From:	Gary D Miller (Generation - 6)
To:	Cotton, Karen
Cc:	Candee Lovett (Generation - 3)
Subject:	[External_Sender] Dominion Energy Comments on the SPS PG Lockout License Amendment SER
Date:	Monday, June 19, 2017 8:48:36 AM

Karen,

The NRC's SER dated May 10, 2017 (Serial No. 17-217) was reviewed in relation to Dominion's submittal dated May 10, 2016 (Serial No. 16-181) for extending PG lockout requirements to additional operating Modes at Surry, as supplemented by Dominion letter dated October 18, 2016 (Serial No. 16-181A.) Our review confirmed the issued Technical Specification changes were correct and the NRC conclusions were satisfactory.

However, we have several comments regarding statements in the SER, see items 1 - 6 below, that may require NRC clarification. In practice, these items will have no impact on our implementation; however, they may cause later confusion when interpreting the license basis if these statements are left as stated in docketed correspondence (i.e., the SER).

1. SE Introduction, bottom of page 1 through the top of page 2:

> "In its letter dated May 10, 2016, the licensee discussed a May 2011, dilution event at Surry Unit 2. Based on its analysis of data from the event, Dominion determined that the change in the source range nuclear instrumentation (SRNI) display, reflecting a significant reactivity change due to the boron dilution, was less than previously expected. The licensee's analysis also determined that the dynamic response of the SRNI had not been considered appropriately during transition to low leakage core loading patterns and removal of secondary neutron sources. When the operator relied on the under-predicted SRNI display for the reactivity increase rate to isolate the reactor coolant system (RCS) from the potential source of deborated PG makeup water, the reactivity increase could have resulted in a total loss of shutdown margin and lead to a core criticality before the boron dilution was terminated. Dominion indicated that the inadequate response of the SRNI had not been considered appropriately for the boron dilution analysis for certain cases in the Surry Updated Final Safety Analysis Report (UFSAR) Section 14.2.5, "Chemical and Volume Control System Malfunction." Specifically, the UFSAR boron dilution analysis for ISD and HSD conditions currently credited administrative boron concentration requirements and relied on the SRNI readings to support sufficient time for corrective operator action prior to complete loss of shutdown margin. In this license amendment request (LAR), Dominion proposed TS changes to extend the TS 3.2.E requirements of PG lockout from being applicable in RSD and CSD modes to being applicable in modes RSD, CSD, ISD and HSD and adding TS 3.2.F to allow modification of the PG lockout in HSD during the approach to criticality. The TS changes will allow Dominion to credit PG lockout and preclude boron dilution events for ISO and HSD conditions."

Dominion didn't make the yellow highlighted statement in our submittals. In fact, it is very likely that the slow dilution event would have been detected before loss of all shutdown margin.

The green highlighted statement is potentially misleading/unclear. More accurate wording

would be ‘in response to a significant reactivity change due to the boron dilution’.

2. In SE Section 2.0 the list of regulations and guidance applicable to this LAR includes the SRP (last bullet). Surry is not an SRP plant; however, if NUREG-0800 was simply used to inform the SER, its reference may be acceptable. That being said, NUREG-0800 requirements appear to be applied to Surry as noted in Item 3 below.

3. SE Section 3.0, first paragraph describes the SRP boron dilution acceptance criteria correctly: “In Section 15.4.6 of the SRP, the guidance indicates that at least 15 minutes should be available from the time the operator is made aware of an unplanned boron dilution event to the time of a total loss of shutdown margin (criticality) occurring during power operation, ISD, HSD, and CSD modes. A warning time of 30 minutes is required during RSD”. However, this is not Surry’s CLB as described in UFSAR section 14.2.5.2.2: “Administratively controlled shutdown margin requirements have been implemented at Surry to ensure that at least 15 minutes are available from initiation of dilution to loss of shutdown margin for corrective operator action in response to an inadvertent boron dilution at intermediate shutdown and hot shutdown.” Surry’s CLB for RSD and CSD does not include a specific operator response time because the current TS 3.2.E precludes high flow rate dilutions in these modes.

4. SE Section 3.3, first paragraph, last sentence: “The result met the SRP Section 15.4.6 guidance discussed in Section 3.0 of this SE.” Our existing analysis does not satisfy the SRP acceptance criterion. As stated in item 3 above, the SPS CLB is “to ensure that at least 15 minutes are available from initiation of dilution to loss of shutdown margin for corrective operator action."

5. SE Section 3.3, 2nd paragraph. This discussion does not appear in our submittal. In particular, it is difficult to understand the reviewer’s intention by the last sentence (“The use of the under-predicted SRNI readings in the analysis was non-conservative…”). We didn’t use under-predicted SRNI readings in any analysis. If anything, our analysis implicitly assumed over-predicted SRNI response. Even in context of analyzing the event data and finding that SRNI underperformed, this is a confusing statement and should be removed or clarified.

6. SE Section 3.3, 4th paragraph: “…boron dilution event is not a credible event with implementation of the proposed TS 3.2.E ...” With the revised TSs, the ***high flow rate*** dilution event is not credible in ISD or HSD. However, the low flow rate boron dilution is still credible as described in SE section 3.4.

Please advise if you require additional information or a phone call to discuss, or if you would prefer that we provide our comments in docketed correspondence.

Gary D. Miller, P.E.
Consulting Engineer
Nuclear Regulatory Affairs
Dominion Energy Services, Inc.
(804) 273-2771 or
tie-line 8-730-2771
fax (804) 273-3715
gary.d.miller@dom.com