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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

OFFICE OF SECRETARY  
DOCKETING & SERVICE  
PC-1003

In the Matter of )  
)  
ALABAMA POWER COMPANY )  
)  
(Joseph M. Farley Nuclear Plant, )  
Units 1 and 2) )  
)

Docket Nos. 50-348-CivP  
50-364-CivP

(ASLBP NO. 91-626-02-CivP)

NRC STAFF TRIAL BRIEF

INTRODUCTION

This trial brief addresses the violations in the above captioned matter which, pursuant to the Board's Order of October 29, 1991, have been set for hearing commencing February 11, 1992. The purpose of the NRC Staff's direct testimony is to establish the *prime facie* case that Alabama Power Company (APCo) was in violation of 10 C.F.R. § 50.49 and that the violations, using the guidance in the NRC Modified Enforcement Policy (Generic Letter 88-07), sustain the NRC Staff's imposition of a civil monetary penalty against APCo in the amount of \$450,000.00.<sup>1</sup> This trial brief is divided into two major sections. The first section sets forth the NRC Staff's overall view of the case and, in particular, the issues of (a) safety significance and (b) the Commission policy followed by the NRC Staff in arriving at the civil penalty

<sup>1</sup>As discussed in n.8 *infra*, the Commission has approved several modifications to the NRC Enforcement Policy regarding violations related to 10 C.F.R. § 50.49 (Environmental Qualification of Electrical Equipment). The Modified Enforcement Policy applicable to the Farley enforcement action was proposed to the Commission in SECY-87-255. The Commission approved the NRC Staff proposal with additional Commission modifications in a January 12, 1988 Staff Requirements Memorandum.

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imposed against APCo. This section includes a summary of the NRC Staff witnesses' testimony regarding safety significance and enforcement. The second section addresses the violations of 10 C.F.R. § 50.49 that the NRC Staff contends occurred at Farley and which are at issue in this proceeding. This section includes a description, in summary form, of the NRC Staff witnesses' testimony regarding each violation.

Rebuttal to APCo's direct testimony submitted on January 16, 1992, will be filed within twenty-one days of the conclusion of the initial portion of the evidentiary hearing in which the parties will present direct testimony pursuant to the Board's January 22, 1992 Memorandum and Order. The NRC Staff's rebuttal to the APCo defenses set out in APCo's pre-filed direct testimony, including (a) that APCo relied on various communications from the NRC Staff as assurance that the equipment at Farley met EQ requirements, (b) that EQ issues were evolving and APCo was subjected to a different inspection standard in 1987 than was used in 1985, and (c) the technical arguments APCo raises as to why the equipment was qualified or qualifiable, will be addressed in the NRC Staff's rebuttal testimony.

## DISCUSSION

### I. THE NRC STAFF'S OVERALL VIEW OF THE CASE AND THE ISSUE OF SAFETY SIGNIFICANCE CONCERNING VIOLATIONS OF 10 C.F.R. 50.49

#### A. Equipment Qualification Rule Requirements

Licenses are required pursuant to 10 C.F.R. § 50.49 to establish a program to environmentally qualify electric equipment important to safety, that is, (1) safety related

electrical equipment, (2) nonsafety-related electrical equipment whose failure under postulated environmental conditions could prevent satisfactory accomplishment of certain enumerated safety functions, and (3) certain post-accident monitoring equipment. 10 C.F.R. § 50.49(a) and (b). The rule requires testing of, or experience with, equipment identical or similar to that installed to show that installed equipment meets its performance specifications under environmental conditions existing during and following design basis accidents, with analysis to demonstrate similarity if the equipment tested was not identical to that installed or the test conditions were not at least as harsh as the postulated accident environment. 10 C.F.R. § 50.49(d), (e), (f), (k), and (l). The rule further requires licensees to document the required testing and analysis by November 30, 1985, and maintain records of that documentation. 10 C.F.R. § 50.49(g) and (j). The rule contains no exception allowing a licensee to dispense with documentation and avoid or mitigate a violation of the rule by performing analysis after the deadline concerning operability or the consequences of the failure of the equipment.<sup>2</sup> In short, if a piece of equipment falls within the grasp of the rule, that equipment must be qualified to certain performance specifications and records kept of the qualification without regard to whether the equipment is

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<sup>2</sup>10 C.F.R. § 50.49(i) provided for applicants for operating licenses granted after February 22, 1983, but before the EQ compliance deadline of November 30, 1985, to perform analysis to ensure that their plants could operate safely pending completion of the environmental qualification of equipment required by the rule. That analysis could include operability and safety significance considerations. Also, Justifications for Continued Operation (JCOs) performed on equipment pending qualification at operating plants prior to the EQ compliance deadline properly considered operability and safety significance of postulated equipment failure. These exceptions are not apposite to the Farley violations.

in fact operable without the testing or records, or whether actual failure of the equipment, as installed, would create a significant safety problem.<sup>3</sup>

B. Scope of Proceeding

The scope of an action initiated by the Commission may be limited and defined by the Commission and the issues in enforcement proceedings may be limited to whether the facts as stated in an order are true and whether the remedy selected is supported by those facts.<sup>4</sup> The Order Imposing a Civil Penalty dated August 21, 1990, which is the basis for the instant proceeding, clearly limits the scope of the proceeding to whether the violations alleged by the NRC Staff occurred, and whether the civil penalty imposed by the NRC Staff should be sustained on the basis of those violations. Section V of the Order states,

In the event the licensee requests a hearing as provided above, the issues to be considered at such hearing shall be:

- (a) whether the licensee was in violation of the Commission's requirements as set forth in the Notice of Violation and Proposed Imposition of Civil

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<sup>3</sup>The NRC has made this assumption for enforcement purposes in order to reduce the resources anticipated to be spent by licensees and the NRC to evaluate in detail whether system operability was in question. Generic Letter 88-07, Enclosure at 3.

<sup>4</sup>*Cf. Boston Edison Co. (Pilgrim Nuclear Power Station), CLI-82-16, 16 NRC 44,45 (1982), aff'd, Bellotti v. NRC, 725 F.2d 1380 (D.C. Cir. 1983) (The Commission, citing an earlier Order suspending construction, Public Service Co. of Indiana (Marble Hill Nuclear Generating Station, Units 1 and 2), CLI-80-10, 11 NRC 438, at 441-42 (1980), held that, "[t]he Commission may limit the issues in enforcement proceedings to whether the facts as stated in the Order are true and whether the remedy selected is supported by those facts."). Regarding the authority to define the scope of the proceeding, that is, its agenda and substance, the Court in Bellotti stated, "We have no doubt that, as a general matter, such authority must reside in the Commission." 725 F.2d at 1381.*

Penalty [dated August 15, 1988], and

(b) whether, on the basis of such violations, this Order should be sustained.

Order at 3-4.<sup>5</sup> After considering the information provided to the NRC Staff during discovery in this proceeding, the NRC Staff has decided not to pursue items I.C.1.a (mixed grease in the Limatorque gear compartment), I.C.1.e (aluminum limit switch housing), and I.C.2 (Target Rock head vent solenoid valves), set forth in the Notice of Violation to Alabama Power Company dated August 15, 1988, as part of the basis for the Order Imposing a Civil Penalty dated August 21, 1990. The NRC Staff, by this action, is indicating that it will rely on the remaining items to fully support the Order Imposing a Civil Penalty dated August 21, 1990 in this proceeding.<sup>6</sup>

Presiding officers in enforcement hearings reviewing NRC Staff enforcement actions apply the policy and procedure guidance of the Commission. *See Hurley Medical Center* (One Hurley Plaza, Flint Michigan), ALJ-87-2, 25 NRC 219, 224 (1987). *See also Advanced Medical Systems, Inc.* (One Factory Row, Geneva, Ohio 44041), LBP-91-9, 33 NRC 212, 226 (1991) (Licensing Board in civil penalty proceeding looked to language of Commission Enforcement

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<sup>5</sup>In its Memorandum and Order of January 3, 1991, the Board reiterated this limited scope in stating, "The issues to be decided in the hearing are whether APCo was in violation of the Commission's requirements as set forth in a Notice of Violation and Proposed Imposition of Civil Penalty of August 15, 1988, and whether the Order should be sustained." Memorandum and Order at 2.

<sup>6</sup>The NRC Staff provided this information to the Board and APCo in its December 20, 1991 "Notice Of The NRC Staff's Intention Not To Pursue Certain Items From The Notice Of Violation In The Above Captioned Proceeding." The NRC Staff will present an argument in its Proposed Findings of Fact and Conclusions of Law after the evidentiary portion of the hearing to support its position that the remaining violations are sufficient to sustain imposition of the \$450,000 civil penalty.



Policy statement to find foundation for decision of agency official to levy a violation). Generally, the Commission's presiding officers and the Commission, by the terms of the NRC Enforcement Policy, apply that policy in reviewing enforcement actions. 10 C.F.R. Part 2, Appendix C, Preamble.

### C. Modified Enforcement Policy

For enforcement actions involving violations of 10 C.F.R. § 50.49, the Commission approved a Modified Enforcement Policy. That modified policy, promulgated with Commission consent in Generic Letter 88-07, sets forth the Commission's Modified Enforcement Policy for certain violations of 10 C.F.R. § 50.49.<sup>7</sup> Significantly, the Modified Enforcement Policy does not allow consideration of refinements on the operability of systems with unqualified equipment or the postulated nature of each unqualified item of electrical equipment important to safety.<sup>8</sup>

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<sup>7</sup>A Commission policy statement "must be respected by the licensing boards and [the Appeal Board] unless and until rescinded by the Commission or overturned by the Courts. *Northern States Power Co.* (Prairie Island Nuclear Generating Plant, Units 1 and 2), ALAB-455, 7 NRC 41, 51 (1978), *remanded on other grounds sub nom. Minnesota v. Nuclear Regulatory Commission*, 602 F.2d 412 (D.C. Cir. 1979), *cited in, Mississippi Power & Light Company* (Grand Gulf Nuclear Station, Units 1 and 2), ALAB-704, 16 NRC 1725, 1732 n.9 (1982).

<sup>8</sup>Generic Letter 88-07 states the Commission's Modified Enforcement Policy for those licensees who were not in compliance with 10 C.F.R. § 50.49 as of the November 30, 1985 environmental qualification deadline. Generic Letter 88-07 followed two previous modifications to the NRC Enforcement Policy for violations of 10 C.F.R. § 50.49. Generic Letters 85-15 and 86-15, sent to NRC licensees on August 6, 1985 and September 22, 1986, respectively, set forth NRC enforcement criteria, which also were approved by the Commission, concerning the handling of environmental qualification violations. Prior to Generic Letter 88-07, the criteria provided for the assessment of daily civil penalties of \$5,000 per item of unqualified equipment for each day the plant operated and the item was unqualified after November 30, 1985, up to a maximum of \$500,000 per item, provided that the licensee, as of that date, clearly knew or clearly should have known that it had equipment for which qualification had not been  
(continued...)

The Modified Enforcement Policy states that:

The significance of the EQ violations is considered when the NRC evaluates the number of systems affected by the EQ violations and determines the EQ violation category. The NRC will assume, for escalated enforcement cases, that the unqualified equipment could affect operability of the associated system. The NRC will not consider refinements on the operability arguments such as the actual time the equipment is required to be operable, administrative measures or controls available to ensure the safety function is accomplished, the degree to which the operability of a system is affected, or, that through additional analyses or testing, the equipment may be demonstrated to be qualified or qualifiable. This assumption is made for enforcement purposes in order to reduce the resources anticipated to be spent by licensees and the NRC to evaluate in detail whether system operability was in question.

Generic Letter 88-07, Enclosure at 3 (Emphasis in original).

In the instant case, the Board need only determine (1) whether APCo did not have documentation to qualify its equipment as stated in the violations in the NOV and (2) whether those violations warrant the civil penalty assessed by the NRC Staff pursuant to the Modified Enforcement Policy.

D. NRC Staff Testimony Regarding Safety Significance And Enforcement Action For The Violations At Issue In This Proceeding

NRC Staff testimony: The NRC Staff presents a panel of witnesses, consisting of James G. Luehman, Uldis Potapovs, and Harold Walker regarding the safety significance of the violations and the NRC Staff's assessment of an appropriate civil penalty using the guidance in the Commission's Modified Enforcement Policy. The panel's pre-filed written testimony and a

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<sup>8</sup>(...continued)

established. Generic Letter 85-15, among other things, defined, for the purposes of enforcement, unqualified equipment as "equipment for which there is not adequate documentation to establish that this equipment will perform its intended functions in the relevant environment."

statement of their educational and professional qualifications were served on the Board and APCo on December 20, 1991. Mr. Luehman is the NRC Staff's lead witness. The panel describes the development of the Modified Enforcement Policy (Generic Letter 88-07) and how the NRC chose to make a conservative judgment as to the overall safety significance of EQ violations based on the number of safety systems affected, rather than evaluating the individual safety significance of each violation by considering the postulated failure of each unqualified item of electrical equipment important to safety. In particular, Mr. Luehman testifies concerning the Commission's direction to the NRC Staff in the Modified Enforcement Policy not to consider refinements on the operability arguments such as the actual time the equipment is required to be operable, administrative measures or controls available to ensure the safety function is accomplished, the degree to which the operability of a system is affected, or, that through additional analyses or testing, the equipment may be demonstrated to be qualified or qualifiable. This assumption is made for enforcement purposes in order to reduce the resources anticipated to be spent by licensees and the NRC to evaluate in detail whether system operability was in question.

The panel testifies that safety significance is inherent with respect to each item required to be environmentally qualified pursuant to 10 C.F.R. § 50.49. To ensure that licensees have a technically sound basis for making assessments of plant safety, the regulation requires a licensee to have reasonable assurance whether electrical equipment important to safety would function as intended during and following a design basis event before operating its nuclear reactor after November 30, 1985. A licensee's lack of knowledge concerning that equipment results in the licensee's inability to assure that such equipment would function in the event of



an accident, which is safety significant. A licensee's performance of new analysis or collection of new data that yield fortuitously positive results does not affect a licensee's prior lack of reasonable assurance. Neither the licensee nor the Staff could have known in advance whether the new analysis or data would indicate that such equipment would function when called upon to do so during an accident resulting in a harsh environment.

The panel further testifies that, as explained in the Modified Enforcement Policy, the NRC aggregates individual violations of 10 C.F.R. § 50.49 to determine the extensiveness of the qualification problem represented by those individual violations in order to assess a civil penalty. The Commission developed Categories A, B, and C based on the extensiveness of the violations, which reflect the overall pervasiveness and general safety significance of the significant EQ violations.

The panel also describes the process whereby the enforcement action in this proceeding began and ultimately resulted in the NRC Staff imposing a civil penalty of \$450,000 against APCo. Their testimony includes an explanation of how the civil penalty was determined, and the role of the NRC EQ Enforcement Review Panel in reviewing all civil penalty EQ violation cases to ensure uniform application among the NRC Regions.

Argument: 10 C.F.R. § 50.49, as to violations of the requirements therein, does not require the evaluation of equipment operability or the consequence of the failure of an individual piece of equipment on an associated system as an element for establishing the violation and the Modified Enforcement Policy, as to the assessment of a civil penalty for violations of 10 C.F.R. § 50.49, prohibits the NRC from considering such arguments. Thus, the issue of safety

significance or operability for an individual piece of equipment or system found in violation of the requirements of 10 C.F.R. § 50.49 is irrelevant to an enforcement action for the violation. For this reason, evidence regarding the safety significance or operability of individual items of electrical equipment is not of consequence to the determination of whether the violations occurred nor whether the Order imposing the civil monetary penalty should be sustained.

During NRC inspections conducted at the Farley Nuclear Plant on September 14-18, 1987, November 2-6, 1987, and November 16-20, 1987, to review APCo's program for the environmental qualification of electrical equipment, the NRC Staff made findings that resulted in an enforcement action for violations of 10 C.F.R. § 50.49. Following the enforcement policy guidance approved by the Commission, the NRC Staff determined that the violations occurred, that the aggregate of the violations affected many systems and many components, and that escalation of the civil penalty indicated by the Modified Enforcement Policy was appropriate. Thereafter, the NRC Staff issued a Notice of Violation and proposed a \$450,000 civil penalty for the violations. After consideration of APCo's response to the Notice, the NRC Staff imposed the civil penalty by Order. For these reasons, the Order imposing the civil monetary penalty is lawful and should be sustained.

## II. TESTIMONY OF THE NRC STAFF WITNESSES AS TO EACH VIOLATION

### A. Overview

Seven panels of NRC witnesses, as more fully described *infra*, testify concerning APCo's failure to meet the applicable requirements in 10 C.F.R. § 50.49, as described in the August 15, 1988 Notice of Violation, which the NRC Staff contends occurred. The panels present

testimony concerning what systems were affected by the violations and why APCo clearly should have known of the violations as of the EQ compliance deadline of November 30, 1985.

B. Panel Testimony

1. V Type Tape Splices

NRC Staff testimony: The NRC Staff presents a panel of witnesses, consisting of James G. Luehman, Norman Merriweather, Charles J. Paulk, Jr., Paul C. Shemanski and Harold Walker, concerning the August 15, 1988 NOV Violation I.A.1. The panel's pre-filed written testimony and a statement of their educational and professional qualifications were served on the Board and APCo on December 20, 1991. Messrs. Merriweather and Paulk are the Staff's lead witnesses.

Mr. Merriweather testifies as to the reason for the September 1987 inspection, i.e., that it was a "reactive" inspection, based on APCo's report that it had identified deficiencies with the qualification of V-type tape splices in solenoid valve circuits, Limitorque valve operators, and containment fan motors. Mr. Merriweather was assigned to be inspection team leader, leading a team which included Mr. Paulk, on an NRC inspection to follow up on the splice problems.

Messrs. Merriweather and Paulk testify as to the conduct of the inspection by the NRC Staff. They testify that they discovered, based on interviews with electricians, foremen, and craft training instructors, that the craft would routinely install V-type tape splices on EQ equipment. They also reviewed documentation, such as procurement records for tape, installation details for splices and terminations, and maintenance records. The team concluded that, unlike the qualified splices documented in the Okonite Test Report (NQRN-3), the taped

splices at Farley were not in-line type splices nor did the craft always use Okonite T-95 and No. 35 tapes inside containment. Messrs. Merriweather and Paulk further testify that they had discussions with a Bechtel representative and disagreed concerning testing of the splices. Messrs. Merriweather and Paulk believed that splice configuration was important in establishing qualification of the splices, and that the installed configuration of the splices at Farley was different from the EQ documentation.

Mr. Paulk testifies that he prepared the part of the NRC Inspection Report Nos. 50-348/87-25 and 50-364/87-25 which summarized the team's findings on the V-type tape splices. In the Report he concluded that there was not sufficient documentation to establish qualification of the installed splices. He found that the unqualified configuration was a type V-stub connection splice using T-95 tape for insulation and No. 35 tape for jacket material, and that this configuration was not covered by design drawings or engineering instructions and had not been environmentally tested for design basis accidents. He determined that the root cause of the unqualified configurations was due to incomplete design drawings/engineering work instructions, and to misinterpretation of electrical notes and details by the craft.

With regard to the splices not being identified on the Farley EQ Master List, the panel testifies that splices do not have to be separately listed. However, Mr. Merriweather testifies that splices/terminations which are not separately listed should be accounted for as part of the qualification file for the end device. At Farley the splices were neither listed on the EQ Master List nor accounted for in the EQ file for the appropriate piece of electrical equipment.

The Staff's findings, reflected in the testimony, establish that APCo did not have documentation in its EQ files to support the qualification of the V-type tape splices as installed

at Farley, and thus demonstrates a violation of 10 C.F.R. § 50.49.

Mr. Merriweather further testifies that the information he had concerning the Wyle test report cited by APCo in its response to the Staff's Notice of Violation showed the report did not qualify the V-type splices for use in instrumentation circuits. Messrs. Merriweather and Walker testify that the testing had not been conducted prior to the end of the September inspection. Thus, for enforcement purposes, the Staff determined that APCo had not demonstrated qualification of the splices, and did not review the report in question. Mr. Walker also testifies that he subsequently reviewed the same report (for another plant), and it did not contain sufficient information to demonstrate qualification for the Farley application.

The panel testifies that the responsibility for ensuring EQ equipment is properly installed is a function of the EQ program, and a failure to install equipment in the associated configuration is a violation of 10 C.F.R. § 50.49.

Mr. Luehman testifies why APCo clearly should have known that the V-type tape splices were not environmentally qualified. He testifies that the Okonite splice documentation only addressed shielded power cables, which should have alerted APCo to the need for more specific information. APCo records did not show this kind of splice installed in a particular location, nor did APCo's quality control procedures assure that the installations were according to drawings for environmentally qualified splices. NUREG-0588 refers to the necessity of addressing equipment interfaces, and NRC Circulars provided information on qualification problems other licensees had with cable splices.



Argument: The NRC Staff contends that, at the time of the September 1987 inspection, APCo had not documented qualification of V-type electrical tape splices installed on numerous safety-related electrical components, including solenoid and motor operated valves. The tape splices were installed in various configurations and material compositions which were not documented as environmentally qualified, and the various configurations had not been previously tested or demonstrated to be similar to an appropriately tested configuration. In addition, the NRC Staff contends that the tape splices were not installed in accordance with approved electrical design details or notes for splices or terminations, and that the splices were not accounted for on the EQ Master List of electrical equipment required to be qualified under 10 C.F.R. § 50.49. The NRC Staff further contends that this violation of 10 C.F.R. § 50.49 existed as of November 30, 1985, that APCo clearly should have known of the violation which affected many components, and that the violation was sufficiently significant under the Modified Enforcement Policy to merit a civil penalty.

## 2. 5-To-1 Splices

NRC Staff testimony: The NRC Staff presents a panel of witnesses, consisting of James G. Luehman, Norman Merriweather, Charles J. Paulk, Jr., Paul C. Shemanski and Harold Walker, concerning the August 15, 1988 NOV Violation I.A.2. The panel's pre-filed written testimony and a statement of their educational and professional qualifications were served on the Board and APCo on December 20, 1991. Messrs. Merriweather and Paulk are the Staff's lead witnesses.

Mr. Merriweather testifies that, during the exit meeting for the September 1987 inspection, the NRC inspection team was informed a 5-to-1 cable splice/termination was installed

on the hydrogen recombiners. Subsequently, the Justification for Continued Operation (JCO) for the recombiners was determined to be inadequate. Mr. Paulk was assigned to walkdown the recombiners during the November 1987 inspection.

Mr. Paulk testifies that he reviewed the hydrogen recombiner EQ file during the September 1987 inspection. He verified the actual splice configuration during the November 1987 walkdown. Based on his review, Mr. Paulk made the finding, as set out in Inspection Report Nos. 50-348/87-30 and 50-364/87-30, that APCo did not have adequate documentation in the EQ files to demonstrate that the in-line 5-to-1 field to pigtail tape splice would perform its intended function during a design basis accident. Mr. Paulk further testifies that he prepared the violation for the NOV, reviewed APCo's response, and prepared the Staff's evaluation for the August 21, 1990 Order. He determined that the Westinghouse installation instructions for the hydrogen recombiners state that the purchaser is to use its own installation procedures to install qualified splices on the pigtail connections. Since the type of splice used by Westinghouse was not specifically described, it was APCo's responsibility to provide EQ documentation of the actual splice.

The Staff's findings, reflected in the testimony, establish that APCo did not have documentation in its EQ files to support the qualification of the 5-to-1 tape splices as installed at Farley, and thus demonstrate a violation of 10 C.F.R. § 50.49.

Mr. Luehman testifies why APCo clearly should have known that the 5-to-1 splices were not environmentally qualified. The primary reason is that the vendor, Westinghouse, provided EQ documentation for the hydrogen recombiners without identifying the splice/termination used in the test. The installation instructions referred to a qualified, but unidentified splice. Since

the EQ files only addressed a one-to-one splice, APCo clearly should have known it did not have EQ documentation for the 5-to-1 splices.

Argument: The NRC Staff contends that, at the time of the September and November 1987 inspections, APCo had not documented qualification of the 5-to-1 electrical tape splices installed on the hydrogen recombiners. The vendor EQ documentation did not identify the splice/termination used in the test, and the installation instructions specified that there be a qualified splice. APCo installed the recombiners using 5-to-1 splices, but the EQ file only had qualification documentation for one-to-one splices. The NRC Staff further contends that this violation of 10 C.F.R. § 50.49 existed as of November 30, 1985, that APCo clearly should have known of the violation which affected many components, and that the violation was sufficiently significant under the Modified Enforcement Policy to merit a civil penalty.

### 3. ChicoA/Raychem Seals

NRC Staff testimony: The NRC Staff presents a panel of witnesses, consisting of Richard C. Wilson and James G. Luehman, concerning the August 15, 1988 NOV Violation 1.B.2. The panel's pre-filed written testimony and a statement of their educational and professional qualifications were served on the Board and APCo on December 20, 1991. Mr. Wilson is the NRC Staff's lead witness. Mr. Wilson describes his participation in the November 1987 inspection at the Farley Nuclear Plant and the qualification files for the ChicoA/Raychem seals he reviewed. Mr. Wilson describes what the NRC Staff contends was deficient in APCo's attempted use of the various documents in the file to qualify the ChicoA/Raychem seals. In

summary, the NRC Staff contends that (a) the assembly and installation of plant and test specimens were under so little control that similarity of and ability to reproduce hardware from one specimen to another could not be established with confidence, (b) the overall design was never tested with a limit switch or other means of measuring the seal's success in the test, (c) the only test of the complete design also lacked steam, chemical spray, and moisture, did not simulate the initial thermal shock of a LOCA (loss of coolant accident), and did not simulate the plant requirement for 30-day post-LOCA exposure (to residual moisture and chemicals), (d) specimen failures, anomalies, and differences in test conditions or specimen designs in reports of tests performed by others were not taken into account by APCo, although APCo took credit for those test reports, and (e) APCo's attempts to use tests of different designs under different conditions did not address those differences, but claimed credit for any favorable bits and pieces of support that could be found in the reports. In short, the documents provided by APCo failed to document qualification of the seals and a review of additional material provided by APCo after the inspection also failed to demonstrate qualification.

The panel testifies that the ChicoA/Raychem seals were required to be qualified in that the seals were subcomponents of limit switches, which were required by 10 C.F.R. § 50.49(b) to be qualified, and the qualification of the seals was necessary to support qualification of the limit switches.

Mr. Wilson describes why APCo clearly should have known of the qualification deficiencies in that: (a) The licensee had no vendor-supplied documentation that demonstrated that the seals were qualified. (b) The licensee has never provided any receiving or field verification inspection records that determine that the configuration of the installed equipment

matched the configuration of the equipment that was qualification-tested by the licensee and its architect-engineer. (c) The licensee had prior written notice that equipment qualification deficiencies might exist in that Raychem-supplied documentation showed test failures for a somewhat similar configuration. (d) Almost all other licensees identified similar problems and corrected them before the November 30, 1985 deadline so that by the deadline, the use of Conax and other qualified cable entrance seals was commonplace in the industry.

Mr. Wilson also offers testimony that shows that the deficiencies existed prior to the November 30, 1985 EQ deadline and that ChicoA/Raychem seals were used in at least 47 safety related applications inside containment at the Farley Units 1 and 2.

The panel also testifies that the violation was sufficiently significant to merit a civil penalty in that sufficient data did not exist and was not developed during the inspection to qualify the seals.

Argument: The NRC Staff contends that, at the time of the inspection, the available file of qualification documentation for ChicoA/Raychem seals, which were used for limit switch and solenoid valve cable entrance seals at Farley, was incomplete and that test data and supporting analysis provided by the licensee were insufficient to demonstrate qualification of the seals. Specifically, the testing performed and referenced did not simulate LOCA stress on the installed seals, and the analyses did not address variations in the configuration of installed and tested seals. The NRC Staff further contends that this violation of 10 C.F.R. § 50.49 existed as of November 30, 1985, that APCo clearly should have known of the violation which affected many components, and that the violation was sufficiently significant under the Modified Enforcement



Policy to merit a civil penalty.

#### 4. Terminal Blocks

NRC Staff testimony: The NRC Staff presents a panel of witnesses consisting of Mark J. Jacobus, Norman Merriweather, James G. Luehman, and Paul C. Shemanski, concerning the August 15, 1988 NOV Violation I.B.1. The panel's pre-filed written testimony and a statement of their educational and professional qualifications were served on the Board and APCo on December 20, 1991. Dr. Jacobus is the NRC Staff's lead witness. Dr. Jacobus describes his participation in the November 1987 inspection at the Farley Nuclear Plant and the qualification documents for the terminal blocks he reviewed. Dr. Jacobus testifies that no file was ever produced for the GE terminal blocks and that the file presented for the States terminal blocks qualified the blocks for control circuit and not instrumentation circuit applications. For instrumentation circuit applications with either GE or States blocks, Dr. Jacobus testifies that APCo cited insulation resistance values from Conax report IPS-307 which was a test of Connectron terminal blocks. Dr. Jacobus further testifies that use of the Conax test report to establish the insulation resistance of the GE and States terminal blocks was not adequate for two reasons. First, the similarity analysis between the GE and States blocks and the tested Connectron blocks was not adequate, in part because the design of the blocks was significantly different. Second, the data that was taken from the Conax report was taken at temperatures of 150°F or less. The temperature profile for qualification of these terminal blocks at Farley required APCo to use data at considerably higher temperatures. Although data was taken at higher temperatures during the Conax test, that data was not included in the test report. The

Conax test report explained that the data was invalid for analysis due to instrumentation difficulties. Thus, even if the similarity analysis were considered acceptable, the Conax test report did not contain the data that was necessary to qualify the terminal blocks for their application at Farley.

The panel testifies as to the requirements for qualifying the terminal blocks. The terminal blocks, as items of electrical equipment important to safety, are, by the provisions of 10 C.F.R. § 50.49(f) required to be qualified by testing of, or experience with, identical or similar equipment, and that such qualification shall include a supporting analysis to show that the equipment to be qualified is acceptable.

Dr. Jacobus testifies that APCo should have been aware of the qualification deficiencies because of IE Information Notice 84-47, "Environmental Qualification Tests of Electrical Terminal Blocks" (June 15, 1984) which clearly delineated the concerns with leakage currents. Dr. Jacobus also testifies that for instrumentation circuit applications of the States and GE terminal blocks, APCo, during the inspection, offered analysis using the insulation resistance values from a test of Connector terminal blocks (CONAX Report IPS-307), thereby indicating APCo's awareness of the concern with leakage currents. Additionally, Dr. Jacobus testifies that APCo had documentation in its purchasing files that, with proper evaluation, would have indicated the insulation resistance problem. Mr. Shemanski testifies that the leakage current concern with terminal blocks used in instrumentation circuits in containment was a high visibility issue within the nuclear industry.

The panel testifies that the deficiencies existed prior to the November 30, 1985 EQ deadline and that the terminal blocks in question were used inside containment in many

instrumentation circuits that provide indication of plant conditions for, among other things, the safe shutdown of the reactor after a design basis event and that the terminal blocks were used in 4-20 milliampere (mA) circuits which are most vulnerable to the adverse effects of terminal block leakage currents.

The panel also testifies that the violation was sufficiently significant to merit a civil penalty in that APCo had to do significant analysis to attempt to assess the qualification status of the terminal blocks and that sufficient data did not exist and was not developed during the inspection to qualify the terminal blocks for their application. The panel discusses in detail the technical inadequacies the NRC Staff found in the documentation relied on by APCo, both during and after the inspection, to attempt to qualify the terminal blocks.

Argument: The NRC Staff contends that APCO failed to have documentation in its files demonstrating that States terminal blocks (Model Nos. NT and ZWM) would maintain acceptable instrument accuracy during design basis accidents and that APCO did not have adequate documentation to demonstrate General Electric (Model No. CR151) terminal blocks would maintain acceptable instrument accuracy in that a qualification file for the General Electric terminal blocks did not exist. The NRC Staff further contends that this violation of 10 C.F.R. § 50.49 existed as of November 30, 1985, that APCo clearly should have known of the violation which affected instrumentation circuits in the 4-20 mA range, and that the violation was sufficiently significant under the Modified Enforcement Policy to merit a civil penalty.

### 5. Limitorque Operators

NRC Staff testimony: The NRC Staff presents a panel of witnesses consisting of William Levis, Norman Merriweather, and James G. Luehman concerning the August 15, 1988 NOV Violation I.C.1. The panel's pre-filed written testimony and a statement of their educational and professional qualifications were served on the Board and APCo on December 20, 1991. Mr. Levis is the NRC Staff's lead witness. Mr. Levis describes his participation in the November 1987 inspection at the Farley Nuclear Plant and the qualification documents for the Limitorque valve operators he reviewed. Mr. Levis testifies that the documentation did not support qualification of the Limitorque valve operators as installed at Farley in that T-drains were not installed and unidentified terminal blocks were used for power leads. Mr. Levis testifies that APCo had two qualification reports to support qualification of the valve operators. One report documented a 7 day test of an operator with no T-drain installed. The other report documented a 30 day test of an operator with a T drain installed. Mr. Levis testifies that APCo offered an evaluation during the inspection that combined the results of the two tests to support qualification of the valve operators for the 30 day post accident operating time and that he rejected this evaluation primarily because the test without the T-drains was only of 7 days duration instead of the required 30 days.

Mr. Levis also testifies that a review of walkdown check sheets indicated that terminal blocks of a different manufacturer than that specified in the qualification documentation had been used as power leads in the Limitorque valve operators installed at Farley.

The panel testifies as to the requirements for qualifying the Limitorque valve operators. The valve operators, as items of electrical equipment important to safety, are, by the provisions

of 10 C.F.R. § 50.49(f) required to be qualified by testing of, or experience with, identical or similar equipment, and that such qualification shall include a supporting analysis to show that the equipment to be qualified is acceptable. 10 C.F.R. § 50.49(k) provides that a record of the qualification of the electric equipment shall be maintained in an auditable form to permit verification that the required equipment is qualified and that the equipment meets the specified performance specifications under postulated environmental conditions. Plant equipment must be identical in design and material construction to the test specimen and deviations must be evaluated as part of the qualification documentation.

Mr. Merriweather testifies that APCo should have been aware of the requirement for T-drains in that one of the vendor test reports used by APCo to support qualification of the equipment requires that T-drains be installed to accommodate the extreme temperatures and pressures of a design basis event environment. Mr. Lewis further testifies that Information Notice 83-72 provided information to licensees concerning the adequacy of terminal blocks supplied in Limitorque valve operators. This information should have made APCo aware of the deficiencies the NRC Staff identified. The panel testifies that the deficiencies existed as of the November 30, 1985 EQ deadline and that several systems were affected by the unqualified Limitorque valve operators.

The panel also testifies that the violation was sufficiently significant to merit a civil penalty in that sufficient data did not exist and was not developed during the inspection to qualify the Limitorque valve operators and that the valve operators were not qualifiable for their application based on other information available to the inspector. The panel discusses in detail the technical inadequacies the NRC Staff found in the documentation relied on by APCo, both



during and after the inspection, to attempt to qualify the Limitorque valve operators.

Argument: The NRC Staff contends that the Limitorque valve operators at the Farley facility were not identical in design or material construction to the qualification test specimen and that deviations were not adequately evaluated. The NRC Staff further contends that this violation of 10 C.F.R. § 50.49 existed as of November 30, 1985, that APCo clearly should have known of the violation which affected several systems, and that the violation was sufficiently significant under the Modified Enforcement Policy to merit a civil penalty.<sup>9</sup>

#### 6. Gems Level Transmitters

NRC Staff testimony: The NRC Staff presents a panel of witnesses consisting of William Levis, Charles Paulk, and James G. Luehman concerning the August 15, 1983 NOV Violation I.C.3. The panel's pre-filed written testimony and a statement of their educational and professional qualifications were served on the Board and APCo on December 20, 1991. Messrs. Levis and Paulk are the NRC Staff's lead witnesses. They describe their participation in the November 1987 inspection at the Farley Nuclear Plant and the qualification documents for the GEMS level transmitters they reviewed. They testify that APCo maintained in its EQ files appropriate vendor supplied documentation (FIRL Test Report No. F-C3834, Final Report dated March

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<sup>9</sup>The EQ requirements and the nature of the violations are stated in the August 15, 1988 NOV, pages 2 and 3, under the heading "Violations Assessed A Civil Penalty" (Violation I.C.1). The Staff has decided not to pursue mixed grease and a limit switch with an aluminum housing as examples in support of the violation as part of the basis for the August 21, 1990 Order Imposing a Civil Penalty. See n.6 *supra*.

1974) to qualify GEMS level transmitters installed in accordance with GEMS installation provisions (GEMS-Delavel Drawing No. LS-36497). They also testify, however, that there was no appropriate documentation to support installation of four of the transmitters that did not have the appropriate level of silicone fluid. They further testify that an adequate level of silicone oil is required because the lead wires, terminal blocks and resistors inside the transmitters might otherwise be adversely affected by aging and thermal effects. Mr. Levis describes why APCo should have known of the qualification deficiency in that the qualification file maintained by APCo required that silicone oil be installed in the transmitter housing.

The panel also testifies that the violation was sufficiently significant to merit a civil penalty in that sufficient data did not exist and was not developed during the inspection to qualify the level transmitters with reduced oil levels and that the affected transmitters were not qualifiable for their application based on other information available to the inspector.

Argument: The NRC Staff contends that APCo did not have documentation that demonstrated the qualification of four of the GEMs level transmitters in that the required silicone oil in the housing of two of the transmitters was approximately one inch low and was missing altogether in two other transmitters. The NRC Staff further contends that APCo clearly should have known of this violation of 10 C.F.R. § 50.49 which affected four components, and that the violation was sufficiently significant under the Modified Enforcement Policy to merit a civil penalty.

7. Premium RB Grease

NRC Staff testimony: The NRC Staff presents a panel of witnesses consisting of James G. Luehman and Charles Jasper Paulk, Jr., regarding the violations involving containment fan motors and room coolers outside containment lubricated with Premium RB grease (Violation I.C.4). The panel's pre-filed written testimony and a statement of their educational and professional qualifications were served on the Board and APCo on December 20, 1991. Mr. Paulk is the NRC Staff's lead witness. Mr. Paulk describes his participation in the September 1987 inspection at the Farley Nuclear Plant and his review of the documentation in the environmental qualification files for the containment fan motors and outside containment room coolers. Both Mr. Paulk and Mr. Luehman describe what the NRC Staff alleges was deficient in the documentation APCo maintained in its files to qualify the containment fan motors and outside containment room coolers.

The panel testifies that the containment fan motors and motors on the outside containment room coolers were on APCo's Master List of equipment that is required to be qualified in accordance with 10 C.F.R. § 50.49 because they could be subject to a harsh environment after an accident they are required to mitigate. In short, the NRC Staff alleges that 1) the vendor's test report documented that the motors were tested for environmental qualification with one particular grease (Chevron SRI-2 grease), 2) the vendor's test report gave instructions for replacing the grease to maintain qualification, and 3) the licensee replaced the grease in the motors with Premium RB grease without documenting analysis to show that the motors were acceptable if lubricated with Premium RB grease instead of Chevron SRI-2 grease or that it had followed the test report's instructions for replacing grease.

Mr. Paulk and Mr. Luehman describe that APCo clearly should have known of the qualification deficiencies because APCo clearly should have known of the requirements of 10 C.F.R. § 50.49, the provisions of the DOR guidelines (issued in 1980), and the instructions in the vendor's manual which APCo had in its qualification files. Specifically, APCo clearly should have known that 1) 10 C.F.R. § 50.49 explicitly requires that equipment installed in the plant be identical or similar to that tested and, if similar, a supporting analysis demonstrate that the equipment is acceptable; 2) the DOR guidelines state that test specimens should be of identical design and material construction as the installed equipment; and 3) the vendor's manual identified the grease used in the qualification test and provided explicit instructions for changing greases in order to maintain qualification.

Mr. Paulk testifies that the containment fans and outside containment room coolers are the components for which qualification was not established.

The panel also testifies that the violation was sufficiently significant under the Modified Enforcement Policy to merit a civil penalty APCo provided no documented basis for concluding that the motors were qualified at the time of the inspection.

Argument: The NRC Staff contends that 10 C.F.R. § 50.49 required APCo to test or analyze the containment fan motors and outside containment room coolers under conditions existing during and following design basis accidents to ensure that those components satisfy their performance specifications under those conditions. In addition, the NRC Staff contends that 10 C.F.R. § 50.49 required APCo to maintain a record of the required qualification testing and analysis. The NRC Staff contends that APCo, at the time of the inspection, failed to document

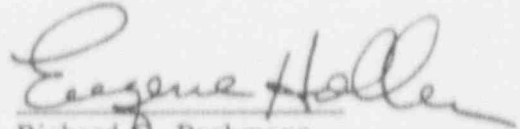
data or analysis qualifying the containment fan motors and outside containment room coolers installed at the Joseph M. Farley Nuclear Plant in that these components were lubricated with Premium RB grease, a grease other than that specified in the test report documenting their qualification. The NRC Staff further contends that APCo clearly should have known of the deficiencies in the qualification file because (1) 10 C.F.R. § 50.49 and the DOR guidelines clearly require that tested components be identical in material construction to installed components or that analysis demonstrating similarity be documented and (2) the vendor's qualification test report specifically identified the grease used in the tested specimen and instructions for using a different grease. Finally, the NRC Staff contends that the violation was sufficiently significant under the Modified Enforcement Policy to warrant a civil penalty.

#### CONCLUSION

On the basis of the evidence presented, the NRC Staff asks the Board to determine that the NRC Staff has established a *prime facie* case that APCo was in violation of 10 C.F.R.

§ 50.49 and that the violations sustain the NRC Staff's imposition of a civil monetary penalty against APCo in the amount of \$450, 000.00.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Eugene Holler".

Richard D. Bachmann

Eugene Holler

Robert M. Weisman

Counsel for NRC Staff

Dated at Rockville, Maryland  
this 31st day of January, 1992



UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

FILED  
USNRC

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD 92 FEB -3 A9 51

In the Matter of )  
ALABAMA POWER COMPANY ) Docket Nos. 50-348-CivP  
) 50-364-CivP  
)  
(Joseph M. Farley Nuclear Plant, ) (ASLBP No. 91-626-02-CivP)  
Units 1 and 2 )

OFFICE OF SECRETARY  
DOCKETING & SERVICE  
BRANCH

CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF TRIAL BRIEF" in the above-captioned proceeding have been served on the following by deposit in the United States mail, first class, or as indicated by an asterisk through deposit in the Nuclear Regulatory Commission's internal mail system, this 31st day of January, 1992:

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Atomic Safety and Licensing Board  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Peter A. Morris  
Administrative Judge  
10825 South Glen Road  
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Office of the Secretary\*  
U.S. Nuclear Regulatory Commission  
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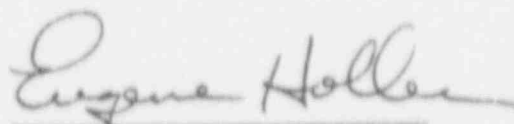
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A handwritten signature in cursive script that reads "Eugene Holler". The signature is written in dark ink and is positioned above a horizontal line.

Eugene Holler  
Counsel for NRC Staff