



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

July 29, 2002

EA-02-122

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

**SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION - NRC INTEGRATED INSPECTION
REPORT NO. 50-395/02-02; EXERCISE OF ENFORCEMENT DISCRETION**

Dear Mr. Byrne:

On June 29, 2002, the NRC completed an inspection at your Virgil C. Summer Nuclear Station. The enclosed report documents the inspection findings which were discussed on July 3, 2002, with Mr. G. Halnon and other members of your staff.

The inspection examined 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. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, two findings were identified which were determined to be of very low safety significance (Green). One finding was determined to involve a violation of regulatory requirements. However, because the issue has been entered into your corrective action program, the NRC is treating the issue as a non-cited violation, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny the non-cited violation, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the United States Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Virgil C. Summer Nuclear Station.

The second finding, involving a failure to establish a fitness for duty procedure consistent with 10 CFR 26.24 requirements, was also a violation of regulatory requirements. Based on your prompt corrective action, the apparent generic nature of the issue, and conflicting NRC guidance regarding the 10 CFR 26.24 requirements, and after consultation with the Director, Office of Enforcement, the NRC has determined that the exercise of enforcement discretion is warranted in accordance with Section VII.B.6 of the "General Statement of Policy and Procedure for NRC Enforcement Actions - May 1, 2000," NUREG-1600, as amended on November 3, 2000 (65 Federal Register 59274), and February 16, 2001 (65 Federal Register 79139) (Enforcement Policy). Accordingly, a Notice of Violation will not be issued.

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 Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Loren R. Plisco, Division Director
Division of Reactor Projects

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

Enclosure: Integrated Inspection Report No. 50-395/02-02

cc w/encl.:

R. J. White
Nuclear Coordinator (Mail Code 802)
S.C. Public Service Authority
Virgil C. Summer Nuclear Station
Electronic Mail Distribution

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

Kathryn M. Sutton, Esq.
Winston and Strawn
Electronic Mail Distribution

Henry J. Porter, Assistant Director
Division of 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

Greg H. Halnon, General Manager
Nuclear Plant Operations (Mail Code 303)
South Carolina Electric & Gas Company
Virgil C. Summer Nuclear Station
Electronic Mail Distribution

Distribution w/encl.:

K. Cotton, NRR

A. Hiser, NRR/DE/EMCB (Section 40A5.1)

RIDSNRRDIPMLIPB

PUBLIC

OE Mail

PUBLIC DOCUMENT (circle one): YES NO

OFFICE	RII:DRP	RII:DRP	RII:DRP	RII:DRS	RII:DRS	RII:DRS	RII:DRS
SIGNATURE	MTW	MTW for	KDL for	ATB	ATB	ATB	ATB
NAME	MWidmann	MKing	KGreen-Bates	FWright	RHamilton	ETesta	KDavis
DATE	7/29/2002	7/29/2002	7/26/2002	7/27/2002	7/29/2002	7/29/2002	7/29/2002
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO
OFFICE	RII:DRS	RII:DRS	RII:DRS	RII:EICS			
SIGNATURE	ATB	MLS1 for	ATB w/changes	SES for			
NAME	JWallo	BBearden	ABoland	CEvans			
DATE	7/29/2002	7/26/2002	7/26/2002	7/29/2002			
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY

DOCUMENT NAME: C:\ORPCheckout\FileNET\ML022110092.wpd

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

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

Report No.: 50-395/02-02

Licensee: South Carolina Electric & Gas (SCE&G) Company

Facility: Virgil C. Summer Nuclear Station

Location: P. O. Box 88
Jenkinsville, SC 29065

Dates: March 31, 2002 through June 29, 2002

Inspectors: M. Widmann, Senior Resident Inspector
M. King, Resident Inspector
K. Green-Bates, Project Engineer, RII (Sections 1R06 and 1R07)
W. Bearden, Reactor Inspector, RII (Section 1R08.2)
K. Davis, Physical Security Specialist, RII (Sections 3PP1, 3PP2,
4OA1.6, 4OA5.2)
J. Wallo, Physical Security Specialist, RII (Sections 3PP1, 3PP2, 4OA1.6,
4OA5.2)
R. Hamilton, Radiation Specialist, RII (Sections 2OS1, 2OS2, 2PS2,
4OA1.4 and 4OA1.5)
E. Testa, Senior Radiation Specialist, RII (Sections 2OS1, 2OS2, 2PS2,
4OA1.4 and 4OA1.5)
F. Wright, Senior Radiation Specialist, RII (Sections 2OS1, 2OS2, 2PS2,
4OA1.4 and 4OA1.5)

Approved by: K. Landis, Chief, Reactor Projects Branch 5
Division of Reactor Projects

Attachment: Supplemental Information

Enclosure

SUMMARY OF FINDINGS

IR 05000395/02-02, on 03/31/2002 - 06/29/2002, South Carolina Electric & Gas Co., Virgil C. Summer Nuclear Station. Non-Routine Evolution and Events - Reactor Trip.

The inspection was conducted by the resident inspectors, a project engineer, three radiation specialists, two physical security specialists, and a reactor inspector. The inspection identified two Green findings involving one non-cited violation and one violation for which the NRC exercised enforcement discretion. The significance of the findings is indicated by its color (Green, White, Yellow, Red) using IMC 0609 "Significance Determination Process" (SDP). Findings for which the SDP does not apply are indicated by "No Color" or by the severity level of the applicable violation. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at <http://www.nrc.gov/NRR/OVERSIGHT/ASSESS/index.html>.

A. Inspector Identified Finding

Cornerstone: Mitigating Systems

- Green. The inspectors identified one non-cited violation evaluated as having very low safety significance (Green) for inadequate design control of the main feedwater pumps recirculation flow control valves logic. The licensee failed to implement proper design control through adequate testing of the digital control logic modification in order to fully understand the operation of the system. The design change to the circuit logic prevented the control room operators from having manual control of the valves which resulted in an automatic reactor trip. Post-modification testing did not identify the logic flaw in the recirculation valve controls.

The safety significance of the finding was very low because the reactor trip response and emergency feedwater system availability were unaffected by the design flaw in the circuit logic. (Section 1R14)

- Enforcement Discretion. The inspectors identified a violation for failure to establish a fitness for duty procedure consistent with 10 CFR 26.24 requirements. Based on prompt corrective action, the apparent generic nature of the issue, and conflicting NRC guidance regarding the 10 CFR 26.24 requirements, the NRC has determined that the exercise of enforcement discretion is warranted in accordance with Section VII.B.6 of the Enforcement Policy. (Section 3PP1)

B. Licensee Identified Violations

None

Report Details

Summary of Plant Status

The unit began the inspection period at 100 percent power. The unit operated at or near full power until April 18 when the unit performed a scheduled power reduction to approximately 85 percent to allow performance of main steam safety valve testing. On April 19, the unit commenced a power reduction to take the unit off-line to begin a scheduled refueling outage. The unit completed the refueling outage and went critical on June 1. During the plant startup a spike occurred on a channel of nuclear instrumentation that resulted in a reactor trip. The unit entered Mode 1 on June 3 and returned to 100 percent power on June 9 and remained at or near full power until June 17. Following a loss of one of the main feedwater (MFW) pumps, an automatic reactor trip occurred on low-low steam generator level. The unit was restarted on June 18 and achieved 100 percent power on June 20. On June 27, the A train MFW pump tripped due to a grounding issue. Power was reduced to approximately 88 percent until maintenance work was completed. On June 29, the unit was returned to full power operation.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

a. Inspection Scope

The inspectors reviewed the licensee's preparations for high ambient temperatures and implementation of Operations Administrative Procedure, OAP-109.1, "Guidelines for Severe Weather," Revision 1C, to verify that those preparations limited the risk of weather related initiating events, ensured accessibility to accident mitigation system equipment, and adequately protected accident mitigation systems from adverse weather effects. The inspectors also reviewed Condition Evaluation Reports (CERs) 0-C-02-1898, 0-C-02-2024, and 0-C-02-2150 written to address control rod drive mechanism (CRDM) and industrial cooling temperature alarms, service water (SW) cooling coil plugging and cooling coil isolation valve XVG03181B-SW stem disc separation issues.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

.1 Availability of Redundant Equipment

a. Inspection Scope

The inspectors verified through plant walkdowns that with a train of equipment removed from service that the opposite train of equipment was correctly aligned, available and operable. The following systems / components were verified:

- B train motor driven emergency feedwater (MDEFW) pump while A train MDEFW pump was out of service;

- A emergency diesel generator (EDG) and support system while B EDG out of service for blackout testing;
- A train control room emergency air ventilation system with the normal air handling system out of service.

Correct alignment and operating conditions were determined from the applicable portions of drawings, System Operating Procedures (SOPs), FSAR, and Technical Specifications (TSs). The documents reviewed during this inspection are listed in the Attachment.

The inspection included review of outstanding Maintenance Work Requests (MWRs) and related CERs to verify that the licensee had properly identified and resolved equipment alignment problems that could impact mitigating system availability.

b. Findings

No findings of significance were identified.

.2 Semiannual Inspection

a. Inspection Scope

The inspectors performed a detailed review and walkdown of the Service Water (SW) system to identify any discrepancies between the current operating system equipment lineup and the correct design lineup. The following documents were reviewed to determine the correct system lineup and system requirements:

- Design Basis Document, "Service Water System;"
- FSAR Sections 2.4.1, and 9.2;
- TS Sections 3.7.4, 3.7.5, and 3.7.9;
- SOP-117, "Service Water System;"
- Drawings for SW cooling: D-302-221 and D-302-222;
- Nuclear Operations training material for the Service Water System, Revision 13;
- SW System - Importance to Maintenance Rule System Function Worksheet and Scoping Document, dated September 12, 2000.

In addition, the inspectors reviewed outstanding maintenance work requests and related CERs to verify that the licensee had properly identified and resolved equipment problems that could affect the availability and operability of the service water system.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

The inspectors reviewed recent CERs, Work Orders (WO), and impairments associated with the fire suppression system. The inspectors reviewed surveillance activities to determine whether they supported the operability and availability of the fire protection system. The surveillance review included observation and data review of Surveillance Test Procedure (STP)-128.024, "Cardox System Functional Refueling Test."

The inspectors assessed the material condition of the active and passive fire protection systems and features and observed the control of transient combustibles and ignition sources. The inspectors conducted routine inspections of the following areas:

- Turbine Driven EFW Pump Room (fire zone IB-25.2)
- Nuclear Steam Supply System (NSSS) Relay Room (fire zone CB-6)
- Turbine Building (fire zone TB-1)
- Diesel Generator A and B Train Rooms and Valve Galleries (fire zones DG-1.1/1.2, and 2.1/2.2)
- IDA and IDB Switchgear Rooms, Emergency Safeguard Feature Switchgear and Ventilation Rooms (fire zones IB-20, 22, 22.1)
- Component Cooling Water (CCW) Heat Exchanger Area (during hot work) (fire zones IB-25.13, 25.15)

These areas are important to safety based on the licensee's fire risk analysis (Individual Plant Examination for External Events (IPEEE) External Fires Request for Additional Information dated January 1999).

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures

a. Inspection Scope

The inspectors reviewed the licensee's flooding mitigation plans and equipment to determine consistency with design requirements and risk analysis assumptions. Walkdowns were conducted of the roofs and interior and exterior walls of the service building. The Diesel Generator and Emergency Switchgear rooms were also toured to verify compliance with calculated flood platform heights, penetration, and water barrier requirements. Plant design changes which modified system pressures and associated flowrates were reviewed to verify that the new flowrates had been appropriately implemented in the flood protection program and met TS and documented flood design specifications. The documents reviewed during this inspection are listed in the Attachment.

b. Findings

The inspector's review identified a discrepancy between plant modifications and flood mitigation evaluations / calculations. The issue is being treated as an Unresolved Item (URI) until the licensee's evaluation of all safety related / risk significant rooms and equipment affected by the increased flood heights and increased water spray distances is complete.

In April 2002, the licensee had identified that plant service water modifications had increased water pressure from 40 to 65 psig, however the resultant increases in room flood levels had not been evaluated nor had flooding calculations been updated as part of these modifications. The inspectors observed that the licensee's corrective action for this design control problem had only evaluated the increase in flood levels in one area of the plant, the EDG 400 elevation (CER 0-C-02-1329 EDG Room Flooding). The inspectors observed that service water piping ran through many other areas of the plant and the licensee's corrective action was not complete as it did not evaluate or address more than this one area. The inspectors also observed that the licensee had not evaluated and documented the increased water spray distances affect on safety and risk significant equipment during a pipe failure.

Further review identified that other plant systems also had system pressure / flowrate modifications, but the licensee's corrective action had not considered evaluating and documenting these changes for their impact on internal flooding, or adding the new flowrates into the sites overall cumulative flood program and associated calculations.

The licensee is currently performing a detailed operability evaluation to determine which safety related / risk significant rooms and equipment are affected by the increased flood heights and increased water spray distances. Therefore, pending the outcome of the review and whether equipment is within the levels acceptable for operation such that flooding could not cause a loss of safety function, the safety significance of this issue remains to be determined.

The NRC identified issue is being treated as a potential violation of 10 CFR 50 Appendix B involving inadequate design control corrective action for flood mitigation issues which were entered into the licensee's corrective action program but did not evaluate all plant safety and risk significant equipment. The potential violation is considered an Unresolved Item until the licensee's investigation as to whether there were safety related/risk elements located in the rooms that were affected by the new flood levels is complete. Until the inspectors can review the documentation and the safety significance can be determined, this issue will be documented as URI 50-395/02002-02. The licensee has entered the issues into their corrective action program as CERs 0-C-02-1329 and 0-C-02-2086.

1R07 Heat Sink Performance

a. Inspection Scope

The inspectors observed the licensee perform an inspection of the Unit 1 Reactor Building Cooling Unit (RBCU) Heat Exchangers A, B, C and D. During this inspection,

the inspectors reviewed the as-found condition of the heat exchangers to determine if deficiencies exist that could mask degraded performance or could indicate a potential for common cause problems. Additionally, the inspectors discussed the as-found condition, monitoring schedule, and historical performance of the RBCU heat exchangers with engineering personnel. Heat exchanger condition reports and other documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

1R08 Inservice Inspection (ISI) Activities

.1 Reactor Coolant System Piping A Hot Leg Weld

a. Inspection Scope

The inspectors reviewed licensee preparations and observed performance of the Mechanical Stress Improvement Process (MSIP) on the B and C hot leg piping to verify that the process was applied in accordance with site specific parameters and the Westinghouse field service procedure. MSIP was applied to the piping to permanently remove weld residual tensile stresses and generate compressive residual stresses on the inside diameter of the piping to mitigate stress related cracking in the weldments on the hot leg nozzle welds. This MSIP procedure was being performed as a followup action for the A hot leg crack as discussed at a meeting held between the licensee and the NRC on January 17, 2002. (Reference ADAMS Accession Numbers ML020520687 and ML020460086).

b. Findings

No findings of significance were identified.

.2 Refueling Outage ISI - Reactor Pressure Nozzle Welds

a. Inspection Scope

The inspectors observed in-process ISI work activities and reviewed selected ISI records. The observations and records were compared to the TS and the applicable Code (American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Sections V and XI, 1989 Edition, no Addenda) to verify compliance.

Calibration of Ultrasonic examination (UT) equipment and portions of the ongoing manual UT examination of the following reactor coolant system (RCS) piping welds were observed:

- Weld 1-4502-12 Six inch ASME Class I Pressurizer pipe to elbow weld
- Weld 1-4502-13 Six inch ASME Class I Pressurizer pipe to tee weld
- Weld 1-4502-19 Six inch ASME Class I Pressurizer pipe to tee weld

The inspectors observed ongoing remote automated UT and eddy current (EC) examinations performed on the inside surface of the reactor pressure vessel (RPV) nozzle to RCS piping welds of B and C hot loops. The inspectors reviewed and discussed all completed examination data with senior examination personnel. Additionally, the inspectors reviewed a video tape of the completed remote visual examination of the above welds.

The inspectors also reviewed the steam generator EC examination results from the most recent completed refueling outage to verify compliance with TS. No steam generator examinations were performed during the ongoing refueling outage. Additionally the inspectors reviewed a video tape of the completed remote visual examination of RPV head penetrations for leakage (Reference Section 4OA5.1).

The qualification and certification records for the examiners, equipment and the weld consumables, and nondestructive examination procedures for the above ISI examination activities were reviewed. Sixteen CER reports, which were associated with ISI activities and had been documented in the licensee's corrective action program, were reviewed.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

The inspectors observed senior reactor operators and reactor operators on the plant simulator during licensed operator requalification training. The scenario (LOR-ST-191) involved a power increase at beginning of life with a positive moderator temperature coefficient. The inspectors reviewed training materials to determine whether risk-significant operator actions and feedback from plant events and industry experience information were incorporated into licensed operator requalification training. The inspectors assessed overall crew performance, communication, oversight of supervision and the instructors' critique.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule (MR) Implementation

a. Inspection Scope

The inspectors sampled portions of selected performance-based problems associated with structures, systems or components (SSCs), to assess the effectiveness of maintenance efforts. Reviews focused, as appropriate, on: (1) scoping in accordance with the MR (10 CFR 50.65); (2) characterization of failed SSCs; (3) safety significance classifications; (4) 10 CFR 50.65 (a)(1) or (a)(2) classifications; and (5) the

appropriateness of performance criteria for SSCs classified as (a)(2) or goals and corrective actions for SSCs classified as (a)(1). Equipment issues described in the CERs listed below were reviewed:

- CERs 0-C-01-1078 and 0-C-02-0725, maintenance preventable functional failure involving loss of power to DC emergency lighting panel DPN8015B due to DC relay coil failure;
- CER 0-C-02-0171, failure of thermal overloads for residual heat removal / spray pump room fan XFN0049B;
- CER 0-C-02-1723, unexpected trip of bus 1EA1 during A train blackout test STP-125.017;
- CER 0-C-02-2314 and associated root cause analysis, failure of service water pump and screen area temperature element;
- Nonconformance Notice (NCN) 01-0290, reactor trip breaker failed to close on demand during testing;
- NCN 01-2155, service water building ventilation fan XFN0080A failure.

The inspectors' review also evaluated if maintenance preventable functional failures or other MR findings existed that the licensee did not capture in their program.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspectors reviewed the licensee's assessments of the risk impacts of removing from service those components associated with emergent work items. The inspectors evaluated the selected SSCs listed below for, (1) the effectiveness of the risk assessments performed before maintenance activities were conducted; (2) the management of risk; (3) that, upon identification of an unforeseen situation, necessary steps were taken to plan and control the resulting emergent work activities; and (4) that emergent work problems were adequately identified and resolved. The inspectors evaluated the licensee's work prioritization and risk determination to determine, as appropriate, whether necessary steps were properly planned, controlled, and executed for the scheduled and emergent work activities listed below:

- A MDEFW pump maintenance with A SW pump, B train instrument air compressor out of service and nuclear instrumentation NI-35 operational test in progress;
- A train EDG maintenance with an A CCW train out of service and safety injection check valve surveillance tests in progress;
- A train SW out of service for pipe repair with the A EDG maintenance and safety injection full flow test in progress;
- B EDG, B CCW heat exchanger removed from service and core reload in progress;

- A train service water to emergency feedwater cross connect valve test with A CCW pump, A train chiller, and A train control room normal air handling unit out of service.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-Routine Plant Evolutions

a. Inspection Scope

This inspection evaluated operator response for non-routine plant evolutions to ensure they were appropriate and in accordance with the required procedures. The inspectors also evaluated performance problems to ensure that they were entered into the corrective action program. The following events or evolutions were reviewed:

- Instrument air pressure transient with standby compressor out of service (CER 0-C-02-0858);
- Reactor trip on June 1, from approximately one percent power due to failure of nuclear instrumentation NI-36 (intermediate range channel) causing high flux at shutdown alarm and trip signal (CER 0-C-02-1899);
- Tavg / steam transient due to reactor power trailing turbine load during increase in power from 50 megawatt - electric (MWe) to 135 MWe (CER 0-C-02-1925);
- Reactor trip on June 17, from 100 percent power due to a loss of the C MFW pump and subsequent low-low level in A train steam generator (CERs 0-C-02-2036, 2037, 2044, and 2061).

b. Findings

The inspectors identified one non-cited violation evaluated as having very low safety significance (Green) for inadequate design control of the MFW pumps recirculation flow control valve logic.

During Refueling Outage (RF)-13, the licensee modified the control system for the main feedwater pumps including recirculation flow control valves IFV-03247-FW, IFV-03257-FW and IFV-03267-FW. As a result of inadequate design control and testing of the design change, the control room operators were unexpectedly blocked from manual control of the recirculation valves during upset conditions. On June 17, the reactor tripped on low-low steam generator level as a result of the recirculation valves not being able to be closed. On a loss of one of the three feedwater pumps, the remaining two pumps automatically increased flow to restore the lost flow. However, due to the new digital control logic, the system logic locked open the recirculation valves to 100 percent demand position to protect the pumps. The 100 percent recirculation flow along with steam demand produced a lowering steam generator level. As a result the operators were unable to stop the recirculation flow to the deaerator storage tank, which resulted in the low-low steam generator level reactor trip.

The failure to maintain proper design controls of the feedwater control system is more than minor, in that, there was an actual impact on plant safety and an increase in the frequency of initiating events (i.e., reactor trip). If the recirculation valves would have been able to be controlled by the operator the reactor trip could have been avoided. The recirculation valves control logic flaw unnecessarily challenged the plant's response systems and specifically rod control and emergency feedwater systems.

10 CFR 50, Appendix B, Criterion III, Design Control, states, in part, that design control measures shall provide for verifying or checking the adequacy of design by the performance of a suitable testing program under the most adverse design conditions. The licensee failed to implement proper design control through adequate testing of the digital control logic modification to fully understand the operation of the system, in that, they failed to recognize that the installed logic inhibited the operators ability to adequately control the plant during a loss of a feedwater pump transient condition. This Severity Level IV violation is being treated as a non-cited violation (NCV), consistent with Section VI.A.1 of the NRC Enforcement Policy and is identified as NCV 50-395/02002-01. This condition has been entered in the licensee's corrective action program under CER 0-C-02-2061.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed selected operability evaluations affecting risk significant mitigating systems to assess, as appropriate, (1) the technical adequacy of the evaluations; (2) whether operability was properly justified and the subject component or system remained available, such that no unrecognized increase in risk occurred; (3) whether other existing degraded conditions were considered; (4) where compensatory measures were involved, whether the compensatory measures were in place, would work as intended, and were appropriately controlled; and (5) the impact on TS Limiting Conditions for Operations (LCOs) and the risk significance in accordance with the Significance Determination Process (SDP). The inspectors reviewed the following CERs, NCNs, issues and evaluations:

- Virgil C. Summer Station Diesel Generator System Reliability Self Assessment dated April 10, 2002;
- CER 0-C-02-1888, rod K-12 digital rod position indication issue due to hard ground;
- NCNs 02-0568 and 02-0803, "Inspection of 'A' Train Service Water Supply and Return Piping Located Areas of Wall Thinning;" Technical Work Record (TWR) LS11312, "A Summary of Pipe Thinning Issues Regarding Service Water Large Bore Piping," dated April 5, 2002; and,
- NCN 02-1560, B CCW heat exchanger review of technical issues with welds.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (PMT)a. Inspection Scope

For the post maintenance tests listed below, the inspectors reviewed the test procedure and witnessed either the testing and/or reviewed test records to determine whether the scope of testing adequately verified that the work performed was correctly completed and demonstrated that the affected equipment was functional and operable:

- PMT for NCNs 00-1470 and 02-1560 following repair of A and B train CCW heat exchangers;
- PMT 0107545 and 0107560, retests for pressurizer power operated relief valves PCV00445A/B-RC per Instrumentation Control Procedure (ICP)-365.013;
- PMTs 0107966, Electrical Maintenance Procedure (EMP)-280.006, molded case circuit breaker and controller inspection for inverter feed to XIT-5904-EV;
- WO 0205532 to retest of reactor makeup isolation valve XVD01919-MU, per Preventive Test Procedure (PTP)-170.001;
- WOs 0205967 and 0205969 to retest temperature control switch IT115402A and the float valve in EDG A lube oil system;
- WO 0205532, PMT following failure of the EDG A output breaker to close from main control room.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activitiesa. Inspection Scope

The unit began a refueling outage on April 19 which was completed on June 3. The inspectors used inspection procedure 71111.20, "Refueling and Outage Activities," to complete the inspections described below.

Prior to and during the outage, the inspectors reviewed the licensee's outage risk control plan for the RF-13 Outage Schedule to verify that the licensee had appropriately considered risk, industry experience and previous site specific problems, and to confirm that the licensee had mitigation / response strategies for losses of key safety functions.

In the area of licensee control of outage activities, the inspectors reviewed equipment removed from service to verify that defense-in-depth was maintained commensurate with the outage risk control plan for key safety functions and applicable technical specifications, and that configuration changes due to emergent work and unexpected conditions were controlled in accordance with the outage risk control plan.

The inspectors reviewed selected components which were removed from service to verify that tags were properly installed and that associated equipment was appropriately configured to support the function of the clearance.

During the outage, the inspectors:

- Reviewed RCS pressure, level, and temperature instruments to verify that those instruments were installed and configured to provide accurate indication; and that instrumentation error was accounted for;
- Reviewed the status and configuration of electrical systems to verify that those systems met TS requirements and the licensee's outage risk control plan. The inspectors also evaluated if switchyard activities were controlled commensurate with their safety and if they were consistent with the licensee's outage risk control plan assumptions;
- Observed spent fuel pool operations to verify that outage work was not impacting the ability of the operations staff to operate the spent fuel pool cooling system during and after full core offload. The inspectors also compared these operations to FSAR commitments and TS requirements;
- Observed licensee control of containment penetrations to verify that the licensee controlled those penetrations in accordance with the refueling operations TSs and could achieve containment closure for required conditions;
- The inspectors examined the spaces and cubicles inside the reactor building prior to reactor startup to verify that debris had not been left which could affect performance of the containment sumps.

The inspectors also reviewed the following activities related to RF-13 for conformance to applicable procedural and TS requirements:

- monitoring of shutdown activities
- decay heat system operations
- inventory control and measures to provide alternative means for inventory addition, including during conditions of reduced inventory
- reactivity controls including locked valve dilution controls
- refuel handling operations (inspection, insertion, and tracking of fuel assemblies through core reload)
- reactor heatup, startup and power ascension activities

The inspectors reviewed various problems that arose during the outage to verify that the licensee was identifying problems related to refueling outage activities at an appropriate threshold and entering them in the corrective action program. The CERs that were specifically reviewed by the inspectors are listed below. The CERs identified below were initiated during the refueling outage and were considered significant.

- 0-C-02-1005, recent control room dose analyses have raised issues that challenge the plant's ability to meet offsite and control room dose limits during non loss of coolant accidents (LOCA) (reference Section 4OA3.2 for review of Licensee Event Report (LER) 50-395/2002002-00 associated with this issue);
- 0-C-02-1029, during reactor shutdown intermediate range nuclear instrument, NI-35 failed;

- 0-C-02-1284, Component Cooling XVG09627A-CC, SW system outlet leader component cooling loop A, a fail-open valve found closed with tubing supply air removed by Instrumentation & Control for regulator and solenoid replacement;
- 0-C-02-1329, non-conservative flood level calculation in DC03290-002 for diesel generator building 400' elevation;
- 0-C-02-1466, A diesel generator breaker would not close;
- 0-C-02-1743, A emergency feedwater pump started when leads were relanded;
- 0-C-02-1880, during rod position indication operational test, control rod M-10 did not withdraw;
- 0-C-02-1888, digital rod position indication non-urgent alarm due to ground on rod K-12;
- 0-C-02-1899, reactor trip on intermediate range high flux due to nuclear instrumentation NI-36 spiking (post trip review performed under Section 1R14);
- 0-C-02-1909, high seal leak off annunciator for B reactor coolant pump.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the surveillance tests listed below, the inspectors reviewed the test procedure and either witnessed the testing and/or reviewed test records to determine whether the scope of testing adequately demonstrated that the affected equipment was functional and operable:

- STP-125.004A, "Diesel Generator A Load Rejection Test;"
- STP-125.011F, "Integrated Safeguards Test Train B;"
- STP-170.005, "Fire Switch Functional Test for XSW1DB-07, XSW1DB-04 and XSW1DB2-04," and PTP-160.022, "Train B AC and DC Breaker Exercise Test;"
- STP-220.002, "Turbine Driven Emergency Feedwater Pump and Valve Test;"
- STP-220.008A, "Turbine Driven Emergency Feedwater Pump Full Flow Test;"
- STP-401.002, "Main Steam Line Code Safety Valves ASME Section XI Test," for XVS-2806M (C Loop main steam line code safety valve).

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed a temporary modification to address inoperable fire hose stations within the reactor building that could potentially challenge containment integrity. The inspectors also examined the installation of temporary power to bus XSW1C3,

spent fuel pooling pump, per EMP-100.004. The inspectors assessed the impact on risk-significant parameters, such as, availability, reliability and functional capability and evaluated the modifications for adverse affects on safety functions of required systems.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a. Inspection Scope

On June 11, the inspectors reviewed and observed the performance of an Emergency Planning Drill that involved a simulated major steam line break with significant primary to secondary leakage and indication of fuel damage (Simulator EPP-97-001B, Revision 0). The inspectors assessed emergency procedure usage, emergency plan classification, notifications and the licensee's identification and entrance of any drill problems into their corrective action program. This inspection evaluated the adequacy of the licensee's conduct of the drill and critique performance. Drill issues were captured by the licensee in CER 0-C-02-2020 and were reviewed by the inspectors.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstones: Occupational Radiation Safety (OS) and Public Radiation Safety (PS)

2OS1 Access Control To Radiologically Significant Areas

a. Inspection Scope

The licensee's procedures controlling access to airborne radioactivity areas, radiation areas, high radiation areas, and very high radiation areas associated with RF-13 were reviewed. Procedures for posting, surveying, and access controls to radiologically significant areas listed in the Inspection Report Attachment were evaluated against applicable 10 CFR 20 requirements. During tours conducted April 22 through 26, and May 6 through 9, the inspectors evaluated radiological postings, barricades, and surveys associated with the Reactor, Auxiliary, Intermediate, Fuel Handling, and Hot Machine Shop building areas; and the Radioactive Waste Storage Pad. Dose rates at various locations in the buildings, and the radioactive materials shipping pad were independently surveyed by the inspectors and compared to dose rates recorded on current survey maps for the selected areas.

Selected Radiation Work Permits (RWPs) used for work in radiologically significant areas associate with RF-13 tasks listed in the Attachment to this report were evaluated for incorporation of access controls. Specified alarm set-points for Electronic Dosimeters (EDs) were evaluated against RWP criteria for appropriateness with regard to the expected work area dose rates.

The inspectors attended several RWP briefings for outage work activities to assess detailed radiological controls planned. Pre-job briefings for jobs scheduled in posted Very High Radiation Areas (VHRAs) were attended to evaluate adequacy of guidance regarding access and As Low As Is Reasonably Achievable (ALARA) controls and consistency with licensee procedures.

Performance of the radiation workers and the radiation protection staff and the application of radiation controls through completion of tasks were reviewed. Interviews concerning RWP requirements and dosimeter set points were conducted with radiation workers. Radiological worker and radiation protection technician training / skill level, adherence to access control procedures and RWP specified access controls were observed and evaluated by the inspectors during selected job site reviews and tours throughout the radiation control led area (RCA). Qualifications of the vendor health physics personnel were evaluated against licensee commitments. The level of management and supervisory presence in the RCA was observed by the inspectors.

Access control procedures for VHRAs and areas which may become VHRA during changing plant conditions were reviewed and discussed with radiation protection management and supervision. Procedural implementation for key control of VHRAs and locked high radiation areas and for accessing posted VHRAs also were observed. For the spent fuel pool area, the general material condition was observed and procedurally established access controls for storage of highly activated non-fuel materials were evaluated for consistency with 10 CFR 20 requirements. The documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

2OS2 As Low As Is Reasonably Achievable Planning and Controls

a. Inspection Scope

For current RF-13 activities, the inspectors reviewed the accuracy of dose and person hour estimates for five selected exposure significant jobs provided for ALARA planning purposes. Licensee dose tracking protocols were reviewed to determine the level of management involvement in the dose management process. Interviews with numerous licensee and vendor personnel were conducted to evaluate the level of understanding and ownership of the ALARA program. Dose records for three dose significant workgroups were reviewed to assess distribution of exposure among individuals. Maximum individual doses were also reviewed.

Outage task sequencing, job scope expansion, and ALARA estimates for high dose jobs including in-service inspection, snubber inspections, test group work, pressurizer work, and reactor instrumentation work were reviewed and discussed with licensee staff regarding incorporation of appropriate ALARA planning considerations. Five ALARA planning packages listed in the Attachment were reviewed prior to being worked and reviewed again two weeks later to evaluate any job scope expansion, planning changes, and in-progress reviews. The inspectors directly observed work being performed on four of the five packages reviewed.

Several work locations in the Auxiliary and Containment Buildings were observed for application of ALARA principles. Dose reduction techniques and radiation protection administrative and engineering controls were reviewed. The inspectors observed the application of engineering controls including temporary shielding and temporary ventilation. Utilization and integration of telemetric dosimetry and closed circuit television were evaluated. Radioactive material and contamination controls also were evaluated for adequacy with regard to maintaining total effective dose equivalent ALARA. The identification and utilization of low dose waiting areas were observed and assessed.

The inspectors reviewed the licensee's Shutdown Chemistry Program and results. Source term reduction initiatives such as sub-micron filtration, specialty resin overlays, zinc injection, and cobalt reduction were also reviewed with licensee personnel. The plant source term was reviewed and discussed with licensee personnel to determine if it was at equilibrium, increasing or declining. The implications and efficiencies of continued reductions in source term were discussed and assessed with licensee management.

The inspectors reviewed estimated and actual doses, and evaluated the licensee's process for in-progress dose estimating adjustments for RF-12. Lessons learned reports and post outage critique issues from RF-12 were reviewed. Integration of the lessons learned into the current RF-13 tasks were evaluated.

The inspectors reviewed Declared Pregnant Woman Program procedures and associated documentation for compliance with 10 CFR 20, and the guidance in Regulatory Guide 8.13 and Regulatory Guide 8.29. The documents reviewed during this inspection are listed in the Attachment.

b. Findings:

No findings of significance were identified.

2PS2 Radioactive Material Processing and Transportation

a. Inspection Scope

The inspection included observations of radioactive material packaging, shipment preparation, loading and driver briefings for two radioactive shipments made during the inspection and listed in the Attachment of this report. Radioactive shipping surveys were performed by the inspectors and compared with licensee survey results.

Transportation vehicle inspections were observed by the inspectors for compliance with licensee and regulatory requirements.

The inspectors interviewed and observed persons responsible for a shipment of radioactive materials to determine their proficiency and knowledge of the shipping regulations and whether shipping personnel demonstrated adequate skills to accomplish the requirements for public transport of radioactive materials. Records of radioactive material transportation and waste processing training and qualifications for licensee personnel were also reviewed.

Documentation for seven radioactive material and radioactive waste shipments referenced in the Attachment to this report were reviewed for completeness and accuracy. The inspectors verified that the licensee maintained Certificate of Compliance documents for applicable packages on file. Documentation for receivers of radioactive materials shipped from the licensee were reviewed to verify they were authorized to receive those shipments.

The procedures and processes for sampling and analysis of radioactive waste streams for characterization and classification of radioactive waste for disposal were reviewed with licensee representatives and assessed. The procedures and processes for transferring radioactive waste resin into shipping and disposal containers were reviewed with licensee representatives.

The inspectors walked down portions of the liquid radioactive waste processing systems to assess the current system equipment with their FSAR descriptions and licensee procedures. The inspectors reviewed the licensee's processes for handling and disposal of solid radioactive waste.

The inspectors interviewed the radioactive waste system engineer and discussed the status of plant equipment to review the adequacy of any changes made to the radioactive waste processing systems since the last inspection and whether radioactive waste processing equipment had been abandoned.

The inspectors reviewed licensee radioactive waste processing and transportation self-assessments and audits performed, during the period of 2001 and 2002, to verify that the program was periodically reviewed for compliance with regulatory requirements and that the licensee was identifying and documenting program deficiencies for corrective actions.

Elements of the licensee's radioactive material processing and transportation activities were reviewed to verify compliance with licensee procedures, descriptions in FSAR Section 11, 10 CFR 20, 61, and 71, and 49 CFR 170-189 requirements. The documents reviewed during this inspection are listed in the Attachment.

b. Findings

No findings of significance were identified.

3. SAFEGUARDS

Cornerstone: Physical Protection

3PP1 Access Authorization (Behavioral Observation Program)

a. Inspection Scope

During the period of April 15-19, 2002, the inspectors evaluated the licensee's Behavioral Observation Program to evaluate the effectiveness and proper implementation of the behavioral observation portion of the personnel screening and Fitness for Duty (FFD) programs. Five representatives of licensee management and five representatives assigned escort duties were interviewed to determine their understanding of the behavior observation program. The inspectors evaluated the effectiveness of each individual's training, including their ability to recognize aberrant behavioral traits, indications of narcotic and alcohol use, and knowledge of work call-out reporting procedures. The inspectors evaluated a sample of the licensee's CERs associated with the access authorization and fitness for duty behavior observation program issued from March 2001 through January 2002 to evaluate the licensee's threshold for recommending for cause testing for adverse events related to human performance.

The licensee's activities were evaluated against requirements in the Virgil C. Summer Nuclear Plant Physical Security Plan, associated plant procedures, and 10 CFR 26, "Fitness For Duty Program." Specific licensee documents evaluated are described in the Attachment.

a. Findings

A violation of 10 CFR 26.20, for which enforcement discretion is being exercised, was identified for the failure to establish an adequate Fitness for Duty Procedure in that it did not require for cause drug / alcohol testing following accidents involving a failure in individual performance resulting in personal injury, as required by 10 CFR 26.24.

As the result of further review of an Unresolved Item (URI) opened in May 2000, the inspectors identified that Virgil C. Summer Nuclear Plant Fitness for Duty Procedure, FFD-100, Revision 5, Section 5.3.2, Paragraph A(2) stated "Incidents that require mandatory consideration of chemical testing include: Violations of industrial safety practices or procedures that result in an injury, or any accident that results in an actual or potential substantial degradation of the level of safety of the plant." The language in this procedure did not clearly indicate that testing was mandatory as a result of an accident involving a failure in individual performance resulting in personal injury, rather that testing only needed to be considered, which is not the requirement stated in 10 CFR 26.24(a)(3). Therefore, procedure FFD-100, Revision 5, was determined to be inadequate in that it did not meet the general performance objectives and specific requirements of 10 CFR 26.24. Discussions with licensee personnel at the time this issue was originally identified indicated that they did not interpret the regulation as

requiring mandatory testing, unless there was a reasonable suspicion that the worker's behavior contributed to the event.

The inspectors reviewed a sample of the licensee CERs and event reports associated with onsite injuries for period January 2000 through the first quarter of 2002. Based on this review, no instances were specifically identified where the licensee failed to test following an injury as required by 10 CFR 26.24(a)(3).

The issue was identified as more than minor because potentially allowing individuals to perform plant work under the influence of drugs or alcohol could have an actual or credible impact on safety and could be reasonably viewed a precursor to a more significant event. Using the Physical Protection Significance Determination Process, and identifying the finding as a vulnerability in Safeguards Systems or Plans, without an intrusion, and with fewer than two similar findings in four quarters, the issue would be characterized as Green.

10 CFR 26.20, Written Policies and Procedures, states "Each licensee subject to this part shall establish and implement written policies and procedures designed to meet the general performance objectives and specific requirements of this part."

10 CFR 26.24, Testing For-Cause, Paragraph (a)(3) requires that for-cause testing should be conducted as soon as possible "after accidents involving a failure in individual performance resulting in personal injury."

As of May 2000, the licensee's failure to establish an adequate procedure which met the general performance objectives of 10 CFR 26.24(a)(3) related to drug testing as a result of an accident involving a failure in individual performance resulting in personnel injury was identified as a violation of 10 CFR 26.20. This violation was placed in the licensee's corrective action program as CER 0-C-00-0607, and the procedure was revised to incorporate the requirements of 10 CFR 26.24 as of May 12, 2000. The NRC has determined to exercise enforcement discretion in accordance with Section VII B.6. of the Enforcement Policy based on the following: (1) the licensee's prompt corrective action to make the procedure consistent with the regulatory requirement, (2) information obtained by Region II which indicates that this licensee's interpretation of the regulation is not isolated to this licensee, and (3) NRC guidance contained in Sections 8.3.2 and 8.3.3 of NUREG 1354, "Fitness for Duty In the Nuclear Power Industry: Responses to Public Comments," which gives conflicting interpretations regarding the applicability of the "if reasonable suspicion" clause of 10 CFR 26.24(a)(3). Therefore, the violation will not be subject to formal enforcement action.

3PP2 Access Control

a. Inspection Scope

During the period April 15-19, 2002, the effectiveness of the licensee's access control procedures and associated equipment designed to detect and prevent the introduction of contraband into the protected area were evaluated. During the inspection, the inspectors evaluated, by direct observation, the adequacy of equipment testing

procedures performed by a licensee representative on in use, access control equipment and on in-service standby equipment at the site's Personnel Access Portal (PAP). The inspectors evaluated the equipment testing procedure to determine if testing was performance-based and challenged the presently installed and configured site equipment. Through observation of licensee performance testing, the inspectors assessed the adequacy of the PAP card readers and biometric hand readers to prevent unauthorized entry into the protected area and to preclude multiple entries without logging out of the protected area. The inspectors also observed and assessed the adequacy of in-processing searches of personnel and packages at the PAP and vehicle searches conducted at the protected area vehicle access portal.

The licensee's Key and Lock Program and associated procedures for limiting and controlling vital area keys were examined. The inspectors reviewed a sample list of current plant workers with vital area access to evaluate the licensee's process for granting vital area access to authorized personnel identified as having a need for such access. An interview was also conducted with the Access Authorization Coordinator to evaluate if adequate safeguards were in place to protect against unauthorized access to the site security computers from outside the protected area.

The licensee's activity was evaluated against requirements contained in the Virgil C. Summer Nuclear Plant Physical Security Plan and associated procedures, 10 CFR 73.55, "Requirements for Physical Protection of Licensed Activities in Nuclear Power Reactors Against Radiological Sabotage, and 10 CFR 73.56, "Personnel Access Authorization Requirements for Nuclear Power Plants." Specific licensee documents evaluated are described in the Attachment of this report.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

.1 Emergency AC Power System Unavailability PI

a. Inspection Scope

The inspectors assessed the accuracy of the PI for the Emergency AC Power System unavailability. The inspectors reviewed selected samples of station logs, NRC Inspection Reports, licensee event reports, monthly operating reports, and corrective action program database for the period of June 2001 through March 2002.

b. Findings

No findings of significance were identified.

.2 High Pressure Injection System Unavailability PI

a. Inspection Scope

The inspectors assessed the accuracy of the PI for the High Pressure Injection System unavailability. The inspectors reviewed selected samples of station logs, NRC Inspection Reports, licensee event report, monthly operating reports, and corrective action program database for the period of June 2001 through March 2002.

b. Findings

No findings of significance were identified.

.3 Heat Removal System (EFW) Unavailability PI

a. Inspection Scope

The inspectors assessed the accuracy of the PI for Heat Removal System (Emergency Feedwater system) unavailability. The inspectors reviewed selected samples of station logs, NRC Inspection Reports, licensee event report, monthly operating reports, and corrective action program database for the period of June 2001 through March 2002.

b. Findings

No findings of significance were identified.

.4 Occupational Radiation Safety

a. Inspection Scope

The inspectors interviewed cognizant personnel and reviewed condition reports for the period January 1 through May 9, 2002, to support the PI verification for the Occupational Exposure Control Effectiveness PI. Records were reviewed for events associated with access control, unplanned exposures, and untimely identification and resolution of problems.

b. Findings

No findings of significance were identified.

.5 Public Radiation Safety

a. Inspection Scope

The inspectors interviewed cognizant personnel and evaluated plant issue reports for the period January 1 through May 9, 2002, to support the PI verification for the Radiological Effluent Technical Specifications / Offsite Dose Calculation Manual PI. The evaluation included reviews of procedures, effluent release permits, coolant source term, plant history with regard to failed fuel, and 10 CFR 61 analyses. Interviews with

various members of radiation protection and chemistry staff were also made during the evaluation.

b. Findings

No findings of significance were identified.

.6 Protected Area Security Equipment Performance Index, Personnel Screening Program Performance and Fitness-For-Duty / Personnel Reliability Program Performance PIs

a. Inspection Scope

The inspectors evaluated the licensee's PI data associated with the Intrusion Detection System (IDS) and Closed Circuit Television (CCTV) to determine if the licensee provided accurate reporting for compensatory time relative to equipment degradation. The evaluation included a review of tracking and trending reports and security event reports for the fourth quarter of 2001.

The inspectors also reviewed a sample list of licensee's event reports, and security logs for April and November 2001, to determine the accuracy of the data associated with the Personnel Screening Program Performance and the Fitness-For-Duty / Personnel Reliability Performance PIs.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems

Selected Issue Follow-up Inspection

a. Inspection Scope

For CER 0-C-01-2181, "Found XVB03116C ("C" SW Pump Discharge Valve) to be without power," the inspectors conducted an in-depth review of the licensee's problem identification and resolution activities to ensure they included:

- Complete and accurate identification of the problem in a timely manner commensurate with its significance and ease of discovery;
- Evaluation and disposition of performance issues associated with maintenance effectiveness, including maintenance errors, maintenance practices, work controls, and risk assessment;
- Evaluation and disposition of operability / reportability issues;
- Consideration of extent of condition, generic implications, common cause, and previous occurrences;
- Classification and prioritization of the resolution of the problem commensurate with its safety significance;
- Identification of root and contributing causes of the problem;

- Identification of corrective actions which are appropriately focused to correct the problem; and,
- Completion of corrective actions in a timely manner commensurate with the safety significance of the issue.

b. Findings

The inspectors determined that the licensee had adequately addressed the as-found condition of valve XVB03116C. Initial investigations were unable to identify the cause of the tripped open breaker XMC1EC1X-03-AD. However, during a troubleshooting plan, conducted by an electrical system engineer, the cause was discovered to be cycling of the C train service water motor 7.2 kV transfer switch on bus XET2003C. Completed corrective actions adequately addressed why the loss of power to the service water isolation valve occurred. The inspectors concluded that overall corrective actions were completed commensurate with the component's safety significance, although the licensee took several months to determine what caused the valve to unexpectedly lose power for approximately 30 hours. No findings of significance were identified.

4OA3 Event Follow-up

- .1 (Closed) LER 50-395/2002001-00: Missed analyses on diesel fuel oil sample. This LER documents a failure to perform seven analyses within 30 days of sampling the diesel fuel oil truck due to the sample being inadvertently discarded. This is a violation of TS 4.8.1.1.2.d.2, which requires twelve diesel fuel oil analyses for each diesel fuel oil truck arriving on site for unloading. Five of the analyses were completed as required before the truck was unloaded into the on-site emergency diesel generator fuel oil storage tanks. The remaining seven analyses were not performed as required within 30 days.

This issue did not represent an actual or credible impact on safety since the initial analyses performed and subsequent analyses of the on-site diesel fuel oil storage tanks were determined to meet the acceptance criteria for an operable fuel oil source to supply the emergency diesels. Although this issue should be corrected to prevent recurrence, it constitutes a violation of minor safety significance and is not subject to enforcement action in accordance with Section IV of the Enforcement Policy. This item is documented in the licensee's corrective action program under CER 0-C-02-0236.

- .2 (Closed) LER 50-395/2002002-00: Incorrect value in fuel handling accident analysis. This documents discovery that a non-conservative value was used to quantify the environmental release following a postulated fuel handling accident inside containment. A revised transit time for radiological activity to the containment boundary was determined to be quicker than the closure time of the purge isolation valves. This created the potential for an environmental release. Three times since 1990, the purge isolation valves close times exceeded the new transport time frame. No isolation valve exceeded the minimum transport time by more than 0.22 seconds; however, this condition represents a violation of TS 4.0.5, 3/4.6.4.1, and 3/4.6.4.3 for inoperable purge isolation valves.

This issue did not represent an actual or credible impact on safety due to the very small time that the purge isolation would be open beyond the design basis analysis time,

therefore, only a fraction of the available activity would be released. In addition, the transport time in the design basis analysis is conservative, in that, it is based upon a rapid release which ignored the transport delays from the water surface to the exhaust inlet. Furthermore, any release would also have to travel through charcoal filters which would significantly reduce iodine activity. Although this issue should be corrected to prevent recurrence, it constitutes a violation of minor safety significance and is not subject to enforcement action in accordance with Section IV of the Enforcement Policy. This item is documented in the licensee's corrective action program under CER 0-C-02-1005.

40A5 Other

.1 (Closed) Temporary Instruction (TI) 2515/145, "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles," - Virgil C. Summer BIN 4 Category Plant

a. Inspection Scope

The inspectors reviewed the licensee's activities in response to NRC Bulletin 2001-01, "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles," in accordance with NRC Temporary Instruction 2515/145, "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles (NRC Bulletin 2001-01)," dated September 20, 2001. The program review included observations of portions of the remotely monitored examinations, review of qualifications for examination personnel, and review of licensee procedures and documents.

b. Findings

All the inspection activities associated with TI 2515/145 are complete. Specific inspection results for each item in the TI are discussed below.

- 1) Verification that visual examination was performed by qualified and knowledgeable personnel.

The inspectors reviewed qualification documentation for the licensee personnel responsible for performance of the VT-3 examination. In addition to the ASME Section XI required training, all station personnel involved were minimally qualified as Level II VT-1, 2 and 3 examiners. The vendor performing the remote camera work, Everest Visual Inspection Technology (VIT), were Level III VT-1, 2, and 3 qualified. The inspectors interviewed the examination personnel and noted that they were knowledgeable of the boron deposit issues identified at the Oconee and Davis Besse stations.

- 2) Verification that visual examination was performed in accordance with approved and adequate procedures.

The inspectors reviewed Quality Systems Procedure (QSP)-505, "Visual Examination," which was the governing procedure for station and vendor personnel for the reactor vessel head inspection. Given the level of examination that the licensee planned, and being a low susceptibility category plant, no formal approved acceptance criteria and/or

critical parameters were established. Performance of the visual VT-3 examination was conducted in accordance with established procedures.

- 3) Verification that the licensee was able to identify, disposition, and resolve deficiencies.

The licensee used drawing 1MS-07-136-0, "CRDM Housing Locations Outside View," to index the remote camera to aid in documenting any deficiencies noted. The licensee performed a visual examination of approximately 80 percent of the CRDM penetrations in the reactor head. The licensee was able to perform 100 percent circumferential inspection for approximately 50 percent of the accessible penetrations. No significant deficiencies were noted for penetrations inspected; however, minor items identified were documented and addressed under CER 0-C-02-1189. Insulation impeded the licensee's ability to access 100 percent of the penetrations for inspection.

- 4) Verification that the licensee was capable of identifying the Primary Water Stress-Corrosion Cracking (PWSCC) phenomenon described in the bulletin.

Based on the adequate resolution of the remote video examination equipment, the accessible vessel head penetrations, and the qualification of the examination personnel the inspectors concluded that the licensee was able to, and did identify leakage on CRDM penetrations. In all cases identified, boron was found to be coming from outside the insulation at the top of the housings flowing downwards. No indications were noted that would be representative of the PWSCC phenomenon.

- 5) Evaluate condition of the reactor vessel head (debris, insulation, dirt, boron from other sources, physical layout, viewing obstructions).

The inspectors noted examples of leakage sources during the examination process that the licensee stated were from previous conoseal leaks. This was most evident between penetrations 27 and 47 where a dried boron residue was noted. No popcorn deposits were noted on the head for any accessible penetrations. Other evidence of boron film was noted on approximately 17 penetrations, but no head degradation was noted. The leaks seen on the side of the CRDM housing were also attributed to conoseal leaks. Some minor debris was identified (i.e., wire stands, screw, nail, washers and wrench head) that the licensee decided not to remove per their disposition of CER 0-C-02-1189 due to the debris having no impact on the head performance.

- 6) Evaluate ability for small boron deposits, as described in the bulletin, to be identified and characterized.

Based on the visual inspection techniques utilized, the licensee was able to detect areas of boron residue on the reactor vessel head, but none of the areas were determined to evidence of PWSCC or from CRDM cracking, therefore, boron identified was not specifically characterized.

- 7) Determine extent of material deficiencies (associated with the concerns identified in the bulletin) which were identified that required repair.

No CRDM or the reactor head vent penetration required repair.

- 8) Determine any significant items that could impede effective examinations and/or ALARA issues encountered.

No ALARA issues were noted that would impeded effective examination of the penetrations. If an 100 percent examination was required, the licensee would have to remove the insulation on the head to complete an effective examination. Since Virgil C. Summer is a low susceptibility plant, BIN 4 category, a full examination was not required.

- .2 (Closed) Unresolved Item (URI) 50-395/2000-004-02: inadequate FFD procedures which fail to require for cause testing after accidents involving a failure in individual performance resulting in personal injury, radiation exposure, or release of radioactivity in excess of regulatory limits (see Section 3PP1).

4OA6 Meetings

Exit Meeting Summary

The inspectors presented the inspection results to Mr. G. Halnon and other members of the licensee's staff on July 3, 2002. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

J. Archie, General Manager, Engineering Services
F. Bacon, Manager, Chemistry Services
L. Blue, Manager, Health Physics Services
M. Browne, Manager, Nuclear Licensing and Operating Experience
D. Gatlin, Manager, Operations
G. Halnon, General Manager, Nuclear Plant Operations
L. Hipp, Manager, Nuclear Protection Services
D. Lavigne, General Manager, Organization Effectiveness
G. Loignon, Supervisor, Quality Assurance
T. McAlister, Supervisor, Quality Control
G. Moffatt, Manager, Design Engineering
K. Nettles, General Manager, Nuclear Support Services
A. Rice, Manager, Plant Support Engineering
R. Sweet, Supervisor, Nuclear Licensing and Operating Experience
J. Thiel, Access Control Coordinator, Nuclear Protection Services
A. Torres, Manager, Planning/Scheduling and Project Management
J. Wasieczko, Supervisor Security Operations, Nuclear Protection Services
R. White, Nuclear Coordinator, South Carolina Public Service Authority
G. Williams, Manager, Maintenance Services

ITEMS OPENED AND CLOSED

Opened and Closed

50-395/02002-01	NCV	inadequate design control of the MFW pumps recirculation flow control valve logic (Section 1R14)
-----------------	-----	--

Opened

50-395/02002-02	URI	failure of the corrective action program to adequately evaluate flood protection design control problems (Section 1R06)
-----------------	-----	---

Closed

50-395/02001-00	LER	missed analyses on diesel fuel oil sample (Section 4OA3.1)
50-395/02002-00	LER	incorrect value in fuel handling accident analysis (Section 4OA3.2)
50-395/00004-02	URI	failure of Fitness for Duty Procedures to adequately require for cause testing after accidents involving a failure in individual performance resulting in personal injury, radiation exposure, or release of radioactivity in excess of regulatory limits (Section 4OA5.2)

LIST OF ACRONYMS

AC	Alternating Current
ALARA	As Low As Is Reasonably Achievable
ASME	American Society of Mechanical Engineers
CB	Control Building
CCTV	Closed Circuit Television
CCW	Component Cooling Water
CER	Condition Evaluation Report
CFR	Code of Federal Regulations
CRDM	Control Rod Drive Mechanism
DC	Direct Current
DG	Diesel Generator
EC	Eddy Current
ED	Electronic Dosimeter
EDG	Emergency Diesel Generator
EFW	Emergency Feedwater
EMP	Electrical Maintenance Procedure
FFD	Fitness for Duty
FSAR	Final Safety Analysis Report
IB	Intermediate Building
ICP	Instrumentation Control Procedure
IR	Inspection Report
ISI	Inservice Inspection
kV	kilovolt
LCO	Limiting Conditions for Operations
LER	Licensee Event Report
LOCA	Loss of Coolant Accident
LOR	Licensed Operator Requalification
MWe	Megawatt - electric

MDEFW	Motor Driven Emergency Feedwater
MFW	Main Feedwater
MR	Maintenance Rule
MSIP	Mechanical Stress Improvement Process
MWR	Maintenance Work Request
NCN	Nonconformance Notice
NCV	Non-Cited Violation
NDE	Nondestructive Examination
NI	Nuclear Instrumentation
NPF	Nuclear Power Facility [Type of license]
NRC	Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
NSSS	Nuclear Steam Supply System
NUREG	NRC Technical Report Designation
OS	Occupational Safety
PAP	Personnel Access Portal
PI	Performance Indicator
PMT	Post Maintenance Testing
PTP	Preventive Test Procedure
PS	Public Safety
PWSCC	Primary Water Stress-Corrosion Cracking
QSP	Quality Systems Procedure
RB	Reactor Building
RBCU	Reactor Building Cooling Unit
RCA	Radiation Control Area
RCS	Reactor Coolant System
RF	Refueling Outage
RII	Region II [NRC]
RPV	Reactor Pressure Vessel
RWP	Radiation Work Permit
SCE&G	South Carolina Electric and Gas
SDP	Significance Determination Process
SG	Steam Generator
SOP	System Operating Procedure
SSCs	Structures, Systems or Components
STP	Surveillance Test Procedure
SW	Service Water
Tavg	Temperature - average
TB	Turbine Building
TI	Temporary Instruction
TS	Technical Specification
TWR	Technical Work Record
URI	Unresolved Item
UT	Ultrasonic
VHRA	Very High Radiation Area
WO	Work Order

List of Documents Reviewed

Section 1R04 - Equipment Alignment (71111.04)

Procedures

- SOP-211, "Emergency Feedwater System"
- SOP-306, "Emergency Diesel Generator"
- SOP-307, "Diesel Generator Fuel Oil System"
- SOP-505, "Control Building Ventilation System"
- FSAR Sections 6.4.1, 8.3.1, 9.5.4, and 10.4.9
- TS Sections 3.7.1.2, 3.7.6, and 3.8.1
- D-302-085, "Emergency Feedwater (Nuclear)"
- D-302-351, "Diesel Generator - Fuel Oil"
- D-302-353, "Diesel Generator - Miscellaneous Services"
- D-302-842, "Chilled Water - To Cooling Coils"
- D-912-140, "Control Room Normal and Emergency Air Handling System"

Section 1R06 Flood Protection Measures (71111.06)

Corrective Action Reports

CERs 0-C-00-0875, 00-1386, 00-1825, 01-0936, 01-1332, 01-1914, 02-0567, 02-0568, 02-0611, 02-0788, 02-0916, 02-1110, 02-1111, 02-1417, 02-0949, 02-1154, 02-1329, 02-1359, and 02-1741.

Procedures

- V. C. Summer Station Administrative Procedure SAP-107; "10CFR50.59 Review Process," dated 5/8/01
- V. C. Summer Emergency Operating Procedure EOP 17.1; "Response to Reactor Building Flooding," dated 11/17/94
- V. C. Summer Engineering Services Procedure ES-425; "Cumulative Effects Program," dated 6/18/01
- V. C. Summer Engineering Services Procedure ES-416; "Design Modification Change Process and Control," Revision 0
- V. C. Summer Engineering Guideline EC-01; "Design Input Development," dated 3/2/01

Other Documents

- V. C. Summer Flood Calculation DC03290-002; "Flooding Evaluation for all Areas not Affected by the FW System," Revision 6
- V. C. Summer Evaluation Request 21007, "Service Water System Pressure," dated 2/14/86

- V. C. Summer TS 6.8.1, "Procedures and Programs, Regulatory Guide 1.33," dated 4/11/02
- V. C. Summer 50.59 Design Package Implementation MRF 31738 dated 11/14/84

Section 1R07 Heat Sink Performance (71111.07)

Corrective Action Reports

CERs 0-C-01-0788, 01-0144, 01-1788, and 02-2087.

Other Documents

- V. C. Summer Calculation PGT-2001-1711, "Evaluation of the V.C. Summer Reactor Building Cooling Units Thermal Performance Test Tube Side Turbulent Flow Requirements," Revision 0
- V. C. Summer Calculation PGT-2002-1003, "Evaluation of the V.C. Summer Reactor Building Cooling Unit Cooling Water Flow Instrument Bias Uncertainty, " Revision 0
- V. C. Summer Preventive Test Procedure PTP-213.002; "Service Water System Heat Exchanger Data Collection," Revision 0
- V. C. Summer Station Administrative Procedure SAP-1255; "Service Water System Reliability Optimization Program," Revision 0

Sections 1R08.1 and 1R08.2 - Inservice Inspection Activities (71111.08)

Procedures

- Westinghouse Procedure MRS-SSP-1300, Field Service Procedure for Application of the Mechanical Stress Improvement Process (MSIP)
- Procedure, SCEG-UT-89-4, Ultrasonic Straight Beam Examination, Revision 2
- Procedure, SCEG-UT-89-9, Manual Ultrasonic Examination of Vessel Welds Less Than or Equal to 2 Inches, Revision 2
- Procedure, SCEG-UT-89-10, Ultrasonic Examination of Class 1 and 2 Vessel Welds Over 2 Inches Thick, Revision 2
- Procedure, SCEG-UT-89-11, Manual Ultrasonic Examination of Ferritic Piping Welds, Revision 0
- Procedure, SCEG-UT-89-1, Manual Ultrasonic Examination of Austenitic Piping Welds, Revision 0
- Westinghouse Procedure, CGE-ISI-208, Remote Eddy Current Examination of Reactor Vessel Nozzle to Pipe Welds Inside Surface for Virgil C. Summer, Revision 1
- Westinghouse Procedure, CGE-ISI-254, Remote Ultrasonic Examination of Reactor Vessel for Virgil C. Summer, Revision 2

Other Documents

- Virgil C. Summer letter dated April 17, 2002, Inspection/MSIP Plan for VCSNS Hot Leg Welds

- AEA Technology Engineering Services, MSIP Parameters for B and C Hot Leg Nozzles, January 2002
- Virgil C. Summer Special Report SPR 2000-005, Steam Generator Tube inspection during Refueling Outage 12, dated November 8, 2000
- Condition Evaluation Report (CER) 0-C-02-1067, Snubber functional test results within degraded acceptance criteria
- CER 0-C-02-1073, Excessive inspection failures on component cooling supports requiring inspection scope expansion
- CER 0-C-02-1078, Snubber piping attachment gap exceeded acceptance criteria
- CER 0-C-02-1108, Rigid pipe support found misaligned
- CER 0-C-02-1110, Rust and blistered paint identified during containment inspection
- CER 0-C-02-1111, Elastomer cover over moisture barrier not properly adhering
- CER 0-C-02-1181, Flow accelerated corrosion components turned over to QC without proper preparation to allow inspection
- CER 0-C-02-1267, As-found support hot measurement exceeded acceptance criteria
- CER 0-C-02-1268, Drawing deficiency identified during snubber inspection
- CER 0-C-02-1272, Snubber functional test results within degraded acceptance criteria
- CER 0-C-02-1294, SG Blowdown piping snubber functional test results failed acceptance criteria
- CER 0-C-02-1296, Weld on component cooling heat exchanger did not meet requirements
- CER 0-C-02-1301, Weld on component cooling heat exchanger ready for QC fit up inspection without proper preparation to allow inspection
- CER 0-C-02-1308, Flaw identified in B hot leg nozzle weld during pre-MSIP WESDYNE NDE activities
- CER 0-C-02-1321, Welds turned over to QC without proper preparation to allow inspection
- CER 0-C-02-1328, Incorrect velocity slope line identified during snubber activation test

Section 20S1 Access Controls to Radiologically Significant Areas (71121.01)

Procedures, Instructions, and Manuals

- Health Physics Procedure (HPP), 157, Personnel Monitoring for Contamination, Revision 9, 03/08/02
- HPP-158, Contamination Control for Equipment and Materials, Revision 10, 12/18/01
- HPP-160, Control and Posting of Radioactive Control Zones, Revision 10, 03/21/02
- HPP-163, Qualification for the Use of Respiratory Protection Equipment, Revision 9, 01/09/01
- HPP-302, Radiation and Contamination Survey Techniques, Revision 9, 06/23/98
- HPP-401, Issuance, Termination and Use of RWP's and Standing RWPs, Revision 14, 09/25/01
- HPP-402, Radiological Survey Requirements and Controls for Reactor Building and Incore Pit Entries, Revision 10, 06/20/00
- HPP-403, Radiological Control for Nuclear Work Activities, Revision 8, 03/21/02

- HPP-405, Personnel Decontamination and Skin Dose Determination, Revision 14, 06/20/00
- HPP-408, Fuel Movement Control, Revision 8, 08/09/99
- HPP-410, Health Physics Routine Survey, Revision 8, 09/25/01
- HPP-419, Electronic Dosimeter Alarm Setpoint, Revision 0, 10/31/01
- Station Administrative Procedure (SAP) SAP-500 Health Physics Manual, Revision 11, 02/08/02
- SAP-1167, NRC Performance Indicators, Revision 0

Radiation Work Permits (RWP's) reviewed and pre-job briefings attended

- RWP 02-00045/001, Perform ISI to Include All Support Work (Insulation, Scaffold, Weld Prep, Etc.)
- RWP 02-00049/001, All Work Associated With Seal Table Thimble Cleaning to Include Retracting Thimbles
- RWP 02-00059/001, All Test Unit Activities Including STP's 215.008, 230.006A,B,C,D, & E, All 250 Series, and Fire Service Testing
- RWP 02-00063/001, All Work in the Pressurizer Cubicle to Include Manway Removal/Replacement, PZR Safety, and Misc. Valve Work
- RWP 02-00070/001, Reactor Head Work to Support Refueling
- RWP 02-00071/001, RVLIS, CRDM Ductwork, NOZZLE Covers, NI Covers, Cavity Seal Plate, Missile Shields, Detension, Tension Studs
- RWP 02-00090/001, All Work Associated With Steam Generator Secondary Side Inspections and Maintenance

Condition Evaluation Reports (CERs)

- CER 0-C-02-1007, Individual was found to have trace amounts of radioactivity on his pants and belt when he in-processed through dosimetry
- CER 0-C-02-1010, During in-processing through Dosimetry, trace amounts of Co-60 and Co-58 on the lanyard
- CER 0-C-02-1077, Low level radioactive material found on individuals lanyards when in-processing through dosimetry
- CER 0-C-02-1418, Low level radioactive material found at security portal
- CER 0-C-02-1146, Low level radioactive material found upon exit count at the Whole Body Count Room

Section 20S2 As Low As Is Reasonably Achievable (71121.02)

Procedures, Instructions, and Manuals

- Chemistry Procedure (CP), CP-614, Reactor Coolant Chemistry Control, Revision 11
- CP-625, Degasification And Oxygenation of The Reactor Coolant System, Revision 8
- HPP-150, Requirement For Issuance And Use of Personnel Dosimetry, Revision 8, 10/17/01

- HPP-151, Use of The Radiation Work Permit and Standing Radiation Work Permit, Revision 8, 07/24/00
- HPP-152, Radiation Control Area Access Control, Revision 8, 11/06/01
- HPP-413, Diving Operations, Revision 2
- HPP-719, Authorization and Control for Resin Transfer, Revision 4, 01/06/99
- HPP-819, Temporary Shielding Evaluation, Installation, and Removal, Revision 11, 02/02/02
- SAP-500, Health Physics Manual, Revision 11, 02/08/02

ALARA Packages /RWPs

- 02-0045, ISI-UT,PT, ETC. (MSIP not included)
- 02-0050, All Snubber Inspection
- 02-0053, MSIP (B&C Nozzle w / Spider Assembly Also) (Actual work not observed on this RWP)
- 02-0059, All Test Group Work Except LLRT
- 02-0071, RVLIS, CRDM, Detension/Tension, Nozzle Covers Etc.

Miscellaneous Documents

- Corporate ALARA Plan, Revision 10
- FSAR Chapter 12 (Radiation Protection), Amendment 00-01, Dated 12/2000
- Virgil C. Summer Nuclear Station, Health Physics and Radwaste Services, RF-12, Outage Report
- Attachment I, RF-12 Health Physics ALARA Report, A RCS Hot Leg Piping Inspection and Repair
- Virgil C. Summer Nuclear Station, RF-13 Outage, ALARA Plan, Issued 3/20/2002
- QA-CHP-02-001, 2001 Annual ALARA Appraisal, February 7, 2002
- Health Physics Field Operations, Self-Assessment Summary Report, QA-CHP-01-002, Assessment Period, February 26 – March 2, 2001
- VIRGIL C. SUMMER ALARA Action Plan, 4/01/2002
- ALARA Committee Meeting Minutes, 1st QUARTER 2002, 02/05/02
- ALARA Committee Job Review (pre-job), RWP 02-090, 05/7/02
- Plan of the day schedule 05/06/02 (Outage Schedule)
- Dose Printout by individual for Health Physics, Mechanical Maintenance, and Master-Lee, 05/07/02

Condition Evaluation Reports (CERs)

- CER 0-C-01-1901, Identified enhancements for ALARA program and ALARA Committee
- CER 0-C-02-1169, CER written to formalize policy for ensuring ED alarms are recognized when hearing protection is utilized consistent with the radiological hazards that may be present
- CER 0-C-02-1187, Electronic Dosimeter dose rate alarm- ED# 207401
- CER 0-C-02-1241, Diver's "back" pocket chamber was offscale when he exited the RCA (Dose of less than 20 mrem estimated)

- CER 0-C-02-1273, Individual received electronic dosimeter dose rate alarm
- CER 0-C-02-1315, Did not estimate man-rem for decon activity to support MSIP for RWP 02-00043
- CER 0-C-02-1388, Unnecessary exposure expended on attempts to repack XVG08085
- CER 0-C-02-1416, Trace amounts of Co-58 on an exit count were not investigated in accordance with guidance initiated for RF-13, but no procedure violation occurred

Section 2PS2 Radioactive Material Processing and Transportation (71122.02)

Procedures, Instructions, and Manuals

- Engineering Services (ES) Procedure, ES-362, Radioactive Material Shipping Inspection, Revision 7, 09/01/00
- System Operating Procedure (SOP), SOP-108, Liquid Waste Processing System, Revision 10, 03/12/99
- HPP-703, Shipping Radioactive Material, Revision 13, 12/05/01
- HPP-712, Classification of Radioactive Materials, Revision 9, 11/19/01
- HPP-716.028, Transfer and De-watering Ion Exchange Resin and or Activated Charcoal Filter Media Using the Scientific Ecology Group (SEG) Rapid De-watering System, Revision 0, 12/09/99
- HPP-716.029, 10-160B Cask Handling, Revision 0, 11/19/01
- HPP-717, Sample Collection, Preparation and Analysis Techniques For Assuring Compliance with 10 CFR Part 61, Revision 6, 12/09/99
- SEG S.D.-P-03-046, Transfer and De-watering Ion Exchange Resin and or Activated Charcoal Filter Media Using the SEG Rapid De-watering System, Revision 2, 11/22/93
- Process Control Program-001, Process Control Program for Processing Wet Waste, Revision 10, 03/12/99

Drawings

- DURATEK Corporation Vendor Drawing DT-61, Radwaste Demineralizer Package P&ID, Revision 2, 5/23/93
- FSAR Figure 10.4-17, D302-362, Liquid Effluents from Nuclear Plant to Fairfield Penstock, Revision 9, 08/01/96
- FSAR Figure 11.2-2, Sheet 1, E-302-735, System Flow Diagram Waste Processing, Revision 14, 01/19/01
- FSAR Figure 11.2-2, Sheet 2, E-302-736, System Flow Diagram Waste Processing, Revision 13, 09/13/97
- FSAR Figure 11.2-2, Sheet 3, E-302-737, System Flow Diagram Waste Processing, Revision 11, 10/11/01
- FSAR Figure 11.2-2, Sheet 4, E-302-738, System Flow Diagram Waste Processing, Revision 10, 12/19/01
- FSAR Figure 11.2-2, Sheet 5, E-302-734, System Flow Diagram Waste Processing, Revision 13, 03/05/01

Radioactive Shipment Documentation

- Virgil C. Summer 01-60, Radioactive Material, n.o.s, 7, UN2982, 10-160 Poly HIC Containing De-watered Bead Resin in 10 -160B Cask USA/9204/B(U)-85, 07/31/01
- Virgil C. Summer 01-62, Radioactive Material, Type B(U) Package, Fissile Excepted, 7 UN2916, Ir-192 Radiography Source, 08/16/01
- Virgil C. Summer 02-14, Radioactive Material, Type B(U) Package, 7, UN2916, Special Form Ir-192, 03/06/02
- Virgil C. Summer 02-20, Radioactive Material, Low Specific Activity (LSA), n.o.s., 7 UN2912, C-van Containing Dry Active Waste and One Liner of Charcoal Media, 03/26/02
- Virgil C. Summer 02-31, Radioactive Material, Low Specific Activity, LSA, n.o.s, 7 UN9212, Contaminated Laundry and 2 boxes on Non Rad Modesty Clothing, 04/24/02
- Virgil C. Summer 02-41, Radioactive Material, Surface Contaminated Object, SCO 7, UN2913, Contaminated Equipment, 05/07/02

Miscellaneous Documents

- Virgil C. Summer 1, FSAR, § 11, Radioactive Waste Management
- Virgil C. Summer 10 CFR Part 61 Waste Stream Analysis Reports: (Primary Resin, sampled 10/12/01; Nuclear Blow-down Resin, sampled 06/21/00; Reactor Coolant Sample Filter, sampled 02/09/02; Seal Water Injection Filter, sampled 02/17/02; Spent Fuel Pool Filter, sampled 02/20/02; Waste Water Charcoal Media, sampled 02/01/02; Dry Active Waste, sampled 02/13/02; and Waste Water Resin, sampled 02/01/02)
- Radioactive Shipment Record Log 2001 and 2002
- Certificate of Compliance 9269, USA/9269/B(U)-85, Revision 3, Docket Number 71-9269
- Certificate of Compliance 9204, USA/9204/B(U)-85, Revision 7, Docket Number 71-9204

Condition Evaluation Reports (CERs)

- CER 0-C-01-2183, Unitech laundry truck arrived with tires unsuitable for radioactive material transport, 11/27/01
- CER 0-C-02-0281, Approximately 2000 gallons of Floor Drain Tank water was inadvertently transferred to the Decon Pit Collection Tank, 02/07/02
- CER 0-C-02-0570, Radiography source received in excess of site radiography license limit, 03/08/02.
- CER 0-C-02-1027, XDM-0040D vessel failure identified during resin reload, 04/19/02
- CER 0-C-02-1030, XDM-0040A potential vessel failure identified during vessel reload, 04/18/02
- CER 0-C-02-1213, Depleted demineralizer's allowed chromated water to break through to the floor drain while draining component cooling water in the Intermediate Building, 04/27/02
- CER 0-C-02-1234, Chromated water observed being drained directly to floor drain without being processed, 04/29/02
- CER 0-C-02-1427, NRC inspectors identified need to procedurally control radioactive shipment emergency and exclusive use instructions, 05/06/02

- CER 0-C-02-1423, Health physics did not adequately verify drivers' qualification for hauling hazardous material, 05/07/02

Sections 3PP1, 3PP2 - Access Authorization and Access Control (71130.01 and 71130.02)

Procedures

- SAP-1005, Unescorted Access Authorization Program, Revision 7
- SPP-210, Security Lock & Key Control, Revision 9
- SPP-211, Security Key Card Control, Revision 7
- SPP-224, Operational Testing of Security Access Control & Intrusion Detection System Revision 4
- SPP-228, Search Equipment Operational Test Procedure, Revision 4
- SPP-213, Security Identification Badge Fabrication I Control, Revision 14
- Fitness For Duty Procedure FFD-100, Revision 5, For Cause Testing Following Accidents Involving Failures In Individual Performance Resulting In Personal Injury.
- FFD-100, Revision 5, Attachment 1, Statement of Alcohol Consumption - Call In
- FFD-100, Revision 5, Attachment 2, Change D, Emergency Recall Positive Result Form
- FFD-100, Revision 5, Attachment 3, Change D, Request to Administer Drug/Alcohol Test For Cause

Other Documents

- Virgil C. Summer Physical Security Plan, Amendment 45
- Virgil C. Summer Contingency Plan, Revision 10
- Key and Lock Daily and Annual Inventory Logs
- Semi-Annual Fitness for Duty Report, July - December, 2001