UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	:	
GEORGIA POWER COMPANY, et al.	:	
	:	DOCKET NUMBERS
	:	50-424 and 50-425
(Vogtle Electric Generating Plant, Units 1 and 2)	:	

AFFIDAVIT OF W. C. RAMSEY

COUNTY OF BURKE

STATE OF GEORGIA

Before the undersigned officer duly authorized to administer oaths did appear W. C. Ramsey, who after being duly sworn, did state as follows:

1. My name is W. C. Ramsey. My business address is Vogtle Electric Generating Plant, Route 2, Waynes- boro, Georgia 30830. I am employed by Southern Company Services as Manager-Nuclear Plant Projects Licensing, Nuclear Safety and Fuel. I am assigned to the Vogtle Project as Readiness Review Program Manager. In that position, my primary responsibility has been the overall scope, direction, and schedule of the VEGP pilot Readiness Review Program. I am a mechanical engineer and I have been involved in a nuclear power plant design for the past fourteen years. I am a member of ASME.

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2. I make this Affidavit in support of Applicants' Motion for Summary Disposition of Joint Intervenors' Contention No. 8 (Qualicy Assurance). I have personal knowledge of the matters stated herein and I believe them to be true and correct. I will describe the organizational structure and the purpose and program of the VEGP pilot Readiness Review Program.

READINESS REVIEW

Overview

3. Georgia Power Company has long been concerned about the inability of a number of utilities to satisfactorily complete nuclear plants under construction on time, within budget, and in compliance with Nuclear Regulatory Commission requirements. A number of these problems appear to have been the result of major quality-related breakdowns in the management of plant construction or the utilities' inability to demonstrate the requisite quality. In a report to Congress on Improving Quality and the Assurance of Quality in the Design and Construction of Nuclear Power Plants (NUREG-1055), the Nuclear Regulatory Commission addressed these issues. In response to the question, "Why have the Nuclear Regulatory Commission and the utilities failed or been slow to detect and/or respond to these quality-related problems?," the Nuclear Regulatory Commission defined a number of shortcomings and recommended actions. One of the actions recommended for further analysis was the feasibility, and

benefits, of readiness reviews which would involve formal assessments by the utility of their readiness to proceed at critical phases of a Project and would include possible involvement of Nuclear Regulatory Commission staff.

4. In order to gain added assurance of the operational readiness of the Vogtle Electric Generating Plant (VEGP), Georgia Power Company is conducting a pilot Readiness Review Program. This program does not eliminate or diminish any authorities or regulatory responsibilities now assigned to or exercised by the Nuclear Regulatory Commission or Georgia Power Company. Further, the pilot Readiness Review Program does not fundamentally change the techniques of inspections or assurance of quality program activities. Rather, the program is a management system which provides for the more orderly planning and predictable execution of existing authorities and responsibilities.

5. In summary, the Readiness Review Program actions include a clear definition and description of all work activities in terms of governing regulatory commitments, an in-depth Georgia Power Company self-assessment of the work activities, Nuclear Regulatory Commission review and actions on both the programmatic and work implementation aspects of the work activities and a methodology for scheduling the separate Readiness Review Program actions of Georgia Power Company and the Nuclear Regulatory Commission.

6. This program incorporates several important features such as a Readiness Review Board, outside technical experts in the various disciplines, and a separate design review group all of which serve to provide independent oversight and review of Readiness Review Program actions and results.

7. Georgia Power Company considers that the Readiness Review Program, including the Nuclear Regulatory Commission's agreement to participate, will result in significant benefits. These benefits include improved planning which will enhance the effective use of critical Nuclear Regulatory Commission and Georgia Power Company resources and improved predictability resulting from the early Nuclear Regulatory Commission determination of program adequacy. Other benefits include enhanced assurance of the overall program acceptability resulting from Georgia Power Company's self-assessment combined with the phased independent Nuclear Regulatory Commission reviews, and improved stability by minimizing the potential for last minute identification of major programmatic problems.

The Readiness Review Program Plan

8. The purpose of the VEGP pilot Readiness Review Program is to provide a systematic and disciplined review of Georgia Power Company's implementation of design, construction and operational preparation processes to

increase the assurance that quality program activities at Plant Vogtle have been accomplished in accordance with regulatory requirements.

9. The Readiness Review Program will be conducted on a schedule to provide added operational readiness assurance to GPC management in support of the VEGP Unit 1 operating license. However, conclusions reached regarding programmatic and technical adequacy through review of VEGP Unit 1 will be indicative of Unit 2 since both units are being designed and constructed, together under a single Quality Assurance program and like management and to the same specifications and criteria.

10. The Readiness Review Program is a management system developed to accomplish the following objectives:

(a) Define the individual work processes involved in the quality program at Plant Vogtle and describe how these processes comply with regulatory commitments;

(b) Provide a phased in-depth self-assessment of safety-related work processes and a separate management overview of the self-assessment process, including an expert evaluation of both the Readiness Review assessment and its conclusions;

(c) Enhance the identification of problems or concerns and ensure their correction in a timely manner;

(d) Provide a mechanism for the early resolution of any differences in the Nuclear Regulatory Commission and Georgia Power Company interpretation of regulatory requirements and the resulting acceptance criteria;

(e) Provide a system that will facilitate the Nuclear Regulatory Commission's review, inspection,

appropriate action and approval of the acceptability of Plant Vogtle work processes on an advanced Readiness Review basis;

(f) Provide a planning system, including Georgia Power Company prepared and Nuclear Regulatory Commission accepted milestone schedules, for the orderly conduct of the separate actions of Georgia Power Company and Nuclear Regulatory Commission.

11. The VEGP Review Program is not intended to eliminate or diminish any authorities or regulatory responsibilities now assigned to or exercised by the Nuclear Regulatory Commission or Georgia Power Company. Further, the Readiness Review Program is not intended to change the techniques of inspections or assurance of quality program activities. Rather, the VEGP Readiness Review Program is an added program initiated by GPC management to assess the VEGP, and provide additional feedback to management so that they may initiate any needed corrective actions in an orderly and timely manner.

12. The scope of the Readiness Review Program encompasses the review of safety-related aspects of design, construction and preparations for operation at Plant Vogtle. The overall scope of the program is divided into five broad generic functions: civil, mechanical, electrical, and operational readiness for Plant operations. These generic functions are further divided into specific work activities, for example: Civil concrete, rebar and caldwelds; structural steel; miscellaneous steel and embeds, welding, and backfill.

From there the division is divided into individual work elements.

13. The Readiness Review Program actions are being conducted at the work element level to review, assess and verify performance. The individual work elements in one or more work activities will be packaged and presented to the Nuclear Regulatory Commission for review and acceptance one package at a time, in general accordance with an established schedule. Such a package is defined as a Readiness Review "Module." The total scope of work will be divided into approximately 20 Readiness Review Modules.

14. Each Module will provide a brief description of the method of complying with Project licensing commitments, pertaining to the Module scope, found in the Final Safety Analysis Report (FSAR). It is not intended to make further commitments or revise in any way prior commitments.

15. Activities common to several Modules will be provided as General Appendixes. There will be approximately eleven (11) appendixes. These appendixes, as appropriate, will be referenced in the Modules and augmented in each Module with module-scope-specific details as needed.

16. Having so defined and described each work element or logical group of elements, GPC will formally assess the elements to determine that the quality program and its implementation have complied with Georgia Power Company

commitments and Nuclear Regulatory Commission regulatory requirements. Additional reviews, inspections or audits will be conducted, wherever necessary, to verify proper accomplishment of the work elements. Each Module will be signed off by an individual responsible for the assessment certifying that the work elements have been addressed properly and are ready for Nuclear Regulatory Commission review.

17. In additional to the self-assessment of Module work elements discussed above, Georgia Power Company will establish a Design Review Group within the Readiness Review Task Force consisting of three or more experienced senior design engineers who are independent of those personnel who performed the work. The function of this group will be to conduct a point-in-time review of the design process to provide a higher level of assurance that the design activities defined and described in the Readiness Review Module have been performed in accordance with all commitments. A particular focus of this group will be to examine the interface actions among design disciplines to insure that there are no discontinues in design work covered by the various Readiness Review Modules.

18. When all work elements in the Readiness Review Module have been assessed and certified as properly implemented, an independent Georgia Power Company Readiness

Review Board will conduct an evaluation of the Readiness Review Module to verify that the overall work activities have been addressed satisfactorily and that all Readiness Review Program actions have been completed properly.

19. Upon satisfactory completion of the Readiness Review Board evaluation, the Vice President and Project General Manager of the Vogtle Project will make a final determination of acceptability of the Readiness Review Module.

20. Upon determining that the Readiness Review Module is satisfactory, the Vice President and Project General Manager of the Vogtle Project will formally submit the Readiness Review Module to the Regional Administrator of the Nuclear Regulatory Commission for review and acceptance. The presentation process will include a brief meeting to outline the scope of the Readiness Review Module and identify any particular aspects that Georgia Power Company may want to highlight to the Nuclear Regulatory Commission. It is expected that the Readiness Review Module would thereafter undergo a multidiscipline review by applicable Nuclear Regulatory Commission organizations to verify the effectiveness of the Georgia Power Company quality program for work areas covered in the Module. It is expected that this review will examine definition of commitments, adequacy of commitment application and proper interpretation of criteria for work

acceptance. Further, it is expected that either a positive finding of program adequacy will be identified to Georgia Power Company, or any concerns with the program defined in the Readiness Review Module will be conveyed for action, as appropriate.

21. Upon completion of Nuclear Regulatory Commission review of the Readiness Review Module, it is expected that the Nuclear Regulatory Commission will identify selected work activities covered by the Readiness Review Module for additional Nuclear Regulatory Commission inspection. For these instances, Georgia Power Company will take all necessary actions to support and assist the Nuclear Regulatory Commission inspection, including the collection and assembly of documentation, having requested personnel readily available for interviews or inspection assistance, and the resolution of all questions or requests for additional information. Georgia Power Company will make every effort to address all inspectors' requests and questions during the Nuclear Regulatory Commission on-site inspection process.

22. Upon completion of additional Nuclear Regulatory Commission inspections of the Readiness Review Module work activities, it is expected that the Nuclear Regulatory Commission will identify any significant areas of non-compliance in accordance with existing Nuclear Regulatory Commission inspection and enforcement policies (e.g.

10 C.F.R., Appendix C). Georgia Power Company will investigate, assess and correct any items so identified in a thorough and rigorously scheduled manner in order to promptly and completely resolve all concerns and to avoid any recurring questions or concerns in subsequently scheduled areas of readiness.

23. Upon satisfactory completion of Nuclear Regulatory Commission inspections of Readiness Review Module work activities, including satisfactory resolution of any resulting concerns, it is expected that the Nuclear Regulatory Commission will formally identify to Georgia Power Company that the scope of work covered by the Readiness Review Module had been reviewed programmatically for implementation, and was deemed satisfactory subject to completion of remaining work in full compliance with all commitments. It is further expected that any work covered by the scope of the Readiness Review Module that had not yet been completed due to the Project work sequence will be factored into normal Nuclear Regulatory Commission site inspection activities with the Georgia Power Company commitment to assist the Nuclear Regulatory Commission in subsequent inspections in the same manner as during the Readiness Review Module inspection activities. The Nuclear Regulatory Commission will be formally notified of any subsequent significant changes to the quality program that would affect the conclusions reached in the completed Module.

Relevant Readiness Review Modules

24. The Readiness Review Program will involve all aspects of VEGP design and construction. The particular Modules which have relevance to the scope of this proceeding are:

Module 1:	Concrete, Rebar and Caldwelds.
Module 4:	Mechanical Equipment, Piping and Components.
Module 8:	Structural Steel.
Appendix A:	Organization.
Appendix C:	Procurement.
Appendix E:	Material Control.
Appendix H:	Nonconformances.
Appendix I:	Project QA Organization.

25. Of these Modules, Module 1 and Appendix I have been completed. The remaining relevant Modules are due to be finalized and submitted to the NRC throughout this summer. A review of the scope of the completed Modules will provide some indication of the detail of the review for all of these Modules.

The Concrete Module

26. The intent of Module 1 was to verify that Category 1 reinforced concrete structures complied with the Final Safety Analysis Report (FSAR) commitments and that compliance is verifiable with existing Project documentation.

27. The verification program was a multistage process beginning with a description of work processes for engineering, procurement, and construction that translate FSAR commitments to the implementing documents such as drawings, calculations, specifications, work procedures, and process procedures. Readiness Review Task Force groups then review the Project records to verify the existence of documents that demonstrate compliance with procedures and implementation of commitments. This review was supplemented by a walk-down on reinforced concrete structures.

28. The method of identifying samples of documentation to be reviewed was designed to provide coverage over the current life of activities under review. The samples selected for each activity under review were established to provide confidence that the FSAR commitments were properly implemented in documents under review.

Five types of reviews were conducted:

(a) Programmatic review of the design engineering process to verify that FSAR commitments were properly implemented into engineering documents;

(b) Technical review of design documents to verify that proper design requirements were considered and that those documents correctly implemented the licensing commitments;

(c) Programmatic review of construction to verify that construction complied with design and procedural requirements as described in engineering documents;

(d) A review of construction records to verify that the end products, used in the construction process, comply with FSAR commitments;

(e) A selection review of concrete structures for visual evidence that construction correctly interpreted design documents, that good workmanship practices were observed, and that the as-built condition of the Plant complies with FSAR commitments.

29. The review team members included specialists from Georgia Power Company, Southern Company Services, Bechtel Power Corporation, Teledyne Engineering Services and Stone and Webster Engineering Corporation. Stone and Webster conducted an independent design review and participated in the selective visual review of concrete structures.

30. In addition to the reviews described above, past audits and special investigations were described and result findings were evaluated for their individual and collective significance with regard to the quality of concrete structures. These investigations included GPC audit findings, NRC inspections, INPO evaluations, and self-initiated evaluations.

31. Verification reviews were structured to disclose discrepancies in the implementation of licensing commitments. When this occurred, discrepancies were identified on the discrepancy report which initiated corrective action by the Project organization. Discrepancies were given a finding number by the Readiness Review Task Force that was used as a control to assure that corrective action was completed. The findings were evaluated for individual and collective significance with respect to the acceptability of reinforced concrete structures.

32. Those evaluations resulted in the identification of five areas where the findings were considered to have potential significance. Three areas: inspector certification, missing post-placement reports, and jet impingement dynamic load factors were technical. The other two, Deviation Reports with wrong approval signatures and missing Quality Control documents, were programmatic.

33. In-depth evaluations by the Project of the areas of potential significance led to the conclusion that the structures were adequate and the evaluation and disposition of these concerns resulted in no changes being required in the existing concrete structures. Two of the five findings required corrective action which is in process.

34. These areas of potential significance and the resulting evaluations have been reviewed by the Vogtle Project Quality Assurance organization for safety significance and reportability in accordance with Project procedures and were determined not to be reportable.

35. Approximately 4,000 individual documents were reviewed to assess the effectiveness of the construction process in controlling work activities associated with the erection of concrete structures. Records were selected for review on the basis that they reflect procedural documentation requirements and qualify as permanent Plant records as defined in ANSI N45.2.9.

36. Six hundred and fifty (650) elements were identified for verification in the following ten (10) major areas of construction activities: material receipt, concrete placement, grout placement, deviation reports, core drilling, in process tests, caldweld inspections, receipt of miscellaneous items, calibrations, and inspector qualification.

37. Fifty (50) findings resulted from the construction verification process. Each finding was individually evaluated and dispositioned for corrective action. Findings dispositioned for corrective action were evaluated for possible effects on the completed and in process structures, and none was found to require rework or repair as a result of the Readiness Review findings.

38. In an effort to assess their collective significance, the fifty findings were grouped into six (6) categories arranged by type of problem encountered: missing sample, accepted records not meeting specification, inaccurate records, improperly processing deviation reports, unique problems, and missing documents.

39. The collective significance of the findings in each of these areas was evaluated. Based on these evaluations, the Readiness Review team concluded that an acceptable program for construction, inspection, and acceptance of reinforced concrete structures exists and that individually or collectively the findings did not

indicate trends requiring a need for major revisions to the program.

40. Two open items were identified (inspector training records and review of DRs for proper approval). Readiness Review concluded that these open items did not require hardware rework or repair. The Readiness Review team is satisfied with the overall acceptability of the program for construction, inspection, and acceptance of reinforced concrete structures.

41. Despite the relatively minor and isolated findings of the Readiness Review Task Force, the task force concluded that the concrete structures at VEGP "comply with FSAR commitments and that this compliance is verifiable with existing Project records."

42. The Readiness Review Board concluded:

> The Readiness Review Board has been apprised of the scope of the Reinforced Concrete Structures Module and has reviewed the program verification and independent design review process and results. Additionally, the Readiness Review Board has reviewed the corrective actions, both proposed and implemented, by the Vogtle Project. Based upon this review, and based upon the collective engineering experience and professional judgment of the Readiness Review Board members, the Board is of the opinion that the corrective action proposed is acceptable. The Readiness Review Board has also concluded that the concrete at VEGP is of sound quality and installed in a manner consistent with the commitments set forth in the FSAR and PSAR and acceptable engineering and construction practice.

43. A similar intensive review and verification of Project Quality Assurance Department is described in Appendix I.

44. The purpose of this verification was to ascertain whether, through representative sampling, Vogtle Quality Assurance Organization, under the direction of the Vogtle Quality Assurance Manager (VQAM) has implemented a comprehensive Quality Assurance program which encompasses design, procurement, construction, preoperational testing, and operating activities. The auditing and quality program oversight responsibilities of the VQAM are divided among a staff of GPC, SCS and Becntel personnel. These positions have a direct reporting unit to the VQAM. Therefore, these areas were selected for the majority of the reviews in this verification.

45. An evaluation of the results of this verification indicates that the Quality Assurance organization has functioned effectively to ensure proper implementation of licensing commitments.

46. Activities verified included the following:

QA independence and reporting;

QA organization program control;

QA audit scheduling on the basis of the status and safety importance of the activities being performed;

QA audit performance in accordance with pre-established, written procedures, plans, and checklists;

QA personnel training and indoctrination (including lead auditor certification);

Documentation and review of audit results by appropriate management, correction of deficiencies identified by the audits, and tracking and re-audit of deficient areas;

Management review and assessment of the scope, implementation, and effectiveness of the QA organization activities;

QA audit and lead auditor certification records.

47. The VEGP QA organization verification was approached in four phases to verify that: (1) QA commitments were implemented; (2) field audits were being performed; (3) site contractors have QA programs; and (4) delegated audits were being performed by SCS, Bechtel and Westinghouse pursuant to procedures.

48. To verify QA commitments were implemented (Phase I), the documents controlling the area of responsibility for each of the applicable commitments were reviewed to determine whether they comply with commitment requirements. The following procedures contained in the GPC QA Department Procedures Manual governing the activities under the direction of the Plant Vogtle QA manager were reviewed:

QA-01-01 Organization and Responsibility of QA Department.

QA-03-02 Training and Personnel Qualification.

QA-03-05 Qualification of Auditors.

QA-04-01 QA Department Procedures and QA Manuals.

QA-05-01 Field Audits.

QA-05-02 Corporate/Supplier Audits.

This review determined consistency between the wording of the GPC QA Department procedures and the commitment sources.

49. In Phase II, the GPC construction and operational audit activities were reviewed for compliance with and implementation of Vogtle Project commitments and pre-established procedures. This review was held at the Vogtle site QA offices.

50. This verification process included a review of annual audit system plans for 1977 through April 1985 for conformance to and coverage of 10 C.F.R. 50 Appendix B activities and scheduling on the basis of the status and safety importance of the activities being performed. The annual QA audit schedules/plans were compared with the audits completed. As of April 1985, 577 construction field audits have been completed covering 618 activities. It should be noted that these audits include non-safety-related work activities. Also, seven field audits of the initial test program have been completed.

51. To confirm that VEGP site contractors have QA programs, GPC site audits of contractors with their own QA programs were reviewed.

52. Audit files were reviewed to assure that all subject areas appeared to be adequately covered, that specific industry problem areas had received appropriate attention, and that all site contractors has been audited regularly.

53. Two contractors with their own QA program were selected to perform further reviews:

> Chicago Bridge and Iron (CB&I) - Containment liner and tank fabrication and installation, lock and hatch installation.
>
> Pullman Power Products (PPP) - Piping system fabrication and installation.

54. the CB&I QA manual showed evidence of BPC review and approval of each revision prior to implementation. The current PPP manual was approved by the GPC site QA manager and evidence was available for approval of previous issues.

55. Both contractors have a requirement for quarterly audits under their own programs. GPC periodically reviewed contractor compliance with his own audit program.

56. In Phase IV, the audits of the QA programs of Southern Company Services, Bechtel Power Corporation, and Westinghouse were reviewed and determined to be in compliance with programs and procedures.

57. Georgia Power Company has audited SCS QA Department activities 11 times from 1975 through 1984. Seven of the audits were joint audits with Alabama Power

Company and included coverage of other nuclear projects. In the audits where the Vogtle Project was not specifically audited, the same programmatic elements would apply. The design audits conducted by SCS QA of Bechtel and Bechtel QA audits of Westinghouse have had active participation by GPC QA personnel. Of the 33 audits conducted, GPC personnel have participated in 31 audits.

58. The audit activity, under the direction and approval of the Vogtle QA manager (VQAM), of Bechtel Power Corporation providing architect/engineering services and Westinghouse Corporation providing the nuclear steam supply system (NSSS) was determined to be adequate.

59. As a result of this intensive verification and review process, the Readiness Review Team force identified only two minor deviations from procedural requirements and only one instance in which the QA Department procedures needed to be enhanced.

60. Based upon the review process, the Readiness Review Team and the Readiness Review Board concluded that the Vogtle Project Quality Assurance organization is and

principally complies with the commitments set forth in the PSAR and FSAR, and that the QA organization will assure the plant readiness for safe operation.

Further Affiant sayeth not.

W. C. RAMSEY

Sworn to and subscribed
before me this 21st day
of June, 1985.

Notary Public