UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET SW SUITE 23T85
ATLANTA, GEORGIA 30303-8931

July 13, 2000

EA-00-145

South Carolina Electric & Gas Company
ATTN: Mr. Stephen A. Byrne
Vice President, Nuclear Operations
Virgil C. Summer Nuclear Station
P. O. Box 88
Jenkinsville, SC 29065

SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION - SAFETY SYSTEM DESIGN INSPECTION (NRC INSPECTION REPORT NO. 50-395/2000-03)

Dear Mr. Byrne:

This refers to the inspection conducted onsite on April 17 - 21 and May 1 - 5, 2000, at your Virgil C. Summer Nuclear Station. Subsequent to the onsite inspection, your staff provided additional information to the team for review. Our in office inspection of this additional information was completed June 15, 2000. The results of this inspection were discussed with Mr. B. Williams and other members of your staff on May 5, 2000, and June 15, 2000.

The inspection was an examination of activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations of activities, and interviews with personnel. The inspection found that engineering activities generally supported the safe and reliable operation of the diesel generators and the related support and interface systems.

Based on the results of this inspection, three issues of very low safety significance (Green) were identified. Additionally, there was one 10 CFR 50.59 issue (No Color) that could not be evaluated under the Significance Determination Process. Two of the Green findings and the 50.59 finding were determined to involve violations of NRC requirements and have been entered into your corrective action program. All three of these violations were not cited in accordance with Section VI.A.1 of the NRC Enforcement Policy. If you contest these non-cited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to the Regional Administrator, Region II; the NRC Resident Inspector at Virgil C. Summer Nuclear Station; and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the ADAMS Public Library component on the NRC web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Kerry D. Landis, Chief
Engineering Branch
Division of Reactor Safety

Docket No.: 50-395
License No.: NPF-12

Enclosure: NRC Inspection Report w/Attachment

cc w/encl:
R. J. White
Nuclear Coordinator Mail Code 802
S.C. Public Service Authority
Virgil C. Summer Nuclear Station
Electronic Mail Distribution

J. B. Knotts, Jr., Esq.
Winston and Strawn
Electronic Mail Distribution

Virgil R. Autry, Director
Div. of Radioactive Waste Mgmt.
Dept. of Health and Environmental Control
Electronic Mail Distribution

R. Mike Gandy
Division of Radioactive Waste Mgmt.
S. C. Department of Health and Environmental Control
Electronic Mail Distribution

(cc w/encl cont'd - See page 3)

(cc w/encl cont'd)

R. M. Fowlkes, Manager
Operations (Mail Code 303)
South Carolina Electric & Gas Company
Virgil C. Summer Nuclear Station
Electronic Mail Distribution

Melvin N. Browne, Manager
Nuclear Licensing & Operating
Experience (Mail Code 830)
Virgil C. Summer Nuclear Station
Electronic Mail Distribution

Distribution w/encl:
K. Cotton, NRR
PUBLIC

OFFICE	RII:DRS	RII:DRS	RII:DRS	RII:DRS	RII:DRP	RII:DRP	RII:EICS
SIGNATURE	Merriweather	Thomas for:	Smith	Thomas	Widmann	Haag	Scott for:
NAME	NMerriweather	MScott	CSmith	MThomas	MWidmann	RHaag	ABoland
DATE	7/ 13 /2000	7/13 /2000	7/ 13/2000	7/13/2000	7/13/2000	7/ 13/2000	7/13 /2000
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY DOCUMENT NAME: C:\sum0003r1.wpd

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.:	50-395
License No.:	NPF-12
Report No.:	50-395/00-03
Licensee:	South Carolina Electric & Gas (SCE&G)
Facility:	Virgil C. Summer Nuclear Station
Location:	P. O. Box 88 Jenkinsville, SC 29065
Dates:	April 17 - May 5, 2000
Lead Inspector:	M. Thomas, Senior Reactor Inspector Engineering Branch Division of Reactor Safety
Inspectors:	N. Merriweather, Senior Reactor Inspector J. Panchison, P.E., Mechanical Engineering Consultant M. Scott, Senior Reactor Inspector C. Smith, P.E., Senior Reactor Inspector M. Widmann, Senior Resident Inspector
Accompanying Personnel:	F. Jape, Senior Project Manager, Engineering Branch, Region II
Approved by:	K. D. Landis, Chief Engineering Branch Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

Virgil C. Summer Nuclear Station
NRC Inspection Report No. 50-395/00-03

The report covers a two-week period of onsite inspection by a regional engineering team using inspection procedure 71111.21, Safety System Design and Performance Capability. The inspection focused on the design and performance of the diesel generators and related support and interface systems. In addition, the report includes the results of a one-week 10 CFR 50.59 inspection by a regional inspector using inspection procedure 71111.02, Evaluation of Changes, Tests, or Experiments.

The significance of issues is indicated by their color (Green, White, Yellow, Red) and was determined by the Significance Determination Process in Inspection Manual Chapter 0609 (see the Attachment). Issues that could not be evaluated under the Significance Determination Process were processed in accordance with the NRC Enforcement Policy without an assigned risk significance (i.e., No Color).

Cornerstone: Initiating Events

- GREEN. The licensee's Transient Stability Study of the Offsite Power System identified that under certain grid conditions (the transmission system lightly loaded, the Fairfield Pumped Storage Plant operating in the pumping mode at ½ or more of its rated capacity, and a fault on the 230 kilovolt (KV) offsite power supply bus) a loss of offsite power (LOSP) could occur. The licensee's probabilistic risk assessment (PRA) screening analysis of the grid conditions described above showed that there would be a slight increase in the LOSP initiation frequency resulting in a change in the core damage frequency (CDF) of less than 1.0×10^{-6}. A Region II senior reactor analyst reviewed the PRA screening analysis and concluded that, based on the change in the LOSP initiation frequency and the change in CDF, this issue was of very low safety significance (Section 1R02).

Cornerstone: Mitigating Systems

- NO COLOR. The licensee's 10 CFR 50.59 safety evaluation performed to incorporate the results of the Transient Stability Study of the Offsite Power System into the Updated Final Safety Analysis Report (UFSAR) Section 8.2.2.2 did not provide an adequate technical basis to support the determination that an unreviewed safety question did not exist. Specifically, the 10 CFR 50.59 did not address the increase in the probability of occurrence of a malfunction of the loss of voltage relay for Case Study Six of the Transient Stability Study; and it did not provide an adequate technical basis to support the conclusion in the UFSAR that the requirements of 10 CFR 50, Appendix A, General Design Criterion 17 would still be met for the grid conditions evaluated for Case Study Six. A non-cited violation was identified. (Section 1R02)

- GREEN. The licensee failed to translate into appropriate procedures and/or acceptance criteria (1) the 105°F design basis limiting value for the diesel generator (DG) intercooler water heat exchanger outlet temperature and (2) the requirement to derate the DGs if the intercooler water heat exchanger outlet temperature exceeded the 105°F value. The issue was of very low safety significance because the licensee's operability evaluation concluded that, with a derating factor applied, the DGs were still operable. A non-cited violation was identified for inadequate design control. (Section 1R21.141)

- GREEN. Design information (e.g., DG design heat load, instrument uncertainty) was not correctly translated into calculation DC07610-002, Revision 1. The calculation incorrectly concluded that one of the two 50% capacity ventilation fans per DG could maintain the associated DG rooms below the Technical Specification limit of 120^{o}F during DG operation for an outside ambient temperature of up to 95^{o}F. Based on the design heat load, one DG ventilation fan could maintain the associated DG rooms below 120^{o}F for an outside ambient temperature of up to only 79.4^{o}F. The issue was of very low safety significance because there were no instances identified where one DG ventilation fan was taken out of service and the associated DG was still considered to be operable. A non-cited violation was identified for inadequate design control. (Section 1R21.142)

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R02 Evaluations of Changes, Tests, or Experiments (71111.02)

a. Inspection Scope

The team reviewed 10 CFR 50.59 evaluations for 14 plant modifications; 13 plant changes and/or procedure changes that did not require a complete 10 CFR 50.59 evaluation (screened out); 14 nonconformance reports for plant components that were repaired or accepted “as-is” and evaluated under the licensee’s 50.59 program, and selected component replacements due to obsolescence. These changes to the plant and procedures as described in the Updated Final Safety Analysis Report (UFSAR) were reviewed to verify that the changes were performed in accordance with 10 CFR 50.59 and the licensee’s procedural controls.

b. Issues and Findings

The team concluded that the 10 CFR 50.59 safety evaluation RN 96-72, which revised the UFSAR to incorporate the results of the Transient Stability Study of the Offsite Power System, was inadequate. The 10 CFR 50.59 stated that the Stability Study did not increase the probability of occurrence of a malfunction of equipment important to safety. The revised UFSAR Section 8.2.2.2, Stability Study Results, stated that the requirements of 10 CFR 50, Appendix A, General Design Criterion (GDC) 17 would still be met for the conditions evaluated. However, Case Study Six of the Stability Study identified that, under certain grid conditions (transmission system lightly loaded, the Fairfield Pumped Storage Plant operating in the pumping mode at ½ or more of its rated capacity, and a fault on the 230 kilovolt (KV) offsite power supply bus), a loss of offsite power (LOSP) could occur, due to the inadequate time delay set point associated with the loss of voltage relay.

Case Study Six of the Transient Stability Study identified a problem with the voltage response of the 230 kilovolt (KV) and 115 KV offsite power supply buses. For critical line outages, a permanent fault was placed at the V. C. Summer substation bus #1 during light system load conditions and while the Fairfield Pumped Storage Facility was operating at its full capacity of 624 megawatts in the pumping mode. With this grid configuration, a fault at the V. C. Summer substation bus #1 would result in initiation of both the loss of voltage and degraded voltage relay timers. Neither the 230 KV nor the 115 KV offsite power supply bus voltages would recover in time to reset the timer associated with the loss of voltage relay and a loss of both preferred power supplies would occur.

The 10 CFR 50.59 did not address the increase in the probability of occurrence of a malfunction of the loss of voltage relay for the conditions in Case Study Six. The team concluded that 10 CFR 50, Appendix A, GDC 17 was not met for Case Study Six, in that, the licensee's probabilistic risk assessment (PRA) screening analysis determined that there would be an increase in the LOSP frequency for Case Study Six.

The 10 CFR 50.59 was based, in part, on a 1980 study of the probability of a LOSP to the V.C. Summer nuclear station. This 1980 study examined the impact of natural events (e.g., tornado, ice storm, or earthquake) and equipment failures on the frequency of LOSP to the station. The 1980 study did not address the concern that the loss of voltage relay time delay set points were inappropriate to prevent a LOSP if the grid conditions in Case Study Six existed.

The 10 CFR 50.59(b)(1) states in part, that changes in the facility as described in the safety analysis report must include a written safety evaluation which provides the bases for the determination that the change does not involve an unreviewed safety question.

Contrary to the above, the licensee's approved 10 CFR 50.59 safety evaluation (RN 96-72 dated February 3, 1998, which revised UFSAR Section 8.2.2.2 to incorporate the results of the Transient Stability Study of the Offsite Power System) was inadequate, in that, it did not provide an adequate technical basis to support the determination that an unreviewed safety question did not exist. The 10 CFR 50.59 did not address the increase in the probability of occurrence of a malfunction of the loss of voltage relay for Case Study Six; and it did not provide an adequate technical basis to support the conclusion in the UFSAR that the requirements of 10 CFR 50, Appendix A, General Design Criterion 17 would still be met for the grid conditions evaluated in Case Study Six.

This violation is being treated as a non-cited violation (NCV) consistent with Section VI.A.1 of the NRC Enforcement Policy. This issue is identified as NCV 50-395/00-03-01, Inadequate 10 CFR 50.59 Safety Evaluation for UFSAR Change RN 96-72. This violation is in the licensee's corrective action program as Primary Identification Program (PIP) Serial No. 0-C-00-0569. A revision to the 10 CFR 50.59 safety evaluation was being prepared at the conclusion of this inspection.

In addition to the above 10 CFR 50.59 issue, the licensee performed an analysis to determine the ramifications of being in the grid conditions required to mimic the results obtained in Case Study Six. These conditions were (1) the grid was lightly loaded; (2) the Fairfield Pumped Storage Facility was in the pumping mode at ½ or more of its rated capacity; and (3) a fault occurred on the 230 KV offsite power supply bus. The licensee added Case Study Six to the LOSP initiator and performed a probabilistic risk assessment (PRA) screening analysis of the conditions described in this case. The screening analysis showed that there was a slight increase in the LOSP initiation frequency and a change in the core damage frequency (CDF) of less than 1.0×10^{-6}. The team and a Region II senior reactor analyst (SRA) evaluated the licensee's screening analysis and the results. The team and the Region II SRA concluded that, based on the changes in the LOSP initiation frequency and the CDF, this issue was of very low safety significance (GREEN).

1R21 Safety System Design and Performance Capability (71111.21)

.1 SYSTEM NEEDS

.11 Energy Source

.111 Diesel Fuel Oil

a. Inspection Scope

The team reviewed design output documents and calculations to verify that the diesel generator (DG) fuel oil system was capable of providing fuel for at least seven days of operation for each diesel during a postulated LOSP. Additionally, the team reviewed actual diesel fuel specifications to assure consistency with design basis calculation assumptions.

The team specifically reviewed calculations DC06630-001, Revision 2, EDG Fuel Oil Consumption, and DC06620-004, Revision 3, EDG Fuel Oil Tank Calibration Data to assure compliance with the fuel oil inventory requirement. In addition, calculations were reviewed to assure that the fuel oil pumps had adequate net positive suction head (NPSH) and was sized properly, and that each fuel oil day tank had adequate venting provisions.

b. Issues and Findings

There were no findings identified.

.112 Starting Air

a. Inspection Scope

The team reviewed design output documents and calculations to verify that the DG starting air system was capable of supplying compressed air for five consecutive starts without recharging and that each DG had its own separate and independent air start system.

b. Issues and Findings

There were no findings identified.

.113 Electrical Power Source

a. Inspection Scope

The team reviewed design basis documents, calculations of record, vendor information, industry standards for sizing of batteries, and approved design output drawings for the ESF 125 volt direct current (DC) batteries 1A and 1B in order to verify that the batteries had been adequately sized for the 10 CFR 50.63 Station Blackout (SBO) four hour coping duration. The team evaluated the adequacy of the 125 volt DC power supplies for (1) DG field flashing; (2) DG exciter cubicle; (3) DG engine control panels; and (4) DG auxiliary fuel oil pumps. The team also evaluated the capability of the 125 volt DC batteries to provide field flashing current within 10.25 seconds of initial demand in addition to providing field flashing current at 239 minutes and 57 seconds for a second start of the DG at the end of the SBO coping period.

b. Issues and Findings

There were no findings identified.

.12 Controls

a. Inspection Scope

The team reviewed the design of the control logic for the DGs to verify that the controls were consistent with the licensing and design bases for the plant. The team specifically reviewed DG start and shutdown control logic diagrams and elementary drawings; the DG design basis document (DBD); DG design specifications; undervoltage relaying logic diagrams for 7.2 KV Buses 1DA and 1DB; DG exciter/voltage regulator control drawings; ESF Load Shedding and Sequencer logic drawings; DG Technical Specifications; and UFSAR Section 8.3. The review included DG local and remote controls, test starting controls, permissives and interlocks, DG building exhaust fan controls, and DG rocker arm pre-lube pump controls. The team reviewed the 7.2KV buses 1DA and 1DB to verify that a degraded voltage or loss of voltage condition on one or both of the 7.2KV buses would result in an emergency start of the DGs to automatically restore alternating current (AC) power to the safety-related loads. The team reviewed the control power for the DGs and voltage regulators to verify that the control power would be available from the safety-related 125 volt DC batteries and chargers.

b. Issues and Findings

There were no findings identified.

.13 Operator Actions

a. Inspection Scope

The team reviewed operating procedures for mitigating the consequences of a LOSP and SBO events to verify that the procedures specified appropriate operator actions and that those actions could be performed in a timely manner commensurate with the significance of the action. The operator actions were also reviewed for consistency with the accidents described in the UFSAR, DBDs, and licensing basis documents. This review included Abnormal Operating Procedures (AOPs), Emergency Operating Procedures (EOPs), and Annunciator Response Procedures (ARPs). The team performed a walkdown of contingency operator actions delineated in the AOPs and EOPs for locally starting the DGs; actions taken to line up supplemental cooling to the charging/safety injection pumps for a loss of component cooling water; refilling the condensate storage tank with demineralizer water, filtered water, and fire service water; and operator tasks associated with draining and filling the boric acid tank (BAT) with fire service water. The team also performed a walkdown of the control room instrumentation and alarms to verify that the appropriate indications and controls were available and adequate for operators to make the necessary decisions during performance of the specific AOPs and EOPs.

b. Issues and Findings

There were no findings identified.

.14 Heat Removal

.141 Cooling Water

a. Inspection Scope

The team reviewed design output documents and calculations to verify that the heat rejected from the diesel engine to the diesel's closed loop cooling water system was adequately transferred to the plant's safety related SW system under normal and abnormal operating conditions. The team further reviewed design and test documents to assure that the SW system was capable of delivering the required amount of water to the diesel heat exchangers at the design basis maximum SW temperature. To further verify the cooling capability, surveillance test procedures were reviewed for each diesel's three heat exchangers, (intercooler water heat exchanger, jacket water cooler, and the lube oil cooler). The intercooler water heat exchanger surveillance test data was selected for review in order to determine whether adverse trends existed in heat transfer capability.

Additionally, the team reviewed the capability of the fire service water system to provide cooling to the DGs should the plant's SW system be unavailable.

b. Issues and Findings

The licensee failed to translate the 105^{o}F design basis limiting value for the diesel engine intercooler water heat exchanger outlet temperature into appropriate procedures and/or acceptance criteria. The diesel manufacturer required that the DG fuel consumption and load carrying capability be derated if the engine's intercooler water heat exchanger outlet temperature (CW Out) exceeded the design limiting value of 105^{o}F. The team also noted that the actual fouling factor for the intercooler water heat exchanger was greater than the design basis fouling factor. This higher fouling factor could affect the heat transfer capability of the intercooler water heat exchanger.

To further verify the SW cooling capability, surveillance test procedure ES-560.211 was reviewed for the last three tests of the "B" intercooler water heat exchanger, (November 17, 1999; February 9, 2000; and April 4, 2000, respectively). The following data were collected:

Intercooler Heat Exchanger "B" Test Data		
Test Date	**Actual Data (^oF)**	**Data Extrapolated to Design Basis Conditions (^oF)**
11-17-99	SW In = 64.69 SW Out = 68.37 CW In = 99.31 CW Out = 69.66 design basis fouling = .00062 actual fouling = .00315	SW In = 95.0 SW Out = 103.26 CW In = 125.0 CW Out = 116.20
2-9-00	SW In = 48.78 SW Out = 53.97 CW In = 88.31 CW Out = 54.57 design basis fouling = .00062 actual fouling = .00193	Not Available
4-4-00	SW In = 62.27 SW Out = 67.01 CW In = 98.39 CW Out = 68.66 design basis fouling = .00062 actual fouling = .00253	SW In = 95.0 SW Out = 104.14 CW In = 125.0 CW Out = 115.27

The surveillance test data in the above table indicated that, under design basis conditions, the CW Out temperature could exceed the design value specified by the diesel engine manufacturer. Derating would reduce the engine's kilowatt (KW) output as well as increase the diesel engine fuel consumption.

At the time of this inspection, the licensee had not derated the DGs as required by the DG manufacturer. Subsequent to the inspection, the licensee initiated PIPs 0-C-00-0603 and 0-C-00-0629 to address this issue. A 2.43% derating was applied to the DGs. The derating factor was based on combustion inefficiencies at higher combustion air temperatures due to ambient air and intercooler cooling water being above design temperatures. The team noted that applying the 2.43% derating to the DGs resulted in the DG KW output being less than the design values specified in UFSAR Section 8.3.1.1.2 and in TS surveillance requirement 4.8.1.1.2.

The licensee performed an operability evaluation which concluded that the DGs were operable. The evaluation determined that, with a 2.43% derating, the minimum TS volume of DG fuel oil was adequate to operate the DGs for seven days under the design basis accident load condition. The evaluation also determined that the reduced KW capacity of the DGs (4147 KW) was still above the maximum required design basis accident load of 4022.7 KW. The basis for the licensee's operability determination was documented in calculation DC06630-001, Revision 3, and PIP 0-C-00-0629. The team reviewed the calculation and the PIP and concluded that the derated DGs were operable but degraded, in that, the KW output was less than the design values specified in UFSAR Section 8.3.1.1.2 and TS 4.8.1.1.2.

The team used the Significance Determination Process (SDP) to evaluate the risk significance of this issue. This issue was screened out in a Phase 1 SDP since the DGs were determined to be operable. This issue was determined to be of very low safety significance (GREEN).

The 10 CFR 50, Appendix B, Criterion III, Design Control, requires in part, that design control measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into procedures and instructions. Design control measures shall be applied to delineation of acceptance criteria for tests.

The team determined that the licensee's failure to translate (1) the 105^{o}F design basis limiting value for the diesel engine intercooler water heat exchanger outlet temperature and (2) the requirement to derate the DGs if the intercooler water heat exchanger outlet temperature exceeded the 105^{o}F value into appropriate procedures and/or acceptance criteria to be a violation of the NRC requirements for design control.

This violation is being treated as a non-cited violation (NCV), consistent with Section VI.A.1 of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as PIPs 0-C-00-0603 and 0-C-00-0629. This violation is designated as NCV 50-395/00-03-02, Inadequate Design Control for the Diesel Generator Intercooler Water Heat Exchanger Outlet Temperature.

.142 Ventilation

a. Inspection Scope

The team reviewed design output documents and calculations to assure that adequate ventilation exists to support operation of the DGs and the station batteries. In addition, the team reviewed and evaluated temperature data obtained in the DG room.

b. Issues and Findings

The team identified that design information (e.g., design heat load, instrument uncertainties) was not correctly translated into calculation DC07610-002, Diesel Generator HVAC Evaluation, Revision 1. This calculation incorrectly concluded that one of the two 50% capacity ventilation fans per DG could maintain the associated DG rooms below the TS limit of 120^{o}F during DG operation for an outside ambient temperature of up to 95^{o}F. The team determined that, based on the design heat load, one DG ventilation fan could maintain the associated DG rooms below 120°F for an outside ambient temperature of up to only 79.4°F.

Based on the conclusions in calculation DC07610-002, Revision 1, the licensee implemented a Technical Specification Interpretation (TSR 1020), which allowed one fan to be removed from service without entering a TS action statement, provided that the ambient temperature inside the DG room did not exceed 95°F. The team noted that TSR 1020 was not correct, in that, it specified temperature inside the DG room instead of outside ambient temperature, and it specified 95°F instead of 79.4°F. The team reviewed the licensee's probabilistic risk assessment (PRA) information and noted that the availability of a single fan per DG train was considered to be a success path for DG operability.

The team noted that the heat load used to arrive at the conclusions in calculation DC07610-002, Revision 1, was determined using temperature data recorded within the DG room during a 1985 test and was based on one fan running. The resulting heat load was determined to be about one half of what the DG vendor supplied heat load was. Using the vendor's heat load, which was consistent with what was found in the DG DBD and other design basis calculations, 120°F could be maintained within the DG room with one fan up to an outside ambient temperature of approximately 80°F. The team noted that, historically, outside ambient temperatures above 100°F have been recorded on a frequent basis. UFSAR Section 2.3.1.3.12 stated that the maximum outdoor air temperature for safety related components was 107°F.

Further review of the calculation by the team revealed that instrument uncertainties were not applied to temperature data collected during the 1985 test and that the supply air flow to the DG room was not measured, but was taken from a fan curve from a previous calculation. The team concluded that the means and methods used by the licensee to obtain the data used as inputs to calculation DC07610-002, Revision 1, to determine the DG room heat load were not complete nor controlled in a manner which demonstrated that one fan could maintain the DG room at 120°F based on the 95°F outside ambient temperature criterion. The team further noted that crediting one DG fan for maintaining the room temperature within design limits during DG operation was not consistent with UFSAR Section 9.4.7.2.1. The team concluded that calculation DC07610-002, Revision 1, was incorrect to allow one DG fan to be out of service for an outside ambient temperature of up to 95°F. This issue was determined to be a violation 10 CFR 50, Appendix B, Criterion III, Design Control.

The licensee initiated PIP 0-C-00-0570 to address this issue. A change to TSR 1020 was initiated to reflect that one DG ventilation fan could be taken out of service if the outside air temperature remained below 79.4°F. The team reviewed maintenance records and equipment out of service logs dating back to 1997. There were no instances identified where one DG ventilation fan was taken out of service and the associated DG was considered to be operable. For those instances where a DG ventilation fan was taken out of service, the associated DG was also out of service.

The team used the SDP to evaluate the risk significance of this issue. This issue was screened out in a Phase 1 SDP since the DGs were determined to be operable. This issue was determined to be of very low safety significance (GREEN).

This violation is being treated as a NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as PIP 0-C-00-0570 and is designated as NCV 50-395/00-03-03, Inadequate Design Control for Determining Diesel Generator Ventilation Fan Capability.

.2 SYSTEM CONDITION AND CAPABILITY

.21 Installed Configuration

a. Inspection Scope

The team conducted a walk down inspection of the DG building, SW pump house, and the area of the underground diesel fuel oil tank. Associated piping and vital components were verified to be in the proper lineup and consistent with the UFSAR, DBDs, vendor manuals, and design basis calculations.

b. Observations and Findings

There were no findings identified.

.211 Instrument Setpoints

a. Inspection Scope

The team reviewed the DG instrument setpoint list, three setpoint calculations, and eight calibration records to verify that instrument setpoints were being established and implemented consistent with the licensing and design basis for the plant. The team also reviewed two electrical maintenance procedures to verify that appropriate design output information on instrument setpoints was being appropriately incorporated into maintenance and test procedures.

b. Issues and Findings

There were no findings identified.

.22 Operation

a. Inspection Scope

The team conducted a system walkdown of the DG building to verify that operation and system alignments of the DG and associated interfacing and auxiliary support systems were consistent with the design and licensing basis (e.g., SW, DG fuel oil, lube oil, DG building ventilation, starting air, etc.).

b. Issues and Findings

There were no findings identified.

.23 Design

a. Inspection Scope

The team reviewed design bases documents, calculations of record, and approved design output drawings for the 7.2 KV system in order to verify that the degraded voltage relay setpoint values ensured that steady state voltage criteria were not violated on downstream emergency power system buses during degraded voltage conditions when fed from the preferred power supplies. The degraded voltage dropout setpoint analytical limit and time delay was also reviewed for compliance with the guidelines of NRC Branch Technical Position PSB-1, Adequacy of Station Electric Distribution System Voltages.

The total instrument loop uncertainty for the loss of voltage and the degraded voltage relays and documented in calculation DC08200-001, Revision 18, was reviewed for consistency with the value specified in TS Table 3.3-4.

b. Issues and Findings

There were no findings identified.

.24 Testing

a. Inspection Scope

The team reviewed completed preoperational and surveillance test procedures to verify that requirements for SW flow, diesel heat exchanger cooling performance, and DG building ventilation fan capability were correctly incorporated into the test procedures and to verify that test acceptance criteria were consistent with applicable design documents.

b. Issues and Findings

GREEN findings related to the diesel intercooler water heat exchanger outlet temperature and DG building ventilation fan capability are discussed in Sections 1R21.141 and 1R21.142 of this inspection report.

.3 SELECTED COMPONENTS

.31 Component Inspection

a. Inspection Scope

The team reviewed pump and fan performance curves for the service water pumps and the DG building ventilation fans. Using applicable design input information, the team performed alternate calculations in order to evaluate operation of the service water pump motors' instantaneous time over current relay setpoints. Additionally, operation of the loss of voltage and the degraded voltage relays was reviewed for their impact on the capability of the service water pump motors to perform their design function. In addition, the team reviewed preoperational test data for the DG fan motors, vendor motor data, and performed independent calculations in order to verify that the DG building fan motors were adequately sized and were capable of performing their design function.

b. Issues and Findings

There were no findings identified.

.32 Component Degradation

a. Inspection Scope

The team reviewed the preventive maintenance procedure for the DGs and voltage regulator and verified that appropriate vendor recommended maintenance checks were included to be performed on a periodic basis. The team also reviewed surveillance test data for the diesel intercooler water heat exchanger in order to determine whether adverse trends existed in the heat transfer capability.

b. Issues and Findings

A GREEN finding related to the diesel intercooler water heat exchanger outlet temperature is discussed in Section 1R21.141 of this inspection report.

.33 Equipment/Environmental Qualification

a. Inspection Scope

The team reviewed temperature specifications for the DG stator and rotor windings and the exciter and voltage regulator panels to verify that the equipment was properly rated for the expected design temperatures in the DG rooms. The team also reviewed the specifications for the relays used in the DG control circuits.

b. Issues and Findings

There were no findings identified.

.34 Operating Experience

a. Inspection Scope

The team reviewed selected NRC Information Notices (IN) to verify that the licensee appropriately considered the impact of operating experience problems on the affected components. The team determined from the review that the issues discussed in the notices had been satisfactorily evaluated and dispositioned by the licensee for the

Summer plant. In addition, the team reviewed the licensee's evaluation of 10 CFR Part 21 reports on Agastat relay problems, and verified that the specific problems or concerns discussed in the reports had been reviewed and dispositioned by the licensee.

b. Issues and Findings

There were no findings identified.

.4 IDENTIFICATION AND RESOLUTION OF PROBLEMS

a. Inspection Scope

The team reviewed selected condition evaluation reports (CER) and PIPs to verify that the cause, extent of condition, and corrective actions developed by the licensee appropriately resolved the problem.

b. Issues and Findings

There were no findings identified.

4. OTHER ACTIVITIES

4OA5 Management Meetings

.1 Exit Meeting Summary

The lead inspector presented the inspection results to Mr. B. Williams, station manager, and other members of the licensee's staff at the conclusion of the onsite inspection on May 5, 2000. Subsequent to the onsite inspection, the licensee provided additional information to the team for review. The in office inspection of the additional information was completed on June 15, 2000, and the lead inspector held a follow up conference call with licensee engineering and licensing representatives. The licensee acknowledged the findings presented and did not have dissenting comments. Proprietary information is not included in this inspection report.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

S. Bailey, Supervisor, Plant Support Engineering
D. Behrens, Environmental Qualification Engineer
M. Browne, Manager, Nuclear Licensing and Operating Experience (NL&OE)
S. Carroll, Principal Electrical Engineer, Design Engineering
T. Clark, Principal I&C Engineer, Design Engineering
A. Cribb, Engineer, NL&OE
S. Fipps, Manager, Design Engineering
M. Fowlkes, Manager, Operations
D. Jones, Engineer, NL&OE

G. Loignon, Senior Engineer, Probabilistic Risk Assessment
R. Myers, Engineer, NL&OE
P. Pittman, Independent Safety Engineering Group
A. Rice, Manager, Plant Support Engineering
C. Rice, Mechanical Engineer, Design Engineering
G. Robertson, Diesel Generator System Engineer, Plant Support Engineering
R. Slone, Electrical Engineer, Plant Support Engineering
R. Waselus, General Manager, Engineering Support
B. Williams, General Manager, Nuclear Plant Operations
G. Williams, Supervisor, Mechanical Design Engineering
T. Wood, Principal Mechanical Engineer, Design Engineering

Other licensee employees contacted included engineers, operators, and administrative personnel.

NRC:

C. Casto, Director, Division of Reactor Safety, Region II
M. King, Resident Inspector

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

50-395/00-03-01	NCV	Inadequate 10 CFR 50.59 Safety Evaluation for UFSAR Change RN 96-72 (Section 1R02)
50-395/00-03-02	NCV	Inadequate Design Control for the Diesel Generator Intercooler Water Heat Exchanger Outlet Temperature (Section 1R21.141)
50-395/00-03-03	NCV	Inadequate Design Control for Determining Diesel Generator Ventilation Fan Capability (Section 1R21.142)

APPENDIX

LIST OF DOCUMENTS REVIEWED

Modifications, Procedures, and ETBTs with Full 10 CFR 50.59 Evaluations

MCN 90102A-D, Increase Core Power to 2900 Mwt
MRF 20787, Addition of Air Accumulators to DG Cooler Fire Service Supply Valves
RN 96-57, EFW System Piping Uprated from 95 Degrees F to 150 Degrees F
RN 96-72, Stability Study Results for Transmission System 1998, dated February 17, 1998
RN 99-087, UFSAR Table 8D-1 Deletion, dated September 13, 1999
MRF 22074, Fusible Disconnects for Pressurizer Heaters
MRF 34428, Change Failed Level Probes in Leak Detection System
MCN 22594Q, XXP-0001B and C Appendix R Fire Switches in CCW System
PTP-225.002, Test of DG Air Start After Coolers
SOP-114, Reactor Building Ventilation System [Operating Procedure]
ECR 50010, FHB Differential Pressure Monitoring and Alarm Change to Dwyer Controls
ECR 50004, Power Lockout Capabilities for HHSI Valves
ETBT 409, New RCP Seal Injection Valves
ECR 50061, 230KV Switchyard Lightning Arrestors
MRF 22594A, Removal of Chilled Water Isolation Valves to CCW Pumps
ECR 50097, EFW Isolation after a Piping Break [outside of containment]

Modifications, ETBTs, and NCNs with 10 CFR 50.59 Screenings

MRF 22424, Service Water Pump Removal
MRF 22594P, Wire Bypass Switch to Eliminate Hot Short
MRF 22736, RMA 13, 14 Cable Swap
MRF 22130, Revise Setpoints for ITS09854 A and B
MRF 22410, Vents and Drains Aux Steam Line
ECR 50029, "C" Chiller Cleanup System
ECR 50033, RWST Low Level Alarm Setpoint Change
ECR 50057, Demin Water Penetration
ECR 50051, AB Roof Replacement
MCN 22352B, CVCS Piping Snubber Reduction
MRF 22353A, SI System Piping Snubber Reduction
MRF 22354A, RHR System Piping Snubber Reduction
MRF 22355A, RC System Piping Snubber Reduction
MRF 22492B, CCW System Piping Snubber Reduction
MCN 22493, SW System Piping Snubber Reduction
MCN22553C, MSR Relay, Controller, Transmitter Upgrade
ECR 50039, DG Room Exhaust Fan Switches
NCN 00-0094, Repair ILS-1903 Level Switch
NCN 00-0366, Install Condulet to XVX16398C-VU
NCN 00-0136, Repair XES000
NCN 00-0126, Rewiring a 7300 Process Cabinet Power Supply
ETBT 428, Existing Source Range Detector is Unreliable
ETBT 463, ASCO Solenoid 212-631-2RVF
ETBT 480, Charging Pump Fitting
ETBT 493, Replacement Valve for XVT 20985A, B-DG

ETBT 502, 316 SST to Inconel for Barton Bellows

Procedures

EMP-190.018, Test Procedure for ITE-81 Relays, Revision 6
EMP-190.001, Test Procedure for ITE-59D Relays, Revision 7
EMP-245.006, Diesel Generator Preventive Maintenance, Revision 12

Drawings

B-208-004-AH-164, Pages A &B, Diesel Generator Room B Exhaust Fan A (XFN45A), Rev. 4
B-208-004-AH-166, Pages A & B, Diesel Generator Room A Exhaust Fan A (XFN75A), Rev. 6
B-208-037-ES-66A(B), 7.2 KV Bus 1DA Undervoltage Relaying, Rev. 10 (11)
B-208-037-ES-67A(B), 7.2 KV Bus 1DB Undervoltage Relaying, Rev. 11 (11)
B-208-024-DG-01, Pages A thru F, Diesel Generator A Breaker Control Scheme, Rev. 12
B-208-024-DG-14 A (B), Diesel Generator System Status Lights, Rev. 6 (0)
B-208-024-DG-15, Pages A thru E, Diesel Generator “A” Exciter (XEX4201), Page Revisions 12, 2, 0, 0, and 2, respectively
B-208-024-DG-18 A (B), Diesel Generator “A” Start (Solenoid 1), Rev. 1 (1)
B-208-024-DG-20 A (B), Diesel Generator A Start (Solenoid 2), Rev. 0 (0)
B-208-024-DG-22 , Pages A thru D, Diesel Generator A Emergency / Test Start, Page Revisions 2, 0, 0, and 0, respectively
B-208-024-DG-24, Pages A thru F, Diesel Generator A Shutdown, all pages Revision 0
B-208-024-DG-26, Diesel Generator A Differential Protection, Revision 0
B-208-024-DG-28 A (B), Diesel Generator A Protective Relaying, Revision 0 (0)
B-208-024-DG-30, Pages A thru D, Diesel Generator A Ready For Load/Auto Start, Revision 0
B-208-024-DG-32 A (B), Diesel Generator “A” Governor Control, Revision 1 (1)
B-208-024-DG-34, Diesel Generator A Annunciator Power Supply, Revision 0
B-208-024-DG-56 A (B), Diesel Generator A Rocker Arm Pre-Lube Pump, Revision 1 (1)
B-224-231, Sheets 93/(94), Nameplate and Assembly Data for Control Switches, Revision 3 (3)
B-224-231, Sheets 91/(92), Nameplate and Assembly Data for Control Switches, Revision 1 (2)
B-208-037, 7.2 KV Bus 1DA Under Voltage Relaying, Sheet 66A, Revision 10; Sheet 66B, Revision 11; Sheet 67A, Revision 11; Sheet 67B, Revision 11
E-206-005, Plant Electrical Distribution, Revision 16
E-206-012, One Line and Relay Diagram Engineered Safety Features Power System, Revision 27
E-206-022, One Line and Relay Diagram, 7200 Volts Switchgear Busses A, 1DB, 1EA and 1EB, Revision 14
E-206-062, Electrical One Line and Relay Diagram, Vital DC System Sheet 3, Revision 18; Sheet 4, Revision 5

UFSAR

Chapters 2, 7, 8, and 9

Technical Specifications

3/4.8, Electrical Power System

Table 3.3-4, Engineered Safety Features Actuation System Instrumentation Trip Setpoints

Calculations

DC09620-006, DG Day Tank (XTK0020A &B) Alarm and Pump Setpoints, Revision 1
DC09640-020, Diesel Generator Exciter Cabinet Rooms A and B Ambient Temperature Switch Setpoint, Revision 0
DC09640-019, Diesel Generator 1A and 1B Rooms Ambient Temperature Switch Setpoint, Revision 0
DC08360-003, Diesel Generator Relay Settings, Revision 4
DC07810-027, Pressure Drop Determination From the FS Supply to the EDG, Revision 1
DC07810-028, Determination of No Load Diesel Cooling Water Flow Requirements Per Appendix R Scenario, Revision 1
DC05330-001, Service water Flow Requirements to the Diesel Generators, Revision 2
DC00020-124, Service Water System Hydraulic Analysis, Revision 7
DC04330-003, Service Water System Flow Model, Revision 0 Preliminary
DC06620-002, DG Emergency Fuel Oil Tank Capacities, Revision 3
DC06630-001, EDG Fuel Oil Consumption, Revision 2
DC06630-004, DG Fuel Oil Transfer Pump NPSH Requirements and System Pressure Loss, Revision 1
DC06630-005, DG FO System Pressure Loss and Transfer Pump Sizing, Revision 1
DC06630-011, FO Day Tank Vent Sizing, Revision 1
DC06620-004, DG Fuel Oil Tank Calibration Data, Revision 3
DC09620-014, DG Fuel Oil Storage Tank Level Instrument Uncertainties and Setpoints, Revision 1
DC06610-001, DG Air Start System Leak Rate, Revision 0
DC00020-077, Diesel Generator Rooms Temperature Limit Due to HVAC Loss, Revision 2
DC00110-138, Diesel Generator Electrical Temperature Termination Profile, Revision 1
DC07610-002, Diesel Generator HVAC Evaluation, Revision 1
DC07290-001, Hydrogen Evolution Rates Intermediate Building Battery Rooms, Revision 2
DC07210-001, Intermediate Building Battery Room Cooling and Heating Loads, Revision 3
DC08200-001, ESF Under Voltage Logic and Settings, Revision 18
DC08360-009, Standby Diesel Generator Loading Profile, Revision 1
DC08360-006, Diesel Generator 1A and 1B Load Study, Revision 8
DC00300-041, PRA4-MU Key Component List
DC08320-005, ESF Battery 1A and 1B capacity, Revision 11
DC08320-010, Class 1E 125 Volts DC System Voltages and Voltage Drop, Revision 12
DC08320-016, Battery Service Test and Acceptance Criteria, Revision 4
Relay Setting Calculations (Relay Device 50-51-74Y, 50G, IAC66K20A) Service Water Pump 7.2 KV Motor Feeder Circuits

Design Bases Documents

Electrical Power Systems DBD, Revision 5

Diesel Generator DBD, Revision 7
SP-546-044461-000, Diesel Generator Design Specification
IMS-94-750-5-0, Static Exciter Regulator Supplementary Operating Instructions
125 Volts DC Electrical System, Revision 4
Heating Ventilation and Air Conditioning System, Revision 8

Nuclear Operations Training Manuals

General Systems GS-2, Safeguards Power, Revision 10
Intermediate Building System IB-5, Diesel Generator System, Revision 12

Vendor Documents

Asea Brown Boveri (ABB) Vendor Document IB 7,4.1.7-7, Type 27N High Accuracy Undervoltage Relay, Issue D
Amerace Corporation Vendor Document E70-1, Agastat Nuclear Qualified Time Delay Relays, dated November 1989
General Electric Publication GEI-44233F, Time Overcurrent Relay Type IAC66K
Service Water Pump Motor Calculated Starting Performance Curves, PO No. SH-1042-SR
Gould Pump Inc., Vertical Pump Division Curve No. 75-141
Joy Series 1000 Axivane Fan Model 48-26-1170 Performance Curves, Customer Order No. SH-10224-SR
Motor Data Sheet for Service Water Pump Motors XPP00039A, B, and C
Motor Data Sheet for Diesel Generator Room Supply Fans XFN-00045A&B and XFN-00075A&B

Bulletins/Information Notices (IN)

IN 88-75, Disabling Of Diesel Generator Output Circuit Breakers By Anti-Pump Circuitry, dated September 16, 1988; Supplement 1, dated April 17, 1989
IN 92-53, Potential Failure of Emergency Diesel Generators Due to Excessive Rate of Loading, dated July 29, 1992
IN 93-96, Improper Reset Causes Emergency Diesel Generator Failures, dated December 14, 1993
IN 94-19, Emergency Diesel Generator Vulnerability to Failure From Cold Fuel Oil, dated March 16, 1994
IN 94-79, Microbiologically Influenced Corrosion of Emergency Diesel Generator Service Water Piping, dated November 23, 1994
IN 96-23, Fires in Emergency Diesel Generator Exciters During Operation Following Undetected Fuse Blowing, dated April 22, 1996
IN 98-41, Spurious Shutdown of Emergency Diesel Generators From Design Oversight, dated November 20, 1998
IN 98-43, Leaks in the Emergency Diesel Generator Lubricating Oil and Jacket Cooling Water Piping, dated December 4, 1998

Primary Identification Program (PIP)

PIP 0-C-98-0749

PIP 0-C-98-0755
PIP 0-C-98-0809
PIP 0-C-98-0824
PIP 0-C-99-0559
PIP 0-C-99-1083
PIP 0-C-99-1261

PIPs Initiated as a Result of this Inspection

PIP 0-C-00-0512
PIP 0-C-00-0514
PIP 0-C-00-0267
PIP 0-C-00-0569
PIP 0-C-00-0570
PIP 0-C-00-0572
PIP 0-C-00-0603
PIP 0-C-00-0629

Miscellaneous Documents

PMTS Calibrations: 9908401, 9908705, 9908402, 9909858, 9901556, 9919979, and 9919980.
Work Request No. 9919032, Change Setpoint for ITS09869B per ECR 50116
Abnormal Condition Evaluation Report 508-126, Diesel Generator Failure on 11/21/97, Isochronous/Droop (ID) Relay
Nonconformance Report # E97-1334, Diesel Generator Load Swings on 11/21/97
Operating Experience Reports: NDE 10023; VEN 940034; SSH 870007; and VEN 910036
V.C. Summer Transient Stability Study Conducted During Spring and Winter of 1996
Study to Determine the Probability of Loss of Off Site Power to V. C. Summer Nuclear Station, Unit 1, dated February 1980
IEEE-485, 1983, IEEE Recommended Practice for Sizing Large Lead Storage Batteries for Generating Stations and Substations

LIST OF ACRONYMS USED

AC	Alternating Current
AOP	Abnormal Operating Procedure
ARP	Annunciator Response Procedure
BAT	Boric Acid Tank
CFM	Cubic Feet per Minute
CFR	Code of Federal Regulations
DBD	Design Basis Document
DC	Direct Current
DG	Diesel Generator
ECN	Engineering Change Notice
EDG	Emergency Diesel Generator
EOP	Emergency Operating Procedure
ESF	Engineered Safety Features
ETBT	Equal To or Better Than
GDC	General Design Criterion
GPM	Gallons Per Minute
HVAC	Heating Ventilation and Air Conditioning
KV	Kilovolt
KW	Kilowatt
LOSP	Loss of Offsite Power
MCN	Modification Change Notice
MRF	Modification Request Form
NCN	Nonconformance Notice
NCV	Non-Cited Violation
NPSH	Net Positive Suction Head
PIP	Primary Identification Program
PRA	Probabilistic Risk Assessment
RN	Revision Notice
SBO	Station Blackout
SDP	Significance Determination Process
TS	Technical Specifications
UFSAR	Updated Final Safety Analysis Report

NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

Reactor Safety

- Initiating Events
- Mitigating Systems
- Barrier Integrity
- Emergency Preparedness

Radiation Safety

- Occupational
- Public

Safeguards

- Physical Protection

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight.   YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. And RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: http://www.nrc.gov/NRR/OVERSIGHT/index.html.