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## SUMMARY OF FINDINGS

IR 05000400-02-11; Carolina Power & Light; on 10/21/2002 - 12/20/2002, Shearon Harris Nuclear Plant, Triennial Baseline Inspection of the Fire Protection Program.

The inspection was conducted by a team of regional engineering inspectors and the Shearon Harris resident inspector. Nine Green findings, each a Non-Cited Violation (NCV), were identified. The significance of issues is indicated by their color (Green, White, Yellow, Red) using IMC 0609 "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be "Green" or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

### Inspection Identified Findings

#### **Cornerstones: Mitigating Systems and Initiating Events**

- **Green.** An NCV of Shearon Harris Operating License Condition (OLC) 2.F, Fire Protection Program; and Technical Specification (TS) 6.8.1, Procedures and Programs, was identified for failing to provide a fire barrier to protect equipment relied upon for safe shutdown (SSD) from maloperation due to a fire and failing to provide procedural guidance for operators to prevent or mitigate the maloperation. The control power cable for charging system motor-operated valve (MOV) 1CS-165, volume control tank outlet to charging pumps, which was relied upon to remain open for SSD during a fire in safe shutdown analysis (SSA) areas 1-A-BAL-B-B1, 1-A-BAL-B-B2, and 1-A-EPA, was routed through those areas with no fire barrier. Also, no procedural guidance was included in AOP-36, Safe Shutdown Following a Fire, Rev. 21, for operators to prevent or mitigate maloperation of 1CS-165 prior to damage occurring to SSD equipment. Consequently, a fire in one of the three SSA areas could cause 1CS-165 to spuriously close, stop all charging/safety injection pump (CSIP) suction, and immediately damage the operating SSD CSIP. Since component cooling (CC) to the reactor coolant pump (RCP) seals could be lost due to a fire in the three SSA areas, the failure of the SSD CSIP could result in a reactor coolant pump (RCP) seal loss of coolant accident (LOCA) with no operable CSIP.

This finding had a credible impact on safety because it could result in a loss of equipment that was relied upon for safe shutdown from a fire and could initiate a LOCA event. However, the finding was of very low safety significance because of the low fire initiation frequencies, automatic sprinklers, fire brigade, and remaining SSD equipment to limit the effects of a fire and to shut down the nuclear reactor. Therefore, this finding is characterized as Green (Section 1R05.\_\_).

- **Green.** An NCV of OLC 2.F and TS 6.8.1 was identified for failing to provide a fire barrier to protect equipment relied upon for SSD from maloperation due to a fire and for failing to provide procedural guidance for operators to prevent or mitigate the maloperation. The control power cables for component cooling MOVs 1CC-208, CC supply to RCP seals; and 1CC-251, CC return from RCP seals; which were relied upon to remain open during a fire in SSA area 1-A-BAL-C, were routed through that area with

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no fire barrier. Also, no procedural guidance was included in AOP-36 for operators to prevent or mitigate maloperation of 1CC-208 or 1CC-251. Consequently, a fire in the area could cause 1CC-208 or 1CC-251 to spuriously close and stop CC to all RCPs. Since CSIP flow to RCP seals was not analyzed to be unaffected by a fire in this area, the loss of CC to all RCPs could potentially result in an RCP seal LOCA.

This finding had a credible impact on safety because it could result in a loss of equipment that was relied upon for safe shutdown from a fire and could potentially initiate a LOCA event. However, the finding was of very low safety significance because of the low fire initiation frequency and probability of spurious actuations, and the effectiveness of automatic sprinklers, fire brigade, and remaining SSD equipment to limit the effects of a fire and to shut down the nuclear reactor. Therefore, this finding is characterized as Green (Section 1R05.\_\_).

- Green. An NCV of OLC 2.F and TS 6.8.1 was identified for failing to provide a fire barrier to protect equipment relied upon for SSD from maloperation due to a fire and for failing to provide adequate procedural guidance for operators to prevent or mitigate the maloperation. The control power cables for two charging system MOVs [1CS-166, volume control tank (VCT) outlet and 1CS-168, CSIP suction cross-connect]; which were relied upon to remain open for SSD during a fire in SSA area 1-A-BAL-B-B4; were routed through that area without fire barriers above and inside MCC 1-B35-SB. Also, no procedural guidance was included in AOP-36, Safe Shutdown Following a Fire, Rev. 21, for operators to prevent or mitigate maloperation of these MOVs. Consequently, a fire in this SSA area could cause these MOVs to spuriously close, stop all CSIP suction, and immediately damage the operating SSD CSIP. This could result in a loss of all charging and high pressure safety injection.

This finding had a credible impact on safety because it could result in a loss of equipment that was relied upon for safe shutdown from a fire. However, the finding was of very low safety significance because of the low fire initiation frequency and probability of spurious actuations, and the effectiveness of automatic sprinklers, fire brigade, and remaining SSD equipment to limit the effects of a fire and to shut down the nuclear reactor. Therefore, this finding is characterized as Green (Section 1R05.\_\_).

- Green. An NCV of OLC 2.F and TS 6.8.1 was identified for failing to provide a fire barrier to protect equipment relied upon for SSD from maloperation due to a fire and for failing to provide adequate procedural guidance for operators to prevent or mitigate the maloperation. The control power cables for four charging system MOVs (1CS-169, CSIP suction cross-connect; 1CS-214, CSIP mini-flow isolation; 1CS-218, CSIP discharge cross-connect; and 1CS-219, CSIP discharge cross-connect); which were relied upon to remain open for SSD during a fire in SSA area 1-A-BAL-B-B5; were routed through that area without fire barriers above and inside MCC 1-A35-SA. Also, inadequate procedural guidance was included in AOP-36 for operators to prevent or mitigate maloperation of these MOVs. Consequently, a fire in this SSA area could cause these MOVs to spuriously close, stop all CSIP flow, and damage the operating SSD CSIP. This could result in a loss of all charging and high pressure safety injection.

This finding had a credible impact on safety because it could result in a loss of equipment that was relied upon for safe shutdown from a fire. However, the finding was of very low safety significance because of the low fire initiation frequency and probability of spurious actuations, and the effectiveness of automatic sprinklers, fire brigade, and remaining SSD equipment to limit the effects of a fire and to shut down the nuclear reactor. Therefore, this finding is characterized as Green (Section 1R05.\_\_\_\_).

- **Green.** An NCV of TS 6.8.1 was identified for inadequate procedural steps. For a fire in fire area 1-A-ACP, AOP-36 steps 2.C and 14.A (which involved removing fuses from transfer panel 1B near the door to the fire area) involved excessive challenges to operators. Challenges included exposure to smoke that would leak past the door and to the fire brigade who would be opening the door, entering a narrow energized electrical cabinet, and using a metal screwdriver inside the cabinet and seven feet above the floor with poor visibility and poor labeling. There was not reasonable assurance that all auxiliary operators (AOs) could perform the steps during a fire. Consequently, operators may not be able to manually start the auxiliary feedwater pump that was relied upon for SSD.

This finding had a credible impact on safety because it could result in inability to operate equipment that was relied upon for SSD from a fire. However, the finding was of very low safety significance because of the low fire initiation frequency, fire brigade, and remaining SSD equipment to limit the effects of a fire and to shut down the nuclear reactor. Therefore, this finding is characterized as Green (Section 1R05.\_\_\_\_).

- **Green.** An NCV of TS 6.8.1 was identified for an inadequate procedure for SSD from a fire. For a fire in areas 1-A-BAL-B or 1-A-ACP, there too many AOP-36 contingency actions, to respond to potential spurious actuations, for the one available SSD AO to perform. Examples included continuously locally manually throttling the charging system flow control valve bypass valve while at the same time locally manually closing a steam generator power operated relief valve that could stick open in a different area of the plant; or at the same time locally manually controlling auxiliary feedwater flow in another area of the plant. Consequently, a main steam line break event may not be stopped or auxiliary feedwater may be lost.

This finding had a credible impact on safety because it could result in inability to prevent an initiating event or to operate equipment that was relied upon for SSD from a fire. However, the finding was of very low safety significance because of the low fire initiation frequency, automatic sprinklers, fire brigade, and remaining SSD equipment to limit the effects of a fire and to shut down the nuclear reactor. Therefore, this finding is characterized as Green (Section 1R05.\_\_\_\_).

- **Green.** An NCV of TS 6.8.1 was identified for an inadequate procedure for SSD from a fire. For a fire in area 1-A-BAL-B, AOP-36 directed operators to take CSIP suction from the boric acid tank (BAT) even if BAT level indication were lost. However, the charging volume needed for reactor coolant system (RCS) cooldown would have emptied the BAT and damaged the CSIP.

This finding had a credible impact on safety because it could result in loss of equipment that was relied upon for SSD from a fire. However, the finding was of very low safety significance because of the low fire initiation frequency, automatic sprinklers, fire brigade, and remaining SSD equipment to limit the effects of a fire and to shut down the nuclear reactor. Therefore, this finding is characterized as Green (Section 1R05\_\_).

- Green. An NCV of OLC 2.F and TS 6.8.1 was identified for failing to provide battery-backed emergency lights for operators to perform actions for SSD from a fire. For a fire in SSA areas 1-A-BAL-B-B1, 1-A-BAL-B-B2, 1-A-BAL-B-B4, 1-A-BAL-B-B5, 1-A-EPA, 1-A-BATB, and 1-A-ACP; many operator actions had no adequate battery-backed emergency lights. Some of those actions had no emergency lights at all. However, some had fluorescent lights that would be powered by the emergency diesel generators during a LOOP, but those lights had not been approved by the NRC as an exemption from the requirement for battery-backed emergency lights.
- This finding has a credible impact on safety because it could result in operators failing to perform SSD actions in an accurate and timely manner. However, the finding was of very low safety significance because operators had flashlights available which would have enabled them to perform the actions. Therefore, this finding is characterized as Green (Section 1R05\_\_).
- Green.