS:

Pressurizer PORV, PORV Block Valve, and PORV Backup Air Supply

The safety-related, seismic PORV backup air supply is relied upon for two functions - mitigation of a design basis steam generator tube rupture accident and low temperature overpressure protection (LTOP) of the reactor vessel during startup and shutdown. The surveillance criteria are based upon the more limiting requirements for the backup air supply (i.e. more PORV cycles potentially required to perform the mitigation function), which are associated with the LTOP function.

The PORV backup air supply system is provided with a calibrated alarm for low air pressure. The alarm is located in the control room. Failures such as regulator drift and air leaks which result in low pressure can be easily recognized by alarm or annunciator action. A periodic quarterly verification of air pressure against the surveillance limit supplements this type of built-in surveillance. Based on experience in operation, the minimum checking frequencies set forth are deemed adequate.

Safety Significance

Dominion is proposing a change to the Surry Technical Specifications which provides for a 14-day allowed outage time for one or both of the PORV backup air supply systems. The proposed change has been demonstrated to be acceptable on the basis that overall PORV availability for accident mitigation is not significantly changed.

An analysis of the proposed change has been performed using the Principle Elements of Risk-Informed Decision Making set forth in Regulatory Guide 1.177. As a result, we have concluded that:

- The proposed change meets the current regulations. No exemption or rule change is being requested.

- The proposed change is consistent with the defense-in-depth philosophy. Traditional engineering considerations have been used to demonstrate this consistency.

- The proposed change maintains sufficient safety margins. Traditional engineering considerations have been used to demonstrate that this is the case.

- The proposed change produces a negligible change in core damage frequency or risk and is consistent with the Commission's Safety Goal Policy Statement.

- There is no impact on Dominion's program for monitoring and controlling plant risk. PORV availability will continue to be monitored and evaluated in accordance with the requirements of 10 CFR 50.65 a(4).

Environmental Assessment

The proposed change has no environmental impact and does not result in any increase in the individual or cumulative occupational radiation exposure. No new effluents or effluent release paths are created as a result of the proposed change. Therefore, there is no environmental impact as a result of the proposed Technical Specification change.

Attachment 2

Mark-up of Technical Specifications and Bases Changes

Surry Power Station
Units 1 and 2
Dominion

NO CHANGE ON THIS PAGE—
PROVIDED FOR INFORMATION

6. Relief Valves

Two power operated relief valves (PORVs) and their associated block valves shall be OPERABLE* whenever the Reactor Coolant System average temperature is ≥350°F.

a. With one or both PORVs inoperable but capable of being manually cycled, within 1 hour either restore the PORV(s) to OPERABLE status or close the associated block valve(s) and maintain power to the associated block valve(s). Otherwise, be in at least HOT SHUTDOWN within the next 6 hours and reduce Reactor Coolant System average temperature to <350°F within the following 6 hours.

b. With one PORV inoperable and not capable of being manually cycled, within 1 hour either restore the PORV to OPERABLE status or capable of being manually cycled or close the associated block valve and remove power from the block valve. In addition, restore the PORV to OPERABLE status or capable of being manually cycled within the following 72 hours. Otherwise, be in at least HOT SHUTDOWN within the next 6 hours and reduce Reactor Coolant System average temperature to <350°F within the following 6 hours.

c. With both PORVs inoperable and not capable of being manually cycled, within 1 hour restore at least 1 PORV to OPERABLE status or capable of being manually cycled. Otherwise, close the associated block valves and remove power from the block valves. In addition, be in HOT SHUTDOWN within the next 6 hours and reduce Reactor Coolant System average temperature to <350°F within the following 6 hours.

*Automatic actuation capability may be blocked when Reactor Coolant System pressure is below 2000 psig.

d. With one block valve inoperable, within 1 hour either restore the block valve to OPERABLE status or place the associated PORV in manual. In addition, restore the block valve to OPERABLE status in the next 72 hours or, be in at least HOT SHUTDOWN within the next 6 hours and reduce reactor coolant average temperature to <350°F within the following 6 hours.

e. With both block valves inoperable, within 1 hour either restore the block valves to OPERABLE status or place the associated PORVs in manual. Restore at least 1 block valve to OPERABLE status within the next hour or, be in at least HOT SHUTDOWN within the next 6 hours and reduce reactor coolant average temperature to <350°F within the following 6 hours.

Add

f. With one or both PORV(s) inoperable (but capable of being manually cycled) because of an inoperable backup air supply, within 14 days either restore the PORV(s) backup air supply(ies) to OPERABLE status or be in at least HOT SHUTDOWN within the next 6 hours and reduce Reactor Coolant System average temperature to < 350°F within the following 6 hours.

7. Reactor Vessel Head Vents

a. At least two Reactor Vessel Head vent paths consisting of two isolation valves in series powered from emergency buses shall be OPERABLE and closed whenever RCS temperature and pressure are >350°F and 450 psig.

The power operated relief valves (PORVs) operate to relieve Reactor Coolant System pressure below the setting of the pressurizer code safety valves. The PORVs and their associated block valves may be used by the unit operators to depressurize the Reactor Coolant System to recover from certain transients if normal pressurizer spray is not available. Specifically, cycling of the PORVs is required to mitigate the consequences of a design basis steam generator tube rupture accident. Therefore, whenever a PORV is inoperable, but capable of being manually cycled, the associated block valve will be closed with its power maintained. The capability to cycle the PORVs is verified during each refueling outage (and is not required during power operations). These relief valves have remotely operated block valves to provide a positive shutoff capability should a relief valve leak excessively. The electrical power for both the relief valves and the block valves is supplied from an emergency power source to ensure the ability to seal this possible Reactor Coolant System leakage path.

INSERT

With one or both PORVs inoperable (but capable of being manually cycled) due to an inoperable backup air supply, continued operation for 14 days is allowed provided the normal motive force for the PORVs, i.e., the instrument air system, continues to be available. Instrument air has a high system reliability, and the likelihood of it being unavailable during a demand for PORV operation is low enough to justify a reasonable length of time (i.e., 14 days) to repair the backup air system.

The accumulation of non-condensable gases in the Reactor Coolant System may result from sudden depressurization, accumulator discharges and/or inadequate core cooling conditions. The function of the Reactor Vessel Head Vent is to remove non-condensable gases from the reactor vessel head. The Reactor Vessel Head Vent is designed with redundant safety grade vent paths. Venting of non-condensable gases from the pressurizer steam space is provided primarily through the Pressurizer PORVs. The pressurizer is, however, equipped with a steam space vent designed with redundant safety grade vent paths.

References

(1) UFSAR Section 14.2.9
(2) UFSAR Section 14.2.10

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.

Add

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.

The refueling water storage tank is sampled weekly for Cl^- and/or F^- contaminations. Weekly sampling is adequate to detect any inleakage of contaminated water.

Control Room Bottled Air System

The control room bottled air system is required to establish a positive differential pressure in the control room for one hour following a design basis accident. The ability of the system to meet this requirement is verified by: 1) checking air bottle pressurization, 2) demonstrating the capability to pressurize the control room pressure boundary, 3) functionally testing the pressure control valve(s), and 4) functionally testing the manual and automatic actuation capability. The test requirements and frequency are specified in Table 4.1-2A.

INSERT

Pressurizer PORV, PORV Block Valve, and PORV Backup Air Supply

The safety-related, seismic PORV backup air supply is relied upon for two functions - mitigation of a design basis steam generator tube rupture accident and low temperature overpressure protection (LTOP) of the reactor vessel during startup and shutdown. The surveillance criteria are based upon the more limiting requirements for the backup air supply (i.e. more PORV cycles potentially required to perform the mitigation function), which are associated with the LTOP function.

The PORV backup air supply system is provided with a calibrated alarm for low air pressure. The alarm is located in the control room. Failures such as regulator drift and air leaks which result in low pressure can be easily recognized by alarm or annunciator action. A periodic quarterly verification of air pressure against the surveillance limit supplements this type of built-in surveillance. Based on experience in operation, the minimum checking frequencies set forth are deemed adequate.

Attachment 3

Proposed Technical Specifications and Bases Changes

Surry Power Station
Units 1 and 2
Dominion

d. With one block valve inoperable, within 1 hour either restore the block valve to OPERABLE status or place the associated PORV in manual. In addition, restore the block valve to OPERABLE status in the next 72 hours or, be in at least HOT SHUTDOWN within the next 6 hours and reduce reactor coolant average temperature to <350°F within the following 6 hours.

e. With both block valves inoperable, within 1 hour either restore the block valves to OPERABLE status or place the associated PORVs in manual. Restore at least 1 block valve to OPERABLE status within the next hour or, be in at least HOT SHUTDOWN within the next 6 hours and reduce reactor coolant average temperature to <350°F within the following 6 hours.

f. With one or both PORV(s) inoperable (but capable of being manually cycled) because of an inoperable backup air supply, within 14 days either restore the PORV(s) backup air supply(ies) to OPERABLE status or be in at least HOT SHUTDOWN within the next 6 hours and reduce Reactor Coolant System average temperature to < 350°F within the following 6 hours.

7. Reactor Vessel Head Vents

a. At least two Reactor Vessel Head vent paths consisting of two isolation valves in series powered from emergency buses shall be OPERABLE and closed whenever RCS temperature and pressure are >350°F and 450 psig.

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With one or both PORVs inoperable (but capable of being manually cycled) due to an inoperable backup air supply, continued operation for 14 days is allowed provided the normal motive force for the PORVs, i.e., the instrument air system, continues to be available. Instrument air has a high system reliability, and the likelihood of it being unavailable during a demand for PORV operation is low enough to justify a reasonable length of time (i.e., 14 days) to repair the backup air system.

The accumulation of non-condensable gases in the Reactor Coolant System may result from sudden depressurization, accumulator discharges and/or inadequate core cooling conditions. The function of the Reactor Vessel Head Vent is to remove non-condensable gases from the reactor vessel head. The Reactor Vessel Head Vent is designed with redundant safety grade vent paths. Venting of non-condensable gases from the pressurizer steam space is provided primarily through the Pressurizer PORVs. The pressurizer is, however, equipped with a steam space vent designed with redundant safety grade vent paths.

References

(1) UFSAR Section 14.2.9

(2) UFSAR Section 14.2.10

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:

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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.

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TABULATION OF CHANGES

Surry Unit 1 / License No. DPR 32 / Docket Nos. 50-280
Surry Unit 2 / License No. DPR 37 / Docket Nos. 50-281

Summary of changes:

The proposed changes to the Operating Licenses, Technical Specifications, and Bases are being made to provide a separate allowed outage time for the pressurizer PORV backup air supply, as well as to incorporate associated surveillance requirements.

DELETE	DATED	SUBSTITUTE
Unit 1 Operating License		
OL Page 3	03-09-01	OL Page 3
Unit 2 Operating License		
OL Page 3	03-09-01	OL Page 3
Units 1 and 2 Technical Specifications and Bases		
Page TS 3.1-5	05-02-95	Page TS 3.1-5
Page TS 3.1-5c	05-02-95	Page TS 3.1-5c
Page TS 4.1-1	06-11-98	Page TS 4.1-1
Page TS 4.1-5	03-09-01	Page TS 4.1-5

Attachment 4

Significant Hazards Consideration Determination

Surry Power Station
Units 1 and 2
Dominion

SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

Dominion is proposing a risk informed license amendment in the form of Technical Specifications changes for Surry Power Station, Units 1 and 2. A 14 day allowed outage time is provided for an inoperable PORV backup air system.

The proposed change does not alter the limiting results of the safety analyses presented in Chapter 14 of the Updated Final Safety Analysis Report (UFSAR). The proposed change will not alter the capability of the pressurizer PORVs to perform their design functions for transients and postulated accidents. Probabilistic safety assessment methods have been used to demonstrate that the proposed change will have negligible impact upon the availability and reliability of the PORVs.

Dominion has reviewed the requirements of 10 CFR 50.92 as they relate to the proposed change for Surry Units 1 and 2 and determined that a significant hazards consideration is not involved. The following is provided to support this conclusion.

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

   The proposed change does not introduce any new mechanisms for the initiation of transients or accidents or for the failure of equipment relied upon in the accident analyses to mitigate the consequences of accidents. The impact of the proposed change on the availability and reliability of the pressurizer PORVs is negligible. Therefore the accident analysis results and conclusions remain bounding.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated.

   There are no modifications to the plant as a result of the changes. No new accident or event initiators are created by changing the required actions for various conditions of PORV inoperability. The proposed change will not introduce any new equipment failure modes that could initiate accidents or change the analysis results presented in the UFSAR.

3. Does the change involve a significant reduction in a margin of safety.

   The proposed change will not alter the limiting results of the safety analyses presented in Chapter 14 of the UFSAR. Provision of an allowed outage time for the pressurizer PORV backup air system and of more condition specific and appropriate actions for various types of PORV inoperability has an insignificant impact on the availability and reliability of the PORVs for performing their safety related functions.