



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 REGION II
 101 MARIETTA STREET, N.W., SUITE 2900
 ATLANTA, GEORGIA 30323

Report Nos.: 50-424/86-135 and 50-425/86-062

Licensee: Georgia Power Company
 P. O. Box 4545
 Atlanta, GA 30302

Docket Nos.: 50-424 and 50-425

License Nos.: CPPR-108 and CPPR-109

Facility Name: Vogtle 1 and 2

Inspection Conducted: December 15-19, 1986

Inspectors: N. Merriweather 2-12-87
 N. Merriweather Date Signed

P. Bibb 2-12-87
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Consultants: N. Merriweather for 2-12-87
 P. Chan, Lawrence Livermore National Laboratory Date Signed

L. Foster 2-12-87
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Approved by: T. E. Conlon for 2-12-87
 T. E. Conlon, Section Chief Date Signed
 Engineering Branch
 Division of Reactor Safety

SUMMARY

Scope: This special announced inspection was performed to assess the applicant's response to Generic Letter 83-28, "Required Actions Based on Generic Implications of Salem Anticipated Transient Without Scram" (ATWS). Areas inspected included post-trip review, equipment classification, vendor interface, post maintenance testing, and Reactor Trip System (RTS) reliability.

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *C. E. Belflower, Quality Assurance Site Manager
- *R. M. Bellamy, Plant Support Manager
- H. Butterworth, On-Shift Operations Supervisor
- *E. M. Dannemiller, Technical Assistant to General Manager
- *W. C. Gabbard, Senior (SR) Regulatory Specialist
- *M. A. Griffis, Maintenance Superintendent
- *M. S. Hairston, Plant Engineer
- *J. Hartka, SR Nuclear Engineer
- *D. Hudson, SR Plant Engineer
- *H. A. Jaynes, Plant Engineering Supervisor
- *W. F. Kitchens, Manager Operations
- G. Lee, Shift Technical Adviser Department Supervisor
- *A. L. Mosbaugh, Assistant Plant Support Manager
- *B. R. Quick, Document Control Supervisor

Other licensee employees contacted included engineers, technicians, operators, mechanics, security office members, and office personnel.

Other Organizations

B. Hendrix, Supervisor Preventative Maintenance, Advanced Technology

NRC Resident Inspectors

J. Rogge, Senior Resident Inspector
R. Schepens, Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on December 19, 1986, with those persons indicated in paragraph 1 above. The inspectors described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee. The following new items were identified during this inspection.

Unresolved Item 50-424/86-135-01 and 50-425/86-062-01, Review classification criteria for RTS components, paragraph 7.

Inspector Followup Item 50-424/86-135-02 and 50-425/86-62-02, Reactor Trip Breakers, paragraph 9.

The licensee did not identify as proprietary any of the material provided to or reviewed by the inspectors during this inspection.

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations. One unresolved item was identified during this inspection and is discussed in paragraph 7.

5. Background

On February 25, 1983, both of the scram circuit breakers at Unit 1 of the Salem Nuclear Power Plant failed to open upon an automatic reactor trip signal from the reactor protection system. This incident was terminated manually by the operator about 30 seconds after the initiation of the automatic trip signal. The failure of the circuit breakers was determined to be related to the sticking of the undervoltage trip attachment. Prior to this incident, on February 22, 1983, at Unit 1 of the Salem Nuclear Power Plant, an automatic trip signal was generated based on steam generator low-low level during plant start-up. In this case, the reactor was tripped manually by the operator almost coincidentally with the automatic trip. This failure of the breaker to open upon an automatic reactor trip signal was undetected by the licensee prior to plant restart.

As a result of the problems identified with circuit breakers at Salem and at other plants, NRC issued Generic Letter (GL) 83-28, Required Actions Based on Generic Implications of Salem ATWS Events, dated July 8, 1983. This letter required licensees of operating plants to respond to intermediate-term actions to ensure reliability of the RTS. Actions to be performed by the licensees included development of programs to provide for post-trip review, classification of equipment, vendor interface, post-maintenance testing, and RTS reliability improvement.

The applicant, Georgia Power Company (GPC), responded to GL 83-28 in letters dated November 8, 1983, May 20, 1985, August 1, 1985, March 17, 1986, March 26, 1986, April 11, 1986, April 28, 1986, May 23, 1986 and August 16, 1986. In these responses, GPC described their compliance to the NRC positions described in the GL.

This inspection was performed to verify compliance to the applicant's responses and to assess the adequacy of the applicant's current program, planned program improvements and implementation of present procedures associated with post-trip review, equipment classification, vendor interface, post-maintenance testing, and RTS reliability for the Vogtle Plant. The results of the inspection are discussed in the paragraphs that follow.

6. Post-Trip Review

The applicant was requested in GL 83-28, Required Actions Based on Generic Implication of Salem ATWS, to describe their program, procedures and data collection capabilities in order to assure that the causes for unscheduled reactor shutdowns, as well as the response to safety-related equipment, are fully understood prior to plant restart.

The applicant's response to GL 83-28 provided a comprehensive description of the program and procedures pertinent to performing post-trip reviews. The inspector reviewed their response, appropriate plant procedures, and interviewed key applicant personnel to assess the adequacy of the applicant's program for post-trip reviews.

The inspection was formatted to verify that a post-trip review program has been implemented and meets the following attributes:

Procedures and equipment exist to cover post-trip review.

Safety assessments of the reactor trip are clearly delineated as part of the post-trip review.

Post-trip review procedures are reviewed periodically by an onsite safety review committee such as the Plant Operations Review Committee (PORC) and upgraded in any areas that have been identified as deficient.

Plant personnel preparing and/or reviewing post-trip documentation receive initial training and refresher training in post-trip review procedures.

Responsibilities and authorities of plant personnel who will perform the review and analysis of these events are clearly defined.

Criteria for determining the acceptability of authorized restart have been established.

Criteria for comparing plant information with known or essential plant behavior have been established.

Guidelines are established for preservation of evidence of reactor trips.

The applicant's response to each of these attributes is discussed individually as follows:

a. Procedures and equipment exist to cover post-trip review.

All procedures reviewed are listed in paragraph 11. For simplicity and clarity, they will be referred to in the body of this report by number only. OP 10006-C is the primary procedure for post-trip reviews. Operations Procedure 19000-1 address immediate actions for a reactor trip (or more importantly what to do if a reactor trip should have occurred and did not) and leads the operator into OP 19000-1 which addresses further actions required for reactor trip response, eventually leading into EPIP 91001-C for Emergency Classification and Notification and OP 10006-C, Reactor Trip Review. Plant Administrative Procedure 00300-C provides for the necessary authorization for a reactor startup following a trip. This AP addresses OP 10006-C. Additionally, a Reactor Trip Reduction Plan is in place as of December 31, 1984, which implements OP 10006-C and addresses INPO, NUMARC, and NRC concerns in the area of reactor trips.

OP 10006-C provides the following information:

- (1) Purpose
- (2) Definitions
- (3) Instructions
- (4) Precautions
- (5) Frequency
- (6) Reactor trip report
- (7) Report numbering
- (8) Report distribution

The body of the reactor trip report provides for:

- (1) Identification of on-shift personnel
- (2) Pre-trip plant status
- (3) Post-trip plant status
- (4) Plant response, trends
- (5) Capture of plant transient information through charts, logs, etc.
- (6) Engineered safety feature actuations
- (7) Reactor protection system actuations
- (8) Trip root cause identification
- (9) Trip classification and restart authorization

- (10) Personnel interviews
- (11) Sequence of events description

The reactor trip review places a reactor trip into one of two categories:

1. Condition I

The cause of the trip is known and has been corrected; all safety-related equipment functioned properly during the trip.

For Condition I events the On-Shift Operations Supervisor (OSOS) has authority to authorize Unit Startup.

2. Condition II

The cause of the trip is not known and/or some safety-related equipment functioned in an abnormal or degraded manner during the trip.

For Condition II events only the General Manager, or his designee, can authorize reactor restart.

Additionally, if the trip is classified as a Condition II event, the Plant Review Board must subsequently review the report, although not necessarily prior to restart.

The inspector observed the installed equipment available for capture of pre-trip/trip/post-trip data. In addition to the usual meters, shift logs and control room recorder strip charts, the plant has two computers, the Emergency Response Facility computer (ERF) and the NSSS Supplied Proteus Computer. Both have five minute pre-trip to 10 minute post-trip data retrieval capacity. Typical of parameters monitored are:

- Reactor trip
- Safety injection
- Containment isolation
- Turbine trip
- Neutron flux
- Containment pressure
- Containment radiation
- RCS temperature
- Pressurizer level

The inspectors observed a demonstration of the equipment. Since startup has not occurred yet, it was not possible to review any completed reactor trip reviews.

- b. Safety assessments of the reactor trip are clearly delineated as part of the post-trip review.

The safety assessment is clearly delineated in OP 10006-C under "Reactor Trip Report." The STA and OSOS are charged with the responsibility to look for:

- (1) abnormal indications or degraded equipment performance,
- (2) events occurring out of the normal anticipated sequence,
- (3) failed or abnormal response of equipment to control signals,
- (4) unusual chemistry results or radiation readings,
- (5) unanticipated alarms and
- (6) analyzing any abnormalities noted and issuing corrective actions.

Further, if the reactor trip is a Condition II event, the Plant Review Board must review the assessment.

- c. Post-trip review procedures are reviewed periodically by an onsite safety review committee such as the PORC and upgraded in any areas that have been identified as deficient.

Administrative Procedure 00051-C provides for biennial review of OP 10006-C. The responsible Department Procedures Coordinator forwards a copy of the procedure and a Review Request Form to the responsible Department Superintendent, who will in turn assign a Procedure Reviewer knowledgeable in the area affected by the procedure to perform the review. If revision of the procedure is required, a safety evaluation of the revision shall be performed by an individual other than the originator of the revision.

- d. Plant personnel preparing and/or reviewing post-trip documentation receive initial training and refresher training in post-trip review procedures.

Operations Procedures 11952-C and 11955-C provide for initial and requalification training (via reading the procedure) on the Reactor Trip Review procedure for the STA and the OSOS. Other licensed personnel receive training through periodic required reading in the Operations Reading Book in accordance with OP 10017-C.

- e. Responsibilities and authorities of plant personnel who will perform the review and analysis of these events are clearly defined.

As identified in paragraph I, a reactor trip is classified as either a Condition I or Condition II trip. If declared a Condition I, the STA and the OSOS have authority, per OP 10006-C, to authorize restart. If Condition II, further reviews are required and only the General Manager may order a restart. Also, a subsequent analysis of the Reactor Trip Review must be performed by the Plant Review Board.

- f. Criteria for determining the acceptability of authorized restart have been established.

As discussed in Section b. above, the safety analysis determines if all pertinent plant parameters were within Technical Specification limits, safety-related equipment operated in a normal manner, and events occurred in a proper sequence. All personnel involved in the post-trip review have been trained in a systematic safety assessment approach to evaluating reactor trips, including simulator training.

- g. Criteria for comparing plant information with known or essential plant behavior have been established.

The reactor trip review, OP 10006-C, provides the necessary step-by-step checklist to verify that operations occurred as expected. Plant behavior is compared to limiting values contained in the Technical Specifications and expected behavior as described in the final safety analysis report to ensure operation was as expected and within limits. Any deviation is noted in the report and evaluated.

- h. Guidelines are established for preservation of evidence of reactor trips.

OP 10006-C, paragraph 3.5, provides for lifetime (of the plant) retention of the original of the Reactor Trip Review by the Document Control Department. Additional copies are routed to the Manager of Operations, General Manager, Plant Review Board Chairman, and all Department Managers. Copies of the control room chart recorders and ERF and Proteus computer printouts shall be attached to the original of the Reactor Trip Review for Document Control Retention.

One comment on Operating Procedure 10006-C is that it does not specifically call attention to a Technical Specification requirement to notify the NRC prior to reactor startup if a safety limit has been exceeded. Administrative Procedure 00300-C addresses this, but it would be prudent to include it in 10006-C. The applicant was informed of this comment in the exit meeting on December 15, 1986, but made no commitments to take any action.

Within the areas examined, no violations or deviations were identified.

7. Equipment Classification

The applicant was requested in Section 2.1 of GL 83-28 to confirm that all components of the RTS whose function is required to trip the reactor are identified as safety-related on documents, procedures, and information handling systems used in the plant to control safety-related activities including maintenance work orders and spare parts replacement. In Section 2.2. of GL 83-28, the applicant was requested to describe their program for ensuring that all components of other safety-related systems are

also identified as safety-related on information handling systems used at the plant.

The applicant's responses to Sections 2.1 and 2.2 of GL 83-28, dated November 8, 1983 and May 20, 1985, provides details of the program and procedures for safety-related equipment classification. In these responses, the licensee made the following statements:

"A review of the RTS components will be performed to confirm their classification consistent with the referenced letter," and

"Those components which have been identified as part of the RTS are indicated as safety-related in VEGP FSAR Table 3.2.2. These components have been identified as safety-related on the applicable electrical diagrams, and in the equipment index."

The inspector reviewed their responses, appropriate procedures, and interviewed responsible applicant personnel to confirm that the applicant's program for equipment classification was adequate and consistent with their response to GL 83-28. The results of the inspection indicate that discrepancies exist between the equipment classifications given in the FSAR and the equipment index. The FSAR, Table 3.2.2-1 provides a classification listing of structures, components and systems. In addition, an Instrument Index, an Equipment Index and a Valve List are also used to identify safety-related components. The valve list and indexes provide information as to whether it is seismically qualified and whether an item is ASME Section III, Class IE, or designed to a non-safety class industry standard.

The Instrument Index, Equipment Index and Valve Lists are used by plant personnel to identify quality requirements for maintenance requests and purchase requisitions. These indexes are also used as data base files for the Nuclear Plant Management Information System (NPMIS). Thus, for Maintenance Work Orders generated on NPMIS, the safety classification or project class (block 9 on MWO Form) is automatically provided for the associated tag number from the equipment data base file. Therefore, the staff normally are not required to evaluate the classification for certain plant tag numbered components.

The project classification for various components considered part of the reactor trip system were reviewed using the Instrument Index, NPMIS and FSAR Table 3.2.2-1. The results indicate that the manual reactor trip switch and manual safety injection (SI) reactor trip switch on the main control board and reactor trip breakers are all classified as non-safety project class 61 J on the Instrument Index. This appears to deviate from the applicant's responses described above, in which they indicate that all components of the RTS are classified as safety-related. The applicant was informed of the discrepancies with the classification of the RTS components and committed to provide additional information for the acceptability or non-acceptability for the non-safety classifications of the above RTS components. This

concern is unresolved pending the applicant providing additional information concerning Plant Vogtle classification criteria (PRM) which would warrant the manual reactor trip switch, manual SI switch and reactor trip breakers having a non-safety classification. This item will be tracked as Unresolved Item 50-424/86-135-01 and 425/86-062-01, Review Classification Criteria for RTS Components.

Administrative Procedures 00350-C and 00800-C establishes administrative controls for maintenance activities and establishes requirements for preparation and approval of requisitions for procurement of all materials and services, respectively. Both of these procedures provide instructions for the proper classification of maintenance and/or requisitions for procurement of all materials and services.

Within the area examined, no violations or deviations were identified.

8. Vendor Interface and Manual Control

The inspector reviewed the applicant's responses to GL 83-28, reviewed procedures, and examined the implementation of their program associated with vendor interface and vendor manual control. Their response described the following program:

Applicant response, dated November 8, 1983, stated that a program would be established to maintain NSSS vendor, (Westinghouse (W)), interface and that an additional review would establish that all information is available and is being used. The applicant also stated that vendor related modifications would be reviewed and implemented or technical reasons for not implementing the recommended modification would be prepared.

The applicant had prepared procedures to control the receipt, distribution, review, use, and control of vendor drawings, manuals, and technical data. Procedures to obtain, evaluate and use industry data had also been developed and were being utilized during the preparation of plant procedures and instructions. The inspector reviewed procedures, interviewed personnel, and observed implementation of the program.

Applicant response, dated April 28, 1986, stated that all modifications recommended by Westinghouse (W), the NSSS vendor, would be reviewed and implemented as necessary. The response further stated that the undervoltage trip assemblies in the reactor trip circuit breakers had been replaced as specified by the vendor. This was later confirmed in a subsequent inspection. The UVTAs were replaced by Field Equipment Change Order No. N-68-BF, Rev. 0. The work was verified as being completed on March 3, 1986.

Applicant's responses, dated August 16, 1985, and October 20, 1986, addressed the revision of plant procedures and TS to incorporate testing of the undervoltage and shunt trip devices, contacts, and

wiring as recommended by the Westinghouse Owners Group (WOG). The response, dated October 20, 1986, also stated that the applicant's maintenance engineering group would review the updates to the WOG maintenance manual and make necessary changes to plant procedures in accordance with the WOG Manual and WCAP-10835. Discussion with applicant personnel and a review of procedures revealed that the applicant had procedures to control vendor manuals and other technical information. Procedures were being implemented except as noted. One problem identified by the inspector was that Procedure No. 27765-C, Revision 5, "Westinghouse Type DS-416 Circuit Breaker Maintenance" did not reference the WOG Maintenance Manual (MUHN-2051), dated October 1984, but referenced a Bechtel No. which was 1X6AT01-571-2. This Instruction Manual is Actually Westinghouse Instruction Book No. 02-Y-N071, dated July 1979. Also, this instruction book had been received, reviewed, and approved by Bechtel, the licensee's A/E, but was marked for "information only." The applicant stated that the "information only" mark was used during the construction phase and was assigned "STATUS 4" per VEGP Project Reference Manual; therefore, Procedure 27765-C and associated procedures for RTB maintenance were developed from the original W instruction book but have been updated with current W technical data. The applicant explained why the WOG Maintenance Manuals and W Technical Bulletins were not referenced but that the technical information had been incorporated into the current procedure. This is discussed further in paragraph 9 of this report. The 1984 WOG Maintenance Manual (identified as Log No. 2X6AT01-10,000) was just recently put into the applicant's review cycle (October 14, 1986) per Procedure No. 00108-C, "Control, Review, Approval and Use of Vendor Documents and Revisions." The technical reviewer had stated on the review sheet that this manual was applicable to the installed reactor trip breakers and that the manual was approved for plant use. The 1986 WOG "Draft RTB Maintenance Manual" No. MPM-WOGRTSDS416-00 was transmitted to the applicant by W letter WOG-86-269, dated September 25, 1986; however, no response to or review of this document could be identified. The WOG letter states that a formal revision is scheduled for late November 1986. The applicant had not received this revision as of December 18, 1986. The applicant stated that the manual would be reviewed when received per Procedure 00108-C, Revision 4 and that plant procedures would be revised as applicable.

The inspector selected several vendor technical manuals in the applicant's review cycle (per Procedure 00108-C) to determine if the manuals were controlled and if the procedure was being implemented. Following is a list of vendor manuals and review status sheets examined:

- VM-0214, Reactor Trip Circuit Breaker
- VM-1169, Differential Pressure Transmitter Model 752, ITT Barton
- VM-1173, Milton Roy Metering Pump Installation Manual

1X3AC01-10004, Brown Boveri, IM type CO Overcurrent Relay
 Instruction Manual W I.L.41-101Q for Overcurrent Relays
 VM-1193, Instructions for Magnetic Contactor
 1X4AF05-256/3, Containment Building Sump Pump Magnetrol Switches
 VM-654, Multi Amp Instruction Book
 VM-696, Honeywell Multi Point Recorder MDLS 111 and 112 Operators
 Manual
 2X6AU01-10011, IM Operator Interface Modules, W No. TP 181
 VM-730, RTD and Thermocouple Handbook (Reference Table)

The above manuals and instruction books were transmitted for review by the Document Control Section. Each document had a control number assigned by document control. The inspector observed that several of the manuals were being reviewed per Revision 3 of Procedure 00108-C instead of Revision 4 (latest issue). The applicant explained that these manuals had been distributed for review prior to issue of Revision 4 of Procedure 00108-C. The applicant stated that they would determine if Revision 4 affected the technical area and if so they would evaluate the need for a re-review of manuals.

Vendor manuals, drawings, and other documentation are controlled and stored by the Document Control Department. They receive, distribute, control, and store vendor manuals and associated documentation per Procedure 00108-C and 00101-C - "Drawing Control." The inspector inspected the document control area to determine if documents were being received, controlled, distributed and stored per procedure. Several documents referenced in Operating and Maintenance procedures were selected for examination and were found to be controlled as required by procedure. Following is a list of manuals and documents examined:

Westinghouse Process Specification 29272, Revision 9
 Instruction Manual 1X6AU01-526, Process Instrumentation and Control Specification 1X6AU01-766, Rosemont Pressure Transmitter
 VM-1054, Ingress Release for VMS Operating Systems
 1X6AA10-132 and 133, Manuals for Process Control System Scaling
 Instruction Manual 1X6AU02-286 for W Series 252 Indicator
 AX2AG07-211, Containment Escape Lock

AX2AF04-24, IM Post Tension System Work Platform

1X1AQ06-10000, Johnson Controls, Vogtle Design and Reference Manual (Security System)

The applicant has computer systems (NORMS and NOMIS) which contains indexes of all vendor manuals, procedures, specifications, technical bulletins, equipment tag numbers, and other technical information received from INPO, NRC, Vendors, and other industry sources. These programs are controlled by procedures as described below:

Procedure No. 00414-C, Revision 3, Operational Assessment Program established organizational responsibilities and implementation instructions to assure that operational information is supplied to appropriate plant personnel. This program addresses requirements of NUREGs 0660 and 0737 and includes control of industry event reports [LERs, SERs, SOERs, Nuclear Network, and the Nuclear Operations and Maintenance Information Service (NOMIS)] to keep plant personnel informed of current information. Vendor reports, Vogtle reports, and NRC event reports are also received and evaluated by the applicant.

Procedure No. 80209-C, Revision 4, "Operational Assessment Program Coordination" describes how the applicant coordinates and assures that nuclear information from vendors, industry and NRC is evaluated and used at Vogtle Plant.

Procedure No. 00405-C, Revision 3, "Commitment Identification, Tracking, and Implementation" provides instructions and responsibilities to further assure that actions and commitments made on technical information are tracked from initiation to final completion.

The applicant receives a periodic Technical Bulletin Index from Westinghouse (NSSS Vendor). This index includes a list of W Technical Bulletins and Data Letters pertinent to equipment and systems supplied by Westinghouse. The applicant supplied the inspector with the latest W Index No. WNSID-TB-86-04, dated June 18, 1986. The Operational Assessment Program (OAP) controls the receipt, distribution, and storage of W Technical Bulletins, NRC Bulletins, NRC Information Notices, INPO SERs and SOERs, GE SILs, and other technical information. Information is retrievable on the computer and the hard copies are filed in the OAP office. The inspector randomly selected some NRC IEBs, W TBs, GE SILs, and INPO SERs and confirmed that the system used to control this information was working. During the data examination, the applicant could not find W TB 83-03 "Reactor Trip Breaker Testing" in the files or in the computer. Further investigation revealed that W TB 83-03 was originally specified as NSD-TB-83-03 and was filed in NRC IEB Folder 83-001. To resolve this discrepancy, the applicant agreed to prepare a file folder for W TB 83-03 and

and to enter W TB 83-03 into the computer data. The following file folders were examined and found adequate (except for W TB 83-03):

WTB 86-07, Auxiliary Pump Assembly
 WTB 83-02 R1, RTB Maintenance
 WTB 83-03 (missing) RTB Testing
 WTB 85-17, DS Breakers Spring Release Latch Lever
 WTB 84-09 R2, Primary Leak at Seal Tables
 WTB 84-02 R1, DS Breakers Wire Damage
 IEBs 82-001, 83-004, 83-008, and 83-001
 IENs 84-05, 83-03, and 84-34
 SERs 86-021, 85-044, and 85-85
 SOERs 85-004, 84-003, and 82-09

The applicant's site QA group had performed an audit of the plants Vendor Manual Control Program in May 1985. A followup QA surveillance was performed on September 16, 1986. The Audit Report identified some inadequacies with Procedure 00108-C and references used in plant procedures. The inspector confirmed some of the QA audit findings during this inspection and discussed these with applicant personnel. Some corrective actions to the site QA audit have been corrected by procedure revisions; however, the use of incorrect references in procedures has not been corrected in all cases. Example is not specifying WOG Reactor Trip Breaker Maintenance Manual and W TBs in Procedure No. 27767-C, RT Breaker Switchgear Inspection and Maintenance.

Other procedures and documents reviewed are listed below:

Materials Record Transmittals for the NORMS Computer System
W Technical Bulletin Indexes No. NSD-TB-83-03 and
 No. NSID-TB-86-04
 Computer Record Search for DS 416 Reactor Trip Circuit Breaker
 Computer Record Search for W TBs, NRC IEBs, and INPO documents
 Procedure 27767-C, Revision 0, RT Breaker Switchgear Inspection
 and Maintenance

Procedure 00414-C, Revision 3, Operational Assessment Program

Procedure 00101-C, Revision 5, Drawing Control

Procedure 27765-C, Revision 5, W Type DS-416 Circuit Breaker Maintenance

VEGP Project Reference Manual, Revision 5, pages C5-7 and C5-8, Supplier Documentation Control

Equipment Maintenance Checklists Nos. 11606S6002RTA-E-6M and 18M for Reactor Trip Switchgear

Preventative Maintenance Turnover Package Approval per procedure 20015-C for Reactor Trip Breakers, dated 11/20/86

Within the areas examined, no violations or deviations were identified.

9. Post-Maintenance Testing: Reactor Trip Circuit Breaker

The Vogtle Electric Generating Plant, Unit 1, is a Westinghouse pressurized water reactor. Its dual train redundant reactor trip circuit breakers RTA and RTB, backed-up by bypass circuit breakers BYA and BYB, are Westinghouse DS-416 type circuit breakers. The applicant, Georgia Power Company, has responded on November 8, 1983, to GL 83-28. In that and subsequent responses the applicant has committed themselves to the development and implementation of procedures to assure the safe and reliable operability of the reactor trip circuit breaker through a program of maintenance and post-maintenance testing.

The inspector verified the applicant's program by (a) reviewing the applicant's procedures on maintenance and post-maintenance testing, (b) reviewing the applicant's procedures versus vendor's technical manuals, (c) reviewing complete work packages of reactor trip circuit breaker maintenance taken during the Construction Acceptance Test, and (d) observing the performance of the reactor trip circuit breaker maintenance procedure in the field.

a. Review of Procedure

The inspector reviewed the applicant's procedure on the reactor trip circuit breaker maintenance: Procedure No. 27665-C, "Westinghouse Type DS-416 Circuit Breaker Maintenance," Revision 5, dated April 18, 1986. The inspector was informed that in April 1986, the applicant performed this procedure for the first time as part of the Construction Acceptance Test (CAT) on the reactor trip circuit breaker. However, as of the date of the ATWS inspection in December 1986, these reactor trip circuit breakers have not yet been turned over from Test to Operations. The status of these breakers placed them in a category which does not get regularly scheduled preventive maintenance.

The inspector noted that:

- (1) The procedure has numerous typographical errors, as well as errors of greater gravity, e.g., in Section 4.10.3, 125VDC is directed to be applied to the breaker control circuit at terminals 3 and 8. This was recognized to be an error as it was one of the lessons learned in the CAT performance of this procedure. The correct terminal points for the application of the 125VDC control voltage are 4 and 7. Several of these errors had been documented in a Temporary Change to Procedure Form during the CAT performance of this procedure. However, the applicant's Procedure No. 00052-C, which governs the generation of the Temporary Change to Procedure Form allows the effectiveness of the temporary changes to lapse after a period of 30 days. In the case in hand, the changes recorded in the Temporary Change to Procedure Form was recommended for permanent incorporation into the procedure. This was not accomplished in the 30 days before the Temporary Change expired.
- (2) The drawings and diagrams in the procedure are not legible. Some reproduction of vendor's sketches and diagrams turned out dark and black, and some reproductions turned out with portions of the vendor's sketches, drawings, and wordings missing.
- (3) Steps in the procedure are out of sequence. For example, in Section 4.20, the arc chutes and front panel was put back on the breaker. However, subsequently several measurements of the breaker's UVTA trip force had to be made. These measurements cannot be made without removal of the arc chutes and front panel and there was no step in the procedure calling for their removal prior to these measurements.
- (4) Figure 9 in Manual Copy #16 located in the Maintenance Section was found to be missing. This same Figure 9 was, however, found properly in place in Manual Copy #12. These manuals are controlled sets of procedure and they shall all be kept up-to-date and identical.

b. Review of Applicant's Procedures Versus Vendor's Technical Manuals

The applicants procedures references, Section 6.0, are not complete and up-to-date. The inspector noted that the vendor's maintenance manual for DS-416, Reactor Trip Circuit Breaker, Revision 0, dated October 1984, as well as other vendor's technical bulletins, on reactor

trip circuit breakers are not listed as reference in the procedure. This is not construed to indicate that the applicant has not reviewed or incorporated the subject vendor bulletins into the reactor trip circuit breaker maintenance procedure. The inspector noted, on the other hand, the reactor trip circuit breaker maintenance procedure includes the elements stated in the applicant's response, dated August 1, 1985, in which the applicant agreed to abide by an NRC followup letter to GL 83-28. Although the NRC followup letter mentioned the vendors manuals and the elements recommended for incorporation in the reactor trip circuit breaker maintenance procedure, the applicant's response of August 1, 1985 did not mention the vendors manual, but nevertheless includes all the elements recommended for incorporation to the maintenance manuals. In response to the inspector's questions, the applicant stated that its personnel had received the subject vendor manual but it did not get formally processed into the document control system. An item by item check of the applicant's procedure versus the commitments made in the applicant's response of August 1, 1985, showed that they agree in all areas of concern. In this regard, the inspector considered the applicant's procedure not lacking in vendor referenced information but only lacking in quality of format, and lacking in a well thought out sequence of performing the steps in the procedure.

c. Review of Complete Work Packages (CAT Data)

The applicant has performed the procedure on reactor trip circuit breaker maintenance once. The inspector was informed that the Construction Acceptance Test (CAT) chose to use the procedure on reactor trip circuit breaker maintenance instead of writing a procedure for the CAT's purpose. A review of the test data showed that several steps were marked "not-applicable" such as Sections 4.28.4b, 4.27.3d, 4.26.2 and 4.26.3. No reasons were given for not performing these steps. The inspector considered the CAT data incomplete to be used for operational acceptance tests. Therefore, the inspector recommended that the Reactor Trip Circuit Breaker Maintenance be completed prior to initial criticality.

d. Observation of the Reactor Trip Circuit Breaker Maintenance

The inspector observed a demonstration by the applicants maintenance personnel of the reactor trip circuit breaker maintenance on breaker RTA.

A review of the tools and measuring equipment showed that they were adequate.

The applicant's electricians and QC inspector showed great interest and initiation in the task. Although some of the personnel had participated in the CAT performance of this procedure, the maintenance went slowly because the group seemed uncertain about the performance of this procedure. This was determined to be caused by a lack of experience with performing maintenance on reactor trip breakers. As the breaker

was removed from the switchgear and prepared for transfer to the maintenance shop. The inspector noted that the breaker was dusty. The inspector questioned the applicant regarding the PM schedule for these breakers. The applicant indicated that the next scheduled preventive maintenance was May 1987. The inspector informed the licensee that this schedule did not appear to be acceptable considering the dust found on breaker RTA, and considering that the reactor trip breakers are being cycled several times during pre-operational testing. These factors did not appear to be adequately addressed by the preventive maintenance program. The inspector recommended an immediate and thorough performance of the entire procedures on all Unit 1 trip breakers. The applicant committed in the exit meeting to review the procedure for the comments identified above and revise appropriately and to complete the reactor trip breaker maintenance on all four breakers prior to initial criticality. This was identified as Inspector Followup Item 50-424/86-135-02 and 425/86-062-02, Reactor Trip Breakers.

The inspector discussed the trending of parameters with the applicant. Due to lack of time, this was left as an Inspector Followup Item to be pursued in conjunction with item 50-424/86-135-02 and 50-425/86-062-02.

Within the area examined, no violations or deviations were identified.

10. Reactor Trip System Reliability

GL 83-28, Item 4.2.2 required that the preventative maintenance and surveillance program for reactor trip breakers shall include trending of parameters affecting operation and measured during testing to forecast degradation of operability. GPC stated in their response, dated August 1, 1985, that they would trend reactor trip breaker parameters to forecast degradation of operability. The applicant stated that the maintenance Engineering group would trend the data on an 18 month interval and then take appropriate action to revise maintenance tasks and frequencies as required. As of the date of the inspection, no trending has been performed. The procedure for Reactor Trip Breaker maintenance has not been performed on all reactor trip breakers and bypass breakers to obtain necessary baseline data. The applicant committed, however, to have the maintenance completed prior to initial criticality. In addition, the reactor trip breaker maintenance procedure will be re-reviewed against all Technical Bulletins and vendor manuals to verify that appropriate vendor maintenance requirements have been incorporated. Further discussion of the maintenance procedure is included in paragraph 9.

Generic Letter 83-28, Item 4.3 required the licensee of W reactors to modify their plants by providing automatic reactor trip system activation of the breaker shunt trip attachments (the shunt trip attachments shall be considered safety-related class IE).

The inspector determined that the applicant has implemented the W owners group generic design package for the automatic shunt trip and has developed procedures to test both independently the shunt and undervoltage trip

devices and the manual reactor trip switch. The shunt panels were observed installed in Unit 1 reactor trip switchgear. The actual installation records and modification test results were not reviewed due to lack of time. However, during a subsequent inspection (87-06) the records were reviewed and found to be acceptable. The modification was installed by Field Equipment Change Order No. N-142-BF and was verified as complete on April 4, 1986.

The design of the solid state protection system (SSPS) was reviewed to verify that the manual trip circuit was located down stream of the output transistors Q3 and Q4 in the undervoltage output circuit. This was confirmed by reviewing Figure 10-9, Solid State Protection System Schematic Diagram, in Technical Manual X6AX01-466, Revision 5.

GL 83-28, Item 4.1 required the applicant to either implement all vendor-recommended reactor trip breaker modifications or a written evaluation of the technical reasons for not implementing the modification shall exist.

In a letter, dated November 8, 1983, the applicant stated that all modifications recommended by the NSSS vendor will be reviewed to verify that either: (1) the modification has been implemented; or (2) a written evaluation of the technical reasons for not implementing the modification will be prepared. This review will be completed by July 1986. In a subsequent letter, dated April 4, 1986, the applicant informed NRC that the undervoltage trip assemblies in the reactor trip switchgear circuit have been replaced. The above was not confirmed due to lack of time and will, therefore, be examined as part of Inspector Followup Item 50-424, 425/86-135-02 and 86-052-02, Reactor Trip Breakers.

Within the areas examined, no violations or deviations were identified.

11. The Following Plant Documents were Reviewed During This Inspection:

Procedures

- a. 10000-C, "Conduct of Operations"
- b. 10006-C, "Reactor Trip Review"
- c. 10017-C, "Operations Reading Book"
- d. 11952-C, "OSOS Qualification Checklist"
- e. 11955-C, "STA Qualification Checklist"
- f. 00300-C, "Authorization to Startup and Shutdown a Reactor"
- g. 00350-C, "Maintenance Program", Revision 5
- h. 00800-C, "Requisition of Materials and Services," Revision 6
- i. 27765-C, "Westinghouse Type DS-416 Circuit Breaker Maintenance," Revision 5, April 18, 1986.
- j. 27731-C, "480 Volt Switchgear Cubicle/Transformer Maintenance," Revision 1, November 8, 1986.
- k. 27767-C, "Reactor Trip Breaker Switchgear Inspection and Maintenance," Revision 0, December 2, 1985.
- l. 00052-C, "Temporary Changes to Procedures," Revision 3, November 4, 1986.

- m. SUM-14, "Release to Operations," Revision 3, November 24, 1986
- n. 54701-1, "1HS-40008 (Manual SI/Rx Trip) TADOT", Revision 1
- o. 54702-1, "1HS-40003 (Manual SI/Rx Trip) TADOT", Revision 1
- p. 54721-1, "1HS-40002 (Manual Reactor Trip) TADOT", Revision 0
- q. 54722-1, "1HS-40007 (Manual Reactor Trip) TADOT", Revision 0
- r. 54724-1, "Automatic BYB Undervoltage Trip TADOT", Revision 0