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MATERIAL MAINTENANCE REQUIREMENTS DURING
STORAGE FOR SHEARON HARRIS NUCLEAR POWER PLANT

For both field and
warehouse
maintenance
PSAC criteria
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Procedure AP-XIII-07, In-Storage Inspection and Maintenance, requires that this instruction be prepared. It is prepared, maintained, and issued under the direction of the Senior Resident Engineer. It is intended as a guide for the various discipline engineers and maintenance personnel for accomplishment of specific maintenance items on a regular basis.

The Materials Supervisor and Maintenance Crew Supervisor shall become familiar with the contents of this instruction. Upon receipt, he will determine if an item will require maintenance using the information listed below. For example, electric motors will require maintenance, but rebar will not. It should always be decided in favor of classifying an item as one requiring maintenance if there is any doubt. When it is decided that an item requires maintenance or that it may be necessary, a Maintenance Log Form (sample attached) with the item description and purchase order number on it shall be prepared by the receiving staff and sent to the discipline engineer.

Using the information below along with any instruction manuals, specifications, or procedures included with the item or obtained otherwise, the discipline engineer will fill out and sign the Maintenance Log Forms showing maintenance requirements. The requirements on the forms will include specific inspections, maintenance actions, and calibrated instrument documentation which must be performed.

When there are conflicting maintenance requirements in the instruction manuals, specifications, procedures, or this instruction, the Senior Resident Engineer shall be consulted for resolution. Where this resolution differs from a vendor's requirements concurrence shall be obtained from the HARRIS PLANT ENGINEERING SECTION.

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After completing these forms the discipline engineer shall return them to the Materials Supervisor for incorporation in the maintenance program.

400, 401, 402, 403

For equipment landed in the power block the forms will be transmitted to the Maintenance Crew Supervisor. The entire process from receipt of an item to its incorporation in the maintenance program should take no longer than twenty-eight days.

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These requirements are only a guide. Instances will occur when it is not possible or necessary to follow them exactly. Exceptions will be established or resolved by the discipline engineer when he fills out the Maintenance Log Form.

These requirements are recommended for all equipment on the site. They are not mandatory, however, for non-nuclear safety related equipment.

In addition to performing the specific maintenance actions below, a general inspection shall be performed on each item when the specific action is performed. This inspection shall cover the following:

1. Evidence of corrosion
2. Paint deterioration
3. Damaged or missing caps or plugs
4. Equipment on the ground
5. Damaged covers over equipment
6. Moisture or water on equipment

Storage deficiencies shall be reported to the Materials Supervisor, and the Maintenance Crew Supervisor, who shall supervise their correction.

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1. Tanks, Vessels and Heat Exchangers

1. All heat exchangers shall be blanketed with nitrogen or inert gas on both the shell side and the tube side. Selected tanks and vessels may be blanketed depending on vendor requirements. The tank, vessel or heat exchanger shall be purged until the O₂ level is below 5%, and then pressurized. The pressure shall be checked weekly. When a regulator is not used, if a check indicates a pressure of less than one psig, recharge the blanket pressure to five psig. If a check indicates no positive

pressure, purge as necessary to assure the O2 level is below 5% and recharge five psig. On those systems using a pressure regulator, maintain the pressure above 1 psig. If a check indicates no positive pressure, purge as necessary to assure the O2 level is below 5% and reset the regulator to maintain the pressure above 1 psig. Vessels landed in power block will be purged except a purge can be released for piping, or other installation operations. The purge will be restored within 28 days if possible. A purge will be maintained up to the 1st valve in the piping line connected to the vessel. However, excessive pipe runs to the first valve, valve section, lack of a valve in a pipe run, or other routine construction activities may prohibit the reestablishment of a purge. In these cases, the purge will remain off.

2. When desiccant bags and humidity cards are used they shall be checked monthly. If the humidity is found in excess of level specified on the Maintenance Log Form, new desiccant bags shall be placed inside the tank or vessel and all openings resealed.

2. Valves

1. With most valves requiring maintenance, the manufacturer will include storage and maintenance requirements with the valves. As previously stated, it is the responsibility of the discipline engineer to delineate these requirements on the Maintenance Log Form.
2. If no requirements are included, it is the responsibility of the materials section to notify the discipline engineer if the valves have motor operators 5 hp or greater, or are of such size that a special storage configuration may be required. If there is doubt, the discipline engineer shall be notified.
3. Motor operated valves should be stored with the control boxes up.
4. Valves should be stored in the closed position. There are

exceptions to this. For example, large butterfly valves should be stored slightly open to allow drainage.

5. Unless required by the manufacturer, valves will not be exercised.
6. Valve openings should be sealed to prevent contamination from dust, dirt, etc. There are exceptions to this. For example, the large butterfly valves do not require covers over the openings. In fact, all but the most tightly sealed covers would trap water.
7. When valves arrive with desiccant bags, they shall be either removed or maintained. The materials section shall notify the discipline engineer of the presence of desiccant bags by so indicating on the Maintenance Log Form. The discipline engineer shall decide whether or not to maintain them based on the configuration of the valve and its storage location.
8. It is the responsibility of the Materials Supervisor to periodically check representative samples of contact preservatives used on valves. Contact preservatives shall be reapplied based on his observations.

3. Pumps

1. The same rules on contact preservatives and desiccant bags that apply to valves shall apply to pumps.
2. Shafts shall be rotated several turns monthly on pumps with an associated motor of 25 hp and larger. Shafts should be stopped so that they do not rest on the same points repeatedly.

4. Electric Motors

1. All electric motors 5 hp and greater shall be meggered as follows:
 1. Electric motors not equipped with space heater 5 hp and greater shall be meggered within twenty-eight days after receipt. These motors shall be meggered every second month over a period of four (4) months. After this period, if approved by the Discipline Electrical Engineer, these motors shall be meggered every third month thereafter.
 2. Electric motors equipped with space heaters 5 hp and greater shall be meggered within twenty-eight days after

receipt. These motors with space heaters energized prior to meggering then shall be meggered every second month over a period of four (4) months. After this period, if approved by the Discipline Engineer, the motors shall be meggered every third month for six (6) months and every fourth month thereafter.

3. Megger readings must be at least one megohm per each 1000 volts of operating voltage plus one megohm.
2. Heaters on motors in unheated spaces shall be energized. Heaters on motors in heated spaces shall not be energized unless required by vendor instructions or the Electrical Engineer so directs. Verification that heaters on motors are energized will be by use of a hand-held ammeter or by tell-tail lights. Heaters found inoperable will be repaired.
3. Shafts on motors 25 hp or greater shall be rotated several turns monthly. Shafts should be stopped so that they do not rest on the same points repeatedly.
5. Electronic Equipment and Instrumentation
 1. Electronic equipment and instrumentation shall be adequately covered or enclosed to preclude the entrance of dust.
 2. Heaters shall be energized if required by vendor instructions or deemed necessary by the electrical engineer. Verification that heaters are energized will be by use of a hand-held ammeter or by tell-tail lights. Heaters found inoperable will be repaired.
 3. If desiccant is used during storage, humidity cards shall be located such that they may be viewed without breaking the polyethylene seal. Desiccant shall be replaced if the humidity exceeds 60%.
6. Electrical Switchgear and Control Equipment
 1. Electrical switchgear and control equipment shall be adequately covered or enclosed to preclude the entrance of dust.

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2. Heaters on electrical switchgear and control equipment in unheated spaces shall be energized. Heaters on electrical switchgear and control equipment in heated spaces shall be energized only if required by vendor instructions or deemed necessary by the Electrical Engineer. Verification that heaters are energized will be by use of a hand-held ammeter or by tell-tail lights. Heaters found inoperable will be repaired.
3. If desiccant is used during storage, humidity cards shall be located such that they may be viewed without breaking the polyethylene seal. Desiccant shall be replaced if the humidity exceeds 60%.

Proper storage and maintenance of equipment requires the use of site purchased materials such as polyvinyl/polyethylene sheeting, contact preservatives, desiccant, etc. Materials coming in contact with stainless steel shall meet the chemical limits and cleaning requirements outlined in WP-112. In addition the following requirements shall be met when these materials are used:

1. Polyvinyl/Polyethylene

1. Polyvinyl/polyethylene used to cover permanent plant equipment shall be flame retardant and/or self-extinguishing and be stamped with indelible ink indicating such. However, plastic wrap on items supplied in accordance with a vendor's approved QA/QC Program will be accepted and stored without rewrapping.
2. When used with desiccant as a vapor barrier, the water vapor transmission rate through the material shall not exceed .05 grams per 100 square inches per 24 hours.
3. Polyvinyl/polyethylene used to cover permanent plant equipment shall be brightly colored to preclude loss within a system and shall be used in the following aspects:
 1. For storage and maintenance of permanent plant safety related and/or seismic Class I equipment, in warehouse storage or in permanent plant buildings. Plastic wrap on items supplied in accordance with a vendor's approved QA/QC Program will be accepted and stored without rewrapping.
 2. Covering concrete where flame retardancy and/or chloride content is a concern.
 3. For use as tarpaulin or temporary walls inside buildings where flame retardancy and/or chloride content is a concern.

2. Polyethylene

1. Polyethylene that does not meet the above requirements may be used provided it is used for functions that do not involve contact with safety related or seismic Class I permanent plant equipment. In no instances may this polyethylene be used in contact with stainless steel.
2. Polyethylene specified for concrete curing functions may be used provided this polyethylene is identified by a different color than polyvinyl specified in section 1.4. This polyethylene shall be stored in the toolroom and shall be identified as required above before being issued to the field.

3. Tapes and Adhesives

1. Tape shall be impervious to water and not subject to cracking or drying out if exposed to sunlight, heat or cold.

4. Desiccant

1. Desiccant shall consist of nondeliquescent, nondusting, chemically inert, dehydrating agents.
2. The reactivation temperature and time shall be marked on the desiccant container.

5. Contact Preservatives

1. The contact preservative shall be compatible with the material on which it is applied.
2. Contact preservatives used on surfaces inaccessible for cleaning shall be the water flushable type. This requirement may be waived for items classified non-nuclear safety.
3. When motors, pumps, turbines, etc., are stored with oil reservoirs and bearing cavities filled with preservative oil, the item shall be so tagged.

6. Caps and Plugs

1. Nonmetallic plugs shall be brightly colored. Brightly colored shall be interpreted to mean "contrasting" color. The intent of this requirement is to preclude inadvertently leaving a plug or cap inside the pipe or component.

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Name:

Equipment Purchase Order:

Model (if necessary): Gould

Serial Number (if necessary):

*Service Water
Booster Pump*

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Reference:

1. Gould Instruction Manual for Pumps

Material Required:

1. Rust Veto 210

Personnel Required:

1. One person assigned by Materials Supervisor
2. One electrician

Procedure:

Initially:

1. Energize space heater if provided
2. Check pump internals. Coat with Rust Ban 392 or equal if necessary
3. Check bearing housings for shell VFI 220 crystals & remove crystals and replace with Rust Veto 210 via the oiler bottle.
4. Megger motor windings - refer to megger sheet.

Monthly:

1. Rotate pump and motor shafts several turns by hand

Every Six Months:

Annually:

1. Check machined surfaces and coat with Rust Ban 373 or equal substitute if needed.

Maintenance In-Storage Instruction Sheet



Name:

Equipment Purchase Order: NY-435105

Model (if necessary): Reliance/Bahnsen

Serial Number (if necessary):

Air Handler #7

Reference:

1. Reliance Inst. Manual B-3645

Material Required:

1. Megger
2. Rust inhibiting oil
3. NLGI grade 2 or 3 grease

Personnel Required:

1. One person assigned by materials supervisor
2. One electrician

Procedure:

Initially:

1. Inspect and megger motor. See megger sheet for frequency approval
2. Connect and energize space heaters
3. Remove bearing housing cover and inspect condition of thrust bearings.
4. Check for moisture accumulation and remove any found by rags or other physical means. Apply no hear.
5. Drain bearing reservoir and fill with rust inhibiting oil to standing oil level.
6. If lower bearing greased, check condition of grease
7. Remove drain plugs and store with motor

Monthly:

1. Rotate Fan shaft 10 - 15 revolutions
2. Rotate Motors 25 H.P. AND GREATER 10 - 15 REVOLUTIONS.

Every 3 Months:

1. Rotate motor shaft BY HAND several turns. (FOR MOTOR UNDER 25 H.P.)
2. INSPECT CONTACTS AND CASING FOR DETERIORATION, DAMAGE.

EVERY 6 MONTHS:

1. Change oil in upper bearing reservoir or grease where applicable.
2. Repack lower grease bearing (if available) by hand with NLGI 2 or 3 grade grease.
3. CHECK GREASE IN FAN SHAFT BEARINGS. ADD GREASE IF NECESSARY, BUT DO NOT OVERGREASE.

N/A VW
11/5/81



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

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OCT 26 1978

In Reply Refer To:

RII:RDB

50-400/78-5

50-401/78-5

50-402/78-5

50-403/78-5

Carolina Power and Light Company
ATTN: Mr. J. A. Jones
Executive Vice President
Engineering, Construction
and Operation
336 Fayetteville Street
Raleigh, North Carolina 27602

Gentlemen:

This refers to the inspection conducted by Mr. R. D. Bradley of this office on September 19-22, 1978, of activities authorized by NRC Construction Permit Nos. CPPR-158, CPPR-159, CPPR-160, and CPPR-161 for the Shearon Harris Nuclear Power Plant Units 1, 2, 3 and 4 facilities, and to the discussion of our findings held with Mr. R. M. Parsons at the conclusion of the inspection.

Areas examined during the inspection and our findings are discussed in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspectors.

Within the scope of this inspection, no items of noncompliance were disclosed.

We have examined actions you have taken with regard to previously identified enforcement matters. These are discussed in the enclosed inspection report.

In accordance with Section 2.790 of the NRC's "Rules of Practice", Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed inspection report will be placed in the NRC's Public Document Room. If this report contains any information that you (or your contractor) believe to be proprietary, it is necessary that you make a written application within 20 days to this office to withhold

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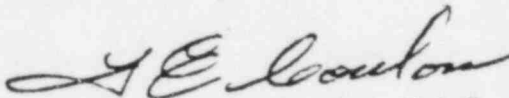
Carolina Power and
Light Company

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such information from public disclosure. Any such application must include a full statement of the reasons on the basis of which it is claimed that the information is proprietary, and should be prepared so that proprietary information identified in the application is contained in a separate part of the document. If we do not hear from you in this regard within the specified period, the report will be placed in the Public Document Room.

Should you have any questions concerning this letter, we will be glad to discuss them with you.

Sincerely,


for Charles E. Murphy, Chief

Reactor Construction and Engineering
Support Branch

Enclosure:

Inspection Report Nos. 50-400/78-05,
50-401/78-5, 50-402/78-5, 50-403/78-5

cc w/encl:

Mr. Roland Parsons, Site Manager
Shearon Harris Nuclear Power Plant
P. O. Box 101
New Hill, North Carolina 27562

RII. Report Nos.: 50-400/78-05, 50-401/78-05,
50-402/78-05, and 50-403/78-05 -2-

DETAILS I

Prepared by: V. L. Brownlee for
K. D. Bradley, Jr., Principal Inspector
Projects Section
Reactor Construction and Engineering
Support Branch

10/25/78
Date

V. L. Brownlee
V. L. Brownlee, Principal Inspector
Projects Section
Reactor Construction and Engineering
Support Branch

10/25/78
Date

Dates of Inspection: September 19-22, 1978

Reviewed by: A. R. Herdt
A. R. Herdt, Chief
Projects Section
Reactor Construction and Engineering
Support Branch

10/25/78
Date

1. Persons Contacted

a. Carolina Power and Light Company (CP&L)

*P. W. Howe, Vice President Technical Services
*R. M. Parsons, Site Manager
*N. J. Chiangi, Manager Engineering and Construction QA
*G. L. Forehand, Principal QA Specialist
*A. Lucas, Resident Engineer
R. G. Black, Project Licensing Engineer
R. D. Brown, Office Engineer

b. Daniel Construction Company (DCC)

P. K. Harris, Document Control Supervisor

*Denotes those present at the Exit Interview.

The inspectors also interviewed eleven other licensee employees during the course of the inspection. They included concrete foremen, QA/QC inspectors, office engineers and contractor personnel.

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2. Licensee Actions on Previous Inspection Findings

(Closed) Noncompliance No. 400/78-04-01, Document Control - CP&L's letter of response dated September 5, 1978, for Infraction A has been reviewed and determined to be acceptable by IE II. The inspectors held discussions with the Principal QA Specialist, Office Manager, and Document Control Supervisor and examined the corrective actions as stated in the letter of response. The inspectors concluded that CP&L management had understood the full extent of this particular noncompliance, performed the necessary audits and follow-up actions to correct the present conditions and developed the necessary corrective actions to preclude recurrence of similar circumstances. The corrective actions identified in the letter of response are being implemented.

3. Unresolved Items

There were no unresolved items identified as a result of this inspection.

4. Independent Inspection Effort

a. General

This inspection was performed for the purpose of transferring Principal Inspector responsibilities from V. L. Brownlee to R. D. Bradley. The inspectors performed walk-through inspections of site facilities and held meetings at the site and at the corporate offices in Raleigh, North Carolina, to acquaint the newly assigned principal inspector with CP&L management personnel and functional relationships.

b. Concrete

During walk-through inspection of the Fuel Handling Building, the inspector witnessed interior wall concrete placements 1FHIW 226013 (elevation 226) and 1FHIW 232005 (elevation 231.5). Placement activities were in progress utilizing one pump with test samples being taken at pump discharge. During subsequent testing, it was noted that air content had shifted below specified limits. Quality inspection personnel promptly rejected the remaining truck yardage. The inspectors monitored CP&L construction and quality inspection personnel and verified that test results were being documented and coordinated with the field engineer and batch plant personnel for proper mix adjustment prior to continuing placement activities. Additional test cylinders were made to later assess strength results of the last batch placed prior to rejection (i.e., 15 percent of the truck

load is placed before a sample is taken). Vibrators were continually used until placement was resumed. The inspectors monitored DCC personnel activities on the forms to assure vibrators did penetrate through into the previous layer of concrete. A review of the applicable Concrete Placement Report, Field Inspection Report for Embedded Plates, Penetrations and Anchor Bolts, Field Inspection Report for Reinforcing Steel and the Concrete Test Reports, indicates they were properly completed.

c. Procedure Review - QA Records

Section 1.8 and Table 1.8-5 of the PSAR set forth the commitments for collection, storage and maintenance of Quality Assurance (QA) records. The SAR specifies that CP&L's QA record program will be structured in accordance with ANSI N45.2.9 (draft 11, Revision 0) dated January 17, 1973, and the applicable Regulatory Staff comments in Section D of the "Grey Book" dated June 7, 1973, with the clarifications and alternatives outlined in the above referenced table.

The inspector reviewed Revision 4 of Section 12 of CP&L's Corporate Quality Assurance Program Manual (revision 7, dated February 15, 1978) and Revision 2 of QA procedure CQA-4 of the SHNPP Construction Site QA Unit Manual of Procedures (revision 1, dated January 10, 1978) and verified that QA record storage requirements were consistent with PSAR commitments.

d. Administration, Construction Supervision, Engineering and QA/QC Facilities

The inspectors observed additional warehousing facilities, a new radiographic storage building under construction, the new QA building for NDE activities, as well as the large additional floor space allocated for the Document Control section for more systematic and organized document processing. These facilities were previously discussed in IE Report Nos. 50-400, 401, 402, 403/77-4, which identified a need for facility expansion, improvement and rearrangement. The actions taken on this matter of concern are presently considered adequate to support the personnel and records for work in the subject areas.

No items of noncompliance or deviations were identified within the areas examined.

5. IE Bulletins (IEB)

- a. (Closed) IEB 78-06, "Defective Cutter-Hammer Type M Relays with DC Coils", Units 1, 2, 3 and 4.

RII. Report Nos.: 50-400/78-05, 50-401/78-05,
50-402/78-05, and 50-403/78-05 -5-

The licensee's letter of July 31, 1978, has been reviewed and it has been determined that there are no DC relays of this type in use in safety-related systems.

- b. (Closed) IEB 78-10, "Bergen-Patterson Hydraulic Shock Suppressor Accumulator Spring Coils", Units 1, 2, 3 and 4.

CPSL's letter of August 21, 1978, states that their review of this matter determined that there are no Bergen-Patterson hydraulic snubbers planned for use at SHNPP.

6. Exit Interview

The inspectors met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on September 22, 1978. The inspectors summarized the scope and findings of the inspection as follows: principal inspector turnover, site inspection, closeout of infraction 400/78-04-01, and IE Bulletins.

DETAILS II

Prepared by:

R.M. Constan
W. B. Swan, Civil Engineer
Engineering Support Section No. 1
Reactor Construction and Engineering
Support Branch

10/19/78
Date

Dates of Inspection: September 19-22, 1978

Reviewed by:

R.M. Constan
J. C. Bryant, Chief
Engineering Support Section No. 1
Reactor Construction and Engineering
Support Branch

10/19/78
Date

1. Persons Contacted

a. Carolina Power and Light Company (CP&L)

*P. W. Howe, Vice President, Technical Services
S. D. Smith, Manager of Power Plant Construction
*R. M. Parsons, Site Manager
*N. J. Chiangi, Manager of Engineering and Construction QA
*G. L. Forehand, Principal QA Specialist
*A. M. Lucas, Resident Engineer
E. L. Kelley, Senior QA Specialist, Civil
V. Safarian, Senior QA Specialist, Civil (second shift)
R. Black, Licensing
J. Nevill, Civil Engineer
W. Johnson, Geologist
A. Fuller, Site Representative, Dams
D. Canady, Geologist
C. Hall, Area Engineer

b. Contractor Organizations

(1) EBASCO Division of ENSERCH (Ebasco)

I. Ciloglu, Geologist
N. Tilford, Geotechnical Engineer, Earth Sciences
M. Hayes, Geotechnical Engineer, Earth Sciences
D. Johnson, Geotechnical Engineer, Earth Sciences

(2) Daniel Construction Co. (Daniel)

*W. B. Goodman, Project Manager
J. Latham, Area Superintendent, Waterproofing and Concrete

C. Pait, General Concrete Superintendent, Day Shift
W. Robinson, Night Superintendent
R. Carlon, Survey Party Chief, Fuel Handling Building

(3) Chicago Bridge and Iron Co. (CB&I)

R. Lerch, Construction Superintendent
A. Thompson, Leadman, Welding
E. C. Dengler, Welding and QA Superintendent

(4) NRC Headquarters Personnel

L. W. Heller, D.S.E.
O. Thompson, D.S.E.
A. T. Cardone, Geologist, D.S.E.

*Participated in management interview.

2. Licensee Action on Previous Inspection Findings

(Closed) Infraction 400-78-04-02: Sampling for Pumped Concrete. The licensee had provided for sampling of concrete at end of the pump line to supplement sampling of concrete moved by crane bucket and cretercrane. Revision 2 to Procedure GPC-13 was issued to clarify sampling requirements. Sampling frequencies are proportional to the amount of concrete moved by each method.

3. Unresolved Items

There were no new unresolved items identified during this inspection.

4. Independent Inspection Effort

- a. The licensee's file of Field Change Requests (FCRs) generated since mid July, 1978 to September 20, 1978, pertaining to reinforced concrete items and equipment mounting were reviewed as to disposition or directed disposition.
- b. Preparation for concrete placements were observed in the south wall of the waste processing building and the west wall of the fuel handling building opposite Unit 1 containment. Shoring being installed in the fuel handling building, to support an 11 foot thick upper slab placement, was inspected. The start of placement of concrete by pumping in a thick wall section of the reactor auxiliary building wall north of the Unit 1 containment was observed.

- c. Controlled compaction of earth fill outside the south wall and southeast corner of the waste processing building was inspected.
- d. Backfilling around concrete shielded CCW recirculation pipes at the southeast quadrant of the power block area was observed.
- e. A discussion was held with the site manager concerning the control of storm water and the absence of ground water in the power block excavations.
- f. Cleaning of the south section of the rock floor of the excavation for Unit 4 was inspected.
- g. Construction housekeeping in all areas was noted.
- h. Storage yard conditions were noted. An additional warehouse was being completed and a metal shed has been provided for storage of combustibles.
- i. Discussions were held with the site manager and resident engineer concerning dimensional problems which occur due to sometimes cumulative effect from tolerances allowed in manufacture, fabrication and placement of heavy reinforcement steel. The licensee is consulting with EBASCO concerning proposed relief of unnecessarily restrictive dimensions shown on rebar installation drawings.

The inspector reviewed the licensee's file of field change requests (FCRs) concerning rebar placement dimensional discrepancies. In each case an engineering evaluation had been made and disposition directed. For example, FCR/PW C-258 written September 1, 1978 stated that an error in placement of dowels in Column 1 and J-1 would cause proposed wall 22A in the waste processing building to be 1 3/8" too far south. Evaluation of adjacent space utilization found no problem from this minor shifting of the wall. The change is to be noted on asbuilt drawings. FCR C-203 was written concerning misalignment of the north face of the shear wall along Column line M-37 in the fuel handling building. The former had bent during placement 1FW234002. The worst displacement was 1 1/4 inch off the next line. The evaluation was "No detrimental effect on wall strength".

Review of the file identified no noncompliance with quality requirements.

During these independent inspection efforts no noncompliances with quality or safety requirements were identified.

5. Lakes, Dams and Canals - Observation of Work and Work Activities

On September 19, 1978, geologists and geotechnical engineers of the licensee, EBASCO, Law Engineering and NRC-DSE held a conference in the site headquarters building concerning work in progress for evaluation of the foundation rock at the main dam and west auxiliary dam.

The inspector accompanied these representatives to the dam sites and examined exposed cleaned rock surfaces. Exploratory drilling of the foundation rock by Law Engineering Company was proceeding and core drilling to evaluate the borrow area was being performed above the southwesterly end of the main dam. Construction drawings and geologic maps of the exposed rock were examined in the damsite trailer.

The proposed dams and reservoir soil work are shown on drawings CAR-2167 (G-6240), "Reservoir, Main Dam-General Plan," CAR-2167 (G-6020), "General Plan, Reservoir Area," and CAR-2167 (G-6270), "Reservoir, West Auxiliary Dam, General Plan."

Requirements for investigation drilling and foundation evaluation are detailed in EBASCO specifications CAR-SH-CH-01, -02, -03, -06, -08, and -11, and in PSAR section 2.6.2.6, "Hydraulic Structures," and Section 2.7, "Subsurface and Foundations". Applicable implementing documents are CQA-9, "Soil Control"; Law Engineering field procedures; and EBASCO geologic mapping procedures.

In the areas examined the inspector found no noncompliance with pertinent requirements.

6. Containment (Structural Concrete 1) - Observation of Work and Work Activities - Unit 1 Basement

Concrete installation work for the Unit 1 basemat had been completed except for repair of surface honeycomb voids on the side near the bottom of the last placement. The completed work was inspected and the QC records for the final placement were reviewed. These records and the controlling documents are discussed in the next paragraph. Review of these records and observation of Category I concrete placement in adjacent structures during this inspection and inspection 78-04 in July 1978 led to the conclusion that adequate quality control had been imposed during the work of installing the containment basemat.

7. Containment (Structural Concrete I) - Review of Quality Records - Unit 1

Review of the quality records for the basemat was completed during this follow-on review by study of the records for the final concrete

placement, placement 1CBSL216002, consisting of 4,792 cubic yards of Mix M-56, 4000 psi concrete with eight cubic yards of M-1 grout used at the surface of the previous placement. Placement was made August 17-19, 1978. 341 batches of concrete were delivered and 49 sets of test cylinders were cast. The water to cement ratio averaged 0.40. Tests for temperature, slump and entrained air were made at specified intervals.

No batch was rejected. Discrepancy reports (DR) were written by a civil engineer whenever the slump or entrained air was out of specified values; 4 inch maximum for slump, 6 percent maximum entrained air. Minimum acceptable slump was 2 inches. Minimum acceptable air was 4%.

The DR's were all cleared by the results of compressive tests of cylinders:

Batch 309, slump 6.0": 5,550 psi at 28 days
Batch 329, slump 1.25": 5,770 psi at 28 days
Batch 339, slump 4.75": 5,090 psi at 28 days
Ticket 15460, air 3.8%: 5,100 psi at 28 days
Ticket 15495, air 7.0%: 5,300 psi at 28 days
Ticket 15545, air 6.8%: 5,785 psi at 28 days

Only 17 of 49 cylinders tested at 7 days failed to meet 28 day strength requirements. Cylinders tested at 28 days gave compressive strengths between 4,740 psi and 6,610 psi, with an average of about 5,600 psi or 40% above required strength.

Records reviewed covered work increments between forming and rebar placement on through curing. They included:

- Concrete Placement Report
- Concrete Test Report
- Preplacement Checklist
- Placement Checklist
- Post Placement Checklist
- Batch Plant Tickets
- 28 Day Concrete Test Report
- FIR for Waterstop and Waterproofing
- Field Inspector Report
- FIR for Reinforcing Steel
- Quality Control Field Report

During the records review the inspector followed resolution of field change requests (FCRs) pertaining to discrepancies in rebar placement dimensions. One FCR described a condition where horizontal rebar was found to be two inches above the drawing dimension. It was left in place with the cover concrete also two inches high since a thick placement above it could be adjusted to compensate.

Another FCR concerned protrusion of rebar, including the ends of #18 bars, which violated tight dimensional requirements of the drawings around the periphery of the tubing chase pit in the basemat. The asbuilt locations were accepted by engineering since eight inches of concrete were to be poured between the involved wall surface and the steel liner of the pit.

Structural integrity was not compromised by either of the resolutions.

In the QC records reviewed no noncompliance or deficiencies were identified.

8. Containment (Structural Concrete 1) - Observation of Work and Work Activities - Unit 2 Basemat

The placement of seal and fill concrete under the proposed basemat for Unit 2 was complete. Drainage channels had been formed into the fill concrete to carry off any intruding water after the containment structural base is cast. The inspector observed the installation of a water proof membrane over the fill concrete to protect the basemat.

By the end of the inspection no Category I concrete had been placed, however, the inspector observed in-place initial forming and rebar at the lowest edge of basemat foundation, inspected a completed Category I placement in the southeast corner of the ten feet thick base for the Unit 2 section of the auxiliary building, and observed rebar installation and cadwelding in the second elevation of Unit 1 auxiliary building and for the basemat of Unit 2.

During inspection of the completed work and work in progress, no noncompliance was identified.

9. Containment (Structural Steel Welding) - Observation of Work and Work Activities - Unit 1 Liner Erection

As discussed at length in paragraph 5 of Details I of Report No. 50-400/78-04, materials for the containment liners for Units 1 and 2 were fabricated and furnished by Graver Tank Company. CB&I is under contract to the licensee to refurbish these previously supplied materials and to erect, inspect and test the containment liners for Units 1, 2, 3 and 4.

Subsection 5.5.1.2 of Appendix 5H of the PSAR stipulates that work now underway is to be accomplished in accordance with Section III, Division 2 (Winter 1975 Addenda) of the ASME Boiler and Pressure Vessel Code.

EBASCO Specification CAR-SH-CH-20, Construction Specification - Concrete, Steel Lined Containment and Associated Materials, Parts, Appertenances and Auxiliary Systems, dated February 24, 1978, appears not to have been approved as yet. It references in Section XI, paragraph 2.5, specification CAR-AS-01, "Liner". Revision 7 to this specification is now in effect. Referenced specifications for work underway had been approved.

The inspector found that CB&I had completed approximately 70% of installation of the floor liner plate on Unit 1 basemat. Welding of plates to embedded anchors and welding of leak chases over the seam welds were observed by the inspector. Welding of a transition strip to the outer perimeter of the floor liner plate was observed. CB&I had fit up eight of thirteen sheets for the first liner wall ring. These sheets were tack welded to back up strips and to the transition strip. The joint preparations for welding the eight sheets to each other were examined. The top and bottom frames and backup strips were being installed in the instrumentation tubing raceway pit in the containment base in preparation for installation of the pit liner.

Electrodes were being stored in a heated, locked oven and issues were controlled.

Discussions were held with the CB&I site manager and welding leadman. Both were experienced at previous nuclear plants.

During observation of floor liner plate installation and wall panel fitup work no noncompliances were identified.

CB&I Nuclear QA Manual for ASME Section III products, issue number 7, was approved for use by CP&L on March 29, 1978. It was reviewed by NRC-IE during inspection 78-04 in July, 1978 and is apparently adequate for quality assurance. CB&I provides QC inspection with CP&L providing project surveillance.

10. Exit Interview

An exit interview was held with P. W. Howe, Vice President of Technical Services, the site manager, R. M. Parsons and members of site staffs.

The inspector outlined the scope of the inspection of dam foundation exploration, concrete in power block structures, and Unit 1 containment liner. In summation the inspector stated that no noncompliances had been identified and no new unresolved item had been identified and that Infraction 400-78-04-02 on sampling of pumped concrete, would be closed.



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

18

In Reply Refer To:

RII:JRH

50-400/79-17

50-401/79-17

50-402/79-16

50-403/79-16

SEP 06 1979

Carolina Power and Light Company
Attn: J. A. Jones, Senior Executive Vice President
and Chief Operating Officer
411 Fayetteville Street
Raleigh, North Carolina 27602

Gentlemen:

This refers to the inspection conducted by J. R. Harris of this office on August 21-24, 1979 of activities authorized by NRC Construction Permit Nos. CPPR-158, CPPR-159, CPPR-160 and CPPR-161 for the Shearon Harris facility, and to the discussion of our findings held with R. M. Parsons at the conclusion of the inspection.

Areas examined during the inspection and our findings are discussed in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

We have examined actions you have taken with regard to previously identified enforcement matters and unresolved items. The status of these items is discussed in the enclosed report.

One new unresolved item resulted from this inspection and is discussed in the enclosed report. This item will be examined during subsequent inspections.

During the inspection, it was found that certain activities under your license appear to be in noncompliance with NRC requirements. This item and references to pertinent requirements are listed in the Notice of Violation enclosed herewith as Appendix A. This notice is sent to you pursuant to the provisions of Section 2.201 of the NRC's "Rules of

7910240389
PDR/LPDR

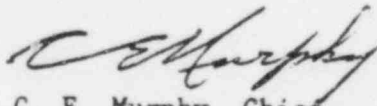
SEP 11 1979

Practice", Part 2, Title 10, Code of Federal Regulations. Section 2.201 requires you to submit to this office, within 20 days of your receipt of this notice, a written statement or explanation in reply including: (1) corrective steps which have been taken by you, and the results achieved; (2) corrective steps which will be taken to avoid further noncompliance; and (3) the date when full compliance will be achieved.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed inspection report will be placed in the NRC's Public Document Room. If this report contains any information that you (or your contractor) believe to be proprietary, it is necessary that you make a written application within 20 days to this office to withhold such information from public disclosure. Any such application must include a full statement of the reasons on the basis of which it is claimed that the information is proprietary, and should be prepared so that proprietary information identified in the application is contained in a separate part of the document. If we do not hear from you in this regard within the specified period, the report will be placed in the Public Document Room.

Should you have any questions concerning this letter, we will be glad to discuss them with you.

Sincerely,



C. E. Murphy, Chief
Reactor Construction and
Engineering Support Branch

Enclosures:

1. Appendix A, Notice of Violation
2. Inspection Report Nos. 50-400/79-17,
50-401/79-17, 50-402/79-16 and
50-403/79-16

cc w/enclosures:

R. Parsons, Site Manager
Post Office Box 101
New Hill, North Carolina 27562

APPENDIX A

NOTICE OF VIOLATION

Carolina Power and Light Company
Shearon Harris, Unit 1

License No. CPPR-158

Based on the NRC inspection August 21-24, 1979, certain of your activities were apparently not conducted in full compliance with NRC requirements as indicated below. These items have been categorized as described in correspondence to you dated December 31, 1974.

As required by Criterion V of Appendix B to 10 CFR 50, and as implemented by Carolina Power and Light PSAR Section 1.8.5.5, "Activities affecting quality shall be prescribed by documented instructions, procedures or drawings,....and shall be accomplished in accordance with these instructions, procedures or drawings". Shearon Harris Specification CAR-SH-CH-6, "Concrete", states, "Concrete shall be maintained in a moist condition for at least the first seven days after placing".

Contrary to the above, at 8:00 p.m. on August 23, 1979, interior wall placement numbers 1CBIW 248 001 and 1CBIW 233 002 in the Unit 1 containment building were dry. The placements were made August 22, 1979.

This is an infraction.

~~291024/0396~~
POR/LPOR



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

Report Nos. 50-400/79-17, 50-401/79-17, 50-402/79-16, and 50-403/79-16

Licensee: Carolina Power and Light Company
411 Fayetteville Street
Raleigh, North Carolina 27602

Facility Name: Shearon Harris Nuclear Power Plant

Docket Nos. 50-400, 50-401, 50-402, and 50-403

License Nos. CPPR-158, CPPR-159, CPPR-160, and CPPR-161

Inspection at Shearon Harris Site near Raleigh, North Carolina

Inspector T. E. Conlon for J. R. Harris 9-6-76
Date Signed

Approved by: T. E. Conlon 9-6-76
T. E. Conlon, Section Chief, RCES Branch Date Signed

SUMMARY

Inspection on August 21-24, 1979

Areas Inspected

This routine unannounced inspection involved 42 ~~inspector~~ hours onsite in the areas of structural concrete, dams and licensee action on previous inspection findings.

Results

Of the three areas inspected, no items of noncompliance or deviations were identified in ~~no~~ areas; one item of noncompliance was found in one area (Infraction - Improper curing of structural concrete - Paragraph 5).

~~7910240107~~
PDR-LPDR

DETAILS

1. Persons Contacted

Licensee Employees

- *R. M. Parsons, Site Manager
- *G. L. Forehand, Principal QA Specialist
- *A. M. Lucas, Resident Engineer
- *J. F. Nevill, Senior Engineer, Civil
- *D. S. Canady, Geologist
- *N. J. Chiangi, Manager Engineering and Construction QA
- E. L. Kelly, Senior Civil Specialist QA
- *T. M. Wyllie, Manager of Nuclear Construction
- G. M. Simpson, Principal Construction Inspector

Other Organizations

- *W. D. Goodman, Project Manager, Daniel
- I. Ciloglu, Geologist, Ebasco
- P. Shiebel, Geologist, Ebasco

*Attended exit interview.

2. Exit Interview

The inspection scope and findings were summarized on August 24, 1979 with those persons indicated in Paragraph 1 above.

3. Licensee Action on Previous Inspection Findings

- a. (Open) Noncompliance (400/79-07-02, 401/79-07-02, 402/79-06-02 and 403/79-06-02): Failure to Place Embankment Core Fills at Specified Moisture Content. Revised procedures and specifications have been examined and approved by NRR and IE:RII. New impervious fill is being placed in accordance with the revised procedures and specifications. Impervious fill in the separating dike has been removed and replaced in accordance with revised procedures and specifications. Impervious fill in the west auxiliary dam between stations 21+00 to 25+00 has been removed. Previously placed impervious fill in the West Auxiliary dam diversion area between stations 37+00 to 41+00 is still being evaluated by the licensee. This item remains open pending review of the licensee's evaluation by NRR and IE:RII.
- b. (Open) Unresolved Item (400/79-07-03, 401/79-07-03, 402/79-06-03 and 403/79-06-03): Category I Piping Fill Support. The Licensee's response dated June 12, 1979 has been reviewed by NRR and IE:RII. Region II, in a letter dated June 18, 1979 from J. P. O'Reilly to J. A. Jones, concurred with CP&L's schedule for resumption of fill around seismic category I pipe and adjacent electric conduit between coordinate N230

and the number 1 tank building. Emergency service water lines crossing fill between the tank building and rock will be on concrete extending to bed rock. Density tests will be made at the 5 foot, 7 foot and 10 foot levels and the foundation grade proof rolled at excavations into old yard fill for the nuclear service water line. Where the nuclear service water lines cross natural ground, the excavations will be controlled in accordance with CAR-SH-CH-8. The licensee is still evaluating powerblock fills and yard fills crossed by category I fuel lines and electrical ducts. This item remains open pending examination of the licensee's evaluation by NRR and IE:RII.

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. New unresolved items identified during this inspection are discussed in paragraph 5.

5. Independent Inspection

The inspector examined the following areas:

- a. Concrete placement numbers 1CBIW248001 and 1CBIW233002 in the Unit 1 containment building and 1TKXW256003 in the Unit 1 tank building.
- b. Quality control field reports, nonconformance reports, and curing records for June, July and August of 1979.
- c. At 8:00 p.m. on August 23, 1979, exposed concrete surfaces of interior wall placement numbers 1CBIW248001 and 1CBIW233002 in the Unit 1 containment building were in a dry condition. The placements were made August 22, 1979. Specification CAR-SH-CH 6 states "concrete shall be maintained in a moist condition for at least the first 7 days after placing". Failure to maintain concrete in a moist condition for the seven day curing period was identified to the licensee as Noncompliance Item 400/79-17-01, "Improper curing of structural concrete".
- d. Examination of quality records on structural concrete disclosed that numerous deficiencies are being reported by QA inspectors regarding curing, vibration and vertical discharge of concrete when using the creeper crane to place concrete. Examination of the Nonconformance Report (NCR) log indicated that some of the construction deficiencies reported by QA inspectors are not being followed up with an NCR report as required by procedure CQC-2, "Nonconformance Control." This was reported to the licensee as Unresolved Item 400/79-17-02, 401/79-17-02, 402/79-16-02 and 403/79-16-02, "Processing and Review of Nonconformance Reports," pending further examination by RII:IE of DDR/DR logs.

6. Lakes, Dams and Canals - Observation of Work and Work Activities

The inspector examined results of replacement of the impervious core in the west auxiliary dam separating dike, spillway excavations in the west auxiliary dam, geologic mapping of the spillway between stations 10+00 to 12+00 and results of grouting to date on the main dam and west auxiliary dam. Acceptance Criteria examined by the inspector were:

- a. PSAR, Appendix 2E
- b. CAR-SH-CH-4, "Embankments, Dams, Dikes and Canals"
- c. Procedure TP-08, Soil Control Program - Class I Dams, Fill and Backfill
- d. CQA-9, Soil Control
- e. CAR-SH-CH-11, Ebasco Specification Drilling and Grouting
- f. Drawings CAR-2167-G-6280 to CAR-2167-G-6282, Reservoir, West Auxiliary Dam Spillway, Plan and Profile; CAR-2161-C-6281, Reservoir West Auxiliary Dam Spillway Sections.

Observations of records and completed work showed operations were being accomplished in accordance with the above listed acceptance criteria.

No deviations or items of noncompliance were identified.



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

NOV 26 1979

McGuire
19
D71

In Reply Refer To:

RII:JRH

50-400/79-19

50-401/79-19

50-402/79-18

50-403/79-18

Carolina Power and Light Company
Attn: J. A. Jones, Senior Executive
Vice President and Chief
Operating Officer
411 Fayetteville Street
Raleigh, North Carolina 27602

Gentlemen:

Thank you for your letter of November 7, 1979, informing us of steps you have taken to correct the item of noncompliance concerning activities under NRC Construction Permit Nos. CPPR-158, CPPR-159, CPPR-160, and CPPR-161 brought to your attention in our letter of October 22, 1979. We will examine your corrective actions and plans during subsequent inspections.

We appreciate your cooperation with us.

Sincerely,

Charles E. Murphy, Chief
Reactor Construction and Engineering
Support Branch

cc: R. Parsons, Site Manager
Post Office Box 101
New Hill, North Carolina 27562

~~8003210211~~
par/LPO-



Carolina Power & Light Company

NOV 13 1979

November 7, 1979

Mr. James P. O'Reilly
United States Nuclear Regulatory Commission
Region II
101 Marietta Street, Northwest
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

In reference to your letter of October 22, 1979, referring to RII: JRH 50-400/79-19, 50-401/79-19, 50-402/79-18 and 50-403/79-18, the attached is Carolina Power & Light Company's reply to the infraction identified in Appendix A. It is considered that the corrective and preventive actions taken are satisfactory for resolution of this item.

Thank you for your cooperation in this matter.

Yours very truly,

SP Zimmerman
for P. W. Howe
Vice President
Technical Services

NJC/jj

Attachment

cc: Mr. J. A. Jones

~~00032/0283~~
POR-LPOR

790316
COPY

INFRACTION

Condition Reported:

As required by Criterion V of Appendix B to 10CFR50, and implemented by Carolina Power and Light PSAR, Section 1.8.5.5, "Activities affecting quality shall be prescribed by documented instructions, procedures or drawings, . . . and shall be accomplished in accordance with these instruction, procedures or drawings." Shearon Harris Procedures AP-IX-06, CQC-2, and TP-17 require that construction deficiencies be reported on Nonconformance Reports (NCR's), Discrepancy Reports (DR's), or Deficiency and Disposition Reports (DDR's).

Contrary to the above, concrete curing deficiencies, improper patching of concrete honeycomb, improper discharging of concrete, improper use of concrete vibrators and improper documentation of concrete data were reported on Quality Control File Report numbers: C-547, C-544, C-540, C-535, C-522, C-518; C-514, C-511, C-509, C-507, C-506, C-504, C-502, C-500, C-499, C-498, C-497, and C-489; but were not reported as NCR's, DR's, or DDR's.

Corrective Steps Taken and Results Achieved:

Of the eighteen (18) referenced Quality Control Field Reports, seven (7) involved local surface drying of concrete during the curing period. The incidents were regarded and handled as routinely correctable by extending the cure periods as specified by approved Field Change Request (FCR) C-525. The FCR provides the engineering (Ebasco) evaluation and resolution by extending the cure period. When out-of-cure conditions were noted, the Construction Inspection (CI) unit issued memos to notify Construction of the requirement to extend the cure periods. Cure extensions were noted in the Curing Log and in post-placement inspection records. Procedure TP-17, Construction Inspection Nonconformance Control, which addresses the resolution of nonconforming conditions by routine measures and FCR C-525 were the bases for issuing memos in lieu of Deficiency Reports. Notwithstanding the bases for the above described action in September, 1979, site management directed that CI issue Deficiency Reports to document all future curing discrepancies to provide management with the opportunity for early review of nonconforming conditions.

Two (2) of the referenced Quality Control Field Reports, C-509 and C-511, dealt with missing entries in the Curing Log. Nonconformance Report C-205 was issued to affect resolution.

One (1) of the referenced Quality Control Field Reports, C-498, reported a concrete repair which had not been performed properly. The repair was rejected by the Inspector, chipped out, and subsequently repaired in accordance with specification requirements. This is documented in concrete repair package 1WPIW256018-P. This was regarded and handled as an in-process correction since the work had not been accepted.

Quality Control Field Report C-514 identified discrepancies related to the concrete repair program. Deficiency and Disposition Report (DDR) 297 was issued to affect corrective action. A follow-up survey was reported in Quality Control Field Report C-588.

Two (2) of the referenced Quality Control Field Reports, C-506 and C-522, were related to unsatisfactory pre-placement cleanup being noted by QA after the Concrete Placement Record had been signed off. In each case the cleanup was satisfactorily completed as the result of a QA hold-point inspection. QA Inspectors have been reinstructed to issue Nonconformance Reports whenever nonconforming conditions are found to exist after final inspections and acceptance sign-offs.

The remaining five (5) referenced Quality Control Field Reports involved in-process concrete placement deficiencies such as diagonal discharge and improper use of vibrators. Construction Inspection personnel are present full-time during concrete placing operations and take on-the-spot action to correct observed deficiencies. Where deficiencies are observed, extra precautions are taken to ensure proper consolidation of the concrete. When repetitive minor deficiencies in technique or severe deficiencies are noted, a Deficiency Report is issued. Deficiency Report C-264, issued July 26, 1979, is an example of reporting such deficiencies as nonconforming conditions. In September, 1979, Construction Inspection personnel commenced entering notations on the post-placement checklist to identify infrequent minor discrepancies in concrete placing techniques and that the discrepancies were corrected during the process. QA Inspectors have been instructed to indicate the significance of observed discrepancies in terms of extent, length of time, percent of the total, etc., in their field reports and to note any nonconformance reports issued.

Corrective Steps Taken to Avoid Further Noncompliance

Training sessions based on the requirement of Ebasco Specification CAR-SH-CH-06, Rev. 6, "Concrete," and the site procedures for concrete production and placement were conducted for craft, Construction Inspection and QA personnel during September and October, 1979. These were designed to improve compliance to concrete placement requirements and uniformity in controls.

In September, 1979, site management directed Construction Inspection personnel to document curing deficiencies on Deficiency Reports to provide management with the opportunity to review these conditions.

QA Inspectors have been reinstructed to issue nonconformance reports whenever nonconforming conditions are found to exist after final inspections and acceptance sign-offs.

QA Supervisors have been instructed to closely monitor the field reports for nonconforming conditions and to ensure these are reported in accordance with approved procedures.

Date When Full Compliance Will be Achieved

Full compliance is considered to have been achieved with the instructions and training sessions for the personnel involved.



Carolina Power & Light Company

NOV 5 AID: 10

October 31, 1979

Mr. James P. O'Reilly
United States Nuclear Regulatory Commission
Region II
101 Marietta Street, Northwest
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

In reference to your letter of October 22, 1979, referring to
RII: JRH 50-400/79-19, 50-401/79-19, 50-402/79-18, 50-403/79-18, the
inspection report for the September 18-21, 1979, Shearon Harris Nuclear
Power Plant visit has been reviewed and found to contain no proprietary
information.

Thank you for your consideration in this matter.

Yours very truly,

P. W. Howe
Vice President
Technical Services

NJC/jc (0630)

cc: Mr. J. A. Jones

~~8003210297~~
PAR



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303
OCT 22 1979

In Reply Refer To:

R11:JRH

50-400/79-19

50-401/79-19

50-402/79-18

50-403/79-18

Carolina Power and Light Company*
ATTN: Mr. J. A. Jones
Executive Vice President and
Chief Operating Officer
411 Fayetteville Street
Raleigh, NC 27602

Gentlemen:

This refers to the inspection conducted by J. R. Harris of this office on September 18-21, 1979, of activities authorized by NRC Construction Permit Nos. CPPR-158, CPPR-159, CPPR-160, and CPPR-161 for the Shearon Harris facility, and to the discussion of our findings held with R. M. Parsons at the conclusion of the inspection.

Areas examined during the inspection and our findings are discussed in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

We have examined actions you have taken with regard to previously identified enforcement matters and unresolved items. The status of these items is discussed in the enclosed report.

During the inspection, it was found that certain activities under your license appear to be in noncompliance with NRC requirements. This item and references to pertinent requirements are listed in the Notice of Violation enclosed herewith as Appendix A. This notice is sent to you pursuant to the provisions of Section 2.201 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations. Section 2.201 requires you to submit to this office, within 20 days of your receipt of this notice, a written statement or explanation in reply including: (1) corrective steps which have been taken by you and the results achieved; (2) corrective steps which will be taken to avoid further noncompliance; and (3) the date when full compliance will be achieved.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed inspection report will be placed in the NRC's Public Document Room. If this report contains any information that you (or your contractor) believe to be proprietary, it is necessary that you make a written application within 20 days to this office to withhold such information from public disclosure. Any such application must include a full statement of the reasons on the basis of which it is claimed that

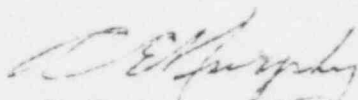
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PAR-LPAR

OCT 22 1979

the information is proprietary, and should be prepared so that proprietary information identified in the application is contained in a separate part of the document. If we do not hear from you in this regard within the specified period, the report will be placed in the Public Document Room.

Should you have any questions concerning this letter, we will be glad to discuss them with you.

Sincerely,



C. E. Murphy, Chief
Reactor Construction and Engineering
Support Branch

Enclosures:

1. Appendix A, Notice of Violation
2. Inspection Report Nos. 50-400/79-19,
50-401/79-19, 50-402/79-18, and 50-403/79-18

cc w/encl:

R. Parsons, Site Manager
P. O. Box 101
New Hill, NC 27562

APPENDIX A

NOTICE OF VIOLATION

Carolina Power and Light Company
Shearon Harris Facility

License Nos. CPPR-158
CPPR-159, CPPR-160, &
CPPR-161

Based on the NRC inspection September 18-21, 1979, certain of your activities were apparently not conducted in full compliance with NRC requirements as indicated below. These items have been categorized as described in correspondence to you dated December 31, 1974.

As required by Criterion V of Appendix B to 10 CFR 50, and implemented by Carolina Power and Light PSAR Section 1.8.5.5, "Activities affecting quality shall be prescribed by documented instructions, procedures or drawings,...and shall be accomplished in accordance with these instructions, procedures or drawings". Shearon Harris procedures AP-1X-06, CQC-2, and TP-17 require that construction deficiencies be reported on Nonconformance Reports (NCRs), Discrepancy Reports (DRs), or Deficiency and Disposition Reports (DDRs).

Contrary to the above, concrete curing deficiencies, improper patching of concrete honeycomb, improper discharging of concrete, improper use of concrete vibrators and improper documentation of concrete data were reported on Quality Control File Report numbers: C-547, C-544, C-540, C-535, C-522, C-518, C-514, C-511, C-509, C-507, C-506, C-504, C-502, C-500, C-499, C-498, C-497, and C-489; but were not reported as NCRs, DRs, or DDRs.

This is an infraction.

~~8003210316~~
POR. L. PDR



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

OCT 22 1979

Report Nos. 50-400, 401/79-19 and 50-402, 403/79-18

Licensee: Carolina Power and Light Company
411 Fayetteville Street
Raleigh, North Carolina 27602

Facility Name: Shearon Harris Nuclear Power Plant

Docket Nos. 50-400, 50-401, 50-402, 50-403

License Nos. CPPR-158, CPPR-159, CPPR-160, CPPR-161

Inspection at Shearon Harris site near Raleigh, North Carolina

Inspector: J. R. Harris

10/18/79
Date Signed

Approved by T. E. Conlon
T. E. Conlon, Section Chief, RCSES Branch

10-18-79
Date Signed

Inspection on September 18-21, 1979

Areas Inspected

This routine, unannounced inspection involved 30 inspector-hours onsite in the areas of previously identified items, structural concrete and dams.

Results

Of the 3 areas inspected, no items of noncompliance or deviations were identified in 2 areas; 1 item of noncompliance was found in 1 area. (Infraction - Processing and review of construction deficiencies - Paragraph 3).

~~8003210325~~
PDR-LPDR

DETAILS

1. Persons Contacted

Licensee Employees

- *R. M. Parsons, Site Manager
- *G. L. Forehand, Principal QA Specialist
- A. M. Lucas, Resident Engineer
- *J. F. Nevill, Senior Engineer, Civil
- D. S. Canady, Geologist
- *N. J. Chiangi, Manager Engineering and Construction QA
- E. L. Kelly, Senior Civil Specialist, QA
- *T. M. Wyllie, Manager of Nuclear Construction
- *G. M. Simpson, Principal Construction Inspector
- *P. W. Howe, Vice President, Technical Services

Other Organizations

- *W. D. Goodman, Project Manager, Daniel Construction Company
- *I. Ciloglu, Geologist, Ebasco
- P. Shieh, Geologist, Ebasco

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on September 21, 1979 with those persons indicated in Paragraph 1 above.

3. Licensee Action on Previous Inspection Findings

- a. (Open) Noncompliance (400/79-07-02, 401/79-07-02, 402/79-06-02 and 403/79-06-02): Failure to Place Embankment Core Fills at Specified Moisture Content. Revised procedures and specifications have been examined and approved by NRR and IE:RII. New impervious fill is being placed in accordance with the revised procedures and specifications. Impervious fill in the separating dike has been removed and replaced in accordance with revised procedures and specifications. Impervious fill in the west auxiliary dam between stations 21+00 to 25+00 has been removed. Previously placed impervious fill in the West Auxiliary dam diversion area between stations 37+00 to 41+00 is still being evaluated by the licensee. This item remains open pending review of the licensee's evaluation by NRR and IE:RII.
- b. (Open) Unresolved Item (400/79-07-03, 401/79-07-03, 402/79-06-03 and 403/79-06-03): Category I Piping Fill Support. The Licensee's response dated June 12, 1979 has been reviewed by NRR and IE:RII. Region II, in a letter dated June 18, 1979 from J. P. O'Reilly to J. A. Jones, concurred with CP&L's schedule for resumption of fill around seismic

category I pipe and adjacent electric conduit between coordinate N230 and the number 1 tank building. Emergency service water lines crossing fill between the tank building and rock will be on concrete extending to bed rock. Density tests will be made at the 5 foot, 7 foot and 10 foot levels and the foundation grade proof rooled at excavations into old yard fill for the nuclear service water line. Where the nuclear service water lines cross natural ground, the excavations will be controlled in accordance with CAR-SH-CH-8. The licensee is still evaluating powerblock fills and yard fills crossed by category I fuel lines and electrical ducts. This item remains open pending examination of the licensee's evaluation by NRR and IE:RII.

- c. (Open) Noncompliance Item (400/79-17-01): Improper Curing of Structural Concrete. The licensee has added additional staff, initiated a special training session on curing and revised the work procedure for inspection of concrete curing. The curing period is extended on any concrete found in a dry condition during the required seven day curing cycle. This item remains open pending NRC IE:RII's examination of the licensee's response to this item.
- d. (Closed) Unresolved Item (400/79-17-02, 401/79-17-02, 402/79-16-02 and 403/79-16-02): Processing and Review of Nonconformance Reports. Procedure AP-1X-06, CQC-2 and TP-17 require that Construction deficiencies be reported on Nonconformance Report (NCRs), Discrepancy Reports (DRs) or Deficiency and Disposition Reports (DDRs). Examination of records disclosed that Construction deficiencies in curing, vibration, patching of honeycomb, discharging and documentation on concrete pours are being reported on quality control field reports and corrected without being reported as NCRs, DRs or DDrs. Quality control field reports on which examples of the above deficiencies were reported and no NCR, DR or DDR issued are numbers: C-547, C-544, C-540, C-535, C-522, C-518, C-514, C-511, C-509, C-507, C-506, C-504, C-502, C-500, C-499, C-498, C-497 and C-489. This item is closed as Unresolved Item 400/79-17-02 401/79-17-02, 402/79-16-02 and 403/79-16-02 and upgraded to Infraction Number 400/79-20-01, 401/79-20-01, 402/79-19-01 and 403/79-19-01, "Processing and Review of Construction Deficiencies.

5. Independent Inspection

The inspector examined the following areas:

- a. Curing controls on 12 concrete placements. Deficient curing conditions were observed on two of the placements. DRs were issued by construction inspectors on the two placements of concern.
- b. Final cleanup and geologic mapping of the main dam core trench between dam centerline stations 12 + 50 to 15 + 90. Geologic mapping was done in accordance with NRC requirements. No anomalies were reported or identified.

No deviations or items of noncompliance were identified.

6. Lakes, Dams and Canals - Observation of Work and Work Activities

The inspector observed placement of the impervious fill, transition filter and rockfill blanket in the west auxiliary dam. Acceptance criteria examined by the inspector were:

- a. PSAR, Appendix 2E
- b. CAR-SH-CH-4, Embankments, Dams, Dikes, and Canals
- c. Procedures TP-08, Soil Control Program. Class I Dams, Fill and Backfill.
- d. CQA-9, Soil Control
- e. Drawings CAR-2167 to 6270, CAR 6272 and 6273, Reservoir, West Auxiliary Dam.
- f. Field design change request number FCR-C-908

No deviations or items of noncompliance were identified.



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

20

MAY 01 1980

In Reply Refer To:
RII:RDB
50-400/80-10

Carolina Power and Light Company
Attn: J. A. Jones, Senior Executive Vice President
and Chief Operating Officer
411 Fayetteville Street
Raleigh, NC 27602

Gentlemen:

This refers to the meeting held at the NRC Region II Office on April 17, 1980, at our request. This meeting related to activities authorized by licensee number CPPR-158, and was attended by members of my staff and Messrs. McDuffie, Howe, Smith, Cutter, and Lucas of your company.

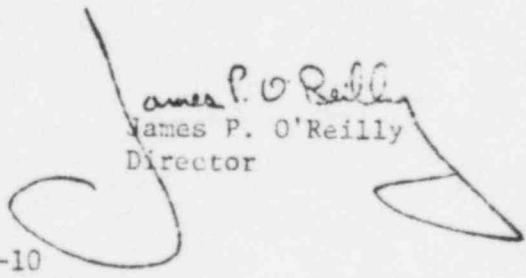
The subjects discussed at this meeting are included in the inspection report which is enclosed with this letter.

It is our opinion that this meeting was beneficial. It has provided the necessary understanding of the circumstances surrounding the omission of reinforcement steel in the containment exterior wall placement.

In accordance with Section 2.790 of NRC's "Rules of Practice", Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed inspection report will be placed in the NRC's Public Document Room.

No reply to this letter is required; however, should you have any questions concerning this matter, we would be pleased to discuss them with you.

Sincerely,


James P. O'Reilly
Director

Enclosure:
Inspection Report No. 50-400/80-10

cc w/enclosure: (See Page 2)

~~8005190602~~
POR/LPOR

MAY 01 1980

Carolina Power and Light Company

-2-

cc w/enclosure:

R. Parsons, Site Manager
Post Office Box 101
New Hill, NC 27562

M. A. McDuffie
Senior Vice President
411 Fayetteville Street
Raleigh, NC 27602



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

Report No. 50-400/80-10

Licensee: Carolina Power and Light Company
411 Fayetteville Street
Raleigh, North Carolina 27602

Facility: Shearon Harris, Unit 1

Docket No. 50-400

License No. CPPR-158

Meeting in Region II Office in Atlanta, Georgia

Inspector:

R. D. Bradley

4/30/80

Date Signed

Approved by:

J. K. Rausch, Acting Section Chief, RCES Branch

5/1/80

Date Signed

SUMMARY

A corporate management meeting was held April 17, 1980, to discuss the circumstances surrounding the omission of reinforcement steel in the Unit 1 containment building exterior wall. This meeting involved 16 inspector hours.

~~8005190608~~
PAR/LPAR

DETAILS

1. Attendees

Licensee

M. A. McDuffie, Senior Vice President, Engineering and Construction Group
P. W. Howe, Vice President, Technical Services
S. D. Smith, Vice President, Power Plant Construction
A. M. Lucas, Senior Resident Engineer
A. B. Cutter, Manager, Nuclear Power Plant Engineering

NRC

J. P. O'Reilly, Director, Region II
J. C. Bryant, Acting Assistant to the Director Region II
A. R. Herdt, Acting Chief, RECS Branch
J. K. Rausch, Acting Section Chief, RCES Branch
T. Conlon, Section Chief, RCES Branch
J. J. Lenahan, Reactor Inspector, RCES Branch
R. D. Bradley, Principal Inspector, RCES Branch

2. Management Meeting

At the request of NRC Region II, representatives of Carolina Power and Light (CP&L) management met on April 17, 1980 with Region II personnel in Atlanta, Georgia to discuss a construction deficiency reported to the RII principal inspector on April 9, 1980. The deficiency pertained to omission of twenty-five bars of reinforcement steel in the Unit 1 containment building exterior wall, adjacent to the construction opening for the equipment hatch. CP&L advised that placement of concrete containing rebar in the containment exterior wall had been discontinued pending resolution of the deficiency and approval of the NRC to resume such placements.

In reply to the RII Confirmation of Action letter issued to CP&L on April 10, 1980, the licensee provided a written response and presented the following information during the meeting:

- a. Investigative findings regarding the circumstances surrounding the reported omission of reinforcement steel.
- b. Results of an audit to identify similar rebar omissions which may have occurred during previous exterior wall concrete placements. This audit utilized information developed from the above investigation.
- c. Remedial actions to assure the exterior wall will be restored to design requirements.

- d. Preventive actions that will be taken to minimize the probability of recurrence in the future.

With regard to the preceding items, a. through d., the licensee concluded that:

- a. Based on an intensive and comprehensive investigation, the root cause leading to the rebar omission was the unique notation referencing the "additional steel" (25 bars) on the main reinforcing drawing. All other reinforcement bars were shown pictorially. The significance of the notation was not fully recognized due to its location on the drawing and due to the complexity of the rebar design and its geometry.

The licensee is also of the opinion that lack of technical competence, or lack of proper training were not contributing factors to this deficiency. It was pointed out that this is the only case where penetration reinforcement bars extend beyond the blockout on a main reinforcing drawing.

- b. No omission of rebar was found during the audit of previous placements that would have compromised safety or structural integrity of the containment exterior wall.
- c. Design requirements for the structural integrity of the containment exterior wall can be achieved by adding additional rebar and altering the configuration of replacement bars installed adjacent to the previous placement. This method of repair has been approved by the licensee's architect-engineer, Ebasco.
- d. The omission of rebar from the exterior wall of the Unit No. 1 containment building was a unique situation precipitated by an unusual mode of notation on the drawing and did not represent a breakdown in CP&L's program or controls. The probability of a recurrence in the future will be minimal after full implementation of the following preventive actions on April 22, 1980:
 - (1) Independent detailed tabulations of exterior wall bars by type and location will be prepared by field engineers and construction inspectors from the design drawings in advance of preplacement inspections. Differences in tabulations will be resolved in advance of field inspection.
 - (2) The area engineer for the exterior wall will be required to review the rebar drawing with the construction inspector before he signifies design approval of the concrete placement report. This review will emphasize a search for details on referenced drawings that are obscure or unusual.
 - (3) The Quality Assurance field audit program will be modified to monitor a few of the more difficult details of placements rather

than one hundred percent of selected placements. Special emphasis will be placed on columns and "additional steel" of various types.

- (4) A drawing review will be conducted to identify similar potential problem areas on the exterior wall.
- (5) A field engineer responsible for rebar verification has been assigned to the exterior wall on a full time basis.
- (6) The area rebar superintendent has been instructed to closely coordinate the activities of crews working various portions of the exterior wall to ensure crews are aware of overlapping work.
- (7) Administrative action will be taken to ensure that first-line and second-line supervisors perform field audits on the people they supervise. The performance of individuals doing field installations and inspections will be monitored.
- (8) Ebasco design engineers will review reinforcing drawings and problem areas with the area engineer. Special emphasis will be given to rebar details that may be obscure on the drawings, and more complicated or intricate areas of installation.

The items presented above were discussed at length with CP&L and they have committed to re-examining the preventive actions for possible implementation in other disciplines, and other areas that are highly stressed and/or complex. The results of this re-examination will be documented in a supplemental response to RII. NRC approval to resume placement of concrete in the exterior wall will be predicated on the acceptability of the licensee's supplemental response and examination of their actions during a subsequent civil inspection by Region II.

UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION II

101 MARIETTA ST., N.W., SUITE 1100
ATLANTA, GEORGIA 30303

21

AUG 05 1981

Carolina Power and Light Company
ATTN: Mr. J. A. Jones, Senior Executive
Vice President and Chief
Operating Officer
411 Fayetteville Street
Raleigh, NC 27602

Gentlemen:

Subject: Report Nos. 50-400/81-14, 50-401/81-14, 50-402/81-14, and
50-403/81-14

This refers to the routine safety inspection conducted by Mr. G. F. Maxwell, of this office on June 20 through July 20, 1981, of activities authorized by NRC License Nos. CPPR-158, CPPR-159, CPPR-160 and CPPR-161 for the Harris facility. Our preliminary findings were discussed with Mr. R. M. Parson, Site Manager at the conclusion of the inspection.

Areas examined during the inspection and our findings are discussed in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

During the inspection, it was found that certain activities under your license appear to violate NRC requirements. This item and references to pertinent requirements are listed in the Notice of Violation enclosed herewith as Appendix A. Elements to be included in your response are delineated in Appendix A.

In accordance with 10 CFR 2.790 of the Commission's regulations, a copy of this letter and the enclosed report will be placed in the NRC's Public Document Room. If the report contains any information that you believe to be exempt from disclosure under 10 CFR 9.5(a)(4), it is necessary that you: (a) notify this office by telephone within ten days from the date of this letter of your intention to file a request for withholding; and (b) submit within twenty-five days from the date of this letter a written application to this office to withhold such information. If your receipt of this letter has been delayed such that less than seven days are available for your review, please notify this office promptly so that a new due date may be established. Consistent with section 2.790(b)(1), such application must be accompanied by an affidavit executed by the owner of the information which identifies the document or part thereof sought to be withheld, and a full statement of the reasons on the basis of which it is claimed that the information should be withheld from public disclosure. This section further requires the statement to address with specificity the considerations listed in 10 CFR 2.790(b)(4). The information sought to be withheld shall be incorporated as far as possible into a separate part of the affidavit. If we do not hear from you in this regard within the specified periods noted above, the report will be placed in the Public Document Room.

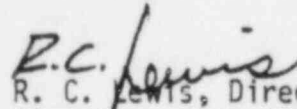
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AUG 05 1981

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Should you have any questions concerning this letter, we will be glad to discuss them with you.

Sincerely,


R. C. Lewis, Director
Division of Resident and
Reactor Project Inspection

Enclosure:

1. Appendix A, Notice of Violation

cc w/encl:

R. Parsons, Site Manager

APPENDIX A

NOTICE OF VIOLATION

Carolina Power and Light Company
Harris 1

Docket No. 50-400
License No. CPPR 158

As a result of the inspection conducted on June 20 through July 20, 1981 and in accordance with the Interim Enforcement Policy, 45 FR 66754 (October 7, 1980), the following violation was identified.

10 CFR 50, Appendix B, criterion XVII as implemented by PSAR Section 1.8.5.17 and Carolina Power and Light's Corporate QA Program Part I, Section 8.2.2 requires that the results of inspections be properly documented.

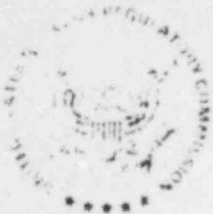
Contrary to the above, the results of inspections were not documented, in that, on July 6, 1981, a Unit 1 containment building Cadweld numbered 032S on drawing 8099 sheet 17A was found not to have the results of the installation inspection recorded and on June 30, 1981, the weld data report for ASME class 3 weld joint 2-SW-207-FW 459 was found not to identify the correct welder who had applied the tack weld.

This is a Severity Level VI Violation (Supplement II.F).

Pursuant to the provisions of 10 CFR 2.201, you are hereby required to submit to this office within thirty days of the date of this Notice, a written statement or explanation in reply, including: (1) admission or denial of the alleged violation; (2) the reasons for the violation if admitted; (3) the corrective steps which have been taken and the results achieved; (4) corrective steps which will be taken to avoid further violations; and (5) the date when full compliance will be achieved. Consideration may be given to extending your response time for good cause shown. Under the authority of Section 182 of the Atomic Energy Act of 1954, as amended, this response shall be submitted under oath or affirmation.

Date: AUG 05 1981

8109240326
POR/LPOR



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION 1
101 MARIETTA ST., N.E. SUITE 1300
ATLANTA, GEORGIA 30303

Report Nos. 50-400/81-14, 50-401/81-14, 50-402/81-14 and 50-403/31-14

Licensee: Carolina Power and Light Company
411 Fayetteville Street
Raleigh, NC 27602

Facility Name: Shearon Harris

Docket Nos. 50-400, 50-401, 50-402, and 50-403

License Nos. CPPR-158, CPPR-159, CPPR-160, and CPPR-161

Inspection at Shearon Harris site near Raleigh, North Carolina

Inspector:

G. F. Maxwell, Sr. Resident Inspector

Date Signed

Approved by:

C. A. Julian, Acting Section Chief, Division of
Resident and Reactor Project Inspection

Date Signed

SUMMARY

Inspection on June 20 through July 20, 1981

Areas Inspected

This routine resident inspection involved 96 inspector-hours on site in the areas of Inspection and Enforcement Bulletins, concrete-units 1 and 2, welding-units 1 and 2, equipment handling and storage and control of nonconformances.

Results

Of the five areas inspected, no violations or deviations were identified in four areas; one violation was found in one area (violation - failure to provide records of the results of inspection and monitoring of work performance).

~~8109240379~~
PDR-LPOR

DETAILS

1. Persons Contacted

Licensee Employees

- *R. M. Parsons, Site Manager
- *N. J. Chiangi, Manager of E&C QA/QC
- *A. M. Lucas, Senior Resident Engineer
- *G. L. Forehand, Director-QA/QC
- *B. Seyler, Principal Civil Engineer

Other licensee employees contacted included 22 construction craftsmen, four operators, and 20 office personnel.

Other Organizations

W. D. Goodman, Project Manager, Daniel Construction Company

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on July 20, 1981 with those persons indicated in Paragraph 1 above. During the exit meeting the items identified in Appendix "A" of this report were discussed in detail with those present. Upon completion of the discussion, licensee personnel clearly understood the violation and stated that they would look into the effect that the inaccurate and missing records may have on the quality of the job.

3. Licensee Action on Previous Inspection Findings

Not inspected.

4. Unresolved items were not identified during this inspection.

5. Inspection and Enforcement Bulletins, Units 1-4

- a. (Closed) IEB 80-20, "Failures to Westinghouse type W-2 spring return to neutral control switches." Bulletin IEB 80-20 is closed based on notification by responsible USNRC Region II personnel that Carolina Power and Lights letter to Region II, dated September 12, 1980, appropriately addressed the concerns noted in the bulletin.
- b. (Closed) IEB 80-23, "Failures of solenoid valves manufactured by Valcor Engineering Corporation." Bulletin IEB 80-23 is closed based on Carolina Power and Light's letter to Region II, dated December 24, 1980 and discussions with responsible Region II personnel.

6. Concrete Units 1 and 2

- a. The inspector observed portions of concrete placements being made in: Unit 1 containment building (pour number 1CBXW245001); Unit 1 fuel handling building (pour number 1FHXW224016); Units 1 and 2 reactor auxiliary common building (pour number 1ACIW247049).

The concrete forms were tight, clean and level. The placement activities pertaining to delivery time, free fall and testing conformed to specification requirements and concrete activities were continuously monitored by inspection personnel.

- b. The inspector requested the inspection data attained by Carolina Power and Light Mechanical QA personnel that related to the rebar cadwelds associated with concrete pour 1CBXW245001 (listed above). As a result of the request and subsequent reviews by the Carolina Power and Light responsible personnel and the inspector, the following were observed:

- (1) The pour contained 152 cadwelds applied over a sixteen month period of time.
- (2) The cadwelds were applied by twenty-six cadwelders and the inspections were conducted by approximately six different inspectors utilizing construction procedures WP-01, WP-15 and CQC-15.
- (3) Approximately 50 percent of the cadwelds were applied in the diagonal position, 25 percent in the horizontal position and 25 percent in the vertical position.
- (4) On July 6, 1981 the inspector observed and was informed that the responsible Carolina Power and Light inspection personnel had failed to document the inspection of one of the cadwelds, as required by construction procedure CQC-15 section 6.5.1, on the cadweld field log. The drawing associated with the cadweld, drawing 8099 sheet 17A, reflected that the cadweld had been installed.

The inspector discussed the above unsatisfactory condition with Carolina Power and Light management personnel and informed them that failure to document the results of inspections is contrary to Criterion XVII of Appendix B to 10 CFR 50, as implemented by Carolina Power and Light's PSAR section 1.8.5.17 and Carolina Power and Light's Corporate QA program Part I, section 8.2.2. This is a violation; failure to provide records of the results of inspections or monitoring of work performance (400/81-14-01). The above mentioned unsatisfactory condition has been identified by Carolina Power and Light QA personnel on Deficiency and Disposition Report (DDR) number 612 dated July 7, 1981.

- c. The inspector observed in-process work activities and the inspection of three cadwelds applied to Unit 1 containment penetration MS-1 and three applied to penetration MS-2.

Except as noted, no violations or deviations were identified in the area inspected.

7. Welding - Units 1 and 2

- a. The inspector observed in process work activities and inspections being performed on the following weld joints:

- (1) 1CC-169-FW472 (observed preparation)
- (2) 2SW-207-1-FW459 (observed final visual)
- (3) 1SW-520-1-FW1775 (observed final visual)
- (4) 1SW-40-5-FW-78 (observed repair)

The inspector interviewed the welder that was identified as the one responsible for the application of the final weld on weld joint 2SW-207-1-FW459. The interview occurred on June 30, 1981. The inspection results, documented on "Weld Data Report" (WDR) white copy indicated that the weld joint had received final visual inspection, initialed as such and was dated June 29, 1981. Part II of the WDR indicated that welder symbol D-30 had applied the tack weld and that welder D-7 applied the root, intermediate and final weld. The Region II inspector was accompanied by the responsible Carolina Power and Light welding inspector and the site Authorized Nuclear Inspector (ANI) during the interview with welder D-7. As result of the interview, review of the yellow copy of the WDR and inspection of the weld joint it was determined that the white copy of the WDR (the copy retained as the official QA record) incorrectly indicated that the tack weld had been applied by Welder D-30. Further inquiry revealed that both welder D-30 and D-7 have current qualifications for the process applied during the tack weld of materials such as those for weld joint 2SW-207-FW459. After the interview, the responsible Carolina Power and Light welding inspector made changes on the official QA copy of the WDR to reflect that welder D-7 was the only welder associated with the application of the tack, root, intermediate and final weld of the aforementioned weld joint. The inspector informed Carolina Power and Light management personnel that the above discrepancy is another example of failure to document inspection results identified as a violation in section 6.b of this report.

- b. The inspector participated in a site inspection conducted by another Region II inspector; the inspection involved observation of in-process welding on reactor coolant spool pieces, in-core instrumentation spool pieces, storage of ASME pipe spool pieces and the qualification and training of Carolina Power and Light QA welding inspectors. The results of the inspection are documented in reports numbered 50-400, 401, 402, 403/81-13.

Except as noted, no violations or deviations were identified in the areas inspected.

8. Equipment Handling and Storage Units 1-4

- a. The inspector observed the stored conditions of the reactor vessels and their internals for units 1-4, the steam generators for units 1 and 2 and unit 1 pressurizer.
- b. The inspector observed portions of the rigging into place of the reactor coolant loop C pump casing. During the movement and placement of the casing, the presence of responsible Westinghouse advisory personnel in and around the associated work areas was observed.

9. Other Areas Inspected Units 1-4

- a. The inspector selected 95 Carolina Power and Light nonconformance reports (NCRs), 41 deficiency and disposition reports (DDRs) and 48 discrepancy reports (DRs) for review and evaluation.
- b. As part of the review and evaluation of the above reports the inspector interviewed the Carolina Power and Light QA supervisors responsible for mechanical, welding, receipt inspection and civil projects. It was determined that:
 - (1) On occasions, DDRs have been returned to the initiators for grammar corrections.
 - (2) NCRs are being written by the inspection personnel associated with the above supervisors, as applicable, if nonconforming conditions are observed relative to incorrect hardware and or documentation, e.g. NCR M-098 dated July 6, 1981.
 - (3) The inspector was informed during the above interviews and by other Carolina Power and Light QA personnel interviewed that if QA personnel discover questionable work practices during their routine inspections, the condition is either documented by those findings the condition or other QA personnel are made aware of the condition for evaluation as appropriate.

In the areas inspected no violations or deviations were identified.



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

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Report Nos. 50-400/81-13, 50-401/18-13, 50-402/81-13, 50-403/81-13

Licensee: Carolina Power and Light Company
411 Fayetteville Street
Raleigh, North Carolina 27602

Facility Name: Harris

Docket Nos. 50-400, 50-401, 50-402, and 50-403

License Nos. CPPR-158, CPPR-159, CPPR-160, and CPPR-161

Inspection at Harris Site near Raleigh, North Carolina

Inspector: B. R. Crowley for 8/5/81
W. P. Kleinsorge Date Signed

Approved by: B. R. Crowley for 8/5/81
A. R. Herdt, Section Chief Date Signed
Engineering Inspection Branch
Engineering and Technical Inspection Division

SUMMARY

Inspection on July 7-10, 1981

Areas Inspected

This routine, unannounced inspection involved 31 inspector-hours onsite in the areas of reactor coolant pressure boundary piping (Unit 1), safety related piping (Units 1-4), safety related components (Units 1-4) and concern regarding inspector qualifications (Unit 4).

Results

Of the four areas inspected, two violations were found in four areas (Violation - Inadequate Measures to Control Preservation of Safety Related Materials and Equipment, Paragraph Nos. 6a(1), 7a, 7b, and 8c; Violation - Failure of Training Records to Accurately Reflect Training & Experience, Paragraph 9). No deviations were identified.

~~2112160625~~
PPR/LPR

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *S. D. Smith, Vice President, Construction
- N. J. Chiangi, Manager, Engineering and Construction QA
- *R. M. Parson, Site Manager
- *A. M. Lucas, Sr. Resident Engineer
- *G. L. Forehand, Principal QA Specialist
- *R. Hanford, Principal Engineer, Welding/Metallurgy
- *G. M. Simpson, Principal Construction Specialist
- *E. E. Willett, Principal Engineer-Mechanical

Other licensee employees contacted included construction craftsmen, technicians, mechanics, and office personnel.

Other Organizations

- *W. D. Goodman - Daniel Construction Company, Project Manager

NRC Resident Inspector

- *G. F. Maxwell

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on July 10, 1981 with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings listed below. No dissenting comments were received from the licensee.

Violation 400, 401, 402, 403/81-13-01: Inadequate Measures to Control Preservation of Safety Related Materials and Equipment, Paragraph Nos. 6a(1), 7a, 7b and 8c

Violation 400, 401, 402, 403/81-13-02: Failure of Training Records to Accurately Reflect Training and Experience, Paragraph No. 9

Unresolved Item 400, 401, 402, 403/81-13-03: No Guidance for Changes to WDR, Paragraph No. 6b(2)(b)1

Inspector Follow-up Item 400, 401, 402, 403/81-13-04: Definition of Class Room Training, Paragraph 9

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 violations or deviations. New unresolved items identified during this inspection are discussed in paragraph 6b(2)(b).

5. Independent Inspection Effort (Units 1-4)

The inspector conducted a general inspection of the power block construction site, the pipe fabrication shop, the pipe storage area and the main dam to observe construction progress and construction activities such as welding, nondestructive examination, material handling and control, housekeeping and storage.

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

6. Reactor Coolant Pressure Boundary Piping (Unit 1)

The inspector observed non-welding and welding work activities for reactor coolant pressure boundary (RCPB) piping. The applicable code for the installation of RCPB piping is the ASME B&PV Code, Section III, Subsection NB, 1974 Edition through the winter 1976 addenda.

a. Observation of Non-Welding Activities

Observation of specific work activities were conducted to determine conformance, where applicable, with the following: inspection and/or work procedures, recordkeeping requirements, installation specification requirements, specified material and qualified inspection personnel.

Reactor Coolant System

<u>ACTIVITY</u>	<u>IDENTIFICATION</u>	<u>PROCEDURE</u>
Handling	Reactor Coolant Elbow	WP-21

- (1) With regard to the inspection above the inspector on July 7, 1981 noted a cloth sling supporting a reactor coolant elbow. The sling was badly abraded in the eye, contrary to requirements of ANSI N45.2.2 "Packaging, Shipping, Receiving, Storage and Handling of Items for Nuclear Power Plants (During the Construction Phase)", paragraph 7.4.1. In addition the sling was not period color coded as required by CP&L procedure WP-21 Revision 0 "Inspection of Equipment and Rigging for General Lifting," Paragraph 4.2. Therefore unacceptable, uninspected rigging was employed to support a reactor coolant system elbow.

The above conditions indicate inadequate measures to control preservation of safety related materials and equipment, and is an example of Violation 400, 401, 402, 403/81-13-01 discussed further in paragraph 8c.

b. Observation of Welding Activities

The inspector observed in-process welding activities of RCPB piping field welds as described below to determine whether applicable code and procedure requirements were being met.

(1) Welding

The below listed welds were examined in process to determine work conducted in accordance with traveler; welder identification and location; welding procedure; WPS assignment; welding technique and sequence; materials identity; weld geometry; fit-up; temporary attachments; gas purging; preheat; electrical characteristics; shielding gas; welding equipment conditions; interpass temperature; interpass cleaning; process control systems; identity of welders; qualifications of inspection personnel; and weld history records.

<u>WELD NUMBER</u>	<u>SIZE</u>	<u>UNIT</u>	<u>SYSTEM</u>
RC-3-FW-5	27.5" X 2.21"	1	Reactor Coolant
RC-3-FW-4	27.5" X 2.21"	1	Reactor Coolant
5-FW-5	0.400"ID X 0.300" Wall	1	Bottom Mounted Incore Tubing
8-FW-5	0.400"ID X 0.300" Wall	1	Bottom Mounted Incore Tubing
25-FW-5	0.400"ID X 0.300" Wall	1	Bottom Mounted Incore Tubing
12-FW-5	0.400"ID X 0.300" Wall	1	Bottom Mounted Incore Tubing
27-FW-5	0.400"ID X 0.300" Wall	1	Bottom Mounted Incore Tubing

(2) Visual Inspection of Welds

The inspector visually examined completed and accepted safety-related welds as described below to determine whether applicable code and procedure requirements were being met.

- (a) The following welds were examined relative to the following: location, length, size and shape; weld surface finish and appearance, including inside diameter of pipe welds when accessible; transitions between different wall thickness; weld reinforcement--height and appearance; joint configurations of permanent attachments and structural supports; removal of temporary attachments; arc strikes and weld spatter; finish-grinding or machining of weld surface--surface finish and absence of wall thinning; surface defects--cracks, laps, and lack of penetration, lack of fusion, porosity, slag, oxide film and under cut exceeding prescribed limits.

WELD NO.SYSTEM

RC-3-FW-2
 41-SW-3
 42-SW-3
 9-SW-4
 23-SW-4
 13-SW-3
 6-SW-3

Reactor Coolant
 Bottom Mounted Incore Tubing
 Bottom Mounted Incore Tubing
 Bottom Mounted Incore Tubing
 Bottom Mounted Incore Tubing
 Bottom Mounted Incore Tubing
 Bottom Mounted Incore Tubing

- (b) Quality records for the above welds were examined relative to the following: records covering visual and dimensional inspections indicate that the specified inspections were completed; the records reflect adequate weld quality; history records are adequate.

With regard to the above inspection the inspector noted that there was no documented guidance addressing approval requirements for revisions or changes to "Weld Data Reports" (WDR). The licensee indicated that they would look further into the matter. The inspector stated that the above would be identified as unresolved item 400, 401, 402, 403/81-13-03: "No guidance for Chages to WDR."

(3) Welder Qualifications

The inspector reviewed the CP&L program for qualification of welders and welding operators for compliance with QA procedures and ASME Code requirements. The following welder qualification status records and "Records of Performance Qualification Test" were reviewed relative to the weld joints listed in paragraph 6b(1) and 6b(2).

WELDER SYMBOL

C-79
 B-43
 C-22
 C-56
 D-17
 C-66
 C-17
 A-92
 B-17

Within the areas examined no violations or deviations were identified except as noted in paragraph 6a(1).

7. Safety-Related Piping (Units 1-4)

The inspector observed non-welding activities for safety-related piping as described below to determine whether applicable code and procedure

requirements were being met. The applicable code for safety-related piping is the ASME B&PV Code, Section III, Subsections NC and ND, 1974 Edition with addenda through winter 1976. Observation of specific work activities were conducted to determine conformance, where applicable, with the following; inspection and/or work procedures, record keeping, installation specifications or plans, specified materials, specified NDE, calibration and use of proper test equipment and qualified inspection and NDE personnel.

<u>ACTIVITY</u>	<u>SYSTEM OR COMPONENT</u>	<u>UNITS</u>	<u>PROCEDURE</u>
Storage	Piping (various)	1-4	AP-XIII-05 AP-XIII-07 PGD-001 PGD-002
Handling	Piping (various)	1-4	WP-21

- a. With regard to the above storage inspection the inspector noted on July 8, 1981, the following in the long term outdoor pipe storage area:
- (1) Damaged pipe caps on numerous safety related piping assemblies contrary to the requirements of PGD-001 and PGD-002.
 - (2) Numerous examples of badly deteriorated tape used to seal safety related piping assemblies, contrary to PGD-002.
 - (3) Numerous examples of safety related stainless steel piping assemblies off dunnage in contact with mud, contrary to AP-XIII-05 paragraph 3.3.5.

The above condition indicates inadequate measures to control preservation of safety related materials and is an example of violation 400, 401, 402, 403/81-13-01 discussed further in paragraph 8c.

- b. With regard to the above handling inspection, the inspector on July 7-10, 1981 noted the following:
- (1) Cloth slings used in the powerblock area to handle or support safety related materials are not period color coded as required by WP-21 paragraph 4.2.
 - (2) A safety related piping assembly was secured to a vehicle for transit with badly deteriorated hold down straps, contrary to ANSI N45.2.2 paragraph 7.4.1.
 - (3) The licensee has no documented inspection program for nonlifting rigging that is employed on safety related materials and equipment, contrary to ANSI N45.2.2 paragraph 7.4.

The above condition indicates inadequate measures to control preservation of safety related materials and is an example of violation 400, 401, 402, 403/81-13-01 discussed further in paragraph 8c.

Within the areas examined no violations or deviations were identified except as noted above.

8. Safety Related Components (Units 1-4)

The inspector reviewed records and observed work activities as described below relative to safety related components to determine whether regulatory requirements are being met. The following documents control material and equipment storage and maintenance:

AP-XIII-05, Rev 6	"Material Storage"
PGD-001, Rev 20	"Material and Equipment Storage Requirements"
AP-XIII-07, Rev 14	"In-Storage Inspection and Maintenance"
PGD-002, Rev 12	"Material Maintenance Requirements During Storage For SHNPP."

a. Observation of Work Activities

The inspector observed the below listed equipment to assure that storage cleanliness and preservation conditions were in compliance with the applicable procedure requirements.

<u>COMPONENT</u>	<u>STORAGE TYPE</u>	<u>UNIT</u>
Reactor Coolant Drain Tank Heat Exchanger	In Place	1
Air Handling Units (various)	Preplacement	1-4

b. Review of Quality Records

The inspector reviewed storage and maintenance records for the safety related components listed in paragraph 8a. The records were reviewed to insure that inspection requirements for cleanliness, preservation and protection were being met.

c. With regard to the inspections of paragraph 8a & b the inspector noted on July 3, 1981 the following:

- (1) A number of safety related air handling and coil units were improperly stored out doors contrary to the requirements of PGD-001 and Bahnson Letter dated April 11, 1979.
- (2) Air handling and coil units started arriving on site April 10, 1979. The storage requirements were identified to the site on April 13, 1979. The improper storage conditions of Paragraph 8c(1) above, were first identified by the licensee in a speed letter dated March 10, 1981.

Therefore, improper storage conditions for safety related components went unidentified for approximately two years and remains to the date of this inspection uncorrected.

The above combined with the examples discussed in paragraph Nos. 6a(1), 7a and 7b indicate that the licensee has not established adequate measures to control storage and preservation of equipment and materials. Failure to establish adequate measures to control storage and preservation of materials and equipment in accordance with work and inspection instructions to prevent damage is in violation of 10 CFR 50, Appendix B, Criterion XIII. This violation will be identified as 400, 401, 402, 403/81-13-01: "Inadequate Measures to Control Preservation of Safety-Related Materials and Equipment."

Within the areas examined no violations or deviations were identified except as noted in paragraph 8.c.

9. Concern Regarding Inspector Qualifications (Unit 1-4)

The NRC was contacted by an individual who expressed the following concerns in substance:

Concerns:

- a. Two individuals without previous experience in hanger inspections were given a short "how to" course in this area. Upon successful completion of the course they were given a 90-day temporary qualification and assigned to the hanger inspection crew. Specifically, these two individuals began training by "shadowing" hanger weld inspectors for 3 to 4 weeks and performed the paperwork without being directly involved in the inspections. They then took a modified examination for Level II hanger inspection and went into the field, without supervision, doing independent inspections of new hangers, old hangers needing reinspection and "As-Built" design changes to hanger weld modifications. The inspections consisted almost exclusively of inspecting fillet welds and these require interpretation utilizing American Welding Society D1.1 Codes requiring Level II certification.

- b. The examinations that two individuals took for their modified hanger inspection Level II is suspect. Previously, on two occasions both individuals failed the regular Level II welding examination. They were subsequently given the modified examination which they passed. It is unknown whether or not it was the modified examination or a regular examination, but on one occasion they started an examination on a Friday afternoon, did not finish and reported to work on the following Monday with all of the answers.
- c. A welding inspector doing Seismic Cat. 1 inspections in the iron workers fabrication shop appears to have inadequate job knowledge. The individual's qualifications should be scrutinized.

Inspection

The inspector reviewed the CP&L program for training and qualification of personnel, interviewed six welding inspectors and reviewed the qualification records of those inspectors interviewed to determine the safety significance of the above concerns. The individuals addressed in the concerns were included in the interview. The interviewees were questioned in the following areas:

- Training type, duration and location
- Preparation for certification testing-type, study materials used and location that study was accomplished
- Testing, type, day of the week, time of day, location, duration and supervision
- Previous experience-type, location and duration
- Knowledge of inspection requirements and methods.

The inspector determined as a result of the program and record reviews, and the interviews that welding inspector training, testing and certification is consistent with the CP&L program and applicable regulatory requirements, except as noted below.

On July 10, 1981 the inspector noted the following in the qualification records reviewed as described above:

- (1) The training and qualification records for several welding inspectors did not reflect required classroom training. This inspector determined that classroom training had been accomplished but not documented.

- (2) The training and qualification record for one welding inspector indicated one year of QC/QA related experience when in fact the individual had only 10 months QC/QA related experience. This inspector determined that the 10 months experience met the CP&L qualification program requirements for qualifications held by the individual in question.

Therefore, quality records did not accurately reflect activities affecting quality. Failure of records to furnish evidence of activities affecting quality is in violation of 10 CFR 50 Appendix B, Criterion XVII. This violation will be identified as 400, 401, 402, 403/81-16-02: "Failure of Training Records to Accurately Reflect Training and Experience."

As a result of the interviews and the review of the qualification program, the inspector noted the program did not contain a definition of "Classroom Training." The licensee indicated that they would look further into the matter. The inspector stated the above would be an inspector follow-up item identified as 400, 401, 402, 403/81-13-04: "Definition of Classroom Training."

Within the areas examined no violations or deviations were identified except as noted above.



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

28

AUG 13 1981

Carolina Power and Light Company
ATTN: Mr. J. A. Jones, Senior Executive
Vice President and Chief
Operating Officer
411 Fayetteville Street
Raleigh, NC 27602

Gentlemen:

Subject: Report Nos. 50-400/81-13, 50-401/81-13, 50-402/81-13 and 50-403/81-13

This refers to the routine safety inspection conducted by Mr. W. P. Kleinsorge of this office on July 7-10, 1981, of activities authorized by NRC Construction Permit Nos. CPPR-158, CPPR-159, CPPR-160 and CPPR-161 for the Shearon Harris facility. Our preliminary findings were discussed with Mr. S. D. Smith, Vice President, Construction, at the conclusion of the inspection.

Areas examined during the inspection and our findings are discussed in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

During the inspection, it was found that certain activities under your license appear to violate NRC requirements. These items and references to pertinent requirements are listed in the Notice of Violation enclosed herewith as Appendix A. Elements to be included in your response are delineated in Appendix A.

One new unresolved item is identified in the enclosed inspection report. This item will be examined during subsequent inspections.

In accordance with 10 CFR 2.790 of the Commission's regulations, a copy of this letter and the enclosed report will be placed in the NRC's Public Document Room. If the report contains any information that you believe to be exempt from disclosure under 10 CFR 9.5(a)(4), it is necessary that you: (a) notify this office by telephone within ten days from the date of this letter of your intention to file a request for withholding; and (b) submit within twenty-five days from the date of this letter a written application to this office to withhold such information. If your receipt of this letter has been delayed such that less than seven days are available for your review, please notify this office promptly so that a new due date may be established. Consistent with section 2.790(b)(1), such application must be accompanied by an affidavit executed by the owner of the information which identifies the document or part thereof sought to be withheld, and a full statement of the reasons on the basis of which it is claimed that the information should be withheld from public disclosure. This section further requires the

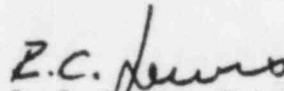
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AUG 13 1981

statement to address with specificity the considerations listed in 10 CFR 2.790-(b)(4). The information sought to be withheld shall be incorporated as far as possible into a separate part of the affidavit. If we do not hear from you in this regard within the specified periods noted above, the report will be placed in the Public Document Room.

Should you have any questions concerning this letter, we will be glad to discuss them with you.

Sincerely,



R. C. Lewis, Chief
Reactor Projects Branch 1
Division of Resident and
Reactor Project Inspection

Enclosures:

1. Appendix A, Notice of Violation
2. Inspection Report Nos. 50-400/81-13,
50-401/81-13, 50-402/81-13 and 50-403/81-13

cc w/encl:

R. Parsons, Site Manager

APPENDIX A

NOTICE OF VIOLATION

Carolina Power and Light Company

Shearon R. Harris 1, 2, 3, & 4

Docket Nos. 50-400, 50-401,
50-402, 50-403

License Nos. CPPR-158, CPPR-159,
CPPR-160, CPPR-161

As a result of the inspection conducted on July 7-10, 1981, and in accordance with the Interim Enforcement Policy, 45 FR 66754 (October 7, 1980), the following violations were identified.

- A. 10 CFR 50, Appendix B, Criterion XIII as implemented by CP&L PSAR Section 1.8.5.13 requires measures be established to control storage and preservation of materials and equipment to prevent damage or deterioration. The storage requirements for air handling and coil units are contained in a Bahnson letter dated April 11, 1979, received onsite April 13, 1979. ANSI N45.2.2 "Packaging, Shipping, Receiving, Storage and Handling of Items for Nuclear Power Plants (During the Construction Phase)" has been identified as the applicable standard for storage and handling. ANSI N45.2.2 prohibits the use of frayed or otherwise deteriorated rigging. ANSI N45.2.2 further requires the establishment of a program for the inspection of rigging including a system that will indicate acceptability. CP&L procedure WP-21, revision 0, "Inspection of Equipment and Rigging for General Lifting" is the controlling site inspection document for handling equipment and materials. Material and equipment storage are controlled by CP&L procedures: AP-XIII-05, revision 10, "Material Storage", PDG-001, revision 20, "Material and Equipment Storage Requirements", PGD-002, revision 12, "Material Maintenance Requirements During Storage for SHNPP", and AP-XIII-07, revision 14, "In-Storage Inspection and Maintenance". WP-21 requires rigging materials to be period color coded. PDG-001 requires fabricated piping assemblies to be capped. PGD-002 requires general inspections for damaged or missing caps. PGD-002 further requires that tape be impervious to water and not subject to cracking or drying out if exposed to sunlight, heat or cold. AP-XIII-05 requires piping assemblies to be stored on dunnage.

Contrary to the above, on July 7 to 10, 1981, measures were inadequate to control material and equipment storage and preservation in that the following conditions were noted:

1. A number of safety related air handling and coil units were improperly stored out doors. This condition went unidentified from April 1979 to March 1981.
2. Badly abraded and deteriorated cloth slings are used to lift, support or handle safety related materials and equipment.

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3. On safety related materials and equipment, there is no documented inspection program for nonlifting rigging.
4. Cloth slings in the power block construction area are not period color coded.
5. Damaged pipe caps on numerous safety related piping assemblies.
6. Numerous examples of deteriorated tape used to seal safety related piping assemblies.
7. Numerous examples of safety related and balance of plant stainless steel piping subassemblies off dunnage in contact with mud.

This is a Severity Level V Violation (Supplement II.E).

- B. 10 CFR 50, Appendix B, Criterion XVII as implemented by CP&L PSAR Section 1.3.5.17 requires sufficient records be maintained to furnish evidence of activities affecting quality. The records shall include qualifications of personnel.

Contrary to the above, on July 10, 1981, sufficient records were not maintained to furnish evidence of activities affecting quality in that: the training and qualifications records for several welding inspectors did not reflect required class-room training, and the training and qualification records for one welding inspector indicated one year of QC/QA related experience when in fact, the individual had only 10 months QC/QA related experience.

This is a Severity Level VI Violation (Supplement II.F).

Pursuant to the provisions of 10 CFR 2.201, you are hereby required to submit to this office within thirty days of the date of this Notice, a written statement or explanation in reply, including: (1) admission or denial of the alleged violations; (2) the reasons for the violations if admitted; (3) the corrective steps which have been taken and the results achieved; (4) corrective steps which will be taken to avoid further violations; and (5) the date when full compliance will be achieved. Consideration may be given to extending your response time for good cause shown. Under the authority of Section 182 of the Atomic Energy Act of 1954, as amended, this response shall be submitted under oath or affirmation.

Date: AUG 13 1981



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

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OCT 27 1981

Carolina Power and Light Company
ATTN: Mr. J. A. Jones, Senior Executive
Vice President and Chief
Operating Officer
411 Fayetteville Street
Raleigh, NC 27602

Gentlemen:

Subject: Report Nos. 50-400/81-18, 50-401/81-18, 50-402/81-18 and 50-403/81-18

This refers to the special inspection conducted by Mr. J. R. Harris of this office on September 8-11 1981, of activities authorized by NRC Construction Permit Nos. CPPR-158, CPPR-159, CPPR-160 and CPPR-161 for the Shearon Harris facility. Our preliminary findings were discussed with Mr. R. M. Parsons, Site Manager, at the conclusion of the inspection.

Areas examined during the special inspection and our findings are discussed in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

During the inspection, it was found that certain activities under your license appear to violate NRC requirements. This item and references to pertinent requirements are listed in the Notice of Violation enclosed herewith as Appendix A. Elements to be included in your response are delineated in Appendix A.

In accordance with 10 CFR 2.790 of the Commission's regulations, a copy of this letter and the enclosed report will be placed in the NRC's Public Document Room. If the report contains any information that you believe to be exempt from disclosure under 10 CFR 9.5(a)(4), it is necessary that you: (a) notify this office by telephone within ten days from the date of this letter of your intention to file a request for withholding; and (b) submit within twenty-five days from the date of this letter a written application to this office to withhold such information. If your receipt of this letter has been delayed such that less than seven days are available for your review, please notify this office promptly so that a new due date may be established. Consistent with section 2.790(b)(1), such application must be accompanied by an affidavit executed by the owner of the information which identifies the document or part thereof sought to be withheld, and a full statement of the reasons on the basis of which it is claimed that the information should be withheld from public disclosure. This section further requires the statement to address with specificity the considerations listed in 10 CFR 2.790(b)(4). The information sought to be withheld shall be incorporated

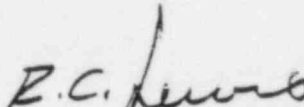
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OCT 27 1981

as far as possible into a separate part of the affidavit. If we do not hear from you in this regard within the specified periods noted above, the report will be placed in the Public Document Room.

Should you have any questions concerning this letter, we will be glad to discuss them with you.

Sincerely,



R. C. Lewis, Director
Division of Resident and
Reactor Project Inspection

Enclosures:

1. Appendix A, Notice of Violation
2. Inspection Report Nos. 50-400/81-18,
50-401/81-18, 50-402/81-18 and
50-403/81-18

cc w/encl:

R. Parsons, Site Manager

APPENDIX A

NOTICE OF VIOLATION

Carolina Power and Light Company
Shearon Harris 1, 2, 3 and 4

Docket Nos. 50-400, 50-401, 50-402,
and 50-403
License Nos.: CPPR-158, CPPR-159
CPPR-160 and CPPR-161

As a result of the inspection conducted on September 8-11, 1981, and in accordance with the Interim Enforcement Policy, 45 FR 66754 (October 7, 1980), the following violation was identified.

10 CFR 50, Appendix B, Criterion VIII as implemented by PSAR Section 1.8.5.8; CP&L Corporate QA Program, Section 5 and Construction Procedures AP-XIII-08 and CQC-7, requires that materials, parts and components be identified and controlled to prevent the use of incorrect or deficient materials, parts and components.

Contrary to the above, safety-related and non-safety-related traveling screen guides used in the Emergency Service Water Intake Structure were not controlled so as to prevent their incorrect use. On September 10, 1981, the inspector observed that safety-related and non-safety-related screen guides were tagged with QA acceptance tags and stored together in the laydown area and that at the intake structure where the screen guides were being installed, safety and non-safety-related guides were stored together or were not properly identified so as to distinguish safety-related screens guides from non-safety-related screen guides.

This is a Severity Level V Violation (Supplement II.E).

Pursuant to the provisions of 10 CFR 2.201, you are hereby required to submit to this office within thirty days of the date of this Notice, a written statement or explanation in reply, including: (1) admission or denial of the alleged violations; (2) the reasons for the violations if admitted; (3) the corrective steps which have been taken and the results achieved; (4) corrective steps which will be taken to avoid further violations; and (5) the date when full compliance will be achieved. Consideration may be given to extending your response time for good cause shown. Under the authority of Section 182 of the Atomic Energy Act of 1954, as amended, this response shall be submitted under oath or affirmation.

The responses directed by this Notice are not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, PL 96-511.

Date: OCT 27 1981

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

OCT 27 1981

Report Nos. 50-400/81-18, 50-401/81-18, 50-402/81-18, 50-403/81-18

Licensee: Carolina Power and Light Company
411 Fayetteville Street
Raleigh, NC 27602

Facility Name: Shearon Harris

Docket Nos. 50-400, 50-401, 50-402, 50-403

License Nos. CPPR-158, CPPR-159, CPPR-160, CPPR-161

Inspection at Shearon Harris site near Raleigh, NC

Inspector: J. R. Harris

10/26/81
Date Signed

Approved by: T. E. Conlon
T. E. Conlon, Section Chief
Engineering Inspection Branch
Engineering and Technical Inspection Division

10-26-81
Date Signed

SUMMARY

Inspection on September 8-11, 1981

Areas Inspected

This special unannounced inspection involved 32 inspector-hours on site to address 12 allegations regarding protective coatings, structural concrete, control of design changes, intake structure gate guides, foundations, and protection of installed electric motors.

Results

The inspection of the 12 allegations revealed the following.

1. Four allegations were correct or partially correct as stated; however, the licensee's QA program had detected the problems described and corrective action was taken or is in progress.
2. Four allegations were correct or partially correct as stated; however, these did not involve violation of NRC regulations and are of no safety significance.

ALLEGATIONS
COVERED AND
CORRECTED

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POA/LAR

3. One allegation was partially correct as stated. Investigation of this allegation resulted in identification of an unresolved item pending further review by NRC.
4. Investigation of one allegation is incomplete and will continue in future NRC investigations.
5. The remaining two allegations were not substantiated; however, during investigation of one of these allegations, a violation was identified (Control of ESW Gate Guides - paragraph 7.g).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *R. M. Parsons Site Manager
- *H. R. Banks, Manager Corporate QA
- *A. M. Lucas, Senior Resident Engineer
- *G. L. Forehand, Director of QA/QC
- *B. Seyler, Principal Civil Engineer
- *L. R. Garner, Senior Construction Specialist, Civil
- *E. L. Kelly, Senior QA Specialist
- *J. F. Nevill, Principal Civil Engineer
- *L. E. Jones, Principal QA Engineer
- P. Morris, Engineering Administration Specialist
- G. Thompson, Civil Construction Inspection Supervisor
- J. Abernathy, Materials & Coatings Engineer

Other licensee employees contacted included five construction craftsmen, six technicians, and three office personnel.

Other Organizations

- *W. D. Goodman, Project Manager, Daniels

NRC Resident Inspector

- *G. Maxwell

- *Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on September 11, 1981 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 violations or deviations. New unresolved items identified during this inspection are discussed in paragraph 7a.

5. Independent Inspection

No independent inspection was conducted.

6. Scope of Inspection

Individuals contacted NRC, Region II representatives and expressed various concerns with construction activities at the Shearon Harris Nuclear Plant. These individuals, hereinafter referred to as "allegers", contacted the NRC independent of each other. Each of the allegers expressed different concerns. The specific allegations addressed during this inspection are as follows:

- a. A prohibited substance was used to repair cracks and fill construction joints inside the containment building.
- b. A letter was provided to the NRC which erroneously stated that no epoxy was used in the containment building below the 246 elevation.
- c. Protective coatings were improperly applied and may not adhere properly.
- d. Areas in concrete where placement form tie rods had been cut off (bug holes) were not properly repaired.
- e. When problems are found, field change requests (FCR's) are issued to avoid the original specifications.
- f. A cold joint exists on the 211-elevation in the "core key" area of the Unit 2 containment building.
- g. Non-seismically-qualified gate guides were used at the intake structure when seismically qualified gate guides were required.
- h. Concrete was poured even though preparation for the pour was known to be inadequate.
- i. Sheet metal welded to seismic plates touching reinforcing bar may lead to damage to the reinforcement due to cathodic action.
- j. Installed motors were improperly protected during sandblasting operations and now have sand inside them.
- k. Waterproofing on the below grade portion of the turbine building wall was damaged and improperly repaired.
- l. Improper rebar cadwelds have been performed by several welders throughout the containment building.

7. Allegations, Discussions and Findings

a. Allegation

An alleged expressed the concern that a substance referred to as "Concresive" was used to repair cracks and construction joints to stop water in-leakage on the 211-elevation of the "Core Key" area of the containment building. The individual indicated that the repair substance contained epoxy which was not supposed to be used below the 246-elevation because of possible radiation affects on the epoxy.

Discussion

The inspector examined the 211-elevation in the core key area of the containment building and discussed the use of Concresive 1411 epoxy grout with responsible engineers. Concresive 1411 epoxy grout is being used and has been approved for use in Service Level 1 areas which includes the 211-elevation of the core key area of the containment building. Examination of its use and discussions with responsible engineers disclosed that Concresive is being used in accordance with specification CAR-SH-COR-02, "Protective Coating Application". Examination of technical report 215-78-G, "Compatability Testing - Concresive 1411 Epoxy Mortar" showed that Design Base Accident tests with simulated LOCA conditions were performed by Southern Imperial Coatings Corporation on January 25, 1978. However, the test report was not clear as to whether the testing included radiation tolerance. Section 1 of the PSAR states that the QA requirements for protective coatings comply with regulatory guide 1.54. Regulatory Guide 1.54 references American National Standards N101.4, N101.2 and N5.9 which require that coatings used in Service Level 1 areas be tested for radiation tolerance. Lack of evidence verifying that radiation tolerances have been performed on Concresive 1411 epoxy grout was identified to the licensee as Unresolved Item 50-400,401,402,403/81-01, "Epoxy Grout Radiation Tolerance", pending review of the test data by NRC.

Findings

The allegation is partially correct as stated in that Concresive was used below the 246 elevation in the containment building. However, the Concresive grout has been tested for Design Base Accident environmental conditions and approved for use in the containment building. The test data was not clear as to whether the testing included radiation tolerance. Lack of verification of radiation tolerance was identified to the licensee as an unresolved item.

No violations or deviations were identified.

b. Allegation

An alleged expressed a concern that a letter was provided to the NRC which erroneously stated that epoxy was not used in the containment building below the 246-elevation.

Discussion

The NRC inspector examined the subject letter and discussed the use of epoxy based coatings and grout materials in the containment building with responsible engineers and inspectors.

The subject letter, dated May 14, 1981, is an internal memorandum from the Senior Resident Engineer to the Site Director of QA/QC. A copy of this memorandum was provided to the NRC resident inspector. The memorandum does state that epoxy was not used below the 249 elevation in the containment buildings. However, the memorandum also references FCR-C-2417 for clarification of areas acceptable for use of epoxy material. FCR-C-2147, and its referenced documents (FCR-C-096, FCR-C-1648, and FCR-C-174) state that approved epoxy based materials can be used anywhere in the containment building except on the inside face of the primary shield wall between elevation 236 and 249.

As stated in paragraph 7.a, an epoxy grout was used in the core key areas on the elevation 211 level of the containment building. Examination of the areas in the containment building where coatings have been applied and review of test reports on coating materials disclosed that epoxy coatings have been applied below the elevation 249 level in the containment building. The inspector discussed with responsible licensee engineers, the internal memorandum which implies that no epoxy was used below elevation 249 in the containment building. These discussions disclosed that, as a result of a compositional error, the memorandum was not clear and implied that no epoxy was used below elevation 249 in the containment building, when in fact it was. This memorandum was not an official QA record or document nor was it an official letter to the NRC.

Findings

The allegation was correct as stated in that a letter was provided to the NRC which erroneously stated that no epoxy was used in the containment below elevation 246. However, this letter was a copy of an internal memorandum from the Resident Engineer to the Site QA/QC Director and not an official letter to the NRC. The memorandum contains a compositional error which implies that epoxy was not used below elevation 249 of the containment building. This memo is not a QA record. The use of epoxy based materials in areas below elevation 249 in the containment building is clearly documented in site QA records. No violations or deviations were identified.

c. Allegation

According to an alleged, 11-S coating was applied on top of Concrevisive grout used to seal cracks on the 211-elevation in the core key area before in-leakage of water was stopped. The alleged does not believe the coating cured properly because of moisture present.

Discussion

Discussions with responsible engineers and examination of the subject area disclosed that deficiency report number DR PC-34 was written because of improperly applied 11-S coating on the 211 elevation of the core key and that the improperly applied 11-S coating was removed. DR PC-34 was initiated before the allegation was reported to the NRC and is still open pending resolution of the deficiency.

Findings

The allegation was correct as stated. However, the licensee identified the deficiency and initiated a deficiency report in accordance with the site QA/QC program.

No violations or deviations were identified.

d. Allegation

According to an alleged, dry patch, which was used to repair tie rod holes (bug holes) in concrete in zones 3 and 4 of the unit one containment building, began to crumble. The crumbling dry patch was subsequently covered with grout and protective coatings.

Discussion

The inspector examined the concrete in zones 3 and 4 of the containment building and discussed the use of dry patch in repairing "bug holes" and problems encountered in the use of coatings on dry patch with responsible engineers. Discussions with responsible engineers disclosed that the subject concern had been identified by the licensee as a deficiency in DR PC-09 on March 20, 1981. Examination of DR PC-09 and the attached investigation report showed that improperly cured dry patches had been covered with Concrevisive 1411. The discovery of Concrevisive being applied over improperly cured dry patches resulted in a comprehensive investigation of all concrete surfaces which received a Nutec 11S coating in Zones 1, 3 and 4 of the containment building. In the investigation report, three responsible QC inspectors stated all improperly cured dry patches were removed prior to coating with Nutec 11S. The cause of the improperly cured dry patches was attributed to not covering the patches with a curing compound. To

prevent recurrence of the problem, concrete personnel have been instructed to use curing compounds on all cosmetic repairs of bug holes resulting from cut-off of tie rods. All dry patches improperly covered with Concrese were removed and repaired. Examination of the subject areas by the NRC inspector showed no improperly cured dry patches or evidence that coatings have been applied to improperly cured dry patches.

Findings

The allegation was correct as stated. Improperly cured dry patches were covered with Concrese grout 1411; however, the licensee's QA program detected the deficiency before the allegation was reported to the NRC and adequate corrective action was taken.

No violations or deviations were identified.

e. Allegation

An allexer stated that some of the design field change requests (FCR's) are "taken care of on site" rather than going back to the person or organization which approved the original specification.

Discussion

The inspector examined sections 2 and 3 of the revised Corporate QA Program Manual and Section 3 of the Nuclear Power Engineering Design (NPED) procedure manual. These manual sections pertain to design changes, FCRs and specification amendments. Examination of these manuals and discussions with responsible management disclosed that the revised QA Manual and implementing NPED procedures meet the design control requirements specified in Regulatory Guide 1.64, ANSI Standard N45.2.11, 1974 and Criterion III, Design Control, of Appendix B, Title 10 of the Code of Federal Regulations. These requirements specify that: "Design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and be approved by the organization that performed the original design unless the applicant designates another responsible organization". The plant owner shall designate the new responsible organization which may be the owners' own engineering organization."

The CP&L Corporate QA Manual specifies that the Vice President of the Nuclear Power Engineering Department (NPED), is responsible for Nuclear Power Engineering. It further specifies that he assigns responsibility for engineering of the Shearon Harris plant to the Manager of Engineering. These responsibilities include direction of the plant design effort and management of the assigned A/E contracts. Also, in

accordance with delegated responsibility from the Vice President of NPED, Manager of Engineering is responsible for deciding the disposition of FCR's. Most of the FCR's are dispositioned through the original A/E. However, in accordance with the Corporate QA program, the Manager of Engineering, Harris Plant, has the authority to disposition FCR's onsite if the following criteria are met:

- (1) CP&L has access to pertinent background information;
- (2) CP&L has demonstrated design competence; and
- (3) CP&L has an understanding of the design intent.

Examination of FCR controls by this NRC inspector and by other NRC inspectors on design controls (documented in NRC reports 80-12 and 81-09) showed that FCR's are being controlled in accordance with the Corporate QA Program, and that the licensee appears to have an adequate management control system in the area of engineering and design control.

Findings

The allegation was correct as stated. Specification amendments and FCRs are sometimes approved by CP&L without going back to the originator for approval. However, these changes are permissible under the Corporate QA program manual and NPED procedure manual.

No violations or deviations were identified.

f. Allegation

According to an allegor, about one and one-half years ago, a concrete placement of approximately 3000 yards was being made in the core key area of the Unit 2 containment building when a cold joint developed. When this cold joint developed, instructions were given by responsible CP&L management to put concrete over the joint and blend it with a vibrator.

Discussion

The inspector examined the records for the concrete pours made to date in the core key area of the Unit 2 containment building. Only two large pours were made, pour number 2CBSL216001 (3000 cubic yards) and pour number 2CBSL216002 (4889 cubic yards). Examination of documentation and discussions with responsible construction craft and engineers disclosed that some problems were encountered in placing pour number 2CBSL216002, but not pour number 2CBSL216001. Pour number 2CBSL216002 was placed on December 13-14, 1979, in the core key area between elevation 208 and 216. According to the CP&L Construction Superintendent and the CP&L QC inspector on the placement there was some concern as to

whether or not a cold joint developed. The Civil QC Inspector documented the concern on the Field Inspection Report. Discussions with responsible engineers and examination of the Field Inspection Report disclosed the following:

- (1) During the placement on December 14, 1979, at approximately 8:30 p.m., a questionable area of concrete was observed.
- (2) The Civil QC Inspector directed that the area be vibrated which resulted in penetration of the concrete.
- (3) The concrete pump malfunctioned and its length of potential downtime was unknown.
- (4) A bucket was ordered to place fresh concrete in the area.
- (5) The Site Manager and the Construction Superintendent were notified that the concrete appeared to have an initial set.
- (6) After twenty minutes, fresh concrete was placed on the questionable concrete.
- (7) The Site Manager, Construction Superintendent and Civil QC Inspector observed vibrating operations; the penetration was sufficient to consolidate the two layers.
- (8) The Site Manager, Construction Superintendent, Civil QC Inspector and Daniel Construction Superintendent were in agreement that the area was definitely not a cold joint.

Findings

The allegation was not substantiated. There was some concern during the placement of pour number 2CBSL216002 in the core key area of the Unit 2 containment building that a cold joint might have developed. Documentation and discussions indicated that fresh concrete was put on the old concrete to keep it alive (a normal construction practice) and vibrated. A cold joint did not develop during this placement. The action of placing fresh concrete on top of old concrete and vibrating it prevented formation of a cold joint.

No violations or deviations were identified.

g. Allegation

Non-seismically-qualified gate guides were used at the intake structure when seismically qualified gate guides were required.

Discussion

Examination of pertinent drawings disclosed that the following type gate guides are to be installed in the Emergency Service Water and Cooling Tower Water Intake Structure.

<u>GUIDE TYPE</u>	<u>CLASS</u>
(1) Traveling screen guides	Seismic & Non-Seismic
(2) Coarse screen guides	Seismic
(3) Fine screen guides	Seismic
(4) Stop log guides	Non Seismic

The drawings show that the non-seismic traveling screen guides are for the cooling tower (i.e., non-safety related) bay of the intake structure.

Examination of purchase documents showed the following. The coarse screen, fine screen and stop log guides were all purchased as seismic class (i.e., safety-related) components. The stop log guides were purchased as seismic, even though this classification was not required for these items. The traveling screen guides were purchased as safety related (seismic) and non-safety related (non-seismic) components. The safety related traveling screen guides were purchased under purchase order number 435-223 and the non-safety related screen guides were purchased under purchase order number 435-222.

On September 10, the inspector examined controls on storage of the traveling screen guides. The inspector observed that safety-related and non-safety related screen guides were tagged with QA acceptance tags and stored together in the permanent laydown area. The inspector also observed that the safety related and non-safety related screen guides were stored together in the temporary storage area at the intake structure pending their installation in the structure. The screen guides in the temporary storage area were not identified as to which ones were safety related and which ones were non-safety related. The inspector examined the screen guides and could not detect any visible difference between the safety related and non-safety related screen guides. In accordance with 10 CFR 50, Appendix B, Criterion VIII, as implemented by CP&L's PSAR Section 1.8.5.8, CP&L's Corporate QA Program, Section 5, and Shearon Harris Construction Procedures A-X111-08 and CQC-7, materials, parts and components, are to be identified and controlled to prevent the use of incorrect or deficient materials, parts, and components. Failure to control safety-related materials in accordance with these requirements was identified to the licensee as Violation Item 50-400, 401, 402, 403/81-18-02, "Control of ESW Gate Guides" .

Findings

The allegation was not substantiated. However, during the investigation of the allegation, it was determined that storage of seismically qualified screen guides was not controlled. Lack of control on storage of the traveling screen guides may have resulted in non-seismically qualified gate guides being installed in the intake structure. This was identified to the licensee as a violation.

h. Allegation

According to an allexer, an exterior wall in the fuel handling area was poured over a surface that had not been properly cleaned. Dirt had not been cleaned from an area of approximately 3 to 4 square feet.

Discussion

The NRC inspector examined exposed concrete surfaces and construction joints in the fuel handling building and discussed preplacement cleanup inspections with responsible construction inspectors. Examination of exposed concrete surfaces and construction joints and discussions with responsible engineers disclosed some voids were discovered in a horizontal construction joint due to dirt pockets. However, these voids were identified by the licensee in deficiency report number DR-C-156 on January 15, 1979, and are being corrected in accordance with the QA program. The area of concern was in placement number 1FHSL246001 in the South Fuel Pool Slab. No other areas of voids due to improper cleanup were detected by the inspector.

Findings

The allegation was substantiated. One case of voids due to improper prepour cleanup was disclosed; however, the licensee identified the deficiency before the allegation was reported to NRC and initiated a deficiency report in accordance with the site QA/QC program. Prepour cleanup will be examined by NRC in future inspections.

No violations or deviations were identified.

i. Allegation

According to an allexer, sheet metal is welded to seismic plates which are in contact with reinforcing steel in the northeast corner of the fuel handling building at the 236 elevation. This could lead to damage of the reinforcement due to cathodic action.

Discussion

Seismic plates are imbedded and anchored in the concrete for the purpose of attaching equipment to the concrete walls. The seismic plates are anchored in the concrete by steel bars welded in a vertical position to the backside of the plate. These bars are attached to the reinforcing steel to hold the plates in position during the concrete pour. The steel bars and reinforcing steel are similar metals and thus have limited potential for cathodic reaction. Also, for a cathodic reaction to take place, moisture must be present. Even if the materials were dissimilar, there would be little potential for a cathodic reaction as their imbedment in concrete would limit the presence of moisture.

The inspector examined the 236-elevation of the fuel handling building. Observations showed that galvanized unistrut material is welded to seismic plates which in turn are in contact with reinforcing steel. Electric conduit pull boxes are bolted to the unistrut material. Observations and discussions revealed that the seismic plates are serving their intended function and that conditions do not exist which would cause a cathodic reaction that would harm the reinforcing steel.

Findings

The allegation is partially correct as stated in that sheet metal is welded to seismic plates touching reinforcing bar. However, the purpose of the seismic plates is to weld sheet metal hanger material to the plates and then attach equipment to the hanger material. Conditions for an adverse cathodic reaction were not identified by the NRC inspector.

No violations or deviations were identified.

j. Allegation

According to an allegor, installed electric motors in a series of small rooms on the 236-elevation in the reactor auxiliary building were not protected during sandblasting operations.

Discussions

The NRC inspector examined the subject electric motors and discussed this concern with responsible engineers. The licensee is aware of the problem and identified the problem in deficiency report number DDR 552 on April 1, 1981.

Findings

The allegation is correct as stated. Some electric motors were not properly protected during sandblasting operations on the 236-elevation in the reactor auxiliary buildings. However, the licensee identified the problem in a deficiency report before the allegation was reported to NRC and is taking corrective measures in accordance with the site QA/QC program.

No violations or deviations were identified.

k. Allegation

According to an allegor, waterproofing on the below grade portion of the turbine building was damaged and improperly repaired.

Discussion

The turbine building foundation is a non-safety related structure and is not subject to the requirements of the site QA/QC program or the requirements of Appendix B, Title 10 of the Code of Federal Regulations. However, the NRC inspector examined the subject area and discussed the subject concern with the Site Manager. The Site Manager indicated he was present during the excavation and patching of the waterproof liner. He stated small blisters of water had formed in the waterproofing membrane as a result of water in-leakage where the top of the membrane was exposed at the surface. Normally, the membrane is surrounded by impervious backfill. He stated that workmen were excavating the fill and exposing the blisters, cutting them to drain the water and then patching the cuts. He stated the excavating and patching had proceeded to a depth such that the foundation of the adjacent transformer structure was in danger of being undermined and collapsing on the workmen. Because of the unsafe conditions he ordered the workmen to cease the digging, blister draining and patching operation and to backfill the area. He stated the small blisters contained only small amounts of moisture and were not detrimental to the membrane integrity or foundation. He felt that the water blisters could be accepted rather than to continue with a digging operation that could have resulted in a serious accident.

Findings

The allegation was correct as stated. However, this allegation involved a non-safety related structure and the item of concern was witnessed by the Site Manager and handled in accordance with sound engineering judgement.

No violations or deviations were identified.

████████████████████

According to an alleged improper rebar cadwelds have been made by several welders throughout the containment building.

Discussion

The NRC inspector interviewed the four cadwelders working the second shift. Discussions with the cadwelders disclosed that they were knowledgeable in cadwelding operations and requirements. The cadwelders all stated that they did not know of any improper cadwelding and had not heard anyone make comments regarding improper cadwelds.

Findings

The NRC inspector was unable to substantiate that any improper cadwelds have been made. This allegation will be examined further in future NRC inspections.

No violations or deviations were identified.

APR 28 1982

Carolina Power and Light Company
ATTN: Mr. J. A. Jones, Senior Executive
Vice President and Chief
Operating Officer
411 Fayetteville Street
Raleigh, NC 27602

Gentlemen:

Subject: IE Report No. 50-400/82-03 and 50-401/82-03

This refers to the investigation conducted by Mr. J. Y. Vorse of this office on December 11, 1981 to February 26, 1982, of activities authorized by NRC Construction Permit Nos. CPPR-158 and CPPR-159 for the Shearon Harris facility.

Areas examined during the investigation and our findings are discussed in the enclosed investigation report. Within these areas, the investigation consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the investigator.

During the investigation, it was found that certain activities under your license appear to violate NRC requirements. These items and references to pertinent requirements are listed in the Notice of Violation enclosed herewith as Appendix A. Elements to be included in your response are delineated in Appendix A.

In accordance with the provisions of 10 CFR 2.790(a), a copy of this letter and the enclosures will be placed in the NRC's Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 2.790(b)(1).

The responses directed by the enclosed Notice are not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, PL 96-511.

82-8030699
PDR-LADR

APR 28 1982

Should you have any questions concerning this letter, we will be glad to discuss them with you.

Sincerely,

James P. O'Reilly
Regional Administrator

Enclosures:

1. Appendix A, Notice of Violation
2. Investigation Report
No. 50-400/82-03

cc w/encl:

R. Parsons, Site Manager

bcc w/encl:

R. Fortuna, IE

M. Resner, OIA

bcc w/encl:

Resident Inspector

Document Management Branch

State of North Carolina

R11:EIS

R10:EIS

R11:ORA

R11:PRP

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APPENDIX A

NOTICE OF VIOLATION

Carolina Power and Light Company
Shearon Harris

Docket No. 50-400
License No. CPPR-158

Based on the results of the NRC investigation conducted on December 11, 1982 to February 26, 1982, and in accordance with the NRC Enforcement Policy 47 FR 9987 (March 9, 1982), the following violations were identified.

- A. 10 CFR 50, Appendix B, Criterion XVIII, as implemented by section 1.8.5.17 of the PSAR, require that inspection records identify the individuals who performed the inspection.

Contrary to the above, a welding inspector signed inspection records indicating he had inspected welds and found them acceptable when, in fact, the welds had been inspected by other individuals and he had not personally inspected the welds.

This is a Severity Level IV violation (Supplement II).

- B. 10 CFR 50, Appendix B, Criterion II, as implemented by section 1.4.9 (1.58) of the PSAR requires the licensee to comply with ANSI N45.2.6-1973.

Contrary to the above, the licensee did not comply with section 2.2 of ANSI N45.2.6-1973 in that two individuals performed weld inspections before they were certified by the licensee as being qualified to perform the assigned work.

This is a Severity Level IV violation (Supplement II).

Pursuant to the provisions of 10 CFR 2.201, you are hereby required to submit to this office within thirty days of the date of this Notice, a written statement or explanation in reply, including: (1) admission or denial of the alleged violations; (2) the reasons for the violations if admitted; (3) the corrective steps which have been taken and the results achieved; (4) corrective steps which will be taken to avoid further violations; and (5) the date when full compliance will be achieved. Consideration may be given to extending your response time for good cause shown.

APR 28 1982

Date: _____

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POR-LPOR



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

INVESTIGATION REPORT NO. 50-400/82-03

SUBJECT: Carolina Power and Light Company
Shearon Harris Nuclear Plant
Unit 1

Improper Welding Inspection Practices

DATES OF INVESTIGATION: December 11, 1981 - February 26, 1982

INVESTIGATOR:

J. Y. Vorse
J. Y. Vorse, Regional Investigator
Enforcement and Investigations Staff

04-19-82
Date Signed

REVIEWED BY:

Carl E. Alderson
Carl E. Alderson, Director
Enforcement and Investigations Staff

4-22-82
Date Signed

3208030706
PDR-LPOR

A. INTRODUCTION

On December 4, 1981, the NRC Resident Inspector assigned to Carolina Power and Light Company's Shearon Harris nuclear power plant, advised Region II that several personnel had complained to him that a welding inspector was not performing visual weld inspections properly. The personnel who complained had no first hand knowledge; however, the rumor among the welders and welding inspectors was that if a hanger was located in an inaccessible area, the individual would not inspect the weld but would sign it off as acceptable. One complainant identified a specific hanger which was rumored to have not been properly inspected by the welding inspector. This hanger was inspected by the Resident Inspector and all welds appeared to be acceptable. However, the adjacent hanger had one weld which appeared to be rejectable. The Resident Inspector later learned the hanger welds had been inspected and accepted by the welding inspector in question.

Based on the number of personnel who were complaining about the welding inspector's weld inspection practices and the potential impact on the welding inspection program, an investigation was initiated by Region II on December 11, 1981, under the authority provided by Section 161.c of the Atomic Energy Act of 1954, as amended.

B. SCOPE OF INVESTIGATION

A review of the information supplied by the Resident Inspector disclosed one allegation to be addressed during the investigation. This was:

A welding inspector was signing off welds on hangers and pipes as acceptable when he had not visually inspected them.

During the course of the investigation, the Investigator held discussions with numerous current licensee and licensee contractor employees. Formal interviews were conducted with 59 individuals who were considered by the Investigator to have potential knowledge of the alleged acts or practices. The investigation also included an inspection of randomly selected hangers and pipes which had been inspected by the particular welding inspector during the time frame the rumors began forming.

The investigation included a review of appropriate regulatory requirements, NRC records and licensee procedures and records including:

- 10 CFR 50, Appendix B
- Shearon Harris Quality Assurance Program
- Personnel Training and Qualification
- Visual Examination of Welds Procedure

This investigation was conducted by one investigator and two inspectors requiring a total of 42 man-hours of investigative and inspection activity on-site.

C. CONCLUSIONS

The allegation was substantiated in that the welding inspector had signed off weld inspections he had not personally performed; however, the welds had been inspected by inspector trainees who were working with the inspector. This results in two violations of NRC requirements:

1. Inspections were performed by uncertified welders; and
2. Inspection records do not reflect the correct identity of the individuals who performed the inspection.



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

APR 29 1982

28

Carolina Power and Light Company
ATTN: Mr. J. A. Jones, Senior Executive
Vice President and Chief
Operating Officer
411 Fayetteville Street
Raleigh, NC 27602

Gentlemen:

Subject: Report Nos. 50-400/82-12 and 50-401/82-12

This refers to the routine safety inspection conducted by Mr. J. J. Lenahan of this office on April 6-9, 1982, of activities authorized by NRC Construction Permit Nos. CPPR-158 and CPPR-159 for the Shearon Harris facility and to the discussion of our findings held with Mr. R. M. Parsons, Project General Manager, at the conclusion of the inspection.

Areas examined during the inspection and our findings are discussed in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

Within the scope of this inspection, no violations or deviations were disclosed.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosure will be placed in the NRC's Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 10 CFR 2.790(b)(1).

Should you have any questions concerning this letter, we will be glad to discuss them with you.

Sincerely,

F. J. Long, Acting Chief
Reactor Projects Branch 1
Division of Project and
Resident Programs

Enclosure:
See Page 2

800528-223
PDR/LPOR

Carolina Power and Light Company

2

APR 29 1982

Enclosure:

Inspection Report Nos. 50-400/82-12
and 50-401/82-12

cc w/encl:

R. Parsons, Site Manager



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

Report Nos. 50-400/82-12 and 50-401/82-12

Licensee: Carolina Power and Light Company
411 Fayetteville Street
Raleigh, NC 27602

Facility Name: Shearon Harris

Docket Nos. 50-400 and 50-401

License Nos. CPPR-158 and CPPR-159

Inspection at Shearon Harris site near Raleigh, North Carolina

Inspector:

J. J. Lenahan

4/28/82

Date Signed

Approved by:

T. E. Conlon, Section Chief

Engineering Inspection Branch

Division of Engineering and Technical Programs

4-28-82

Date Signed

SUMMARY

Inspection on April 6-9, 1982

Areas Inspected

This routine, unannounced inspection involved 27 inspector-hours on site in the areas of structural concrete work activities, application of protective coating inside containment, nonconformance reports on concrete aggregate gradations; previously identified inspector follow-up items, and license identified items.

Results

Of the areas inspected, no violations or deviations were identified.

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DOR/LPOR

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *R. M. Parsons, Project General Manager
- *G. M. Simpson, Principal Construction Specialist
- *W. E. Seyler, Principal Civil Engineer
- *E. L. Kelly, Civil QC Supervisor
- *A. M. Lucas, Senior Resident Engineer
- *G. L. Forehand, Site Director-QA/QC
- *D. C. Whitehead, QA Supervisor
- W. Pridgen, Civil Engineer
- P. Breedlove, Civil Construction Inspector

Other licensee employees contacted included six civil QC inspectors.

NRC Resident Inspector

- *G. F. Maxwell

- *Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on April 9, 1982, with those persons indicated in paragraph 1 above.

3. Licensee Action on Previous Inspection Findings

Not inspected.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Independent Inspector Effort

The inspector examined the following areas:

- a. Soils and concrete laboratories and currentness of calibration of laboratory equipment
- b. Partial placement of pour number 1FHXX295002, an interior wall in the fuel handling building.
- c. Application of protective coatings (NUTEC 11 and NUTEC 11S) on the secondary shield wall at the elevation 261 level in the reactor containment building. The inspector observed preparation of surfaces to

receive protective coatings, mixing of the protective coating materials, application of the coating materials, and QC inspection of the protective coatings activities.

- d. Main Dam and West Aux Dam. Both structures are currently impounding water. Licensee engineers are reading the piezometers weekly until filling of the reservoirs is completed.
- e. Nonconformance report (NCR) numbers C474, C478, C482, C483, C484, C486, C488 and C489. These NCRs document failure of the number 67 aggregate to comply with the ASTM C-33 gradation. These NCRs were written between December 1981 and March 1982.

Licensee engineers have conducted an investigation to identify the cause of the increased number of failing aggregate gradation tests. The results of this investigation are summarized in a memorandum dated March 29, 1982, Subject: SHNPP Number 67 Stone Gradation Problems. As a result of their investigation, licensee engineers concluded that the cause of the increased number of failing gradation tests is probably due to the method of stockpile construction which may result in segregation of the aggregate. The contractor has been directed to alter this method of stockpile construction. The inspector toured the batch plant and noted that the recommendations of the licensee's engineers concerning stockpile construction have been implemented. The inspector witnessed sampling and testing of number 67 aggregate and discussed the test results with licensee QC inspectors. The sampling and testing methods complied with procedure number CQC-13, Concrete Control.

After review of the above NCRs and procedure number CQC-13, and discussions with licensee engineers, the inspector identified the following inspector followup item (IFI):

Procedure CQC-13 requires concrete aggregate to be sampled and tested daily for compliance with specification (ASTMC-33) gradation requirements. The daily sample is taken at the end of the day's concrete production. On days when more than 200 cubic yards of concrete is placed, an additional aggregate sample is required to be obtained and tested after 200 cubic yards of concrete is placed. The inspector noted in review of the NCRs listed above that no gradation failures were recorded for the samples tested on the daily basis. The above NCRs only document aggregate gradation failures which have occurred on samples of aggregate obtained after 200 cubic yards of concrete was placed. The inspector questioned licensee engineers as to the reasons why all the failures are occurring on the aggregate sample obtained after 200 cubic yards of concrete are produced, and why the problem is not occurring in testing the daily samples. The discussions with licensee engineers disclosed that whenever testing of an "after 200 CY" sample fails, concrete production is allowed to continue until the pours in progress are completed (as per stated in procedure CQC-13 to avoid cold joints in the concrete), and an NCR is written to document that concrete was placed in a pour which was produced using aggregate with a gradation not in conformance with specification requirements. After the in-progress

pours are completed, concrete production is stopped until the batch plant aggregate bins are purged and the aggregate is sampled and tested until it meets the gradation requirements. Concrete production is then permitted to resume. When the daily sample fails the gradation test, the bins are purged and aggregate is sampled and tested until satisfactory results are obtained. However, the failing daily test results are not being recorded. The only daily test results being recorded are those which indicate that the aggregate which has been placed in the bins is satisfactory for use in the next day's concrete. The philosophy the licensee has adopted in gradation testing of concrete aggregate is that a passing test indicates that the aggregate is acceptable until the next sample is obtained. The inspector discussed the practice of not recording the "daily" sample gradation failures with licensee engineers and the project manager. The inspector expressed concern that failure to record the "daily" sample failures may result in an inadequate evaluation of aggregate problems and may not reflect an accurate representation of problems encountered and resolved during construction. The licensee agreed to record all "daily" sample test results, including failures and retests. Further review of the concrete gradation problem, and further discussion with licensee personnel disclosed the following:

- (1) The licensee recognized in 1977 that occasional problems with aggregate gradations may be encountered and performed a detailed investigation of aggregate gradation at that time. The batch plant was modified in 1977 to provide for rescreening of aggregate not meeting specification gradation requirements. The inspector reviewed the results of the 1977 aggregate investigation.
- (2) The failing aggregate test results are only slightly outside (usually 1 or 2 percent) of the specification limits. Standard concrete industry practice recognizes that occasionally aggregate will not meet the standard ASTM C-33 aggregate gradation. Also ACI specifications permit use of aggregates not conforming to the ASTM C-33 gradations if it can be demonstrated that concrete of acceptable strength can be produced from these aggregates. There are numerous reports prepared by the Corps of Engineers, The Bureau of Reclamation, the National Highway Research Board, and other agencies documenting cases where out of ASTM C-33 specification aggregate has produced acceptable concrete.
- (3) The average strength of the concrete being produced at the site, as indicated by unconfined compression test results of concrete cylinders, is exceeding the required design strengths by 15 to 40 percent. Aggregate with gradations slightly (less than 5 percent) outside of ASTM C-33 limits will have no impact on the strength of the concrete. In addition, slight (less than 5 percent) deviations from specification gradation limits would have no impact on unit weight, workability or durability of the concrete.
- (4) ACI 304 recommends that aggregate gradations be evaluated using a running average of 5 to 10 previous tests. This results in the use of an average gradation for quality control and permits the use of aggre-

gate with an occasional gradation test results slightly out of spec. The licensee is evaluating the use of the running average method to control aggregate gradation. This will result in a more meaningful quality control test method in lieu of their present method which evaluates only individual test results.

The inspector will review the licensee's actions to document and correct the aggregate gradation problem in a future inspection. This was identified to the licensee as inspector followup item 400/82-12-01 and 401/82-12-01, "Evaluation of Concrete Aggregate Gradation Problems."

No deviations or violations were identified.

6. Containment (Structural Concrete II) - Observation of Work and Work Activities - Unit 1

The inspector made a detailed review of installation and inspection of reinforcing steel for pour number 1CBXW396002, Elevation 391 to 396 of the reactor building dome.

Acceptance criteria examined by the inspector appear in the following documents:

- a. PSAR Section 5
- b. CP&L procedure number WP-11, Fabrication and Installation of Rebar
- c. CP&L procedure TP-22, Inspection of Rebar Installation
- d. Drawing numbers CAR 2167-G-0660 and CAR 2167-G-0661, Containment Building Dome Reinforcing Steel
- e. Field Change Requests (FCR) numbers FCR C2483, C2843, C3059, and C3067

The inspector verified that the reinforcing steel was installed as per the requirements shown on the drawings and FCRs. The inspector measured spacing of the rebar and verified that the proper number and size of bars had been installed. The inspector discussed inspection requirements and acceptance criteria used in rebar inspection with the civil QC inspector responsible for performing the reinforcing steel inspection.

No deviations or violations were identified.

7. Previously Identified Inspector Followup Item

(Closed) Inspector Followup Item 400/81-20-02 and 401/81-20-02: Inspection of Curing Compound Application. The inspector reviewed the licensee's disposition of Deficiency and Disposition Report (DDR) Number 559. This DDR was a deficiency identified by the site QA/QC group concerning lack of requirements in the construction inspection procedure, TP-15, to observe the actual application of curing compound on the surface of concrete to be cured. In order to correct this deficiency the licensee has revised procedure numbers TP-15 and WP-17. The revision to work procedure WP-17, Concrete, requires the area engineer to compute the minimum quantity of

curing compound required to be placed on each placement to meet the manufacturer's minimum application rate. The concrete curing superintendent is then required to record the actual amount of curing compound used on each placement on the concrete curing record. The inspector reviewed curing records and verified that these quantities of curing compounds (minimum required and quantity actually applied) were being recorded. The revision to inspection procedure, TP-15, Concrete Placement Inspection, requires the construction inspectors to verify that the quantities of curing compounds applied to placements equals or exceeds the required amount. The inspector reviewed a memorandum dated September 16, 1981, Subject: SHNPP Application and Inspection of Curing Compound. This memo summarizes the methods used to inspect applications of concrete curing compounds previous to the revision to procedure TP-15 discussed above. The memo states that curing compound application had been inspected previous to the revision though not fully described in the procedure. The inspector has no further questions on this item at this time. This item is closed.

8. Licensee Identified Item (10 CFR 50.55(e))

Prior to this inspection, the licensee identified the following item under 10 CFR 50.55e:

(Open) Item (CDR 50-400/82-71) Deficiencies in Welded Studs on Embedded Strip Plates. This item was reported to NRC Region II on February 17, 1982. The licensee submitted a final report to NRC for this item on March 19, 1982. During receipt inspection of strip plates which are to be embedded in concrete, licensee inspectors found plates which contained studs with inadequate weld connections to the plate. These plates, which were supplied by Alfab, Inc., were received onsite on January 10, January 29, and February 25, 1982. Alfab is required, under their QA program, to inspect the plates for conformance to specification requirements in their shop prior to release for shipping to the site. Of the 1914 plates received on those dates, licensee inspectors rejected 61 plates. The licensee has determined that the rejected plates could not meet the plate design criteria with defective studs. The rejected plates were returned to the vendor for repair. The inspector reviewed DDR number 806, 812, and 840 which document the problems noted in receipt inspection of the above embed plates.

The licensee is currently inspecting all embed plates fabricated by Alfab when they are received onsite. The inspector discussed the inspection program and the problem with the defective stud welding with licensee QA/QC inspectors who perform the receipt inspections. As a result of this problem, the licensee conducted an audit of Alfab and discussed corrective action with them to prevent repetition of this problem. The vendor stated that they would increase their inspection and testing frequency to ensure adequate welding.

On April 2, 1982, the licensee informed NRC Region II that some embed plates in a shipment received onsite after the final report for this item was submitted to NRC (March 19, 1982) had studs with defective welds. This

problem was documented on DDR 862. The licensee will submit an addendum to the final report which discusses DDR862 to NRC Region II by May 15, 1982. During review of this problem at the site, the inspector was informed that 35 of 79 embed plates fabricated by Alfab and received at the site on April 7, 1982 were rejected because of defective welds in the connections of cadweld sleeves to embed plates. The inspector reviewed a draft of DDR 890 which was written to document and correct this problem. The licensee is evaluating the defective welding on the cadweld sleeves as a separate item. This item remains open pending further review by NRC.



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

Vorse
29

MAY 25 1982

Carolina Power and Light Company
ATTN: Mr. J. A. Jones, Senior Executive
Vice President and Chief
Operating Officer
411 Fayetteville Street
Raleigh, NC 27602

Gentlemen:

Subject: IE Report No. 50-400/82-08 and 50-401/82-08

This refers to the investigation conducted by Mr. J. Y. Vorse of this office on February 22-23, 1982, of activities authorized by NRC Construction Permit Nos. CPPER-158 and CPPER-159 for the Shearon Harris facility.

Areas examined during the investigation and our findings are discussed in the enclosed investigation report. Within these areas, the investigation consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the investigator.

Within the scope of this investigation, no violations or deviations were disclosed.

In accordance with the provisions of 10 CFR 2.790(a), a copy of this letter and the enclosed Summary of Investigation will be placed in the NRC's Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 2.790(b)(1).

Should you have any questions concerning this letter, we will be glad to discuss them with you.

Sincerely,

James P. O'Reilly
James P. O'Reilly
Regional Administrator

Enclosure:
Summary of Investigation

cc w/encl:
P. Parsons, Project
General Manager

8206220061
PDR-LDR



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

MAY 25 1982

INVESTIGATION REPORT NOS. 50-400/82-08 and 50-401/82-08

SUBJECT: Carolina Power and Light Company
Shearon Harris Nuclear Power Plant
New Hill, North Carolina

Improper Maintenance Inspection Practices

DATES OF INVESTIGATION: February 22-23, 1982

INVESTIGATOR:

J. V. Vorse
J. V. Vorse, Regional Investigator
Enforcement and Investigations Staff

5-25-82
Date Signed

REVIEWED BY:

Carl E. Alderson
Carl E. Alderson, Director
Enforcement and Investigations Staff

5-25-82
Date Signed

8206220067
par/LPAR

A. INTRODUCTION

On January 25 and February 2, 1982 the NRC Resident Inspector at Carolina Power and Light Company's Shearon Harris nuclear power plant site called NRC Region II Enforcement and Investigation Staff and expressed concerns related to improper maintenance inspection practices. He related the following two concerns:

1. Inspection records for two Boric Acid Transfer Pumps, a Service Water Booster Pump and two Air Handling Units were signed off by a maintenance inspector as having been checked for damage and paint deterioration. However, in some instances the maintenance inspector never lifted the polyethylene covering from the equipment.
2. Megger (megohmmeter) checks were not conducted on a 100 hp motor on the 150 ton Fuel Handling Crane although they were signed off by a QC inspector as having been performed.

Pursuant to the authority provided by Section 161.c of the Atomic Energy Act of 1954, as amended, an investigation was initiated by the NRC on February 2, 1982.

B. SCOPE OF INVESTIGATION

Based on the information provided by the Resident Inspector it was determined that the investigation should include a determination of the facts and circumstances pertaining to the apparent failures to properly inspect equipment in accordance with prescribed maintenance procedures and identification of any willful or deliberate actions by the licensee's inspectors to falsify inspection records.

During the course of the investigation, the Investigator held formal interviews with several licensee and contractor employees who may have had knowledge of the incidents.

The investigation included a review of appropriate regulatory requirements, NRC records and licensee procedures and records including:

- Title 10; Code of Federal Regulations
- Material Maintenance Requirements
- Warehouse Maintenance Logs
- Deficiency and Disposition Reports

This investigation was conducted by one Investigator and, on occasion, the Resident Inspector participated. A total of 12 man-hours of investigative activity was conducted onsite.

C. CONCLUSION

The investigation revealed that of the two concerns, one (No. 1 above) was partially substantiated. That is, the concern had some substance in that some of the equipment was signed off as being inspected for damage and paint deterioration even though the inspection was not conducted. However, the action of the inspector who signed the document was not a deliberate or willful falsification of records. The other concern was unfounded. No violations or deviations were identified.

D. MEETINGS WITH LICENSEE

The licensee was informed on February 22, 1982, that an investigation had been initiated into several concerns expressed by the Resident Inspector regarding improper maintenance inspection practices. However, details of those concerns were not discussed.

The site manager was informed of the results at the conclusion of the investigation on February 23, 1982.

DETAILS OF INVESTIGATION

CAROLINA POWER AND LIGHT COMPANY

SHEARON HARRIS NUCLEAR PLANT

FEBRUARY 22-23, 1982

A. INDIVIDUALS CONTACTED

The following individuals were contacted during the course of the investigation.

Carolina Power and Light (CP&L)

E. Felton, Engineer, Mechanical Engineering Group
D. Hollar, QA Receiving Inspector
E. McClean, Project Engineer, Mechanical
C. Napier, Material Man A (Warehouse)
R. Parsons, Site Manager
F. Taylor, QA Supervisor, Mechanical
R. Williams, QA Technician

Daniels Construction Company

H. Gaster, Maintenance Crew Supervisor

Nuclear Regulatory Commission (NRC)

G. Maxwell, Resident Inspector

B. ALLEGATIONS, DISCUSSIONS, FINDINGS

1. Allegation

Inspection records for two Boric Acid Transfer Pumps, one Service Water Booster Pump and two Air Handling Units were signed off by maintenance inspectors as having been checked for damage and paint deterioration when they had not performed the inspection properly.

Discussion

The Resident Inspector, while in the field, was advised by an unidentified person that a mechanical QA inspector had observed maintenance personnel signing off inspections which were improperly performed. The Resident Inspector contacted the identified QA inspector for further details and was informed by that individual that he had been conducting a routine field surveillance of a crew performing maintenance inspections of safety related equipment. One of the crew, a millwright, signed off inspection documentation indicating that he had inspected the equipment for damage such as paint deterioration, rust, missing parts, etc., when he had not even lifted the polyethylene covering off of the respective equipment. The QA inspector brought this to the attention of supervisory personnel and a Deficiency and Disposition Report (DDR) was issued.

The Investigator reviewed DDR No. 804 which addressed the issue. The deficiency details state in part that:

"During surveillance of maintenance of safety related equipment on 01-19-82, it was noted that the polyethylene cover was not removed to facilitate inspection for damage as required by PGD-002. WP-106 (Field Maintenance Log) was signed off indicating this inspection was performed".

The Investigator reviewed the Engineer's copy of the Field Maintenance Log. The log indicated that an inspection on the Boric Acid Pumps, ASN and BSN was not required until April 1982. There were no notes on the log instructing the inspector to check for damage on the air handler unit. On the Service Water Booster Pump, however, an inspection for damage was required in January 1982 and the log was signed indicating it had been inspected. The Supervisor of the maintenance crew, Harry O. Gaster was interviewed by the Investigator on February 23, 1982 and he provided a signed statement containing the following information in substance:

Sometime in December 1981, he instructed two maintenance inspectors (millwrights) not to remove covers from the Boric Acid pumps which were located in rooms where sand-blasting was taking place. Also in the vicinity were the air handlers and Service Water Booster Pump. On his own initiative, without any instruction or direction from higher authority, he instructed the maintenance crew not to lift or remove the polyethylene as long as the megger wires were accessible and the shaft did not have to be rotated. He told them that it was better to leave the cover on rather than get dust inside the machinery. In his opinion, damage would result from lifting the covers allowing sand or dust to get inside the moving components of the booster pump.

He had also informed his crew that if they were not able to inspect equipment as directed by the working log, then they were to inform him so that he could make a note on the Field Maintenance Log. He did not instruct his crew to inform him if they did not remove the covers and inspect for paint damage for the reasons previously discussed.

The two inspectors were no longer employed on the site as they had been laid off along with other millwrights due to a reduction-in-force implemented by Daniels Construction Company.

The Investigator also observed the area in which the equipment was located. The amount of dust and grit covering various surfaces indicated that the decision not to remove the polyethylene covers was appropriate.

Findings

The allegation was partially substantiated. The Service Water Booster Pump was not inspected for paint damage when the Maintenance Inspection Log indicated it had been. However, this was an administrative deficiency in that the inspectors did not inform their supervisor or make appropriate entries on the log indicating they had not inspected due to sandblasting in the area. There was nothing to indicate that a willful and deliberate attempt was made to falsify inspection records.

2. Allegation

A mechanical inspector signed documentation that he had megger checked a 100 hp motor on the 150-ton Fuel Handling Crane when it was not physically possible to conduct the test.

Discussion

During a routine maintenance inspection of electrical components the NRC Resident Inspector asked a mechanical inspector to conduct a megger check on a 100 hp motor which was listed and signed off on the Warehouse Maintenance Log as having previously been megger checked. The mechanical inspector was unable to locate the megger wire. When he was asked by the Resident Inspector how he could sign off a maintenance log showing that he had meggered a 100 hp motor when there was not even a wire present to megger with, the mechanical inspector could offer no explanation. The Resident Inspector stated to the Investigator that he was unable to remove the covering from the motor due to inclement weather conditions and, therefore, it was unknown what type of motor was under the cover.

The Investigator, accompanied by the Resident Inspector and the Mechanical Project Engineer went to the 150-ton Fuel Handling Crane and removed the cover from the motor in question. It was determined to be a 100 hp eddy current brake. Located adjacent to it was another motor, a 100 hp induction motor. The induction motor was observed to have a wire for megger checking purposes. The Warehouse Maintenance Log was reviewed by the Investigator and only one 100 hp motor was listed as requiring megger checks. No identification of that motor, such as type and serial number, was provided on the Equipment In-Storage Maintenance Sheet which was attached to the log and utilized by the mechanical inspector as a guide on how to perform his inspection. Therefore, either 100 hp motor could feasibly be checked and signed off on the Maintenance Log.

Interview of [Felton]

Because of this apparent discrepancy, the Investigator interviewed the Mechanical Engineering Group Supervisor, [Ernie Felton], on February 23, 1982 at the Shearon Harris site. The purpose of the interview was to determine past and present maintenance inspection procedures, particularly regarding filling out the required inspections on the Maintenance Log. That is, who determines what should be inspected and at what frequency. [Felton] provided the following information in substance:

During the 1980-1981 time frame, warehouse personnel entered inspection requirements data on the Warehouse Maintenance Log and it was reviewed for completeness by the Mechanical Engineering Group who compared it with the vendor's operating and maintenance manual.

The present procedure, is that the Mechanical Engineering Group extracts from the vendor's manual, if available, whatever information is pertinent for the required maintenance inspections and frequency of those inspections. A Maintenance Inspection Sheet is filled out and forwarded to the warehouse where a Warehouse Maintenance Log is made up. The Warehouse Maintenance Log is submitted back to the Mechanical Engineering group and approved if it compares favorably with the Maintenance Inspection Sheet.

When the 150-ton Fuel Handling crane was received on site on June 6, 1980, under the old procedures, the Maintenance Engineering Group provided only technical assistance to the warehouse. That is, they compared the Warehouse Log Sheet with the vendor's manual. However, at the time there was no vendor's manual on hand for the 150-ton crane and it was evaluated on the basis of comparison with inspection requirements of similar equipment. The warehouse was, at that time, responsible for overseeing the entire maintenance and storage program. Only one person, a Material Man named [Charles Napier] was responsible for that function.

He acknowledged that this oversight with the 150-ton crane should have been discovered during the annual audit, but for some unknown reason it was not.

Interview of [Napier]

[Charles D. Napier] was interviewed by the Investigator on February 23, 1982, regarding the 150-ton crane. [Napier] provided the following information in substance:

When the 150-ton crane arrived on site, in accordance with the procedure at the time, he made up the Warehouse Maintenance Log. He filled out the inspection requirements on the left hand margin and submitted the log to

the Mechanical Engineering Department for review and what he thought was a comparison with the vendor's manual. The Warehouse Maintenance Log was returned to the warehouse approved, with no changes made by the Mechanical Engineering Department.

Finding

The allegation is unsubstantiated. A 100 hp motor was being meggered as required on the Warehouse Maintenance Test Log. However, the lack of specific identification as to what motor should be meggered demonstrates an administrative shortcoming. There was no evidence indicating intent to falsify records.

SEP 13 1982

Carolina Power and Light Company
ATTN: Mr. J. A. Jones
Vice Chairman
411 Fayetteville Street
Raleigh, NC 27602

Gentlemen:

Subject: Report Nos. 80-400/82-03 and 80-401/82-23

This refers to an investigation conducted by Mr. J. Y. Vorse of this office between June 6 and 23, 1982 of the circumstances surrounding an allegation of forgery at the Shearon Harris facility.

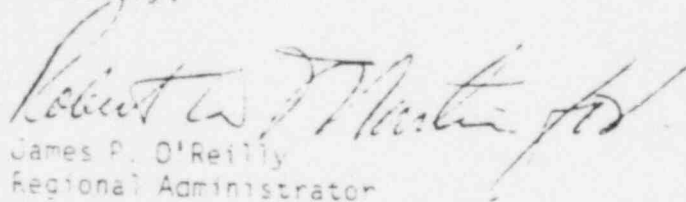
The scope and findings of the investigation are presented in the enclosed Summary of Investigation. The investigation consisted of selective examinations of pertinent procedures and records, interviews with personnel, and observations by the investigator.

Within the scope of this investigation, no violations or deviations were disclosed. However, while no evidence of forgery was obtained, the investigative findings give us cause for concern about the adequacy of your hanger inspection documentation program. Accordingly, this matter is identified as an Unresolved Item (82-23-01) pending further inspection.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosure will be placed in the NRC's Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 10 CFR 2.790(b)(1).

Should you have any question concerning this letter, we will be glad to discuss them with you.

Sincerely,


James P. O'Reilly
Regional Administrator

Enclosure:
see Page 7

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Carolina Power and Light Company

SEP 13 1962

Enclosure:
Summary of Investigation

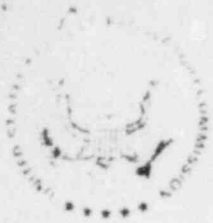
cc w/encl:
R. M. Parsons, Project General
Manager

bcc w/encl:
NRC Resident Inspector
Document Management Branch
State of North Carolina

bcc w/encl:
R. Fortuna, OI

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

SEP 13 1982

INVESTIGATION REPORT NOS. 50-400/82-23 and 50-401/82-23

SUBJECT: Carolina Power and Light Company
Shearon Harris Nuclear Power Plant
Units 1 and 2

Forgery of QC Weld Inspection Document

DATES OF INVESTIGATION: June 6-23, 1982

INVESTIGATORS: James F. Vorse
James F. Vorse, Regional Investigator
Enforcement and Investigations Staff

08-25-82
Date Signed

Bruno Uryc, Jr.
Bruno Uryc, Jr., Regional Investigator
Enforcement and Investigations Staff

8/25/82
Date Signed

REVIEWED BY: Carl E. Alderson
Carl E. Alderson, Director
Enforcement and Investigations Staff

9/9/82
Date Signed

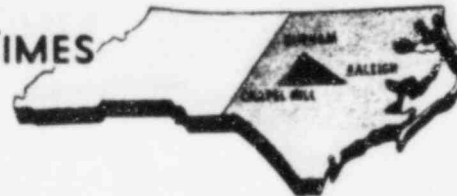
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SERVING EASTERN NORTH CAROLINA AND THE RESEARCH TRIANGLE

AFTERNOON
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215 SOUTH McDOWELL STREET • RALEIGH, NORTH CAROLINA 27602



July 19, 1983

Mr. Joseph Felton
Director
Division of Rules and Records
Freedom of Information Act
Nuclear Regulatory Commission
Washington, DC 20555

FREEDOM OF INFORMATION
ACT REQUEST

FOIA-83-413

Rec'd 7-22-83

Dear Mr. Felton:

This is a Freedom of Information Act Request. The News and Observer requests all internal, non-public documents, memos, evaluations, transcripts, investigative reports and other materials dealing with these areas:

-Construction flaws and possible construction flaws at Carolina Power & Light Company's Shearon Harris Nuclear Plant.

-Any improper conduct by inspectors or other officials of the Nuclear Regulatory Commission (NRC) during the course of their duties in inspecting, licensing and regulating Shearon Harris construction.

-Improper conduct or possible improper conduct by Carolina Power & Light, Shearon Harris contractors, or subcontractors in their dealings with the NRC over Shearon Harris construction or licensing.

This request covers typed and handwritten materials, computer print outs, and all other recorded materials and documents.

The News and Observer will pay the cost of reproducing these documents. Please advise if the NRC has a considerable body of material - more than 200 pages - so that The News and Observer can decide which documents it wants. Please also advise of copying fees if they exceed \$30 before making copies.

To expedite this request, I would be willing to accept documents where the specific names of inspectors are blocked out. I can be reached by phone at 919-829-4500.

Sincerely,

Doug McInnis

Doug McInnis

~~8310280174~~