UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
SOUTH CAROLINA ELECTRIC & GAS COMPANY	)	Docket No. 50-395
	)	
Virgil C. Summer Nuclear Station, Unit 1)	)	

TESTIMONY OF NRC OFFICE OF INSPECTION AND ENFORCEMENT ON CONTENTION 9*

Q. 1. Would each of the panel members please introduce themselves by stating their names, employment affiliation, and professional qualifications.

A. (Mr. Brownlee). My name is Virgil L. Brownlee. I am employed by the U.S. Nuclear Regulatory Commission as a project inspector in the Region II, Office of Inspection and Enforcement. A copy of my professional qualifications is attached.

(Mr. Girard). My name is Edward H. Girard. I am employed by the U.S. Nuclear Regulatory Commission as a reactor inspector in the Region II, Office of Inspection and Enforcement. A copy of my professional qualifications is attached.

(Mr. Skolds). My name is John L. Skolds. I am employed by the U.S. Nuclear Regulatory Commission as a resident inspector in the Region II, Office of Inspection and Enforcement. A copy of my professional qualifications is attached.

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* Contention 9 states:

The quality control of the Summer plant is substantially below NRC standards as evidenced by consistently substandard workmanship, in several aspects, during the construction of the plant.

Q. 2. Could each of the panel members describe their responsibilities with respect to the Summer operating license proceeding.

A. (Mr. Brownlee). I am the assigned project inspector for the V.C. Summer plant. My duties as a project inspector for the past 12 years have included verification of implementation of quality assurance programs and inspection of design, procurement and inspection of nuclear power plants.

(Mr. Girard). I am a metallurgical engineer assigned as a reactor inspector to inspect welding and nondestructive examination activities. I am prepared to address the areas of welding, nondestructive examination activities, pre-service inspection and certain allegations of construction shortcomings investigated by the office in 1979.

(Mr. Skolds). I have been assigned as the senior resident inspector at the V.C. Summer plant since 1979. My duties have included review of the pre-operational test program, quality assurance, emergency planning, operations, maintenance and administrative procedures.

Q. 3. Has the panel selected a lead member for purposes of the Office of I&E testimony on contention 9?

A. (Mr. Brownlee) Yes. I am.

Q. 4. Could you briefly describe the nature of this testimony?

A. (Mr. Brownlee). The testimony which follows discusses the implementation of the quality assurance/quality control program at the Summer plant during construction and pre-operational testing, and addresses the several concerns raised in testimony elicited on behalf of the Intervenor from several construction workers on this matter at a deposition held on August 2, 1978. Discussion of the implementation of the QA/QC program is done primarily in terms of the inspection history compiled by the Office of Inspection and Enforcement (OIE) for the Summer plant during construction.

Q. 5. Could you or anyone on the panel briefly describe the scope of the Office's construction inspection program?

A. (Mr. Brownlee). Yes.

The objective of the NRC programmatic construction inspection program is to determine, through inspection utilizing sampling techniques, that the nuclear facility is being constructed in accordance with applicable regulations and commitments made by the applicant. A major segment of this program is to determine, in conjunction with NRR, that the QA/QC program as implemented is effective and provides assurance that the safety and welfare of the public are protected. This objective was achieved at V. C. Summer by examination of management controls, including quality assurance and quality control manuals, work procedures, records and documents and by the observation of work in progress. Work in progress was inspected for quality workmanship, conformance to control procedures and conformance to codes. Records were examined to verify that purchased materials and equipment met quality standards and that quality control inspections were performed throughout construction.

Q. 6. When did the NRC construction inspection begin.

A. (Mr. Brownlee). May, 1971.

Q. 7. Could someone on the panel summarize the level of construction inspection effort expended since the beginning.

A. (Mr. Brownlee). Yes.

From the initial inspection of V. C. Summer in May 1971 until March 31, 1981, the NRC has performed one hundred thirty (130) construction inspections in accordance with internal inspection procedures and instructions. To accomplish this program, experienced inspectors spent five hundred and one (501) man days at the construction site, contractor offices, and vendor manufacturing facilities. Also, a corporate level QA inspection of SCE&G (Columbia) and DCC (Greenville) has been performed to assure establishment and implementation of QA programs.

Q. 8. Could someone on the panel define the nature of enforcement actions utilized by the NRC to ensure compliance with regulatory requirements?

A. (Mr. Brownlee). Yes.

Enforcement actions are utilized by NRC to ensure compliance with regulatory requirements. These are legally binding requirements or prohibitions imposed on a licensee via the Code of Federal Regulations, permits or license. Failure to comply with these requirements (noncompliance) is the basis for enforcement action. To provide a measure of perspective, noncompliance items are categorized into three severity levels: violations, infractions, and deficiencies.1/

1/ These are items described in Attachment A to this testimony.

Q. 9. Could someone on the panel summarize the items of noncompliance identified at the Summer station throughout its construction?

A. (Mr. Brownlee). Yes.

Construction inspections and the related items of noncompliance are tabulated in the Summer Inspection Chronology (Attachment B) and summarized below. The classification of these items utilizing the following definitions of violations, infractions, deficiencies and deviations indicates that there were no violations, twenty-two (22) infractions, eleven (11) deficiencies, and two (2) deviations (a failure to meet an FSAR commitment, for example, Reg. Guides, codes, standards).

(i) Welding and Nondestructive Examination (NDE) - Eleven (11) items of noncompliance were identified in welding and NDE programs. Of these seven (7) items were identified in the welding program related to electrode control, procedure requirements and compliance, quality control surveillance, and weld data. Four (4) items identified in the NDE program were related to liquid penetrant, magnetic particle, and radiographic inspection of welds.

(ii) Supports and Mechanical Equipment - Seven (7) items of noncompliance were identified in the piping, supports and mechanical equipment programs. Of these, four (4) items were identified in the storage of safety-related equipment. Two (2) items were related to the installation of a snubber and hanger. One (1) item was related to the sealing and capping of piping and components.

(iii) Vendor Control - Three (3) items of noncompliance were identified as a result of inspection of the licensee's vendor control program. Two (2) of these items were identified in vendor material control and material certifications. One (1) of these items was identified in the vendor qualification of personnel and procedures for clad stripping.

(iv) QA Program - Seven (7) items of noncompliance were identified as a result of inspection of the licensee's QA program areas. These items were identified with regard to procedure noncompliance on tape, hacksaws, cadwelding, calibration, drawing control, and inspection records.

(v) Miscellaneous - Five (5) items of noncompliance and two (2) deviations were identified in the area of environmental control, concrete curing, housekeeping and Part 21. Two (2) of these items of noncompliance and one (1) deviation were identified in hydrologic monitoring and erosion control. One (1) item of noncompliance was identified involving curing of concrete for an auxiliary building slab, one (1) item of noncompliance was identified in reactor vessel housekeeping, one (1) item of noncompliance was identified regarding Part 21 procedures, and one (1) deviation was relative to fire pump installation.

Q. 10. Could someone on the panel provide a summary analysis of the significance of these items of noncompliance?

A. (Mr. Brownlee). Yes.

An analysis of the thirty-three (33) items of noncompliance and two (2) deviations identified during the construction of V. C. Summer indicates that twenty-two (22) were identified as infractions. That is, if they had remained uncorrected they could have resulted in the failure of a seismic Category 1 system or structure in such a manner that the safety function or integrity would be impaired. Except in the case of one area, these noncompliances were random in nature and were not indicative of SCE&G's management nor inadequacies in the QA program. Two noncompliances were written regarding the control of duct tape but SCE&G took additional actions to avoid recurrence of the problem.

The safety significance of these items was individually analyzed by South Carolina Electric and Gas (SCE&G) and, in turn, by the NRC. In each case, SCE&G identified the corrective actions and measures taken to preclude recurrence. The corrective actions were confirmed through NRC inspections. Of the items identified, the welding problems with the primary loop welding are identified as the most significant in relation to the safety of the plant. These items have been corrected according to approved engineering procedures and are considered to be acceptable for the intended service.

Q. 11. Could someone on the panel summarize the office's investigation of the worker allegations raised at the August 2, 1978 deposition before the Licensing Board?

A. (Mr. Brownlee) Yes.

'Allegations to the Licensing Board on construction activities at Virgil C. Summer Nuclear Plant were identified in a prehearing conference and witness depositions on August 2, 1978. The Office of Inspection and Enforcement (OIE) Region II received the transcripts and identified specific areas of concern which may have safety significance. The areas of concern, which were identified and investigated, were as follows: (witnesses and transcript pages are noted),

a. Prehearing Conference (D. Delorch)

Splicing of electrical cable was being performed within the containment. (page 262)

b. Witness No. 1 Deposition (C. G. Whisennant)

A problem existed with repeated repairs to a weld (FW-6 or ISO SW-02). (Pages 10, 34, and 83)

c. Witness No. 2 Deposition (S. O. Fort)

(1) Heavy wall carbon steel piping was being welded without proper preheat. (Pages 4-12)

(2) A problem with bad E-7018 electrodes existed in that electrodes darker in color did not weld properly. (Page 12)

(3) Welders could move qualification test assembly during welding contrary to ASME Code requirements of a fixed position. (Page 42)

(d) Witness No. 3 Deposition (M. Lowe)

No specific areas of concern having safety significance were identified for investigation. General concerns were expressed on concrete pours during rain, wooden forms, and rebar. (Pages 21, 22, 23)

(e) Witness No. 4 Deposition (R. Hinson)

(1) Circulating water pump capacity being impaired due to a three foot space behind the intake and the wall itself. (Pages 8-10, 37)

(2) Service water pumps were very much distorted and out of level after being in place for two or three months. (Pages 12-13, 19-20)

(3) Some safety-related welds were not x-rayed. (Pages 13, 15, 27-28, 34-35)

(4) Not using stainless steel shims on safety-related equipment after being instructed to do so. (Pages 15-17, 21, 23-24, 47)

(5) Putting concrete grout in the cracks to maintain the structural integrity of the pump motor building. (Page 36)

(6) Workers not trained in methods to contact NRC on quality problems. (Pages 42, 43)

f. Witness No. 5 Deposition (E. Laitala)

No specific areas of concern having safety significance were identified for investigation.

Q. 12. Could you describe the nature and results of these investigations?

A. Yes.

During the period of August 1978 through April 1979, nine inspectors investigated the various areas of concern identified to the Hearing Board. Inspection results were documented in IE Report Nos. 50-395/78-16, 50-395/78-17, 50-395/78-25, 50-395/78-26, 50-395/79-01, 50-395/79-05, 50-395/79-06 and 50-395/79-12. Each of the areas of concern were investigated and findings were documented in the inspection reports or Region II memoranda. The detailed results of the inspections are summarized in Attachment C hereto.

Q. 13. Did the investigation reveal any items of noncompliance?

A. No.

Q. 14. At the prehearing conference held on April 7-8, 1981, Intervenor Bursey mentioned a former worker at the plant site had made certain allegations of construction shortcomings to the Region II Office (Tr. 432) which the Staff was able to ascertain formed the subject of an investigation conducted by the Region in 1979 (Tr. 625-26). Could someone on the panel please describe the background of this matter and the nature of the allegations involved?

A. (Mr. Girard). Yes.

An individual contacted the NRC Region II office on August 31, 1979, expressing his concern with regard to welding and inspection

practices and the use of drugs and liquor at South Carolina Electric and Gas Company's (SCE&G) Virgil C. Summer Nuclear Station. Representatives of Region II subsequently met with the individual to discuss his concerns on September 10, 1979. Telephone conversations were held with the individual to further discuss his concerns on October 30 and 31 and November 7, 9, 20, and 22, 1979; and on January 23 and July 14, 1980. As a result, an investigation was initiated into the following allegations:

a. QC inspectors were not adequately trained to inspect fillet weld sizes on piping socket welds. As a consequence many undersize socket welds were accepted in safety-related piping.

b. Carbon steel rotary wire brushes were often used on stainless steel piping, as evidenced by the appearance of rust on the piping. This violates licensee procedural requirements which specify the use of stainless steel wire brushes on stainless steel piping.

c. QC inspectors in the Fab Shop sometimes signed off inspections of welds before the welds were performed. (This took place in the Fab Shop area).

Three inspectors were named, one of whom was identified as the

main offender. Specific examples of items on which inspections were bypassed could not be identified.

d. QC inspectors were not adequately trained to perform high-low checks on butt weld fit-ups. It was common practice when butt weld fit-up problems with high-low checks were encountered to relieve high areas by the grinding away (where accessible in 12-inch diameter and larger pipe) the interior of the pipe surface so that an "apparent" acceptable high-low check would result. Minimum wall thickness limits were frequently not met. Exterior misalignment continued to be visible on such pipe. Potential examples were identified by the alleger as being in the Service Water (SW) intake pipe and in Component Cooling (CC) system pipe at the 412 elevation in the Intermediate (IM) Building.

e. High-low code requirements on the butt welds were violated on some difficult to reach welds with the knowledge of both the QC inspector and the welding supervisor (specific examples could not be identified).

f. Non-code piping was upgraded to (ASME Section III) Class 1 with no evidence of proper testing and documentation. The alleger recalls that the Class 1 and non-code pipe differed visibly in surface finish. The Class 1 pipe was "shiny", while the non-code pipe had a "mill skin" on it. The alleger believes the heat number recorded on the documentation was a

carryover from previously used Class 1 pipe rather than the actual heat number on the pipe being substituted. The pipe may still carry its true heat number. He further stated that the pipe was 2" Sch 160. He thought it was used in the RC system about June or July 1978. About 18 or 20 pieces were used.

g. An undersize fitting was installed in safety-related piping. The fitting was identified as a 6,000 lb. fitting, but based on its size relative to the piping in which it was being installed, it appeared to the alleger to be a 3,000 lb. fitting.

The alleger stated that the fitting was a 2x1 reducer insert and that be believed it was installed in the RC, CS or SI system.

h. Sometimes pipe was not properly withdrawn from sockets prior to making socket welds. The frequency of lack of proper withdrawal in socket welds from the Fab Shop should be 25% or less. Pipe not being cut sufficiently square contributed to this problem. The alleger could not identify specific examples.

i. QC inspectors and others use alcohol and drugs on the job.

j. Service water line piping was damaged (arc-burns) while cutting lugs on nearby items. The damaged area was ground, welded, and ground again to hide the damage. The QC inspectors did not know of the work and did not perform the required inspections. This piping is inaccessible now because it is buried.

k. The alleger was performing a qualification test by welding a "Carpenter 20" stainless steel test sample. The test sample was submitted and accepted by radiographic examination even though the alleger noted cracking in the test weld. This was not for safety-related welding certification. The alleger speculated that this might also have occurred in qualification testing for safety-related welding. He did not know of any such cases however.

l. Carbon steel plates in the incore pit liner were improperly installed with backing strip clearance in excess of the required 1/16 inch. The backing strips were not close enough to the veritical welds for the first sections put in at the bottom. No backing strips were used on the horizontal welds.

m. Welds on the carbon steel plates in the liner of the incore pit in some instances entrapped substantial amounts of slag yet were subsequently ultrasonically tested as acceptable. The alleger is concerned that the nondestructive test

examiners were either improperly trained or falsified their findings.

n. Welders not properly qualified or certified performed welding on the incore pit liner during late 1976 or early 1977. One of these welders also welded stainless steel at unspecified locations in the IM building while uncertified. The individuals were not identified as performing these welds in the records.

o. Welders sometimes violated welding requirements (on socket welds) to expedite their work. Examples of violations included single pass welds and undersized fillets on socket welds performed in the Fab Shop. The welding supervisor condoned this practice as a means of expediting work. On occasion workers would not be permitted to leave the job until assigned work was complete.

In several instances where the alleger provided specific information related to inadequate workmanship, he indicated that this knowledge was based on the fact that he had personally performed the inadequate work

Q. 15. Could you describe the nature of the investigation conducted into these allegations?

A. Yes.

The investigation at the Summer site commenced with the September 10, 1979 meeting held with the alleger to discuss his concerns. During the period of October 29 thru December 19, 1979, the investigators interviewed 33 individuals currently or formerly employed at the site. In addition to conducting interviews, the investigators reviewed procedures and records and examined installed piping.

The primary phase of the investigation was concluded on December 19, 1979 with a meeting of NRC and the Summer management during which the preliminary results of the investigation were outlined. The results of this phase of the investigation were documented in IE Report 50-395/79-35. The status of many of the allegations remained unresolved. Sufficient justification for concern was established, however, to identify a number of items requiring further examination and review, the investigation was continued within NRC Region II's normal inspection program. The licensee cooperated in providing data and engineering evaluations for examination and review by the NRC for the unresolved items. Inspection results for the remaining items were documented in IE Report Nos. 50-395/80-03, 50-395/80-07, 50-305/80-12, 50-395/80-17, 50-395/80-20, 50-395/80-30, 50-395/80-39, and 50-395/81-06.

Q. 16. Could you state any findings and conclusions reached as a result of this investigation?

A. Yes.

The findings were regar to the allegations were as follows:

Item	Finding
a.	Allegation confirmed by direct observation. Extensive reinspection and repair was required for correction.
b.	Alleged actions were determined not to have safety significance.
c.	Allegation confirmed in interviews with craft. Extensive reinspection and evaluation were provided to assure the adequacy of previously accepted work. Allegation was confirmed to have no safety significance.
d.	Allegation confirmed by examinations. Engineering evaluation of sampling data indicated no repairs would be required.
e.	Not specifically confirmed but related to (d.) The engineering evaluation applied to (d.) was considered applicable to this item.

f. One of 16 individuals interviewed confirmed this allegation. It could not be confirmed by direct observation. If correct, the allegation is not considered to be a significant safety concern.

g. Allegation confirmed by nondestructive examination and documentation review. Measures were established to assure identification and evaluation of this and similar items to determine the need for replacement.

h. Allegation confirmed by interviews with craft. Engineering evaluation of radiographic data from a sample of the subject items, design data and historical experience with such welds indicated the condition present would provide no significant safety concern.

i. Allegation confirmed by licensee management and craft. Not considered widespread. No evidence was found to indicate that any safety-related work had been significantly affected.

j. Could not be confirmed or denied. An engineering evaluation, taking into account design data on the subject piping, indicates that the alleged actions would not provide significant safety concern.

k. Based on extensive NRC inspection in this area, the alleged action was not considered to provide a significant safety concern.

l. Based on an engineering evaluation of the design, the alleged actions are not considered to have safety significance.

m. Same as (l).

n. Same as (l). (This allegation was confirmed in part, by the licensee from their data).

o. Confirmed in interviews with craft. Engineering evaluation of consequences of alleged actions, including data from examination of sample welds and histroical data and information from interviews with craft, indicate the alleged actions would not provide a significant safety concern.

Two items of noncompliance were identified. These specifically addressed items (a) and (d). No deviations were identified. The cause and corrective actions taken by the licensee relative to the items of noncompliance were considered applicable to the other confirmed allegations with safety significance. NRC Region II is satisfied that the licensee has taken adequate corrective action relative to the safety significant confirmed allegations described above.

Q. 17. In light of the above testimony, could someone on the panel summarize the offices position on the Applicant's overall quality assurance and quality control performance during construction?

A. (Mr. Brownlee). Yes.

Based upon the inspections conducted to date in accordance with the NRC construction inspection program, which included selective examination of procedures and representative records, interviews with craftsmen and site personnel, and indepth observations by the inspectors, there is reasonable assurance that the equipment and materials were procured pursuant to design specifications. V. C. Summer has been constructed and the equipment installed in accordance with FSAR commitments and the plant can be operated safely without danger to the health and safety of the public. The licensee has demonstrated its commitment to QA at the V. C. Summer Nuclear Plant by expanding its involvement in the construction program. This included taking corrective actions on identified deficiencies and by staffing a group of construction engineers and QC inspectors at the construction site for the vendor inspection program.

ATTACHMENT A

DEFINITION OF ITEMS OF NONCOMPLIANCE

a. Violation

A violation is an item of noncompliance of the type listed below, or an item of noncompliance (1) which has caused, contributed to or aggravated an incident of the type listed below, or (2) which has a substantial potential for causing, contributing to, or aggravating such an incident or occurrence; e.g., a situation where the preventive capability or controls were removed, or otherwise not employed, thus creating a substantial potential for an incident or occurrence with actual or potential consequences of the type listed below.

(1) Exposure of an individual in excess of the radiation dose specified in 10 CFR 20.403(b) or exposure of a group of individuals resulting in each individual receiving a radiation dose which exceeds the limits of 10 CFR 20.101 and a total dose which exceeds 25 man-rems for the group.

(2) Radiation levels in unrestricted areas which greatly exceed the regulatory limits.

(3) Release of radioactive materials in amounts which exceed the limits for concentrations of radioactive materials in effluents specified in the regulations.

(4) Fabrication, construction, testing or operation of a Seismic Category I system or structure in such a manner that the safety function or integrity is lost.

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(2) Radiation levels in unrestricted areas which greatly exceed the regulatory limits.

(3) Release of radioactive materials in amounts which exceed the limits for concentrations of radioactive materials in effluents specified in the regulations.

(4) Fabrication, construction, testing on operation of a Seismic Category I system or structure in such a manner that the safety function or integrity is lost.

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1 NRC Inspection and Enforcement Manual, Chapter 0800

(5) The failure to properly function or loss of integrity of a Seismic Category I system, or structure; or other component, system, or structure with a safety or consequences-limiting function.

(6) Exceeding a safety limit as defined in technical specifications associated with facility licensee.

(7) Diversion or theft of plutonium, uranium 233, or uranium enriched isotope U-235.

(8) All security barriers or controls removed or inoperative.

(9) A breakdown in management or procedural controls as evidenced by significant items of noncompliance in several areas of the QA crieria and license requirements.

b. Infractions

An infraction is an item of noncompliance of the type listed below, or an item of noncompliance (1) which resulted in a reduction of preventive capability below requirements but redundant controls precluded an item of noncompliance of the violation category or (2) which caused, contributed to or aggravated such an incident or occurrence, e.g., the preventive cap-

ability or controls were removed or otherwise not employed and there was substantial potential for an incident or occurrence with actual or potential consequences of the type listed below:

(1) Exposure of an individual or groups of individuals to radiation in excess of permissible limits but less than the values in 10 CFR 20.403.

(2) Release of radioactive materials in concentrations or rates which exceed permissible limits.

(3) Failure to function or loss of integrity of a Seismic Category I system or structure, or other component, system, or structure with a safety or consequences limiting function during testing, or failure to meet surveillance frequencies.

(4) Fabrication, construction, testing or operation of a Seismic Category I system or structure in such a manner that the safety function or integrity is impaired.

(5) Exceeding limiting condition for operation.

(6) Inadequate management or procedural controls.

(7) Security degraded or impaired by removal or impairment of a required barrier or control but a redundant system operative.

(8) Exceeding limits or limiting conditions for operation in licenses, technical specifications; guides, codes, or standards which are imposed for the purposes of minimizing adverse environmental impact.

c. Deficiency

A deficiency is an item of noncompliance in which the threat to the health, safety, or interest of the public or in the common defense and security is remote and no undue expenditure of time or resources to implement corrective action is required. Deficiencies include such items as noncompliance with records, posting, or labeling requirements which are not serious enough to amount to infractions.

50-395/73-1	1/24-25/73	Swan McFarland	QA Audit	None
50-395/73-2	5/10-11/73	McFarland	Licensee Audit of A/E (Gilbert)	None
50-395/73-3	5/16-17/73	McFarland	Licensee Audit of CBI Nuclear	None
50-395/73-4	7/31 - 8/2/73	McFarland	QA Audit	None
50-395/73-5	9/4-6/73	McFarland Swan	Construction/QA	None
50-395/73-6	9/24-26/73	McFarland	Licensee Audit of NSSS (Westinghouse)	None
50-395/73-7	11/29-30/73	McFarland	Construction/QA	None
50-395/74-1	1/8-9/74	Oller	Vendor/Chicago Bridge and Iron Works	None
50-395/74-2	1/16-17/74	McFarland	Licensee Audit of A/E (Gilbert)	None

50-395/74-3	2/5-7/74	Oller	Vendor/Westing-house	None
50-395/74-4	2/26-27/74	Oller	Vendor/CBI Nuclear	(74-4-A1 (II)) Clad Strip-Back Procedure Qualification
50-395/74-5	2/26-27/74	Swan	Construction/QA/QC	None
50-395/74-6	4/2-4/74	McFarland	Licensee Audit of NSSS (Westing-house)	None
50-395/74-7	4/5/74	Oller	Vendor/Westing-house	None
50-395/74-8	9/20-13/74	McFarland	Construction/QA/QC	None
50-395/74-9	10/16-18/74	McFarland Foster	Construction/QA	None

50-395/74-10	10/22-25/74	Swan Cunningham	Environmental Program, Concrete and Foundations	None
50-395/75-1	1/29-31/75	McFarland Wright	Construction QA/ QC	(75-1-A1 (III)) Curing Deficiency
50-395/75-2	5/21-22/75	Swan	Construction QA/ QC	None
50-395/75-3	7/15-17/75	McFarland	Construction QA	None
50-395/75-4	8/26-28/75	McFarland Porter Swan	Construction QA/ QC	(75-4-A1 (II)) Welding Electrode Control
50-395/75-5	10/9-10/75	Cunningham	Environmental Protection	None

50-395/75-6	12/2-4/75	McFarland Swan	Construction QA/ QC	(75-6-A1 (III)) of Inspections during Storage
50-395/76-1	1/29-30/76	McFarland Wright	Construction QA/QC, Concrete, Foundations, Batch Plant	None
50-395/76-2	2/12-13/76	McFarland Wright Beratan	Construction QA/ QC, Concrete	None
50-395/76-3	3/30 - 4/2/76	McFarland Wright	Construction QA/ QC, Concrete	(76-3-A1 (III)) Cadwelding Failure to Follow Procedure
50-395/76-4	5/4-7/76	McFarland Porter	Construction QA/ QC, Welding	None

50-395/76-5	6/22-25/76	McFarland Wright Blake Vallish	Construction QA/ QC, Welding, Dams, Containment, RV and Components	None
50-395/76-6	7/29-30/76	McFarland Porter	Construction QA/ QC, Welding	None
50-395/76-7	8/31 - 9/3/76	McFarland Porter Wright	Construction QA/ QC, Welding, Dams	(76-7-A1 (II)) Materials Certifications
50-395/76-8	11/30 - 12/3/76	McFarland Blake	Construction QA/ QC, Welding	None
50-395/76-9	12/8-10, 13/76	Cunningham	Environmental Protection	(76-9-A1 (III)) Hydrologic Monitoring
50-395/76-10	12/14-17/76	Swan	Construction QA/ QC, Lakes, Dams, Canals, and Containment	None

50-395/77-1	2/28 - 3/2/77	Blake	Construction QA/ QC, Welding	(77-1-A1 (II)) Pipe Welding QC Surveillance procedure
50-395/77-2	4/25-27/77	Crowley	Construction QA/QC, Welding	None
50-395/77-3	6/22-24/77	Cochran McFarland	Construction QA/ QC, Principal Inspector Turnover	None
50-395/77-4	7/5-7/77	Swan	Containment Tendons, Concrete	None
50-395/77-5	8/9-12/77	Porter Cochran McFarland Crowley	Construction QA/QC, Welding SR Tanks	(77-5NI) Inadequate Control/ Inspection of Purchase Material

				(77-5N1) Inadequate Inspection of Complete Components
50-395/77-6	9/19-20/77	Hunt	Construction QA/QC, Electrical	None
50-395/77-7	10/[illegible]-6/77	Porter	Construction QA/QC, Welding	None
50-396/77-8	10/11-13/77	Cochran Swan Vallish	Construction QA/QC, Containment Ring Girder, Service Water Intake	None
50-395/77-9	10/27/77	Cochran	Vendor/D.G. O'Brien Inc.	None
50-395/77-10	11/14-17/77	Cochran	Construction QA/QC	None

50-395/77-11	11/29 - 12/2/77	Cunningham	Environmental Protection	(77-11) Hydrologic-gic Monitoring (77-11) Deviation Land Management
50-395/77-12	12/19-22/77	Crowley	Construction QA/QC, Welding	None
50-395/78-1	1/4-6/78	Cochran	Construction QA/QC, 10 CFR Part 21	None
50-395/78-2	2/27 - 3/1/78	Cochran Foster Murphy	Construction QA/QC, Welding	(78-02-1) Use of Hacksaw on Stainless Steel
50-395/78-3	3/20-21/78	Swan Gibbons	Construction QA/QC, Fire Protection, Concrete	None

50-395/78-4	4/11-13/78	Cochran Blake Economos Annast	Construction QA/QC, Welding	(78-04-01) Rejectable Radio-graphs
50-395 78-5	5/15-18/78	Cochran Burdette Ang Compton	Construction QA/QC, RV Inter-nals	(78-05-02) Storage of RV Internals
50-395/78-6	5/17-18/78	Jape Lewis	Operations Meeting	Inspection
50-395/78-7	5/23-24/78	Cunningham	Environmental Protection	None
50-395/78-8	5/22-25/78	Blake	Construction QA/QC, Welding	(78-08-01) Storage of Safety-Related Equipment
50-395 78-9	6/12-15/78	Ang Bryant	Construction Safety-Related Components, Allegations on Weld Cracking	None

50-395/78-10	6/21-23/78	Cochran Porter	Inspector Turnover	(78-10-02) Welding
50-395/78-11	6/27-29/78	VanDoorn	Piping, Welding	None
50-395/78-12	7/11-13/78	Compton Economos	Containment, Pipe Supports and Restraints, Piping	(78-12-01) Hangar Welding (78-12-02) Code Requirements (78-12-03) Storage
50-395/78-13	7/25-27/78	Blake	Piping, Penetration Welding	None
50-395/78-14	7/31-8/2/78	Porter Thomas	Piping,Bulletins, Reporting, Circulars	None
50-395/78-15	8/8-11/78	VanDoorn Conlon Girard	Piping	(78-15-02) Tape
50-395/78-16	8/21-24/78	Crowley	Containment, Piping	(78-16-01) Failure to follow inspection and welding procedures

50-395/78-17	8/29-31/78	Gibbons	Construction QA/QC, Electrical	None
50-395/78-18	9/5-8/78	Modenos Ang	Construction QA/QC, Mechanical	(78-15-01) housekeeping
50-395/78-19			Operation Inspection	
50-395/78-20	9/21-22/78	Burdette Cochran	Construction, Inspector Turnover	None
50-395/78-21			Operations Inspection	
50-395/78-22	10/3-5/78	Vallish	Construction QA/QC, Safety-Related Structures, Service Water Intake Components	None
50-395/78-23	10/10-12/78	Gibbons Hardwick	Construction QA/QC, Electrical	None

50-395/78-24	10/17-19/78	Peery	Radiological Environmental Monitoring	None
50-395/78-25	10/16-19/78	Burdette Girard	Construction QA/QC, Welding	None
50-395/78-26	10/31 - 11/2/78	Vallish Lenahan Crowley Economos	Construction QA/QC, Mechanical Components, Welder Training and Qualification Program	None
50-395/78-27	10/27-30/78	Burdette Brownlee Rausch Ruhlman	Construction QA Program	(78-27-05) Control of Drawings
50-395/78-28	12/4-7/78	Compton Modenos	Construction QA/QC, Containment Prestressing Work	None
50-395/78-29			Operations Inspection	

50-395/78-30	12/11-14/78	Walters Girard Hardwick	Construction QA/ QC, Electrical, Welding	(78-30-01) Calibration Review
50-395/78-31	12/13-15/78	Burdette	Licensee Audit of A/E (Gilbert)	None
50-395/79-1	1/8-11/79	Compton Modenos	Construction QA/QC, Components Service Water and Circulating Water Pumps	(79-01-01) Pipe Support Installation
50-395/79-2	1/22-26/79	Hardwick	Construction QA/ QC, Electrical	None
50-395/79-3	1/22-26/79	Girard	Construction QA/ QC, Welding	(79-03-01) Use of Duct Tape
50-395/79-4	Emergency Planning Initial Management Meeting			
50-395/79-5	2/5-8/79	Burdette Bradley	Construction QA/QC	None

50-395/79-6	2/12-15/79	Lenahan	Construction QA/QC, Containment Prestressing Work	None
50-395/79-7			Operations Inspection	
50-395/79-8	3/12-15/79	Burdette	Construction QA/QC	None
50-395/79-9	3/20-23/79	Gibbons	Construction QA/QC, Electrical	None
50-395/79-10	3/20-23/79	Blake	Construction QA/QC, Welding	(79-10-01) No Requirements on Weld Profile
50-395/79-11	4/3-6/79	Swan	Construction QA/QC, Containment Prestressing Work	None
50-395/79-12	4/16-19/79	Burdette	Construction QA/QC	None

50-395/79-13	4/9-12/79	Ruff	Construction QA/QC, Electrical	None
50-395/79-14	4/30 - 5/1/79	Swan	Construction QA/QC, Containment Prestressing Work	None
50-395/79-15	5/8-11/79	Walters	Construction QA/QC, Electrical	None
50-395/79-16	5/21-24/79	Crowley VanDoorn	Construction QA/QC, Radiography	None
50-395/79-17	5/22-25/79	Miller	Fire Protection/ Prevention	(79-17-01) Deviation - Substandard Fire Pump Installation
50-395/79-18	5/22-25/79	Hardwick	Construction QA/QC, Electrical	(79-18-02) Cable Tray Support Installation
50-395/79-19	5/8-11/79	Girard	Construction QA/QC, Welding	None

50-395/79-20	6/25-27/79	Burdette	Construction QA/ QC	None
50-395/79-22	9/26-28/79	Walters	Construction Electrical	None
50-395/79-23	7/11-13/79	Ang	Construction General Expansion Anchors	None
50-395/79-24	7/31 - 8/3/79	Burdette	Construction Q/A	None
50-395/79-26	8/28-31/79	Girard	Construction Welding	None
50-395/79-27	9/12-14/79	Girard	Construction Preservice Inspection	None
50-395/79-30	10/1-4/79	Burdette	Construction Q/A	79-30-09 10 CFR Part 21 Procedures Not adequate

50-395/79-32	10/30 - 11/2/79	Ruff	Construction	None
50-395/79-34	10/30 - 11/1/79	Ang	Construction Mechanical (Seismic Analysis)	79-34-01 Inadequate Inspection of Pipe Hanger
50-395/79-36	11/5-8/79	Burdette	Construction QA	None
50-395/79-38	11/19-29/79	Lenahan	Concrete and Cadwelding	None
50-395/79-39	11/27-29/79	Walters	Electrical	None
50-395/79-40	11/10-13/79	Burdette	QA	None
50-395/80-02	1/8-11/80	Gibbons Hardwick Merriweather	Electrical Instrumentation	None
50-395/80-03	1/22-25/80	Girard	Reactor Coolant and Pressure Boundary Piping	80-03-01 Inadequate Ultrasonic Testing

50-395/80-04	1/24-25/80	Ang	Mechanical and Seismic	None
50-395/80-05	1/25-28/80	Burdette	QA	None
50-395/80-07	3/3-6/80	Girard	Piping and Welding	None
50-395/80-08	3/3-6/80	McFarland	Mechanical, Reactor Vessel Internals	None
50-395/80-10	4/14-17/80	Burdette	QA	None
50-395/80-12	4/22-25/80	Girard	Radiography	None
50-395/80-14	5/13-16/80	Gibbons Merriweather	Electrical and Instrumentation	None
50-395/80-16	6/10-12/80	Burdett	QA	None
50-395/80-27	6/24-27/80	Girard	Preservice Inspection	None

50-395/80-19	7/16-18/80	Ang	Anchor bolts and seismic supports	None
50-395/80-20	8/5-8/80	Kleinsorge	Piping and Welding	80-20-01 Fitup Procedure Not Followed
50-395/80-21	8/12-15-80	Walters	Fire Barriers, Electrical/ Instrumentation	None
50-395/80-28	9/23-25/80	Rausch	QA	None
50-395/80-30	10/20-24/80	Girard	Preservice Inspection	None
50-395/80-37	12/2-5/80	McFarland	QA	None
50-395/80-38	12/12/80	Crowley	IEB-13	None
50-395/80-39	12/16-19/80	Girard	Preservice Inspection	None

50-395/81-02	2/3-5/81	Crowley	Containment Penetrations	(81-02-01) Installation Inspection Records
50-395/81-04	2/18-20/81	Gibbons	Licensee Identified items, IE Bulletins and Circulars	None
50-395/81-06	3/24-27/81	Girard	Licensee Identified items, IE Bulletins, Preservice Inspection	None
50-395/79-35*	9/10 - 12/19/79	Marsh	Construction Investigation	79-25-01

Refer to questions/answers 14 and 15 for a summary description of the investigation and findings. The status of a number of items identified in this investigation was unresolved and they were addressed in subsequent inspections conducted during 1980 and 81 as denoted in question/answer 15.

E-335 79-42*	11/19/79 8/7/80	Marsh	Construction Investigation	None

*These investigations were initiated to ascertain the degree of truthfulness and substance of the information provided by those alleging that safety-related activities are substandard. (See questions/answers 11, 12 and 13).

ATTACHMENT C

DEPOSITION ALLEGATIONS OF IMPROPER CONSTRUCTION

Prehearing Conference

Area of Concern

Splicing of electrical cable was being performed within the containment. (Page 262)

Inspection Findings for Concern - IE Report 50-395/78-17

At the request of the Atomic Safety and Licensing Board the inspector examined the containment building for reported splices in electrical cables to containment penetrations. Splices were found at the specified locations; however, each spliced cable was identified to be temporary construction wiring. There are no safety-related electrical penetrations installed at this time. The inspector examined Specification SP-559-044461-000 for electrical penetrations. The specification requires use of splicing sleeves on some miscellaneous power circuits. The bill of material has been revised to cancel this usage. The Electrical Construction Guidelines for Cable Installation Number 04-4461-5-200-912, dated 7/1/77 has detailed splicing instructions. The cable instal-

lation procedures FQCP 7.1.1 states "No splices permitted unless specifically called for on drawings or approval of engineer" by Field Change Notice.

The report of splicing has been verified but there are no safety-related cables involved. The licensee does have provision for splicing but only under the control of design engineering.

Within the areas examined there were no items of noncompliance identified.

Witness No. 1

Area of Concern

Mr. Whisennant alluded to a problem with repeated repairs to FW-6 on ISO SW-02. (Pages 10, 34 and 83)

Inspection Findings for Concern - IE Memo to File from B. R. Crowley dated October 19, 1978

The inspector reviewed weld records for this weld. The records indicated two repairs attempts and then the joint was cut. After cutting, one repair was required.

The inspector reviewed the "controlled weld joint records" for all welding including repairs. In addition the welding procedure and welder qualification records were reviewed. Although several repairs were required, the records

appear to be in order and there is nothing to indicate that acceptability of the finished weld should be questioned.

Witness No. 2

Area of Concern #1

Mr. Fort, who was employed as a welder, indicated that heavy wall carbon steel piping in his work area was being welded without proper preheat in that attempts were being made to maintain preheat with "rosebud" torches. Procedures require a 200 degree F minimum preheat and require that the preheat not be interrupted until the weld is 30% complete. (Pages 4-12)

Inspection Findings for Concern #1 - IE Memo to File from B. R. Crowley dated October 19, 1978

The licensee's contractor (DCC) has determined that Mr. Fort did not weld any safety-related pipe. The licensee is performing further investigation to determine what welds were made by Mr. Fort and in what areas of the plant.

See paragraph 5 of RII inspection report 50-395/78-16 for additional findings relative to this problem.

Inspection Findings for Concern #1 - IE Report 50-395/78-16

Paragraph 5

Safety-Related Piping (Welding) - Observation of Work and Work Activities

The inspector observed the safety-related pipe welding activities described below to determine whether the requirements of the applicable code, specifications and procedures were being met. The applicable code for the welding is the ASME Boiler and Pressure Vessel Code, SEction III, Subsection NC and ND, 1971 Edition with addenda through the summer of 1973 as required by DCC specification SP-220-044461-000, "Erection of Nuclear Piping, Virgil C. Summer Nuclear Station, Unit 1". The following in-process welds were observed at various stages of fabrication:

FW-8:	ISO SP-06
FW-3:	ISO MS-06
FW-1:	ISO MS-09
FW-13:	ISO FW-11
FW-10:	ISO MS-08
FW-13R1	ISO MS-09
FW-17:	ISO MS-08
FW-17:	ISO WG-13
FW-14:	ISO FW-11
FW-1:	ISO MS-09
FW-11:	ISO WD-08

Weld identification, joint preparation and alignment, evidence of QC verification of fitup, use of specified weld procedures, weld appearance, welder qualification, use of specified preheat and interpass temperatures, use of specified weld material, and practice of grinding starts and stops, as applicable to each weld, were examined.

FW 10, ISO MS-08 and FW 13R1, ISO MS-09 were examined to determine if surfaces were suitable for the required NDE and if the proper NDE was being performed at the proper state of fabrication.

During observation of the welding activities, the inspector paid special attention to preheat and interpass temperature controls and practices. Most of the welds observed were heavy wall carbon steel which required a minimum preheat of 200 degrees F. The preheat was not to be interrupted until the weld was 30% complete. In all cases observed these requirements were being met. The preheat was being maintained with electrical resistance heaters and blankets. The only time a "rosebud" torch is used for preheating is for fitup and tack welding. Interviews with welders indicate that this practice of preheating is the only practice in use on safety-related piping.

Welding wire room Nos. 2 and 4 were examined for storage conditions, issue records and handling of returned material. Welding areas were examined for the presence of uncontrolled welding materials.

In the areas inspected, no items of noncompliance or deviations were identified.

Area of Concern #2

Mr. Fort talked about a problem with bad E-7018 electrodes. He indicated that the bad electrodes were darker in color (which he attributed to moisture in the coating and did not weld good.) (Page 12)

Inspection Findings for Concern #2 - IE Memo to File from B. R. Crowley dated October 19, 1978

Welding material control practices for E-7018 electrodes were reviewed by the inspector. Welding wire room Nos. 2 and 4 were examined for storage conditions, issue records, and handling of returned materials.

The inspector found that two brand names of E-7018 electrodes are in use at the site - Airco and McKay. Visual inspection of the two electrodes reveal that the McKay electrodes have a much darker coating than the Airco. Discussions with licensee personnel revealed that the welders prefer the Airco electrode and for that reason very few McKay electrodes are issued. The licensee further stated that when the McKay electrodes were first put into use, the welders complained about the operating characteristics of the electrode. Some of the electrodes were sent out for testing. The testing revealed that the electrodes, although different from the Airco in welding characteristics were acceptable.

It should be noted that the welding characteristics of each manufacturer's electrode is a little different. Once a welder gets used to a particular brand, when he switches to a new brand he is likely to think there is a problem with the

new brand because he tries to weld with it exactly like he welded with the old brand.

Area of Concern #3

For welding performance qualification. Mr. Fort hinted that welders could move their qualification test assembly during welding. The ASME Code requires that the test assemblies be welded in fixed positions. (Page 42)

Inspection Findings for Concern #3 - IE Memo to File from B. R. Crowley dated October 19, 1978

See paragraph 4.c of inspection report 50-395/78-16 for findings relative to this problem. In addition to the inspection effort of paragraph 4.c, the inspector interviewed several of the welders during the in-process welding discussed in paragraph 5 of the report. All of those interviewed indicated that during qualification, their test assemblies were fixed in position and could not be moved.

Inspection Findings for Concern #3 - IE Report 50-395/78-16, Paragraph 4.c

Welding Qualification Test Shop

The inspector observed in-process welder qualification work in the welding qualification shop. Five (5) pipe welders were observed in the process of welding their performance qualification test assemblies. In all cases the welders had a technique sheet describing how the assemblies were to be welded.

The assemblies were welded to fixtures in the weld booths and could not be moved out of position.

In the areas inspected, no items of noncompliance or deviations were identified.

Witness No. 4

Area of Concern #1

Circulating water pumps capacity being impaired due to a three foot space behind the intake and the wall itself. This limitation of space is on 3 sides of the intake. Per the manufacturer's representative these pumps need 11 feet space on every side of the intake to meet its capacity. Also at its present location in the pumps will probably vibrate and fall apart (pages 8-10, 37).

Inspection Findings For Concern #1 IE Report 50-395/79-1

Required clearances exist between circulating water pump inlet and surrounding structures. The inspectors examined vendor and construction drawings and vendor correspondence approving the circulating water pump layout. No discrepancies were identified. It is noted that these pumps are not safety-related equipment.

No deviations or items of noncompliance were identified.

Area of Concern #2

Service water pumps were very much distorted and out of level after being in place for two or three months. The pumps were not working properly. This was caused from the foundation shifting and the concrete walls cracking in many places. The whole foundation had shifted and one end of the building was much lower than the other. Pumps were reshimmed. (Pages 12-13, 19-20)

Inspection Findings for Concern #2 - IE Report 50-395/79-1

Pumphouse settlement effects on Service Water Pumps. Pump installation records, pumphouse settlement records and the present physical condition of the pumphouse and pump installations were examined by the inspectors. No unusual conditions or adverse effects from settlement were noted.

No deviations or items of noncompliance were identified.

Inspection Findings for Concern #2 - IE Report 50-395/78-26

This effort was to include a review of the QA records for final setting of the Service Water Pumps, and to review the detailed installation of the (RHR) pumps, and the high pressure safety injection pumps and to confirm their proper installation by review of the QA records.

The following documents were reviewed to determine the licensee's commitments and QA/QC requirements for the installation of these pumps:

SCE&G Field QC Procedure 6.2.1, "Inspection of Alignment of Rotating Equipment"

SCE&G Field QC Procedure 6.2.2, "Installation of Rotating Equipment"

DCC Construction Procedure AP-VIII-03 R5, "Cleaning, Handling and Preservation", and Exhibit A, "Plant Equipment Maintenance Log"

a. Service Water Pumps

The following C&I drawings were reviewed and used to verify locations, orientation details and installation requirements for these pumps:

E-026-102 R13, "Service Water Screen and Pump House Plans and Sections"

E-426-702, "Service Water Intake Screen and Pump House Plan - Floor Ele. 425' - 0" - Concrete Outline"

The SCE&G audits of Goulds Pumps were reviewed in File 301.1.7, "Surveillance and Audits". These were the pre-award of contract QA audits of the vendor on December 10 and 11, 1974, and February 12 and 13, 1975, and a pre-shipping of pumps audit inspection of June 29 and 30, 1977. All findings were dispositioned in a timely, adequate manner.

The installation of the three service water pumps was inspected in the service water pump house. These pumps are identified as XPP-39A, B and C-SW. Some discharge piping is connected to the pump bowls, but the discharge header is disassembled and awaiting the backfilling of the lines outside the pump house structure. The pump motors are not mounted on the pumps and final alignment and grouting of the pumps is to be accomplished.

Nonconforming Condition Notice (NCN) 0527 dated October 24, 1978, concerning the three pumps discharge flange connections was reviewed. Actions are being taken to resolve this open NCN.

No items of noncompliance were identified.

Area of Concern #3

Some safety-related welds were not x-rayed. After a length of time some of these welds were cutout and replaced. These welds were stainless steel and located in the reactor building at elevation 412. (Pages 13, 15, 27-28, 34-35)

Inspection Findings For Concern #3 - IE Report 50-395/78-25

Welds and weld records were inspected for three piping welds located at the 412 foot elevation in the containment:

a. Residual Heat Removal System Weld FW-1 on Isometric RH-10

The inspector reviewed the following records for compliance with the specified ASME section III C1.1 (71W73) requirements.

1. Controlled Weld Joint Records (CWJR) of August 17, 1977

2. Welder qualification for No. 1310

3. Welding material requisition sheet 108719 and 1070504

4. Final radiographic film and report (R1989)

5. Procedure qualification records for welding procedure 8-8-BA-6 Rev. 0 (PQT 64 and 94).

The delta ferrite values noted on the CWJR were checked for compliance with the license's FSAR commitment.

The weld was visually examined for compliance with the specified ASME Section III C1.1 (71W73) requirements.

The weld was visually examined for compliance with the specified ASME Section III C1.1 requirements.

No deviations or items of noncompliance were identified.

b. Safety Injection System Weld FW-1 on Isometric S1-14 (Welding Still in Process).

The inspector reviewed the following records for compliance with the specified ASME SEction III C1.1 (71W73) requirements.

1. CWJR of September 19, 1977

2. Welder qualification for No. 1177

3. Welding material requisition sheet 146648

No deviations or items of noncompliance were identified.

c. Safety Injection System Weld FW-1 on Isometric S1-34 (Completed Weld)

The inspector reviewed the following records for compliance with the specified ASME Section III C1.2 requirements.

1. CWJR of March 28, 1978

2. Welder qualifications for Nos. 1405, 1072 and 1008

3. Welding material requisition sheet 116882 and 155401

4. Final radiographic film and report (R3324)

The delta ferrite values noted on the CWJR were checked for compliance with the licensee's FSAR commitment.

The weld was visually examined by the inspector for compliance with the specified ASME Section III C1.2 requirements.

No deviations or items of noncompliance were identified.

Inspection Findings For Concern #3 - IE Report 50-395/79-12

One item brought out during the deposition concerned x-raying of safety-related welds was examined.

The inspector performed an inspection of welds at the 412' elevation in order to randomly select welds and determine if radiographic film was available for the selected welds. The following welds were selected for this review:

Isometeric	Field Weld No.	Report	Date Film Read
50-05-09	FW-7	R3823	12-19-78

SE-CS-04	FW-2	R3462	10-30-78
SE-SI-17	FW-4	R2102	3-25-79
SE-SI-16	FW-14R2	R4733	3-25-79
SE-ND-11	FW-1	R4687	3-22-79
SE-SI-37	FW-9	R4351	2-15-79
SE-WD-23	FW-1	R4234	2-02-79
SE-SI-16	FW-3	R3677	12-01-78
SE-RH-09	FW-6R1	R4071	1-22-79

The inspector determined that radiographic film was available for the selected welds and the radiographic film had been reviewed for acceptance by radiographic film interpreters.

No items of noncompliance or deviations were identified.

Area of Concern #4

Not using stainless steel shims on safety-related equipment after being instructed to do so. QC personnel not concerned which type of shim used. (Pages 15-17, 21, 23-24, 47)

Inspection Findings For Concern #4 - IE Report 50-395/79-01

Material requirements for shims on safety-related equipment. Discussions with construction crafts and QC personnel indicated that stainless steel shims are used unless other materials are specified by manufacturers or design documents. A review of several construction/QC procedures showed that specific shim

materials are not specified. Equipment shims are not considered safety-related materials.

Area of Concern #9

Putting concrete grout in the cracks to maintain the structural integrity of the pump motor building. (Page 36)

Inspection Finding For Concern #5 - IE Report 50-395/79-06

An item brought out during the deposition was examined. The item concerned putting concrete grout in cracks in the pump motor building. Examination of the service water pumphouse and discussions with responsible engineers disclosed that the pumphouse had not cracked. Therefore grouting of this structure was not required. However, the service water intake tunnel, which carries water from the lake to service water pumphouse, had cracked during construction due to excessive differential settlements. This was reported to NRC Region II as a 50.55(e) Item. The cracks in the intake tunnel were grouted in December 1977 and January 1978.

The inspector examined the following documents concerning the grouting operations to repair the cracks in the service water intake structure.

a. Specification "Technical Requirements for Filling Cracks in Concrete with Epoxy Grout"

b. Preliminary Test Program Checklist

c. Receiving Inspection Checklist for Epoxy Grout

d. SCE&G Compression Test Results Performed on Epoxy Grout Materials

e. QC Records of Grouting Inspection

f. Completion Report - Grouting in Walls and Roof of Service Water Intake Structure, dated January 21, 1978

g. Service Water Intake Structure Settlement Effects and Related Work, Report Numbers 1 and 2.

In addition, the inspector examined 10 of the 15 core samples taken of the grouted cracks in the the structure. Based on examination of quality records and core samples, it appears that the cracks in the structure have been satisfactorily repaired.

The licensee will perform an underwater inspection of the service water intake tunnel in Spring - Summer, 1979 to verify that additional cracking has not occurred since the repairs were completed.

No items of noncompliance or deviations were identified.

Area of Concern #6

Workers not trained in methods to contact NRC on quality programs, (pages 42, 43)

Inspection Findings For Concern #6 - IE Report 50-335/79-05

One item brought out during the deposition concerned reporting of conditions adverse to quality noted by craft personnel was examined.

Daniel Construction procedure APII-05 is the controlling procedure for orienting, indoctrinating and training Daniel Project Personnel. The Project Training Coordinator (Daniel) is responsible for the administration and indoctrination of all Daniel Project Training Programs. He or his designee is also responsible for conducting the orientation presentation for newly hired Daniel personnel. In addition, the Training Coordinator administers examinations as he deems necessary, and periodically performs and analysis of Deficiency and Nonconformance Notices to determine if there are existing adverse trends and if trends can be reduced through subsequent training. The inspector held discussion with the Project Training Coordinator and reviewed training folders for six craft personnel including two each from the following trades: welding, pipe fitting, mill wrights, and electricians. The inspector also reviewed the training schedule for the week of February 5, 1979, and attended a major portion of the "QA General Lecture" Class conducted by the Training Coordinator.

In evaluating the provisions for craft orientation, indoctrination and training, a discussion with the Project Training Coordinator revealed one item of concern.

Craft personnel are not being made aware that notices, which provide direction on reporting quality concerns, have been posted. The need to advise craft personnel of the posted notices and their location was brought to the attention of licensee management. This item is identified as an Inspector Follow-Up Item No. 395/79-05-03, Craft Training on Reporting Quality Concerns. SCE&G has agreed to re-evaluate existing training provisions. NRC posting requirements are being met.

VIRGIL L. BROWNLEE
PROFESSIONAL QUALIFICATIONS
REGION II - OFFICE OF INSPECTION AND ENFORCEMENT
U.S. NUCLEAR REGULATORY COMMISSION

My name is Virgil L. Brownlee. My business address is 101 Marietta Street, NW, Suite 3100, Atlanta, Georgia 30303. I am employed by the United States Nuclear Regulatory Commission, Office of Inspection and Enforcement as a Project Inspector.

My primary assignment as Project Inspector encompasses the period from May 1969 through present. During this period, I have participated in over two hundred inspections relating predominately to design, procurement and construction of nuclear power plants. My primary duties have included verification of implementation of the QA programs and inspection of design, procurement and construction activities including receipt, storage and installation of equipment and vendor related activities. To accomplish this, I coordinated the inspection efforts of individual inspectors and consultants, participated in programmed inspections and prescribed special inspection efforts inspecific areas of concern.

My present assignment as project inspector includes five sites (8 reactors). Five units are operational and three have construction permits.

Prior to my employment with the Atomic Energy Commission, I was a member of the U.S. Air Force and was assigned to the Army Nuclear Power Program from December 1958 through June 1969. My major assignments with the Army Nuclear Power Program were as follows:

1. Qualified operator on three reactors--SM-1, Fort Belvoir, Virginia; PM-1, Sundance AFS, Wyoming; Nuclear Engineering Center, Wright-Patterson AFB, Ohio.

2. Shift Supervisor/Maintenance Superintendent on two reactors--PM-1, Sundance AFS, Wyoming; Nuclear Engineering Center, Wright-Patterson AFB, Ohio.

3. Construction/Test and Startup operation of two reactor facilities--PM-1, Sundance AFS, Wyoming; Nuclear Engineering Center, Wright-Patterson AFB, Ohio.

I have received my secondary education in a public school system in Illinois. I have completed accredited college courses from Black Hills College and Wright State University.

During my Air Force and NRC career, I have completed several military and civilian courses related to the nuclear field. The related courses included: nuclear physics; nuclear, electrical and mechanical engineering; instrumentation and control systems; operators training; reactor safety (MIT); welding (AWS); radiography (Kodak); Nondestructive examination (Convair); PWR Systems (NRC); PWR Operations and Transients (NRC); PWR Simulator Operations (NRC); and BWR Systems (NRC).

JOHN L. SKOLDS

PROFESSIONAL QUALIFICATIONS

REGION II - OFFICE OF INSPECTION AND ENFORCEMENT

U.S. NUCLEAR REGULATORY COMMISSION

My name is John L. Skolds. My business address is Rt. 1, Box 64, Jenkinsville, SC 29210. I am employed by the United States Nuclear Regulatory Commission, Office of Inspection and Enforcement as Senior Resident Inspector at the V.C. Summer Nuclear Station.

I graduated from the United States Naval Academy in 1972 with a Bachelor of Science Degree in Applied Science. I have attended Georgia State University, Atlanta, Georgia and am presently attending the University of South Carolina in the pursuit of a Master of Business Administration Degree. I am a member of the Sigma Pi Sigma, the Physics National Honor Society.

From 1972 to 1973, I was a student in the Navy Nuclear Power Program. From 1973 to 1975, I was a division officer on board the USS FRANCIS SCOTT KEY (SSBN 657), a nuclear submarine. While on board, I qualified as Engineering Officer of the Watch and Officer of the Deck.

From 1975 to 1977, I was assigned as Leading Engineering Officer of an operating crew at the Navy Nuclear Power Training Unit in West Melton, New York. In this capacity, I was the Officer in charge of an operating crew during construction, preoperational testing, initial criticality and low power physics testing for a new prototype nuclear power plant. I qualified as Engineering Officer of the Watch and Chief Engineer. In 1977, I joined the U.S. Nuclear Regulatory Commission as an Operations Inspector. During this employment, I performed inspections in various operational areas including quality assurance, Technical Specifications, operating and maintenance procedure review. I completed the Nuclear Regulatory Commission's Pressurized Water Reactor (PWR) courses and Boiling Water Reactor (BWR) courses.

In 1979, I was assigned as Senior Resident Inspector at the V.C. Summer Nuclear Station. My duties have included review of the preoperational test program, quality assurance, emergency planning, operations, maintenance and administrative procedures.

STATEMENT OF QUALIFICATIONS OF EDWARD H. GIRARD

OFFICE OF INSPECTION AND ENFORCEMENT, REGION II

My name is Edward H. Girard. My business address is 101 Marietta Street, N. W., Suite 2900, Atlanta, Georgia 30303. I am employed by the United States Nuclear Regulatory Commission, Office of Inspection and Enforcement as a Reactor Inspector in the Materials and Processes Section of the Engineering Inspection Branch, Division of Engineering and Technical Inspection.

I graduated from Georgia Institute of Technology in Atlanta, Georgia in 1950 with the degree of Bachelor of Ceramic Engineering and obtained a Master of Science degree in metallurgy from the same institution in 1963. I am a member of the American Welding Society, the American Welding Society Subcommittee D1C4 on Welding of Industrial and Mill Cranes; and the American Society of Mechanical Engineers Committee on Cranes for Nuclear Facilities.

From 1950 to 1961, I was employed as a Ceramic Engineer at Carborundum Company in Niagara Falls, New York. My primary functions in the Research Department included research on refractory glass fibers and refractory hard metals.

From 1961 to 1963, I attended college, as described previously, and worked part time with an Assistantship in the X-ray Diffraction Lab at Georgia Tech.

From 1963 to 1966, I was a Metallurgist at the Metals and Controls Division of Texas Instruments in Attleboro, Massachusetts where my duties included conducting programs on development of protective coatings for refractory metals, ceramic-metal joining research, and supervision of the Research Department's metallography laboratory.

From 1966 to 1967, I was employed as a Senior Metallurgist at IIT Walter Research Corporation in Des Plaines, Illinois. I worked on development of fiber and insulation and ceramic acoustical tile manufacturing processes.

From 1967 to 1971, I was employed as a Senior Metallurgist at the General Atomic Company in San Diego, California. I was responsible for various materials engineering process development activities (brazing, welding, adhesive bonding, powder metallurgy, cleaning and coatings) for use in nuclear fuel manufacture and production of a nuclear powered direct energy conversion generator.

From 1971 to 1972, I continued my employment at the General Atomic Company in the position of a QA Engineer responsible for auditing processing and records in manufacture of fuel elements for a nuclear reactor.

From 1972 to 1976, I continued my employment with the General Atomic Company as a Senior Engineer/QA Engineer responsible for review and approval of customer and internal documents involving welding, heat treatment, and other special process requirements. I also served as cognizant QA engineer on various programs for manufacture of ASME B&PV Code (Sections III and VIII) and RDT (Reactor Development and Technology) vessels and ANSI B31.1 piping.

From 1976 to 1978, I was employed as a Senior Engineer at Offshore Power Systems in Jacksonville, Florida. I was responsible for development of materials and processing requirements for nuclear plant components, piping and supports.

In 1978, I accepted a position as a Reactor Inspector with the U. S. Nuclear Regulatory Commission. My duties involved the inspection of procedures, activities, and records for nuclear components being installed or already installed in licensed nuclear power plants (both in construction and during operation phases). As a specialist I have provided engineering advice and assistance to other members of the NRC staff concerning conditions arising during construction, inservice inspection or operation of nuclear facilities which require a knowledge of metallurgy, welding and or nondestructive examination.