



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

FINAL SAFETY EVALUATION

BY THE OFFICE OF NUCLEAR REACTOR REGULATION

FOR THE PRESSURIZED WATER REACTOR OWNERS GROUP

TOPICAL REPORT PWROG-17018-P/NP, REVISION 0.

"SOLID STATE PROTECTION SYSTEM GENERAL WARNING ALARM MODIFICATION"

EPID L-2018-TOP-0004

1.0 INTRODUCTION

By letter dated February 1, 2018 (Ref. 1), as supplemented by letters dated July 5, 2018 (Ref. 2), and March 13, 2020 (Ref. 3), the Pressurized Water Reactor Owners Group (PWROG) transmitted Topical Report (TR) PWROG-17018-P/NP, Revision (Rev.) 0, "Solid State Protection System (SSPS) General Warning Alarm Modification" (Ref. 4) to the U.S. Nuclear Regulatory Commission (NRC) for review and approval. By letter dated March 13, 2018 (Ref. 5), the NRC staff accepted the TR for review and subsequently, by emails dated April 2, 2018 (Ref. 6) and August 19, 2019 (Ref. 7), transmitted a request for additional information to PWROG in accordance with NRC's TR review process.

2.0 BACKGROUND AND REGULATORY EVALUATION

The proposed modification, as described within the subject TR, eliminates four automatic partial (half) reactor trips and replaces these automatic actions with an alarm and appropriate manual operator actions to eliminate sources of unnecessary reactor trips. This change is necessary to allow for a summary of new self-diagnostic results to be made available outside of the Solid State Protection System (SSPS) cabinets.

A licensee will use a variety of methods to evaluate the transients and accidents that could occur at its nuclear power plant (NPP). The NRC staff reviews these methods to ensure that they provide a realistic or conservative prediction such that it can be demonstrated that the requirements of 10 CFR can be satisfied.

2.1 NUREG-0800, Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants

NUREG-0800 provides the acceptance criteria for the review of TRs. Specifically, Standard Review Plan (SRP) Chapter 7, "Instrumentation and Controls," which addresses the requirements for instrumentation and control (I&C) systems in NPPs based on light-water reactor designs. SRP Chapter 7 and NRC Interim Staff Guidance (ISG), which augments

and supplements SRP Chapter 7, establishes the review criteria for Digital I&C systems, which the NRC staff applied to this safety evaluation (SE). Based on NRC staff's review this SE is limited to the evaluation of compliance with the applicable regulations and guidance documents to the degree that they can be met by the proposed modification description

2.2 10 CFR 50.55 a(h), Protection and Safety Systems

The following regulations are applicable to the subject TR:

10 CFR 50.55a(h) standards incorporated by reference include:

- The 1968 version of Institute of Electrical and Electronics Engineers (IEEE) Standard (Std.) IEEE Std. 279, "IEEE Standard: Criteria for Protection Systems for Nuclear Power Generating Stations,"
- The 1971 version of IEEE Std. 279, "IEEE Standard: Criteria for Protection Systems for Nuclear Power Generating Stations," and
- The 1991 version of IEEE Std. 603, "IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations," including the correction sheet dated January 30, 1995.

Each of these IEEE Stds. contains a clause that requires an indication when a protective action is bypassed or removed from service.

- For IEEE Std. 279-1968, Clause 4.13, "Indication of Bypasses"
- For IEEE Std. 279-1971, Clause 4.13, "Indication of Bypasses"
- For IEEE Std. 603-1991, Clause 5.8.3, "Indication of Bypasses"

The NRC staff used the following guidance when it evaluated the applicant's compliance with the underlying "Indication of Bypasses" requirements:

2.3 Regulatory Guide (RG) 1.47, Revision 1, "Bypassed and Inoperable Status Indication for Nuclear Power Plant Safety Systems"

RG 1.47 (Ref. 8), describes a method acceptable to the NRC staff for complying with the regulatory requirements regarding the bypassed and inoperable status indication for nuclear power plant safety systems.

2.4 10 CFR Part 50, General Design Criteria (GDC) for Nuclear Power Plants

The NRC staff also used the following application-specific to 10 CFR Part 50, Appendix A, "General Design Criteria [(GDC)] for Nuclear Power Plants," to evaluate the TR for use in safety systems, as follows:

GDC 23, "Protection system failure modes," which states,

"The protection system shall be designed to fail into a safe state or into a state demonstrated to be acceptable on some other defined basis if conditions such as disconnection of the system, loss of energy (e.g., electric power, instrument air), or postulated adverse environments (e.g., extreme heat or cold, fire, pressure, steam, water, and radiation) are experienced."

3.0 TECHNICAL EVALUATION

This technical evaluation section documents the NRC staff's evaluation of the TR against the relevant criteria identified in Section 2.0 above. The technical evaluation has been separated into the following sections:

- 3.1 Solid State Protection System Description
- 3.2 Fail Safe Feature Description
- 3.3 Bypassed and Inoperable Status Indication

3.1 Solid State Protection System Description

The SSPS is a product line in use in Westinghouse designed NPPs. The salient features of the SSPS are summarized as follows:

1. The system is comprised of redundant, identical Trains (A and B) that are physically and electrically independent. Access to the cabinets in each train is administratively controlled. Additionally, each train is provided with a Demultiplexer cabinet to interface with the main control board and plant computer (if applicable).
2. The system performs reactor trip and engineered safety features voting and actuation functions as well as non-protective control and equipment protection type functions.
3. A bypass breaker in parallel with each trip breaker enables on-line testing of the trip breakers. The Train A protection system de-energizes the Train A reactor trip breaker and the Train B bypass breaker undervoltage coils, the Train B protection system de-energizes the Train B reactor trip breaker and the Train A bypass breaker undervoltage coils. The bypass breakers are interlocked to prevent simultaneous closure thus preventing both trains from being bypassed simultaneously.
4. System status information is transmitted to the control board status lamps and annunciators as well as to the plant computer.
5. Testing of the complete SSPS can be performed with the plant at power or shutdown. The process instrumentation portion of the protection system, the logic, and the reactor trip and engineered safety features actuation circuits are tested separately.

6. A system status alarm for each train is annunciated in the control room. The alarm is generated by the associated train General Warning circuit. If a General Warning condition should develop simultaneously in both trains, the General Warning circuits will automatically trip the reactor. This design feature is in addition to the bypass breaker interlock trip feature discussed in No. 3.
 - a. One part of the system status alarm (i.e., SSPS General Warning Alarm (GWA)) is that the four conditions (see description below) addressed by this modification produce an alarm and a half trip.
7. Testability of all reactor trip and engineered safety feature actuation functions can be performed at power (i.e., without an undesired effect on plant operation), is incorporated in the design.

The NRC approved the TR for the boards (cards) that contain a complex programmable logic device (CPLD) (Ref. 9 and Ref. 10) that proposed eight replacement circuit boards for the voting logic and associated communications to the main control board and plant computer Demultiplexers. The new design boards also contain some enhancements which include board edge light emitting diodes (LEDs) for enhanced status and self-diagnostics indication. The proposed modification of the subject TR for this SE would make this self-diagnostic information available external to the SSPS cabinets, on the main control board.

The TR proposes to change the functioning of the system status alarm portion of the SSPS system when four specific conditions occur. Only the fourth of these four conditions, listed below, involves a loss of function; the others do not. The four conditions are: (1) the loss of one (of the two) 15 VDC power supplies in either train, (2) the loss of one (of the two) 48 VDC power supplies in either train, (3) the multiplexer test switch selected to the "Inhibit" position or transitioning between positions, and (4) the pulled card (Rows 2-5) interlock. Annunciation of these four conditions is needed because they all represent a degradation of SSPS functionality. These four conditions currently result in an SSPS GWA and half trip. These four half-trip inputs do not protect against any specific transients or design basis accidents; they are used, in part, to help ensure the reliability and availability for the SSPS equipment (If an SSPS GWA is activated in both trains, the SSPS trips the reactor.).

The modified design in the TR would result in an SSPS Non-urgent Alarm for these four conditions, with no half trip input. The elimination of the four half trip inputs in each train means that some SSPS equipment conditions that would currently result in a plant trip would now only alarm as a result of the modification. In addition to these four conditions, other potential conditions identified by the self-diagnostics features of the new boards that contain a CPLD (which in the SSPS with the original boards would only be identified by surveillance testing) would also activate the SSPS Non-urgent Alarm. The motivation for this change is to improve efficiency and safety. In the current configuration, an operator must open the SSPS cabinet doors to see the status of the self-diagnostics that would identify failures, which are rarely expected to occur. Since the new self-diagnostics include (but are not limited to) identification of loss or degraded function, it is preferable to notify the operators immediately in the control room. Therefore, as part of the proposed design, new self-diagnostic features information will be made directly available to operators in the main control room.

3.2 Fail Safe Feature Description

The NRC staff considered 10 CFR Part 50, Appendix A, when evaluating the TR for use in safety systems, as follows:

GDC 23, "Protection system failure modes," which states:

"The protection system shall be designed to fail into a safe state or into a state demonstrated to be acceptable on some other defined basis if conditions such as disconnection of the system, loss of energy (e.g., electric power, instrument air), or postulated adverse environments (e.g., extreme heat or cold, fire, pressure, steam, water, and radiation) are experienced."

The current design of the SSPS meets this criterion by tripping the reactor when a card in each train of the SSPS is disconnected (from the card cage backplane connector). In addition, there is annunciation in the control room when each card is disconnected.

The TR, as supplemented, proposes to remove the fail-safe feature when a card in rows 2 through 5 is disconnected, but enhances (1) the "bypassed and inoperable status indication" aspects, and (2) the administrative aspects to prevent disconnecting a card in the operable SSPS train.

The proposed change decreases the likelihood of the two-pulled-cards malfunction by adding administrative controls to minimize opportunities for the human error of pulling a card in each train and does not affect the likelihood of the other three malfunctions. In addition, the proposed change increases the overall reliability of the SSPS by improving the early identification and correction of certain degraded conditions. Furthermore, the proposed change improves the outcomes of certain combinations of malfunctions by allowing for a controlled shutdown of the plant, if necessary, as opposed to an automatic trip.

In summary, the modification improves safety and reliability by: (1) adding administrative controls for avoiding an adverse condition and loss of protective function, (2) avoiding spurious trips which places unnecessary burden on plant systems and operators, and (3) identifying, in a timely manner, potential degradations in the SSPS equipment. In aggregate, the increases in reliability and safety provide reasonable assurance of protection and are an acceptable alternative to the current fail-safe features with half-trips. Therefore, the modification proposed in the TR would continue to meet GDC 23 by the activation of a control room annunciator when a card in rows 2 through 5 is disconnected.

3.3 Bypassed and Inoperable Status Indication

RG 1.47 describes a method acceptable to the NRC staff for complying with the regulatory requirements regarding the bypassed and inoperable status indication for nuclear power plant safety systems. The NRC staff evaluated the change with respect to the six positions in the RG as follows:

Position 1. "Administrative procedures should be supplemented by an indication system that automatically indicates, for each affected safety system or subsystem, the bypass or deliberately induced inoperability of a safety function

and the systems actuated or controlled by the safety function. Provisions should also be made to allow the operations staff to confirm that a bypassed safety function has been properly returned to service.”

The NRC staff agrees that there is no change in the conditions that produce an alarm (i.e., the same conditions continue to produce an alarm) and this position continues to be met. However, because a new alarm is being added and since the conditions producing the SSPS GWA are being changed, the TR states that a licensee will update alarm response procedures in accordance with the licensee’s quality assurance program.

Position 2. “The indicating system of Position 1 above should also be activated automatically by the bypassing or the deliberately induced inoperability of any auxiliary or supporting system that effectively bypasses or renders inoperable a safety function and the systems actuated or controlled by the safety function.”

The NRC staff agrees that there is no change in the conditions that produce an alarm (i.e., the same conditions continue to produce an alarm) and this position continues to be met.

Position 3. “Annunciating functions for system failure and automatic actions based on the self-test or self-diagnostic capabilities of digital computer-based I&C safety systems should be consistent with Positions 1 and 2 above.”

The original SSPS cards do not have self-diagnostic capabilities; therefore, position No. 3 did not apply to these cards. The new cards, however, discussed in the subject TR have self-diagnostic capabilities. The TR allows a modification to implement annunciating functions for degradations or failures of the cards in rows 2 through 5. The staff agrees that this approach is consistent with Positions 1 and 2.

Position 4. “The bypass and inoperable status indication system should include a capability for ensuring its operable status during normal plant operation to the extent that the indicating and annunciating functions can be verified.”

NRC staff’s evaluation to this position is addressed below.

Position 5. “Bypass and inoperable status indicators should be arranged such that the operator can determine whether continued reactor operation is permissible. The control room of all affected units should receive an indication of the bypass of shared system safety functions.”

The SSPS Non-urgent alarm would prompt the operator to determine the cause of the alarm in the affected SSPS train. Each of the CPLD-based cards in rows 2 through 5 have card edge LEDs that indicate the particular condition that generated the alarm; the operator can easily determine each card’s operable status and, thereby, determine whether continued reactor operation is permissible. Therefore, NRC staff agrees these card edge LEDs support meeting bypass and inoperable status and indication capabilities.

Position 6. "Bypass and inoperable status indicators should be designed and installed in a manner that precludes the possibility of adverse effects on plant safety systems. The indication system should not be used to perform functions that are essential to safety, unless it is designed in conformance with criteria established for safety systems."

The staff reviewed the proposed modification described in the TR and determined that it precludes the possibility of an adverse effect. In addition, the SSPS Non-urgent Alarm alerts the operator of the need to evaluate the condition of the SSPS and does not automatically initiate any actions (i.e., does not perform functions that are essential to safety). Therefore, NRC staff agrees that the proposed design provides reasonable assurance of safety in the presence of potential adverse effects on plant systems.

In summary, NRC staff has reasonable assurance that the design can meet the six regulatory positions in RG 1.47, and, therefore, the TR can meet the regulatory requirements for the bypassed and inoperable status indication.

4.0 CONCLUSIONS

Based on the evaluations and technical reviews discussed herein, the NRC staff finds the SSPS, as modified by TR PWROG-17018-P/NP, Revision 0, can continue to meet regulatory requirements when the associated NRC guidance is met for licensees that reference the TR. The NRC staff finds that the unique configuration of each plant requires that each licensee analyze whether the GWA change can be made under 10 CFR 50.59 without prior NRC approval.

This SE addresses only the generic safety issues associated with GWA change. Licensees may reference this SE, as applicable, when performing a 10 CFR 50.59 Screening/Evaluation.

4.1 Summary of Regulatory Compliance

The NRC staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by the GWA change, and (2) there is reasonable assurance that such activities will be conducted in compliance with the NRC's regulations.

5.0 CONDITIONS, LIMITATIONS, AND/OR ACTION ITEMS

The NRC staff did not evaluate whether implementation of the subject TR by each licensee will satisfy the requirements of 10 CFR 50.59(c)(2). Each licensee must consider its licensing basis in whole as provided in the final safety analysis report and plant specific configurations involving the SSPS in its 10 CFR 50.59 Screening/Evaluation. More specifically, 50.59(c)(2) states a licensee shall obtain a license amendment pursuant to 10 CFR 50.90(c)(2) prior to implementing a proposed change if the change meets any of the eight criteria related to potential malfunctions, accidents, and methods.

The SE of this subject TR does not generically pre-approve an outcome of each licensee's evaluation against specific 10 CFR 50.59 criteria. The SE of this subject TR only addresses the

generic safety issues associated with making the proposed change contained therein. These generic technical findings may be referenced in the site-specific 10 CFR 50.59 Screening/Evaluation process at the discretion of the licensee, to the extent that NRC has approved the specific design configurations and operations in the subject TR as an acceptable way of generically meeting regulatory requirements.

6.0 REFERENCES

1. Letter from W. A. Nowinowski, Pressurized Water Reactor Owners Group, to USNRC Document Control Desk, February 1, 2018, Submittal of PWROG-17018-P/NP, "Solid State Protection System General Warning Alarm Modification," ADAMS Accession No. ML18039A033.
2. Letter from W. A. Nowinowski, Pressurized Water Reactor Owners Group, to USNRC Document Control Desk, July 5, 2019, Transmittal of the Response to NRC Request for Additional Information Email for WCAP-17018-P/NP, Revision 0, "Solid State Protection System General Warning Alarm Modification," ADAMS Accession No. ML18191B172.
3. Letter from W. A. Nowinowski, Pressurized Water Reactor Owners Group, to USNRC Document Control Desk, March 13, 2020, Transmittal of the Response to the Second NRC Request for Additional Information for WCAP-17018-P/NP, Revision 0, "Solid State Protection System General Warning Alarm Modification," ADAMS Accession No. ML20073N407.
4. Topical Report PWROG-17018-NP, Revision 0, "Solid State Protection System General Warning Alarm Modification," January 31, 2018, ADAMS Accession No. ML18039A034.
5. Letter from USNRC, to W. A. Nowinowski, Pressurized Water Reactor Owners Group dated March 13, 2018, "Acceptance For Review of the Pressurized Water Reactor Owners Group Topical Report PWROG-17018-P/NP, 'Solid State Protection System General Warning Alarm Modification,'" ADAMS Accession No. ML18057A080.
6. Email from B. Benney, USNRC to C. Holderbaum, PWR Owners Group dated April 2, 2018, Transmittal of Request for Additional Information.
7. Email from J. Drake, USNRC to C. Holderbaum, PWR Owners Group dated August 19, 2019, Transmittal of Request for Additional Information, ADAMS Accession No. ML19295E585.
8. Regulatory Guide 1.47, Revision 1, "Bypassed and Inoperable Status Indication for Nuclear Power Plant Safety Systems," February 28, 2010, ADAMS Accession No. ML092330064.

9. WCAP-17867-P-A Revision 1, "Westinghouse SSPS Board Replacement Licensing Summary Report," October 31, 2014, ADAMS Accession No. ML14287A130.

10. WCAP-17867-P-A Revision 1, "Appendix A, SSPS New Design Boards Theory of Operation," October 31, 2014, ADAMS Accession No. ML14287A129.

Principal Contributor: Norbert Carte, NRR/DE/ECIB

Date: July, 15 2020

| TOPICAL REPORT PWROG-17018-P/NP, REVISION 0 | | | | | |
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| COMMENT RESOLUTION TABLE | | | | | |
| Comment Number | Text Location in the Proprietary DSE | | Comment Type (Clarification, Editorial, Accuracy, Proprietary) | PWROG Suggested Revision | NRC Response |
| | Page | Line | | | |
| 1 | 1 | 19 | Clarification | <p>Please revise: "The TR" to "Reference 1"</p> <p>Reference 3 revised the TR to delete the discussion regarding 10CFR50.59 from the TR.</p> | NRC staff finds the comment acceptable and the revisions have been incorporated. |
| | | | Editorial | Please revise: "requests" to "requested" | |
| 2 | 1 | 20 | Clarification | Please add "Screens/E" | NRC staff finds the comment acceptable and the revisions have been incorporated. |
| 3 | 1 | 21 | Editorial | Please revise: "modifications" to "modification" | NRC staff finds the comment acceptable and the revisions have been incorporated. |
| 4 | 1 | 30 | Editorial | Please revise: "a certain set" to "those four" | <p>NRC staff finds the comment acceptable in part.</p> <p>It was not the intent to specifically describe (in the introduction) the conditions in both trains which would cause a trip, in part because of the many possibilities. Therefore, the clause was eliminated entirely rather than modifying it.</p> |
| 5 | 1 | 31-32 | Clarification | <p>Please delete: "for a summary of" and replace it with "the"</p> <p>Please replace "results" with "capabilities"</p> | NRC staff does not find the comment acceptable and the revisions have not been incorporated. |

| TOPICAL REPORT PWROG-17018-P/NP, REVISION 0 | | | | | |
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| | Page | Line | | | |
| | | | | | The current phrasing is more accurate since the only information available on the main control board is whether an alarm condition exists or not. |
| 6 | 3 | 17-18 | Clarification | <p>Please revise the sentence: "The cabinets in each train are capable of being locked to allow for administrative control of access."</p> <p>To: "Access to the cabinets in each train is administratively controlled."</p> | NRC staff finds the comment acceptable and the revisions have been incorporated. |
| 7 | 3 | 26-28 | Clarification | <p>Please revise the sentence: "The Train A logic de- energizes the Train A trip breaker and the Train B bypass breaker, the Train B logic de- energizes the Train B trip breaker and the Train A bypass breaker."</p> <p>To: "The Train A protection system de- energizes the Train A reactor trip breaker and the Train B bypass breaker undervoltage coils, the Train B protection system de- energizes the Train B reactor trip breaker and the Train A bypass breaker undervoltage coils."</p> | NRC staff finds the comment acceptable and the revisions have been incorporated. |
| 8 | 3 | 48 | Clarification | <p>Please revise the beginning of the sentence: "Testability of all engineered safety features that can be operated at power..."</p> <p>To: "Testability of all reactor trip and engineered safety feature actuation functions can be performed at power..."</p> | NRC staff finds the comment acceptable and the revisions have been incorporated. |

| TOPICAL REPORT PWROG-17018-P/NP, REVISION 0 | | | | | |
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| | Page | Line | | | |
| 9 | 4 | 1-2 | Clarification/Accuracy | WCAP-17867-P-A Revision 1, "Westinghouse SSPS Board Replacement Licensing Summary Report", October 31, 2014, is listed as Reference 8 and repeated as Reference 9, with two different ADAMS Accession Numbers, please confirm these two references. | NRC staff finds the comment acceptable and the revisions have been incorporated. NRC staff clarified that use of TR beyond what is approved must be submitted to the NRC for review and approval |
| 10 | 4 | 1 | Editorial | Please revise the beginning of sentence: "The NRC approved complex programmable logic device (CPLD)-Based SSPS card TR..." To: "The NRC approved the TR for the boards (cards) that contain a complex programmable logic device (CPLD)..." | NRC staff finds the comment acceptable and the revisions have been incorporated. |
| 11 | 4 | 7-8 | Clarification | Please revise the end of sentence: "...would make this self-diagnostic information available outside of the SSPS cabinets, on the control board." To: "...would make this self-diagnostic information available external to the SSPS cabinets, on the main control board." | NRC staff finds the comment acceptable and the revisions have been incorporated. |
| 12 | 4 | 18 | Editorial | Please revise: "half-trips" to "half-trip inputs" "half-trip inputs" | NRC staff finds the comment acceptable and the revisions have been incorporated. |
| 13 | 4 | 22 | Editorial | Please revise: "with no half trip: to: "with no-half trip input" Please revise: "half-trips" to "half-trip inputs" | |

| TOPICAL REPORT PWROG-17018-P/NP, REVISION 0 | | | | | |
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| | Page | Line | | | |
| 14 | 4 | 25-26 | Editorial | <p>Editorial</p> <p>Please revise the end of sentence: "...the new CPLD-based cards (which in the old system would only be identified by surveillance testing) would also drive the SSPS. Non-urgent Alarm."</p> <p>To: "...the new boards that contain a CPLD (which in the SSPS with the original boards would only be identified by surveillance testing) would also activate the SSPS Non-urgent Alarm."</p> | NRC staff finds the comment acceptable and the revisions have been incorporated |
| 15 | 4 | 46-47 | Clarification | <p>Clarification</p> <p>Please revise the sentence: "The current design of the SSPS meets this criterion by tripping the NPP when a logic card in each division of the SSPS is disconnected."</p> <p>To: "The current design of the SSPS meets this criterion by tripping the reactor when a card in each train of the SSPS is disconnected (from the card cage backplane connector)."</p> | NRC staff finds the comment acceptable and the revisions have been incorporated |
| 16 | 5 | 3 | Clarification | Please delete "logic" | NRC staff finds the comment acceptable and the revisions have been incorporated. |
| 17 | 5 | 5-6 | Clarification | <p>Please revise the end of the sentence: "a logic card in the only operable division of SSPS equipment."</p> <p>To: "a card in the operable SSPS train."</p> | NRC staff finds the comment acceptable and the revisions have been incorporated. |

| TOPICAL REPORT PWROG-17018-P/NP, REVISION 0 | | | | | |
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| | Page | Line | | | |
| 18 | 5 | 16 | Editorial | Please delete the extra space. | NRC staff finds the comment acceptable and the revisions have been incorporated. |
| 19 | 5 | 20 | Editorial | Please revise "provides" to "provide" and "is" to "are" | NRC staff finds the comment acceptable and the revisions have been incorporated. |
| 20 | 5 | 21 | Editorial | Please delete "s" | NRC staff finds the comment acceptable and the revisions have been incorporated. |
| 21 | 5 | 22 | Editorial | Please revise "in" to "by" | NRC staff finds the comment acceptable and the revisions have been incorporated. |
| 22 | 5 | 23 | Clarification | Please delete "logic" | NRC staff finds the comment acceptable and the revisions have been incorporated. |
| 23 | 5 | 44 | Editorial | Please revise "as controlled by" to "in accordance with" | NRC staff finds the comment acceptable and the revisions have been incorporated. |
| 24 | 6 | 11 | Clarification | Please delete: "in the previously approved TR did" and replace it with "do" | NRC staff finds the comment acceptable and the revisions have been incorporated. |
| 25 | 6 | 13 | Editorial | Please add "discussed" and revise "topical" to "TR" | NRC staff finds the comment acceptable and the revisions have been incorporated. |

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| | Page | Line | | | |
| 26 | 6 | 14 | Editorial | Please add "a" | NRC staff finds the comment acceptable and the revisions have been incorporated |
| | 6 | 15 | Clarification | Please delete "logic" | NRC staff finds the comment acceptable and the revisions have been incorporated. |
| 27 | 6 | 29-30 | Clarification | Please revise the sentence: "The SSPS Non-urgent would prompt the operator to go to the alarming cabinet and investigate." To: "The SSPS Non-urgent alarm would prompt the operator to determine the cause of the alarm in the affected SSPS train." | NRC staff finds the comment acceptable and the revisions have been incorporated. |
| 28 | 6 | 30 | Clarification | Please delete "logic" | NRC staff finds the comment acceptable and the revisions have been incorporated. |
| 29 | 6 | 31 | Editorial | Please revise "to" to "that" | NRC staff finds the comment acceptable and the revisions have been incorporated. |
| 30 | 7 | 14 | Clarification | Please add "Screen/" | NRC staff finds the comment acceptable and the revisions have been incorporated. |
| 31 | 7 | 28 | Editorial/ Clarification | Please add "Screens/E" | NRC staff finds the comment acceptable and the revisions have been incorporated. |
| 32 | 7 | 36 | Editorial/ Clarification | Please add "10 CFR" and "Screens/E" | NRC staff finds the comment acceptable and the revisions have been incorporated. |

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| | | | | | |
| | Page | Line | | | |
| 33 | 8 | 35-39 | Clarification | WCAP-17867-P-A Revision 1, "Westinghouse SSPS Board Replacement Licensing Summary Report", October 31, 2014, is listed as Reference 8 and repeated as Reference 9, with two different ADAMS Accession Numbers, please confirm these two references. | NRC staff finds the comment acceptable and the revisions have been incorporated. |