



Carolina Power & Light Company

P. O. Box 101, New Hill, N. C. 27562
October 29, 1982

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USNRC REGION I
ATLANTA, GEORGIA

NRC-18

Mr. James P. O'Reilly
United States Nuclear Regulatory Commission
Region II
101 Marietta Street, Northwest (Suite 3100)
Atlanta, Georgia 30303

CAROLINA POWER & LIGHT COMPANY
SHEARON HARRIS NUCLEAR POWER PLANT
1985-89 - 900,000 KW - UNITS 1 & 2
WELDING ON 6.9KV SWITCHGEAR
PURCHASE ORDERS NY-435112 AND NY-435113, ITEM 76

Dear Mr. O'Reilly:

Attached is the final 10CFR50.55(e) and 10CFR, Part 21, report on the subject deficiency which describes the problem and the corrective action taken to accomplish resolution. With this report, Carolina Power and Light Company considers this matter closed.

If you have any questions regarding this matter, please do not hesitate to contact me.

Yours very truly,

R. M. Parsons
Project General Manager
Shearon Harris Nuclear Power Plant

RMP/sh

Attachment

cc: Mr. G. Maxwell (NRC-SHNPP)
Mr. V. Stello (NRC)

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CAROLINA POWER & LIGHT COMPANY
SHEARON HARRIS NUCLEAR POWER PLANT

Unit No. 1

Final Report

October 29, 1982

Reportable Under 10CFR50.55(e)
Reportable Under 10CFR21

SUBJECT:

Shearon Harris Nuclear Power Plant/Unit No. 1
10CFR50.55(e) and 10CFR Part 21 Reportable Deficiency.
Welding for 6.9kV Class 1E switchgear and seismically-
designed 6.9kV Nonclass 1E switchgear purchased under
Purchase Orders NY-435112 and NY-435113 from Siemens-
Allis, Inc.

ITEM:

Welding in Class 1E 6.9kV switchgear and seismically-
designed 6.9kV Nonclass 1E switchgear

SUPPLIED BY:

Siemens-Allis, Inc., West Allis, Wisconsin

NATURE OF
DEFICIENCY:

In December 1980, the Switchgear Division of Siemens-
Allis, Inc. (West Allis, Wisconsin), shipped 6.9kV switch-
gear to the CP&L site on Purchase Orders NY435112, Class 1E
switchgear, and NY-435113, Nonclass 1E Seismically-
Designed Switchgear. Welding in the switchgear was not
inspected by Ebasco's Vendor Quality Assurance representative
prior to shipment, as the check plan did not include
mechanical inspection requirement.

On January 28, 1982, and February 1, 1982, a Siemens-
Allis representative was brought on site with the vendor
shop drawings so that an inspection of the welding could
be performed. The inspection revealed that the weld
lengths and spacing were not in conformance with the
vendor shop drawings. It was also noted that the quality
of the welding was poor.

Subsequent inspection of the test prototype, which was
seismically tested, revealed similar discrepancies to the
vendor drawings.

Comparison of the quality of welds and Siemens-Allis'
internal acceptance criteria indicated that approximately
40% of the welds did not meet the criteria.

Although the switchgear on site and that seismically
tested exhibit similar welding deficiencies, they were
not similar enough to conclude that the equipment on site
adequately reflected the same structural construction of
the equipment seismically tested.

DATE PROBLEM
OCCURRED:

Refer to section above.

DATE PROBLEM
REPORTED:

March 31, 1982 - CP&L (N. J. Chiang) notified the NRC
(C. W. Berger and C. Julian) that this item was reportable
under 10CFR50.55(e) and 10CFR Part 21.

SCOPE OF
PROBLEM:

The deficiency involves the two Unit 1 Class 1E 6.9kV switchgear buses (26 cubicles) and five Unit 1 Nonclass 1E seismically-designed 6.9kV switchgear buses (43 cubicles).

SAFETY
IMPLICATION:

Seismic qualification of the Class 1E switchgear is required to assure that safety-related loads are capable of being powered during a seismic event. As the seismically-designed Nonclass 1E switchgear is located in the same room as Class 1E equipment, qualification is required to assure that no switchgear component will become loose and possibly damage safety-related components during a seismic event.

REASONS
DEFICIENCY
IS
REPORTABLE:

Failure of the supplier's QA program to control the welding on the switchgear has resulted in switchgear being shipped to the site which did not adequately reflect the same structural construction as that of the piece of equipment which had been seismically tested and whose test report had been accepted. Failure of the switchgear to be seismically constructed could result in the loss of power supply to safety-related loads during a seismic event as a result of failure of the switchgear.

CORRECTIVE
ACTION: 1.

Inspection of structural construction has been added to the VQA inspection check sheet for seismically-designed AC and DC distribution equipment yet to be shipped. Any equipment on site will be inspected by Site QA. In order to preclude a similar situation, suppliers of seismically-designed AC and DC distribution equipment have been requested to provide a written response describing the provisions in their quality assurance program, which would assure that the drawings and/or procedures used for manufacturing/fabrication of the equipment will reflect the actual structural and operational characteristics of the equipment being seismically qualified.

2. Subsequent to producing the switchgear for Unit 1, Siemens-Allis has moved their manufacturing facility from West Allis, Wisconsin, to Wendell, North Carolina. This new facility is not producing any Class 1E switchgear at this time, and therefore, no QA program is in place for doing so. Prior to releasing Unit 2 switchgear for fabrication, Ebasco and CP&L will assure that Siemens-Allis has a program in place which will preclude a similar occurrence.

3. A tabulation of all components which make up the cubicles was made by Siemens-Allis indicating the method of fastening to other components. A functional review was made of all components having arc-welding attachments to determine if weld failures could adversely affect the switchgear IE operation. In making this determination, the following were considered:

- a. Whether any weld failure could cause a cubicle structural failure or,
- b. Could the components affected fail and cause additional failures to the equipment

In analyzing for the possibility of cubicle structural failure, calculations were made to demonstrate that the front side plates are actually capable of absorbing all of the seismic loading in the front-to-back direction if appropriate hardware is used for bolting them to the frames.

Where indicated by the Siemens-Allis report, 1/2" - 13 Grade 5 bolts were replaced by 5/8" - 11 Grade 8 bolts. For other braces which could affect IE operation, a rewelding program was conducted as required to assure:

- a. All welds on these braces met the acceptance criteria of Siemens-Allis.
- b. Quantity of weld on connected pieces was at least the amount on the test unit unless less weld could be shown to be acceptable. For components which had no counterpart on the test unit, Siemens-Allis performed an analysis to justify the seismic adequacy.

The report concluded that the seismically-designed Nonclass IE switchgear would maintain structural integrity without rewelding or changing hardware. Hence, only the cubicles and superstructures associated with the Class IE functions of the reactor coolant pump motors were reworked to meet the above requirements on the Nonclass IE switchgear.