UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report No. 50-395/79-16

Licensee: South Carolina Electric & Gas
Columbia, South Carolina 29218

Facility Name: V. C. Summer Nuclear Station, Unit 1

Docket No. 50-395

License No. CPPR-94

Inspection at: Fairfield County, South Carolina

Inspectors: B. R. Crowley for — 6/19/79
P. K. Van Doorn — Date Signed

B. R. Crowley — 6/19/79
B. R. Crowley — Date Signed

Approved by: A R Herdt — 6/19/79
A. R. Herdt, Section Chief, RC&ES Branch — Date Signed

SUMMARY

Inspection on May 21-24, 1979

Areas Inspected

This routine, unannounced inspection involved 51 inspector-hours onsite in the areas of safety-related pipe welding; followup on a Licensee Identified Item (50.55(e)).

Results

Of the two areas inspected, no apparent items of noncompliance or deviation were identified.

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DETAILS

1. Persons Contacted

Licensee Employees

*J. F. Algar, Site Manager
*D. A. Nauman, QA Manager
*D. R. Moore, Director, Surveillance Services
*A. A. Smith, Site QA Coordinator
*T. A. McAlister, QA Surveillance Specialist
J. L. Gypin, QA Level III Examiner

Daniel Construction Company (DCC)

*W. L. West, Project QA Manager
*G. R. Curtis, Mechanical QC Supervisor

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized by R. J. Hardwick on May 25, 1979 with those persons indicated in Paragraph 1 above.

3. Licensee Action on Previous Inspection Findings

Not inspected.

4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve noncompliance or deviations. A new unresolved item identified during this inspection is discussed in paragraph 6.f.

5. Independent Inspection Effort

The inspectors conducted a general inspection of the containment and auxiliary building to observe construction progress and construction activities such as welding, material handling and protection, housekeeping and pipe storage. During this inspection the inspectors specifically observed Weld No. FW-10C2 of Drawing No. E-304-671 for conformance to procedure and Code (ASME 1971 through 1973 Summer Addenda) requirements. This is a 3 1/2" x .438", stainless steel Class 2 weld.

No items of noncompliance or deviations were identified.

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6. Licensee Identified Items (50.55(e))

(Open) Item 395/79-05-02: ASME Code Radiography. This item was reported to Region II on February 8, 1979. The licensee reported paper concerns, inadequate technique and potential relevant defects in ASME Section III radiography of pipe welds which had been previously accepted by three radiographic interpreters. SCE&G, in a letter to RII dated March 12, 1979, reported that preliminary evaluation indicated that the questionable radiographs were the results of "pressure on interpreters to not fall behind" and "a film type that provided marginal sensitivity."

a. Radiography is being performed in accordance with the ASME Boiler and Pressure Vessel Code, Section III, 1971 edition plus addenda through the summer of 1973. Conam Inspection Division of Nuclear Engineering Services (Conam) is performing radiography and providing results to the constructor, Daniels Construction Company (DCC). DCC reviews the radiographs and approves the results. The radiographs are also subject to the review of the ASME Authorized Inspector, (AI). In early 1979 SCE&G began a review of the then approximately 1100 radiographs contained in the records vault which had been accepted by the three levels of review delineated above. Since this review disclosed an unacceptable number of questionable radiographs, SCE&G decided to review all accepted radiographs. SCE&G contracted Law Engineering Company (Law) to assist in this review. Prior to this time period SCE&G had reviewed approximately 100 radiographs, including all reactor coolant loop joints, leaving approximately 1000 radiographs to be reviewed. During this initial review period (here in after called first review) approximately 730 radiographs were reviewed. A total of 237 were identified as questionable. Radiographs were questioned for technique, documentation, and possible defects. All questionable radiographs were subjected to a joint review of the SCE&G Level III inspector and a DCC Level III inspector. Some were accepted by review only, many were reshot and accepted and eight were rejected. None of the rejects were for major discontinuities. SCE&G has contracted Conam to provide a corporate Level III review of the unreviewed radiographs remaining from the initial 1000 plus an additional 179 radiographs which entered the vault during the first review period (approximately 450 total). SCE&G intends to review all radiographs questioned by the Conam Level III and 20% of radiographs accepted by the Conam Level III to establish confidence in the Conam review and verify sufficient independence from other Conam personnel. SCE&G is also reviewing all radiographs accepted after the first review period.

b. This inspection was conducted with the following objectives:

(1) Verify that personnel accepting and reviewing radiographic film (AI excepted) were qualified in accordance with the applicable inspector qualification program.

(2) Determine, based on a limited film review, if SCE&G and contracted personnel appeared to be maintaining an appropriately conservative approach to review of accepted radiographs.

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(3) Determine why many radiographs questioned had been accepted through three levels of interpretation.

(4) Determine, based on a limited film review, if more recent radiographs appear to have improved quality.

c. Regarding objective no. (1), the inspectors reviewed qualification records for a total of 14 personnel from SCE&G, Conam and DCC. Records showed personnel to be appropriately qualified with one possible exception (see paragraph 6. f. below).

d. The inspectors reviewed a total of 63 radiographs in various categories in order to obtain objectives no. (2) and (4).

All reviews include film for the entire weld, i.e. both accepted and questioned/rejected areas. Radiographs for the following welds were reviewed:

(1) Rejects Resulting from First Review:

ISO	Weld No.	Size (Inch)	Class
DE-RC-420-P	FW-1R1	10 x 0.593	MC
DE-CN-101-P	FW-2R2	3.6 x 0.484	2
SE-FW-15	FW-7R1	18 x 1.156	2
SE-RH-05	FW-4C1R2	10 x 0.365	2
SE-BD-12	FW-2C1	2.375 x 0.218	2
DE-FS-404-D	FW-2	12 x 0.631	MC
SE-MS-17	FW-10	32 x 1.084	2
SE-IA-08	FW-1	6 x .280	2

(2) Radiographs Questioned for Technique only from First Review:

ISO	Weld No.	Size (Inch)	Class
SE-CS-12	FW-14	3.5 x 0.216	2
SE-CC-47	FW-8C1	8 x 0.322	2
SE-SF-19	FW-5	10.75 x 0.365	2
SE-CS-12	FW-10R1	3.5 x 0.216	2
DE-CN-402	FW-4R3	36 x 0.484	2
SE-CS-15	FW-11	3.5 x 0.438	2
DE-SS-225-P	FW-2R1	10 x 0.539	MC
SE-CS-40	FW-11C1R1	3.5 x 0.438	2
SE-CS-40	FW-5	3.5 x 0.216	2
SE-CS-05	FW-2	6.625 x 0.280	2
DE-CS-409-P	FW-2	10 x 0.649	MC
DE-MS-428-P	NCN-0547R1	56 x 1.234	2
SE-CS-15	FW-5	3.5 x 0.438	2

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(3) Radiographs Questioned for Indications from First Review:

ISO	Weld No.	Size (Inch)	Class
SE-CS-01	FW-8R2	8 x 0.322	2
SE-BD-12	FW-8	3.5 x 0.300	2
DE-CC-330-P	FW-1	12.75 x 0.621	MC
DE-SS-411-P	FW-1	10 x 0.539	MC
DE-CN-402-P	FW-2R5	42 x 0.734	MC
SE-MS-08	FW-9R1	32 x 1.100	2
SE-BD-12	FW-6C1	2.375 x 0.218	2
SE-RH-01	FW-7C2R2	12 x 0.375	2
SE-MS-07	FW-1	32 x 1.084	2
SE-CS-30	FW-10	3.5 x 0.216	2
SE-CS-51	FW-2C2	3 x 0.216	2
DE-CS-229-P	FW-1	10 x 0.640	MC
SE-CS-72	FW-8	3 x 0.216	2
SE-RH-10	FW-6R1	12 x 0.375	2
SE-FW-13	FW-5	18 x 1.156	2

(4) Radiographs Accepted by SCE&G from First Review:

ISO	Weld No.	Size (Inch)	Class
SE-SI-22	FW-2	6 x 0.719	1
SE-SP-15	FW-2	8 x 0.322	2
SE-MS-09	FW-10R1	30 x 1.125	2

(5) Radiographs Accepted by Law from First Review:

ISO	Weld No.	Size (Inch)	Class
SE-CS-60	FW-3	3 x 0.216	2
DE-CN-101-P	FW-4R2	36 x 0.484	2
SE-CC-47	FW-5	8 x 0.322	2
SE-CS-50	FW-4C2	3 x 0.216	2
SE-BD-13	FW-12	3.5 x 0.300	2

(6) Radiographs Questioned by Conam Coporate Level III:

ISO	Weld No.	Size (Inch)	Class
SE-RH-05	FW-6C2	10.75 x 0.365	2
SE-SI-04	FW-10R1	14 x 0.375	2
SE-SI-05	FW-2R1	14 x 0.375	2
SE-CS-60	FW-6R3	3 x 0.216	2
SE-MS-06	FW-4	32 x 1.800	2

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(7) Radiographs Accepted by Conam Corporate Level III (Except SFA pipe size incorrect)

ISO	Weld No.	Size (Inch)	Class
SE-RH-04	FW-4	10 x 0.365	2
SE-M06	FW-9R1	32 x 1.100	2
SE-CS-01	FW-5	8 x 1.100	2
SE-SI-34	FW-6	12 x 1.125	2
SE-SI-34	FW-12	12 x 1.125	2

(8) Radiographs Recently Reviewed by SCE&G

ISO	Weld No.	Size (Inch)	Class
DE-CS-03	FW-10	3.5 x 0.404	2
SE-FW-13	FW-19	3.5 x 0.300	2
SE-FW-15	FW-16C1	3.5 x 0.300	2
SE-SI-22	FW-1R6	6 x 0.719	1
SE-SI-37	FW-2C1	2 x 0.344	2
SE-FS-20	FW-2R2	4.5 x 0.237	2
SE-BD-11	FW-11R1	3.5 x 0.283	2

e. Results of the above radiograph review are as follows:

(1) One radiograph (FW-11CR1 of ISO SE-CS-40) was identified by the NRC inspector as having borderline maximum density acceptance. This weld was reshot during the inspection resulting in an acceptable radiograph.

(2) One weld radiograph (FW-10 of ISO SCS-30) appeared to have an indication resulting from a surface discontinuty. This indication was not noted on the radiographic interpretation sheet. The NRC inspector along with SCE&G personnel verified by visual inspection that the indication was caused by an acceptable surface condition.

(3) The NRC inspectors noted that many radiographic technique sheets contained minor errors and that some radiographic interpretation sheets did not list all acceptable indications along with unacceptable indications as is normal practice in radiography. SCE&G informed the inspectors that these general problems had been identified to DCC and Conam.

(4) The NRC inspectors did note the marginal quality exhibited by some of the earlier radiographs, i.e. fuzziness/film graininess and difficulty seeing the required image quality indicator hole. Since interpretation of radiographs does rely heavily on the skill of the interpreter it would be expected that these marginal radiographs would result in differences of opinions among interpreters. The NRC inspectors did note some improvement in the more recent radiographs considered to be partly caused by the use of more sensitive film.

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(5) The NRC inspectors noted that SCE&G had questioned four areas on radiographs rejected by Law which were not the same areas as those for which the film was rejected by Law. Two of these radiographs resulted in rejects (FW-10 of ISO SE - MS- 17 and FW-1 of ISO SE-IA-08). In this regard, SCE&G agreed to review at least 20% of radiographs totally accepted by Law to establish a confidence level in this area.

(6) SCE&G and contracted personnel appear to be maintaining a conservative approach to review of accepted radiographs.

(7) It was not determined during the course of the inspection why the questioned radiographs had been accepted through three levels of interpretation. SCE&G has requested DCC, Conam and the AI to address this question and at the time of this inspection had not received answer acceptable to SCE&G. This area will be subject to future review by NRC when examining this 10 CFR 50.55(e) item.

f. One unresolved item was identified as follows:

DCC CP procedure AP-VI-06, "Training and Qualification of NDE personnel," paragraph 3.5 requires that level I and II Personnel be able to distinguish between colors." DCC corporate procedure 7.1, "Training and Qualification of Nondestructive Examination Personnel" does not contain color requirements. One DCC level II inspector records indicated that he had failed his eye test for colors. This item will remain unresolved until it can be determined whether this eye test failure has resulted in noncompliance to a procedure requirement. This is item 395/79-16-01, "Color test requirements for eye examinations of NDE examiners."

No items of noncompliance or deviations were identified.

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