U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
Division of Quality Assurance, Vendor, and
Technical Training Center Programs

Report No: 50-424/86-105R

Docket No: 50-424

Licensee: Georgia Power Company

Facility Name: Vogtle Nuclear Plant, Unit 1

Inspection At: Vogtle Site, Waynesboro, Georgia

Inspection Conducted: August 11 to 15, 1986

Inspection Team Members:

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Mechanical Systems:	T. DelGaizo, Consultant, WESTEC Services
Electrical Power:	S. Athavale, Electrical Engineer, IE
Controls:	J. Leivo, Consultant
Mechanical Components:	T. McLellan, Inspection Specialist, IE
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VOGTLE NUCLEAR PLANT, UNIT 1
Inspection of Independent Design Review Results
August 11 to 15, 1986

1. Background

At a meeting with the NRC in Bethesda, Maryland on June 20, 1985, the Georgia Power Company (GPC) presented a plan for an independent design review (IDR) of Plant Vogtle, Unit 1 (Vogtle) to be performed by the Stone & Webster Engineering Corporation (SWEC). NRC inspection activities related to the Vogtle IDR were conducted in three phases: (1) inspection of program preparations, (2) inspection of program implementation, and (3) inspection of IDR results and corrective actions. The first two phases of NRC inspection were conducted in July and August, 1985 and were reported in NRC Inspection Report No. 85-34R, dated September 30, 1985.

2. Purpose

The purpose of this inspection was to conduct the third phase of NRC inspection activity, namely the inspection of IDR results and corrective actions. The specific objectives of this inspection were: (1) review calculations and evaluations supporting the IDR findings to determine whether the IDR findings and corrective actions, including the evaluation of generic concerns, are technically acceptable, (2) review implementation of corrective or preventive actions, (3) ensure that NRC comments or concerns from previous NRC inspections were resolved or adequately incorporated in the IDR, and (4) review open items from Readiness Review Modules 8 and 13c to determine if these items have been resolved.

The purpose of this inspection report is to document the IE review and closure of items identified in a previous IDR inspection 85-34R, as well as inspections of the independent design reviews contained in Readiness Review Modules 8 and 13C (inspection reports 85-64R and 86-42, respectively).

The assessment of the validity of the results and conclusions of IDR Module 22 will be addressed by the evaluation report that is being prepared for this module.

3. Personnel Contacted

A large number of GPC, SWEC, and Bechtel Power Corporation (BPC) personnel were contacted through the course of the five day inspection. The following is a brief listing of the key personnel contacted:

Name	Organization Position
P. Rice	GPC V.P., Project Engineering
D. Foster	GPC V.P., Project Support
W. Ramsey	GPC Mgr., Readiness Review
D. Read	GPC General Manager, QA
C. Hayes	GPC Vogtle QA Manager
F. Marsh	BPC Project Engineering Mgr.
A. Sanders	BPC Ass't Project Engineer
D. Strohman	BPC Project QA Engineer
S. Stamm	SWEC Tech. Manager, IDR

G. Bushnell	SWEC Hazards Reviewer
S. Frank	SWEC Mechanical Systems Reviewer
W. Gardel	SWEC Electrical Reviewer
R. Mathur	SWEC Structural Reviewer
C. Tsai	SWEC Pipe Stress Reviewer
J. Lockaby	SWEC Pipe Support/Duct Support Reviewer
C. Mullen	SWEC Instrumentation and Controls Reviewer
J. Curtain	SWEC Module 8 Team Leader

4. General Conclusions

As a result of this inspection, the NRC arrived at the following general conclusions:

(1) All prior NRC inspection comments or concerns were reviewed and considered acceptable. These items are considered closed as detailed in Addendum (1) to this report.

(2) All prior open items from Readiness Review Modules 8 and 13c were reviewed and found to be acceptable. These Modules are considered closed as detailed in Addendum (2) to this report.

ADDENDUM (1)

NRC INSPECTION COMMENTS FROM INSPECTION 85-34R

OBS. NO.	CONCERN	STATUS	COMMENT
MECHANICAL SYSTEMS			
1.1	Examples of insufficient documentation were observed. Specifically, checklists were not filled out completely and several attributes on checklists did not have an appropriate justification for their associated review status.	CLOSED	Improved documentation was observed. Documentation is satisfactory for checklists 1901-2G, 1908-2G and checklist associated with calculation X4C1302V, R4, 4-9-85.
1.2a	Assumptions of calc. X4C1302V05 appear to contradict each other with regard to using 3% or 13% channel error for steam generator instruments.	CLOSED	Open Item G-28-0 was initiated by the IDR team. The project's response clarified the apparent contradiction to the satisfaction of the IDR team. The inspection team concurs with the IDR team's disposition.
1.2b	Computer verifications were no longer valid due to a revision of the input to the calculation.	CLOSED	IDR observation 22-G11 was initiated. The valid verification was still available in Revision 0 to the calculation. The IDR team accepted the project response and the inspection team concurs with this action.
1.2c	Questions were raised regarding the use of a piping wall thickness formula from the ASME code.	CLOSED	IDR observation 22-G18 was initiated. Ultimately, this portion of the calculation was voided for other reasons and therefore the calculation was not revised. The IDR team accepted the project's response to this observation and the inspection team concurs with the action taken.
1.3	Checklists were not reviewed at the time of inspection (85-34R) and therefore no conclusions could be drawn as to their adequacy.	CLOSED	These checklists were reviewed during this inspection and were found to be acceptable.

OBS.NO.	CONCERNS	STATUS	COMMENT
MECHANICAL COMPONENTS			
2.1	Open items not cross referenced back to checklist	CLOSED	Open item list dated October 3, 1985 provides a cross-reference.
2.2	Concerns were identifed in comparing pipe stress calculation X4CP-7075, R5, data point 221 to pipe support calculation V1-1301-012-H021.	CLOSED	a. BPC reviewed all pipe supports within their scope of supply (ie. 2142 supports from 208 isometrics) for (1) location deviations, (2) load deviations and (3) load direction deviations. From this review 76 deviations were identified, one resulted in a hardware change and the other 75 will be resolved during the as-built reconciliation program. b. Pipe support stiffness was determined to be adequate. c. Page 2 of the subject pipe support calculation does reference the drawing of the steel to which it is attached. Thus, the concern regarding design traceability is not valid and this item is closed.
2.3	HELBA should include a postulated break inside containment.	CLOSED	The review of a postulated break inside containment was conducted by SWEC and the consequences of this break were appropriately evaluated by SWEC in checklist 1920-2B dated 8-13-85.
2.4	IDR hazards checklist did not reference the documents which implement the design feature being audited.	CLOSED	Appropriate references were added to the IDR hazards checklist.
2.5	Several significant concerns raised by SWEC will be closely followed by the NRC to assure adequate resolution. Specifically refer to observations C04, C06, C04, D-01, D02, D04 and D06.	CLOSED	All these observations were reviewed and have been resolved to the satisfaction of the inspection team.

OBS. NO.	CONCERN	STATUS	COMMENT
ELECTRICAL POWER			
3.1	Specification checklist did not contain comments on the review of operating parameters reviewed against source documents.	CLOSED	Source documents have been identified and values reviewed against operating parameters.
3.2	Review of the DC system failed to include three potential problem areas related to the station battery, viz.:	CLOSED	The IDR team reviewed the three problem areas; (2) and (3) were adequately resolved and (1) resulted in observation 22-F1.
	(1) Review of battery manufacturer's test data for establishing a minimum voltage during the first minute.		
	(2) Comparison of load profile used for sizing the batteries to the load profile included in the specification.		
	(3) Comparison of the purchased cell size to the calculated cell size.		
3.3	Questions were identified by the SWEC audit team concerning cable flame test data and approved lubricants for cable pulling; however, no open item reports were issued.	CLOSED	Open item reports were subsequently issued by the IDR team and observations 22-F25 and 22-F52 resulted for cable flame test and cable pulling lubricants, respectively.
3.4	Nine of thirteen checklists were not completed at the time of the NRC inspection. The NRC is concerned that insufficient time remained to complete a thorough review.	CLOSED	The IDR review period was extended by one week and all checklists have been completed.
3.5b	No review was conducted to assure adequate HVAC for the switchgear and battery rooms.	CLOSED	Review of the battery room HVAC system was subsequently performed. The switchgear HVAC was not reviewed because other similar areas were reviewed.

OBS. NO.	CONCERN	STATUS	COMMENT
INSTRUMENTATION AND CONTROL			
4.1	Many of the checklists were not completed at the time of the NRC inspection. The NRC is concerned that insufficient time remained to complete a thorough review.	CLOSED	The IDR review period was extended and all checklists were completed. The inspection team is satisfied that sufficient review was performed in the controls area.
4.2	No area of NSSS interface has been evaluated for instrumentation and controls.	CLOSED	NSSS interface was subsequently evaluated by the IDR Team to the satisfaction of the inspection team.
4.3	IDR team's checklists were not in sufficient detail to support the conclusions reached by the reviewers.	CLOSED	Additional details were added to the checklists such that the conclusions of the review are sufficiently justified.
4.4	Vogtle project has not yet performed setpoint calculations, but has established instrument setpoints. A review of setpoint calculations should be included in the IDR.	CLOSED	The inspection team reviewed and is satisfied with the Project procedure for performing setpoint calculations. Implementation of the procedure will be verified during the NRC's review of corrective action.
4.5a	Design changes to be reviewed had not been selected.	CLOSED	A number of design changes were reviewed by the IDR Team and the inspection team is satisfied that the review in this area is complete.

ADDENDUM (2)

INSPECTION OF OPEN ITEMS FROM READINESS
REVIEW MODULES 8 AND 13C
AUGUST 15-19, 1986

MODULE 13C

OPEN ITEM 86-42-01 COMMENT 1

The project revised Civil Engineering Study No. 91 to include the discontinuity effects at the mat-wall interface of the containment analysis, and has included this revised study as Attachment 2 to Calculation No. X2CJ2.9.0. Revised study No. 91 shows that the increase in the hoop moment is in all cases less than the design membrane hoop moment. This item is therefore considered closed.

OPEN ITEM 86-42-02, COMMENT 2

BPC has revised Civil Engineering Study No. 90 to include scaling factors derived from the results of FINEL and OPTCON for a similar plant. Additionally, revised study No. 90 has been included as Attachment 1 to Calculation No. X2CJ2.9.0 and is also referenced on sheet 24 of 109 of calculation No. X2CJ2.10.1. This resolution is acceptable to the NRC team and the item is considered closed.

MODULE 8

OPEN ITEM 85-64R-02, COMMENT 1

The source of the 15 PSI fluid pressure was identified as coming from the Nuclear Group via calculation NO. X2CK4.05.3. Additionally, updated calculated pressures indicate that the 15 PSI is conservative. The NRC team considers this item closed.

OPEN ITEM 85-64R-03, COMMENT 2

The IDR team has confirmed that the connection details as shown in BPC drawing AX2D08G029, Rev. 3, 9/20/83 are adequate. Calculation X2CK4.9.6 has been revised by deleting the sketches and establishing the adequacy of the connection details. The NRC team finds this resolution acceptable and the item is considered closed.

OPEN ITEM 85-64-01, COMMENT 4

In response to this comment the IDR team reviewed three calculations, X2CJ4.1.4.2, X2CJ4.1.4.4 and X2CJ4.1.4.7. This review is documented in a SWEC letter to Southern Company Services, dated July 9, 1986. The NRC team found the IDR review of these calculations to be adequate and agrees with the resolutions proposed as a result of this review. This item is considered closed.

OPEN ITEM 85-64R-04, COMMENT 5

The IDR team confirmed that the referenced loads in Calculation AX4AL01-46-2 performed by the Whiting Company, the supplier of the polar crane, were correctly calculated, and that these loads were correctly utilized by Bechtel in the design of the polar crane girder. The NRC team considers this item closed.

OPEN ITEM 85-64R-05, COMMENT 6

GPC stated that the reason that two turbine building cranes were not modeled as being simultaneously on the same side of the turbine building in the calculations associated with the seismic analysis of one unit's turbine building was because mechanical stops will be installed prior to fuel load as shown on drawings AX2D10F081 and AX2D10F083. This rationale is acceptable as it precludes both cranes being in the same building. This item is considered closed.

OPEN ITEM 85-64R-06, COMMENT 6

In response to this comment GPC stated that two five-way restraints will prevent a complete failure of the Category II portion of the main steam piping from adversely affecting the Category I portion. The NRC team reviewed the associated stress analysis isometric and concluded that this item is closed.