

**VIRGINIA ELECTRIC AND POWER COMPANY**  
**RICHMOND, VIRGINIA 23261**

December 22, 1999

United States Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

Serial No. 99-593  
NL&OS/ETS R1  
Docket Nos. 50-338  
50-339  
50-280  
50-281  
License Nos. NPF-4  
NPF-7  
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DPR-37

Gentlemen:

**VIRGINIA ELECTRIC AND POWER COMPANY**  
**NORTH ANNA POWER STATION UNITS 1 AND 2**  
**SURRY POWER STATION UNITS 1 AND 2**  
**REVISION OF REGULATORY GUIDE (RG) 1.97 TYPE A VARIABLES**

As part of our ongoing configuration management project, which includes conversion to the Improved Standard Technical Specifications, Virginia Electric and Power Company (Virginia Power) has re-evaluated the current emergency operation procedures. Based on that review, we have determined that the current plant instrumentation classified as RG 1.97 Type A variables requires revision. The revised group of Type A variables, including a basis for inclusion or deletion of variables, is included in Attachments 1 and 2 for North Anna and Surry Power Stations, respectively.

There are no new commitments made in this letter. If you have any questions or require additional information, please contact us.

Very truly yours,



Leslie N. Hartz  
Vice President - Nuclear Engineering and Services

Attachments

Acc 1/1

PDR #DOCK 05000 280

cc: U. S. Nuclear Regulatory Commission  
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**Attachment 1**

**North Anna Units 1 and 2**

**Regulatory Guide 1.97 Type A Variables**

**Virginia Electric and Power Company**

**Current Regulatory Guide 1.97 Type "A" Variables  
North Anna Power Station Units 1 and 2**

VARIABLE NUMBER	VARIABLE
A-01	Steam Generator Narrow Range Level
A-02	Steam Generator Pressure
A-03	Core Exit Temperature
A-07	RCS Wide Range Pressure
A-08	High Head Safety Injection (HHSI) Flow to the Cold Leg
A-13	Pressurizer Level
A-15	Containment Pressure
A-17	Degree of Subcooling
A-18	Containment Sump Level, Wide Range
A-19	Containment Wide Range Radiation Monitor
A-21	Containment Wide Range Pressure

**Justification for additions:**

Containment Wide Range Pressure

Containment wide range pressure was previously identified only as a Type C, Category 1 variable. However, the emergency operation procedures (EOP) use the Containment wide range pressure recorder in conjunction with the normal range Containment Pressure indication in order to determine if a manual start of quench spray is necessary. As a result, Containment wide range pressure is being included as a Type A variable (A-21).

**Justification for deletions:**

High Head Safety Injection (HHSI)

Indication of high head safety injection flow to the hot leg is not required to be a Type A variable. The reactor coolant pump (RCP) trip criteria in the EOPs requires indication that at least one charging pump is running and flowing to the RCS and that RCS subcooling based on core exit thermocouples (CETs) is less than 20°F. If both of these criteria are met, the operator must manually trip the RCPs. A safety injection (SI) signal automatically aligns the (SI) system for cold leg injection from the RWST. If the RWST level reaches its low-low level setpoint while a SI signal is present, the SI system automatically realigns for cold leg recirculation from the containment sump. Since indication of HHSI flow to the cold leg is the only indication required as an input to the RCP trip criteria, indication of HHSI flow to the hot leg is not required as a Type A variable. Indication of HHSI flow to the hot leg remains a Type D, Category 2 variable.

Reactor Coolant System Hot Leg Temperature

Although the Reactor Coolant System (RCS) hot leg temperature is not explicitly called out in the EOPs, it was incorrectly identified as an input to RCS subcooling indication

and consequently, included as a Type A variable. The Subcooling Margin Monitor actually utilizes RCS pressure and core exit thermocouple temperatures as inputs. Therefore, RCS hot leg temperature is no longer considered a Type A variable. Indication of RCS hot leg temperature remains a Type B, Category 1 variable since it provides information on the accomplishment of core cooling.

#### Refueling Water Storage Tank Level

The Refueling Water Storage Tank (RWST) level was originally identified as both a Type A and Type D variable. The RWST level is used in the EOPs to indicate when to manually transfer the LHSI pump suction to the containment sump. If the operator fails to manually accomplish the switchover prior to a minimum level condition in the RWST, automatic switchover from the RWST to the containment sump occurs. Since automatic actuation exists, RWST level is not a Type A variable. Indication of RWST level remains a Type D, Category 2 variable since it provides information on the operation of the safety injection system.

#### Emergency Condensate Storage Tank Level

Emergency Condensate Storage Tank (ECST) level is required to be continuously monitored in the EOPs. If a low level is indicated, the operator is required to transition to an abnormal procedure to compensate for the lack of ECST inventory. However, Technical Specifications ensure that the level maintained in the ECST is adequate to mitigate the accident without operator action during a design basis accident. Therefore, the indication of ECST level is not required as a Type A variable. Indication of ECST level remains a Type D, Category 1 variable since it provides information on the operation of the auxiliary feedwater system.

**Attachment 2**

**Surry Units 1 and 2**

**Regulatory Guide 1.97 Type A Variables**

**Virginia Electric and Power Company**

**Current Regulatory Guide 1.97 Type "A" Variables  
Surry Power Station Units 1 and 2**

VARIABLE NUMBER	VARIABLE
A-01	Steam Generator Narrow Range Level
A-02	Steam Generator Pressure
A-03	Core Exit Temperature
A-07	RCS Wide Range Pressure
A-08	HHSI Flow to the Cold Leg
A-13	Pressurizer Level
A-15	Containment Pressure
A-18	Degree of Subcooling
A-19	Containment Sump Level, Wide Range
A-20	Containment Wide Range Radiation Monitor
A-21	AFW Flow

**Justification for additions:**

Auxiliary Feedwater Flow

Auxiliary Feedwater (AFW) flow indication is utilized by the operator in a Functional Restoration Procedure as an indication that the affected unit's AFW system is not functioning, thereby prompting the manual operator action to initiate AFW cross-connect flow from the unaffected unit. Typically, the loss of all AFW concurrent with a high-energy line break (HELB) outside containment would be considered outside Surry's design basis. However, the loss of all AFW must be assumed for a HELB in Surry's Main Steam Valve house (MSVH) because the AFW pump motors are located in the MSVH and are not environmentally qualified for a HELB in the MSVH. Since AFW flow indication is the primary method for determining that a manual operator action is required in order to mitigate this specific DBA, AFW flow indication is required to be classified as a Type A variable (A-21).

**Justification for deletions:**

High Head Safety Injection (HHSI)

Indication of high head safety injection flow to the hot leg is not required to be a Type A variable. The reactor coolant pump (RCP) trip criteria in the EOPs requires indication that at least one charging pump is running and flowing to the RCS and that RCS subcooling based on core exit thermocouples (CETs) is less than 20°F. If both of these criteria are met, the operator must manually trip the RCPs. A safety injection (SI) signal automatically aligns the (SI) system for cold leg injection from the RWST. If the RWST level reaches its low-low level setpoint while a SI signal is present, the SI system automatically realigns for cold leg recirculation from the containment sump. Since indication of HHSI flow to the cold leg is the only indication required as an input to the

RCP trip criteria, indication of HHSI flow to the hot leg is not required as a Type A variable. Indication of HHSI flow to the hot leg remains a Type D, Category 2 variable.

#### Reactor Coolant System Hot Leg Temperature

Although the Reactor Coolant System (RCS) hot leg temperature is not explicitly called out in the EOPs, it was incorrectly identified as an input to RCS subcooling indication and consequently, included as a Type A variable. The Subcooling Margin Monitor actually utilizes RCS Pressure and core exit thermocouple temperatures as inputs. Therefore, RCS hot leg temperature is no longer considered a Type A variable. Indication of RCS hot leg temperature remains a Type B, Category 1 variable since it provides information on the accomplishment of core cooling.

#### Refueling Water Storage Tank Level

The Refueling Water Storage Tank (RWST) level was originally identified as both a Type A and Type D variable. The RWST level is used in the EOPs to indicate when to manually transfer the LHSI pump suction to the containment sump. If the operator fails to manually accomplish the switchover prior to a minimum level condition in the RWST, automatic switchover from the RWST to the containment sump occurs. Since automatic actuation exists, RWST level is not a Type A variable. Indication of RWST level remains a Type D, Category 2 variable since it provides information on the operation of the safety injection system.

#### Emergency Condensate Storage Tank Level

Emergency Condensate Storage Tank (ECST) level is required to be continuously monitored in the EOPs. Technical Specifications ensure that the level maintained in the ECST is adequate to mitigate the accident without operator action during a design basis accident. Therefore, the indication of ECST level is not required as a Type A variable. Indication of ECST level remains a Type D, Category 1 variable since it provides information on the operation of the auxiliary feedwater system.