U.S. NUCLEAR REGULATORY COMMISSION

STANDARD REVIEW PLAN

~~DRAFT~~ BRANCH TECHNICAL POSITION (BTP) 8-9

OPEN PHASE CONDITIONS IN ELECTRIC POWER SYSTEM

REVIEW RESPONSIBILITIES

Primary -- Organization responsible for electrical engineering

Secondary - None

A. BACKGROUND

~~On January 30, 2012, Byron Station~~Byron Station is a two-unit pressurized water reactor plant. The electrical distribution system for each unit consists of four nonsafety 6.9-kilo Volt (kV) buses, two nonsafety 4-kV buses, and two engineered safety features (ESF) 4-kV station buses. Both the ESF 4-kV and the two nonsafety 6.9-kV station buses that power the two reactor coolant pumps (RCPs) are normally supplied by station auxiliary transformers (SATs) connected to the 345-kV offsite power switchyard. On January 30, 2012, Unit 2 experienced an automatic reactor trip from full power because the reactor protection scheme detected an undervoltage condition on the 6.9-kV buses that power ~~reactor coolant pumps (~~the RCPs~~)~~. The undervoltage condition was caused by a broken inverted porcelain insulator stack of the Phase C conductor for the 345~~-~~kV power circuit that supplies both ~~station auxiliary transformers (~~SATs~~)~~. The insulator

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failure resulted in a high impedance fault through the fallen Phase C conductor and a sustained open phase condition on the high voltage side of the SAT. The open circuit created an unbalanced voltage condition on the two 6.9-kV nonsafety-related RCP buses and the two 4.16-kV ~~engineered safety features (~~ESF~~)~~ buses. Some ESF loads ~~remained~~that were energized ~~momentarily, relying~~relied on equipment protective devices to prevent damage from an unbalanced overcurrent condition. The ~~overload~~phase overcurrent condition ~~caused~~actuated relays to trip several ESF loads~~ to trip~~.

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Approximately 8 minutes after the reactor trip, the control room operators diagnosed the loss of Phase C condition and manually tripped circuit breakers to separate the unit buses from the offsite power source. When the operators opened the SAT feeder breakers to the two 4.16-kV ESF buses, the loss of ~~ESF bus ~~voltage ~~resulted in ~~relays started the emergency diesel generators (EDGs) ~~automatically starting ~~and ~~restoring~~restored power to the ESF buses. ~~In the event that the operators failed to diagnose~~If the condition ~~in a timely manner, a potential~~had been allowed to persist for an additional few minutes, damage to the RCP seals could have occurred due to loss of RCP seal cooling water~~ may~~. This in turn could have resulted in a loss~~-~~of~~-~~ coolant ~~event within a few more minutes. ~~from the RCP seals in the containment building.

A second event also occurred at Byron Station Unit 1 on February 28, 2012. This event was also initiated by a failed inverted porcelain insulator ~~which~~that resulted in an open phase as well as a phase~~-~~-to~~-~~-ground fault on the line side of the circuit. In this event, the fault current was high enough to actuate protective relaying on the 345~~-~~-kV system. The 4.16-kV ESF buses experienced ~~an undervoltage condition~~a loss of voltage due to the opening of 345~~-~~-kV system breakers, which resulted in separation of the SATs from the 4.16-kV buses. The ~~1A and 1B~~two EDGs started and energized the 4.16-kV ESF buses as designed.

~~Past~~A review of other operating experience ~~has ~~identified design vulnerabilities associated with single-phase open circuit conditions at South Texas, Unit 2~~;~~ (See Licensee Event Report (LER) 50-499/2001-001, Agencywide Documents Access and Management System (ADAMS) Accession No. ML011010017); Beaver Valley Power Station, Unit 1~~;~~ (See LER 50-334/2007-002, ADAMS Accession No. ML080280592); and a single event that affected Nine Mile Point, Unit 1 (See LER 50-220/2005-04, ADAMS Accession No. ML060620519) and the neighboring James~~-~~ A.~~-~~ Fitzpatrick ~~Nuclear ~~Power Plant~~; and Nine Mile Point, Unit 1.~~ (See LER 50-333/2005-06, ADAMS Accession No. ML060610079)

These events involved offsite power circuits that were rendered inoperable ~~by~~due to an open~~-circuited~~ circuit in one phase. In each instance (except South Texas, Unit 2), the condition went undetected for several weeks because offsite power was not aligned to the ESF buses during normal operation and the surveillance procedures, which recorded phase-to-phase voltage, did not identify the loss of the single phase. At South Texas, Unit 2, offsite power was normally aligned to ESF and nonsafety plant buses and the reactor was manually tripped by the operator when ~~circulation water pump was ~~the three Circulating Water Pumps were tripped by the open phase condition. ~~Recently, two related ~~Operating experience has identified three similar international events~~ occurred. First, the~~:

1. On December 22, 2012, Unit 1 at Bruce Power Plant in Canada ~~identified that the protective relaying scheme is vulnerable to open-phase, or~~was in shutdown condition when a maintenance cooling system pump (P1) tripped. Operators tried to manually start pumps P1 and P2 but both failed to start due to the electrical protection schemes. Field operators identified a loss-of-phase ~~events based on an event that occurred on December 22, 2012, where~~ condition caused by a break in one of the 3~~-~~ phases of the 230 kV overhead line ~~connections was broken. Second, the~~connection.

2. On May 30, 2013, Forsmark~~,~~ Unit 3 in Sweden reported ~~that protective relaying scheme is vulnerable to open phase events based on an event that occurred on May 30, 2013 (an~~ event resulting from human error. The plant was in a refueling outage with one of the two 400-kV offsite power circuit breakers and a 70-kV back-up power supply breaker ~~to the 400 kV grid was disconnected in two phases, when~~ open due to maintenance work. While testing the protective relaying for the main generator, an erroneous trip signal was sent to the remaining 400-kV offsite power source ~~to~~ circuit breaker. One of the three phases in the circuit breaker failed to open, resulting in a double open phase condition in the power circuit (i.e., two open phases). Some of the operating loads tripped due to phase unbalance, while some safety-related and nonsafety-related loads overheated and failed. The undervoltage relays on the safety buses ~~were in the process of realigning to an alternate 70 KV source).~~ did not detect the degraded voltage conditions because the induced voltage was higher than the trip setpoint of the relays.

3. On April 27, 2014, the Dungeness B power plant in United Kingdom experienced random tripping of large loads resulting from the loss of one of three phases in the 400kV electrical supply to the site. The open phase condition was the result of inadequate contact in one pole of the circuit breaker.

In ~~both events, EDGs~~the events discussed above, the protective relaying schemes did not detect the open phase(s) conditions due to inadequate detection schemes. As a result, degraded power sources continued to supply plant safety-related and nonsafety-related loads. In addition, the emergency diesel generators (onsite power system) did not automatically connect to the safety buses because the plant design did not have features to ~~address~~detect and automatically isolate the open phase conditions~~.~~ in the offsite power source.

Based on the Byron Station operating event, the staff issued U.S. Nuclear Regulatory Commission (NRC), Information Notice 2012-03, "Design Vulnerability in Electric Power System," dated March 1, 2012 (~~Agencywide Documents Access and Management System (~~ADAMS~~)~~ Accession No. ML120480170). On July 27, 2012, the staff issued NRC Bulletin 2012-01, "Design Vulnerability in Electric Power System," (Accession No. ML12074A115) to confirm that licensees comply with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(h)(2), 10 CFR 50.55a(h)(3), and Appendix A~~ to 10 CFR Part 50, ~~, **"**General Design Criteria for Nuclear Power Plants**,"** to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," General Design Criterion (GDC) 17, "Electric Power Systems," or principal design criteria specified in the updated final safety analysis report. Specifically, the NRC requested licensees to provide information by October 25, 2012, ~~(1)~~ regarding (1) the protection scheme to detect and automatically respond to a single phase open circuit condition or high

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impedance ground fault condition on GDC 17 power circuits, and (2) the operating configuration of engineered safety features buses at power. The Electrical Engineering Branch staff has reviewed the information that NRC licensees provided and the ~~detail~~details of this review are documented in a NRC Bulletin 2012-01, "Design Vulnerability in Electric Power System," Summary Report dated February 26, 2013 (ADAMS Accession No. ML13052A711).

~~Safety Significance of open phase condition: At Byron, both offsite and onsite electric power systems were not able to perform their intended safety functions due to the design vulnerability. Manual actions were necessary to restore ESF safety functions. A design basis event concurrent with this open phase condition could have resulted in the plant exceeding the guidance contained in 10 CFR 50.46, "Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Nuclear Power Reactors." The accident sequence precursor analyses conducted by the staff calculated a conditional core damage probability of 1×10^-4^.~~

~~-~~The purpose of this BTP is to provide guidance to the staff in reviewing various licensing~~-~~ actions related to electric power system design vulnerability due to open phase conditions in offsite electric power ~~system~~systems in accordance with Appendix A to 10 CFR Part 50, GDC 17 or principal design criteria specified in the updated final safety analysis report, ~~and~~ 10 CFR 50.~~36(c~~55a(h)(2~~) and (c)(3).~~),
10 CFR 50.55a(h)(3), and 10 CFR 50.36(c)(2) and 10 CFR 50.36(c)(3).

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B. BRANCH TECHNICAL POSITION

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~~The design of the electrical system should address the following open phase conditions:~~

1. Electric power from the transmission network to the onsite electric distribution system is supplied by two physically independent circuits. The design of the electrical system and the protective relaying system should address ~~loss~~the following open phase conditions (OPCs):

    (i) Loss of one of the three phases of the independent circuits on the high voltage side of a transformer connecting an offsite power circuit to the transmission system ~~under~~. The protection scheme should consider all operating electrical system configurations and loading conditions:

    a. with a high impedance ground fault condition; and

    ~~b.~~ b. without a high impedance ground fault condition; and

    (ii) ~~loss~~Loss of two of the three phases of the ~~either~~ offsite power circuit (without ground) on the high voltage side of a transformer connecting an offsite power circuit to the transmission system under all operating electrical system configurations and loading conditions.

~~1. Nuclear Power Plants with Active Safety Features~~

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~~For performing licensing reviews for~~ *Notes:*

i. The staff should ensure that licensees have considered all potential OPCs on the high voltage and low voltage side of transformers and interconnecting onsite auxiliary power circuits. Any connections that are not evaluated should be documented with an adequate justification. If there is a potential for OPCs in the intervening power path, the licensee should have analyses to show that the above open phase conditions are the limiting conditions.

ii. For AP 1000 plants, electric power from the transmission network to the onsite electric distribution system is supplied by only one circuit.

iii. For the purpose of OPC evaluation, high impedance ground faults are ground faults that produce fault currents below the ground fault relay setting.

2. For operating reactors and new reactors with active design safety features ~~plant designs,~~ reviewed under 10 CFR Part 50 and 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," the following criteria should be satisfied when evaluating OPCs:

~~I. *Detection and Alarms*~~

~~An open phase condition~~The OPC should be automatically detected and alarmed in the main control room ~~unless it can be shown that the open phase condition does not prevent functioning of important-to-safety SSCs.~~

a. ~~Detection circuits for the open phase condition, which prevents the functioning of important-to-safety SSCs, should be sensitive enough to identify an open phase condition~~ under all operating electrical system configurations and plant loading conditions. The detection circuits should be sensitive enough to identify OPCs under all operating electrical system configurations and plant loading conditions for which ~~they~~the offsite power supplies are required to be operable~~.~~ in accordance with plant technical specifications (TSs) for safe shutdown.

The detection circuit should minimize spurious indications for an operable offsite power source in the range of voltage perturbations such as switching surges, transformer inrush currents, load or generation variations, lightning strikes, etc., normally expected in the transmission system. If the plant auxiliaries are supplied from the main generator and the offsite power circuit to the ESF bus is configured as a standby power source, then any failure (i.e., OPC) should be alarmed in the main control room for operators to take corrective action within a reasonable time. In such cases, the consequences of not immediately isolating the degraded power source should be evaluated to demonstrate that any subsequent design bases conditions that rely on offsite power circuit (s) for safe

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shutdown do not create plant transients or abnormal operating conditions. Also, the remaining power source (s) can be connected to the ESF buses within the time assumed in the accident analysis.

b. If offsite power circuit(s) is (are) functionally degraded due to OPCs, and safe shutdown capability is not assured, then the ESF buses should be designed to be transferred automatically to the alternate reliable offsite power source or onsite standby power system within the time assumed in the accident analysis and without actuating any protective devices, given a concurrent design basis event.

The ~~II.~~ ~~*Actuation circuits*~~

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c. ~~The design of actuation circuit~~design of protection features for OPCs should address the following:

(i) Power quality issues caused by OPCs such as unbalanced voltages and currents, sequence voltages and currents, phase angle shifts, and harmonic distortion that could affect redundant ESF buses. The ESF loads should not be subjected to power quality conditions specified in industry standards such as Institute of Electrical and Electronic Engineers (IEEE) Standard (Std) 308-2001, “Criteria for Class 1E Power Systems for Nuclear Power Generating Stations,” Section 4.5, “Power Quality,” with respect to the design and operation of electrical systems as indicated in Regulatory Guide (RG) 1.32 “Criteria for Power Systems for Nuclear Plants.”

(ii) Protection scheme should comply with applicable requirements including single failure criteria for ESF systems as specified in 10 CFR Part 50, Appendix A, GDC17, and 10 CFR 50.55a(h)(2) or 10 CFR 50.55a(h)(3), which require compliance with IEEE Std 279-1971 “Criteria for Protection Systems for Nuclear Power Generating Stations” or IEEE Std 603-1991, ”Standard Criteria for Safety Systems for Nuclear Power Generating Stations.” RG 1.153, “Criteria for Power, Instrumentation, and Control Portions of Safety Systems,” provides additional guidance on this topic.

If protective features are provided in a non-Class 1E system only, a failure of the non-Class 1E scheme should not preclude the onsite electrical power system from performing its safety function given a single failure in the onsite power system.

(iii) Protection scheme design should minimize misoperation, maloperation, and spurious actuation of an operable off-site power source~~ by providing independent dual sensors and coincidence logics.~~. Additionally, the protective scheme should not separate the operable off-site power source

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~~Licensees/applicants should perform failure modes analysis to demonstrate that the additional actuation circuit design does not result in lower overall plant operation reliability. These devices must be coordinated with other protective devices in both the transmission system and the plant's electrical system (e.g., fault protection, overcurrent, etc.).~~

~~III. *Circuit Classification*~~

~~Class 1E detection and actuation circuits at the ESF bus level meet the applicable requirements of GDC 17. A non-Class-1E detection and actuation circuit at the non-Class1E level may be acceptable if the following is satisfied:~~

~~A detection/protection scheme providing equivalent function at the high voltage circuit (non-Class-1E) is acceptable to the NRC if the licensee can demonstrate compliance with NRC regulations in 10 CFR 50.55a (h)(2) or 10 CFR 50.55a(h)(3), "Protection Systems," otherwise, an alternative to the requirements of 10 CFR 50.55a (h)(2) or 10 CFR 50.55a(h)(3) should be submitted and authorized prior to implementation in accordance with 10 CFR 50.55a(a)(3) or an exemption to these requirements in accordance with 10 CFR 50.12, "Specific exemptions," must be processed.~~

~~IV. *Updated Final Safety Analysis Report*~~

~~The Updated Final Safety Analysis Report (UFSAR) should be updated to discuss the design features and analyses related to the effects of, and protection for, any open phase condition design vulnerability. This update would typically be to Chapter 8 of the UFSAR and completed in conjunction with the 10 CFR 50.71(e) requirements.~~

~~V. Protective Actions~~

(iv) The unbalanced voltage/current conditions for ESF components expected during various operating and loading conditions should not exceed motor manufacturer's recommendations. The International Electrotechnical Commission (IEC) Standard IEC 60034-26, National Electrical Manufacturers Association (NEMA) Standard (MG 1) Parts 14.36 and 20.24, and IEEE Std C37.96-2012 (Guide for AC Motor Protection), Section 5.7.2.6, "Unbalanced Protection and Phase Failures," may be used for general guidance.

Technical Specification Surveillance Requirements and Limiting Conditions of Operation for equipment used for mitigation of OPCs should be identified and implemented consistent with the operability requirements specified in the plant TSs and in accordance with 10 CFR 50.36(c)(2) and 10 CFR 50.36 (c)(3). RG 1.93 "Availability of Electric Power Sources," provides additional guidance on this topic.

3. For ~~an open phase condition, the staff finds the following method for meeting the design requirements acceptable:~~

~~(1) With no accident condition signal present, the licensee/applicant should demonstrate that:~~

~~a. The condition does not adversely affect the function of important-to-safety structures, systems and components; and~~

~~b. Abnormal operating occurrence, transients, events, and accidents (e.g., RCP seal failure) would not be created as a result of the condition;~~

~~c. Important-to-safety equipment is neither prevented from operating because protective devices are actuated nor damaged by the condition; and~~

~~d. Safe Shutdown capability is not compromised for all operating and anticipated operational occurrences.~~

~~(2) With an accident condition signal present, the licensee/applicant should demonstrate that:~~

~~a. Automatic detection and actuation will transfer loads required to mitigate postulated accidents to an alternate source and ensure that safety functions are preserved, as required by the current licensing bases.~~

~~b. Alternatively, a licensee/applicant may demonstrate by analytical analyses and actual testing that all design basis accident acceptance criteria and GDC17 or equivalent criterion are met with the open phase condition, given other plant design features. The analyses should include all design and licensing basis assumptions including single failure criterion.~~

~~(3) Following protection system requirements should be met for the open phase condition:~~

~~The voltage or current sensors should be designed to satisfy the following applicable requirements 10 CFR 50.55a(h)(2) or (h)(3) derived from IEEE Std. 279 and/or IEEE Std. 603, as endorsed by RG 1.153:~~

~~i. Class 1E equipment should be used and should be physically located at and electrically connected to the Class 1E switchgear.~~

~~ii. An independent scheme should be provided for each division of the Class 1E power system.~~

~~iii. The open phase protection should include coincidence logic on a per bus basis to preclude spurious trips of the offsite power source.~~

~~iv. The open phase protective devices should automatically initiate the disconnection of offsite power sources whenever the setpoints and time delay limits have been exceeded.~~

~~v. Capability for test and calibration during power operation should be provided.~~

~~vi. Annunciation must be provided in the control room for any bypasses incorporated in the design.~~

~~If the non-Class 1E open phase circuit protection schemes are installed on the offsite power system, the following equivalent protection system requirements specified in 10 CFR 50.55a (h)(2) or 10 CFR 50.55a(h)(3) should be met as a minimum:~~

~~Justifications for complying with NRC regulations 10 CFR 50.55a (h)(2) or 10 CFR 50.55a(h)(3), "Protection Systems," should be provided. Otherwise, an alternative to the requirements of 10 CFR 50.55a (h)(2) or 10 CFR 50.55a(h)(3) must be submitted and authorized prior to implementation in accordance with 10 CFR 50.55a(a)(3) or an exemption to these requirements in accordance with 10 CFR 50.12, "Specific exemptions," must be processed.~~

~~i. Non-Class 1E equipment should satisfy separation requirements if interface with safety busses is required.~~

~~ii. An independent dual detection scheme should be provided at the non-Class 1E level for each circuit that feeds the division of the Class 1E power system.~~

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~~iii. The open phase protection should include coincidence logic on a per train/per phase basis to preclude spurious trips of the offsite power source.~~

~~iv. The open phase protective devices should automatically disconnect the offsite power sources when the setpoints and any time delay limits have been satisfied.~~

~~v. Capability for test and calibration during power operation should be provided.~~

~~vi. Annunciation must be provided in the control room for any bypasses incorporated in the design.~~

~~VI. *Surveillances and Limiting Conditions for Operation*~~

~~The technical specifications should include requirements in accordance with 10 CFR 50.36(c)(2) and (c)(3) for limiting conditions for operations, surveillance~~

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~~requirements, trip setpoints, alarm set points, and maximum and minimum allowable values for the open phase conditions relays and associated time delay devices.~~

~~2. Nuclear Power Plants with Passive Safety Features~~

~~New~~ reactor licensees, COL applicants, and ~~design centers~~applications for certification of designs incorporating passive safety features ~~plant designs~~ reviewed under 10 CFR Part 52 ~~should address~~, the following ~~design~~ criteria~~:~~ should be satisfied when evaluating OPCs:

~~I. *Detection and Alarms*~~

~~If the open phase condition prevents important-to-safety functions:~~

~~An open phase condition~~a. The OPC should be automatically detected and alarmed in the main control room ~~unless it can be shown that the open phase condition does not prevent functioning of important-to-safety SSCs.~~

~~Detection~~under all operating electrical system configurations and plant loading conditions. The detection circuits ~~for the open phase condition, which prevents the functioning of important-to-safety SSCs,~~ should be sensitive enough to identify ~~an open phase condition~~OPCs under all operating electrical system configurations and plant loading conditions for which ~~they are required to be operable.~~

~~II. *Actuation circuits*~~

~~If open phase condition actuation circuits are required,~~ the ~~design should minimize misoperation, maloperation, and spurious actuation by providing independent dual sensors and actuation logics that could cause separation from an operable off-site~~ offsite power source~~. Additionally, the protective scheme should not separate the operable off-site offsite source in the range of voltage unbalance~~ is normally ~~expected in the transmission system. Licensees/applicants should perform failure modes analysis to demonstrate that the additional actuation circuit design does not result in lower overall plan operation reliability. These devices should be coordinated with other protective devices in both the transmission system and the plant's electrical system (e.g., fault protection, overcurrent, etc.).~~required in accordance with Appendix A to 10 CFR Part 50, GDC 17.

~~III. *Restoration of preferred or Onsite AC Power*~~

b. Following detection of an open phase condition and alarm in the control room, plant procedures should specify operator actions to ensure the standby diesel generators are connected to the auxiliary alternating current buses if they are not automatically connected in accordance with

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c.

~~IV. *Surveillances*~~

Periodic surveillance tests~~, calibrations, setpoint verifications or inspections (as applicable)~~ should be established for any new detection and alarm circuits to ensure their reliability to perform their intended design functions.

~~3. Considerations for Protective Devices for Alarm and Trip Functions~~

~~The following guidelines provide an overview of the analyses that should be performed:~~

~~a. Commercially available software packages that have been adequately verified and validated for safety related applications may be used to analyze and model open phase and unbalanced fault conditions. The software should have capabilities to perform the unbalance load flow study for a steady state solution with opening a single phase at a time. For transformers, the effects of an embedded winding, no-load current and losses, transformer type (core and shell), and inter-phase A, B, C mutual coupling, including zero-sequence shall be included.~~

~~b. Establish the capability of the major important-to-safety components to withstand unbalanced voltage/current conditions expected during various operating and loading conditions. The manufacturer provided parameters maybe acceptable if specified during the procurement process. Industry standards such as NEMA MG 1-2011 (Motors and Generators), Section 20.24, titled, "Effects of Unbalanced Voltages on the Performance of Polyphase Squirrel-Cage Induction Motors", and IEEE Std. C37.96-2012 (Guide for AC Motor Protection), Section 5.7.2.6, "Unbalanced protection and phase failures" may be used for general guidance.~~

~~c. Establish the limitations of existing protective devices for various operating and loading conditions with open phase conditions on each phase.~~

~~d. The magnitude of expected unbalance voltage and current for different open phase or high impedance fault currents may dictate the operating characteristics of proposed protective devices. As an example, a protective device with two settings may be used for (a) alarm only when a low unbalanced voltage/current is detected, (b) trip when higher unbalanced voltage/current that is deemed unacceptable for plant equipment is detected. A time delay may be incorporated in both settings to avoid actuations during transient conditions. Any time delay provided must always meet the accident analysis assumptions.~~

C. REFERENCES

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~~1. RG 1.153, “Criteria for Power, Instrumentation, and Control Portions of Safety Systems.”~~

~~1.~~ ~~2. NRC Information Notice 2012-03, “Design Vulnerability in Electric Power System,” dated March 1, 2012, ADAMS Accession No. Institute of Electrical and Electronics Engineers, ML120480170.~~

2. ~~3. NRC Bulletin 2012-01, “Design Vulnerability in Electric Power System,” dated July 27, 2012, ADAMS Accession No. ML12074A115.~~

3. ~~4.~~ Institute of Electrical and Electronics Engineers, IEEE Std~~.~~ 279-1971, “Criteria for Protection Systems for Nuclear Power Stations.”

4. ~~5.~~ Institute of Electrical and Electronics Engineers, IEEE Std. 603-1991, “Criteria for Safety Systems for Nuclear Power Generating Stations.”

5. ~~U. S. Nuclear Regulatory Commission~~, “~~ML13052A711.~~

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PAPERWORK REDUCTION ACT STATEMENT

The information collections contained in the Standard Review Plan are covered by the requirements of 10 CFR Part 50, and 10 CFR Part 52, and were approved by the Office of Management and Budget, approval numbers 3150-~~-~~0011, 3150-0151.

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