

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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BEFORE THE ATOMIC SAFETY AND LICENSING BOARD A10:27

In the Matter of)
DUKE POWER COMPANY, et al.) Docket Nos. 50-413
(Catawba Nuclear Station,) 50-414
Units 1 and 2))

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APPLICANTS' PROPOSED FINDINGS OF
FACT IN THE FORM
OF A PARTIAL INITIAL DECISION

Volume II

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IV. FINDINGS OF FACT

A. Palmetto Contention 6 - Quality Assurance

1. Background

1. Palmetto Contention 6 was originally premised upon concerns raised by two former Company employees, Nolan R. Hoopingarner and William R. McAfee, in affidavits attached to the original petition to intervene. These affidavits reflected a concern over substandard workmanship, inadequate quality control, and Company pressure to approve faulty workmanship. During the course of discovery, Palmetto became aware of concerns raised by welding inspectors at Catawba during late 1981 and early 1982. These welding inspectors' concerns became an important part of Palmetto's case.

2. Palmetto also attempted to litigate matters beyond the Hoopingarner/McAfee and welding inspector concerns, but was directed by the Board in a discovery order to specifically identify any other matters which should be litigated under this quality assurance contention. (See May 13, 1983 Memorandum and Order).

3. In the Board's ruling on Applicants' Motion for Sanctions based on Palmetto's failure to comply with the Board's May 13, 1983 discovery order, the Board narrowed Contention 6 to include for litigation only those concerns

raised by Messrs. Hoopingarner and McAfee and the welding inspector concerns.^{31/} (See Memorandum and Order of June 20, 1983, p. .).^{32/}

4. In sum, Palmetto Contention 6 is premised upon the following: (1) welding inspector concerns, (2) Hoopingarner/McAfee concerns, (3) in camera testimony. Each of these items is discussed below.^{33/} However, prior to reaching these items we provide an overview of Applicants' QA program.

31/ Palmetto also relies upon testimony elicited from in camera witnesses as support for Palmetto Contention 6.

32/ The Order also included for litigation any issues which surfaced between the June 20, 1983 ruling and the hearing; it excluded all other matters. In this regard, during an August 3, 1983 telephone conference, Palmetto alleged that unnamed persons had brought to its attention serious deficiencies over and above those already in the case, which would compromise the public health and safety. Applicants sought an immediate identification of the persons and the alleged deficiencies. Palmetto refused to provide the information. Thereafter, this Board, in its September 14, 1983 ruling (pp. 6-8) on Applicants' written motion for the production of the names and facts concerning this matter, required that Palmetto divulge such information to Applicants. Palmetto Alliance failed to do so.

33/ As noted, our decision regarding in camera issues is set forth in Appendix A.

a. The Company and Its Quality Assurance Program

5. Duke designs, builds, and operates its own power generating facilities (Tr. 2027, Owen, 10/6/83)^{34/} and has done so for over 75 years. (Apps. Exh. 1, Owen, pp. 5-7).

6. Duke Power has been involved in the design and construction of nuclear generating facilities since the mid-1950's. The Company participated in the design and operation of the Parr Reactor in South Carolina, which produced electricity from 1963 until 1967 as part of an operating research program. The Company has been operating the three unit Oconee Nuclear Station in South Carolina for the past ten years, and recently began operating the two unit McGuire station, which is similar in design to Catawba. The Company has been able to develop key engineering personnel with experience in the design and construction of nuclear facilities while building the Oconee and McGuire stations. Many of these individuals are now involved with Catawba (Apps. Exh. 1, Owen, pp. 6-7).

^{34/} The format for citations to the record is as follows: transcript citations include the page numbers, the speaker, and the date, i.e., (Tr. 1924, Guild, 10/5/83); and citations to prefilled testimony include the exhibit number, the name of the person submitting the testimony, and the page number, i.e., (Apps. Exh. 1, Owen, p. 1).

7. In 1967 Duke instituted a Quality Assurance Program (QA Program) for the construction of its first nuclear units, the Oconee units. Since that time Duke has revised its program and developed a generic QA program which was applicable to all its nuclear units. (Tr. 1921, 1930, 1935, Owen, 10/5/83; Apps. Exh. 9, Wells, pp. 3, 5, 7).

8. The substance of Duke's generic QA program is set forth in the Topical Report (Apps. Exh. 5). The QA program as described in the Topical Report was submitted to the NRC in 1974 and was approved. Each subsequent amendment to the Topical Report has also been approved by the NRC. (See, e.g., Staff Exh. 13, SER, p. 17-4). The Topical Report is implemented by various Quality Assurance Manuals (Apps. Exh. 6; Apps. Exh. 2, Grier, p. 8).

9. Duke's QA Program as set forth in the Topical Report is designed to satisfy the regulatory requirements set forth in Appendix B to 10 C.F.R. Part 50, and include management commitment to quality assurance, organizational requirements, and requirements for certain activities such as design control, document control, procurement control, inspections, control of materials, special processes, tests, and measurement and test equipment, nonconforming materials, corrective action, records, and audits.

10. Mr. W. H. Owen, Executive Vice President, Engineering and Construction, is the corporate officer ultimately responsible for quality assurance.^{35/} The Construction, Quality Assurance (QA), and Design Engineering Departments report to him. Each department functions as an independent organization, each with its own department head who is completely responsible for the work.

11. The Construction Department is responsible for building the plant according to design, quality requirements, schedule, and budget. The QA Department independently verifies the quality through tests and inspections, and is responsible for identifying and approving resolution of quality problems. The QA Department has complete independence within the Company with respect to setting or approving quality requirements and defining the tests and inspections to determine levels of quality achieved and has complete independence with respect to monitoring the resolution of any quality

^{35/} Mr. Owen has been employed by Duke Power since 1947. He graduated from Clemson University in 1947 with a degree in Mechanical Engineering. He has worked in various positions for the Company in both the Production and Design Engineering Departments, became Principal Mechanical Engineer in 1966, became Vice President of the Design Department in 1972, and in 1978 became Senior Vice President for Engineering and Construction, and was elected to the Board of Directors of the Company. Mr. Owen assumed his present title in 1982. He is a registered professional engineer in both North and South Carolina. (Apps. Exh. 1, Owen, p. 1-2).

problems which develop. The QA and Construction Departments cooperate in the development of procedural requirements and the training of all employees so that these quality requirements are well understood. The two departments also cooperate in scheduling their work so that quality assurance inspection personnel will be available when needed. (Apps. Exh. 1, Owen, p. 4-5).

12. That same kind of relationship exists between QA and Design Engineering. Design Engineering is responsible for the complete design of generating facilities, including preparation of drawings, specification of equipment, and detailed information showing technical and quality requirements for construction of a station. The QA Department works with the Design Engineering Department in specifying or approving quality requirements for the plant and monitors the activities in Design Engineering to confirm that all requirements of the QA Program are met. QA also works with Design Engineering in providing the necessary training so that design employees understand the quality requirements and the responsibilities of each department. (Apps. Exh. 1, Owen, pp. 3-5).

13. The QA Department has direct access to Mr. Owen to be sure that they have sufficient resources, both in number of employees and in technical skills, to fulfill their responsibilities, and has direct and independent

access to him to discuss any problems associated with implementing the QA Program. (Apps. Exh. 1, Owen, p. 4-5; see Tr. 2029-2032, Owen, 10/6/83 for Finding Nos. 6-9).

14. The QA Department is organized into six divisions, each of which reports to the Corporate QA Manager, G.W. Grier.^{36/} The six divisions are Administrative Services, Operations, Technical Services, Vendor, Audit, and Projects. The Administrative Services Division is responsible for training and certification of all inspectors and for the technical and developmental training for all members of the department.

^{36/} Mr. Grier has been employed by Duke Power since 1969. He is a 1964 graduate of Georgia Institute of Technology with a degree in Physics. Mr. Grier served in the United States Navy for five years as a Commissioned Officer. He attended the Nuclear Power, Prototype Reactor Training and Submarine Schools in the Navy, and was qualified for and served in various positions aboard a Polaris submarine. Mr. Grier's positions at Duke have included Construction Engineer at Oconee, where he supervised visual and NDE welding inspectors, was certified as a Level III NDE examination inspector, and was responsible for development and maintenance of welding procedures, and review of welding inspection documentation; Senior Construction Engineer at McGuire, where he supervised technical support, quality control inspectors, and scheduling and planning, was responsible for developing the procedures and recommending organization modifications necessary to comply with the newly published 18 point criteria set forth in 10 CFR 50, Appendix B; Planning Manager at Catawba, responsible for developing and maintaining the construction schedule; and Manager of the Station Support Division at Oconee, responsible for all construction activities at Oconee. Mr. Grier was appointed Corporate QA Manager in 1982. He is a registered professional engineer in North Carolina. (Apps. Exh. 2, Grier, p. 2-3).

Administrative Services is also responsible for all personnel administration and for long term maintenance of QA records. (Apps. Exh. 2, Grier, p. 3-4).

15. The Operations Division is responsible for carrying out the QA program at Duke's operating nuclear stations. (Apps. Exh. 2, Grier, p. 4).

16. The Technical Services Division is responsible for development and maintenance of all quality assurance procedures, surveillance of Design Engineering activities, review of vendor quality assurance documentation, interpretation of quality assurance requirements in codes, standards, and design specifications, and trending of non-conforming item reports (NCI's). (Apps. Exh. 2, Grier, p. 4).

17. The Vendor Division is responsible for the audit and approval of supplier quality assurance programs, and maintaining a list of currently qualified suppliers. (Apps. Exh. 2, Grier, p. 4).

18. The Audit Division is responsible for the internal auditing of the QA Program. They audit the activities of other divisions in the QA Department as well as other departments which are responsible for carrying out the requirements of the QA Program. These audit activities include certification that the QA procedures meet the requirements of the codes, standards, specifications and NRC regulations which the Company is

committed to meet. In addition, these audit activities verify the proper implementation of these approved procedures, and provide periodic reports to Duke management on the effectiveness of the QA Program. (Apps. Exh. 2, Grier, p. 4).

19. The Projects Division is responsible for the QA Program during construction at Catawba. The Projects Division, headed by Larry R. Davison,^{37/} includes the QA engineers and technicians who are responsible for reviewing construction procedures and documents for conformity with QA requirements, for determining specific inspections required to carry out the program, and for approving corrective action instructions. The Projects Division also includes Quality Control (QC) inspectors who

^{37/} Mr. Davison has been employed by Duke Power since 1971. He is a 1967 graduate of Georgia Institute of Technology with a degree in Mechanical Engineering. He served in the United States Navy for four years where he attended the Nuclear Power and Submarine schools, and received training at the Navy's prototype nuclear power plant. Mr. Davison's positions with the company include Assistant Field Engineer at Oconee, responsible for welding inspection, and Senior Quality Control Engineer at Catawba (since 1974), responsible for all quality control inspection activities. In 1981 he was appointed Manager of the Projects Division, and transferred to the Charlotte office. Mr. Davison has been assigned to the Catawba site since 1974, except for the period February 1981 to September 1982. Mr. Davison is now Project QA Manager at Catawba, and remains responsible for all quality assurance during construction at Catawba. Mr. Davison is a registered professional engineer in both North and South Carolina. (Apps. Exh. 14, Davison, pp. 2-3, and Attachment 1; Tr. 3663-64, Davison, 10/18/83).

implement inspection procedures,^{38/} QA Technicians and Clerks who review completed QA inspection documentation, and a surveillance group which reviews the implementation of the QA Program by both the Construction and QA Departments. (Apps. Exh. 2, Grier, p. 5; Apps. Exh. 14, Davison, p. 1).

20. The Projects Division includes all of the QA employees responsible for implementation of the program at the Catawba site, including approximately 230 employees working as engineers, technicians, inspectors and clerks. (Apps. Exh. 14, Davison, p. 1).

21. The Projects Division consists of five groups which perform various functions: the Inspection Group, the QA Technical Group, the Surveillance Group, the Planning Group, and Employee Relations.^{39/} The Projects Division

^{38/} These QC inspectors were organizationally in the Construction Department until 1981. Although Palmetto raises questions about the affect of this structure on independence of the QC inspectors, this aspect of the organizational structure does not indicate any failure to comply with the Appendix B independence criteria. This aspect of the QA organization is discussed in detail infra.

^{39/} The structure of the Projects Division has been modified in some respects during a recent reorganization of the QA Department, but not in any way which affects the Board's decision. For example, before a separate position of Inspection Superintendent was created, the technical supervisors reported directly to the Project QA Engineer; the Surveillance Group was headed by one of the QA engineers; and the positions of Employee Relations Assistant and Planning Supervisor were added since 1981. (App. Exh. 14, Davison, p. 20).

is depicted in the chart set forth in Apps. Exh. 14,
Davison, Attachment 3.

22. The Inspection Group is responsible for the QC inspection of the work that is being done, and is organized by discipline into several other groups; the Mechanical Group is responsible for inspection of mechanical work such as pipe erection, equipment installation and pipe support erection; the Electrical and Instrumentation Group is responsible for inspection of electrical and instrumentation work such as cable installation, electrical equipment installation, and instrumentation installation; the Civil Group is responsible for inspection of structural work such as concrete placement, soils work, structural steel erection and coatings; the Welding and NDE Group is responsible for inspection of welding including visual inspection and non-destructive testing, such as radiography (RT), liquid penetrant (PT), magnetic particle (MT), and ultrasonic (UT) inspections; the Receiving Group is responsible for inspection of all safety-related material and equipment received at the site; and the Document Control Group is responsible for inspection of documents in use during construction to ensure that they are the correct reasons. (Apps. Exh. 14, Davison, pp. 16-17).

23. The Inspection Group includes the inspectors within each discipline who are responsible for actual inspection of the work activities in accordance with the QA procedures. This inspection may be done in-process, such as welding inspection which has hold points^{40/} at various steps prior to welding, during welding, and after welding; or the inspection may be done upon completion of a work activity, such as a mechanical pipe hanger. (App. Exh. 14, Davison, p. 17).

24. The Inspection Group is headed by a Superintendent who is responsible for all of the inspections that are required by the QA Program. The Inspection Superintendent has four Technical Supervisors or QA Engineers reporting to him. There are two Technical Supervisors in welding and non-destructive examination; there is a Technical Supervisor for the mechanical area; and there is a QA Engineer for the civil, electrical and instrumentation area, which also includes the receiving and document control areas. Each of these Supervisors has Supervising or QC Supervisors Technicians, who are the first line supervision of inspectors, reporting to him. Supervising Technicians generally are qualified inspectors

^{40/} Hold points are identified points in a process which require inspection and approval before the work can proceed to the next step. (Apps. Exh. 14, Davison, p. 23).

who have demonstrated through performance the ability to supervise and lead others. (Apps. Exh. 14, Davison, p. 17, and Attachment 3).

25. The two Technical Supervisors in the welding area during the times relevant to this decision were Arthur E. Allum^{41/} and Charles R. Baldwin.^{42/} The Supervising Technicians (first line supervisors) reporting to the Technical Supervisors during the relevant times were Gary E. Ross, B.W. Deaton, and Stanley W. Ledford. The Supervising Technicians are responsible for the day to day supervision of inspectors who are certified in visual

41/ Mr. Allum has been employed by the Company since 1977. Prior to joining Duke Power, Mr. Allum served in the United States Navy for twenty years. While in the Navy he served as Director of the Nondestructive Testing of Metals School; Director of the Naval Sea System Command Test Examiner Certification Agency; electrician, welder, and operator on diesel and nuclear powered submarines; and served on submarine tenders as hull repair officer, planning officer, nondstructive testing officer, nuclear systems repair officer, quality assurance officer, and radiation protection officer. Mr. Allum transferred to Catawba from the Cherokee site on May 25, 1981. (Apps. Exh. 21, Allum, pp. 1-3).

42/ Mr. Baldwin was employed by Duke Power in 1967 as a QC Inspector at Oconee. He received training in radiography and magnetic partical and liquid penetrant examination. Mr. Baldwin was promoted to Supervising Technician in 1971, and was transferred to Catawba in 1975. He was promoted to Technical Supervisor in 1976 and has served as the welding inspector examiner at Catawba, responsible for training, examining, and certifying welding inspectors in accordance with established procedures. (Apps. Exh. 20, Baldwin, pp. 2-4).

or non-destructive examination techniques. (Apps. Exh. 21, Allum, pp. 1-3; Apps. Exh. 20, Baldwin, pp. 1-6; Apps. Exh. 14, Davison, p. 18 and Attachment 4).

26. The QA Technical Group (QA Engineering) within the Projects Division is headed by Robert A. Morgan,^{43/} Senior QA Engineer, and is composed of engineers and technicians whose primary responsibilities are to initiate, review or approve construction procedures and documentation and specify inspection instructions for the inspection groups to use in their jobs; review and approve the resolutions of inspection deficiency reports (R-2A's) and non-conforming items (NCI's);^{44/} provide answers and evaluations for technical questions, deficiencies, audit items, and non-conformances; perform a final review of inspection records to ensure that requirements are met as the inspections are completed; provide training to

^{43/} Mr. Morgan has been employed by the Company since 1970. He is a graduate of Virginia Polytechnic Institute with a degree in Civil Engineering. Mr. Morgan's previous positions with the company include Assistant Field Engineer at Oconee, responsible for technical support and QA for the reactor buildings; Associate engineer in the Design Engineering Department, responsible for designing structural steel for areas at McGuire and Catawba; and QA engineer at Catawba since 1975. Mr. Morgan is responsible for managing and directing the QA engineering and technical support functions at Catawba. He is a registered professional engineer in both North and South Carolina. (Apps. Exh. 18, Morgan, p. 2, and Attachment 1).

^{44/} Inspection deficiency reports and non-conforming items were focused on rather extensively in the hearing. These terms are discussed infra.

inspectors and QA Technicians relating to inspection and documentation requirements; interface with Construction and Design Engineering to resolve technical, procedural, and inspection questions; and interface with internal and external auditors to resolve inspection, procedural or technical questions. (Apps. Exh. 18, Morgan, pp. 1-4).

27. The QA Engineers in the Technical Group perform technical evaluations in the areas of welding, mechanical and non-destructive examinations (NDE); civil, electrical, and instrumentation; and support restraint. Each of these areas is headed by a registered professional engineer.

(Apps. Exh. 18, Morgan, p. 4).

28. Joe C. Shropshire^{45/} is responsible for QA Engineering in the mechanical, welding and NDE areas. There are currently eight technicians who work in this area. It is their responsibility to assure that the QA program is implemented and carried out in the areas of

^{45/} Mr. Shropshire has been employed by Duke Power since 1978. He is a 1967 graduate of Virginia Polytechnic Institute with a degree in Civil Engineering. Mr. Shropshire has worked as an engineer for the Virginia Department of Highways and for Pittsburgh Testing Laboratory prior to joining the Company. Mr. Shropshire also taught various aspects of civil engineering for seven years. His previous positions with the Company include Assistant QA Engineer, responsible for developing, coordinating, and training QC-Civil inspectors in structural steel, concrete, soils, and coatings, and Associate QA Engineer, responsible for implementing the QA program in mechanical piping, equipment, and system testing, welding, and NDE. Mr. Shropshire is a registered professional engineer in the State of West Virginia.

mechanical piping, equipment, and system testing, welding, and NDE; to see that work activities performed by the craft is controlled in accordance with procedures and that work is documented accordingly; to assure that the work is inspected appropriately by placing inspection hold points and by directing the QA review of the documentation to see that the work is done and inspected properly; to work with inspection personnel to solve inspection and procedural questions; to perform research on code matters and non-conforming items; to review and approve all construction procedures in mechanical and welding; and to review and approve non-conforming items. (Apps. Exh. 19, Shropshire, pp. 1-2).

29. The Surveillance Group in the Projects Division has technicians who are responsible for conducting surveillance on both the construction work and the inspection activities of the Inspection Group to assure that the work and the QC inspections are performed in accordance with QA procedures. This group is completely independent from the Inspection Group and the Technical Group. The supervisor of the Surveillance Group has the freedom to schedule the areas to be reviewed and when surveillance will be done. Major construction areas are covered periodically, but whenever a specific problem area is found, that area may be looked at in more detail and with more frequency. When a deficiency or problem is

identified, it is noted in a surveillance report and may either be nonconformed, or handled in some other manner in accordance with a QA Procedure for correcting the deficiency or discrepancy. In addition, the Surveillance Supervisor can also notify the Project Manager or the Project QA Manager of a condition that has been observed. Corrective action is required for such identified conditions. The surveillance reports are communicated to the Project Manager as a means of informing the Construction Department of the results of the surveillance activities. (Apps. Exh. 14, Davison, p. 19).

30. The Planning Group in the QA organization at the Catawba site is responsible for disseminating schedule information to the various QA Groups. They are responsible for coordinating the QA work with the construction work schedule so that the inspections can be scheduled and accomplished in a timely manner. (Apps. Exh. 14, Davison p. 19).

31. The Employee Relations Assistant is responsible for personnel activities of the QA Department at the Catawba site, including assisting employees in any recourse^{46/} they might pursue through the Company. (Apps. Exh. 14, Davison, p. 20).

46/ The Company recourse procedures are discussed infra.

32. The organizational structure of the Company and the QA Department has changed in some respects during the course of construction at Catawba. On the whole these changes do not affect the issues decided by this Board. In those instances where specific organizational or managerial changes are relevant to decisions before the Board, those changes are addressed in detail.^{47/}

2. Welding Inspector Concerns

The concerns of various welding inspectors were formally raised in January 1982 in response to management's request.^{48/} Much underlies the raising of

^{47/} Palmetto appears to challenge the NRC's initial approval of Duke's organizational structure. (Tr. 1924-1924). Palmetto examined Mr. Owen concerning the formation of the Quality Assurance Department in 1973. The Board indicated that this line of inquiry was not germane to the issues to be decided, but allowed the examination as part of Palmetto's effort to establish a foundation for its lack of independence argument. (Tr. 1927). Having heard all of the evidence, the Board still believes that this line of inquiry was not germane to the issues to be decided. The organizational structure at Duke Power, as it pertains to the QA Department, has been approved by other licensing boards and appeal boards. See Duke Power Company (William B. McGuire Nuclear Station, Units 1 & 2), ALAB-143, 6 AEC 623, 625 (1973); Duke Power Company (Catawba Nuclear Station, Units 1 & 2), LBP-75-34, 1 NRC 626, 646, 649-50 (1975), aff'd, ALAB-355, 4 NRC 397 (1976); and Duke Power Company (Cherokee Nuclear Station, Units 1, 2 & 3), LBP-77-74, 6 NRC 1314 (1977), aff'd, ALAB-4482, 7 NRC 979 (1978). The Board is interested in whether the QA Department was independent of cost and schedule pressure and control from line management. These matters are considered and decided infra.

^{48/} The background to the expression of concerns by welding inspectors is set forth infra.

these concerns. Given the importance of the issue, the Board considers it necessary to provide the relevant background before reaching the specific concerns.

a. Background

(1) The 1981 Transfer of QC Inspectors

33. The QA Department was established in 1974. James R. Wells^{49/} was the first Corporate QA Manager. Most of the employees performing QA functions in Design, Construction and Production were transferred to the newly formed department and continued to perform their same jobs. The QC inspectors remained in the Construction Department. The primary reason for leaving the QC inspectors in Construction was so that they could be scheduled to be available when needed to inspect work. At that time, this was the conventional organization for QC inspectors. (Tr. 1941-44, Owen, 10/5/83; Apps. Exh. 9, Wells, pp. 5-9).

^{49/} Mr. Wells has been employed by Duke Power Company for 26 years. He is a graduate of the Georgia Institute of Technology with Bachelors and Masters Degrees in Civil Engineering. Mr. Wells held several positions in the Construction Department prior to being appointed Corporate QA Manager in 1974. In 1973, Mr. W.S. Lee, then the Company's Senior Vice President of Engineering-Construction, had taken on the additional job of supervising QA functions. The next year the position of Corporate Quality Assurance Manager was created. From February 1982 to August 1983, Mr. Wells was an on-loan employee of the Company assigned to the Institute for Nuclear Power Operations (INPO) to assist in developing their Construction Project Evaluation Program. (Apps. Exh. 9, Wells, pp. 1-2, and Attachment 1).

34. The QC inspectors reported administratively to Construction management; they were on the Construction payroll and received their tools, supplies and day to day work assignments from their supervision in Construction. Construction was responsible for seeing that inspections were performed in a timely manner consistent with the work schedule. (Apps. Exh. 9, Wells, p. 6; Tr. 1939, Owen, 10/5/83; Tr. 2296, Grier, 10/7/83).

35. The QC inspectors reported functionally to the QA Department. QA was responsible for training and certifying the QC inspectors, establishing the standards that the QC inspectors would apply during their inspections, determining what kinds and sequence of inspections that would be performed, and how the QA procedures would be implemented to assure that the completed work met the established specifications and standards. (Tr. 1938-39, Owen, 10/5/83; Tr. 2296, Grier, 10/7/83).

36. In February 1981, the QC inspectors were transferred to the QA Department. The Company determined that the concern over scheduling the inspector's work was not as great as they initially thought. (Tr. 1944-45, Owen, 10/5/83). Also, at the time of the transfer the Company was building two other nuclear plants in addition to Catawba. The company determined that the move would provide flexibility in transferring inspectors from the

Projects to the Operations Division of QA. The Company wanted to continue to develop and expand the QA Department in view of the need to provide quality assurance activities at the ongoing construction projects and the future operating sites, and provide career opportunities for the QA employees. (Tr. 1944-45, Owen, 10/5/83; Tr. 2286-87, Owen, 10-7-83).

37. Although not relevant to this background discussion or this decision, it should be noted that Palmetto asserted that the organization with QC inspectors in the Construction Department reflected a lack of independence of the QA program in violation of Appendix B. It was abundantly clear from the evidence that the standards and criteria applied by the inspectors were set by the QA Department, the QA Department functioned independently from Construction and Design, and that QA conducted surveillance activities to assure that these standards and criteria were being correctly applied. (Tr. 1938-39, Owen, 10/5/83; Tr. 2296, Grier, 10/7/83). The Board finds that this assertion is not supported by the evidence, and is simply without merit.

38. Palmetto also asserts that the Duke organizational structure does not create an independent quality assurance program because it has been subjected to

improper cost and scheduling pressures. (Tr. 2029-2039; 2155, Guild, 10/6/83). The evidence presented was to the contrary.

39. Mr. Grier, Corporate QA Manager, testified that under the present organizational structure he has been given the freedom and independence to implement the QA Program without constraining influence in regard to schedule and costs, and that the personnel in Design and Construction understand his department's independent role. (Apps. Exh. 2, Grier, pp. 25-26; Tr. 2142, Grier, 10/6/83); Tr. 2244-45, Grier, 10/7/83). This testimony was not contradicted by any direct evidence presented by Palmetto, nor by any cross examination of Applicants' witnesses by Palmetto. The Board finds that the QA Department has been given freedom and independence to implement the QA Program (Apps. Exh. 5, Topical Report, Sec. 17.1-3; Apps. Exh. 6, QA Manual, letter from W.S. Lee, Chairman, supporting independence of QA program).

40. Mr. Grier, as Corporate QA Manager, is made aware of cost and schedule information at the project so that this information can be taken into account for planning purposes within the department. Mr. Grier and his department managers require this information so that they can allocate the necessary inspection personnel to

make timely inspections to assure that the timing of inspections does not unnecessarily delay construction activities. (Tr. 2144-50, Grier, 10/6/83).

41. Information on the volume of non-conformances as it relates to the volume of work is maintained by Construction^{50/} (Tr. 2149, 2153, Grier, 10/6/83). The volume of non-conformances generated by QA has a negative impact on the timely completion of construction activities (Tr. 2149, Grier, 10/6/83) since each non-conformance must be resolved either by rework or technical resolution. (Apps. Exh. 2, Grier, pp. 18-22). This type information would be helpful in determining whether the QA Program is slowing down construction. This information is compiled for Mr. Owen, the head of Construction, and others responsible for management of the construction project. (Tr. 2154, Owen, 10/6/83). The managers in Construction are responsible for any problems reflected in this information, and the burden of the cost and schedule implications is borne by Construction, not by QA. (Tr. 2243, Grier, 10/6/83). This information is not made available to Mr. Grier, the QA Manager. (Tr. 2153, Grier, 10/6/83). The QA Department is not made aware of the

^{50/} This type information is different from the trend analysis of NCIs performed by the QA Department. Analysis of the trends in the number of NCIs is made available to the appropriate area in Design or Construction for appropriate corrective action. (Tr. 2156-2160, Grier, 10/6/83).

impact of implementing the QA program on the cost and schedule of the plant. It does not appear to this Board that any improper cost or schedule pressure is placed on the QA Department.

42. Palmetto also asserted that there is a lack of independence in the QA program because the performance objectives of site QA management include an objective of "meeting the construction schedule." (Tr. 4702, Davison, 10/26/83; Tr. 4711, Shropshire, 10/26/83; Tr. 4712, Morgan, 10/26/83; Tr. 4714, Baldwin, 10/26/83; Tr. 4714, Allum, 10/26/83). Mr. Davison, Project QA Manager, explained that he was responsible for developing a method of communicating the schedule of work activities to QA supervision so that they could be aware of the work that was scheduled and so that they could do a better job of planning and scheduling the QA inspectors to be ready to perform inspections when work is completed or in progress. (Tr. 4677-4678, 4702, Davison, 10/26/83; 5001-5002, Baldwin and Allum, 10/27/83).

43. This objective was implemented by Mr. Davison by organizing a Planning Group within QA which obtained scheduling information from Construction, which was then passed on to QA supervision in a format meaningful to QA, so that QA could plan its activities to be ready to perform inspections when the work was ready to be inspected. (Tr. 4705-4706, Davison, 10/26/83).

44. The QA supervisors used this information to discuss the priority of the work for each week with their crews, and to assure that the work force in QA was assigned to meet the construction schedule. (Tr. 4708-4709, Davison and Morgan, 10/26/83; 4711-4720, Morgan, Shropshire, Baldwin and Allum, 10/26/83).

45. This scheduling information was used for planning purposes, and had no impact on the type of inspections to be performed or the standards to be applied by QA. (Tr. 5001-04, Baldwin and Allum, 10/27/83; 5014, Davison, 10/27/83). Even though this planning function will contribute to the overall corporate goal of completing the project on schedule, (Tr. 4706, Davison, 10/26/83) the practice appears to the Board to reflect good management, rather than a lack of independence of the QA program. The Board finds Palmetto's assertions about the lack of independence of the QA Program to be unsupported by the evidence.

(2) The Pay Reclassification

46. In July 1981 the Company implemented the results of its most recent evaluation of inspector positions. The pay grade of welding inspectors was reduced as a result of this evaluation. The relevant facts are set forth below.

47. Prior to the start of construction of its first nuclear plant, the Oconee Station, Duke Power did not have a welding inspection program. The line supervision was

responsible for ensuring that welds were of satisfactory quality. During the construction of Oconee, the Atomic Energy Commission required Duke to develop an inspection program for safety related activities. The Company established an inspection program in 1967 at Oconee. This program required all welding inspectors to have either two years prior experience as a welding inspector or as a welder. The initial welding inspectors were transferred from within the Company and met the requirement by having two years welding experience, since Duke did not have any in-house inspectors with two years experience. The Company offered the inspectors more money than they made as craft welders. (Apps. Exh. 1, Owen, p. 13). These welding inspectors were placed in the QC organization, which as noted, was part of the Construction Department at that time. (Apps. Exh. 9, Wells, pp. 2-3).

48. In the early 1970's, the American National Standards Institute (ANSI) published a standard on qualification of inspectors which required a certain amount of experience and training. The Company reviewed the qualifications of all of its inspectors after publication of the standard. The Duke inspectors met this standard because they had acquired the requisite level of experience. The ANSI standard on the qualifications for a welding inspector indicated that the experience requirements could be satisfied in a number of ways; by

being a welder, an inspector, or working under the direction of an inspector. After publication of the ANSI standards, Duke standardized its training programs consisting of classroom instruction and on the job training which allowed qualification of welding inspectors who did not have previous welding experience. (Apps. Exh. 9, Wells, pp. 3-4).

49. When Catawba construction began in 1974, there were no position analyses for inspectors. QA procedures governed inspector training and certification, but did not cover pay. The pay classifications that existed were administered by each supervisor, with increases or promotions originating with the supervisor's recommendation and requiring approval by management. In 1977, position analyses were developed for the various inspector positions at McGuire. In this regard, the position analysis for welding inspectors was revised in 1980 to reflect that in June, 1978 the two years experience requirement had been changed when the certification procedures were standardized along the lines of the ANSI standard for inspectors. (Apps. Exh. 14, Davison, pp. 3-5).

50. The pay classification for inspectors, is determined by an analysis of the job content of that position. Each position is assigned points based on job

content. The resulting number of points determines the pay grade classification. (Tr. 2328-31, Owen and Grier, 10/7/83; Tr. 2979, Grier, 10/13/83).

51. The rating established for welding inspectors in 1977 was 320 points and resulted in welding inspectors being placed in pay grade 11. (Apps. Exh. 2, Grier, pp. 44-45).

52. The 1977 position analyses and corresponding pay grade classifications were initiated throughout the Company in February 1980. (Apps. Exh. 2, Grier, p. 44). Because of the time lag between when the position analyses were completed in 1977, and their implementation in 1980, all the position analyses were reviewed and updated as necessary soon after implementation.

53. Mr. Grier, now corporate QA Manager, was a member of the Non-Exempt Evaluation Team formed in 1977 to conduct the initial evaluations of the position analyses of all non-craft non-exempt jobs in the Construction Department, including the inspectors who were part of Construction. Mr. Grier was also a member of the same team in 1980 that reviewed the revised position analysis. (Apps. Exh. 2, Grier, p. 44); Tr. 2330-31, Grier, 10-7-83, 2978-79, Grier, 10-13-83).

54. The 1980 Committee evaluated new and revised jobs using the Hay Associates method. In the summer of 1980, the Committee reviewed and evaluated a revised

position analysis for welding inspectors. The Committee took into account the 1978 changes in the required experience (Apps. Exh. 14, Davison, pp. 4-5). This review determined that both the know-how points and the problem solving points should be reduced. The know-how points were reduced because the position analysis no longer required that a welding inspector have at least two years of prior welding or welding inspection experience. The problem solving points were reduced because the team determined that the thinking challenge should be designated as selective memory rather than interpolative. This is consistent with an inspector's role which requires that solutions to problems be bounded by the limits of the procedures which govern the inspector's actions. This does not allow the inspectors to search out new solutions to problems.

55. The 1980 rating for the Welding Inspector A position was 281 points. This re-evaluation resulted in the movement in the pay grade for Welding Inspectors from Grade 11 to Grade 10. (Apps. Exh. 2, Grier, pp. 44-45; Tr. 2322-23, 2329-31, 2337-39, Grier, 10/7/83; Tr. 2986-89, Grier, 10/13/83). With this reduction the pay differential between welding inspectors and craft that existed when the welding inspection position was created was now only a few cents per hour. (Apps. Exh. 14, Davison, pp. 3-4).

56. There were other jobs in the QA Department which were affected by this evaluation process. The Film Reader position was reevaluated from 341 points to 299 points. This resulted in a pay grade reduction from Grade 12 to Grade 11. The Mechanical Inspector A position was reevaluated from 225 points to 262 points, which resulted in a pay grade increase from Grade 9 to Grade 10. The Electrical Inspector A position was reevaluated from 228 points to 262 points, which resulted in a pay grade increase from Grade 9 to Grade 10. (Apps. Exh. 2, Grier, p. 45).

57. These changes in pay grade were implemented at the time of the July 1981 general salary increase. At that time welding inspectors and film readers received one-half the general increase to begin the process of moving their pay to the proper level. This process was completed after the general salary increase in 1982 by giving the welding inspector and film readers a smaller salary increase to bring the pay in line with their grade classification. (Apps. Exh. 2, Grier, p. 45).

58. The position evaluations which resulted in the pay reclassifications were conducted pursuant to an ongoing Company effort to balance the requirements of all jobs with others within the Company, as well as balancing the effect of external competition on wage rates. (Tr. 2319-20, Owen, 10/7/83). The entire process was conducted

in accordance with established procedures used throughout the Company and affecting many jobs other than welding inspectors. (Tr. 2327, Owen, 10/7/83; Tr. 2322, Grier, 10/7/83; Tr. 2979, Grier, 10/13/83). When the matter came to Mr. Owen for his approval, there was nothing extraordinary about his approval of these position reclassifications, and he satisfied himself that the evaluations had been conducted consistent with the approach used throughout the Company. (Tr. 2327-28, 2332-33, 2339-41, Owen, 10/7/83)

59. The pay reclassification was explained to the welding inspectors during July 1981. Many inspectors disagreed with the reclassification and elected to pursue the matter through the Company's Employee Recourse Procedure.^{51/} (Apps. Exh. 9, Wells, pp. 8-9). This recourse procedure entitles employees to a prompt review and decision by higher management on any problem arising during the course of employment. The recourse procedure has three steps. The first step is an attempt to resolve the matter within the department. The written recourse submitted by the employee is answered within thirty (30) working days. If the employee is not satisfied with the

^{51/} This Corporate Employee Recourse Procedure is to be distinguished from the Quality Assurance Department recourse procedure which is discussed infra in connection with the recourse of G.E. Ross. Departments within the Company have a procedure for handling recourses at the department level, which implements step 1 of the corporate procedure.

department's response, the second step may be invoked within ten (10) working days. This step involves the Corporate Employee Relations Department, which coordinates a "second look" at the department's decision by gathering the relevant information and working with the department and the employee to resolve the issue. If the matter is not satisfactorily resolved at the second step, the employee has the right to have the matter reviewed and decided by the President of the Company within twenty (20) working days. (Apps. Exh. 8, Addis, Attachment 2, p. 1).

60. Approximately sixty-seven (67) inspectors at four different locations were affected by the reclassification, and approximately fifty-three (53) initiated a Step 1 Recourse. The matter was investigated and the pay re-classification was upheld.

61. Forty-five (45) inspectors chose to pursue the recourse to Step 2, twenty (20) of which were from Catawba. Gail Addis,^{52/} Director of Employee Relations in the Company's Corporate Personnel Office was involved with these recourses at Step 2. After receiving notification of each employee's recourse, Ms. Addis collected information about what had occurred at Step 1, and

^{52/} Ms. Addis has been employed by the company since 1978. She has a Master of Education in Counseling from the University of South Carolina, and has been involved in counseling relating employment since 1970. (Apps. Exh. 8, Addis, pp. 1-2, and Attachment 1).

researched the pay grade issue with QA Department management and the Corporate Wage and Salary Staff to learn the basis for the pay reclassification. Ms. Addis met with inspectors at the various sites to discuss their recourses. At Catawba, Ms. Addis and Mr. Wells met individually with the inspectors. (Apps. Exh. 8, Addis, pp. 5-6). Her role was to be sure that management and the employee understand each others views. The inspectors communicated the reasons for their disagreement with the pay reclassification to management with Ms. Addis' assistance. The inspectors felt that the reclassification was not internally equitable because of what they perceived to be the value of their position in relation to a welder's duties. The inspectors believed that their job was worth more than the craft welder. Upon consideration of the recourse, the pay reclassification was upheld. (Apps. Exh. 8, Addis, p. 4, 8).

62. At Step 3, twenty-nine (29) inspectors sought review by the President of the Company, twelve (12) of which were from Catawba. (Apps. Exh. 8, Addis, p. 5). At Step 3, W.S. Lee, then President of the Company, upheld the pay reclassification, and wrote a letter to the welding inspectors setting forth his decision. (Apps. Exh. 8, Addis, p. 10; Apps. Exh. 9, Wells, p. 10).

63. Though not relevant to this background discussion, Palmetto attempted to show that there were quality assurance considerations involved in the pay reclassification that the Company failed to consider. (Tr. 2333-36, 2340-41, Guild, 10/7/83). The several matters raised are addressed below.

64. First, Palmetto focused on the elimination of the two years of prior welding experience as a quality assurance versus cost and schedule consideration that was not adequately considered by the Company. (Tr. 2336, 2349, Guild, 10/7/83). Palmetto attaches too much weight to the prior welding experience requirement. This does not appear to the Board to reflect a conflict between quality assurance and cost and schedule pressure. From the beginning of the inspection program, prior welding experience was one of alternative methods of meeting the experience requirement. (Tr. 2355, Owen, 10/7/83). It is consistent with the ANSI standard for welding inspectors, not to have had prior welding experience, and the Company had satisfactorily qualified and certified welding inspectors at its Cherokee project without prior welding experience. (Tr. 2350-54, Grier, 10/7/83; Tr. 2980-81, Grier, 10/13/83; Tr. 2982, Owen, 10/13/83; Tr. 4290-93, Davison, 10-21-83). Palmetto offered no evidence to challenge the ANSI standards or the Duke training and certification program. Palmetto simply disagreed with the

Company witnesses during cross-examination. This is an insufficient challenge in view of the clear evidence that welding inspectors were treated like any other employees with respect to their position evaluations and resulting pay classifications.

65. Second, Palmetto asserted that the pay reclassification was in retaliation for the welding inspector concerns. (Tr. 2996, Kelley, 10/13/84). This allegation is not supported by the evidence. There was no evidence that the reclassification was tied in any way to the concerns. (Tr. 2997-2999, Addis, 10/13/83; Tr. 3000-3001, Owen, Grier, Wells, 10/13/83). The assertion that the reclassification was directed to the welding inspectors to "send them a message" because they were slowing the project down is equally without merit. The welding program was not a critical path item at Catawba, and overly conscientious inspection in the welding area would not have a significant impact in the construction schedule. (Tr. 3003-06, Owen, 10/13/83; Tr. 12,231-32, Barnes, 1/30/84). Importantly, the record reflects that the concerns were raised after the pay reclassification (see, e.g., Apps. Exh. 8, Addis, p. 9).

66. Third, Palmetto alleged that the pay reclassification was in retaliation for the 1981 SALP below average rating at Catawba.^{53/} This assertion also lacks merit. The committee evaluating the job positions did not consider the SALP report in its work evaluating job positions, (Tr. 3034, Grier, 10/13/83) and Mr. Owen testified that he did not connect the SALP report and the pay reclassification. (Tr. 3027, Owen, 10/13/83). More telling is the fact that the Company was not advised of the SALP rating until after the pay reclassification had been implemented. The 1981 SALP report was published in August 1981, and the reclassification had been implemented in July 1981. (Tr. 3014-16, Owen, 10/13/83). Palmetto's assertion of retaliation in this context is based on the erroneous assumption that the high number of noncompliances (the basis for the SALP rating) is synonymous

^{53/} The 1981 SALP report is discussed in the testimony of Messrs. Owen (Apps. Exh. 1, pp. 18-20), Grier (Apps. Exh. 2, pp. 34-35), and Wells (Apps. Exh. 9, pp. 11-12). (See also, Tr. 5115-39, Dick, 10/27/83). The report covers the period of construction of the Catawba plant from September 1979 through August 1980. The report rated the plant "below average" based upon an unweighted raw number of deficiencies recorded during the specified timeframe, which coincided with a period of extremely heavy construction activity at Catawba (Apps. Exh. 1, Owen, p. 19). Mr. Owen testified that all the specified items leading to that rating were satisfactorily corrected prior to issuance of the report, but the report did not take corrective action into account. (Id.). In any event, a "below average" rating does not indicate systematic or significant deficiencies in design, construction, or the QA program at Catawba. (Id.).

with a high number of nonconformances, presumably written by welding inspectors. While it is possible for a nonconformance (NCI or other deficiency report) to result in a noncompliance with NRC regulations, the correlation necessary to support Palmetto's position does not exist. In many instances the fact that the Company's QA Program has identified an actual or potential noncompliance results in the Company's not receiving a citation from NRC because the Company identified and corrected the problem within its QA Program. (Tr. 9384, Van Doorn, 12/2/83).

(3) Emergence of Welding Inspectors Concerns

67. During Ms. Addis' interviews with inspectors regarding their pay reclassification recourse, matters other than disagreement with the pay reclassification surfaced. Ms. Addis referred to these concerns at Catawba as work quality concerns and differentiated them from the pay recourse. Ms. Addis described these matters as

deal[ing] with working relationships across department lines, the feeling that department management didn't fight for higher pay for them, a perception that there was little empathy for them, that some had been misled by taking positions in QA for advancement, and some concerns at Catawba that the quality of work was adversely affected by some management practices and working relationships. [Apps. Exh. 8, Addis, p. 8].

Mr. Wells, who had accompanied Ms. Addis, experienced similar complaints. (Apps. Exh. 9, Wells, p. 2). Ms. Addis and Mr. Wells reported these concerns to Mr. Owen,

who requested that they present them in writing. Ms. Addis wrote a memorandum to Mr. Owen on December 3, 1981, which outlined these work quality concerns. (Apps. Exh. 8, Addis, Attachment 1, p. 17).

68. Mr. Owen informed Mr. Lee that these concerns had been raised during the pay recourse. Mr. Lee and Mr. Owen decided that a task force should be appointed to determine whether any technical inadequacies existed at the plant, and to determine the scope of the problem. (Apps. Exh. 1, Owen, p. 14).

(4) Task Force I

69. At Mr. Owen's direction a three-member task force, known as Task Force I, was promptly established. The three members were Mr. McMeekin, Mr. Hoellen and Mr. Homesley. The first meeting of Task Force I was held on December 14, 1981, at which time Mr. Owen directed the Task Force to investigate the inspectors' concerns and report back to him by the end of the year (Apps. Exh. 1, Owen, p. 14).

70. The qualifications of the Task Force members are described in the prefilled testimony of Mr. McMeekin (Apps. Exh. 10, pp. 3-4). Mr. Hoellen, the Task Force Chairman, is a nuclear engineer and has been with Duke since 1976, holding a variety of positions relating to nuclear fuel purchasing. He is currently Assistant Manager of Nuclear Fuel Purchasing. Mr. McMeekin is an electrical engineer who from 1965 to 1973 worked in the U.S. Navy nuclear program, joining Duke as a Design Engineer in 1973. He is currently a Principal Engineer in the Design Engineering Department. Mr. Homesley is currently Plant Superintendent of the Riverbend Steam Station. He has been with Duke for over 29 years and in that time has worked directly with craftsmen and first-line supervisors.

71. At the initial Task Force meeting Mr. Owen explained that during the pay recourse action several QC inspectors had voiced concerns at Catawba, and he provided

the Task Force with information relating to these concerns (Apps. Exh. 10, McMeekin, p. 4). The role of Task Force I was to investigate the concerns, with total independence from management, for the purpose of determining whether in fact a problem existed and its possible scope (Apps. Exh. 1, Owen, p. 14; Apps. Exh. 10, McMeekin, p. 8). The Task Force first gathered information through interviews with Mr. Wells and Ms. Addis. Then it decided to conduct on-site interviews with at least half of the inspectors. (Apps. Exh. 10, McMeekin, p. 6). The interviews were conducted at the Catawba site on December 18, 21 and 22, 1981. The Task Force also interviewed management and supervision in the QA and QC organizations, as well as Construction Technical Support.^{54/} It then met in late December 1981 to develop a report which was issued on December 29, 1981 (Attachment 4 to Apps. Exh. 10).

72. Task Force I concluded that the QA program at Catawba was satisfactory and that no unacceptable work affecting safety existed (Apps. Exh. 10, McMeekin, p. 7). It found that the welding inspectors were concerned with deviations from written work procedures by craft and had discussed several examples of such deviations. But none

^{54/} The Task Force I investigation also included the Oconee and McGuire sites. Interviews similar to those conducted at Catawba were also carried out at Oconee and McGuire on January 6 and 7, 1982. This phase of the investigation concluded in the Task Force Report Addendum, issued January 12, 1982.

of the inspectors identified any work that was technically inadequate. (Id. at 8). It characterized the problem associated with the inspectors' concerns as a "communication problem" between the inspectors and their supervisors as well as construction personnel (Id. at 7). In the opinion of Mr. McMeekin, a result of the poor communications was that some inspectors misconceived their role as one to require strict adherence to work procedures rather than to document variances from such procedures (Id. at 10). These inspectors thus concluded that they were receiving inadequate support from supervision and management because they felt that the craft was routinely permitted to vary from procedures and that such variances were not thoroughly analyzed for acceptability (Id.). Accordingly, it made several recommendations aimed at improving communications (Id. at 8):

1. Provide inspectors with a better understanding of the basis for the technical acceptability of a noncomformed item.
2. Avoid the use of memoranda and verbal directives to provide instruction and utilize more expedient means of revising procedures.
3. Clarify the respective responsibilities of inspectors and supervisors.
4. Advise employees of the methods of seeking technical resolution of concerns.
5. Improve NCI documentation process by requiring a more explicit statement of the nonconformance and the basis for its resolution.

73. Following the completion of its reports, Task Force I presented its findings and recommendations to management. It stressed that the QA program was working but that corrective action was needed on the communications problem. In this connection, Task Force I recommended to Mr. Owen that it would be prudent to investigate the specific technical concerns of the inspectors (Apps. Exh. 10, McMeekin, p. 9).

74. Palmetto did not seriously question the work of Task Force I. It raised some question as to the independence of the Task Force I effort, but Mr. McMeekin stated that the conclusions and recommendations of his Task Force were in no way influenced by management, though technical information was sought from some members of management (Tr. 3265-67, McMeekin, 10/14/83). Palmetto also questioned whether the Task Force I effort was comprehensive (Tr. 3272, McMeekin 10/14/83). Mr. McMeekin explained, of course, that the investigation was comprehensive within the scope of its assignment, which was to make an expedient assessment as to whether a problem existed (Id.). Task Force I was not charged with evaluating each individual concern (Tr. 3283 and 3295).

b. Welding Inspectors' Technical Concerns

(1) Background of Technical Task Force Investigation

75. In January 1982 the Applicants, pursuant to the recommendation of Task Force I, commissioned a Task Force to investigate the technical concerns of the welding inspectors and to make recommendations to resolve any identified inadequacies. The Technical Task Force was composed of five individuals with considerable engineering experience from Duke's QA, Construction and Design Engineering Departments. Mr. Cobb, who at the time was Principal Engineer in charge of the Civil Support Section in Design Engineering, was appointed Chairman. The other members were Mr. Williams (engineer in the Mechanical Design Section of Design Engineering), Mr. McAuley (engineer in Piping Analysis and Support/Restraint Design Section of Design Engineering), Mr. Coggins (engineer in QA Department, Technical Services Division) and Mr. Van Malssen (Construction Department). (See Apps. Exh. 11, Cobb, pp. 4-5).

76. The qualifications of the Technical Task Force members are described in the prefilled testimony of Mr. Cobb (Apps. Exh. 11, pp. 2 and 4-5). Mr. Cobb, the Chairman, has had over 19 years of professional engineering experience and has been with Duke for

approximately nine years, working primarily in the area of mechanical equipment and piping structural qualification. Mr. Williams holds a B.S. degree in Physics and had 14 years of professional experience in piping engineering with ITT Grinnell Corporation prior to joining Duke. He has had nine years of experience with Duke in materials engineering, code requirements, field installation specification, and fabricated piping. Mr. McAuley is a civil engineer with a Master of Engineering degree in Structures. He has had over six years of engineering experience with Duke in the area of civil structures and support/restraint design. Mr. Coggins holds a B.S. degree in Materials Engineering and had three years of professional experience with Reynolds Metals Company prior to joining Duke. He has had nine years of experience with Duke in the areas of materials specifications, field installation specifications, code requirements, and QA procedures. Mr. Van Malssen has a B.S. in Engineering Operations with two years of professional experience with Kemper Insurance as an authorized inspector and QA/QC Engineer, and five years of experience with Duke in the area of welding engineering and Level III visual welding inspection. (Apps. Exh. 11, Cobb, pp. 2 and 4-5).

77. The qualifications of the Technical Task Force members were examined by Management Analysis Company as part of its review of the Task Force activity (described

below), and each member was determined to be "qualified by virtue of his education and experience." (Apps. Exh. 13, Zwissler, p. 6). While Mr. Zwissler acknowledged the problem that some of the Task Force members had prior involvement in some of the stated concerns, he indicated that this had been remedied by providing for a completely independent review of each resolution to confirm or deny the initial finding of the Task Force (Apps. Exh. 13, Zwissler, p. 6).

78. Following the completion of the Task Force I investigation, management had been advised that additional specific concerns had been expressed by the welding inspectors. Mr. Davison called a meeting with all the welding inspectors at Catawba on January 11, 1982, and asked them to prepare a written list of all their specific concerns so that a comprehensive investigation could be conducted. (Apps. Exh. 14, Davison, pp. 6-7). This request was made again on January 21, 1982 in a letter from Mr. Wells to all the welding inspectors. In this way, the Applicants assured that all the welding inspectors' concerns were identified for the Task Force investigation, though a few additional concerns subsequently arose and were addressed in the hearing. When the written concerns were furnished to Mr. Davison, he conveyed them to the Technical Task Force (Id. at 7).

79. As the Technical Task Force began reviewing the concerns of the welding inspectors, it became evident that some of the concerns were nontechnical in nature. As Mr. Grier explained, "Any concerns expressed that were not tied to a piece of physical work in the plant, the resolution of an NCI, or the implementation of a QA procedure were considered to be non-technical." (Apps. Exh. 2, Grier, p. 49). Because the Technical Task Force was limited to addressing technical concerns, another group had to be constituted to review the nontechnical concerns and make appropriate recommendations for corrective action. (Apps. Exh. 12, Alexander, pp. 2-3). Accordingly, the Nontechnical Task Force, headed by Mr. Alexander, was created.

80. The objective of the Technical Task Force was to evaluate technical aspects of the welding inspectors' concerns, summarize the results, draw conclusions, and make recommendations to management. The Task Force recommendations were to include any actions required to resolve deficiencies identified during the investigation, any actions that might improve the technical aspects of the inspectors' work, and a presentation to the inspectors to discuss the Task Force results and management's response. The principal focus of the investigation was on determining whether there were any actual or potential technical inadequacies at the Catawba site associated with

these concerns. If any actual or potential technical inadequacies were identified the Task Force was to make specific recommendations directed at resolving these inadequacies. (Apps. Exh. 11, Cobb, p. 6).

81. The investigation was conducted according to a Task Force Plan consisting of six major phases. (See Apps. Exh. 11, Cobb, pp. 6-7). The first phase was data collection and review. This involved identifying the concerns, listing and classifying them, setting up files, and reviewing each concern to determine if there was sufficient information for evaluation, and, if not, to gather that additional information, in some cases through interviews with inspectors. The second phase was the technical evaluation. Each technical concern was assigned to a Task Force member for evaluation based on his area of expertise. Technical evaluations were performed and documented on a Technical Evaluation - Individual Concern form. Each evaluation was verified independently by either another member of the Task Force or a separate party. The verification was also documented using a Verification - Individual Concern form. The third phase was development of results and recommendations. Responses to the technical concerns were summarized in the final report and programmatic and general recommendations were compiled. The fourth phase involved management review and implementation of the recommendations. A Management

Implementation Plan (described below) was developed by the QA Department and was incorporated into the final report. The fifth phase involved inspector feedback. The Task Force activity and overall results were reviewed with all inspectors at Catawba as a group, and then each concern submitted by an inspector was reviewed with that inspector along with the evaluation and associated recommendations. Results from those sessions were summarized and incorporated into the report. The sixth and final phase of the Task Force's work was preparation of the final report and disposition of all the data compiled. In this step, two Task Force reports (Volumes I and II) were completed and made available to management. The Task Force Plan included in this phase a review of the Report with the NRC. The Task Force Reports were made available to the NRC by the QA Department. (Apps. Exh. 11, Cobb, pp. 6-7).

82. After the recommendations of the Technical Task Force were prepared, they were presented to Mr. Grier, who along with several QA Department Division Managers, then developed the Management Implementation Plan (Apps. Exh. 2, Grier, p. 49; the Plan is Attachment 3 to Apps. Exh. 2). The Plan embraced a number of implementation objectives covering the programmatic and general recommendations of the Technical Task Force. The Plan was reviewed with Mr. Owen and the Vice Presidents of

Construction and Design Engineering. Mr. Bradley was named Implementation Coordinator. Each specific action recommendation was assigned to a particular individual in the QA, Construction or Design Engineering Departments to assure its implementation. (Apps. Exh. 2, Grier, p. 50). Mr. Grier reviewed the actions taken, and Mr. Bradley verified that each specific action recommendation had in fact been implemented (Id.). Many of the specific actions, relating as they did to the overall QA program, were the responsibility of Mr. Davison. While Palmetto attempted to show some impropriety in this, inasmuch as Mr. Davison had been mentioned in some of the concerns (see Tr. 4091-94, Davison, 10/20/83), the implementation directives were sufficiently specific to ensure that the actions would be carried out (see Tr. 4094, Grier, 10/20/83). The actions taken are described at pages 51-53 of Mr. Grier's prefilled testimony (Apps. Exh. 2) and will be discussed in the appropriate places in the findings that follow.

(2) Summary of Task Force Findings

83. A total of 130 technical concerns were raised by the welding inspectors. Some of these were identical, so that in all there were 114 unique technical concerns raised. (Apps. Exh. 11, Cobb, pp. 9-10). The Task Force found that these could be grouped into nine generic technical areas: Process Control, Welding Inspection,

Nonconforming Item Report (NCI) Resolution, Design Drawings, Material Control, Construction Procedures, Variation Notice (VN) Processing, Welding Procedures, and QA Procedures. (Apps. Exh. 11, Cobb, p. 8). 55/ The investigation of the welding inspectors' concerns revealed that there were no actual technical inadequacies, though 24 concerns identified potential technical inadequacies and required further investigation. (Apps. Exh. 11, Cobb, p. 8). These potential technical inadequacies were investigated by the QA Department in accordance with the Management Implementation Plan.

84. The Task Force reached three overall conclusions. First, it concluded that the interface between the inspectors and their supervision and between the inspectors and craft personnel contributed significantly to the inspectors' technical concerns. The primary areas of interest were supervision's response to technical questions raised by the inspectors, the use of verbal instructions to inspectors and the process of resolving nonconforming items. The inspectors' concern with the craft was based on a perceived failure by the craft to perform their work in accordance with procedures. (Apps. Exh. 11, Cobb, pp. 10-11). The second overall

55/ Note that there was some overlap in the generic groupings, so that some of the 114 concerns appeared in more than one generic group. (Applicant's Ex. 11, Cobb, p.10).

conclusion was that implementation of procedures was a major area of concern with the inspectors. Approximately 54% of the total number of concerns involved either actual or potential violations of procedures. (Apps. Exh. 11, Cobb, p. 11). The third conclusion was that some of the concerns could be alleviated by revisions of procedures or the development of new procedures. Specific areas for such revision included: methods of handling documentation, especially that related to reworkable discrepancies, instructions for handling situations not covered by the procedures, more specific definitions of duties and responsibilities of personnel regarding compliance with procedural requirements, and additional guidance in each department on proper NCI processing. (Apps. Exh. 11, Cobb, pp. 10-11).

85. The Task Force provided three types of recommendations. First, it generally recommended a simplification of procedures and a separation of administrative procedures from QA or other technical procedures. Second, it provided specific recommendations for follow-up actions needed to close out potential technical inadequacies and establish preventive measures against occurrence of future technical inadequacies and procedural violations. Third, it provided programmatic recommendations for the review of procedures, programs, responsibilities and practices in technical and

administrative areas. (Apps. Exh. 11, Cobb, pp. 11-12). The Task Force recommendations are described further in the discussion of specific concerns that follows.

86. The Task Force attempted to put the concerns in perspective by noting that the 114 concerns brought forth by the welding inspectors represented only "a microscopic sample size of the total volume of work associated with the areas reviewed" (Apps. Exh. 11, Cobb, p. 13). In other words, when one considers that these welding inspectors have inspected an almost countless number of welds and written over a thousand NCIs and yet have presented only these 114 concerns, it is evident that no systematic breakdown of the QA program has occurred. The Task Force also accepted the welding inspectors' concerns as stated and did not question the accuracy of their concerns. It also pointed out that since some of the concerns dated back to 1978, corrective actions had already been taken in some cases. Finally, it was noted that of the 130 inputs, 94 had come from two people; the Task Force concluded that this sample of information was not representative of a random sample of welding inspectors at Catawba Nuclear Station. (Apps. Exh. 11, Cobb, pp. 13-14). This is especially true because all the welding inspectors were asked by management to submit all their concerns (see FF 78).

87. The Task Force findings were presented to the inspectors in two steps in an effort to ensure that each concern was properly interpreted. First, the Task Force Plan and evaluation methods were described to all the inspectors as a group. Then the Task Force attempted to review the evaluation of each concern with the inspector who raised it; some of the inspectors do not specifically remember meeting with the Technical Task Force to discuss the evaluation of their concerns (see, e.g., Apps. Exh. 28, Deaton, p. 3). These discussions included one or two members of the Technical Task Force, the inspector and his supervision. (Apps. Exh. 11, Cobb, p. 14).

88. Mr. Lewis Zwissler of Management Analysis Company (MAC) was retained by the Applicant as an independent consultant to oversee the Task Force investigation. He was also available as a technical or quality assurance expert if needed for specific evaluations or verifications. (Apps. Exh. 11, Cobb, pp. 16-17). Mr. Zwissler's qualifications are outlined in his prefilled testimony (Apps. Exh. 13, pp. 1-3). He has had over 40 years of experience in quality assurance, project management, and research and development, including 20 years of active management in quality assurance in the nuclear and aerospace industries. He served for eight and a half years as Director of Quality Assurance for Argonne National Laboratory and served as QA Manager on the

Polaris, Titan III, Gemini and Apollo programs for Aerojet General Corporation. He holds a B.S. in Civil Engineering, an M.S. in Applied Mechanics, and has completed the academic requirements for a Ph.D in Applied Mechanics. He is Registered Professional Engineer, a Fellow in the American Society for Quality Control and a Senior Member of the American Nuclear Society. He has been involved in consultation projects at seven nuclear power plants.

89. The role of MAC was to review the qualifications of the members of the Technical Task Force, review the approach and methods of the Task Force to assure that a complete list of all the concerns was compiled, review the approach and methods used to evaluate the resolutions of the concerns, audit the resolutions to ensure completeness and quality of work, and prepare a written report on the Task Force effort independently for Duke management (Apps. Exh. 13, Zwissler, pp. 4-5). Mr. Zwissler's report to management, dated April 26, 1982, is Attachment 2 to Apps. Exh. 13. Mr. Zwissler also reviewed the Applicants' efforts to implement the Technical Task Force recommendations and submitted a brief report in August 1982 (Apps. exh. 2, Grier, p. 48).

90. Mr. Zwissler interviewed each member of the Technical Task Force and reviewed their individual qualifications. He judged each member to be qualified by

reason of education and experience to perform the work of the Task Force (Apps. Exh. 13, Zwissler, pp. 6-7). However, he recognized that the objectivity of the Task Force could be questioned because of the prior involvement of Task Force members in the resolution of some of the concerns. In particular, he recommended that Mr. Coggins not be appointed Chairman of the Task Force. The problem was remedied by the appointment of Mr. Cobb as Chairman and by initiating a completely independent review of each resolution to confirm or deny the initial finding of the Task Force. (Apps. Exh. 13, Zwissler, pp. 6-7).^{56/}

91. Palmetto challenges the independence of the Technical Task Force because of the participation of Mr. Coggins, a member of the QA Department. The record establishes, however, that the Task Force was fully independent of Duke management. The Task Force was never advised to arrive at any foreordained conclusions. From

^{56/} The independence of the MAC review was questioned by the Intervenors during the hearing on the theory that MAC's review was similar to the design and construction review conducted at the Midland plant which was subject to certain independence criteria established by the NRC (see Tr. 3345-69, Zwissler, 10/17/83; PA Exh. 21). But Palmetto's premise is flawed: at Midland, MAC performed a broad review of the entire QA program, whereas its work at Catawba was to oversee an independent task force investigation (Tr. 3488-89, Zwissler, 11/17/83). As Mr. Zwissler explained, however, MAC satisfies all these independence criteria with respect to its work for the Applicants, even though the criteria are not specifically applicable (Tr. 3608, Zwissler, 10/18/83).

the outset, including the development of the Task Force Plan, it worked without the involvement of management or any other parties not directly connected with the evaluations and verifications of inspector concerns. (Apps. Exh. 11, Cobb, p. 18). As for Mr. Coggins' participation, he was selected because the Task Force needed a member who was intimately familiar with the QA procedures (Tr. 3593, Cobb, 10/18/83). Moreover, the Task Force established the policy that if an individual had been involved in the concern in any way, he was not to be the evaluator or verifier of the concern (Tr. 3593-94, Cobb, 10/18/83).

92. It was the ultimate conclusion of the Technical Task Force that the concerns raised by the welding inspectors did not affect the quality or safety of the Catawba plant. No technical inadequacies were found, and all potential inadequacies were resolved through specific follow-up actions. (Apps. Exh. 11, Cobb, pp. 18-19). The concerns that were expressed did not, in the judgment of the Task Force, indicate that any welding inspectors had been pressured to approve faulty workmanship, nor were they indicative of any systematic deficiencies. (Apps. Exh. 11, Cobb, pp. 19-20). The Task Force further concluded that the procedural violations that had occurred did not result in the approval of any workmanship that represented an unsafe condition. (Apps. Exh. 11, Cobb, p.

20). Nor did the inspectors' concerns indicate a breakdown in the QA program at Catawba. (Apps. Exh. 11, Cobb, p. 20).

93. Mr. Zwissler undertook an independent evaluation of the quality of the Task Force's work. More specifically, he reviewed the written concerns and the Task Force analysis, and performed a detailed technical evaluation of the recommendations. His review was also designed to ensure that the Task Force correctly interpreted QA and construction procedures. (Apps. Exh. 13, Zwissler, p. 7). Moreover, he provided advice to the Task Force in those situations where he felt that additional work was required or that the recommendations failed fully to address the actions needed to resolved the concerns (Id. at 8).

94. Mr. Zwissler concluded that the technical resolutions of the Task Force were valid and that there was no adverse impact on the safety of the plant (Apps. Exh. 13, Zwissler, p. 8). He pointed out that the technical evaluations performed by the Task Force included an independent review of prior resolutions of the NCIs associated with the concerns, with a second independent review to assure the objectivity of the final Task Force determinations (Id. at 8-9). As was noted above, Mr. Zwissler also reviewed the adequacy of the Management Implementation Plan. It was his conclusion that the Plan,

successfully completed, would satisfactorily resolve all the concerns (Id. at 10). In August 1982 he audited the documentation of the completed corrective actions under the plan. He continued to oversee the implementation of the actions, and in his prefiled testimony he stated that "every concern that was expressed was adequately resolved from a technical standpoint, and in my opinion, no residual quality-related problems remain in the construction of the plant." (Id. at 11).

95. It is reasonable to conclude on the basis of the Technical Task Force findings and MAC's independent review that the investigation was comprehensive and resulted in the correction of all deficient items. Because no unresolved technical inadequacies were found to exist among the welding inspectors' concerns, we are satisfied that no systematic technical deficiencies exist in the QA program as a whole. Furthermore, while Palmetto has alleged that the existence of procedural violations is indicative of a deficient company practice, it has been clearly established that the conservatism built into the QA procedures allows for work to be found technically acceptable, even where a deviation from procedures has occurred (Apps. Exh. 2, Grier, p. 42; Tr. 6763, Ross, 11/10/83). Thus the procedural violations that have

occurred do not indicate a breakdown in the QA program or the existence of any unsafe condition (Apps. Exh. 11, Cobb, p. 20).

(3) Resolution of Welding Inspectors' Technical Concerns

96. As was noted above, there were 114 separate technical concerns presented by the welding inspectors. These were grouped by the Task Force into nine generic technical categories. The following discussion of each specific concern will utilize these same categories.

(a) Process Control^{57/}

97. There were a total of 20 concerns in this category. Of these, there were 11 concerns identified by the Task Force as involving an actual procedural violation, while three involved a potential procedural violation. There were no actual technical inadequacies, though four of the concerns presented potential technical inadequacies. (Technical Task Force Report (T.F. Report) Vol.I, Section 5.3.1, Attachment 4 to the prefilled testimony of Mr. Cobb, Apps. Exh. 11). The major "typical findings" identified by the Task Force included: confusion resulting from discrepancies between construction

^{57/} The term "process control" refers to a method used to control work and in some cases correct discrepancies discovered by inspectors. A Process Control Form is used by the inspector as both the inspection report and the documentation of the repair of the defect. (See Apps. Exh. 37, Dressler, Davison, Alexander, pp. 41-42).

procedures and process controls; confusion where an item is not specifically addressed by normal procedures (e.g., using air to cool stainless steel piping); the fact that inspectors are quick to write NCIs on trivial items that can be handled by a simple question or action (e.g., incident where welder failed to stencil weld but recorded his I.D. number on Process Control traveler); and the problem that supervision (primarily first-line) may not adequately explain their technical decision to subordinates. (T.F. Report Vol.I, Section 5.3.1).

98. In accordance with the programmatic recommendations of the Task Force, a thorough review of Process Control procedures and practices was carried out. This review concluded that in general the Process Control procedures are adequate and well understood by the individuals responsible for implementing those procedures. Implementation objectives in this area did result in the establishment of periodic meetings with individuals in QA, crafts, and Construction Technical Support for the purpose of reviewing problems in using Process Control procedures (Apps. Exh. 2, Grier, pp. 51-52).

99. All the Process Control concerns have been resolved to the satisfaction of the welding inspectors who raised them and no challenge was presented by the

Intervenors to the resolution of these concerns. There follows a summary of the concerns and the Task Force's resolutions and recommendations.

- a. Concern K-1: use of air hose to provide rapid cooling of welded joint (NCI 13165). Mr. Irby noted that accelerated cooling was inappropriate and requested a resolution addressing this from a metallurgical standpoint. (See Apps. Exh. 77, (offer of proof), Irby, Attachment A). Metallurgical considerations were addressed in a memorandum from Mr. Whitaker (Id.), and it was determined that no technical inadequacy was present. The Task Force recommended revising the welding process specifications to clarify quenching operations. (T.F. Report Vol II, K-1). Applicants were prepared to submit testimony of Mr. Irby that the Task Force resolution was satisfactory. (Apps. Exh. 77 (offer of proof), Irby, p. 4).
- b. Concern R-3: class G welds - failure by craft to follow CP-49. This concern did not involve safety-related welds. No technical inadequacy was found, yet the Task Force directed clarification of CP-49 (T.F. Report, Vol. II, R-3). Mr. Ross, who raised the concern stated that the resolution was satisfactory (Apps. Exh. 34, Ross, p. 5).
- c. Concern R-8: verbal instructions that valve weld end preparations could be modified without use of process control F-9B or F-10A. The Task Force found that Design Drawing and Field Weld Data Sheet permitted modification and thus there was no violation of procedures or technical inadequacy. But it recommended that the supervisor should explain the basis for his decision where verbal instructions are based on documents. (T.F. Report, Vol.II, R-8). Mr. Ross agreed with resolution (Apps. Exh. 34, Ross, p. 5).
- d. Concern R-22: no process control covered certain welding and fitting operations on piping. Task Force found that an explanatory note should have been included on process control F-9B or M-4A, but that there was no violation of procedures or technical inadequacy. It recommended that where clarification or expansion of process control is

required, such an explanatory note shall be written. (T.F. Report, Vol. II, R-22). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).

- e. Concern R-23: numbering temporary weld in same manner as permanent weld. Ross felt that a temporary weld in field should have been removed prior to the fabrication in shop of the permanent weld. The Task Force concluded that forms M-4A and M-4J would provide the proper documentation and that craft and inspectors should be instructed on this. (T.F. Report, Vol. II, R-23.) Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- f. Concern R-26: conflict between CP-304 and process control M-4A as to data sheet for making weld. The Task Force recognized this as an inconsistency but found that QA-QC supervision had correctly instructed inspectors to use M-4A (listing the acceptable data sheet). (T.F. Report Vol. II, R-26.) It noted that conflicts in process control must be corrected before issuance to the field. Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- g. Concern R-32: repair of vendor welds. Mr. Ross believed there was no process control governing the repair of rejectable vendor welds. But as the Task Force pointed out, such repairs are handled by appropriate process control documentation and the program is initiated by an NCI. (T.F. Report, Vol. II, R-32). It recommended identification and repair of the weld in question and a review of the procedures (Id.). Mr. Ross agreed with this resolution (Apps. Exh. 34, Ross, p. 5).
- h. Concern R-39: notes on process control for inspecting I.D. of pipe. The Task Force found that such notes are not required on the basis of the ASME Code and QAP M-4. But it noted that supervisors should explain verbal directions on technical and procedural matters to their subordinates. (T.F. Report, Vol. II, R-39). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- i. Concern R-40: craft modifying Class B sway strut without process control. The Task Force found that procedures do in fact exist detailing

appropriate methods for modifications of these struts. No procedural violation or technical inadequacy was found. (T.F. Report, Vol II, R-40(rev.1)). Mr. Ross agreed with the resolution. (Apps. Exh. 34, Ross, p. 5).

- j. Concern R-41: grinding on valve body outside the weld preparation area. The Task Force agreed with Mr. Ross that welding and grinding outside the weld prep area was an actual violation of the design drawing for the valve in question. But it noted that process control was such that any actual welding on the valve body in question would have been properly performed, and thus there was no technical inadequacy; it recommended that craft be instructed that welding beyond the weld prep area on the valve requires additional process control. (T.F. Report, Vol. II, R-41). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- k. Concern R-47: inspector was told to accept a unidirectional valve where isometric called for valve with two-directional flow. The Task Force found that this was a potential violation of QA Procedures M-4 and Q-1. But it found no technical inadequacy because valve flow direction is verified twice by inspection and system functional testing verifies operability. (T.F. Report, Vol. II, R-47). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- l. Concern R-52: absence of material grade of piping from M-4A as required by CP-42. The Task Force concluded that the absence of the material grade was irrelevant to the inspection of material identification, but it recommended that CP-42 be reviewed to determine whether the requirement for material grade should be removed. (T.F. Report, Vol. II, R-52). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- m. Concern R-57: documenting removal of brass contamination on Form M-4I. The Task Force found that this was an actual violation of CP-310 which requires that removal of brass contamination be documented on an F-9B and a potential technical inadequacy, though Mr. VanMalssen's concurring report noted that CP-310's requirement is contingent on the evaluator's judgment as to whether the extent of the contamination is "excessive". (T.F. Report, Vol. II, R-57). The

Task Force emphasized the need for the performance of activities in accordance with procedures, recommended a review of M-4Is to ensure that contamination had been adequately removed, and recommended a review and possible revision of CP-310 to describe the manner in which an M-4I could be used (Id.). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).

- n. Concern R-64: saddle weld in field with no "L" dimension (NCI 14033). The Task Force found this to be an actual violation of the design drawing and a potential technical inadequacy. It was concerned with the adequacy of the process documents issued to the field and the use of verbal instructions. It noted, however, that Design Engineering was evaluating the NCI and that such procedure guarantees a determination of adequacy or correction of the problem. (T.F. Report, Vol. II, R-64). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- o. Concern D-11: Mr. Bryant reported that resolution of NCI 9293 did not address the release of inaccurate process control sheets and lack of ANI signature. The Task Force, though finding this an actual violation of QA Procedures Q-1 and F-9, noted that the program for handling NCIs had subsequently been modified to require a more careful review. In addition, the inaccurate process control sheets had been recalled, and the work was performed in accordance with accurate process control. So no technical inadequacy was found. (T.F. Report, Vol. II, D-11). Mr. Bryant agreed with this resolution (Apps. Exh. 30, Bryant, p. 5).
- p. Concern D-14: pre-approved M-4A forms were not updated to reflect resolution of NCIs 13455 and 13540 (fillet leg sizes were not shown). The Task Force found this to be an actual violation of QA Procedure F-9 and a potential technical inadequacy. It recommended review of pre-approved process control forms to ensure proper specification of fillet weld leg sizes, the recall of inaccurate process control forms, and the implementation of the resolution of NCI 14070 to ensure adequate disposition of undersized fillet welds. It also urged improvements in

process control preparation. (T.F. Report, Vol. II, D-14). Mr. Bryant agreed with the resolution (Apps. Exh. 30, Bryant, p. 5).

- q. Concern D-26: use of improper data sheet (field weld) by craft in violation of QA Procedure M-19. The Task Force agreed that this was an actual violation of procedures, but it was adequately resolved by the NCI that was issued by the inspector. The Task Force noted that "The QA program worked correctly in identifying and resolving a procedure violation." It recommended stronger incentives to craft to ensure adherence to procedures, though it recognized that continuous instruction was already being given craft. (T.F. Report, Vol. II, D-26). Mr. Bryant agreed with this resolution (Apps. Exh. 30, Bryant, p. 5).
- r. Concern P-3: cleanliness check of repair welds to QAP M-24. The Task Force observed that the internal cleanliness check for repairs is not needed and that final radiography of repair welds would reveal defects due to lack of purge or contamination by dirt. It found no procedural violation or technical inadequacy. Its only recommendation was that inspectors should be made aware that M-24 does not cover repair welds. (T.F. Report, Vol. II, P-3). The Applicants were prepared to present testimony of Mr. McCoy, the inspector who raised this concern, indicating that he was satisfied with its resolution (Apps. Exh. 82 (offer of proof), McCoy, p. 4).
- s. Concern C-1: the double bevel groove welds processed as partial penetration welds. The Task Force found that there had been an actual violation of QA Procedure M-51. However, it concluded that the joint was acceptable on the basis of Design Engineering's approval, stated on the evaluation of NCI 12319, and that no technical inadequacy existed. Its specific recommendation was that QAP M-51 be reviewed to determine whether process control requirements for full penetration NF welds are overly restrictive. (T.F. Report, Vol. II, C-1 (Rev. 1)). Mr. Burr, the inspector who raised the concern, indicated that he is satisfied with this resolution (Apps. Exh. 29, Burr, p. 7; Tr. 5963, Burr, 11/3/83).

t. Concern C-2: lack of proper control on certain base metal repairs. The Task Force found this to be an actual violation of QAP F-9 and Q-A but classified it as a potential technical inadequacy. The violation was documented and resolved on NCI 12459, and cleanliness was established by radiographic examination of the base metal. However, a problem existed with craft's understanding of the QAP F-9 requirements for base metal repairs and the requirements of QAP Q-1 regarding movement of an item subject to an NCI. QAP F-9 was later revised to describe base metal repairs more clearly, and it was recommended that craft be instructed on QAP Q-1 (T.F. Report, Vol. II, C-2). Mr. Burr indicated satisfaction with the resolution (Apps. Exh. 29, Burr, p. 7; Tr. 5963, Burr, 11/3/83).

(b) Welding Inspection

100. There were 30 total concerns in this category.

Of these, there were ten which involved actual procedural violations and five which involved potential procedural violations. There were no technical inadequacies identified, though six of the concerns raised potential inadequacies. (T.F. Report, Vol. I, Section 5.3.2). The major concern in this area related to the validity of verbal instructions given by supervision on the acceptability of questionable conditions, construction practices, and minor QA procedure violations, and on the interpretation of the meaning and intent of the QA procedures (Id.). In this connection, among the "typical findings" of the Task Force were several items involving inspector/supervision disagreements on matters of technical judgment. For example, it was noted that design specifications, QA procedures, and construction procedures

are not always revised to clarify practices accepted by supervision, and that NCIs are being written on inspection hold points that could be handled within procedures or by use of Form R-2A. (Id.)

101. In the area of Welding Inspection, the Task Force implementation objectives resulted in several enhancements in the program. A training program was established whereby the individual from QA Technical Services who is responsible for a particular QA procedure revision will conduct a training session with supervision to explain the intent of the revision. (Apps. Exh. 2, Grier, p. 52). The Applicants have also developed a policy on responses to technical questions concerning the intent of procedures; this includes documentation of answers from responsible personnel in QA, Design Engineering and Construction. Workmanship samples have also been developed to assist inspectors and supervisors in understanding acceptance criteria. Finally, a training videotape has been produced explaining the roles of inspectors and supervisors. (Id.).

(i) Concerns that have been satisfactorily resolved.

102. Of the 30 concerns in the welding inspection area, the majority have been resolved to the satisfaction of the welding inspectors who raised them, and no challenge was presented by the intervenors to the resolution of these concerns. These are as follows:

- a. Concern R-2: no inspection of certain welds used to anchor embedments during concrete pour. The Task Force found that no inspection was necessary inasmuch as these were not design welds (i.e. welds specified on design drawings). The Task Force recommended that supervision inform the inspectors of the basis of technical decisions. (T.F. Report, Vol. II, R-2). Mr. Ross agreed with this resolution (Apps. Exh. 34, Ross, p. 5).
- b. Concern R-4: no inspection of nonsafety-related welds to safety-related steel. The Task Force observed that the QA program does not require an inspection of such welds and that inspectors should be made aware of this. (T.F. Report Vol. II, R-4). Mr. Ross agreed with this resolution (Apps. Exh. 34, Ross, p. 5).
- c. Concern R-9: lack of criteria for overlapping fillet welds on pipe supports. The Task Force found that the overlapping fillet welds were technically adequate, though it recognized that CP-432 did not contain acceptance criteria and therefore the supervisor's verbal approval was improper. It directed that applicable design specifications and CP-432 be revised to define acceptability for overlapping fillet welds. (T.F. Report, Vol. II, R-9). Mr. Ross agreed with this resolution (Apps. Exh. 34, Ross, p. 5).
- d. Concern R-18: work continued under QAP M-19 even though the deficiencies required work stoppage under QAP Q-1 and R-1. The Task Force characterized this as a procedural discrepancy; NCI 8636 was processed on this work and has documented the acceptability of the field condition. The NRC has reviewed the item and concluded that it was adequately resolved. The Task Force recommended the development of criteria to govern the need for work stoppage when procedural inadequacies are found. (T.F. Report Vol. II, R-18). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- e. Concern R-20: unlimited overrun on fillet welds. The Task Force found an actual violation of CP-385, which specified a 1/8 inch tolerance, while CP-22 permitted unlimited overrun. But it concluded that the weld as installed was technically adequate and noted that the design specifications and CP 385 have been revised to allow unlimited overrun identical to CP-22. It

cautioned that supervisors should not give verbal instructions which conflict with an existing procedure. (T.F. Report, Vol. II, R-20). Mr. Ross agreed with this resolution (Apps. Exh. 34, Ross, p. 5).

- f. Concerns R-25 and D-9: welding over slag. The Task Force observed that this is unacceptable under welding process spec. L-300 (Bryant had written NCI 9264 and 9266 on this), but that subsequent radiographic evaluation will ensure ultimate acceptability of the weld. It recommended that craft be reminded of the requirements of L-300. (T.F. Report, Vol. II, R-25, D-9). Mr. Ross and Mr. Bryant agreed with the technical resolution of these concerns (Apps. Exh. 34, Ross, p. 5 and Tr. 6728, Ross, 11/10/83; Apps. Exh. 30, Bryant, p. 5, and Tr. 6117, Bryant, 11/4/83).
- g. Concern R-38: inspector instructed to approve work without specific fitup inspection of fillet weld. The Task Force concluded that there was no substantiation of insufficient weld size and no reason the inspector could not perform an adequate inspection. Yet it recommended that inspectors should not approve work that is not 100% acceptable to them. (T.F. Report, Vol. II, R-38). Mr. Ross agreed with this resolution (Apps. Exh. 34, Ross, p. 5).
- h. Concern R-34: undersizing of weld (NCI 11486). In this case the supervisor instructed the inspector to approve an undersized weld. The Task Force found this to be an actual violation of QA Procedure L-80 and CP 432 and agreed that the supervisor acted improperly in directing the approval of an item in conflict with existing procedures. However, it classified this practice as a potential technical inadequacy, noting that the particular item is structurally adequate. It recommended that Design Engineering review this undersizing problem in conjunction with NCI 11,486 and that QA personnel not attempt to make such engineering judgment. (T.F. Report, Vol. II, R-34). Mr. Ross agreed with this resolution (Apps. Exh. 34, Ross, p. 5).
- i. Concern R-49: questionable welds on steam generator blow down tank. The Task Force stated that two Level II inspectors disagreed on the acceptability and that a Level III inspector was

called in and determined that the item was technically adequate. (T.F. Report, Vol. II, R-49). Mr. Ross agreed with the resolution. (Apps. Exh. 34, Ross, p. 5).

- j. Concern R-51: inspection of root pass under QAP M-4. The Task Force found an actual violation of QAP M-4, Rev. 9, in that additional layers of weld were applied before the inspection. But it explained that Rev.10 of QAP M-4 better indicates the technical point that the interior surface inspection is required after all weld layers have been deposited. Therefore no technical inadequacy was present. (T.F. Report, Vol. II, R-51). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- k. Concern R-55: verbal approval of certain root openings. The Task Force found that the supervisor's instructions were in fact consistent with Procedure L-300. But it recommended that supervision explain the basis of their instructions to inspectors. (T.F. Report Vol. II, R-55). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- l. Concern R-56: no specification of maximum allowable size of tack welds. The Task Force found a potential procedural violation and a potential technical inadequacy due to the excessive length of certain tack welds. It said the length of such welds is a "judgment call" and requested a radiograph of the weld to determine the adequacy of alignment. On the basis of the radiographic test, the Task Force concluded that no technical inadequacy existed. It urged that a definition of tack welds be incorporated into the welding process specs. (T.F. Report Vol. II, R-56). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- m. Concerns R-59 and D-28: difference of opinion between inspector and QA engineer on acceptability of pipe where there was a black stain inside of the pipe. The Task Force found an actual violation of QA Procedure M-4 because the inspector signed off on the basis of the QA engineer's opinion when he did not agree that the work was acceptable. The Task Force noted that Design Engineering had subsequently confirmed the technical adequacy of the work. But it stated that the appropriate action would have been for

the inspector to reject the hold point and refer the concern to QA for disposition. (T.F. Report, Vol. II, R-59, D-28). Both Mr. Ross and Mr. Bryant were satisfied with the resolution (Apps. Exh. 34, Ross, p. 5; Apps. Exh. 30, Bryant, p. 5).

- n. Concern D-16: inspector's inability to verify fillet weld size due to skewed joint configuration. The Task Force found no procedural violation and stated that the weld was structurally adequate because more weld was deposited than required by the drawing. It recommended that the basis for supervision's verbal responses be communicated to inspectors (T.F. Report, Vol. II, D-16). Mr. Bryant was satisfied with this resolution (Apps. Exh. 30, Bryant, p. 5).
- o. Concern R-61: "fisheye" indication on weld not addressed in ASME Code or QAP L-80. The inspector felt the indication resembled lack of fusion; the supervisor classified it as porosity. While the Task Force found a potential procedural violation, it said there was no technical inadequacy, noting that the weld had passed the required ASME and Duke inspections. It pointed out that the welder should have eliminated the interpass indication as required by process specs. (T.F. Report, Vol. II, R-61). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- p. Concern C-4: possible alteration of welds after x-ray testing. Mr. Burr, a Level II inspector, wrote NCI 12420 on weld I-VY-23-7. The Task Force noted that the NCI has been resolved by a finding that the weld was acceptable by a Level III inspector. It therefore found no procedural violation or technical inadequacy, and stressed that the Level III inspector's decision must control. (T.F. Report, Vol. II, C-4). Mr. Burr was satisfied that no technical deficiency was present (Apps. Exh. 29, Burr, p. 7; Tr. 5963, Burr, 11/3/83).
- q. Concern D-31: voiding of NCI 13028. The Task Force found an actual violation of QAP Q-1 in that statements which the inspector did not make were attributed to him on the NCI. No technical inadequacy was found because the final field condition was acceptable, the weld having been

repaired. The Task Force recommended accurate statements on NCIs and a review of how to handle differences in opinions between inspectors and supervisors. (T.F. Report Vol. II, D-31). Mr. Bryant was satisfied with the resolution (Apps. Exh. 30, Bryant, p. 5).

- r. Concern K-3: excessive root penetration and crystallized oxidation on welds (NCI 12549). The Task Force found no procedural violation or technical inadequacy, noting that the inspector's concerns were addressed in the resolution of NCI 12549 by the Level III inspectors, using VT and RT testing. It recommended that inspectors be made aware that Level III inspectors have responsibility to make the decisions on difficult calls. (T.F. Report, Vol. II, K-3). The Applicants were prepared to present the testimony of Mr. Irby to the effect that he agreed with the Task Force resolution (Apps. Exh. 77 (offer of proof), Irby, p. 4).
- s. Concern P-2: oxidation in piping system weld. The Task Force noted that the weld had been radiographed and then reviewed (the proper method for detecting oxidation) by three groups (QC, QA and ANI) and found technically adequate. As for any procedural violation, it noted that M-24 is not concerned with the weld prep cleanliness problem here, and it recommended that inspectors be instructed on the requirements of M-24. (T.F. Report, Vol. II, P-2). The Applicants were prepared to present the tesitmony of Mr. McCoy to the effect that he was satisfied with the technical resolution (Apps. Exh. 82 (offer of proof), McCoy, pp. 4-5).
- t. Concern V-3: inspector's signing off M-18A before inspection was actually performed. The inspector signed the form on the basis of a note indicating that the inspections had been performed while he was on sick leave. The Task Force recognized that this was an actual violation of QAP M-18 and, classifying this as a potential technical inadequacy, it directed the completion of the inspection. (T.F. Report, Vol. II, V-3). Mr. Harris was satisfied with the resolution (Apps. Exh. 67, Harris, p. 4; Tr. 9034-40, Harris, 12/1/83).

- (ii) Concerns that were discussed during the hearing.

103. Some of the welding inspection concerns were discussed either because the inspector did not agree with the resolution or because the Intervenors challenged the resolution during cross-examination. These are as follows:

- a. Concerns I-1 and R-58: oxidation on root pass and excess penetration in piping system outside accessibility range of QAP M-4. This concern was raised by both Mr. Gantt and Mr. Ross. While Mr. Ross stated agreement with the resolution (Apps. Exh. 34, Ross, p. 5), Mr. Gantt, in his prefiled testimony, suggested that his concern had not been adequately resolved (Apps. Exh. 58, Gantt, p. 4). However, during cross-examination he explained that, on the basis of radiographic testing of the weld which revealed no defects, he is now satisfied that this was not a rejectable condition or a procedural violation (Tr. 8461 and 8469, Gantt, 11/29/83), though he testified that his original visual inspection led him to believe that L-80 was violated (Tr. 8469, Gantt, 11/29/83). The Task Force found no procedural violation or technical inadequacy, noting that the weld had received three independent RT reviews (QC, QA and ANI) and that visual inspection often over-estimates fractional dimensions (T.F. Report, Vol. II, R-58 and I-1).
- b. Concern C-3: Construction Technical Support overruled inspector's decision as to lack of fusion on the root of weld (NCI 12682). The Task Force concluded that it was an actual violation of ANSI Standard N45.2.6 and 10 C.F.R Part 50, App. B, for Technical Support to overrule the inspector's decision (T.F. Report Vol. II, C-3), though it is proper for Technical Support to participate in the resolution of an NCI (Tr. 5964, Burr, 11/3/83). Nevertheless, as the Task Force found, there is no technical inadequacy associated with this weld because it was later repaired (Tr. 5865 and 5873, Burr, 11/3/83). Mr. Burr agreed with the Task Force recommendation that Construction Technical Support be instructed that they must not overrule a decision by an inspector (Tr. 5928, Burr, 11/3/83), and he noted that the recommendation has produced satisfactory results in that he has not been overruled since

(Tr. 5869-70, Burr, 11/3/83). In addition, this incident was the subject of an NRC noncompliance report (PA Exh. 85), and Mr. Van Doorn, the NRC Resident Inspector, assured Mr. Burr that Technical Support would not be permitted to overrule an inspector (Tr. 5892, Burr, 11/3/83).

- c. Concern D-3: indications in root area of full penetration weld where only partial penetration was required (verbal voiding and discarding of NCI without serial number). The Task Force found no procedural violation, but Mr. Bryant, on cross-examination, said he believes there was a violation of QAP L-80, visual inspection (Tr. 6098, Bryant, 11/4/83). He admitted, though, that he does not know whether the weld was technically inadequate (*Id.*). The Task Force concluded that there was no technical inadequacy. (Mr. VanMalssen made this decision for the Task Force. He is highly qualified to make such a technical judgment in this area inasmuch as he has had five years of professional experience in welding engineering and Level III visual welding inspection.) It noted that a weld in excess of that required by design was achieved and that the site Level III inspector had approved the work. However, it agreed with Mr. Bryant that the NCI that had been prepared should have been declared invalid and filed appropriately rather than discarded, and it recommended that decisions of supervisors must be recorded by appropriate documentation (T.F. Report, Vol. II, D-3).
- d. Concern D-18: incorrect sizing of welds. The Task Force found an actual violation of process control M-4A and a potential technical inadequacy. It noted, however, that the supervisor had made the correct decision in referring the question to Technical Support, whose investigation should determine the acceptability of the welds. (T.F. Report, Vol. II, D-18). Mr. Bryant disagreed with the resolution because he felt that the person who finds the problem should initiate the Q-1A rather than having it referred to Technical Support (Tr. 6124, Bryant, 11/4/83). But he recognized that Q-1A Forms are more thoroughly reviewed now than they were in the past (Tr. 6176-77, Bryant, 11/4/84).

- e. Concern D-22: minor incomplete fusion in weld on steam generator drain tank. The Task Force concluded that there was a potential violation of QAP L-80, visual inspection, but it found that, on the basis of a liquid penetrant test, the weld was acceptable and no technical inadequacy was present. (T.F. Report, Vol. II, D-22). Mr. Bryant did not agree with this resolution because he felt that his visual inspection should have been conclusive that the weld was unacceptable and should not have been overridden by the liquid penetrant test (Tr. 6133-34, Bryant, 11/4/83). But as Mr. Baldwin explained, both Mr. Ross and the NDE examiner who performed the liquid penetrant test concluded that there was no rejectable condition (Tr. 4421, Baldwin, 10/25/83). The Task Force recommended the development of workmanship standards for acceptable marginal indications, weld metal defects, and base material indications.
- f. Concern D-24: visual detection of pin hole indication in root of weld and instructions from supervisor to accept the weld because there were no guidelines in L-80. Mr. Bryant felt that corrective action was warranted, but he testified that this item was not rejectable under any procedure (Tr. 6139, Bryant, 11/4/83). The Task Force found that the work was technically adequate because this Class C weld, which is in an environment that is less severe than that for Class A and B welds, had passed all required inspections. It recommended, however, that QA personnel and craft should be instructed that welding is not to be done over any such obvious defect indications. (T.F. Report, Vol. II, D-24).
- g. Concern D-25: visual inspection of hanger welds. This concern did not present a procedural violation. As the process control required, the inspector had brought to the attention of craft certain defects that could have been corrected on the spot (Tr. 6140, Bryant, 11/4/83), but he became dissatisfied with craft's attempts to correct the work and was ready to write a nonconformance on the ground that in his opinion the work violated QAP L-80 (Tr. 6140). The Task Force stated that the inspector's action was inappropriate under the process control and was judged so by the supervisor. It noted that the welds in question had been removed, so that no problem with the technical adequacy remained.

(T.F. Report, Vol. II, D-25). It recommended an evaluation of the inspector's capability to judge acceptable work and the establishment of a program to track incorrect inspection calls (Id.). While Mr. Bryant took exception to the Task Force's criticism of his competence (see Tr. 6169-79, Bryant, 11/4/83), he testified that he assumed the work was corrected (Tr. 6140).

- h. Concern D-27: root pass inspection of weld (NCI 12329). Here the inspector disagreed with the Level III inspector's visual and RT examination of the weld following NCI 12329. The Task Force agreed with the Level III inspector that there was no procedural violation or technical inadequacy and recommended that Level II inspectors be informed that the decision of Level III inspectors must control on questions of weld acceptability. Level III inspectors have greater training and experience in radiography, among other responsibilities, than do Level I or Level II inspectors, and they must meet certification requirements concerning education and experience (see, e.g., Apps. Exh. 97, Cavender et al., pp. 3-6; Tr. 7005, Ross, 11/11/83). (T.F. Report Vol. II, D-27). Mr. Bryant disagreed with the resolution because he felt there was an actual violation of QAP L-80 and that more sensitive tests should not override a visual determination regarding surface defects (Tr. 6141-43, Bryant, 11/4/83).
- i. Concern E-3: purging of stainless steel weldments. Mr. Cauthen discovered welding on stainless steel pipe without purging, which he believed violated L-200 (Tr. 6444, Cauthen, 11/8/83). The Task Force, however, determined that since the back side of the tacks was apparently accessible (see Tr. 6445, Cauthen 11/8/83), purging was not required by procedures. Also, it found that the weld was now acceptable because it had been removed and rewelded (T.F. Report, Vol. II, E-3). It recommended that craft and inspectors be reminded of the procedures regarding purging of stainless steel welds (Id.). Mr. Cauthen indicated that this item was on nonsafety-related piping and that he had rechecked it and verified that it had been removed (Tr. 6573, Cauthen, 11/9/83).

j. Concern D-30: final visual inspection of weld on pipe where grinding was performed by remote means. The Task Force found that the supervisor had improperly instructed the inspector to sign off when remote inspection means were required by M-4 (an actual violation of M-4 was found and a potential technical inadequacy). It was noted that the acceptability of the welds would be determined by the resolution of NCI 13955. (T.F. Report, Vol. II, D-30). Mr. Bryant was satisfied with the resolution. (Apps. Exh. 30, Bryant, p. 5). Mr. Ross also stated that it had been resolved (Tr. 7020, Ross, 11/11/83), though he believed that this concern may possibly have had safety significance if it had not been corrected (Tr. 7022, Ross, 11/11/83). He cited it as the one instance where he believed the Task Force should have classified the work (before it was repaired) as an actual technical inadequacy (Tr. 7029, Ross, 11/11/83). Nevertheless, he agreed that the resolution of the NCI associated with this concern (NCI 13955, which is Apps. Exh. 35) indicated that the grinding would not have been of any safety or structural significance had it not been repaired (Tr. 7035, Ross, 11/11/83; Apps. Exh. 35). Also, the pipe in question will receive pre-service and in-service ultrasonic testing (Tr. 7044-46, Ross, 11/11/83). Furthermore, it was established that the grinding was outside the accessibility range for a direct visual inspection under QAP M-4 (Tr. 7087-88, Ross, 11/11/83).

(c) Nonconforming Item Report (NCI) Resolution

104. There were a total of 8 concerns in this category, of which six presented actual procedural violations and two presented potential technical inadequacies. There were no actual technical inadequacies. (T.F. Report, Vol. I, Section 5.3.3). The Task Force found that NCI originators, in some cases the inspectors, were not providing sufficiently detailed

descriptions of nonconforming items, that some NCIs were not being resolved within a reasonable time, that a final authority was perhaps needed to settle differences of opinion over whether an item is nonconforming, and that inspectors may need additional training to alleviate judgmental disagreements (Id.)

105. In accordance with the Task Force recommendations, Procedure Q-1 was revised to make clear that any voided NCIs must be filed (Apps. Exh. 2, Grier, p. 53).

(i) Concerns that have been satisfactorily resolved.

106. All but one of the concerns over NCI resolution were resolved to the satisfaction of the welding inspectors. The resolutions of Concerns K-1 and D-11 have been discussed above (FF 99). The other concerns are as follows:

- a. Concerns R-13, H-1 and J-5: no preheat verification on weld in pressurizer support (NCI 7850). The inspectors were concerned that the NCI was not properly evaluated. The Task Force noted that the process control issued to the field failed to facilitate implementation of the QC hold point and that the NCI evaluation was based on an opinion that preheat had been achieved because of perceived small amount of overlap, which the inspector disagreed with. The Task Force found an actual violation of QA Procedure F-9 (the appropriate process control) and a potential violation of QAP Q-1. It classified this concern as a potential technical inadequacy and ordered that a hardness test be performed on the heat affected zones of the weld in question. As recommendations, it pointed out the need for additional process control for complex or unusual situations and ordered the hardness test. (T.F. Report, Vol. II, J-5, H-1,

R-13). Mr. Godfrey, who raised concern J-5, was satisfied with this resolution (Apps. Exh. 56, Godfrey, pp. 4-5; Tr. 8309, Godfrey, 11/28/83). Mr. Eubanks, who raised concern H-1, noted that the problem was corrected by the additional testing ordered by the Task Force (Apps. Exh. 74 (offer of proof), Eubanks, p. 4). And Mr. Ross, who raised concern R-13, agreed with the resolution (Apps. Exh. 34, Ross, p. 5).

- b. Concerns R-6 and D-4: incorrect welding symbol (NCI 7514). The Task Force found that the incorrect welding symbol was an actual violation of AWS A2.4 and that a potential violation of QAP Q-1 and QAP R-3 (the measures for correcting drawing deficiencies) existed. But it noted that the weld symbol was corrected after the NCI was written, and thus no technical inadequacy was present. (T.F. Report, Vol. II, R-6, D-4). Mr. Ross and Mr. Bryant agreed with the resolution (Apps. Exh 34, Ross, p. 5, and Apps. Exh. 30, Bryant, p. 5).
- c. Concern D-6: inspector questioned resolution of NCI 6291 requiring repair of arc strikes on vent stacks. The Task Force found no procedural violation or technical inadequacy, noting that Design Engineering had determined that the depth of the arc strikes was such that the structural integrity of the vent stacks was not impaired. However, it recommended that Design Engineering provide more complete justification in future for NCI resolution. (T.F. Report, Vol. II, D-6). Mr. Bryant agreed with the resolution (Apps. Exh. 30, Bryant, p. 5).
- d. Concern D-8: no stenciling of fillet weld by the welder (NCI 9258). The Task Force found an actual violation of ANSI B31.1 and M-51 requiring welds to be stenciled. Yet it noted that all Duke welders are qualified to make the type of fillet welds involved here and that the weld had thus been performed by a qualified welder. The problem was that the NCI evaluation only addressed the weld defects, not the failure to stencil the weld. The Task Force recommended that craft be reminded of their duty to stencil welds and that the NCI evaluation process be made complete (it noted that NCIs are now being resolved correctly). (T.F. Report, Vol. II, D-8). Mr. Bryant agreed with the resolution (Apps. Exh. 30, Bryant, p. 5).

e. Concern K-2: pits in Unit 2 containment plate as received from vendor (resolution of NCI 9092). The containment plate exhibited certain defects after being installed. An NCI was written but not resolved for over a year. The Task Force found an actual violation of QAP Q-1 (prohibiting permanent installation of nonconforming item) and P-1 and classified this as a potential technical inadequacy. It pointed out that the resolution of the problem was not performed in a sufficiently expeditious manner, and it recommended, inter alia, that an upper time limit be imposed for resolution of NCIs and that adequate site inspection be performed before a resolution is issued. (T.F. Report, Vol. II, K-2). The Applicants were prepared to introduce testimony of Mr. Irby indicating that he agreed that the resolution of his concern was satisfactory (Apps. Exh. 77 (offer of proof), Irby, p. 4).

(ii) Concerns that were discussed during the hearing.

107. Only one concern, which was raised by both Mr. Ross and Mr. Bryant, remains outstanding in the NCI Resolution category.

a. Concerns R-62 and D-15: defect indication across pipe weld and into base metal (resolution of NCI 13053). Design Engineering classified the defect as a gouge resulting from handling, while the inspector felt it was a crack, violating L-80. The Task Force found no procedural violation or technical inadequacy. It noted that the Level III inspector had accompanied Design Engineering during the evaluation and that they determined, in their judgment, that the indication was a handling mark rather than a crack. In the resolution of NCI 13053, some light grinding was done to remove this defect. Even after the defect was removed, the pipe thickness was only slightly below the minimum requirement, indicating that the defect was minor. The pipe was nevertheless removed. In short, the engineering judgment of the Level III inspector and Design Engineering personnel must prevail over the welding inspector's opinion. Its recommendations were that further training was needed for the particular inspector to help him distinguish between handling marks and cracks and

that a source such as a Level III inspector should be available to resolve conflicts on the spot. (T.F. Report, Vol. II, R-62, D-15). Mr. Bryant said he disagreed with the Task Force findings (Apps. Exh. 30, Bryant, p. 5), both as to the determination that the indication was a handling mark and the recommendation that he be given further training (Tr. 6118-20, Bryant, 11/4/83). But he recognized that a liquid penetrant test, which was performed to resolve the NCI, was the appropriate way to resolve his concern (Tr. 6143-45, 6170-71, Bryant, 11/4/83). Ross also believed that an actual violation of L-80 occurred and he stated that in its original condition the weld was technically inadequate though the condition was later removed (Tr. 6740-41, Ross, 11/10/83). But he indicated that no safety problem was present (Tr. 7034, Ross, 11/11/83).

(d) Design Drawings

108. There were a total of five concerns in this category. The Task Force identified one actual procedural violation, one potential procedural violation, and one potential technical inadequacy. (T.F. Report, Vol. I, Section 5.3.4). In accordance with the Task Force recommendations, additional training was conducted by Design Engineering to emphasize the importance of clarity in drafting (Apps. Exh. 2, Grier, p. 53). All the Design Drawing concerns have been resolved to the satisfaction of the welding inspectors who raised them and no challenge was presented by Palmetto to the resolution of these concerns. The principal area of concern related to the proper methods of detailing a particular weld symbol

(Id.). The resolution of this problem, Concerns D-4 and R-6, was discussed above in FF 106. The other Design Drawing concerns were as follows:

- a. Concern R-24: verbal instructions that inspector could separate weld length. The Task Force found a potential violation of AWS D1.1, stating that the supervisor acted improperly. When it was determined that the weld could not be made as specified on the design drawing, the matter should have been referred to Design Engineering. No technical inadequacy, however, was found. The Task Force recommended that supervisors be instructed that they must not give verbal responses in violation of design drawings, procedures, etc. (T.F. Report, Vol. II, R-24). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- b. Concern R-30: NF boundary not properly shown. The Task Force found no violation of procedures or any technical inadequacy. It noted that the support had been inspected to NF requirements as intended and that the NF boundary arrows were only slightly off, not enough to be significant. Since the inspector had received no response from his supervisor when this concern was raised, the Task Force recommended a review with supervisors on their responsibilities in providing verbal responses on technical questions. (T.F. Report, Vol. II, R-30). Mr. Ross agreed with this resolution (Apps. Exh. 34, Ross, p. 5).
- c. Concern R-33: clarification of weld size specified on drawing. The weld size was not completely clear, and so the inspector asked his supervisor for an interpretation. The supervisor correctly interpreted the weld size. The Task Force therefore concluded that no procedural violation or technical inadequacy was present. (T.F. Report, Vol. II, R-33). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- d. Concern D-10: reclassification of welds as nonsafety-related allegedly after the initiation of NCI 9291. The Task Force found that the concern was factually incorrect, i.e. that the reclassification occurred prior to the initiation of the NCI. There was thus no violation of procedures. The Task Force noted that no

technical inadequacy existed because the item was a cleanliness requirement rather than a structural requirement. Its recommendation was that revisions to process controls should be issued as quickly as possible from the Construction office to the craft. (T.F. Report, Vol. II, D-10). Mr. Bryant was satisfied with the resolution (Apps. Exh. 30, Bryant, p. 5).

(e) Material Control

109. There were 24 total concerns within this category. Seven of them presented actual procedural violations and five presented potential procedural violations. There were three potential technical inadequacies discovered by the Task Force. (T.F. Report, Vol. I, Section 5.3.5). Among the typical findings in this area identified by the Task Force were that violations of Material Control procedures are not always documented, that NCI resolutions do not always explain the rationale for acceptance, that craft may not fully understand the importance and purpose of marking materials before cutting, that material identifications are sometimes obliterated or made inaccessible prior to inspection, and that inspectors have not received sufficiently specific guidance in the application of materials marked "A" (ASTM) as opposed to "SA" (ASME).

(i) Concerns that have been satisfactorily resolved.

110. Most of the Material Control concerns, have been resolved to the satisfaction of the inspectors who raised them. The resolution of Concern K-2 was discussed above in FF 106. The others are as follows:

- a. Concern R-1: degree of rusting permitted by QAP M-24: the Task Force noted that the determination of heavy rust under QAP M-24 is a matter of judgment as to the thickness allowed; this judgment should be exercised by a QC supervisor or by the inspector using workmanship samples. In this case the judgment was made by two levels of QA-QC supervisors, one being a Level III inspector. (T.F. Report, Vol. II, R-1). Their judgment was found technically acceptable by the Task Force, though a potential violation of M-24 was noted. The inspector involved (Ross) had requested a workmanship sample but was given none. The Task Force recommended that such samples, showing acceptable and rejectable rusting under M-24, should be considered. (Id.) Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- b. Concern R-7: material identification missing -- use of configuration to verify proper material. The Task Force found no violation of procedures or technical inadequacy. It recognized that QAP M-21 and H-5 allow acceptance of material by dimensional configuration. (T.F. Report, Vol. II, R-7). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- c. Concern R-11: thickness limitations for stenciling of hanger material. The Task Force observed that at the time the concern was raised there was no procedural requirement addressing this subject, and that this was an inadvertent omission. Since that time thickness limitations have been established and the hanger in question has been found sufficiently thick to permit stenciling. It recommended that supervision be contacted where a situation is not covered by procedures and that they be sensitive to the need to expand procedures to cover generic problems. (T.F. Report, Vol. II, R-11). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- d. Concern R-14: two material specifications shown on isometric bill of material for one piece. The inspector was told that either specification was acceptable, and the Task Force agreed that this is the case in many instances. No procedural violation or technical inadequacy was found. (T.F. Report, Vol. II, R-14). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).

- e. Concerns R-31 and R-35: use of A-105 material in place of SA-105. The Task Force pointed out that this was appropriate since the two materials are identical. However, it found an actual violation of F-9 and H-4 because of craft's tampering with the material identification. It recommended that craft, Technical Support and QA should be made aware of the materials that are identical and that tampering is not permitted. (T.F. Report, Vol. II, R-31, R-35). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- f. Concern R-48: acceptance of material with obliterated markings. The Task Force found that a potential violation of QA M-21 and H-5, requiring material identification and inspection of the identification, had occurred. Nevertheless, it concluded that no technical inadequacy was present because the supervisor determined the steel to be safety-related A-36 quality. It recommended a review of marking procedures. (T.F. Report, Vol. II, R-48). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- g. Concern R-60: type of material required for backing strip on hanger. The Task Force found no procedural violation, but noted that the hanger was potentially inadequate because an unacceptable backing material may have been used as a result of the fact that, through oversight, no listing of acceptable material had been included in L-300, L-400 and L-500, though it recognized that the possibility of obtaining an unacceptable material at the site was low. It recommended an inspection of the hanger and the necessary revision to the procedures. (T.F. Report, Vol. II, R-60). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- h. Concern D-13: heavy rust and grit found around piping (NCI 10013). The Task Force pointed out that, under QAP M-24, only final system cleanliness was required in accordance with QAP L-71. The piping in question had been flushed twice in accordance with L-71 and found acceptable. The Task Force recommended that the purpose of M-24 be explained to inspectors. (T.F. Report, Vol. II, D-13). Mr. Bryant, who raised this concern, agreed with its resolution (Apps. Exh. 30, Bryant, p. 5).

- i. Concerns J-2 and R-27: material marked with two spec numbers A-105 and SA-105, not matching released pipe material log (NCI 9358). The inspector felt that this was a violation of QA procedures (Tr. 8238 and 8246, Godfrey, 11/28/83). The Task Force found no procedural violation or technical inadequacy because the marking was appropriate in that A-105 and SA-105 are identical, as the resolution of NCI 9358 indicates (PA Exh. 112). It recommended instructing inspectors on procedures and pointing out that dual marking by suppliers is not uncommon. (T.F. Report, Vol. II, R-27, J-2). The inspector did not believe he had authority to say whether SA-105 and A-105 were interchangeable (Tr. 8244, Godfrey, 11/28/83), and his NCI stated only that the marking was inconsistent, not that the wrong material had been used (Tr. 8247, Godfrey, 11/28/83). He also stated that later inspections would probably have discovered the inconsistent marking (Tr. 8249, Godfrey, 11/28/83). Mr. Ross, who raised concern R-27, indicated agreement with the resolution (Apps. Exh. 34, Ross, p. 5).
- j. Concern J-3: no NDE piece mark on a reducer (NCI 10187). The Task Force found this to be an actual violation of QAP M-4 and H-4 requiring inspectors to verify that material is marked with the NDE piece mark when one is shown in the RPML. Nevertheless, since the purpose of listing the mark is to enable tracing to NDE records, specifically radiographs, the only materials requiring an NDE piece mark are those which are radiographed. In this case, no NDE piece mark was necessary, and thus the Task Force found no technical inadequacy. It recommended a review of the policy on this matter. (T.F. Report, Vol. II, J-3). Mr. Godfrey, who raised the concern, agreed with the resolution (Apps. Exh. 56, Godfrey, pp. 4-5; Tr. 8309, Godfrey, 11/28/83).
- k. Concerns R-45 and D-21: incorrect marking of a fitting by the manufacturer. The weld was marked A 432 WPB (which does not exist); the supervisor instructed the inspector to mark it A 234 WPB, the correct marking. Thus, the Task Force recognized this as an actual procedural violation and directed research of the M-4A and the weld to assure proper documentation of traceability.

(T.F. Report, Vol. II, R-45, D-21). Mr. Ross and Bryant agreed with the resolution (Apps. Exh. 34, Ross, p. 5, and Apps. Exh. 30, Bryant, p. 5).

- l. Concern U-1: absence of traceability on safety-related steel. Here the Task Force found an actual violation of QAP M-21 and H-5 because the inspector was unable to verify identification. But he was later able to do so by having a hole cut in a door frame that had made the markings inaccessible. Thus no technical inadequacy was present. (T.F. Report, Vol. II, U-1). The Applicants were prepared to introduce testimony by Mr. M. Standridge, who had raised the concern, that he was satisfied with the resolution (Apps. Exh. 86 (offer of proof), M. Standridge, p. 5).
- m. Concern B-1: heat number on pipe was not RPML (NCI 6259). The Task Force noted that the inspector properly initiated an NCI, which was adequately resolved and evaluated. No technical inadequacy or procedural violation was found. (T.F. Report, Vol. II, B-1). The Applicants were prepared to introduce testimony of Mr. Bumgardner, who raised the concern, that he was satisfied with the resolution (Apps. Exh. 71 (offer of proof), Bumgardner, pp. 4-5).
- n. Concern B-2: no piece number on pipe (NCI 6047). The Task Force found an actual violation of QAP H-P but noted that it was corrected through stenciling of the pipe and thus no technical inadequacy resulted. (T.F. Report, Vol. II, B-2). Applicants were prepared to introduce testimony of Mr. Bumgardner that he agreed with the resolution (Apps. Exh. 71 (offer of proof), Bumgardner, pp. 4-5).
- o. Concern B-4: lack of heat number on pipe. The inspector's concern related to the use of other means, e.g. size, thickness, manufacturer, of identifying materials when a heat number is missing. The Task Force found that this process is acceptable, and therefore no procedural violation or technical inadequacy was present. (T.F. Report, Vol. II, B-4). Applicants were prepared to introduce testimony of Mr. Bumgardner that he agreed with the resolution (Apps. Exh. 71 (offer of proof), Bumgardner, pp. 4-5).

p. Concern B-5: writing NCI because of no backing strip heat number. The Task Force pointed out that material traceability is a hold point under QAP M-4, but that rejectability of a hold point is not grounds for an NCI. In this case, since the strip heat number was available, the inspector should have requested that it be placed on the M-4A or, if this was not done, rejected the work. The Task Force recommended that inspectors be trained in the proper use of QAPs to avoid unnecessary writing of NCIs. (T.F. Report, Vol. II, B-5). Applicants were prepared to introduce testimony of Mr. Bumgardner that he agreed with the resolution (Apps. Exh. 71 (offer of proof), Bumgardner, pp. 4-5).

(ii) Concerns that were discussed during the hearing.

III. The Material Control concerns that remain unresolved in the inspector's mind or that were pursued during cross-examination are as follows:

a. Concerns R-5 and E-5: welder's control of filler material. The Task Force found an actual violation of QAP H-3, requiring verification of filler material traceability prior to acceptance of the weld. In the incident described, the welder did not have control of his welding consumables, which was unacceptable. But no technical inadequacy occurred because only ASME-approved welding materials are used at Catawba. (T.F. Report, Vol. II, E-5, R-5). During cross-examination, Mr. Cauthen, who raised Concern E-5, indicated that his primary problem was that such violations should have received an NCI or at least have been "written up". (Tr. 6463-65, Cauthen, 11/8/83). This was consistent with the Task Force recommendation that surveillance (written) should be performed by QA on these items. Mr. Ross agreed with the resolution of this concern (Apps. Exh. 34, Ross, p. 5).

b. Concerns J-1 and R-28: three heat numbers on piping material (NCI 9085). The inspector was concerned that the pipe could be cut and a part of it used in a safety-related system (Tr. 8251-8255, Godfrey, 11/28/83), and he felt there had been an actual violation of QAP H-4 regarding traceability (Tr. 8260, Godfrey, 11/28/83), but he had no concern that the pipe may be defective

(Tr. 8263, Godfrey, 11/28/83). The Task Force noted that traceability requirements are not applicable to Class E piping materials (see also Apps. Exh. 14, Davison, p. 10). It noted that the craft had installed the correct material as shown on the isometric and that therefore no procedural violation or technical inadequacy existed (T.F. Report, Vol. II, R-28, J-1). Its recommendation was for additional training of craft and supervisors concerning the proper control of Class E piping (Id.). Its programmatic recommendation was a review of the clarity of procedures and craft implementation of procedures for material marking (T.F. Report, Vol. I, Table V). As for any potential technical inadequacy, Mr. Godfrey acknowledged that the traceability is not required for Class E piping but stated that the Task Force conclusions did not address his concern that the pipe may be used in a safety-related system (Apps. Exh. 56, Godfrey, p. 5; Tr. 8265, Godfrey, 11/28/83). He recognized, however, that if the pipe were cut, the traceability number would later be verified inasmuch as CP-96 requires transferring heat numbers (Tr. 8305, Godfrey, 11/28/83; see also Tr. 8316 and 8324). Mr. Davison explains that the heat number verification will ensure that the pipe is not used in a safety-related system (Apps. Exh. 14, Davison, p. 10). Pursuant to the recommendation of the Task Force, QAP H-4 was revised to clarify its applicability (Apps. Exh. 2, Grier, p. 53).

- c. Concern D-5: no material identification on cable tray weld -- supervisor discarded Q-1A. The supervisor instructed the inspector to allow craft to put the material identification (A-36) on the materials; the supervisor did so because there were no materials inferior to A-36 on the site, and so it would meet minimum requirements (Tr. 6105-06, Bryant, 11/4/83). Mr. Bryant's dissatisfaction with this resolution was that he felt the supervisor had violated QAP Q-1 by discarding the NCI without examining the work. The Task Force concluded that the supervisor's judgment was correct; it found no technical inadequacy but noted a potential violation of QAP Q-1 in the supervisor's disposition of the invalid NCI. (T.F. Report, Vol. II, D-5).

- d. Concern D-17: pitting in piping material which violated acceptable manufacturer's thickness tolerances (NCI 11309). The Task Force concluded that the NCI had been properly initiated and that Design Engineering had resolved the NCI by finding the wall thickness to be acceptable. It recommended that inspectors be reminded that a procedural violation does not automatically mean that the item is unacceptable. (T.F. Report, Vol. II, D-17). Mr. Bryant's disagreement with the resolution related to his belief that the situation constituted an actual violation of CP-107 (Tr. 6121, Bryant, 11/4/83), but he accepted the fact that design engineering judgment may lead to acceptance of work which violates a procedure (Tr. 6122, Bryant, 11/4/83).
- e. Concern Q-1: verbal instructions to accept material on the basis of configuration where there was no material identification visible (NCI 13627). The Task Force found a potential violation of QAP H-5, but noted that dimensional configuration may be used as a method of identification. (This was permitted by the revision of QAP H-5 that was in effect at the time of the NCI, Tr. 6396, Rockholt, 11/8/83.) The resolution of NCI 13627 adequately established that the plate installed was the correct material (PA Exh. 89). Because of the configuration, of the plate, as received from the vendor, the plate could only be installed with the mark number on the bottom side. The material's traceability could be verified by means of the configuration because there were only two plates of this type on site, one for each of the two decontamination pits (see PA Exh. 89; Tr. 6965-66, Ross, 11/11/83). The Task Force recommended that markings not be made inaccessible prior to inspection and that clarification of identification procedures be given. (T.F. Report, Vol. II, Q-1). Mr. Rockholt, who raised this concern, agreed that this concern did not represent a problem with the quality of workmanship (Tr. 6391, Rockholt, 11/8/83). Mr. Ross expressed his opinion that the technical resolution did not adequately address the inspector's concerns (Tr. 6720, Ross, 11/10/83), though he admitted that it is possible to verify the material's traceability by its configuration (Tr. 6965-66, Ross, 11/11/83), and he stated that the plate installed was in fact the proper plate (Tr. 7050). Pursuant to the

recommendation of the Task Force, QAP H-5 was revised to clarify its applicability (Apps. Exh. 2, Grier, p. 53).

- f. Concern Q-2: craft's cutting of A-36 steel without transferring the markings. The Task Force found a potential violation of QAP H-5, which requires marking of miscellaneous steel to be used in safety-related items, and CP-23. No technical inadequacy resulted, however, because the inspector was able to confirm that the parent material from which the steel was cut was properly marked. It recommended instructing craft on the marking requirements and inspectors on the scope of QAP H-5 (T.F Report, Vol. II, Q-2). Mr. Rockholt disagreed with this resolution because he felt that it was an actual violation of procedures for craft to cut the steel prior to marking (Tr. 6334-36, Rockholt, 11/8/83). But he does not have the expertise to say whether this resulted in a technical inadequacy (Tr. 6336, Rockholt, 11/8/83).
- g. Concern Q-3: craft's cutting of class B pipe without transferring traceability information. The Task Force found no procedural violation and no technical inadequacy since the pipe was to be used in nonsafety-related system (QAP H-4 applies only to safety-related conditions). It recommended retraining inspectors on the scope of H-4. (T.F. Report, Vol. II, Q-3). Mr. Rockholt disagreed with this resolution because he thought there had been an actual violation of procedures, though he recognized that the material was probably adequate (Tr. 6337-38, Rockholt, 11/8/83).

(f) Construction Procedures

112. There were a total of five concerns in this category, only one of which presented an actual procedural violation. No actual or potential technical inadequacies were found. Among the Task Force's typical findings was that craft may need additional training in QA and Construction procedures, but otherwise its findings

indicated proper understanding and implementation of procedures by craft and QA personnel. (T.F. Report, Vol. I, Section 5.3.6).

(i) Concerns that have been satisfactorily resolved.

113. Three of the Construction Procedures concerns have been resolved. These are as follows:

- a. Concern R-12: flow direction of valve not shown on isometric. The inspector was concerned with verbal instructions to sign off the work. The Task Force found an actual violation of CP-150 on basis of deficient process control. It pointed out that the inspector should be shown the adjacent isometrics, to determine flow direction, and the deficiency related to process control personnel. It recommended that guidance be established for handling process control deficiencies and that supervisors not instruct inspectors to sign for work they do not think is acceptable. (T.F. Report, Vol. II, R-12). Mr. Ross agreed with this resolution (Apps. Exh. 34, Ross, p. 5).
- b. Concern R-15: hanger numbers not marked. The Task Force noted that under the procedures the use of isometrics and hanger sketches will permit an inspector to locate the hanger; however, it recognized that marking the hangers will make the inspection easier, and this is now being done. (T.F. Report, Vol. II, R-15). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- c. Concern B-3: defacing inspector's acceptance on paperwork of nonsafety-related weld that had been cut out. Inasmuch as the weld was not safety-related, the Task Force found this problem to be outside the scope of the QA program. But it recommended that supervisors explain the rationale behind verbal instructions more thoroughly. (T.F. Report, Vol. II, B-3). Mr. Bumgardner agreed with the resolution (Apps. Exh. 71 (offer of proof), Bumgardner, p. 5).

(ii) Concerns that were discussed during the hearing.

114. Two of the Construction Procedures concerns were either not resolved to the satisfaction of the inspectors or were pursued on cross-examination. These are as follows:

- a. Concern L-1: craft foreman guiding the hand of welder. The inspector was concerned that the foreman should stencil his initials adjacent to the weld, indicating himself as the welder, and that the foreman should have checked out rods from materials issue station (see Tr. 8890-92, Jackson, 11/30/83.) The Task Force concluded that, on the basis of the statements of numerous craftsmen, the foreman was only guiding the welder's hand, not actually welding. But it noted that this practice should only be carried out during training. (T.F. Report, Vol. II, L-1). Mr. Jackson, who raised the concern, disputes the Task Force's understanding of the concern (he believes the foreman actually did the welding -- see Tr. 8892-8900, Jackson 11/30/83), but he agrees that no technical inadequacy is presented, because the foreman in question was and is a certified welder, and the weld was not safety-related (Tr. 8918, Jackson, 11/30/83.)
- b. Concerns D-20 and R-44: welding across flanges of beams without authorization on design drawing. The Task Force indicated that Design Engineering had in fact approved the weld repair as part of the resolution of a CP-22A. Therefore, no procedural violation or technical inadequacy was presented. (T.F. Report, Vol. II, R-44, D-20). Mr. Bryant, who raised this concern, agreed with the technical resolution (Tr. 6131, Bryant, 11/4/83), but he believed that CP-22 did not actually authorize this welding, and he disagreed with the Task Force recommendation that supervisors should be made aware of their responsibilities to provide verbal responses on technical questions (Tr. 6132, Bryant, 11/4/83). Mr. Ross also felt that CP-22 had been violated and that the Task Force recommendation was not necessary (Tr. 6732-33, Ross, 11/10/83); but he stated that he agreed with the resolution (Tr. 6966 and 6977, Ross, 11/11/83).

(g) Welding Procedure

115. The Task Force identified 18 total concerns in this category. Five of them involved actual procedure violations, four involved potential violations. There were six potential technical inadequacies found. (T.F. Report, Vol. I, Section 5.3.8). The salient points made by the Task Force in this area were that technical judgments by supervision are not always properly documented, that craft and inspectors may not fully understand and properly implement QA procedures, and that process control information is needed to cover unusual work situations (Id.). It should be noted that six of the Welding Procedure concerns have been discussed above and will not be discussed here. These are: Concerns D-9, R-25, D-3, D-16 and E-3, which are discussed under Welding Inspection concerns, and R-60, discussed under Material Control concerns.

(i) Concerns that have been satisfactorily resolved.

116. The Welding Procedure concerns that have been resolved to the satisfaction of the inspectors are as follows:

- a. Concern R-16: correctness of fitting without filler material. The Task Force found that the supervisor's instructions as to the fitting method were correct and that it was within allowances of the applicable ASME code. It noted that QA procedures were subsequently revised to permit fitting without filler material. For these reasons technical inadequacy was found. This was an instance where further process

control was needed. (T.F. Report, Vol. II, R-16). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).

- b. Concern R-17: use of 350 degree F temp sticks in verifying interpass temperature. The Task Force recognized the need for inspectors to be issued 500 degree F temp sticks for this work, but it noted that the weld in question had passed all required inspection hold points and examinations, and thus no technical inadequacy was present. (T.F. Report, Vol. II, R-17). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- c. Concern R-37: use of jack for holding pipe during welding. The Task Force noted that the ASME code and Design Engineering allow this practice. (T.F. Report, Vol. II, R-37). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- d. Concerns R-53 and D-32: use of water to provide rapid cooling. The Task Force conclusions on this concern were addressed in the metallurgical study resolving Concern K-1 (see Finding 13a above), and Mr. Ross and Mr. Bryant agreed with the resolution (Apps. Exh. 34, Ross, p. 5, and Apps. Exh. 30, Bryant, p. 5).
- e. Concern R-54: excessive weave width of electrodes on penetration weld. The Task Force found that the excessive weave width constituted an actual violation of L-300, thus requiring an NCI. The supervisor was incorrect in not allowing the initiation of an NCI. The Task Force directed that the weld in question be identified and tested for excess heat input. (T.F. Report, Vol. II, R-54). Mr. Ross was satisfied with this resolution (Apps. Exh. 34, Ross, p. 5).
- f. Concern D-29: welding outside amperage range (NCI 12782). The Task Force found that the amperage ranges of FWDS L-231 had been exceeded, an actual procedural violation. Nevertheless, it noted that these are optimum ranges for welding and are not the only acceptable ranges. In the resolution of the NCI, the amperage range violation was found acceptable and not in violation of the code; thus no technical

inadequacy was identified (T.F. Report, Vol. II, D-29). Mr. Bryant agreed with the resolution of his concern (Apps. Exh. 30, Bryant, p. 5).

- g. Concern J-4: preheating in excess of 500 degrees F, the maximum FWDS parameter for preheat (NCI 9119). The Task Force agreed that this was an actual violation of procedures, but the Task Force evaluator determined that, on the basis of discussions with the inspector, the upper limit was below 900 degrees F, and thus the preheating would have had no detrimental effects. (T.F. Report, Vol. II, J-4). Mr. Godfrey was satisfied with this resolution (Apps. Exh. 56, Godfrey, p. 5).
- h. Concern M-1: failure to clean paint 1/2 inch away from all sides of weld prep. The Task Force found no violation of procedures or technical inadequacy. It said there was no proof of improper cleaning (the inspection was made after the welding) and pointed out that the 1/2-inch criterion is not a "magic number". It recommended inspections prior to welding and stated that as long as the weld does not pick up contaminants, the cleaning is adequate. (T.F. Report, Vol. II, M-1). Mr. Jones, the inspector who raised the concern, agreed with the resolution (Apps. Exh. 78 (offer of proof), Jones, p. 4).
- i. Concern P-1: misalignment of weld repair. The Task Force pointed out that the weld in question had been judged acceptable by radiography and Technical Services review. (T.R. Report, Vol. II, P-1). Mr. McCoy, who raised the concern, was satisfied with the resolution (Apps. Exh. 82 (offer of proof), McCoy, p. 4).
- j. Concern V-2: unacceptable welds on drawing. The Task Force found a potential violation of L-80 and M-21 and a potential technical inadequacy, and it directed that the welds be inspectd by a Level III inspector (T.F. Report, Vol. II, V-2). The welds were thus investigated and found acceptable by the appropriate Level III inspector (Tr. 9028-35, Harris, 12/1/83), and Mr. Harris was satisfied with the resolution (Apps. Exh. 67, Harris, p. 3, and Tr. 9033, Harris, 12/1/83).

k. Concern E-2: socket welds without 1/16-inch gapping. The Task Force found a potential violation of procedures and a potential technical inadequacy. While the inspector stated that the particular welds in question were repaired (see Tr. 6437-38, Cauthen, 11/8/83, and Tr. 6556, Cauthen, 11/9/83), there was some doubt as to the acceptability of the socket welds performed by the crew. It was recommended that QA conduct a study to determine whether the welds had appropriate gaps. (T.F. Report, Vol. II, E-2). The welds were not safety-related (see Tr. 6438, Cauthen, 11/8/83). Mr. Cauthen indicated that he was satisfied with the technical adequacy of the welds he inspected (Tr. 6579, Cauthen, 11/9/83).

(ii) Concerns that were discussed during the hearing.

117. Three of the Welding Procedure concerns either were not resolved to the satisfaction of the inspectors who raised them or were pursued during cross-examination and therefore warrant more detailed discussion. These were as follows:

a. Concerns R-50 and D-23: weld on steam generator blowdown tank was welded downhill. Mr. Bryant's concern related to the fact that his supervisor instructed him not to accept the work rather than initiate a Q-1 (see Tr. 6134-36, Bryant, 11/4/83); he agrees, however, with the Task Force technical resolution (Tr. 6136). The Task Force noted that downhill welding was prohibited but that the acceptability of the welds will be examined during later inspections (hence a potential technical inadequacy). It recommended that construction and QA supervision be reminded to document all violations of the QA program. (T.F. Report, Vol. II, R-50, D-23). While Bryant agreed with the technical resolution, Mr. Ross expressed disagreement with the Task Force characterization of the problem as a potential procedural violation and technical inadequacy, though he later observed that the weld in question had been repaired with an uphill weld (Tr. 6734-37, Ross, 11/10/83). He agreed that welding downhill does not detract from the structural strength of the weld (Tr. 6977, Ross, 11/11/83), and he stated that there is nothing in

the resolution of his concerns that causes him to question the safety of the plant (Tr. 7049, Ross, 11/11/83).

- b. Concern D-19: failure to reinforce penetration weld from root out (NCI 11534). The Task Force found that a potential violation of procedures occurred as a result of excess reinforcement. It stated that the weld in question had passed all applicable inspections except for excess reinforcement, and it recommended a reevaluation of the NCI or the issuance of a new NCI to resolve the potential inadequacy resulting from excess reinforcement. (T.F. Report, Vol. II, D-19 (Rev. 1)). Mr. Bryant believed that the welding from the inside constituted an actual violation of the design drawing (Tr. 6126, Bryant, 11/4/83), but he agreed with the Task Force that the adequacy of the reinforcement in excess of design specification should be reevaluated (Tr. 6127). As a specific action recommendation, the Task Force directed this reevaluation (T.F. Report, Vol. I, Table VIII, 11). Mr. Zwissler verified that this action was carried out (Apps. Exh. 13, Zwissler, p. 11).

(h) Variation Notice Processing

118. Variation notices (VN) are issued by Design Engineering to clarify drawings and make minor changes that are necessary to facilitate construction. Inasmuch as only one concern was raised in the area of VN processing, the Task Force concluded that this was not a major area of interest (T.F. Report, Vol. I, Section 5.3.7). The concern raised, R-19, involved a hanger package with two variation notices showing different weld designs. The inspector was told by his supervisor to use the VN that appeared to fit the work performed. While this did not violate procedures, the Task Force found that this was not the preferred practice; the supervisor should

have consulted Design Engineering to see which VN they wanted incorporated. No technical inadequacy resulted (T.F. Report, Vol. II, R-19), and the inspector agreed with the resolution (Apps. Exh. 34, Ross, p. 5).

(i) QA Procedure

119. There were 16 total concerns in this category. Two of them represented actual procedural violations and eight presented potential procedural violations. Two potential technical inadequacies were identified. Among the typical findings of the Task Force were that reworkable deficiencies are being nonconformed when procedures allow other methods of handling, that violations of QA procedures are not always documented, that NCIs that are determined to be invalid are not being filed, and that written acceptance criteria are not uniformly understood and applied. (T.F. Report, Vol. I, Section 5.3.9).

(i) Concerns that have been satisfactorily resolved.

120. Several of the concerns in this area were discussed above. These are: Concerns D-15, R-62 (FF 107), C-1 (FF 99), D-5 (FF 111), and D-13 (FF 110). The QA procedure concerns that have been resolved to the satisfaction of the welding inspectors are as follows:

- a. Concerns D-12 and R-29: absence of welder's stencil on temporary welds. The inspectors involved felt that there was a violation of QAP I-1, requiring stenciling. But the Task Force found that stenciling of temporary welds is covered by QAP M-4. It recommended that numbers

be assigned to NCIs before submitting for technical review, thus improving accountability of welds determined to be invalid. (T.F. Report, Vol. II, D-12, R-29). Mr. Bryant and Mr. Ross agreed with the resolution (Apps. Exh. 30, Bryant, p. 5; Apps. Exh. 34, Ross, p. 5).

- b. Concern R-36: use of M4I form to document jack marks on inside of pipe after fit-up. The Task Force found that construction damage could be documented on either an NCI or an M4I. Thus no procedural violation or technical inadequacy was present. (T.F. Report, Vol. II, R-36). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- c. Concern R-42: absence of welding stencil on miscellaneous steel. The Task Force noted a potential violation of M-21, requiring welder's stencil mark, and a potential technical inadequacy. But it pointed out that the welds may have been incomplete when the inspector saw them and that the M-21 program would assure proper identification. (T.F. Report, Vol. II, R-42). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p 5).
- d. Concern R-43: handling of invalid NCIs. The Task Force found that the incident in question potentially violated QAP Q-1 which requires that if an NCI is determined to be invalid, an explanation shall be stated on that NCI and filed. It recommended training in the handling of NCI's. (T.F. Report, Vol. II, R-43). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- e. Concern R-46: Class E hanger package without an M-51A. As the Task Force observed, QAP M-51 has never applied to Class E hanger. Thus, no procedural violation or technical inadequacy occurred. (T.F. Report, Vol. II, R-46). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).
- f. Concern R-63: failure to verify welding filler material. The Task Force noted a potential violation of M-21 which requires inspector verification of filler material. It classified the situation as a potential technical inadequacy, noting that the filler material must

be confirmed prior to acceptance of the weld. (T.F. Report, Vol. II, R-63). Mr. Ross agreed with the resolution (Apps. Exh 34, Ross, p. 5).

- g. Concern R-65: signing for work and inspections performed under QAP M-4 (NCIs 13789 and 13947). The inspector was concerned with the fairness of providing retraining of an inspector who failed to sign for an inspection, while a welding foreman who failed to sign paperwork was not given training. As the Task Force explained, in the first case an NCI was appropriate because a hold point was passed by a radiographer and work proceeded, whereas in the second case no work proceeded past the hold point. (T.F. Report, Vol. II, R-65). Mr. Ross agreed with the resolution (Aps. Exh. 34, Ross, p. 5).
- h. Concern R-10: acceptance of nut without material identification. While a potential violation of QA M-21 occurred, the Task Force concluded that the supervisor's decision that the nut was acceptable was a valid exercise of judgment. (T.F. Report, Vol. II, R-10). Mr. Ross agreed with the resolution (Apps. Exh. 34, Ross, p. 5).

(ii) Concerns that were discussed during the hearing.

121. The QA procedure concerns that were discussed during the hearing are as follows:

- a. Concern D-7: two welder's stencils were listed on M-49A but were not on material. The weld should have been stenciled as required by M-49, according to the Task Force (T.F. Report, Vol. II, D-7). The inspector wanted to initial an NCI, but the supervisor, after consulting Tech Support, directed the inspector not to write a Q-1A but have the welders stencil the work. The inspector (Mr. Bryant) disagreed with this decision, believing there had been an actual violation of M-49, I-1 and Q-1 (Tr. 6109-11, Bryant, 11/4/83). His disagreement with the Task Force was essentially that the traceability of the work was left in doubt because both of the welders' stencils remained listed on the M-49A (Tr. 6110-11, Bryant, 11/4/83).

- b. Concern E-1: use of pipe not listed in released piping material log. The inspectors concern related to the fact that after he decided to initiate an NCI the craft, on the instruction of Mr. McKenzie, had cut out the pipe and remade the fit. The Task Force, though finding a potential violation of QAP M-4 and Q-1, noted that it is appropriate for an inspector to reject the hold point by returning the M-4A to the fitter. Alternatively, QAP R-2 can be used for documenting minor, readily correctable deficiencies. (T.F. Report, Vol. II, E-1). The Task Force recommended clarification of procedures for handling reworkable deficiencies (Id.). Cauthen's disagreement with the resolution is based on his belief that, at the time, the Q-1 procedure was the way to handle the problem rather than an R-2 (Tr. 6429-30, Cauthen, 11/8/83). He admitted, however, that the only problem with the pipe was the lack of a heat number (traceability) and that he could have directed craft to repair the work pursuant to M-4 (Tr. 6571, Cauthen, 11/9/83). Furthermore, he expressed satisfaction with the technical resolution of the NCI written on this and noted that the piping was not safety-related (Tr. 6572-73).
- c. Concern E-4: use of QAF's M-4 and Q-1. The Task Force pointed out the appropriate uses of M-4 (surface inspection for construction-induced damage) and Q-1 (nonconstruction-induced damage). It recommended that the inspector be trained in the appropriate use of these procedures. (T.F. Report, Vol. II, E-4). This concern arose because Mr. Cauthen would use the M-4I form to note matters other than construction defects (Tr. 6451, Cauthen, 11/8/83). He justified this practice on the basis that the M-4I process involves less time and trouble than the NCI process (Tr. 6454). He stated, however, that he has not approved any faulty work (Tr. 6573), and he is aware of no inspectors who have approved welds that were faulty (Tr. 6577).
- d. Concern V-1: M-4I inspections performed with uncontrolled copies of isometric drawings. The Task Force classified this as a potential violation of QAP G-1, which requires the use of controlled documents when performing inspections, but it noted that the inspector had not cited any specific incidents to substantiate his claim.

(T.F. Report, Vol. II, V-1). Mr. Harris, who raised the concern, was satisfied with its resolution (Apps. Exh. 67, Harris, p. 3). He stated that he was informed that an uncontrolled copy is used just for purposes of locating the system to be inspected (Tr. 9022, Harris, 12/1/83). Moreover, he stated that he has no question about the quality or safety of the M-4I inspection he conducted (Tr. 9063, Harris, 12/1/83).

(j) Additional Technical Concerns

122. A few additional technical concerns which were not submitted to the Technical Task Force were raised in prefilled testimony or during oral examination. All of them have been satisfactorily resolved. These are as follows.

- a. Structural steel integrity -- absence of guidelines and controls regarding removal of welds on structural steel without the removal area being inspected. This was raised by Mr. Bryant (Apps. Exh. 30, Bryant, p. 8). He was concerned with the removal of welds which may weaken structural items (Id.; Tr. 6151-52, Bryant, 11/4/83). But he noted that Duke has taken action to avoid such problems, e.g., on piping systems (Tr. 6153, Bryant, 11/4/83). And this was confirmed by Mr. Ross, who observed that a program of rechecking such structures all over the plant has been instituted (Tr. 7006, Ross, 11/11/83). As Mr. Davison explained, the Applicants are currently reviewing specific items of concern to determine their significance and whether corrective action is necessary. In addition, a review is being conducted of the procedures governing the removal of temporarily attached welds. (Apps. Exh. 14, Davison, p. 10).
- b. Reduction of base metal on hangers by grinding or undercutting in excess of that allowed by procedures (NCI 14137). Mr. Rockholt raised this concern. He was bothered by the fact that craft continued working on the hangers after he requested them to stop (Tr. 6303, Rockholt, 11/8/83), though he had not formally put a hold tag on the work (Tr. 6351-2). He was afraid that

craft's action would have eliminated the nonconformance (Tr. 6310). The resolution of NCI 14137 ensured the correction of any defects (PA Exh. 90). In addition, there is nothing improper in crafts continuing work on an item if no hold tag has been placed on its (see Tr. 6571-72, Cauthen, 11/9/83).

- c. Additional welding concerns identified by Mr. Cauthen (Apps. Exh. 32, Cauthen, p. 4). Mr. Cauthen raised four additional concerns. First, he discovered a series of bad welds on Class C piping (Id.; Tr. 6529-30, Cauthen, 11/9/83). The welder responsible was discharged (Tr. 6530). Mr. Cauthen further noted that random radiographs or the QA surveillance program would detect these defects (Tr. 6576). Second, Mr. Cauthen questioned the qualification of a welder who had his stainless steel certification (Tr. 6532), but he did not allege that this caused any faulty workmanship to be accepted (Tr. 6579). Third, he alluded to the fact that he had run a lot of M4-Is and found some defective welds, though the number of these was not great compared with the total amount of work he inspected (Apps. Exh. 32, Cauthen, p. 4, Tr. 6533), but he agreed that there was no safety problem (Tr. 6545-47). Fourth, he was concerned about certain welds that had only received final visual checks (these were done by McKenzie's crew) (Tr. 6533-34). However, he noted that he kept a "good check" on these (Tr. 6534). Moreover, Mr. Davison explained that systems that only receive final visual inspections are those classified by Design Engineering as having a lesser degree of safety significance (Apps. Exh. 14, Davison, p. 10).

c. Non-Technical Concerns

(1) Non-Technical Task Force

The non-technical concerns were addressed by the Non-technical Task Force as set forth below. Those concerns which were not resolved by the Non-technical Task Force to the satisfaction of the welding inspectors and those non-technical concerns raised subsequent to the Non-Technical Task Force are also addressed below. They fall essentially into four categories: Harassment, Employee Access to the NRC, Lack of Management Support, and Construction Pressure.

123. As the Technical Task Force began to analyze the welding inspectors' concerns in January of 1982, it soon became apparent that some of the concerns were non-technical in nature and thus outside the scope of the Technical Task Force effort. The Technical Task Force advised Duke management of this fact (Apps. Exh. 2, Grier, p. 48; Apps. Exh. 12, Alexander, p. 2).

124. On February 22, 1982 Mr. Grier appointed Mr. N. Alexander, who at the time was the Personnel Manager, Station Support Division, at the McGuire Station, to head a Non-technical Task Force to review and make recommendations as necessary with regard to the non-technical concerns that had been raised by welding inspectors at Catawba (Apps. Exh. 12, Alexander, p. 2, corrected at Tr. 3142, Alexander 10/14/83). Mr. Alexander

has been employed by Duke since June 1967. He has held several personnel positions, including Personnel Manager in the Construction and QA Departments, and is currently the Manager of Administrative Services in the QA Department (Apps. Exh. 12, Alexander, p. 1-2). Mr. D. Powell, who at the time was Employee Relations Supervisor, Construction Department General Office, assisted Alexander on the Non-technical Task Force (Apps. Exh. 12, Alexander, p. 3; Tr. 3133, Alexander 10/14/83). Mr. Powell has had nine years of experience in personnel at Duke, with seven years dealing specifically with employee relations (Apps. Exh. 12, Alexander, p. 3).

125. The Non-technical Task Force effort began on February 26, 1982 when Alexander was provided a list of all the concerns which the welding inspectors had given to Duke management. From this list Alexander reviewed the concerns and identified those that were non-technical. (Apps. Exh. 12, Alexander p. 3; Tr. 3143, 3147, Alexander 10/14/83). The Technical Task Force also provided Alexander with a list of all the concerns categorized into technical or non-technical. Alexander compared his list of non-technical concerns with the list provided by the Technical Task Force and concluded that all concerns would be addressed by either the Technical or Non-technical Task Force or, in some instances, both. The Technical Task Force had identified three technical concerns that had

non-technical implications and therefore both Task Forces agreed to cover these concerns in their investigations. (Apps. Exh. 12, Alexander, p. 3-4; Tr. 3152, Alexander 10/14/83).

126. Alexander differentiated between technical and non-technical concerns by characterizing administrative or personnel matters as non-technical. A non-technical concern would not relate to actual hands-on performance of work or the resolution of an NCI. Where there was uncertainty as to whether a concern was technical or non-technical Alexander discussed the concern with the Technical Task Force and resolved which group had responsibility. (Apps. Exh. 12, Alexander, p. 4; Tr. 3151-53, Alexander 10/14/83; Tr. 3145-46, Cobb 10/14/83; Tr. 3488-89, Alexander 10/17/83).

127. After a determination had been made as to which concerns were non-technical Alexander noted that many of the concerns were similar in nature and therefore he established general categories to deal with all the non-technical concerns. He analyzed each of the individual non-technical concerns, consolidated some of them into the general categories and arranged them in a matrix (PA Exh. 20) according to inspector and the category of concern (Tr. 3147 and 3162-63, Alexander 10/14/83). This matrix represents the categorization of all the non-technical concerns, and it is possible to identify each individual

concern from the matrix (Tr. 3148, Alexander 10/14/83; see also Tr. 7047, Ross 11/11/83). The categories that Alexander established for the Non-technical Task Force review were: Qualifications, Technical Support, Resolutions, Communication, Management Support, Responsibilities, Directing Craft, Procedures, and Harassment. Those concerns that did not fit into one of the established categories were treated individually. (Apps. Exh. 12, Alexander, p. 4; Tr. 3149, Alexander 10/14/83).

128. Alexander next gathered information regarding these non-technical concerns. The documents submitted by the welding inspectors were reviewed by Alexander and where there was not enough information to understand a concern and to make recommendations, Alexander interviewed the individual welding inspector to obtain additional information so that the concern could be addressed. (Apps. Exh. 12, Alexander, p. 4).

129. On March 15, 1982 Alexander submitted a memorandum to Grier which set forth the Non-technical Task Force plan. This plan which Alexander had submitted to Grier for approval was the proposed Non-technical Task Force plan for addressing and resolving the non-technical concerns of the welding inspectors. (Tr. 3171, Alexander 10/14/83). Grier approved the proposal on March 15, 1982. (Tr. 3177 Alexander 10/14/83).

130. The Non-technical Task Force Plan consisted of six phases of work. These phases were:

- I. Data Collection and Review
- II. Evaluation and Recommendations
- III. Management Review
- IV. Communicate Implementation Plan
- V. Implement Plan
- VI. Final Report

131. Phase I. Data Collection and Review involved identifying the non-technical concerns to assure that the Non-technical Task Force had sufficient information to evaluate the concern. At the time Grier approved the Non-technical Task Force Plan, Alexander had already completed phase I with the possible exception of two or three specific concerns that required additional discussion with inspectors (Tr. 3173, Alexander 10/14/83).

132. Phase II. Evaluation and Recommendation involved evaluating each concern and making recommendations for addressing the concerns, both immediately and long term. The Non-technical Task Force had not completed this phase at the time the Plan was approved although Alexander stated that a draft for this phase of work had been prepared (Tr. 3178, Alexander 10/14/83).

133. Phase III. Management Review involved submitting the Non-technical Task Force Report to Duke management for review and approval. This phase of work was completed and submitted to Owen on March 24, 1982

(Apps. Exh. 12, Alexander, p. 5, Attachment 3). The Non-technical Task Force Report presented six general categories of non-technical welding inspector concerns. These categories were:

- I. NCI's/RESOLUTIONS
- II. PROCEDURES
- III. WORK DIRECTION
- IV. REOURSE
- V. QUALIFICATIONS
- VI. COMMUNICATIONS

134. Within each general category the Non-technical Task Force further grouped the non-technical concerns to "fine tune" each general category so that it could identify and address common issues in the non-technical concerns. (Tr. 3159-3163, Alexander 10/14/83). For all subgroups in the six general categories the Non-technical Task Force prepared summaries of the issues identified and presented its conclusions and recommendations.

135. The essential findings of the Report indicated that there were areas that needed management attention, such as communications, the need for a method by which employees could address concerns to management and confusion over the inspector's role in relation to the craft. (Apps. Exh. 12, Alexander, p. 5, Attachment 3). The Non-technial Task Force Report made several recommendations:

- * training of supervisors in communications
- * explaining to inspectors what their role and responsibilities are

- * implementing a "Team Work" program
- * developing procedures for resolving employee concerns and communicating answers to their questions. (App. Exh. 12, Alexander, p. 5).

These recommendations made were accepted by Duke Power Company management.

136. In conjunction with management review in Phase III, the Non-technical Task Force prepared and submitted to Duke management a Management Implementation Plan for Non-technical Concerns. Mr. Owen and Mr. Grier accepted this Plan on March 25, 1982. (Apps. Exh. 12, Alexander, p. 6, Attachment 3; Tr. 3043, Alexander 10/13/83; Tr. 3597, Alexander 10/18/83).

137. The Management Implementation Plan for Non-technical Concerns established the following steps (Apps. Exh. 12, Alexander, Attachment 3):

1. The Personnel Manager will act as implementation coordinator for the non-technical implementation plan with the following duties.
 - A. Assure that all specific action recommendations are assigned to appropriate individuals and have target dates for completion.
 - B. Assure that all implementation objectives are assigned to appropriate individuals and have completion dates specified.
 - C. Collect documentation of all implementation action.
2. Specific action recommendations will be carried out as they relate to the specific concern raised by the individual inspector.

3. General recommendations will be carried out based on the following implementation objectives:

A. Work Direction

1. Train inspectors in their role and responsibility as it relates to the Craft.
2. Implement a "team work" program for QA to increase the identification of inspectors.

B. Recourse

1. Implement a Departmental Employee Recourse Procedure for addressing employee concerns at the lowest possible level.
2. Implement a Departmental Technical Recourse Procedure to allow employees an avenue for airing technical concerns as they arise.
3. Implement a Departmental Harassment Procedure to deal with any employee harassment problem.

C. Qualification

1. Communicate to Inspectors the kind of instruction that can be given to Craft personnel by inspectors.

D. Communication

1. Train Supervisors and Inspectors in communication skills both oral, written and dealing with other people.
2. Implement an Employee Forum program for QA Personnel to establish two-way communication.
3. Schedule QA Management for the Effective Management Program.

138. Phase IV, Communicate Implementation Plan.

This Phase established the schedules for communication with the welding inspectors in groups and individually (Apps. Exh. 12, Alexander, p. 7, Attachment 3 corrected at Tr. 3049, Alexander 10/13/83). Grier met with the welding inspectors at Catawba and explained the findings of the Non-technical Task Force and the actions that would be taken. Alexander also began meeting with the inspectors who had non-technical concerns to review the individual concerns with them and their supervision so as to ensure that they understood that their concerns had been addressed and what the management recommendations were with respect to their concerns. (Apps. Exh. 12, Alexander, pp. 6-7).

139. Phase V, Implement Plan The implementation of the Non-technical Task Force recommendations began on March 31, 1982. (Apps. Exh. 12, Alexander, p. 6).

140. With regard to the Specific Action Recommendations of the Management Implementation Plan, Alexander had responsibility to assure that each specific action recommendation was carried out (Apps. Exh. 12, Alexander, p. 7; Apps. Exh. 2, Grier, p. 54). The Non-technical Task Force recommendations regarding training of inspectors in their role and responsibilities (Management Implementation Plan, Step 3.A.1 Work Direction and Step 3.C.1 Qualification) were carried out by developing a

video titled "The Inspector" (Id.; Tr. 3541, Alexander 10/16/83). The Non-technical Task Force recommendations regarding training of supervisors and inspectors in communication (Management Implementation Plan, Step 3.D.1 Communication) was done by Duke Corporate training and the training of QA management (Management Implementation Plan, Step 3.D.2. Communication) was given by the Construction and Design Engineering Departments. (Apps. Exh. 12, Alexander, p. 7). Alexander personally developed all the procedure recommendations for Departmental Employee Recourse, Departmental Technical Recourse and Departmental Harassment (Management Implementation Plan, Step 3.B.1., 2., 3., Recourse). (Id.; Tr. 3541, Alexander 10/18/83).

141. With regard to the Non-technical Task Force recommendations concerning "teamwork" (Management Implementation Plan, Step 3.A.2., Work Direction), Duke management has taken steps to provide better self-identity for QA personnel and make them feel as part of a team by use of standard color hard hats with logos, a departmental newsletter and QA forums (Apps. Exh. 2, Grier, p. 54; Apps. Exh. 14, Davison, p. 35).

142. The establishment of the Employee Forum program (Management Implementation Plan, Step 3.D.2. Communications) by Duke management provides QA employees the opportunity to meet with second level supervision to discuss any item. (Id.)

143. The implementation of the Non-technical Task Force recommendations is complete. However, Alexander, in his position in the QA Department, is continuing to develop programs to enhance the communication and skills of the inspectors and supervisors in dealing with the various communication programs. (Apps. Exh. 12, Alexander, p. 6; Tr. 3139, Alexander 10/14/83; Tr. 3597, Alexander 10/18/83).

144. Phase VI, Final Report, of the Non-technical Task Force Plan involved the Non-technical Task Force reporting back to Duke Management that the Management Implementation Plan was being carried out.

145. Palmetto makes several assertions concerning bias and lack of independence, failure to implement Non-technical Task Force recommendations, and deficiencies and inadequacies of the Non-technical Task Force effort, in order to discredit or otherwise undermine the thoroughness of the Non-technical Task Force Report and the Management Implementation Plan.

146. First, Palmetto asserts that Alexander as a result of either his role as Personnel Manager at McGuire or his transfer to the QA Department on March 15, 1982 had a conflict of interest when he conducted the investigation of the non-technical concerns of the welding inspectors (Tr. 3182, Guild 10/14/83).

147. Alexander, in response to Palmetto's assertion of a conflict of interest, stated that at the time he was appointed to head the Non-technical Task Force he was working at the McGuire Nuclear Station as personnel manager and was not a member of the Duke QA Department or otherwise associated with activities at Catawba. Alexander stated that the fact that he became a member of the QA Department on March 15, 1982 in no way compromised his ability to complete the Non-technical Task Force effort. The concerns which were the focus of his investigation were concerns that involved instances of past activities at Catawba. (Tr. 3395-96, Alexander 10/18/83). Alexander further stated that even though he was involved in the implementation of the recommendations of the Non-technical Task Force he did not feel his position in the QA Department compromised his ability to see that the recommendations were carried out. This is so because the recommendations and their implementation were approved by management. Alexander basically carried out the Management Implementation plan. (Tr. 3597, Alexander 10/18/83).

148. Palmetto also asserts that Alexander's previous working relationship with Grier brings into question Alexander's independence in investigating welding inspector concerns. Palmetto means to suggest that since Alexander had worked closely with Grier previously and was

now investigating concerns relating to QA which Grier was responsible for, Alexander would not be totally independent. (Tr. 3183-84, Alexander 10/14/83). Alexander responded to Palmetto's questions on this point by stating that he knew Grier from working with him at the McGuire Nuclear Station from 1971 to 1978. Grier was the Project Engineer and Alexander was personnel supervisor during this time. Alexander acknowledged that he and Grier became familiar with each other's work but beyond that Alexander characterized his working relationship with Grier as a business-type relationship. (Tr. 3183-84, Alexander 10/14/83).

149. Second, Palmetto asserts that the Management Implementation Plan for Non-technical concerns was not implemented or was not taken seriously by the QA Department, or the Construction Department and that the welding inspectors did not sense that the implementation of the recommendations of the Non-technical Task Force improved the situation.

150. In point of fact the QA Department took the Non-technical Task Force recommendations and the Management Implementation Plan very seriously. In Grier's prefilled testimony and in Davison's prefilled testimony both witnesses set forth extensive steps that were taken

to implement the Non-technical Task Force recommendations, as discussed previously at paragraphs 140-142 (Apps. Exh. 2, Grier, p. 54; Apps. Exh. 14, Davison, p. 35).

151. The Construction Department also considered the recommendations of the Non-technical Task Force. Dick in his prefilled testimony stated that the Non-technical Task Force recommendations dealt primarily with the roles and relationships of various positions within the QA Department but that he had already communicated to Construction Department employees at Catawba the Company's expectations regarding their role and their relationship with QA (Apps. Exh. 24, Dick, pp. 12-13). Further, Dick stated that long before the recommendations came out of the Non-technical Task Force the Construction Department had implemented a recourse procedure. That procedure was implemented in June of 1976. A slightly revised procedure was adopted in May of 1979. This procedure allowed an employee to express any concern or suggestion to successive levels of supervision. In addition, a more formal process was available if the employee wished to use it (Apps. Exh. 24, Dick, p. 7). Dick also stated that in February of 1981 the Construction Department began its employee forum program. This program consisted of regular meetings between employees and higher levels of

supervision. Key elements of these meetings were open discussions and a chance to share ideas and ask questions. (Id. at p. 8).

152. In September of 1980 the Construction Department implemented a procedure on harassment. The intent of this procedures was to keep the work environment free from any sort of intimidation (Id. at 9).

153. Palmetto examined Dick about the Construction Department's harassment procedure in relation to the QA harassment procedure (Tr. 5272-5282, Dick 11/1/83). Palmetto asked Dick whether the Construction Department procedure covered the type of harassment allegedly experienced by the welding inspectors considering the fact that the Construction Department harassment procedure had a catchall phrase which included "other innate personal characteristics" (Tr. 5275, Dick 11/1/83). Dick responded at several points that the type of harassment experienced by the welding inspectors was included in the Construction Department harassment procedure. Palmetto took issue with Dick's view. In response to a question by the Board about the Construction Department harassment procedure, Dick stated that

we tried to cover that kind of harassment. If we failed to be specific in it, it was our failure in semantics not in intent. (Tr. 5281, Dick 11/1/83).

Dick stated further that

it's a long standing policy forever that I can remember that you don't harass fellow employees or employees of another department. And we would have aggressively addressed it in the absence of a policy, a written policy. (Id. at 5782).

154. Palmetto examined Dick with regard to whether the Construction Department had implemented programs to train craft in dealing with welding inspectors similar to the video that the QA Department had prepared on the welding inspectors' relationship with craft (Tr. 5373-85, Dick, 11/1/83). Dick responded that the Construction Department "chose to communicate, in a more blunt, threatening way with our employees, that we gave illustrations of conduct that was not acceptable." (Tr. 5381, Dick, 11/1/83). The Board followed upon Dick's response by asking Dick to clarify that the same care was taken to communicate to the craft the Company's desire to avoid confrontations (Tr. 5616, Dick, 11/2/83). Dick re-emphasized his earlier statement to Palmetto and added that the Construction Department did not produce a videotape training device because the Construction Department addresses such problems in a more direct way. (Tr. 5616-17, Dick, 11/2/83).

155. Palmetto examined the welding inspectors regarding their perception as to whether the recommendations of the Non-technical Task Force had been

implemented and whether the welding inspectors thought improvements had taken place. The welding inspectors in their prefiled testimony stated that several changes had taken place with the implementation of the Non-technical Task Force recommendations. Generally, the changes cited by the welding inspectors were:

1. Technical/Non-technical recourse procedure,
2. Management changes/Supervision rearrangement,
3. Improved communications,
4. Employee forum. (Apps. Exh. 30, Bryant, p. 5; Apps. Exh. 29, Burr, p. 5; Apps. Exh. 57, Crisp, p. 4; Apps. Exh. 28, Deaton, p. 3; Apps. Exh. 67, Harris, p. 3; Apps. Exh. 68, Ledford, p. 3; Apps. Exh. 31, Rockholt, p. 5; Apps. Exh. 34, Ross p. 5).

156. Third, Palmetto asserts that the Non-Technical Task Force could not have done an adequate and complete investigation of the welding inspector non-technical concerns considering the amount of time the Non-technical Task Force took to review, evaluate and conclude their effort (Tr. 3177, Guild 10/14/83). Palmetto's assertion rests on the fact that Alexander began his investigative work on February 26, 1982 and essentially concluded with the submission of his report to Owen on March 24, 1982. (Tr. 3148-49, Alexander 10/14/83). Palmetto would have the Board conclude that Alexander could not have fairly and seriously considered the merits of the welding inspectors' non-technical concerns in this timeframe.

Applicants, for the reasons set forth in paragraphs 125-132 feel confident that the Non-technical Task Force fairly and seriously considered the welding inspectors' non-technical concerns.

157. In order to overcome Applicants' position, Palmetto examined in great detail each welding inspector who testified and submitted concerns to Duke to determine whether the Non-technical Task Force met with, discussed with, or otherwise contacted each welding inspector about his concerns. Of the eleven welding inspectors who testified and submitted concerns,^{58/} four welding inspectors stated that the Non-technical Task Force had contacted them (Tr. 6036, Bryant 11/4/83; Tr. 6675, Ross 11/10/83; Tr. 8291, Godfrey 11/28/83; Tr. 8377-78, Crisp 11/29/83). Four welding inspectors stated that they could not recall whether the Non-technical Task Force had contacted them (Tr. 5729-32, Deaton 11/3/83; Tr. 6413, 6435, Cauthen 11/8/83; Tr. 8887, Jackson 11/30/83; Tr. 9008, Harris 12/1/83). Three welding inspectors had no non-technical concerns (Apps. Exh. 58, Gantt, pp. 3, Attachment A; Apps. Exh. 29, Burr, p. 3, Attachment A; Apps. Exh. 31, Rockholt, Attachment A).

^{58/} Deaton, Burr, Bryant, Rockholt, Cauthen, Ross, Godfrey, Crisp, Gantt, Jackson, Harris. (Ledford, Reep and Sifford provided no concerns in their prefilled testimony).

158. In further support of its assertion that the Non-technical Task Force could not have done an adequate and complete investigation of the welding inspector non-technical concerns, Palmetto attempts to demonstrate that the Non-technical Task Force failed to consider numerous welding inspector non-technical concerns in its investigation. Palmetto's strategy in demonstrating its point was to examine each welding inspector as to his knowledge and understanding of the disposition of his non-technical concerns and whether the individual welding inspectors agreed with the resolutions of the Non-technical Task Force.

159. Deaton was the first welding inspector to be examined by the Parties and the Board. (Tr. 5721, Deaton 11/3/83). Deaton included in his prefilled testimony Attachment A wherein he listed three non-technical concerns which he had provided to Duke management in late 1981 or early 1982. (Apps. Exh. 28, Deaton, 2-3, Attachment A). Deaton stated in his prefilled testimony that all three concerns had been resolved by improved communications within the QA Department. (Apps. Exh. 28, Deaton, pp. 3, Attachment A).

160. Palmetto sought to establish that Deaton had no way of knowing whether his non-technical concerns had been addressed by the Non-technical Task Force because he could not recall whether he met with the Non-technical Task

Force or discussed with them the results of their investigation (Tr. 5727-35 Deaton 11/3/83). However, despite the lack of recollection on the part of Deaton, it is quite apparent that Deaton felt his concerns were resolved. This is evidenced by the fact that Deaton in response to a question by Palmetto about whether Deaton had other information that would lead him (Deaton) to conclude that his concerns were investigated stated that communication was his only concern and now "we are doing a very good job of communicating at this time". Palmetto further asked Deaton that since things have gotten better by way of more communication did this lead Deaton to believe that his concerns were investigated. Deaton said "yes" to that question. (Tr. 5731-32, Deaton 11/3/83).

161. Burr was the second welding inspector examined by the Parties and the Board. (Tr. 5839, Burr 11/3/83). Burr included in his prefilled testimony Attachment A wherein he listed four technical concerns he provided Duke management in late 1981 or early 1982 (Apps. Exh. 29, Bur., p. 3, Attachment A).

162. In Burr's prefilled testimony he expressed two concerns that were not included in his original list provided to Duke management in late 1981 or early 1982. These two concerns involve first, statements made to Burr by his supervisor concerning his future at Duke if he did not "ease off craft" and second, an incident where Burr

was reprimanded by Mr. L. Davison for not bringing concerns to Duke management prior to contacting the NRC. (Apps. Exh. 29, Burr, p. 3).

163. Since Burr did not identify these concerns to Duke management neither task force considered them in their respective reports. Burr's explanation as to why he did not include these concerns in his original list was that he understood that he was to only include those concerns of a safety related nature and he did not feel free to express a concern which would not be traceable by documentation (Apps. Exh. 29, Burr, p. 3; Tr. 5910 Burr 11/3/83). However, Burr's position is not supported by another welding inspector who testified.

164. Palmetto asked Ross what his impression was from the January 1982 meeting with Duke management in which the welding inspectors were asked to provide Duke management with their concerns (Tr. 6655-62, Ross 11/10/83). Ross responded that

to the best of his knowledge, it was just a matter of writing down any concerns, any specifics; the more specifics the better because it would help resolve the problems. It was pretty open as far as just saying, hey, if you got problems, let's lay them on the table (Id.).

In other words, "hey, list all your concerns, not just specific safety related concerns." Ross stated he listed everything from A to Z (Tr. 6656, Ross 11/10/83).

Palmetto asked Ross how Burr could have come away from the

meeting the way he did. Ross responded that he really could not say what impression Burr had when he left the meeting (Tr. 6659, Ross 11/10/83). Further, Ross stated that several other welding inspectors came to Ross after the meeting and asked him whether they should submit all their concerns. Ross responded that "now was the time to put everything on the table just like they were told in the meeting" (Tr. 6659, Ross 11/10/83).

165. With regard to Burr's two non-technical concerns the Board notes that extensive examination by the Parties on both of Burr's uninvestigated non-technical concerns occurred during the hearing. The Board discusses these two non-technical concerns infra.

166. Bryant was the third welding inspector examined by the Parties and the Board (Tr. 5966 Bryant 11/3/83). Bryant included in his prefilled testimony Attachment A a list of nine non-technical concerns he expressed to Duke management in late 1981 or early 1982. (Apps. Exh. 30, Bryant, Attachment A). During direct examination by the Applicant, Bryant corrected his prefilled testimony by adding one new non-technical concern. (Tr. 5967-68, Bryant 11/3/83). The new non-technical concern involved harassment (Tr. 5992-97, Bryant 11/4/83).

167. Bryant in his prefilled testimony stated that to the best of his memory none of his non-technical concerns were resolved (Apps. Exh. 30, Bryant, p. 5; Tr. 6035, Bryant 11/4/83).

168. The Board has examined the ten non-technical issues and feels they fall into three areas which are discussed in this decision. These three areas are Lack of management support; Dissatisfaction with pay reclassification; and Harassment. Further, an examination of the matrix used by Alexander to evaluate the welding inspectors' non-technical concerns shows that Alexander considered Bryant's nine non-technical concerns. For the reasons set forth herein Bryant's non-technical concerns have been addressed.

169. Rockholt was the fourth welding inspector examined by the Parties and the Board (Tr. 6184, Rockholt 11/4/83). Rockholt included in his prefilled testimony several attachments. Attachment A listed three technical concerns Rockholt provided to Duke management in late 1981 or early 1982 (Apps. Exh. 31, Rockholt, Attachment A). Attachment B included one non-technical concern, harassment/job advancement. This concern was also listed in his prefilled testimony. (Apps. Exh. 31, Rockholt, pp. 2-4, Attachments B).

170. In addition to the concerns identified in Attachment B in Rockholt's prefilled testimony and Rockholt's concern regarding retaliation, Rockholt identified two other non-technical concerns during his testimony. These two non-technical concerns included Rockholt being "shculdered" by craft people and Rockholt's concern about his working relationship with Allum.

171. The Parties and Board examined Rockholt and others on Rockholt's non-technical concerns and the Board discusses them infra.

172. Cauthen was the fifth welding inspector examined by the Parties and Board (Tr. 6404, Cauthen 11/8/83). Cauthen included in his prefilled testimony Attachment A wherein he listed two non-technical concerns involving alleged lack of management support and harassment, which he had provided to Duke management in late 1981 or early 1982 (Apps. Exh. 32, Cauthen, p. 2, Attachment A).

173. In his prefilled testimony Cauthen provided additional non-technical concerns in the area of harassment (Apps. Exh. 32, Cauthen, pp. 3-4). All of these topics are discussed infra.

174. The record does not focus on Cauthen's non-technical concerns to any extent to suggest that the Non-technical Task Force investigation of Cauthen's non-technical concerns was anything less than adequate.

175. Ross was the sixth welding inspector examined by the Parties and the Board (Tr. 6599, Ross 11/10/83). Ross included in his prefilled testimony Attachment A which listed all his concerns that he expressed to Duke Management in late 1981 or early 1982. (Apps. Exh. 34, Ross, p. 3, Attachment A). Ross further identified other concerns that were not addressed by the Technical and Non-technical Task Forces. These other concerns are identified in Attachment B to his prefilled testimony (Apps. Exh. 34, Ross, pp. 3-4, Attachment B).

176. Ross in his prefilled testimony stated all of the other welding inspector concerns of which I am aware and all my concerns except one (except one discussed below) have been adequately resolved by actions including procedural changes, more rigid (sic) enforcement of procedures, personnel changes, and introduction of a technical and non-technical recourse procedure (Apps. Exh. 34, Ross, p. 5).

177. Ross' only remaining unresolved non-technical concern related to retaliation and discrimination against Ross personally (Apps. Exh. 34, Ross, p. 6). This concern was thoroughly probed by the Parties and the Board during the hearing. The Board discusses this concern infra.

178. Palmetto examined Ross thoroughly on his prefilled statement that all his concerns except one were adequately resolved (Tr. 6675-87, Ross 11/10/83). Palmetto's effort to cast a shadow on the adequacy of the Non-technical Task Force effort is demonstrated by

Palmetto's string of questions to Ross about whether Ross in looking at Alexander's March 15, 1982 memorandum to Grier and matrix (PA Exh. 20) could specifically identify concerns from Alexander's memorandum and matrix. Ross was unable to correlate identifiable concerns of the welding inspectors with Alexander's matrix (Tr. 6679-81, 6681-83, Ross 11/10/83).

179. The Staff examined Ross as to his understanding of the Non-technical Task Force Report categorization of welding inspector non-technical concerns (Tr. 6960-65, Ross 11/11/83). The Staff's questioning further probed Ross' understanding of the March 15, 1982 memorandum (PA Exh. 20). Ross upon closer examination of the March 15, 1982 memorandum stated specifically that the harassment concerns he had in 1982 were harassment concerns about his crew and that in looking at Alexander's memorandum it was very possible that these harassment concerns were identified next to the welding inspectors name on the matrix. Ross further stated that the specific harassment indications by the names of welding inspectors he had harassment concerns for could very well have been Alexander's way of noting Ross' concerns. (Tr. 6961-63, Ross 11/11/83).

180. The Staff went further and asked Ross to examine the findings, recommendations and conclusions of the Non-technical Task Force since Palmetto in its earlier

examination had asked Ross if he saw any headings dealing with harassment when he viewed the matrix. Ross had testified that he did not see any. (Tr. 6963-64, Ross 11/11/83). The Staff showed Ross Roman numeral IV, Recourse, paragraph 1 of the Non-technical Task Force Report and asked Ross whether he agreed that the paragraph in question stated that QA employees feel that they are harassed by construction employees and that below that statement there is a summary that indicates that a department harassment procedure was implemented. Ross agreed that Roman Numeral IV, Recourse, paragraph 1 covered the harassment concerns he had. (Tr. 6963-64, Ross 11/11/83). Ross further stated that the harassment procedure had been implemented, and that one result of all the investigations was the harassment (procedure) and recourse (procedure) and that a lot of doors were opened to take care of situations that had occurred in the past (Tr. 6964, Ross 11/11/83).

181. The Staff asked Ross whether he thought that after the task force did its work and completed its recommendations and implementations, that in fact there was less harassment of the scrt that Ross was concerned with when he expressed his concerns. Ross answered "yes" to that question. (Id.)

182. Applicant asked Ross to explain his previous testimony that things have gotten better. Ross stated

Well, what I meant by that was that we had a lot of doors opened to us, a lot of ears opened to us. We now have a training session as far as when procedures come down. Before, procedure was just kind of drifted downhill. The man that wrote it may be up four or five steps from where you were located. Under the trainer program, he comes down and holds a training session with us and instructs at the same time, usually so that we all get the same understanding and the same meaning of what he intended. We do have an active personnel department now where you can go with concerns. The recourse policy has been implemented. There is more of an open door. Things -- attitudes appear to have changed.

One thing is questions. Mr. Grier has a policy of -- when he comes around asking how things are going and things aren't going good and you pass it on, usually there is some action started on it very shortly.

So this type of attitude and whatnot -- they have -- the attitudes have improved. A lot of doors have been opened that have been closed to us for some time. (Tr. 7047-48, Ross 11/11/83).

183. Applicant asked Ross if all of this to the best of his knowledge was the result of the various task forces that were conducted. Ross stated

I think a lot of it came about as a result of the task forces. We had doors opened. We had ears opened. We had procedural changes. We had concerns incorporated into procedures. We had procedures which have been clarified. There has been a lot of changes as a direct result of the concerns and their resolutions. (Id. at 7049).

184. Godfrey was the seventh welding inspector examined by the Parties and the Board (Tr. 8206, Godfrey 11/28/83). Godfrey included in his prefilled testimony Attachment A wherein he listed eight non-technical

concerns which he provided to Duke Management in late 1981 or early 1982 (Apps. Exh. 56, Godfrey, p. 2, Attachment A). Godfrey identified one new non-technical concern in his prefilled testimony which dealt with his right to contact the NRC. The Board discusses this concern infra.

185. Palmetto examined Godfrey extensively as to his understanding of the investigation and resolution of his non-technical concerns (Tr. 8789-97, Godfrey 11/28/83). Palmetto having established that Godfrey knew very little about Alexander's Non-technical Task Force effort nor could speak for the adequacy of the Task Force other than that "They evaluated them [non-technical concerns] somehow" (8290, Godfrey 11/28/83), Palmetto asked Godfrey why it should conclude that the Non-technical Task Force took Godfrey's concerns seriously. Godfrey responds "Don't ask me ask them. I have no idea.". (Tr. 8297, Godfrey 11/28/83).

186. Again the Board has examined the allegations and in this instance find that they fall into lack of management support, harassment and pay reclassification. These matters are discussed infra.^{59/}

^{59/} With respect to harassment such consists of an allegation that Godfrey was called a S.O.B. There was no discussion of this situation and accordingly, standing alone the Board does not find that this language in and of itself constitutes harassment.

189. Crisp was the eighth welding inspector examined by the Parties and the Board (Tr. 8348, Crisp 11/29/83). In Crisp's prefilled testimony he included under Attachment A a list of six non-technical concerns that he provided Duke management in late 1981 or early 1982 (Apps. Exh. 57, Crisp, pp. 2-3, Attachment A). Crisp further stated all of his concerns had been resolved except for the lack of opportunity for inspectors to promote or transfer into other jobs and the pay reclassification (Id., at p. 5). In as much as five of his non-technical concerns had been resolved to his satisfaction the Board concludes that the Non-Technical Task Force evaluated Crisp's concerns. The remaining non-technical concern is discussed infra.

188. Gantt was the ninth welding inspector examined by parties and the Board (Tr. 8447, Gantt 11/29/83). Gantt included in his prefilled testimony Attachment A which listed one technical concern that he provided to Duke management in late 1981 or early 1982 (Apps. Exh. 58, Gantt, pp. 2-3, Attachment A). In addition to the concern listed in Attachment A to his prefilled testimony, Gantt expressed a new non-technical concern regarding the low morale of welding inspectors, (Apps. Exh. 58, Gantt, p. 2). This new concern was not expressed at the time of the Non-technical Task Force and therefore it was not

investigated. The Parties and the Board heard extensive testimony on the morale issue and the Board discusses this issue infra.

189. Jackson was the tenth welding inspector examined by the Parties and the Board who expressed concerns (Tr. 8814, Jackson 11/3/83). Jackson included in his prefilled testimony Attachment A which listed five non-technical concerns provided to Duke management in late 1981 or early 1982 (Apps. Exh. 61, Jackson, p. 2, Attachment A). Jackson expressed no other non-technical concerns in his prefilled testimony.

190. In his prefilled testimony, Jackson stated that his concerns were investigated by the Non-technical Task Force and that he met with them and was told that all his and the other welding inspectors concerns were taken care of. (Apps. Exh. 61, Jackson, p. 3).

191. Palmetto examined Jackson on his understanding of the non-technical Task Force and his perception of any resolutions that came out of the Non-technical Task Force Report (Tr. 8878-8888, Jackson 11/30/83).

192. Palmetto focused on whether the Non-technical Task Force addressd Jackson's harassment charge. Palmetto asked Jackson if his harassment charge was reflected in the Non-technical Task Force matrix. Jackson responded "no" (Tr. 8886, Jackson 11/30/83). Jackson explained he did not include his specific harassment charge in the list

of concerns he submitted to Duke management. (Apps. Exh. 61, Jackson, Attachment A). Therefore the harassment charge was not identified to the Non-technical Task Force. However, examination by the Staff revealed that Jackson listed the harassment concern in his list of concerns in a general sense of his having been threatened. (Tr. 8904, Jackson 11/30/83). The Staff asked Jackson if it was true that the Employee Relations Section of the Construction Department and the Employee Relations Section of the QA Department investigated his harassment claim? Jackson's response was "yes". (Tr. 8904, Jackson 11/30/83). The Staff asked Jackson if he felt the investigators took his harassment charge seriously and investigated it seriously. Jackson's response was "yes" (Tr. 8905, Jackson 11/30/83).

193. Harris was the eleventh and final welding inspector examined by the Parties and the Board who provided Duke management with concerns (Tr. 8956, Harris 12/1/83). Harris included in his prefilled testimony Attachment A which listed two non-technical concerns he provided to Duke management in late 1981 or early 1982 (Apps. Exh. 67, Harris, pp. 2-3, Attachment A). Harris stated in his prefilled testimony that all of his concerns were thoroughly investigated and properly handled and taken care of. (Apps. Exh. 67, Harris, pp. 2-4). Harris did not identify any other concerns in his prefilled testimony.

194. Inasmuch as both of Harris' non-technical concerns had been resolved to his satisfaction the Board concludes that the Non-technical Task Force evaluated Harris' concerns.

(a) Harassment

(i) Ross Evaluation

Mr. Ross alleges that:

I feel I have been discriminated against in violation of 10CFR50 in that my conditions of employment and compensation for employment have been adversely affected by my expressing my concerns of no support from QA management and their not following procedure. [Apps. Exh. 34, Ross, p. 8; see also Id., Attachment B].

195. The concerns in question are those attached to Mr. Ross' testimony (Apps. Exh. 34, Ross, Attachment A) and are included as part of the previously described welding inspector concerns.

196. At the heart of Mr. Ross' harassment allegation are two matters: (1) Mr. Ross' recent job evaluations (Apps. Exh. 34, Ross, p. 8) wherein he received fair ratings in contrast to prior higher ratings (Tr. 3933-35, Davison, 10/19/83; Tr. 4488, Allum, 10/25/83); (2) Mr. Ross' feeling that management has blackballed him, will not transfer him to operations QA, but will lay him off when the project is completed (Apps. Exh. 34, Ross, p. 9). Each concern is discussed below.

[1] Job Evaluation

197. In 1982 and 1983, Mr. Ross' job performance was rated as fair. Prior to that time he received higher ratings. (Tr. 4488, Allum, 10/25/83).

198. Applicants' rating system received much attention at the hearing (see, i.e., Tr. 3933 and 3936, Davison, 10/19/83; Tr. 3963-64, Crier, 10/19/83; Tr. 4487-88 and 4533, Allum, 10/25/83; Tr. 4560-63 and 4564-73, Allum and Davison, 10/25/83; Tr. 4583 and 4589, Allum, 10/25/83; Tr. 4968, Allum, 10/27/83). Essentially the present system can be characterized as follows:

199. An evaluation period of one year is established commencing from the anniversary date of an employee's hiring (See i.e., PA Exh. 50; Tr. 3966-69, Davison, 10/19/83). At the beginning of each period the employee and his supervisor establish objectives for the year (Tr. 4487, Allum, 10/25/83). These objectives are set forth in a Personal Performance Plan Worksheet (PPPW) (See i.e., PA Exh. 51). Several times during the period the employee and his supervisor meet to discuss the employee's attainment of the established goals (Tr. 3966-69, Davison, 10/19/83). At the conclusion of the period, the supervisor assesses the employee's attainment of the established goals on a form entitled Accountability Summary and Appraisal (AS&A) (See i.e., PA Exh. 50).

200. The AS&A lists each objective established for the period, with a weighting factor of 1-3 assigned to each objective. The form provides a space for the supervisor to rate the employee's attainment of the pre-established objective. The ratings range from 1 to 5,

with 5 being the highest. At the end of the form a space is provided wherein the weighting factor and rating factor of each objective are multiplied together, the resultant values are added together and divided by the total number of weighting points. The value obtained is compared to a chart set forth in the AS&A and a final rating of 1-5 is assigned (see i.e., PA exh. 50). The chart is set forth below:

<u>Performance Levels</u>	<u>Overall Rating</u>
5	4.5 or greater
4	3.5 to 4.4
3	2.5 or 3.4
2	1.5 to 2.4
1	1.4 or less [<u>Id.</u>].

The AS&A describes the final ratings as follows:

<u>Performance Level</u>	<u>Description</u>
5	Very exceptional performance. Accomplishments go far beyond normal expectations. Clearly unique performance.
4	Accomplishments are noticeably above expectations and indicate significant "stretch" in the job.
3	Accomplishments consistently satisfy expectations. Individuals receiving this rating work independently with only a periodic review of results.
2	Accomplishments are minimally acceptable. Some improvement is desired. Additional work experience and/or training may improve the level of performance.
1	Frequently falls short on accomplishments. Immediate improvement is required. The individual has not

grasped the basic requirement of this accountability and shows little or no sign of progress. [Id.]

201. Applicants' job evaluation program utilizing the PPPW and AS&A is entitled the Performance Management Program. The Program was instituted in November 1982. (Tr. 3936, Davison, 10/19/83; Tr. 4583 and 4589, Allum, 10/25/83). Prior to that time Applicants' job evaluation system did not use numbers, but rather the following descriptive terms: marginal, fair, competent, commendable and distinguished (Tr. 4570-73, Davison, 10/25/83; Tr. 4968, Allum, 10/27/83). Applicants' Program applies to exempt employees (such as Mr. Ross) (Tr. 3936, Davison, 10/19/83). The program involves a distribution of performance ratings, such that a minimum of 20 percent of the employees are in the fair or below category, at least 60 percent are in the mid-range and no more than 20 percent are above the mid-range (Tr. 4969, Allum, 10/27/83). In 1982 at least 20 percent of the exempt employees were rated 2 (fair) or below; the target for 1983 was 15 percent (Tr. 3963-64, Grier, 10/19/83).

202. Primary focus at the hearing was placed upon Mr. Ross' 1983 evaluation. The 1983 evaluation consisted of two parts: an interim and a final evaluation.

203. The interim evaluation of Mr. Ross was performed by his supervisor, Mr. Allum, in October 1982 for the period April 1982 until October 1982 (Tr. 3936,

Davison, 10/19/83). As explained in the interim evaluation, such was conducted "because of a fair rating received by Beau on his last annual appraisal which identified a need for further development"^{59/} (PA Exh. 36, p. 1; see also Tr. 3934, Davison, 10/19/83).

204. The interim evaluation reflected the following:

While Beau's performance in the areas of planning and organizing work assignments remains acceptable, his performance in several other areas as a supervisor still demonstrate a clear need for further development. Generally, Beau's understanding of his role as a supervisor and his responsibilities to other organizations (i.e., craft), his employees, and his management needs improvement. Beau's successful performance as a supervisor necessitates his clearly understanding his responsibilities and carrying them out properly. Without improvement in these areas Beau's continued assignment as a supervisor will not be appropriate. [PA Exh. 36, p. 1].

^{59/} Mr. Ross alleged that Mr. Allum agreed that Mr. Ross' 1982 fair rating was in retaliation for raising concerns (Tr. 6777, Ross, 11/10/83). However, Mr. Allum's statements on the record do not support that allegation. To the contrary, in explaining the basis for both the 1982 and 1983 fair ratings, Mr. Allum stated:

His communication had gone down. Either had gone down or were never at an acceptable level in that items that were communicated to him by management were not presented to his employees in the same light that they were presented [to him].

There was a different connotation as to Mr. Ross spoke to his inspectors about what was said from management in that it didn't -- it didn't reflect what was said in a lot of cases. [Tr. 4490, Allum, 10/25/83]

205. Six illustrative areas of improvement were identified in the interim evaluation:

a. When the decision was made to start recertifying welding inspectors in MT and PT at Catawba, Beau asked his supervisor if that meant that the people being recertified were going to be transferred to Cherokee? The answer was no, that we were preparing to better utilize the workforce at Catawba. Beau evidently did not accept this explanation as he took the first opportunity to ask his second line supervisor the same question who gave him the same answer. This was not the proper action for him to take.

b. When clarification was received from QA Technical Services concerning the proper use of R-2As and this information was communicated to Beau, he said that this interpretation showed a lack of support for him and his inspectors. However he did agree that the final product would meet all QA requirements.

c. The communication between Beau, his crew, craft, and Technical Support has gotten better but still needs much improvement. Of particular concern is the communication problems between Beau and Craft supervision. For example, when craft supervision or technical support personnel have questions concerning Beau's inspectors, inspections, or inspection interpretations, which require looking at the item being inspected, he often will send another inspector to look at the item. This is unacceptable as it is his responsibility to interface with these various groups. This responsibility cannot be delegated. This action detracts from his effectiveness as a supervisor and isolates him from the problems. Beau views this approach as being supportive of his crew but in fact is shirking his duty as a supervisor. These actions were demonstrated when craft tried to enlist his help with structural steel on the ramp of Unit 2, tack welds in #2 diesel generator room, and paint in welds of Unit 2 diesel generator. Beau interface with the personnel involved and looked at the welds only after being directed by his supervisor. These are only a few of the numerous times this has happened. Because of this attitude, these people are hesitant to go to Beau with problems.

The communications between Beau and other supervisors in his area is also at a minimum because of his attitude. He is very quick to find reasons why new plans and ideas won't work rather than trying to find ways to make them work.

d. Beau also has a problem in accepting Code requirements as being stringent enough. For example, after having been given a copy of the Code criteria for NF welds and being instructed to have some hanger material inspected by these criteria the inspector listed several items as rejectable that the criteria clearly did not specify. Considerable time and effort had to be spent to properly inspect the material listing Code rejectable items separately from other observed questionable conditions.

e. In carrying out his duties as a supervisor Beau has problems answering the questions of his employees in the proper manner. All supervisors were instructed in June to provide answers to employee questions when they knew the answer. When they did not, to go to the next level of supervision with the question to get the answer and then communicate it to the employee. Recently one of Beau's inspectors had several questions about a NCI. Instead of following the method above which he had been instructed to do, Beau attempted to answer the questions himself which he could not do. Then he referred the inspector to his (Beau's) supervisor. The inspector later stated that he thought Beau had told him that he would probably need to file recourse to get an answer. Beau does not seem to understand his role as a supervisor in answering or getting answers to his employee's questions.

f. Beau has felt that he should not be held accountable for his employees actions in areas of safety, attendance and job performance. This was illustrated by his reluctance to write his Personal Performance Plan Worksheet (PPPW) for the coming year listing objectives in these areas although the other supervisors had no objections to these accountabilities and felt them to be valid. Again this pointed out a basic misunderstanding of his role as a supervisor. However, once the PPPW was written, he has attempted to improve in the areas identi-

fied. Improvement has been made in his crew's attendance and some improvement has been made in his communications with craft and technical support personnel, however, more improvement is needed in this and the other areas listed on his PPPW. [Id., pp. 1-2].

206. Cross-examination on the interim evaluation focused primarily on item e ("answering the questions of his employees in the proper manner") (Tr. 3954-61, Davison, 10/19/83). In explaining the matter, Applicants stated:

Yes. Part of the responsibility of a supervisor is to answer the questions that his employees may have, and may bring to him. And I think this is an observation of in some cases Art felt that Beau would simply attempt to answer those questions, but if an answer did not satisfy the inspector or didn't answer the question that he would simply refer the inspector up to a higher level or indicate, 'Well, I don't know what you need to do to get an answer to that question.'

That is the sense of what is being communicated there. Rather than recognizing that the employee has not gotten the answer, doesn't understand the answer, I need to be sure I understand it so I can communicate to him clearly. [Tr. 3955, Davison, 10/19/83].

207. In countering item e of the interim evaluation, Palmetto Alliance suggested that it was appropriate for Mr. Ross to inform an inspector to file a recourse^{60/} in a

^{60/} Mr. Grier explained Applicants' recourse procedure as follows:

In July 1981, the company implemented a Management Procedure entitle 'Resolution of Technical Matters Involving Differences of Opinion'. The purpose of this procedure is to give due consideration to differing views of employees on technical matters. An employee can direct his concern in writing to
(footnote continued)

situation where Mr. Ross agrees with his inspector and someone up the line disagrees (Tr. 3959, Guild, 10/19/83). Applicants disagreed, stating that it is incumbent upon Mr. Ross to find out the reason why his management took the position it did and convey that information to the inspector, rather than simply informing the inspector that recourse was necessary. (Tr. 3959, Davison, 10/19/83).

208. Palmetto Alliance further attempted to characterize item e of the interim evaluation as follows:

Well, it seems to me to be communicating that Mr. Allum was going to give Mr. Ross a bad evaluation, at least in part, because Mr. Ross won't go along with a technical decision about the validity of an NCI that he doesn't agree with, and instead where he sides with his inspector. [Tr. 3959, Guild, 10/19/83].

(footnote continued from previous page)

his department head, who shall appoint a group of not less than three technically qualified individuals to review the issue. The group shall gather data, review the concerns, and make recommendations leading to a resolution. A written answer will be provided to the questioning employee. If the employee is not satisfied he can take his concern to the Executive Vice President, Engineering and Construction. In July 1982, the Quality Assurance Department implemented a supplementing procedure entitled 'QA Department Quality Recourse Procedure.' The purpose of this procedure is to give employees within Quality Assurance an avenue to express concerns about quality and technical concerns. This procedure enables an employee to take his technical concerns through successive levels of management within the Quality Assurance Department and if not satisfied, allows recourse to the Executive Vice President. [Apps. Exh. 2, Grier, pp. 39-40].

In response Applicants stated:

Absolutely not. Again, what this is referring to is how a supervisor deals with questions that he may get from his employees; the answers that he gives to those, if he knows the answers to them, and if he understands the question and can answer. But if he doesn't feel that he can do that, that he makes an effort to get that answer, and that he understands that answer so he can explain it to the employee.

. . .

Now, clearly, at that point in time, the employee has, if he disagrees with that answer or thinks there is either a technical or non-technical -- he has the right of recourse if in getting the answers he does not feel comfortable or feel like it's technically correct. [Tr. 3959-60, Davison, 10/19/83].^{61/}

209. Mr. Allum informed Mr. Ross of the interim evaluation in January 1983 (Tr. 3938 and 3942, Davison, 10/19/83). Mr. Allum characterized Mr. Ross' job performance during the April-October 1982 period as marginal (Tr. 4569, 4574, Allum, 10/25/83). However, at the time of the January 1983 meeting, Mr. Allum had noticed an improvement in Mr. Ross' job performance and so informed Mr. Ross (Tr. 4575-76, 4578 and 4588, Allum, 10/25/83; see also Tr. 4583, Davison, 10/25/83).

^{61/} Applicants also explained that if a supervisor disagreed with his supervision with regard to the resolution of a matter, the proper course of action was to file a recourse. (Tr. 3958, Davison, 10/19/83).

210. On April 15, 1983, Mr. Ross received his annual evaluation. This evaluation reflected a 2 (fair) rating. (PA Exh. 50).^{62/}

211. Mr. Allum was responsible for Mr. Ross' annual 1983 evaluation (Id.) He was questioned extensively by Palmetto Alliance with regard thereto (see generally Tr. 4486-4606, Allum and Davison, 10/25/83).

212. Mr. Allum listed six categories wherein Mr. Ross was rated 1 or 2 (marginal or fair).^{63/} These categories are:

- a. effective administration of the salary administration program including evaluations.
- b. carry out responsibilities of QA and Construction Department QA Procedures.
- c. resolving technical problems concerning quality.
- d. conduct inspections to insure that procedures are being properly followed.
- e. support of management decisions and communications between Mr. Ross, his crew, and craft and Technical Support personnel.

^{62/} The Board inquired into the relationship between the interim evaluation and the annual evaluation, particularly whether the final evaluation represented an average over a period of a year. Applicants confirmed that the rating was an average, which was somewhat subjective. (Tr. 4560-63, Davison and Allum, 10/25/83).

It should also be noted that the actual rating was 2.2, which is much closer to Competent (2.5) than it is to marginal (1.4) which reflects the improvement since the interim evaluation.

^{63/} Mr. Ross was rated as 3 (competent) in four categories. (PA Exh. 50).

f. interface: proper communications with other groups and departments. [PA Exh. 50].

Each category was discussed during the hearing.

213. With regard to the first category of Mr. Ross' 1983 annual evaluation wherein he was rated 1 or 2 (see ¶212, item a supra), the evaluation states:

Evaluations have improved but attention is needed identifying employee weaknesses. Improvement is needed to bring the evaluations up to the desired level. [PA Exh. 50].

Mr. Allum explained that such rating was premised upon Mr. Ross' need to pay attention to identifying employee weaknesses and strengths; that Mr. Ross did not complete his evaluation forms as he should have, thereby inhibiting management's ability to identify the positive and negative qualities of its personnel. Specifically, Mr. Ross did not include sufficient background information such as attendance and safety record; Mr. Ross did not indicate whether an employee had "communication problems, failure to follow any rules problem." (Tr. 4530-31, Allum, 10/25/83).

214. Mr. Allum stated that Mr. Ross was not singled out with regard to the need for identifying employee weaknesses and strengths; rather, all supervisors who worked for Mr. Allum received a 2 rating on this point. (Tr. 4532 and 4558, Allum, 10/25/83).

215. With regard to the second category of Mr. Ross' 1983 evaluation wherein he was rated 1 or 2 (see ¶212, item b, supra) the evaluation states:

Significant improvements have been made in the identification of items requiring Q-1As and R-2As. Improvement is needed in the writing of the description on items to be identified in reports. [PA Exh. 50].

Mr. Allum stated that Mr. Ross "needs to improve in writing the description" set forth in NCI's or R-2A's. Mr. Allum pointed out that generally it was difficult for the people reviewing the NCI's or R-2A's to ascertain what the problem was. (Tr. 4533-35, Allum, 10/25/83).

216. Mr. Allum stated that he was not singling out Mr. Ross with regard to the need for improvement in describing items on various reports; rather, all supervisors working for Mr. Allum received a 2 rating in this category. (Tr. 4536 and 4558, Allum, 10/25/83).

217. With regard to the third category of Mr. Ross' 1983 evaluation wherein he was rated 1 or 2 (see ¶212, item c, supra) the evaluation states:

Beau is capable of answering most questions concerning quality. Many of the questions he asked are ones that he knows the answers to but apparently wants to get approval before answering the inspectors. He needs to answer this type of question himself. [PA Exh. 50].

Mr. Allum summarized the problem as follows:

Mr. Ross has a lot of technical -- he is technically competent to make decisions.

He is a very intelligent individual. He is able to answer the questions that come before him, but those that he doesn't feel will reflect what his people want to hear are referred to someone else.

. . .

If he thinks that the inspector will not see it the same way he does, I feel that he sends that question on.

He doesn't answer it when he has the opportunity to do it. He has the knowledge and everything at hand to do it, not that his decision or answer is any different than mine. [Tr. 4536-37, Allum, 10/25/83].

218. Mr. Allum stated that Mr. Ross would infer that he agreed with his inspectors on a technical position and that Mr. Allum had overruled him, when in fact Mr. Allum had concurred in recommendations of Mr. Ross. Put another way, Mr. Allum stated that Mr. Ross would agree with him but he wanted the inspectors to think that he agreed with them. (Tr. 4544-46, Allum, 10/25/83).

219. Mr. Ross explained that judgment came into play in welding inspection (Tr. 6990, Ross, 11/11/83). In this regard the record reflects that Mr. Ross was to exercise this judgment and answer those questions he was capable of so answering, rather than simply sending the matter up the supervisory chain (PA Exh. 33; Tr. 3891-92, Grier, 10/25/83). The record also reflects that Mr. Ross was instructed that if he could not answer the question, he was to go get the answer and communicate such to the

employee rather than simply sending the matter up the supervisory chain (PA Exh. 36; Tr. 3955, 3959, Davison, 10/19/83).

220. Contrary to the above, Mr. Ross also stated that if an inspector had a concern and he, Mr. Ross, could not find the answer "in the black and white" of the procedures, he would not disagree with the inspector "because that was his prerogative as an inspector" (Tr. 6960, Ross, 11/11/83). Continuing, Mr. Ross stated:

If he wanted to write a nonconforming item report, I couldn't show him in procedure, once I showed him what I had in procedure and he didn't agree, there was never the first time that I stopped one, no, sir. [Id.]

See also Tr. 6760 (11/11/83) wherein Mr. Ross stated:

If they had a situation which they feel is non-conforming and I know and can show him in the procedure where there is a different way of handling it besides nonconforming it per procedure, then that is the way we go about it. Unless they feel super strong. If they feel this is an outstanding something that needs more attention, then he does have the prerogative of initiating an NCI and kicking it on up.

221. Mr. John Bryant provided further insight into this matter when he stated:

Q. You indicated you liked working with Mr. Ross pretty well. Has he ever overruled any of your inspection findings?

A. Yes, sir.

Q. Would you say this happened often or a little bit or about how many times has this happened? Once?

A. I would say, sir, it's various -- it's a very small percentage of the number of inspections I have made since I been out there. I would say I made a thousand inspections. Maybe once or twice.

Q. So the time you been overruled it's been by people higher than Mr. Ross?

A. Yes, sir.

Q. What did Mr. Ross tell you about that? Was he the one that told you that you had been overruled or did someone else overrule you and convey to you that it had been overruled?

A. Well, normally, I would -- I go to Mr. Ross and get his concurrence on the decision I have made, and then Mr. Ross will send me on to the next line supervisor and I would personally -- you know -- confront him in most cases, and he would tell me right there, you know, hey, I don't agree with you, or, yes, I agree with you, whatever.

Q. Would you be by yourself or would Mr. Ross be with you?

A. In many cases -- I would say in most cases I would be by myself. In a few controversial or what Beau thought would be really controversial cases he would go with me. [Tr. 6155-56, Bryant, 11/4/83].

222. Mr. Ross himself also provided evidence of a situation where he failed to pursue a matter. Specifically, he discussed the situation where Mr. Bryant had written an NCI and both he and Mr. Ross were not satisfied with the resolution. Thereafter Mr. John Bryant prepared a recourse. At that time Mr. Ross discovered that

Well, the NCI, unknown to me, had already gone to the people who it should have gone to. Management's decision had been made that this was a valid resolution, but nobody had told me that. [Tr. 7018, Ross, 11/11/83].

Importantly, Mr. Ross stated, "but nobody had told me that," because he had not sought an answer.

223. Mr. Ross acknowledged that he was instructed by both Mr. Allum and Mr. Davison not to keep concerns in notebooks, rather he should bring them forward. (Tr. 7019 and 7071-72, Ross, 11/11/83). The record is replete with references to the fact that when an employee has a technical concern he should pursue the matter through supervision. See Apps. Exh. 2, Grier, pp. 43-44 wherein Mr. Grier states:

The Welding Inspector's first step is to discuss the matter with his supervisor and explain to his supervisor why he believes that supervision has made an incorrect judgment. The supervisor should then discuss the matter with his supervision and determine if the judgment is correct. The outcome of this discussion is discussed with the inspector. If this means of resolving the issue is not successful the inspector should then use the Quality Assurance Procedure for Quality Recourses. This will allow the disagreement to be put in writing and answers to be developed and documented.

If the matter is not resolved prior to its reaching the Corporate Quality Assurance Manager as outlined in the Recourse procedure, then a review team of at least three qualified individuals will be named by the Corporate Quality Assurance Manager. This team will thoroughly investigate the problem and document the results, which will be discussed with the inspector. If this does not resolve the issue then the inspector can take his concern to the Executive Vice President for final resolution. If this pursuit of technical recourse through the company is not successful the inspector should take the matter to the resident NRC Inspector or call the Regional Office.

See also Apps. Exh. 14, Davison, pp. 31-32; Apps. Exh. 18, Morgan, p. 9; Apps. Exh. 19, Shropshire, pp. 6-7.^{64/} However, contrary to the above, Mr. Ross kept a notebook and recorded concerns of his and his employees therein and did not pursue them up through the supervisory chain. (see, i.e., Apps. Exh. 34, Ross, Attachment A; Tr. 6820, Ross, 11/10/83).

203a. With regard to the fourth category of Mr. Ross' 1983 evaluation wherein he was rated fair or marginal (see ¶212, item d, supra) the evaluation states:

Beau is spending more time in the field with his inspectors. Items of concern have been identified in Beau's area by audit groups concerning the number of random inspections and volt/amp checks being done. This problem can be taken care of by better utilization of his inspectors.

Mr. Allum explained that audit groups had determined that more random inspections should be conducted. Accordingly, Mr. Ross needed to make sure his inspectors conducted more random inspections. Mr. Allum pointed out that Mr. Ross was rated the same as his peers with regard to the need to increase the number of random inspections and volt/amp check inspections. (Tr. 4552-56 and 4559, Allum, 10/25/83). With regard to the fifth category of Mr. Ross' 1983 evaluation wherein he was rated 1 or 2 (see ¶212, item e, supra) the evaluation states:

^{64/} See Apps. Exh. 2, Grier, pp. 37-38 which references the fact that the Company's unwritten recourse procedure was put in writing in 1977.

Beau's performance in the first seven months of this evaluation period was less than satisfactory. During that period he showed lack of support of management decisions. This was illustrated by his failure to accept the explanation given to him on the recertification of welding inspectors in MT and PT and his dissatisfaction expressed concerning the interpretation given by QA Technical Services concerning the proper use of R-2As and Q-1As. Communications between Beau, his crew, and craft and Technical Support personnel was improved over the last annual evaluation but is in need of much improvement. This was caused in part by his using another inspector to investigate problems or concerns of craft rather than doing it himself. [PA Exh. 50].

224. With regard to Mr. Ross' lack of support of management decisions, Mr. Allum stated "items that were communicated to him by management were not presented to his employees in the same light that they were presented to him" (Tr. 4490, Allum, 10/25/83; see also Tr. 4490-93, Allum, 10/25/83).^{65/} As an example Mr. Allum referred to transfer policies and one specific case wherein Mr. Feemster, a welding inspector, not supervised by Mr. Ross, requested a transfer out of welding inspection (Tr. 4493-96, Allum, 10/25/83). This request was approved by management because Mr. Feemster's supervisor said he could

65/ Mr. Allum stated:

When items were discussed such as transfer policies, how those should be handled, how transfer requests should be handled, the word was not communicated back to the people as it was presented, or how it went out to the other groups who were members of the same meeting, who heard the same words. [Tr. 4493, Allum, 10/25/83].

afford to let him go.^{66/} However, when looking at all areas of welding inspection, the company found it had a shortage in Mr. Ross' area and thus assigned Mr. Feemster to Mr. Ross' crew. Thereafter, Mr. Rockholt of Mr. Ross' crew sought a transfer. Mr. Allum went to Mr. Ross and said "do you still want to let this individual go out of our area, go to operations?" (Tr. 4494-95, Allum, 10/25/83). Significantly, Mr. Ross said he needed Mr. Rockholt; therefore Mr. Rockholt's transfer was not approved. However, Mr. Ross told Mr. Rockholt that we [supervision] had approved transfer request of another crew, but they turned it down in Ross' crew. That was totally incorrect.

Mr. Ross was aware that was incorrect. He knew all the circumstances. However, the welding inspector involved in the second transfer felt that he was being singled out because he didn't transfer his request.

That could very well, very easily have been handled by Mr. Ross properly, explaining his actions. But that didn't happen. [Tr. 4495, Allum, 10/25/83].

Mr. Rockholt confirms this point. See PA Exh. 87 (letter) wherein he states:

Eddie Feemster turned in a transfer request. It was approved by Stanley and Art. I turned in an identical transfer request and it was approved by Beau but rejected by Art . . . Eddie Feemster did not have any concerns . . .

See also Tr. 6247-49 (Rockholt 11/8/83).

66/ The record reflects that it is company policy to ask a supervisor if he could afford to allow a person to go. (Tr. 4494, Allum, 10/25/83).

225. Mr. Allum made reference to another example of Mr. Ross' lack of support of management decisions, referring to the Company's decision to train and certify welding inspectors in non-destructive examination (NDE). Mr. Ross asked "does this mean that we are going to go back to Cherokee and go back to work there or is Cherokee going to start up again?" (Tr. 4498, Allum, 10/25/83). Mr. Allum informed Mr. Ross that Cherokee was not going to start up again, rather, the company sought "to better train our people and give them more in-depth knowledge of the inspection that we are going on" (Id.). However, Mr. Ross communicated to his people that the reason that former Cherokee inspectors were being retrained "was to get them back to Cherokee" (Tr. 4499, Allum, 10/25/83). Mr. Allum stated that Mr. Ross conceded he had acted improperly with regard to this matter (Id.).

226. Mr. Allum stated that there were other examples involving Mr. Ross' lack of support for management decisions (Tr. 4500-01, Allum, 10/25/83), such as the "dissatisfaction expressed concerning the interpretation given by QA technical services concerning the proper use of R2A's and Q1A's" (Tr. 4514, Allum, 10/25/83). To explain, when the procedures were changed to give inspectors the use of R2A in a welding inspection area, Mr. Ross was opposed and said "that that was showing nonsupport for him and the welding inspectors not having

the NCI" (Id.). Mr. Ross wanted to use NCI's for all items found during an inspection and stated that use of R2A's would take away some of the authority of the welding inspectors (Tr. 4516-17, Allum, 10/25/83). Mr. Allum explained the context in which Mr. Ross expressed his dissatisfaction, i.e., shouting at Mr. Allum in front of several engineers in Mr. Allum's office. Mr. Allum stated that Mr. Ross was free to express his opinion as to R2A and NCI at the proper time and place; it was the manner, the time and place that Mr. Allum felt was a demonstration of a lack of judgment which reflected adversely on his evaluation. (Tr. 4515-20, Allum, 10/25/83).

227. With regard to the sixth category of Mr. Ross' 1983 evaluation wherein he was rated 1 or 2 (see ¶212, item f, supra) the evaluation states:

Improvements have been made in communicating with craft, however, there is room for a lot of improvement. This can be done by Beau looking into problem areas himself rather than having one of his inspectors trying to determine what the problems are.

Mr. Allum stated that Mr. Ross needed to improve communication with craft and technical support personnel (Tr. 4521, Allum, 10/25/83). Mr. Allum stated that Mr. Ross would use another inspector to investigate problems and concerns of craft, rather than doing it himself (Tr. 4521-27, Allum, 10/25/83). Mr. Allum pointed out that in order to solve problems it was important that inspection

and craft/technical support have face-to-face communication. This contact was necessary in order to "find out if there is a problem, if craft has a problem or if inspection has a problem, or what it is, and come to a mutual feeling to identify the problem and take care of it." (Tr. 4524, Allum, 10/25/83).

228. Mr. Allum stated that he went over the evaluation with Mr. Ross and that Mr. Ross appeared to accept the points and that he agreed with them. However, thereafter Mr. Ross apparently changed his mind and filed a recourse. (Tr. 4545-50, Allum, 10/25/83; Apps. Exh. 34, Ross, Attachment B).

229. On April 18, 1983, in accordance with Applicants' procedures, Mr. Ross instituted a recourse of his 1983 evaluation. Mr. J.W. Willis, Inspection Superintendent (Mr. Allum's superior) investigated the matter. (Tr. 3838-39, Davison, 10/19/83). On April 22, 1983, he responded to Mr. Ross as follows:

After discussions with you and A.E. Allum which were held separately I do not feel that you have been discriminated or retaliated against based on your performance review for this year or last year. The Performance Management Program requires a distribution of Performance Evaluations such that there will be some people rated below average, some average and some above average. This distribution may occur naturally or it may occur by a relative comparison of performance against a performance profile. There are several people at our location whose performance was evaluated and determined to be below average because expectations were not met. The accountability summary and appraisal form (AS&A) identifies these areas with a brief explanation

of the rating. There are some areas in which other people were given the same rating you received for basically the same reason. Specific examples given are not necessarily intended to be all inclusive but indicate areas where additional improvement is needed. Your appraisal form also indicates your performance has improved during this past review period. [Apps. Exh. 34, Ross, Attachment B].

230. Palmetto Alliance sought to imply that Mr. Ross' recourse was prejudiced because Mr. Davison and Mr. Grier were aware of, and participated in, Mr. Ross' 1983 annual evaluation and initial recourse (see i.e., Tr. 3862-77, Grier and Davison, 10/19/83). Mr. Davison explained that he would routinely see and sign or initial employee evaluations, even though he may subsequently be asked to hear the employees' recourse disputes (Tr. 4921, Davison, 10/27/83). Mr. Davison went on to state that his knowledge of Mr. Ross' evaluation did not impair his ability to carry out his responsibilities with respect to Mr. Ross' recourse (Tr. 5015-16, Davison, 10/27/83). Specifically, Mr. Davison stated:

I made every effort when I received Mr. Ross' recourse to look at that without any prejudice.

Of course, I had seen the evaluation. I had understood the evaluation, and I made every effort to make sure that my previous involvement with that evaluation did not prejudice my understanding in listening to his recourse and making any decision about that. [Tr. 5016, Davison, 10/27/83].

Mr. Grier responded in a similar fashion. (Tr. 3862-77, Grier, 10/19/83; Tr. 4212, Grier, 10/20/83). Specifically, Mr. Grier stated:

As I say, it's a matter of course that I am informed of the recourses that are going on in the department. I don't involve myself in the investigation of those recourses. If the recourse comes to me, then I have a detailed investigation done so I could make my independent decisions in regard to the matter. [Tr. 4214, Grier, 10/20/83].

Importantly, Mr. Grier stated that:

It's -- it's not standard procedure for me to discuss the details of the investigation that that individual is conducting, and I don't discuss the details of that investigation. [Tr. 4233, Grier, 10/20/83].

Thereafter, on April 27, 1983, Mr. Grier met with Mr. Ross regarding his concerns over his 1983 evaluation. Mr. Grier discussed several items with Mr. Ross:

First, I discussed my idea of his responsibility as a supervisor. I explained that he must represent the company to his employees and at the same time he must hold his employees' interest in mind. We discussed the balance a supervisor must have on these two matters. We also discussed the fact that a large part of a supervisor's task will be answering employees' questions and the fact that a supervisor must determine when he can answer the questions and when questions must be referred to higher supervision for response. I suggested that Beau had not been answering as many questions as he really had the training and judgment to answer.

The second area of discussion dealt with my philosophy in regards to the QA Program, workmanship, and following procedures. We discussed the fact that many questions and concerns raised by inspectors and others do not deal with the issue as to whether or not something will meet the requirements, but rather deal with degrees of judgment. I explained that one of his tasks as a supervisor is to use his judgment to answer employees' questions in such a way that we will not exceed standards to a great degree. I used some diagrams to explain my point on this matter. There seemed to be a good appreciation of this issue in Beau's mind.

A third topic that I covered was the exempt salary program and a performance distribution required by that program. I also discussed with Beau and Art my expectations in regards to administration of the Performance Management Program. I told them that I expected that in course of their periodic reviews, notes would be written on their performance worksheets which would aid in their understanding of expectations on objectives. I also explained to both of them that I expected their communications in regards to performance to improve. [PA Exh. 33].

231. Discussion at the hearing focused on Mr. Grier's philosophy in regards to the QA program, workmanship, and following procedures. Particular emphasis was placed on a diagram (PA Exh. 34) used by Mr. Grier as a tool for explaining this philosophy to Mr. Ross. (Tr. 3887-96, Grier, 10/19/83). Mr. Grier explained, as follows:

The quality assurance procedures aren't written in a way that attempt to make a black and white case or allow an inspector to make a black and white decision in regards to the acceptability of some construction features. In fact, that's impossible. There are so many situations that come up in the course of an inspector doing an inspection, be it welding or pipe hanger inspection or an electrical inspection or some type that are gray areas. The other aspect of the quality assurance procedures are that as -- as the design specifications are proved may not be precise in a certain standard.

The QA procedure attempts to be conservative in that regard. All that means -- all that results in quality assurance procedures that in fact and in practice are more conservative than the codes and design specifications that they are based on.

The diagram that I used was just a line diagram that attempted to place some linear relationship on these concepts.

. . .

What I explained to Mr. Ross and discussed with him, using the linear diagram, was the fact that the -- the design specification standard for some attribute of the construction may be displayed at a certain point on this line. There is conservatism in the design requirement, so somewhere on this diagram is a point where you could say that the -- that the design justification might be made in regard to the acceptability of some feature. [Tr. 3889-90, Grier, 10/19/83].

Mr. Grier explained that the purpose of such discussion was to make Mr. Ross aware in a general sense, of the reasoning behind management decisions thus enabling him to support management decisions. Another reason was to inform Mr. Ross of the areas wherein an inspector is to exercise judgment and that with regard to questions arising in such areas he should exercise his judgment more. (Tr. 3891-92, Grier, 10/25/83). Specifically, Mr.

Grier stated:

To discuss with Mr. Ross the fact that a lot of the issues that were raised by inspectors and were the subject of discussion, questions, or disagreements between the inspectors and supervision and management fell in this area between the design specification requirements and the QA procedure requirements and that one of the -- one of the tasks of management and supervision and quality assurance was to understand this aspect of the QA procedures and the design requirements, and therefore to gain an appreciation of why in many instances nonconforming reports are justified by design engineering with no -- no rework required, which in one sense to an inspector or any quality assurance employee could be said to violate the QA procedures.

. . .

Somewhere around this QA procedure line. That goes to the aspect of the fact that QA procedures cannot be used by an inspector who his only task is making black and white decisions. He must make some judgment based on his experience and based on the training he receives and the intent of the procedure as well as the words of the procedure. [Id.].

232. Palmetto Alliance sought to imply that Mr. Ross was forced to attend the April 27, 1983 meeting with Mr. Grier, and was coached by Mr. Grier as to his testimony in this proceeding (Tr. 3881, 3884-86, Grier, 10/19/83). Mr. Grier stated that Mr. Ross "was free not to meet with me" (Tr. 3881, Grier, 10/19/83) and that he "didn't have any intent to advise him on any testimony" (Tr. 3884, Grier, 10/19/83; see also 4206-07, Grier, 10/20/83). Rather, Mr. Grier explained that

The purpose of my discussion there was an exchange of information between Mr. Ross and myself, particularly in terms of clearly defining the terms such as those that I mentioned in the course of conversations. [Tr. 3884, Grier, 10/19/83].

Mr. Ross was also examined on this point. He stated that Mr. Grier made no attempt to influence his testimony whatsoever (Tr. 7049-50, Ross, 11/11/83). Indeed, Mr. Ross stated that he felt his meeting with Mr. Grier was helpful (Tr. 6798-99, Ross, 11/10/83).

233. Thereafter, on May 12, 1983, Mr. Ross pursued his recourse to Mr. Davison (Tr. 3863, Grier, 10/19/83; Tr. 4592, Davison, 10/25/83; Apps. Exh. 34, Ross, Appendix

B). Mr. Davison investigated the matter (Tr. 3845, Davison, 10/19/83). The investigative steps taken by Mr. Davison are set forth in his report of May 26, 1983 (PA Exh. 35). These steps include:

- meeting with Mr. Ross to go over relevant job evaluation documents,
- ascertaining from Mr. Ross the basis of the recourse and the basis of the feelings expressed in the recourse,
- review of personnel files of Mr. Ross' supervisor peers,
- meeting with Mr. Allum to go over relevant job evaluation documents.
- meeting with Mr. Ross and Mr. Allum to discuss points of disagreement.

On the basis of his investigation Mr. Davison concluded that there had not been any discrimination by Art Allum in his evaluation of Mr. Ross (Id.; Tr. 3846, Davison, 1/19/83). Mr. Davison's findings in this regard were:

1. That Beau's feelings of being discriminated against were based on the outcome of his evaluation and other actions he had observed. These actions observed by Beau (G.E. Ross) were viewed from Beau's perspective; and, resulted in conclusions on his part which were not legitimate because he did not know of other factors or actions that resulted in the observed actions.

There was no discrimination against Beau substantiated by the other actions observed by Beau.

2. That communications from Art to Beau regarding Beau's performance were informal (i.e., verbal) and not clearly understood by Beau.

3. That communications from Beau to Art were lacking in that Beau did not follow proper procedures (informal or formal recourse) in getting answers to his concerns where he had doubted Art's decision or directions.

4. That Art's evaluation of Beau's performance was not discriminatory because his evaluations of other persons reporting to him were done in the same manner and with many of the same points as the evaluation of Beau.

5. That Art's evaluation of Beau's performance was basically accurate.

6. That a large contributor to Beau's feelings of being treated unfairly resulted from the lack of specific clear standards for Beau's performance and the lack of formal review sessions to go over Beau's performance.

7. That Beau tends to evaluate himself against his own internalized standards and has difficulty accepting any other evaluation. He also tends to evaluate himself by comparing others in his position against these internalized standards. This makes meaningful communication sometimes very difficult with him.

8. That Art's evaluations of other supervisors who also had concerns expressed in the same manner as Beau did not support or substantiate discrimination by Art toward them. [PA Exh. 35].

Mr. Davison's findings were not challenged.

234. During the hearing both Mr. Grier and Mr. Davison stated that Mr. Ross' 1983 evaluation was not an attempt to harass Mr. Ross, nor was it the result of his expression of concerns to the various task forces investigating the welding inspectors' concerns. (Tr. 4328, Grier, 10/21/83; Tr. 4330, Davison, 10/21/83).

[2] Transfer

Mr. Ross alleges that

I have tried to get under new management by applying for transfer but have not been allowed to transfer. I have seen some positions filled that I would like to have had, but no luck. I feel that I am going to be kept on construction and not transferred to nuclear production until there is no place to go and then I will probably be laid off. I feel this is because of my being vocal on no support and this will be my punishment for being too concerned. [Apps. Exh. 34, Ross, p. 9].^{67/}

235. Applicants explained that there have been transfers from construction QA into operations QA, but that such were not common (Tr. 3849, Davison, 10/19/83). Applicants further explained that transfer was dependent upon the an assessment of need (Tr. 3849-50, Davison, 10/19/83) availability (Tr. 3856, Grier, 10/19/83) and seniority (Tr. 3852, Grier, 10/19/83). However, it was explained that while Mr. Ross was a senior employee (Tr. 3853-54, Grier and Davison, 10/19/83), seniority, while a factor, does not apply to exempt employees such as Mr. Ross (Tr. 3855, Grier, 10/19/83). With regard to the other factors, Mr. Grier stated that Mr. Ross

^{67/} Mr. Ross also references a lack of promotional opportunity as another form of alleged harassment (Apps. Exh. 34, Ross, p. 8). As stated by Mr. Grier:

Promotions in, and transfer out, of the welding inspecting organization have not been very frequent. With respect to promotions, this is because many of the inspectors have been with us for a long time and thus have reached the top of their pay classification. Newer members of the organization progress up the pay scale at a rate similar to inspectors in other areas of the QA Department. Due to Duke's present construction plans, promotional opportunities are very limited. [Apps. Exh. 2, Grier, p. 57].

is a valuable part of the organization within the project's QA organization right now. He is needed in that position and there is no position open for him to fill within the operations division at this time. [Tr. 3856, Grier, 10/19/83].

Applicants' position stems from the fact that present work level essentially precludes making inspectors available for transfer (Apps. Exh. 2, Grier, p. 57; Tr. 3918, Grier, 10/19/83). Mr. Grier explained the process used to fill positions in Operations QA as they come open as follows:

As we need to staff the Operations Division at Catawba we staff that with qualified individuals who are available from other locations. In the case of supervisory positions, we look at the candidates that are qualified and also, their availability. [Tr. 4327, Grier, 10/21/83].

Mr. Grier explained that about 25 positions have been filled in Operations QA at Catawba (Id.). When asked if any of these positions included a welding inspector supervisor position, Mr. Grier responded:

No. There have been positions filled of first line supervisors over inspectors. The first position was filled with an individual with an electrical background and that corresponds to the type of work that the Nuclear Production Department does in the early phases of their startup activities at the plant. That primarily is associated with instrument and electrical system calibrations and check-outs.

We have staffed one other first line supervisor position, that with a supervisor with a mechanical background. That supervisor became available as we closed out our projects work at McGuire, and the mechanical area is one that is picking up an activity now in the Projects Division area. [Id.].

Lastly, Mr. Grier stated that

I don't agree with his opinion that what will happen to him is that at some point in time his job will run out and he will be laid off.

• • •

I don't agree that that is -- that is certainly not what I intend to happen. [Tr. 3855, Grier, 10/19/83].

236. On the basis of Mr. Ross' evaluation and Mr. Ross' statements regarding transfer and promotion opportunities, Palmetto Alliance suggests that Applicants are "building a case" against Mr. Ross.^{68/} Specifically,

^{68/} As further evidence that Applicants are "building a case," Palmetto Alliance also relies upon a recommendation of Applicants which stated that Mr. Ross was a block to communictions and should be transferred (PA Exh. 12). The record reflects that Mr. Ross was not singled out, rather, the same observation was made about Mr. Ross' supervisor, Mr. Baldwin (Id.). Further, Mr. Wells explained that the recommendation was simply a discussion tool (Tr. 2754, 2793, 2796, Wells, 10/12/83) to be used in determining what to do with two people who had a communication problem (Tr. 2757, Wells, 10/12/83).

With regard to the suggested transfer, Mr. Wells stated that such should not be viewed as punitive (Tr. 2757, 2796, Wells, 10/12/83). For example, Mr. Wells explained that the suggested transfer of Mr. Ross to Applicants' Oconee Nuclear Station, an assignment which was considered by many employees to be a "prime spot" (Tr. 2757, Wells, 10/12/83)

...didn't involve getting rid of him. Certainly a welding inspector at an operating nuclear plant such as Oconee was at the time is an important job, and you don't get rid of somebody by putting them into an important job such as welding inspector at an operating nuclear plant, or in QA technical services, or for that matter, as a welder.

If you want to get rid of somebody, there's
(footnote continued)

Palmetto Alliance states:

...Duke is getting ready to hang him out to dry and give him bad evaluations over a period of time. Either get him out of his supervisory job where he is causing problems, or let him get to the point where there is no more QC going on, because you are not constructing anything anymore, and then he will be just laid off, and he says that. [Tr. 4586, Guild, 10/25/83].

Mr. Davison responded, stating:

Certainly it's not a file to build against Beau Ross. We indicate on there what the evaluation is of his performance, and indicate both the positive and negative, and certainly there is no intent to build a file against Mr. Ross by that document. [Tr. 4588, Davison, 10/25/83].

(footnote continued from previous page)

procedures, if there's just cause to do that. We certainly didn't feel that there was any cause to get rid of Mr. Ross. [Tr. 2795, Wells, 10/12/83].

In any event, Mr. Ross was not transferred; rather, Mr. Baldwin was reassigned and assumed the position of technical supervisor over radiography and non-destructive examination. Mr. Baldwin was replaced by Mr. Allum. (Tr. 3835, Davison, 10/19/83).

Palmetto Alliance argues that the fact Mr. Baldwin was transferred and not Mr. Ross is evidence that Mr. Ross was not the communications problem. However, as Mr. Davison explained, the communications problem seemed to involve both parties. (Tr. 4480, Davison, 10/25/83).

The record reflects that Mr. Allum was subsequently transferred. Again, Palmetto Alliance suggests that such transfer is evidence that Mr. Ross does not have a communications problem. However, the record reflects that Mr. Allum's transfer was totally unrelated to matters which could serve as evidence of a communications problem, i.e., the Ross evaluation and the Ross recourse. (Tr. 3857-59, Grier, 10/19/83; Tr. 4481-82, 4598, Davison, 10/25/83).

Mr. Allum noted that there had been improvement in Mr. Ross' performance (Id.)^{69/} and that there was no intention to relieve him of his supervisory role, despite previous indications to the contrary (Tr. 4575-76, Davison, 10/25/83). Indeed Mr. Allum stated that Mr. Ross' performance

had improved significantly so that it [removal from supervisory position] was not a question anymore. And that is as stated in his performance appraisal. [Tr. 4576, Allum, 10/25/83].

See also Tr. 3963 (10/25/83) where Mr. Davison states:

I think at this point in time there's no reason for me to believe his continued assignment as supervisor is not appropriate.

In addition, Mr. Grier, as previously noted, stated that he did not intend for the scenario set forth by Palmetto Alliance to happen (Tr. 3855, Grier, 10/19/83).

237. The record also reflects several other factors which have a bearing on this allegation. First, the 2 rating does not connote that Mr. Ross' performance is unsatisfactory; rather, it indicates that there are some areas that need improvement. (Tr. 3963, Grier, 10/19/83).

^{69/} Mr. Grier stated that his impression of Mr. Ross' performance now was that it was competent. Specifically, Mr. Grier stated:

I have no reason to believe that the improvement that had been noted by Mr. Allum in that timeframe has not continued. As a matter of fact, I believe it has, and I believe his performance, from what I know at this point in time, would certainly be probably in the competent level. [Tr. 3965, Grier, 10/19/83].

238. Second, Mr. Ross' job evaluation has not diminished his stature in the work place where he is thought of highly by his crew and peers. (see i.e., Tr. 6028, Bryant, 11/4/83).

238A. Third, Mr. Ross stated that the 18-20 people who had worked for him were outspoken; that there was a lot of unrest stemming from the pay reclassification; and that the majority of the welding inspector concerns came from his crew. (Tr. 7056-57, Ross, 11/11/83).

239. Fourth, the two other welding inspector supervisors, Mr. Deaton and Mr. Ledford, received a 3 rating in 1983 (Tr. 4953, Allum, 10/25/83).^{70/} However, Mr. Deaton, like Mr. Ross, had raised concerns (Apps. Exh. 28, Attachment).

240. Fifth, 14 welding inspectors and supervisors testified in this proceeding; 19 others offered prefiled testimony. All but 9 raised concerns. However, none of the welding inspectors or supervisors, with the exception of Mr. Ross, complained about his job evaluation or suggested that such was adversely affected by his having raised concerns.

^{70/} Mr. Sifford and Mr. Harris are also welding inspector supervisors at Catawba, however they did not begin working in that capacity until June 1983 and November 1982 respectively. (Tr. 9121, Sifford, 12/1/83).

241. Sixth, Mr. Ross stated that his job evaluation may affect his crew with respect to their willingness to raise concerns; that they might not "fight daily for the quality assurance program at Catawba" (Tr. 6821-22, Ross 11/10/83). The record reflects that each member of Mr. Ross' crew who testified stated that despite any problems he might be confronted with he continued to do his job, including raising concerns, such that each and every one could state that the plant was built safely. (see i.e., Tr. 6026-35, Bryant, 11/4/83). Indeed, Mr. Ross himself stated that despite whatever harassment inspectors may have felt, they "did not compromise on their inspections" (Tr. 6965, Ross, 11/11/83). In this regard, Mr. Rockholt stated that "inspector morale was and is low." He further stated that Beau Ross had been given a bad evaluation for supporting his inspectors in their concerns. This he cited as an example of harassment (Apps. Exh. 31, Rockholt, pp. 7-8). When cross-examined about his low morale, Rockholt stated that it affected how he felt about his job, but not how he did his job. When asked about the effect of this low morale on others, he stated that it did not effect how carefully they did their jobs. (Tr. 6314-16, Rockholt 11/8/83). Thus, the low morale of which the Ross evaluation may have been a contributing factor had no impact on the quality of the inspectors' work.

242. Seventh, Mr. Ross stated that the number of his concerns was a very small number when compared to the number of inspections and actions that occurred at Catawba (Tr. 6971, Ross, 11/11/83). Mr. Ross stated that despite the harassment he felt, and his inability to work with his supervision, he continued to raise concerns and to document such (Tr. 6819-20, Ross, 11/11/83). He also stated that conditions had improved; that doors of communication are now open to the inspectors. (Tr. 7047-49, Ross, 11/11/83). On this point, he also stated that the QA program was functioning properly at the time, in the sense of assuring safety (Tr. 6971, Ross, 11/11/83). He stated that all of his technical concerns had been satisfactorily resolved^{71/} (Tr. 6977-78, Ross, 11/11/83) and that the plant was safely built (Tr. 7003-04, Ross, 11/11/83).

243. In an attempt to summarize the facts relative to Mr. Ross' allegation, Palmetto Alliance asked the following question:

All right, Now, let me see if I can put this to you. We've come a big circle from December of '81. There has been a lot of reshuffling. There has been some significant changes in quality assurance management at the very top. Mr. Wells has been replaced. There has been a shift in the supervision over welding inspectors now several times. In the face of all of the documentation that Mr. Beau Ross has come

^{71/} Mr. Ross had at one time indicated that he had a concern with respect to one remaining item, however, that concern has since been resolved to his satisfaction. (Tr. 7049, Ross 11/11/83).

forward with about first his technical concerns, his concerns about the QA program and work relationships. and his concerns about retaliation against him, he appears to be the survivor in it all. Mr. Beau Ross is still there. Now, what I want to understand is your opinion about this first, Mr. Davison. Why is Beau Ross still hanging in there? Why is he still there in the face of all of his explicit, expressed concerns about discrimination and pressure and, sir, if you know, does his personal situation have anything to do with the fact that he has no choice but to hang in there at Duke Power Company? Can you tell me that, sir? [Tr. 4599-4600, Guild, 10/25/83].

In response, Applicants stated:

That was a very long question, sir. I disagree with your characterization that Mr. Ross is the survivor. I don't think that is accurate.

Secondly, why is Mr. Ross still there? Mr. Ross is still there because he has performed his job in a manner that does not indicate that he needs to be replaced for any reason performancewise. There was a period of time where that was a question, that period of time is now [past]. He is a competent individual. For the most part he performs his job very well. We have to evaluate people's performance on a relative basis. He has some areas of weakness. Other supervisors have areas of weakness. That is not a reason for him not being there, and I think the third part of your question is, does Mr. Ross -- Mr. Ross have any other choice? Maybe that is the reason why he is still there. And I certainly feel that a man -- a man with Mr. Ross' background would have a choice of leaving Duke if he so desired. I don't see anything that would prevent him from doing that. [Tr. 4600-01, Davison, 10/25/83].

244. Based on the above facts the Board concludes that the harassment alleged by Mr. Ross to have occurred does not cause us to find that systematic deficiencies or company pressure to approve faulty workmanship have existed so as to question the safety of the plant.

(ii) Reep-Jones Incident

245. This incident occurred on March 1, 1983, when welding inspector Phillip M. Reep (Reep) went to the in-core instrumentation pit at 12:40 p.m. to visually inspect eighteen Class A fillet wells. (Tr. 8638-40, Reep 11/30/83) The in-core instrumentation pit is a remote area in the reactor building below the reactor pressure vessel and is accessible only by ladder. (Id.) Reep descended the ladder and walked to one end of the pit where a steel plate had been erected to shield radiographers during x-ray work. (Tr. 8660, Reep 11/30/83)

246. Behind this shield Reep observed Construction Department welder G. R. Jones (Jones) lying on the floor on his side with a mat under him. (Tr. 8662, Reep 11/30/83) Reep presumed Jones was asleep. (Id.) Reep then walked to the other end of the area where he saw Jones' welding pouch and filler material (welding rods) hanging from a pipe in the area Reep was to inspect and approximately 35 to 40 feet away from Jones. (Tr. 8664-66, 8694, Reep 11/30/83)

247. Quality Assurance Procedure H-3 (QAP H-3) sets out the requirements for control of filler material. (Tr. 8640, Reep 11/30/83) A welder secures a number and type of welding rods from the rod issue station based upon the specific weld joint on which he is working. He is issued

only the estimated number needed for the job and any left over are turned in at the close of the work day with careful records being kept of these transactions. (Tr. 8642-43, Reep 11/30/83) The intent of this welding rod control is to assure that the correct rod is used with the procedure for making the weld. (Tr. 5620, Dick 11/2/83) By Reep's account, upon discovery of a rod pack with "uncontrolled" filler material in it, he was to take the rods and issue a nonconforming item report (NCI). (Tr. 8644, Reep 11/30/83) Reep's understanding of the term "control" was "in the welder's possession at all times." (Tr. 8648, Reep 11/30/83)

248. Upon seeing Jones' welding rods, Reep reached into Jones' pouch, took the filler material out and asked pipe fitter Steve Vincent standing nearby to go to the inspection station and ask Reep's acting lead man, Harold Eubanks, to come to the pit. (Tr. 8666. Reep 11/30/83) Eubanks came and observed the uncontrolled welding rods. (Tr. 8667, Reep 11/30/83) Eubanks then left and Reep started the inspections that he had come to the pit to perform. (Tr. 8674, Reep 11/30/83) As Reep was doing so, one of the pipe fitters aroused Jones and told him that Reep had taken his filler material. (Tr. 8675, Reep 11/30/83) Jones then approached Reep, removed the filler

material from Reep's pocket and placed it back in his rod pouch. Thereafter, words were exchanged. (Tr. 8676, Reep 11/30/83)

249. Reep finished inspecting the first nine welds and turned to go to the other end of the pit where Jones had been reclining to inspect the other welds. As he did so, Reep reached back in and took Jones' rods from his pouch which was still hanging where Reep had first observed it. At this time Jones was seated beside his pouch some six to seven feet away. (Tr. 8677-78, Reep 11/30/83) Reep performed the nine remaining visual inspections and turned to go up the ladder to leave the pit. Jones then came up beside him and took the filler material out of Reep's hand. Words were again exchanged and Reep left the pit. (Tr. 8679, Reep 11/30/83)

250. Later, on the same day, Reep reported the incident to his supervisor and initiated an NCI regarding the uncontrolled filler material. (Tr. 8680, Reep 11/30/83) Also, on the same day Reep filed a formal harassment charge against Jones on the grounds that Jones had verbally harassed him and threatened him while he was performing his job. (Tr. 8684, Reep 11/30/83) The Quality Assurance and Construction Departments through their Employee Relations sections investigated Reep's

harassment charge. Construction Department Project Manager John C. Rogers discussed the charge with Quality Assurance personnel. (Tr. 5246-50, Dick 11/1/83)

251. The final resolution of the NCI was that the filler material in question was returned to the rod issue station and welder Jones received a Class A^{72/} violation, i.e. a written reprimand for leaving welding rods uncontrolled. (Tr. 8682, 8704, Reep 11/30/83) In addition, Reep's harassment charge was investigated over a period of time by Employee Relations personnel of both the Construction and Quality Assurance Departments with the final conclusion, agreed upon by both departments, being that Jones' conduct toward inspector Reep did not constitute a violation of Duke's harassment policy. (Tr. 8693, 8709, Reep 11/30/83) Jones received stern counseling from his supervisor on how to conduct himself in a more professional manner and what the consequences of any further similar behavior would be. (Tr. 8705, Reep 11/30/83; Tr. 5287-88, Dick 11/1/83)

252. Also, Quality Assurance Employee Relations personnel met with Reep after the investigation of his harassment charge was completed. (Tr. 8708, Reep 11/30/83) One of the conclusions reached in the harassment charge investigation was that while Jones was

^{72/} Three Class A violations within 12 months could result in termination of employment. (Tr. 5289, Dick 11/1/83)

undeniably at fault, Reep could have avoided the confrontation with Jones and had the opportunity to do so, i.e. Reep did not have to force the issue of possession of the rods since he already had a witness (Eubanks) that the rods were not under Jones' control. (Tr. 5268-69, Dick 11/1/83; PA Exh. 84, C. N. Alexander, pp. 68-84) Both Reep and Jones agreed with the final actions taken by their respective departments. (Tr. 5287-88, Dick 11/1/83; Tr. 5591, Beam 11/2/83) NRC inspector Kim Van Doorn concurred that Duke responded appropriately and took corrective action regarding the Reep-Jones incident. (Tr. 9743-46, Van Doorn 12/5/83)

253. This Board does not feel it need decide personnel matters such as this. However, after reviewing the testimony of all the witnesses regarding this incident, the Board finds that, while unfortunate, it was inconsequential and merely indicative of the natural conflict which sometimes exists between inspectors and persons having their work inspected and occasionally surfaces in a busy workplace. The Board also concludes that appropriate officials thoroughly investigated and took corrective action regarding this incident. Contrary to Intervenors' assertion, there is no evidence in the record to support a finding that Duke management's investigation and handling of this incident permitted,

invited or encouraged further activity of a similar nature involving the Construction and Quality Assurance departments.

254. The Board further finds that, in respect to the matter before it, neither the quality of construction nor the safety of the Catawba plant was in any way affected by this incident. Nor does this incident indicate that anything was amiss about the inspection of construction work at the plant. Inspector Reep testified that Jones' conduct did not interfere with or keep him from fully inspecting all eighteen welds in the in-core instrumentation pit. (Tr. 8685, Reep 11/30/83) The "uncontrolled" welding rods in question were the correct type of filler material for the specific weld joints in the in-core instrumentation pit. (Tr. 8693, Reep 11/30/83) There is no evidence that filler material was ever improperly used in welds in the instrumentation pit or, for that matter, at any time or any place at Catawba (Tr. 8694, Reep 11/30/83)

255. When the Board questioned Duke's Vice President, Construction, R. L. Dick, regarding the safety significance of the Reep-Jones incident, Mr. Dick answered that you would "have to use a lot of imagination" to conjure up a safety problem arising out of uncontrolled filler material, and that "someone would have to be intent on mischief" for there to be such a problem. (Tr. 5622,

Dick 11/2/83) There simply is no evidence of any such mischief in the record. None of the exhaustive analysis of the Reep-Jones incident contained in the record of this case demonstrates that the Quality Assurance program at Catawba was ineffective or inadequate. To the contrary, the Board concludes the Reep-Jones incident demonstrates that the Quality Assurance program at Catawba was working and effective, and that neither the quality nor the safety of the plant were affected in any way by the incident.

(iii) Jackson-McKenzie Incident

256. This incident began on November 11, 1981 in the RBS area adjacent to the reactor pressure vessel. (Tr. 8821-22, Jackson 11/30/83) Welding inspector Larry S. Jackson (Jackson) was walking across a platform toward a location where he was to make a weld verification when he saw about ten feet below him pipe fitter Fox grinding on a two-inch diameter stainless steel pipe. Jackson perceived that the grinding disk being used by Fox was not marked with red paint as prescribed by Construction Procedure 170 (CP-170). Saying nothing, Jackson walked down to Fox's work area to examine the disk. (Tr. 8823-25, Jackson 11/30/83)

257. At Jackson's request, Fox handed the disk to him, whereupon Jackson saw two red "Magic Marker" marks on the paper on the backside of the disk. (Tr. 8828, 8901,

Jackson 11/30/83) By Jackson's account, while he was descending to the work area, Fox, having noticed Jackson's presence, took the grinder to his tool box where he placed the two red marks on the disk.^{73/} (Id.) Since Jackson believed he would have seen the red marks had they been on the disk at the time he first observed the work in progress from the platform, he decided to initiate an NCI for violation of CP-170. (Tr. 8828, 8834, 8903, Jackson 11/30/83)

258. The type of disk involved is an abrasive wheel three inches in diameter and is used for grinding in preparation of pipe joints for welding. (Tr. 5669, Dick 11/2/83) Standard procedure at Catawba was to mark the disks used to grind stainless steel pipe with red spray paint to distinguish them from disks used to grind carbon steel pipe. (Tr. 8755-57, McKenzie 11/30/83) The purpose of the marking procedure was to keep disks containing carbon steel fragments or particles from being used interchangeably on stainless steel pipe. (Tr. 8792, McKenzie 11/30/83; Tr. 5669-70, Dick 11/2/83) These disks are used up rapidly "in a few minutes." (Tr. 8797, McKenzie 11/30/83)

^{73/} Jackson testified that although he did not see Fox mark the disk, Fox must have done so while Jackson walked down to Fox's work area. (Tr. 8828, Jackson 11/30/83)

259. After examining the disk, Jackson left Fox's work area taking the disk with him. (Tr. 8834, Jackson 11/30/83) Jackson then met Fox's supervisor, Edward J. McKenzie (McKenzie), and discussed the matter. (Tr. 8835, Jackson 11/30/83) At McKenzie's request, Jackson handed him the disk from his work pouch, whereupon McKenzie looked at it, commented on its red marks, and put it in his own shirt pocket. (Tr. 8835-37, Jackson 11/30/83) Jackson asked for it back but McKenzie refused. By Jackson's account, he then reached into McKenzie's shirt pocket whereupon McKenzie stepped back, balled up his fist, and told Jackson that if he touched him again, he would knock his eyes out. (Id.) By McKenzie's account, Jackson poked McKenzie repeatedly in the chest while demanding return of the disk and asserting that he was going to issue an NCI report. (Tr. 8768, 8811, McKenzie 11/30/83) Nothing further happened and Jackson then left the work area. (Tr. 8837, Jackson 11/30/83)

260. A short time later, McKenzie and Jackson together went to Jackson's supervisor, Charles Baldwin, who immediately reviewed the matter and concluded that the disk should have been marked with red spray paint. (Tr. 8772, McKenzie 11/30/83) McKenzie then apologized to Jackson and the two men shook hands and returned to work.

(Id.) Later that day Jackson initiated an NCI report regarding the section of pipe on which Fox was working at the time the incident arose. (Tr. 8845, Jackson 11/30/83)

261. The next day, November 12, 1981, Jackson went to the RBS area to place a red NCI tag on the section of pipe upon which Fox had been grinding the previous day. (Tr. 8848-49, Jackson 11/30/83) According to Jackson, he asked Fox to point out that section of pipe, which Fox did, and Jackson tagged it. (Id.) As it turned out, Jackson tagged the wrong section of pipe. Shortly thereafter McKenzie approached Jackson, impolitely addressed him and informed him that he had tagged the wrong pipe. (Tr. 8850, Jackson 11/30/83) Jackson immediately went to his supervisor and filed a formal harassment charge against McKenzie for verbally abusing him. (Tr. 8853, 8855, Jackson 11/30/83) McKenzie went to see Charles Baldwin who sent a person to tag the correct section of pipe. (Tr. 8778, McKenzie 11/30/83) The next day, Jackson, who had been "on loan," was returned to his regular crew and work area. (Id.; Tr. 9072, 9100, Ledford 12/1/83)

262. The final outcome of this incident was that the NCI report concerning the section of pipe was allowed to stand; however, the piping system which included this section of pipe was later deleted (cut out) and removed from the building for reasons totally unrelated to the

incident. (Tr. 8780-81, McKenzie 11/30/83; Tr. 8911, Jackson 11/30/83) According to McKenzie, this incident was the only time a violation occurred regarding an "unmarked" grinding disk. (Tr. 8791, McKenzie 11/30/83) McKenzie testified that he did not know of any occasion where an unmarked disk was partially used, marked, and then reused on a different type of type. (Tr. 8812, McKenzie 11/30/83) McKenzie also testified that he collected all his crew members' red magic markers the day after the Jackson incident. (Tr. 8781-82, McKenzie 11/30/83)

263. Intervenor Palmetto Alliance contends that management "brushed over" this incident and directed that Jackson's harassment charge be dismissed so as to "send a message" to the various crafts that harassment of welding inspectors would be tolerated. The evidence in the record disproves this argument.

264. After resolution of the NCI report, Jackson's harassment charge was investigated thoroughly. Duke's Vice President, Construction, R. L. Dick, testified that he personally became "intimately involved" in the investigation of the Jackson-McKenzie incident to see that the Company was doing a full investigation. (Tr. 5201, 5291, 5303, Dick 11/1/83) Dick planned the procedure for the investigation along with J. R. Wells, then head of the Quality Assurance Department. (Id.) Dick and Wells

directed Employee Relations personnel from Construction and Quality Assurance to investigate the incident and propose a conclusion of the matter. (Tr. 5304, Dick 11/1/83; Tr. 5591-92, Beam 11/2/83; Tr. 8904, Jackson 11/30/83) The investigators' joint finding that Jackson's actions had contributed to escalation of the confrontation and their recommendation that the incident did not result in harassment of Jackson were accepted and endorsed by Dick and Wells. (Tr. 5329, Dick 11/1/83)

265. Contrary to Palmetto Alliance's assertions, McKenzie was counseled about the incident and told that his language (calling Jackson "stupid") was unprofessional. (Tr. 8795, McKenzie 11/30/83) McKenzie was also counseled about Duke's harassment policy. (Tr. 8787, McKenzie 11/30/83) McKenzie testified that this counseling made a big impression on him and that he felt fortunate he did not lose his job because of the incident. He also testified he was informed that if a similar incident occurred again involving him that he would lose his job. (Tr. 8796, McKenzie 11/30/83) In addition, a verbal reprimand was given to McKenzie's entire crew. (Tr. 5329-30, Dick 11/1/83)

266. Jackson was also counseled that he had behaved in an unprofessional manner in reaching for the disk and provoking McKenzie. (Tr. 8869-70, 8913, Jackson 11/30/83) Jackson testified that management took his harassment

charge seriously and investigated it seriously. (Tr. 8905, Jackson 11/30/83) He also testified that in his view the manner in which his charge of harassment was handled would not discourage other welding inspectors from filing harassment charges if the situation called for it. (Tr. 8876, Jackson 11/30/83)

267. Having reviewed all the evidence regarding the Jackson-McKenzie incident, the Board finds that nothing about the incident indicates that the quality of construction at Catawba was compromised or that unacceptable work was ignored. When the Board questioned Jackson about the thrust of his efforts to inspect Fox's grinding disk, Jackson testified that his "main concern was the disk was not marked," not that the wrong disk was being used. (Tr. 8910, Jackson 11/30/83) Moreover, Mr. Dick testified that there was "no safety significance in using the wrong disk," and that it was just a workmanship matter. (Tr. 5670, Dick 11/2/83) Any lingering safety concerns arising out of this incident vanish when it is recalled that the pipe section in question was deleted and removed from the reactor building. Indeed, McKenzie testified that he had no questions whatsoever about the safety or quality of the work he or his crew had done at the Catawba plant. (Tr. 8808-09, McKenzie 11/30/83)

268. Nor does this incident give rise to any concern that the Construction Department exerted improper pressure on the Quality Assurance Department thereby constraining it in any fashion. That management did not publish publicly the outcome of Jackson's harassment charge investigation in no way supports Intervenors' assertion. Common sense seems to support management's decision to close the matter after full investigation and counseling with the principals involved.

269. Our conclusion, after careful review of the facts, is that the incident was thoroughly investigated by Duke and that appropriate corrective action was taken regarding the persons involved. Our conclusion is buttressed by NRC inspector Kim Van Doorn's testimony to the same effect. (Tr. 9743, Van Doorn 12/5/83) The Board finds that no matters regarding the safe construction of the plant were involved in this incident. The record in this case, the Board concludes, demonstrates that this was a personnel clash, devoid of safety significance, and not representative of the compatible working relationship which more often prevailed between the various crafts and the inspectors of the Catawba plant.

(iv) Harris-Mullinax Incident

270. This incident took place in the fall of 1978 at the time when a steelworker crew under foreman Thomas H. Mullinax (Mullinax) was engaged in fitting-up the upper personnel airlock to the containment shell/liner plate in reactor building 2. (IC Tr. 1034, Harris 12/16/83; Tr. 8967, Harris 12/1/83; Apps. Exh. 101, Mullinax, p. 2). This fit-up involved joining the airlock's 1-1/8" thick carbon steel ring, which is fifteen to twenty feet in diameter, to the 3/4" thick carbon steel containment liner plate. (Tr. 8974-75, Harris 12/1/83; IC Tr. 1026-27, 1029, Mullinax 12/16/83). The two surfaces were first attached by making tack welds every foot or two around the entire circumference of the steel ring to hold it in place for an initial inspection before the ring was welded into final position in the containment pipe. (Tr. 8976, 9054-55, Harris 12/1/83; IC Tr. 1025, Mullinax 12/16/83).

271. In performing this job, procedures require that the metal surfaces be preheated to within a prescribed temperature range prior to making the tack welds. (Tr. 8973, 9054, Harris 12/1/83). Preheating is done by using a "rosebud" which is a fitting attached to an oxygen acetylene torch. (Tr. 8985, Harris 12/1/83). Because "keeping the preheat up" is a continuous process, welders preheat only the immediate area where the weld is to be done and a couple of feet ahead or below. (Tr. 8973,

8977, 9055, Harris 12/1/83). To check temperatures both welders and inspectors have temperature sticks made of a chalk or soap-like substance which melts at a certain temperature level when placed on metal surfaces. (Tr. 8977, 8986, Harris 12/1/83; IC Tr. 995, Davison 12/16/83).

272. Welding inspector Lindsay H. Harris, Jr. (Harris), working in the area, checked with his temperature stick and found Mullinax's crew did not have the portion of the containment liner plate where they were making a tack preheated sufficiently. (Tr. 8967, 8977-78, Harris 12/1/83; IC Tr. 1051, Harris 12/16/83). Harris told the crew they had not properly preheated the plate and to "get the preheat up." Also, he kept watching them which, he admitted, made them "nervous." (Tr. 8967-68, Harris 12/1/83).

273. After checking the temperature again, Harris told Mullinax that the crew would have to cut the tack out due to inadequate preheating, or he (Harris) would issue an NCI report. According to Harris, Mullinax's response was that if Harris did not leave his men alone, he would knock Harris' teeth out. (Tr. 8968, 8985, Harris, 12/1/83; IC Tr. 992, Harris 12/16/83). Harris testified this exchange took place "right in front of the airlock door." (Tr. 8983, Harris 12/1/83).

274. According to Mullinax, his crew told him that Harris had called them liars when they told him they had preheated the plate, and that it was his men who had told him they wanted to whip Harris. (IC Tr. 1052-53, Mullinax 12/16/83; Apps. Exh. 101, Mullinax, p. 2). Mullinax testified that he did not want Harris harassing his crew, and that as he and Harris walked "up the hill" to straighten the matter out with supervision, he said in a perturbed tone of voice, "Lindsay, you're going to get your teeth knocked out." (IC Tr. 1067, Mullinax 12/16/83; Apps. Exh. 101, Mullinax, p. 2). The two men then went to talk to their respective supervisors. (Tr. 8968, 8980, Harris 12/1/83; Apps. Exh. 101, Mullinax, p. 2).

275. The next day Mullinax was called to a meeting^{74/} with Job Superintendent Cecil Wall, Larry Davison, Charles Baldwin and others. (Apps. Exh. 99, Davison, p. 2). Wall had also called S.O. Shelby, the steelworker craft superintendent, in from vacation to this meeting. (Apps. Exh. 101, Mullinax, p. 3; Tr. 5680, 5694, Dick 11/2/83). Mr. Wall reprimanded Mullinax and told him: that this type of statement from him to any inspector would not be tolerated; that he was responsible

^{74/} Larry R. Davison, Quality Control Manager at Catawba, was informed of the incident by Charles Baldwin, QC Supervisor. Davison notified Cecil Wall, Job Superintendent, asked him to investigate, and requested a report back from Wall. (Apps. Exh. 99, Davison, p. 2).

for his crew's actions in this type of situation; and that his position as supervisor and quite possibly his job were on the line if this type of incident reoccurred. (Apps. Exh. 99, Davison, p. 3; IC Tr. 1042, 1045, Mullinax 12/16/83)

276. Harris testified that Mullinax later explained that he did not mean he was going to do something to Harris, but rather he was insinuating that his men were becoming aggravated and might take action. (Tr. 8968, 8983-84, Harris 12/1/83; IC Tr. 993-94, Harris 12/16/83). Mullinax also apologized to Harris and asked him to put the matter behind them. (Tr. 5681, Dick 11/2/83). Harris also testified that the airlock joint was properly fit-up and inspected in accordance with procedures. (Tr. 8969, 8987, 8996, 9056-8, Harris 12/1/83). Had the correct procedures not been followed, Harris testified he would have written an NCI report. (Tr. 9058, Harris 12/1/83). According to Harris, "We went by procedures. We didn't let the welders get by with anything." (Tr. 9000, Harris 12/1/83). The incident did not prevent Harris from doing his job (Tr. 9059, Harris 12/1/83).

277. In reflecting back on the incident, both men testified that it was reasonable to conclude that the message Mullinax spoke and the one Harris understood were different. (IC Tr. 1068, Harris, Mullinax 12/16/83). Harris candidly testified that Mullinax probably thought

he was right (in the way he handled the situation) and "I didn't give him (Mullinax) a chance to explain himself." (Tr. 8969, Harris 12/1/83). Despite the incident, Harris testified that he and Mullinax had worked together often and without problems since. (Tr. 9058-59, Harris 12/1/83). According to Harris, after the incident Mullinax's attitude changed 100% and they worked well together on a day-to-day basis. (Tr. 9059, Harris 12/1/83). Harris did not file a harassment charge against Mullinax because, as he testified, his supervisor handled the problem in a proper manner and he was satisfied with the way it was handled. (Tr. 9049-51, Harris 12/1/83).

278. After the incident Mullinax informed his crew that arguments with inspectors were to be avoided; that threats or intimidation of inspectors would not be tolerated; and that all questions which could not be resolved without arguing should be brought to him. (Apps. Exh. 99, Mullinax, p. 4). Mullinax also testified that he was instructed to work with and assist inspectors in performing their duties and to perform rework if necessary to bring the work into compliance with inspection requirements. (Id.; IC Tr. 985-86, Mullinax 12/16/83).

279. At this juncture, the Board must point out that welding inspector Harry F. Langley also claimed to have been involved and harassed in the incident between Mullinax and Harris. (IC Tr. 1076-77, Langley 12/16/83;

Tr. 6845-47, 6883, Langley 11/10/83). However, we find it very difficult to mesh Langley's version of the incident with the accounts given by any of the principals involved.^{75/} It is clear from the record that Harris and Langley worked together briefly in early, 1978 inspecting the lower airlock in RB 2. (IC Tr. 1038, Harris 12/16/83; Tr. 8959, Harris 12/1/83). It is also clear that Mullinax's crew was working on that airlock during their inspection. (Id.) However, Mullinax, Harris and Davison all testified they were not aware of any involvement of Langley in the Harris-Mullinax incident which occurred months after Langley left Duke's employment. (IC Tr. 1030-31, Harris 12/16/83; Apps. Exh. 101, Mullinax, p.2; Apps. Exh. 99, Davison, p. 1). However, even if the Board were to accept Langley's account as accurate, the incident has little, if any, significance. This is so especially

^{75/} Langley was a welding inspector from January to April, 1978. (Tr. 6878, Langley 11/10/83). He testified the Harris-Mullinax incident occurred in February, 1978. (Tr. 6845, Langley 11/10/83). Harris testified the incident happened in the fall of 1978 at a time when Langley was no longer employed by Duke Power Company. (IC Tr. 1031, 1034, Harris 12/16/83). Langley's account of the incident was that Harris put his head through a hole in the containment wall to ask Mullinax a question to which Mullinax replied that he (Harris) better get his head out of the hole because he might get his teeth knocked out. (IC Tr. 1076-77, Langley 12/16/83). This account varies widely from the testimony of Harris and Mullinax. Langley claims to have written an NCI report as a result of this incident. (Tr. 6847-48, Langley 11/10/83). No such document was placed in evidence in this proceeding.

in light of Langley's testimony that the airlock welds passed visual and x-ray inspection and that the incident did not stop him from doing his inspection work correctly. (Tr. 6867, 6883-84, Langley 11/10/83).

280. In summary, the Board finds that incident amounted to little more than a regretable verbal exchange. Harris himself testified, "He (Mullinax) wasn't really threatening my life or nothing." (Tr. 8969, Harris 12/1/83). The record evidence makes it clear that Duke's management immediately and thoroughly investigated the incident and disciplined Mullinax. The record further demonstrates that since the incident relations between Mullinax and Harris have been good. There is a complete absence of testimony that this incident had any safety significance regarding construction of the Catawba plant. In short, this incident in no way diminishes the reasonable assurance that the Catawba plant is safety constructed.

(v) Cauthen Incidents

281. In his prefilled testimony, Mr. Boyce Cauthen addressed three recent harassment concerns which were not dealt with by either Task Force (Apps. Exh. 32, Cauthen, pp. 3-4). One concern, which involved Mr. Max Reep, is addressed in the section devoted to Mr. Reep, supra section (ii).

282. The first of the two remaining concerns involved harassment from other inspectors. While running M4-I's, some inspectors under Mr. Cauthen's control found welds which did not meet the L-80 procedure and they were NCI'd. The other inspectors who had previously approved the welds gave Mr. Cauthen "a hard time" for turning them in (Apps. Exh. 32, Cauthen, p. 3). The other inspectors would talk about Mr. Cauthen and avoid him (Tr. 6512, Cauthen 11/9/83). He felt he was just doing his job (Apps. Exh. 32, Cauthen, p. 3).

283. The second of the two new harassment concerns involving Mr. Cauthen arose from a similar incident while running M4-I's and a failure of a weld to meet the L-80 procedure. The welder who originally approved the weld which Mr. Cauthen NCI'd said he would get Cauthen off the M4-I job. Mr. Cauthen discussed the possibility of filing a harassment charge, but in fact did not, but in one week he was removed from the M4-I job (Id. at p. 3).

284. Mr. Cauthen has not felt harassed since then, but he lacked confidence in the inspector who replaced him. Despite this alleged harassment, however, Mr. Cauthen testified that it did not keep inspectors from doing their job (Id. at pp. 3-4). They continued to write NCI's on all nonconforming welds (Tr. 6513-14, Cauthen 11/9/83). Mr. Cauthen believes the QA Program was working, but he thought the welding inspectors should have

more control over what they found on random inspections (Apps. Exh. 32, Cauthen, p. 6). He testified that he thinks the plant is safely constructed in those areas he has checked (Tr. 6404, Cauthen 11/8/83; Tr. 6542, Cauthen 11/9/83). Additionally, Mr. Cauthen has heard of no substandard work existing uncorrected in other areas (Tr. 6550-53, Cauthen, 11/9/83).

285. Based on the foregoing evidence, this Board finds reasonable assurance that these incidents did not lead to the creation of a risk to the public health and safety.

(vi) Deaton Incident

286. This incident occurred during 1977 while B.W. Deaton was a welding inspector at the Catawba plant. (Tr. 5792, Deaton 11/3/83). Deaton testified that he was having to reinspect continuously the work of a steelworker^{76/} who was fitting containment plates. (Tr. 5793, Deaton 11/3/83). According to Deaton, he had to go back time after time to show Shires how to get his work done. (Id.) Deaton testified that he refused to sign the steelworker's process control sheet and, instead, instructed Shires to call him back when he had performed

^{76/} Although Deaton did not know the steelworker's name, R.L. Dick identified him as Mr. Shires. (Tr. 5350, Dick 11/1/83).

the work correctly. (Tr. 5794, Deaton, 11/3/83). Shires would call Deaton back and the work was "still not right." (Id.)

287. Deaton was proceeding home from work one day on Interstate 77 with several other people, including steelworker foreman Irving Lumpkin, in the car (Tr. 5794, Deaton 11/3/83; Tr. 5341, Beam 11/1/83). A car pulled alongside the one Deaton was riding in and a man in that car pulled out a rifle and pointed it at Deaton. (Tr. 5394, Deaton 11/3/83). Deaton recognized the man holding the rifle as the steelworker with whom he had had problems. (Id.) Words were exchanged and Shires sped off up the highway headed north toward Charlotte. (Tr. 5794-95, Deaton 11/3/83). Deaton watched Shires' car go up the Sunset Road exit ramp and go across the bridge, down the ramp onto the other side of the hignway headed south.

(Id.)

288. The next day Deaton reported the incident to his supervisor, G.E. Ross, and went to work. (Tr. 5795-96, Deaton 11/3/83). Apparently, at about the same time, Shires had gone to his foreman, T.H. Mullinax, and asked Mullinax "to terminate him upon request." (Tr. 5342, Beam 11/1/83). Mullinax told Shires he could not simply terminate him upon request, sent Shires on to work, and

took the matter to Job Superintendent Cecil Wall^{77/} (Id.) Wall and Mullinax went to Project Manager Doug Beam's office where they reported the incident to Beam (Id.; Tr. 5694, Beam 11/2/83). Deaton was then called to Beam's office where he gave his first hand report (Tr. 5796, Deaton 11/3/83). After considerable discussion,^{78/} Beam decided to allow the worker to quit rather than terminate him for cause. (Tr. 5349, Beam 11/1/83; Tr. 5623-24, Beam 11/2/83). Duke has not rehired Mr. Shires for work at its other nuclear generating stations, Oconee and McGuire. (Tr. 5353, Dick 11/1/83).

289. Deaton testified that the rifle pointing incident did not affect his subsequent job performance in any way and that he had not felt intimidated by the incident. (Tr. 5800, Deaton 11/3/83). In addition, NRC inspector Kim Van Doorn was of the opinion that Duke took appropriate corrective action in response to the rifle pointing incident. (Tr. 9743, Van Doorn 12/5/83). The Board is inclined to accept Deaton's statement without reservation, especially when it is noted that Deaton's

^{77/} Lumpkin also reported the matter to Wall. (Tr. 5345, Beam 11/1/83).

^{78/} Beam was concerned that he had insufficient evidence of an incident which took place away from the job site to involuntary terminate the worker. (Tr. 5347, Beam 11/1/83; Tr. 5623-24, Beam 11/2/83).

prepared testimony fails to include any mention of this incident. (Apps. Exh. 28, Deaton, pp. 1-5 and Attachment 1).

289a. The Board notes in passing that Mr. Deaton has worked at Catawba since the beginning of the plant. (Tr. 5805, Deaton 11/3/83). His testimony in that regard is worth mentioning:

The quality of the welding at Catawba, if I may address it that way, is of [sic] good a quality of welding -- and I've been out in construction for many years and on a lot of jobs, and a lot of construction plants before -- and the quality of the welding at Catawba is as good as I've ever seen, sir.

* * *

I don't think no [sic] part of the plant would break down, sir. [Tr. 5805, Deaton 11/3/83)

Deaton further testified that the only concern he had while working at Catawba was communication about resolution of NCI's. (Tr. 5731, 34, 5748-49, Deaton 11/3/83). He went on to state that communication about NCI's had greatly increased and that, in his opinion, the workforce was presently doing a good job of communicating. (Id.) He added that there was no breakdown in the Quality Assurance program and that "there is no doubt in my mind that Catawba is safe and has been." (Tr. 5755, 5757-58, Deaton 11/3/83).

289b. The Board can find no evidence in the record that this incident had any impact on Deaton's or any other welding inspector's job performance at the plant. The Board concludes that Duke's management handled the incident expeditiously and properly. We further conclude that this incident raises no concerns about the safety of construction of the Catawba plant.

(vii) John Bryant Incidents

290. Mr. Bryant cites two instances in which he claims to have been the target of harassment. The first involved a threat from a welder to push Bryant off a scaffold after he had rejected a weld in accordance with QA procedures. Mr. Bryant brought the matter to the attention of Mr. Davison. Mr. Davison informed Mr. Bryant that these types of situations would occur from time to time and what he was to handle them in a professional manner (Tr. 6052, Bryant, 11/4/83).

291. The treatment by management of the scaffold incident was cited as an example of management siding with the craft (Tr. 6049, Bryant, 11/4/83; Apps. Exh. 30, Attachment A, Bryant, pp. 2-3). However, under cross-examination by the State of South Carolina, Mr. Bryant testified that the incident was satisfactorily resolved by management (Tr. 6148-49, Bryant, 11/4/83). Further, Mr. Bryant stated that, while disagreeing with the response of Mr. Davison to his complaint, Mr. Davison did

not insinuate that, in trying to avoid a conflict in such situations, rejectable work should be passed (Tr. 6052, Bryant, 11/4/83). Indeed, with respect to the scaffold incident, on redirect examination, Mr. Bryant testified that after the threat, he had talked with the welder's foreman, the welder had apologized and he has had no further difficulties with that welder (Tr. 6177, Bryant, 11/9/83).

292. The second incident involved a threat by a general foreman to have him removed from the auxiliary building (Apps. Exh. 30, Attachment A, Bryant, p. 3; Tr. 6055, Bryant, 11/4/83). Mr. Bryant testified that he left the auxiliary building when his entire crew was moved. This occurred at least a year after the threat and, in Mr. Bryant's opinion, the crew move was unconnected to the harassment incident (Tr. 6156-57, Bryant, 11/4/83).

293. It should be noted that Mr. Bryant stated that the alleged harassment incidents and management response did not affect his job performance or the performance of other welding inspectors (Tr. 6148-49, Bryant, 11/4/83).

294. In addition to the concerns with harassment by craft personnel, Mr. Bryant expressed a concern over the evaluation of Mr. Ross. The merits of the Ross evaluation are addressed.

295. Mr. Rockholt's personal experience with instances of alleged harassment is limited to two specific incidents. The first was an occasion in which he was shouldered by a craftsman. Mr. Rockholt testified, however, that he had never been threatened with bodily harm by any of the craft (Tr. 6372, Rockholt, 11/8/83). He further testified that this shouldering incident by a carpenter did not make him feel threatened and did not prevent him from doing his job (Tr. 6388, Rockholt, 11/8/83).

296. The second incident involved Cindy Crimminger's assignment to a surveillance crew. Mr. Rockholt complained about the position not being offered to a welding inspector and complained about her lack of qualifications because she had no welding experience. He asserted that he was not considered because of problems he had had in dealing with management (Apps. Exh. 31, Rockholt, Attachment B).

297. Mr. Rockholt acknowledged that he had no knowledge of Ms. Crimminger's ability to do the job, and there is no other evidence in the record showing she is not qualified to do her job. Rather, he asserted that she did not have the experience, specifically "no welding background" (Tr. 6326, Rockholt, 11/8/83). Mr. Rockholt cites this as an example of intentionally deterioriating the QA program by using people who do not have

qualifications (Tr. 6329, Rockholt, 11/8/83). On redirect examination, Rockholt acknowledged that this incident did not result in substandard work on his part (Tr. 6391-92, Rockholt, 11/8/83).

298. Mr. Rockholt also testified that he felt that he had been generally harassed or intimidated by certain supervising personnel. However, he further testified that such an atmosphere had not affected his job performance and that he was unaware of any other welding inspectors whose performance had been affected (Tr. 6353, Rockholt, 11/8/83). Further, Mr. Rockholt stated that such was "not of a nature that would have presented anything that would be a detriment to nuclear safety" (Tr. 6186, Rockholt, 11/4/83)(emphasis added).

299. In sum, the Board finds that these allegations do not adversely affect the public health and safety.

(ix) Burr-Ledford Incident

300. This incident occurred during 1981 at a time when welding inspector William H. Burr (Burr) was working the second shift (3:30 p.m. to 12:00 p.m.) at the Catawba plant. (Tr. 5887, Burr 11/2/83; Tr. 9082, Ledford 12/1/83). His supervisor, Stanley W. Ledford (Ledford) regularly worked on the first shift (7:30 a.m. to 4:00 p.m.), leaving only a brief overlap in their scheduled workdays. (Id.). However, Mr. Ledford testified that he would stay over "every night or what ever it took,"

talking with Burr and discussing problem which had arisen. (Tr. 9083, Burr 12/1/83). Also, Burr frequently called Ledford and other supervisors at their homes between 5:00 p.m. and 11:30 p.m. to discuss work-related problems (Tr. 9090, 9112, Ledford 12/1/83). In addition, Burr often left handwritten notes and records for Ledford to follow up on during the day shift. (Tr. 5844-45, Burr 11/3/83).

301. Shortly before the incident, the second shift's workload became heavier. (Tr. 9089, Ledford 12/1/83). Ledford and other supervisors discussed whether and how soon another supervisor might be needed on the night shift. (Id.; Tr. 9098, Ledford 12/1/83). Ledford testified that he was not thinking about putting someone over Burr, but rather was considering Burr for the promotion. (Tr. 9096, 9098, Ledford 12/1/83).

302. Burr was doing a good job with his work, but, as Ledford testified, craftsmen were complaining to their supervisors that Burr was inspecting too closely. (Tr. 9090, 9109, Ledford 12/1/83). Craft foreman had come to Ledford's office to complain about Burr, and Ledford had talked with his own supervisor, Charles Baldwin, about these complaints. (Tr. 9093-94, Ledford 12/1/83; Tr. 5930, Burr 11/2/83). According to Ledford, when Burr found anything "borderline,"^{79/} he would go and get someone to

^{79/} Ledford testified as follows:

verify whether it was right or wrong. (Tr. 9090, Ledford 12/1/83). In Ledford's opinion, Burr was not confident enough of his own decisions although he was capable of making them. (Id.). Ledford, therefore, decided to work the second shift with Burr one day to see how Burr was doing. (Id.; Tr. 9111, Ledford 12/1/83).

303. On that day, Ledford went to the inspection area where the gang box had been set up about half an hour after the second shift started. (Tr. 9115, Ledford 12/1/83; Tr. 5986, Burr 11/3/83). He found Burr and asked to buy him a cup of coffee. (Id.). The two men had a conversation; Ledford then observed Burr's work; and toward the end of the second shift the two men talked again. (Tr. 9115, Ledford 12/1/83).

304. The substance of the "coffee cup conversation" is the subject of some dispute. According to Burr, Ledford told him that he had a good future with Duke because of his education, personality and ability to do the work, but that he "would have to ease-off [the craft] a little bit." (Tr. 5886, 5938-39, Burr 11/3/83). Burr understood this message to be that his future advancement

(footnote continued from previous page)

In my dealings with Bill (Burr), coming in and watching him work, talking with him on the procedures, he wanted to be certain that every decision he made, whether it was borderline or not, was correct; there would be no doubt whatsoever that there would be anything come back to him. (Tr. 9109-10, Ledford 12/1/83).

with Duke would be limited, if not non-existent, if he did not "ease-off." (Apps. Exh. 29, Burr, p. 3). Burr testified that he felt the "ease-off the craft" message came from someone other than Ledford, because it was "a little out of character" for Ledford to say that. (Tr. 5939-40, Burr 11/3/83). However, Burr stated that no source for the message was specified, and Ledford did not tell him that he was issuing too many NCI's. (Tr. 5938, 5954, Burr 11/3/83). The conversation gave Burr the feeling he was "being a little over zealous." (Tr. 5954, Burr 11/3/83).

305. Ledford, on the other hand, testified that he asked Burr:

. . . to take a good look at his work, his inspections, and if he could make an interpretation or decision on his own in a reasonable amount of time without causing a bunch of delays, two or three hours on making each decision, then to go ahead with it. [Tr. 9093, Ledford 12/1/83].

Ledford further recalls telling Burr to leave him notes about problems; that Ledford would work on these problems the next morning when he came to work; and that if Burr's decisions were wrong, Ledford would correct them. (Id.). Ledford also remembers telling Burr not to be afraid to make decisions on his own (Id.). Ledford further recollects saying to Burr that he was sure Burr did not

want to be a welding inspector the rest of his life when other positions may possibly open up. (Tr. 9095, Ledford 12/1/83).

306. Ledford does not recall telling Burr to "ease-off the craft." (Tr. 9089, 9093, 9108-09, Ledford 12/1/83). Ledford testified that he deliberately couched this conversation in general terms for good reasons:

I didn't want to tell him [Burr] somebody was going to be set up [promoted], and he'd stand a good chance if he could make everything go smooth, because that wouldn't be the proper thing to do. It may cause a person to back off, sure enough, and let something by.

* * *

I beat around the bush on it to him.

* * *

. . . I thought that he had tied things together and figured out what I was talking about, without my telling him directly. [Tr. 9091, Ledford 12/1/83].

Ledford testified that the message he gave Burr came only from himself and not from anyone above him (Tr. 9110, Ledford 12/1/83).

307. As it turned out, the second shift workload leveled off and no one was promoted. (Tr. 9097, Ledford 12/1/83). Burr testified that rather than "ease-off" or accept work that failed to conform to QA standards or procedures, this conversation made him more determined to do his job as he saw fit. (Tr. 5930-31, Burr 11/3/83; Apps. Exh. 29, Burr, p. 4). He further stated that he

knew all along his prime responsibility was to make sure the work was done right regardless of whatever else happened. (Tr. 5937, Burr 11/3/83). Burr stated that the part of the Catawba plant he had been directly involved with was in full compliance with all codes and laws. (Tr. 5933, Burr 11/3/83). He also believed that his job and employment opportunities had not been affected by the incident. (Apps. Exh. 29, Burr, p. 4).

308. After reviewing all the evidence concerning this incident, the Board finds that this incident amounts only to an employee communications/personnel matter without any safety significance and is beyond the scope of our consideration. However, we note in passing that such incidents are not unlikely to occur where a conscientious employee seeks to eliminate every conceivable question or possibility before making decisions. All the testimony points to the fact that after the incident Burr continued unimpeded to perform inspections to the best of his ability. His determination to see the QA program function properly and to its full potential adds to our reasonable assurance that Catawba is built safely.

(b) Employee Access to the NRC

309. One of the issues raised by Palmetto Alliance as a part of its allegation of harassment of employees is whether, and under what circumstances, employees at Catawba are able to voice concerns directly to the NRC.

310. One aspect of this issue is whether Applicants' supervision discouraged welding inspectors from voicing their concerns directly to the NRC by threatening or otherwise warning welding inspectors of possible retaliatory measures by management if they did not follow Applicants' established procedures.^{80/}

311. During the course of the hearing Applicant offered pre-filed testimony from thirty-three welding inspector personnel. Fourteen of these witnesses were ultimately examined thoroughly by the parties and members of the Board as to a number of matters, including this allegation. In addition, Applicants provided for examination, by the parties and members of the Board, a number of key management personnel. The Staff also provided for examination by the parties and members of the Board three NRC inspectors knowledgeable of the facts concerning this allegation.

^{80/} Palmetto Alliance also alleged that Mr. Hoopingarner had been ordered directly not to talk to the NRC. That allegation is addressed infra.

312. Applicants' corporate policy is that they want employees to bring their concerns to the attention of supervision before going to the NRC but that employees are free to go to the NRC at any time. (Tr. 2021-23, Owen 10/6/83). Palmetto Alliance's position seems to be that their policy operated to preclude employees from going directly to the NRC if they wished to do so. Further, Palmetto Alliance asserts that management personnel met with welding inspectors on several occasions to advise them that any concerns they have should be first brought to Applicants for review and action before such concerns could be taken to the NRC. Palmetto Alliance contends the Applicants made it clear that if this were not done, appropriate action would be taken against the employee involved.

313. Applicants' stated policy regarding access to the NRC is contained in its April 25, 1977 letter signed by R. L. Dick (Apps. Exh. 24, Dick, p. 10; Apps. Exh. 37, Dressler, et al., Attachment D.; Tr. 2270-2271, Grier 10/7/83). The Dick letter states in pertinent part that

(a)ny nuclear industry worker who has concerns or questions about the nuclear safety of any facility or activity licensed by the Nuclear Regulatory Commission may bring these matters to the attention of an NRC inspector or the nearest NRC Regional Office if they cannot be resolved directly with his or her employer. [Id., Attachment D].

314. This language was sent to Applicants in an April 6, 1977 letter from Mr. Volgennau with a request that such be posted. Applicants did so in Mr. Dick's April 25, 1977 letter. (Tr. 2274, Owen, 10/10/83; Staff Exh. 1; Tr. 2591, Grier 10/11/83)

315. Examination of this language suggests to the Board that it was the NRC, not Applicants, who suggested that before an employee approaches the NRC, he first try to resolve matters with his employer. And the record shows that Applicants in practice instructed their employees to bring concerns to them first, but this did not mean they were not free to go to the NRC at any time. (See, e.g., Tr. 2271, Grier 10/7/83).

316. The Staff's view of the language in its letter is that they encourage an employee to go first to his or her employer before approaching the NRC. The NRC believes the extent to which an employee is encouraged to utilize his or her employers' corrective action processes is up through the first two or three levels of supervision. The employers' program ought to be sufficient and the communications ought to be sufficient to assure the vast majority of those concerns are properly handled. Even so an employee is not required to go to his or her employer before coming to the NRC. (Tr. 9878-84, Van Doorn 12/6/83).

317. The interpretations placed upon the language by Applicants and the NRC appear to be reasonable. The Board concludes that in practice the Applicants' stated policy provides direct access to the NRC. The Board notes that there has been confusion in the past with regard to an employee's right to go directly to the NRC without going to Applicants first with his or her concerns but it is evident based upon the testimony of those employees who appeared before us that access to the NRC has always been available.

318. In October of 1980 Mr. Davison, who at the time was Senior Quality Control Engineer for Duke Power Company and responsible for Quality Control inspections at Catawba, met with the NRC Resident Inspector, Mr. Maxwell. Mr. Maxwell had informed Mr. Davison that some non-safety-related issues were being brought to the NRC. Some welding inspectors had brought to Mr. Maxwell concerns which did not involve safety-related portions of the plant. (Apps. Exh. 14, Davison, p. 14; Tr. 3695-96, Davison 10/18/83). Mr. Maxwell's recollection of the meeting is hazy; he could not recall details of the conversation he had with Davison about the welding inspector concerns (Tr. 9392-95, Maxwell 12/2/83). Mr. Maxwell does not recall that, in the course of questioning people about concerns, he may have mentioned to Mr.

Davison some of the specific concerns that had been brought to the NRC's attention (Tr. 9401, Maxwell 12/2/83).

319. Subsequently, Mr. Davison met with the welding inspectors to be sure they all understood that the Company's recourse procedure applied to any concern, technical or non-technical (Tr. 3637-3701, Davison 10/18/83). Mr. Davison further advised the welding inspectors that they had a responsibility to follow this procedure prior to going to the NRC, but this responsibility in no way would replace their right by law to go to the NRC at any time. (Apps. Exh. 14, Davison, pp. 2, 12-14; Tr. 3710, Davison 10/18/83).

320. The conclusion we draw from Mr. Davison and Mr. Maxwell's meeting is that although Mr. Maxwell is fairly sure he did not mention specifically welding inspector concerns to Mr. Davison, the impression created in Mr. Davison's mind was that Mr. Maxwell was referring to welding inspector concerns when he was discussing NCI's.

321. Mr. Burr states it was his belief that during his meeting with Davison he was reprimanded for not having first brought problems to the attention of Applicants' management (Apps. Exh. 29, Burr, p. 3; Tr. 5881, Burr 11/3/83). He testified that the message he took away from the meeting was that he was to bring his concern to Applicants first; however, he did state that Mr. Davison

told him that he had the right to go to the NRC. He noted that he felt Mr. Davison would be a little less than pleased with the welding inspectors if they resorted to that. Mr. Burr's total impression from his meeting with Mr. Davison was that he was being reprimanded for the fact that welding inspectors had brought concerns to the NRC without first raising them with supervision. (Tr. 5882, Burr 11/3/83).

322. On examination by the Board regarding his meeting with Mr. Davison, Mr. Burr made it clear that he felt he could go to the NRC without going to his supervision first and in fact he had done so without any adverse effect on his job (Tr. 5936-37, Burr 11/3/83). It appears to us, then, that even though Mr. Burr may have felt that he was being reprimanded in his meeting with Mr. Davison, he did then and does now understand that he may take any concern directly to the NRC without adverse job effect.

323. Other welding inspectors testified regarding their meetings with Mr. Davison. Those who could recall that meeting stated that they did not have the sense that Mr. Davison reprimanded them or advised them that they could not contact the NRC directly (Tr. 6208, Rockholt 11/4/83; Tr. 5766, Deaton 11/3/83; Tr. 8360, Crisp 11/29/83). Those who could not recall the meeting, or did not meet with Mr. Davison, testified that they understood

they were not prohibited or otherwise limited from going directly to the NRC even though they knew Applicants would prefer they first bring their problems to them (Tr. 6173, Bryant, 11/4/83; Tr. 8310, Godfrey 11/28/83; Tr. 6562, Cauthen, 11/9/83).

324. We conclude, that although Mr. Burr may have believed that Mr. Davison reprimanded him in their meeting for not bringing concerns to supervision before approaching the NRC, the balance of welding inspectors who recalled meeting with Mr. Davison do not share his opinion. To the contrary, it is apparent from their testimony that Mr. Davison explained Applicants' desire that concerns should be brought to supervision before going to the NRC, but that direct access to the NRC was nonetheless open if they so desired. Further, Mr. Davison's remarks during the meetings with the welding inspectors did not leave the majority of them with the impression that Applicants would take retaliatory measures against employees who went directly to the NRC.

325. On January 27, 1982 Mr. W.H. Owen, who at the time was the Company's Senior Vice President for Engineering and Construction, met with three groups of welding inspectors at Catawba to discuss with them the fact their pay recourse was completed and that Applicants had appointed a Task Force to examine their concerns. He wanted to encourage the welding inspectors to do two

things. First, he wanted them to express all their concerns to the Task Force so that they could be thoroughly evaluated. Second, he wanted the welding inspectors not to let down in the work they were doing, which was important (Tr. 2012, Owen 10/6/83).

326. In his meetings with the welding inspectors, Owen used a set of prepared remarks so that he could be relatively sure that he was consistent in his meetings since three separate groups of welding inspectors were to meet with him (PA Exh. 3; Tr. 2014-2017, Owen 10/6/83). During the course of one of the meetings, Mr. Godfrey, then a welding inspector at Catawba, tape-recorded Mr. Owen's remarks. The tape subsequently was transcribed and that transcription is in evidence in this proceeding. (PA Exh. 2; Tr. 1988, 1992, Owen 10/5/83; Tr. 8272, Godfrey 11/28/83).

327. Palmetto takes the position that Mr. Owen, in responding to a question posed by Mr. Rockholt about the inspectors' ability to contact the NRC without fear of retaliation, essentially stated that retaliation could not be ruled out if the welding inspectors went directly to the NRC. Mr. Owen was asked by Mr. Rockholt if Applicants would condone retaliation against an individual who felt that he had to contact the NRC. In response to that

question Mr. Owen stated that, depending upon the circumstances of the case, appropriate action could not be ruled out. (PA Exh. 2, p.7).

328. A number of welding inspectors testified as to their recollection of the Owen meetings. Several of them were present in the meeting which Mr. Godfrey tape-recorded. These witnesses offer their own interpretations of that meeting.

329. Mr. Rockholt, who had asked the question of Mr. Owen, stated on cross-examination that he had once understood Applicants' policy to be that employees should raise concerns with supervision before going to the NRC, but that now he is aware they can go to the NRC at any time. Mr. Rockholt was asked if this was a change in policy; he responded that he did not know, but it was not consistent with his prior understanding of the policy. (Tr. 6212-13, Rockholt 11/4/83). When asked by the Board what message he got from Mr. Owen's remarks, Mr. Rockholt testified the impression he had was that it would be better if he didn't go to the NRC (Tr. 6360-62, Rockholt 11/3/83). Nevertheless, on redirect Mr. Rockholt stated that Mr. Owen did not say employees could not go to the NRC, although he did say it would be better if employees went through Applicants' chain of command; that he (Rockholt) had never been disciplined for going to the

NRC; and that to the best of his knowledge others had been to the NRC and never been disciplined. (Tr. 6397-98, Rockholt 11/8/83).

330. Mr. Godfrey testified that he came away from the meeting with the understanding that he would be free to go to the NRC without fear of retaliation (Tr. 8778, Godfrey 11/28/83). Mr. Godfrey was questioned by the Board regarding whether he believed he would be subjected to disciplinary measures for not bringing concerns to the Company before going to the NRC. Mr. Godfrey stated that prior to his meeting with Mr. Owen he was not sure what would be done, but after the meeting he had no doubt he could go to the NRC first with no fear of disciplinary action. The Board also asked whether any of his supervision, prior to Owen meeting, ever told Mr. Godfrey that he had to come to supervision before taking concerns to the NRC. Mr. Godfrey's response was no. (Tr. 8311, Godfrey 11/28/83).

331. Beau Ross, who also attended this meeting responded to a series of questions by the Board by saying that he left the Owen meeting with the impression that there might be punishment if employees did not first go to supervision. However he added that he believed that Mr. Owen's comments did not come out the way he intended. Further questioning of Mr. Ross by the Board disclosed that he thought Mr. Owen meant to convey that Applicants

would prefer employees discussing concerns in-house first. (Tr. 7014, 7068, Ross 11/11/83). In addition, Mr. Ross stated that his men knew they could always go to the NRC and that to his knowledge none had ever gotten in trouble for doing so. He further stated that he does not think Applicants would retaliate against anyone who went to the NRC (Tr. 7068-71, Ross 11/11/83).

332. Charles Crisp testified that he attended one of the meetings held by Mr. Owen and recalls

(S)omeone made the point that we could go to the NRC with any problem. We could talk to [Applicants]. We didn't have to talk to them first, but they emphasized the fact that they would prefer we come to Duke or some of our upper management on the jobsite, and whatever the problem was, try to get them the same information, the first shot, and try to iron the problem out without having to go to the NRC with it. (Tr. 8358, Crisp 11/29/83).

333. Mr. Owen testified, during cross-examination, that part of the reason he said what he did to Mr. Rockholt (that everyone must make his own decision on whether to go to the NRC) was that in his mind approaching the NRC could very well entail a longer procedure than if the employee brought his concern to the Company (Tr. 1995, Owen 10/6/83). Mr. Owen's testimony suggests that he was concerned about individuals going to the NRC capriciously, as in the context of a labor dispute unrelated to the safety of the plant when pressed on cross-examination by Palmetto Alliance, Mr. Owen stated that he thinks it is

clear Applicants' policy is that there is no retaliation for going to the NRC (Tr. 1996, Owen 10/6/83). Mr. Owen further stated that "I think the tone of the question [from Mr. Rockholt] came to me and I interpreted it as, what if I do that [go to the Company] and I don't . . . feel like I'm satisfied and I tried to say certainly we don't have any objection to you going to the NRC. Not only do you have the right to do it, you ought to go do it. I encourage you to do it." (Tr. 2010, Owen 10/6/83).

334. Mr. Owen expressed assurance to the parties and the Board that

repeatedly over the years we have told our employees, trained our employees, and have demonstrated that we don't retaliate against our employees either for use of our internal recourse procedures or any external resource procedure that is provided. [Tr. 2023, Owen 10/6/83].

335. The Board examined Mr. Owen on his perception of the Company's policy on access to the NRC:

Q (Judge Kelley) . . . the policy of the Company, as you understand it, is an employee with a safety concern can go to one or the other, or both?

A (Mr. Owen) That's the policy of the Company. That's my personal philosophy, and I support it, and believe I have always. [Tr. 2264, Owen 10/7/83].

336. The Board, in reviewing the record, concludes that it was not Mr. Owen's intent to do other than state unequivocally the Company policy on employees' access to

the NRC. Although some who heard his response to Mr. Rockholt's questions may have misunderstood Mr. Owen's intent, the Board is satisfied that the weight of the evidence supports the conclusion that Applicants' policy on access to the NRC does not include retaliatory actions against employees who go to the NRC.

337. The Board concludes that it is not the Company's policy that employees must bring concerns to their supervision before taking them to the NRC; that it is the Company's policy that employees have free access to the NRC at any time; and that the Company has not attempted to discourage employees from contacting the NRC directly by threatening or otherwise warning them of retaliatory action.

(c) LACK OF SUPPORT/COMMUNICATIONS

(i) Introduction

338. Many of the welding inspectors expressed the concern that they were not supported by QA supervision as they carried out their jobs within the QA program.^{81/} These lack of support concerns can be categorized into one of four areas, (1) verbal voiding of NCI's by QA supervision; (2) procedure interpretations by QA supervision; (3) resolutions of NCI's; and (4) the use of procedure R-2 and other methods to handle discrepancies.

339. Verbal voiding - Verbal voiding of NCI's was the focus of considerable attention during the hearing. There were instances where welding inspectors identified discrepancies, initiated a Nonconforming Item Report (NCI), and submitted it without a serial number to QA supervision for approval and processing, but QA supervision invalidated or "voided" the NCI. The NCI's were invalidated for any of a number of reasons. For example, the discrepancy identified by the inspector could be handled in accordance with another procedure, or the discrepancy was not an actual nonconformance, or perhaps the discrepancy could be readily corrected by a craftsman.

^{81/} See prefilled testimony of J.R. Bryant, William Burr, Boyce Cauthen, Charles Crisp, John Rockholt, and G.E. Ross. (Apps. Exh. 30, Bryant, pp. 3, 6; Apps. Exh. 29, Burr, p. 4; Apps. Exh. 32, Cauthen, p. 2; Apps. Exh. 57, Crisp, p. 2; Apps. Exh. 31, Rockholt, pp. 2, 4; and Apps. Exh. 34, Ross, p. 2).

(Apps. Exh. 14, Davison, pp. 28-29). The welding inspectors viewed the invalidation of NCI's as a lack of support for them after they had identified discrepancies because QA supervision would not approve and process an NCI.

340. Procedure interpretations - The welding inspectors were trained to require strict adherence to procedures as they performed inspections. QA supervisors are required to interpret procedures and exercise technical and engineering judgment as they carry out their duties to implement the QA program. The welding inspectors perceived a lack of support from QA supervision when supervisors interpreted procedures in a manner different from the inspectors' interpretations. The inspectors were then instructed to accept work in situations where the inspectors believed that accepting the work violated QA procedures. (FF 384-88.)

341. Resolutions of NCI's - Some concerns involved disagreement with resolutions of NCI's. The inspectors identified discrepancies which were then processed as NCI's. QA supervision approved the resolutions to those NCI's which correctly addressed deficiencies, but in the inspector's view, failed to address procedure violations by craft. The inspectors believed that they were not

supported by supervision when QA approved the resolutions of NCI's, but violations of procedures by craft were not challenged.

342. Procedure R-2 - The remaining concerns about lack of support involved the use of R-2 and other methods to resolve discrepancies, rather than the use of procedure Q-1. Procedure Q-1 is the NCI procedure which requires an evaluation of the discrepancy and approval of the disposition of the NCI by QA/supervision. Some concerns reflect instances where inspectors were instructed by QA supervision to document deficiencies using procedure R-2, or process control, or were instructed to allow craft to correct minor deficiencies. This occurred when Applicants were attempting to utilize other procedures to resolve discrepancies and reduce the number of unnecessary or improper NCI's which, in effect, were written to answer questions and resolve minor deficiencies. The inspectors believed that this was done in cases where the procedures required the use of Q-1. (FF 399-403.)

343. Palmetto contends that these concerns not only reflect a lack of support for welding inspectors, but reflect significant and systematic breakdowns in the Quality Assurance Program such that there is no reasonable assurance that the as-built condition of the plant is in accordance with the established design and construction

specifications (see Tr. 1859-60, Guild, 10/5/83). More specifically, Palmetto contends that the concerns demonstrate:

- A. The Company's failure to adequately document identified deficiencies;
- B. The Company's failure to adequately document decisions to not treat identified deficiencies as items reportable to NRC; and
- C. Improper processing of non-conforming item reports (NCI's), including the widespread practice of "verbal voiding" NCI's, and improper overturning of NCI's by Construction supervision. (Tr. 1862-64, 1867, Guild, 10/5/83).

344. Applicants characterized these concerns as the result of a failure of communications within the QA Department, particularly in the area of NCI resolution.^{82/} In Applicants' view, the inspectors did not understand the role of QA supervision in the resolution of discrepancies, and QA supervision did not adequately explain the basis for decisions invalidating NCI's, interpreting procedures, approving resolutions to NCI's, and instructing inspectors to accept work. Applicants contend that the lack of support concerns do not reflect a breakdown in its QA Program. (Apps. Exh. 2, Grier, P. 57a; Apps. Exh. 14, Davison, pp. 11-12; Apps. Exh. 21, Allum, p. 6; Apps. Exh.

^{82/} See the following prefilled testimony of QA supervision, as well as task force members: Apps. Exh. 2, Grier, pp. 55-57, 57a; Apps. Exh. 14, Davison, p. 11; Apps. Exh. 18, Morgan, pp. 9-10; Apps. Exh. 12, Alexander, p. 8; Apps. Exh. 10, McMeekin, pp. 7-8, 10; Apps. Exh. 11, Cobb, pp. 10-11; and Apps. Exh. 13, Zwissler, p. 12.

20, Baldwin, p. 10; Apps. Exh. 18, Morgan, p. 14; and Apps. Exh. 19, Shropshire, pp. 9-10). The welding inspectors agree that their concerns do not reflect a breakdown in the QA program,^{83/} but reflect their belief that they did not receive the necessary support they needed from QA supervision to require strict adherence to procedures.^{84/}

345. Applicants presented evidence at the hearing to refute both Palmetto's broad assertions of breakdowns in the QA Program, and the welding inspectors' claim of lack of support/communications. With respect to the broader question of systematic breakdowns in the QA Program, Applicants presented evidence which dealt with each aspect of the eighteen specific criteria set forth in Appendix B. (Apps. Exh. 2, Grier, pp. 7-31). However, Palmetto's allegations essentially challenge Applicants' compliance with Criteria X, XV, and XVI, which govern inspection of

^{83/} See prefilled testimony of B.W. Deaton, A.S. Gantt, Vernon Godfrey, Lindsay Harris, Stanley Ledford, William Burr, Charles Crisp, J.R. Bryant, Larry Jackson, and John Rockholt. (Apps. Exh. 28, Deaton, p. 4, Apps. Exh. 58, Gantt, pp. 5-6; Apps. Exh. 67, Harris, p. 4; Apps. Exh. 56, Godfrey, p. 4; Apps. Exh. 68, Ledford, p. 4; Apps. Exh. 31, Rockholt, p. 6; Apps. Exh. 29, Burr, p. 6; Apps. Exh. 57, Crisp, p. 5; Apps. Exh. 30, Bryant, pp. 6-7; and Apps. Exh. 61, Jackson, p. 5).

^{84/} See prefilled testimony of J.R. Bryant, William Burr, Boyce Cauthen, Charles Crisp, John Rockholt, and G.E. Ross. (Apps. Exh. 30, Bryant, pp. 3, 6; Apps. Exh. 29, Burr, p. 4; Apps. Exh. 32, Cauthen, p. 2; Apps. Exh. 57, Crisp, p. 2; Apps. Exh. 31, Rockholt, pp. 2, 4; and Apps. Exh. 34, Ross, p. 2).

activities affecting quality; control of non-conforming materials, parts, and components; and establishment of measures to identify significant conditions adverse to quality and to assure corrective action. Accordingly, these findings do not address the other criteria.^{85/} The Board's findings with respect to the evidence bearing on the Applicants' documentation of construction deficiencies, resolution of non-conformances, and corrective action measures are set forth below, followed by the findings with respect to the lack of support/communications concerns.

(ii) Documentation of Discrepancies

346. The Appendix B criterion with respect to inspections, Criterion X, requires that Applicants establish a program of inspections to verify conformance with the documented instructions, procedures and drawings applicable to the project, with such inspections being performed by individuals other than those who performed the activity being inspected. (10 C.F.R. Part 50, App. B).

^{85/} The Board admitted Applicants' evidence on compliance with each of the Appendix B criteria as background and indicated that it would be considered as such unless some specific criteria was the subject of greater focus by Palmetto. These three criteria were specifically identified by Palmetto as applicable to the practices they challenged in the hearings, and are therefore, considered in detail by this Board. (Tr. 2091-95, Kelley, 10/6/83; Tr. 2104, 2107, 2135, Guild, 10/5/83). Palmetto also challenged Applicants' QA Program independence and organization, which is considered elsewhere in this decision.

347. The inspection program at the Catawba site is conducted by QC inspectors who are trained, examined and certified in their particular area of responsibility. Their inspections are controlled by QA Procedures which are approved by the QA Department. These procedures include instructions for performing the inspection, requirements for hold points which stop the work until inspectors inspect and approve a certain activity, acceptance criteria, and documentation requirements. The results of inspections are documented on established forms, and include, as a minimum, the results of the inspection and the identity of the inspector conducting the inspection. All inspectors, as well as other QA employees, have full authority and responsibility to stop work when conditions adverse to quality affecting nuclear safety are detected. (Apps. Exh. 2, Grier, p. 16; Apps. Exh. 14, Davison, pp. 21-22; Tr. 2058-61, 2067, 2071, Grier, 10/5/83; Tr. 2268-69, 2293-94, Grier, 10/783; Tr. 2946, Grier, 10/13/83).

348. During the course of inspections, an inspector accepts or rejects construction workmanship under one of four methods. First, the "hold point" method is commonly used when a minor discrepancy or deficiency is identified. Work cannot proceed on an item until the inspector accepts work at certain points. The inspector can inform the craftsman that he is not accepting a certain item and

indicate to the craftsman that he should make corrections in accordance with the established procedures. In this instance, the inspector will withhold his acceptance until all necessary actions are taken to correct the deficiency or discrepancy. This method is commonly used at Catawba. (Apps. Exh. 2, Grier, p. 18; Apps. Exh. 14, Davison, p. 23; Tr. 2929, Grier, 10/13/183; 3738-39, Davison, 10/18/83; Tr. 4201, Davison, 10/20/83).

349. A second method of indicating acceptance or rejection of work is commonly referred to as the "process control" method, which is used primarily in welding. In this instance, the process control provides the means to document a rejection of work. The procedure for making the weld and for inspecting the weld would provide instructions on how to correct that discrepancy or defect, and then provide instructions for reinspection. The inspector inspects the repair or rework, and if acceptable, will indicate the acceptance on the same documentation. All of this would be documented on the Process Control Form, which serves both as a documentation of the work and the inspection of that work, including repairs, rework and reinspections. Like the hold point method, process control is commonly used to identify and correct minor discrepancies or deficiencies. Procedures M-4 and F-9 were commonly referred to during the hearing as examples of process control (Apps. Exh. 2, Grier, p.

18; Apps. Exh. 14, Davison, p. 23; Tr. 2062, 2071, Grier, 10/6/83; Tr. 2959, Grier, 10/13/83; 4286-87, 4199-00, Davison, 10/20/83; Davison, 10/21/83; 4926-4928, Allum, 10/27/83; 4929-30, Davison, 10/27/83).

350. Where the applicable inspection procedures do not offer a means to document the rejections and corrections of discrepancies, the QA program provides two other methods for identification and resolution of these discrepancies, Procedure R-2;^{86/} which utilizes a Deficiency Report Form (Form R-2A), and Procedure Q-1, Control of Nonconforming Items, with its corresponding form Q-1A, Nonconforming Item Report (NCI). Under Procedure R-2, the inspector describes the discrepancy on Form R-2A, obtains the serial number and the form is forwarded to the Construction Technical Support Group, which determines the appropriate action to correct the discrepancy. After the corrective action has been taken, the QA Department reviews that action to assure its sufficiency, and to assure that all actions and reinspections were performed. Each discrepancy documented on Form R-2A is reviewed by Construction and QA under the criteria for originating NCI's to determine if it should

^{86/} Procedure R-2 was not commonly used in the welding area prior to June 1982. Prior to the revision of Q-1 to allow use of R-2, (Revision 17), Q-1 was used to document minor discrepancies. Palmetto's assertions with respect to the use of R-2 are discussed infra.

be upgraded and handled using Procedure Q-1. In addition, Construction analyzes R-2A's to identify any existing or developing trends adverse to quality. (Apps. Exh. 2, Grier, pp. 18-22; Apps. Exh. 14, Davison, pp. 23-24; Apps. Exh. 6, QA Manual, Procedure R-2; Tr. 2079-80, Grier, 10/6/83).

351. The R-2 procedure requires less resources to resolve minor discrepancies when compared with the Q-1 procedure. An evaluation to determine whether the item is reportable under 10 C.F.R. § 50.55(e) is not required, nor is an evaluation required to determine whether significant corrective action is needed. (Tr. 2582, Grier, 10/11/83).

352. Procedure Q-1 is used to document discrepancies which (a) require design evaluation other than interpretations, clarifications or editorial changes; (b) represent a manufacturing deficiency other than minor material defects; (c) requires extensive rework; (d) represent a bypassed inspection holdpoint; or (e) which was discovered outside of a preplanned inspection under circumstances where there is no planned inspection which would check for that type discrepancy. (Apps. Exh. 2, Grier, p. 19; Apps. Exh. 14, Davison, pp. 23-24 Apps. Exh. 6, QA Manuals, Procedure Q-1;^{87/} (Tr.

^{87/} The QA Manuals were submitted as background, and are only cited where a specific procedure has been focused on during the hearing. (See Tr. 2091-95, Kelley 10/5/83).

2132-33, Grier, 10/6/83).

353. In a situation where any of these five criteria are applicable, an inspector or other individual would write an NCI, and obtain a sequential serial number and place it on the form.^{88/} A designated QA Engineer would then review the NCI to assure that the item is nonconforming and requires processing under Q-1, and also assure that all information needed to describe the item and to perform the evaluation is provided. If it is determined that an NCI is unnecessary, the reason is explained on the report and a copy provided to the originator. These voided non-conforming item reports are filed and maintained. In the past, it was not always a QA Program requirement to file and maintain copies of voided nonconforming item reports, although the other aspects of this initial review applied.^{89/} (Apps. Exh. 2, Grier, p. 20; Tr. 2109, Grier, 10/6/83; Tr. 3680-81, Davison, 10/18/83).

354. The actual item which is non-conforming will be tagged to indicate its status, and if physically possible, will be segregated from acceptable items. (Apps. Exh. 2,

^{88/} The serial number is obtained at this point under the current revision of Procedure Q-1, revision 18. The practice under prior revisions to Q-1 is discussed infra.

^{89/} This relates to "verbal voiding" of NCI's, a practice challenged by Palmetto. This practice is discussed in detail infra.

Grier, p. 20; PA Exh. 59, Procedure Q-1). Nonconforming the discrepancy stops any further work from proceeding to prevent any interference with the discrepancy pending resolution of the NCI.^{90/} (Tr. 2059, Grier, 10/5/83).

(iii) Resolution of Discrepancies

355. The majority of the welding inspector concerns involved this process of resolving discrepancies. Many of the technical concerns involved specific NCI's that the inspector remained concerned about.^{91/} Other concerns were considered non-technical and were described by the inspectors as lack of support by QA management, a failure to follow procedures by QA Management, and a failure to communicate the basis for QA Management decisions regarding NCIs. (Apps. Exh. 30, Bryant, pp. 2, 3, 6; Apps. Exh. 29, Burr, p. 4; Apps. Exh. 32, Cauthen, p. 2; Apps. Exh. 57, Crisp, p. 2; Apps. Exh. 28, Deaton, p. 3; Apps. Exh. 58, Gantt, p. 2; Apps. Exh. 56, Godfrey, p. 3;

^{90/} All QA employees have the authority to stop work in circumstances where continuation of the work would produce circumstances adverse to quality. (Apps. Exh. 2, Grier, p. 9). Procedure R-1 sets forth the procedure for stopping work when this same result, i.e. preventing work where the continuation might produce results adverse to quality, cannot be achieved by other means (Q-1, process control, or hold points). (Tr. 2058-61, 2071, Grier, 10/6/83). Procedure Q-1 does not prohibit all work relating to the non-conforming item from proceeding, only work that might interfere with resolution or produce other conditions adverse to quality (PA Exh. 59).

^{91/} See findings relating to the Technical Concerns infra.

Apps. Exh. 67, Harris, p. 2; Apps. Exh. 61, Jackson, pp. 2, 3, 5; Apps. Exh. 68, Ledford, p. 3; Apps. Exh. 31, Rockholt, pp. 2, 4; Apps. Exh. 34, Ross, p. 2).^{92/}

356. The lack of support concerns must be viewed in the context of the role of inspectors and their supervision. Inspectors are thoroughly trained to follow procedures.^{93/} Many inspectors were interpreting procedures literally. Even though the intent of the written procedures is to allow the inspectors to make "black-and-white" decisions, the procedures as written could not cover every specific situation that would arise during the course of inspections. Procedures are written to implement the various standards and codes applicable to Catawba. These standards and codes are interpreted and written as procedures for use by inspectors. Invariably "gray" areas exist and questions of interpretation arise as inspectors use those procedures. These questions would

^{92/} Applicants' submitted the testimony of 19 other welding inspectors as an offer of proof after the Board determined that additional testimony from welding inspectors would be cumulative. The prefilled testimony of these inspectors, though not admitted, together with the admitted testimony of various inspectors and supervisors encompasses the totality of the welding inspector concerns. See Applicants' Exhibits (offer of proof) 70, 71, 72, 74-80, 81-83, and 86.

^{93/} Mr. McMeekin, a member of Task Force I, concluded that some welding inspectors saw their role as requiring strict adherence to procedures, rather than documenting discrepancies and variations from these procedures (Apps. Exh. 10, McMeekin, p. 10).

be resolved by QA supervision, and in many instances the answers provided by supervision may have appeared to the inspector not to follow the wording of the procedure. Inspectors were not comfortable with the interpretations provided by QA supervision, and QA supervision had not done a sufficient job of explaining their interpretations and judgments to inspectors. In some instances, QA supervision may have reached a conclusion about a question and instructed the inspector to accept the item. Even though the judgments made by supervisors were correct and proper, the inspector was required to accept something that he did not agree with, or in some instances did not understand. The inspector was justifiably concerned in this situation since it conflicted with their training to rigidly adhere to QA procedures. The communication between inspectors and QA supervision was clearly less than desirable, resulting in considerable frustration on the part of the welding inspectors.^{94/} (Apps. Exh. 2, Grier, p. 55; Tr. 3784-87, Grier, 10/19/83; 7052, Ross,

^{94/} An example offered during the hearing was helpful in understanding how this communication problem led to the kind of concerns expressed by the welding inspectors. Mr. Grier cited the example of a question on whether the length of a weld on a pipe hanger has to be continuous, or whether a weld can be divided into two pieces. The answer may be yes, but the procedure is ambiguous. The inspector might be told to accept the divided weld, but might not understand how that interpretation agrees with what is written in the procedure. (Tr. 3785, Grier, 10/19/83).

11/11/83).

357. These kind of disagreements between inspectors and supervision can occur at any level of the inspection and discrepancy resolution process. The concerns about NCI's rejected at the stage of Senior Engineer review have received considerable attention as "verbally voided" NCI's. Also, an inspector may, for example, write an NCI on a weld; the NCI is approved by the Senior Engineer; and is evaluated by a welding engineer for disposition. The welding engineer evaluates the NCI based on his knowledge of the codes and standards and determines that it is "acceptable as is". This resolution and justification is approved by QA Engineering, but insufficient effort is made to explain the resolution to the inspector. Even if the inspector understands and agrees with the resolution of the deficiency, he may feel that there are violations of procedures by craft that are not addressed by the resolution. The inspector may view approval of the resolution by QA supervision as a failure to support the inspector's enforcement of the procedures. (Tr. 3008, Wells, 10/13/83).^{95/} Strictly speaking, the inspector has

^{95/} Another helpful example offered by Mr. Wells involved wall thickness of pipe. An inspector identifies a pipe wall that is less than the required thickness; he initiates an NCI; and it is assigned to Design to evaluate the NCI based on the stresses on the pipe. Design determines that the thickness is satisfactory, but the analysis and reasoning are not adequately communicated to the inspector. The inspector may (footnote continued)

correctly performed his job -- identification and documentation of discrepancies, and the QA supervisors and engineers correctly performed their jobs -- interpretation of codes and procedures to resolve discrepancies identified by inspectors. Yet this kind of situation resulted in welding inspector concerns touching on several areas, verbal voiding of NCI's; procedure interpretations; resolution of NCI's; and the use of R-2 and other procedures to resolve discrepancies.

358. Criteria XV requires that Applicants establish measures to control materials, parts, and components which do not conform to requirements in order to prevent their inadvertent use or installation, and establish procedures for identification, documentation, segregation, disposition and notification to affected organizations. In addition, nonconforming items must be reviewed and accepted, rejected, repaired or reworked in accordance with documented procedures (10 C.F.R. Part 50, App. B).

359. The process established for resolution of NCIs is set forth in Procedure Q-1. This procedure has been revised a number of times during the course of construction at Catawba. (PA Exh. 59). Some of these revisions were focused on during the hearing, and others

(footnote continued from previous page)
seriously question whether too thin pipe was accepted. This kind of situation gave rise to the welding inspector concerns. (Tr. 3009, Wells, 10/13/83).

have little bearing on the issues before this Board. The Board is primarily concerned with the revisions in effect from 1980-1982, Revisions 13-17.^{96/} (PA Exh. 59). Revision 13 to Q-1 was in effect from May 1980 until Revision 14 was approved in January 1981. Some of the occurrences which were later expressed as welding inspector concerns arose during this time period. The NCI evaluation and disposition process as set forth in Revision 13 follows.^{97/}

360. When an inspector determined that a discrepancy could not or should not be handled by another method, he would fill in the descriptive information on the Q-1A. If the inspector had questions about whether the item was in fact nonconforming, he might talk with his supervision to resolve any questions. If a determination is made at this stage that the item is not nonconforming, or could be handled by another method, the Q-1A would not be completed by the inspector or would be discarded. If the

^{96/} When a specific revision is important to a finding made by the Board, the specific revision will be identified. Palmetto Exhibit 59 includes Procedure Q-1, Revisions 1-18. Revisions 1-6, and perhaps 7-9 are not relevant to this proceeding since they were utilized prior to any significant safety related construction at Catawba.

^{97/} The difference between Revisions 12 and 13 are negligible and would not alter these findings in any way. Revision 12 was in effect from June 1978 until May 1980.

determination is that the item is nonconforming, the inspector would sign the form as the originator. (Apps. Exh. 14, Davison, pp. 26-27).

361. After the person originating the NCI has described the discrepancy and provided the additional information required on Form Q-1A, the form is forwarded to the Senior Engineer for review for clarity, completeness, and validity. This review was conducted by the Senior Engineer in the section where the person originating the NCI worked. When QC inspectors originated NCIs, the review was conducted by Mr. Davison, whose title at that time was Senior QC Engineer. During this period, there was no requirement that the NCI have a serial number at this review stage, although in most instances the inspectors obtained a serial number prior to this review.^{98/} The Senior Engineer reviewed the NCI for clarity, completeness and validity to determine if the item was clearly identified; if the problem was clearly described; whether the requirements had been violated and identified; whether there was another more appropriate way

^{98/} Revision 13 provided for assignment of a sequential number by Document Control after the Senior Engineer and the Senior QA Engineer reviews of the NCI. The practice was that an inspector or other person originating an NCI would obtain a serial number at the time they originated and signed the Q-1A form (Tr. 6985, Ross 11/11/83). Assignment of a serial number is a clerical function, and does not indicate a review of the NCI for validity. (Apps. Exh. 14, Davison, p. 27).

to handle the item; and whether all the available information is provided to enable the person later assigned responsibility for resolution of the NCI to understand the discrepancy. (Apps. Exh. 14, Davison, pp. 27-28; PA Exh. 59, Procedure Q-1, Rev. 13, ¶5.1.13; Tr. 3680-81, Davison, 10/18/83).

362. Mr. Davison testified that when an NCI was unclear or needed additional information, he explained this to the inspector and directed the inspector to obtain the information or clarify the NCI and submit it again. Mr. Davison also discussed the validity of the NCI with the inspector if he had questions about validity. These discussions sometimes included the inspector's supervisor. If Mr. Davison determined at this point that the discrepancy identified by the inspector was not a valid NCI, he explained his reasoning to the inspector, and handled the completed NCI in one of two ways, depending on whether the NCI had a serial number. If the NCI had a serial number, he would either explain in writing on the NCI why it was invalid, or approve the NCI and ask QA to assign it to him for resolution, in which case he would resolve the NCI by stating why it was invalid. In both instances, the NCI form would be forwarded to QA for

review and filing. If the NCI did not have a serial number he would return it to the inspector and explain why it was not valid.^{99/} (Apps. Exh. 14, Davison, p. 28).

363. Revision 13 provided no instructions for disposition of invalidated NCIs. The practice at that time was that the voided NCI was not processed further if it did not have a serial number (Tr. 2109-11, Grier, 10/6/83). Valid NCI's were approved and signed by Mr. Davison or another Senior Engineer and forwarded to the Senior QA Engineer for review (Apps. Exh. 14, Davison, pp. 28-29; PA Exh. 59, Procedure Q-1, Rev. 13, ¶5.1.13).

364. The Senior QA Engineer during this period was Mr. Morgan.^{100/} Like the review conducted by Mr. Davison, Mr. Morgan reviewed the NCI for clarity, completeness, and proper content, and signed the form, which indicated his acceptance.^{101/} If the NCI is determined to be invalid at this stage by the Senior QA Engineer, it is filed and no further action is taken. If the NCI is approved, the

^{99/} Palmetto argues that this "verbal voiding" was a widespread and improper practice. It is discussed in detail infra.

^{100/} Mr. Morgan has been responsible for QA Engineering in the NCI resolution process during the entire period of construction at Catawba relevant to this decision, although the position title has changed from time to time when the QA Department was reorganized. (Apps. Exh. 18, Morgan, pp. 1-3).

^{101/} Mr. Morgan delegated aspects of this review to other engineers in QA Engineering. In the welding area, Mr. Shropshire performed this function (Tr. 4867-68, 4870, Morgan, 10-26-83).

Senior QA Engineer assigns it to the appropriate department to perform the evaluation, state the justification and determine the disposition of the item. The NCI is then forwarded to the Document Controller who maintains the official documentation; assigns the NCI a sequential serial number (if it does not already have a number); and distributes copies to the appropriate department for resolution. (Apps. Exh. 14, Davison, p. 29; Apps. Exh. 18, Morgan, pp. 8-9; PA Exh. 59, Procedure Q-1, Rev. 13, p. 3).

365. The NCI is evaluated by the assigned department, and a disposition is provided, including a justification if the resolution is that the discrepancy is "acceptable as is," and instructions necessary to implement the disposition. The NCI is also evaluated at this stage for reportability under 10 C.F.R. §50.55(e) and 10 C.F.R. Part 21. (Tr. 4856, Shropshire, 10-26-83). Next, the NCI receives a technical review for clarity, completeness and proper technical content by an engineer within the department providing the disposition. (PA Exh. 59, Procedure Q-1, Rev. 13, ¶5.1.17-20).

366. The NCI is returned to QA for a final review and approval of the disposition and justification, and the evaluation for corrective action. Specific actions necessary to implement the disposition, as well as subsequent inspections are approved by QA Engineering and

the disposition is implemented. When all necessary actions have been taken, QA provides a final review and approval of the actions, and the NCI is filed and maintained. (PA Exh. 59, Procedure Q-1, Rev. 13, pp. 4-5; Apps. Exh. 2, Grier, p. 20; Apps. Exh. 14, Davison, p. 24).

(iv) Review for Corrective Action
and Reportability

367. Criteria XVI requires that Applicants establish measures to assure that conditions adverse to quality are promptly identified and corrected. For significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. (10 C.F.R. Part 50, App. B).

368. Applicants' QA procedures that control work activities and inspections (process control) in some instances contain instructions for corrective action. These instructions include methods to identify and document discrepancies as well as instructions for carrying out corrective action. Where the process control does not provide instructions, discrepancies are recorded on R-2A's or NCI's. Each NCI is reviewed to determine if significant corrective action needs to be considered. The

corrective action required to bring the specific item into compliance is recorded on the NCI. (PA Exh. 59 Procedure Q-1; Tr. 2582, Grier 10/11/83).

369. If there is a need for significant corrective action, then the provisions of Procedure R-6, Significant Corrective Action, are carried out. Significant corrective action would involve actions which would extend beyond the scope of correcting the specific item which was nonconforming. Under the R-6 procedure, a designated individual in QA, Design or Construction is responsible for determining the required corrective action. The items considered in this evaluation include whether the condition is significant; the root cause of the problem; what corrective action is required to prevent recurrence; whether there are possible Duke or industry generic implications; whether the condition is repetitive to the extent that generic corrective action should be implemented; and whether the condition needs to be investigated at other Duke sites. The results of this evaluation are recorded on Form R-6A and corrective actions required are documented. After the corrective action is carried out there is a final review by QA. (Apps. Exh. 2, Grier, pp. 21-22).

370. Quality Assurance procedures require analysis of trends in discrepancies documented on NCI's and R-2A's. These trends are provided to the appropriate management in

Construction and QA. These trends allow Company management to assess the effectiveness of the corrective action program (Apps. Exh. 2, Grier, p. 22; Tr. 4873, Shropshire, 10/26/83). These trend reports also reflect generic or repetitious problems that require significant corrective action. (Tr. 4874, Shropshire, 10/26/83).

371. Historically, QA Engineering conducted the review for significant corrective action at the time of the review of NCI dispositions. (Tr. 4858-59, 4876-77, Shropshire, 10/26/83; Tr. 4877, Davison, 10/26/83). Revision 14 to Q-1, approved in January 1981, included this practice in the Q-1 procedure. Revision 14 required a review by the person performing the engineering technical review within the department resolving the NCI to assure corrective measures are sufficient to prevent or minimize recurrence of the item, and if it is a recurrent problem, to assure that other possibilities have been considered as a means to preventing further occurrence. (PA Exh. 59, Procedure Q-1, Rev. 14, ¶5.1.20). Revision 14 required this same review by QA engineering to assure the sufficiency of corrective measures both at the review for approval of the disposition of the NCI and final approval of implementation of the disposition, including corrective measures. (PA Exh. 59, Procedure Q-1, Rev. 14, 15 and 16).

372. Applicants are required by 10 C.F.R. §50.55(e) and 10 C.F.R. Part 21 to report all significant deficiencies to the NRC. QA Engineering assigns all NCIs to the appropriate department to determine if the item is reportable to NRC. (PA Exh. 59, Procedure Q-1, Rev. 11, ¶4.10 (approved July 1977); Rev. 12, ¶20-21). This review for reportability has become more formalized during the course of construction at Catawba. Revisions to Procedure Q-1 have imposed time requirements for conducting the review, and other procedures have been established for handling potentially reportable items. (See PA exh. 59, Procedure Q-1, Rev. 15, ¶5.1.7, and Rev. 18, Form Q-1D; Tr. 4886, Shropshire, 10/26/83).

(v) Verbal Voiding of NCIs

373. Prior to the approval and implementation of Revision 17 to Q-1 in June, 1982, the inspector originating an NCI completed the description of the nonconforming item and usually obtained a serial number prior to presenting the NCI to the Senior Engineer, Mr. Davison, or to the other person performing the initial review of the NCI (Tr. 6985, Ross, 11/11/83).^{102/} The

^{102/} Revision 16 to Procedure Q-1 was approved in December 1981. This revision changed the first review of the NCI from Senior Engineer to "the appropriate individual in Construction or Project QA." (PA Exh. 59, Procedure Q-1, Rev. 15, ¶5.1.1(m)). This became the technical review and was performed by Charles Baldwin and other technical supervisors delegated this responsibility by Mr.

(footnote continued)

purpose of this review was essentially to determine if the discrepancy identified by the inspector was nonconforming or if it could be handled by another procedure. If the NCI was determined to be unnecessary or improperly initiated, the reason was explained to the inspector, or on the form and a copy of the form was provided to the inspector. (Apps. Exh. 14, Davison, p. 28). There was a distinction in the disposition at that point. If a serial number had been obtained prior to review by the Senior Engineer, and he invalidated the NCI, the NCI was filed. If the inspector had not obtained a serial number prior to such review, then the NCI would be given back to Inspector and not filed. It is the latter practice that Palmetto asserts is an improper processing of NCI's, resulting in a lack of documentation of identified deficiencies which calls into question the adequacy of the QA Program as a whole, and more specifically the documentation of deficiencies (Tr. 1819-20, 1867, Guild 10/5/83).

374. The Q-1 procedures in effect at the time this initial review of NCI's was required clearly allowed an NCI to be invalidated at this stage. (PA Exh. 59, Procedure Q-1, Rev. 13, ¶5.1.13). Revisions 12, 14, 15 and 16 similarly provide for the invalidation of an improper or unnecessary NCI at this review stage.

(footnote continued from previous page)

Morgan. (Tr. 4977-78, Mr. Morgan, 10/27/83). The nature of the review at this level was not changed.

375. The practice of invalidating NCI's at the Senior Engineer review is not inconsistent with procedure Q-1. While the procedure could have been clearer, we cannot conclude that verbal voiding was an improper practice. However, the inspectors saw it as an example of lack of support^{103/} (See Tr. 8227, Godfrey, 11/28/83), while QA supervision saw it as the proper exercise of

103/ In response to Board questions about voided NCI's, Mr. Bryant stated that when he first got into welding inspection Mr. Davison would not even comment about his NCI's. Mr. Davison just signed them (Tr. 6063, Bryant, 11/4/83). Mr. Bryant stated that sometime in 1980 or 1981, Mr. Davison started screening NCI's a lot more closely. This more careful screening appears to coincide with the effort to reduce the number of improper or unnecessary NCI's. Mr. Bryant thought that when Mr. Davison started screening more carefully that his integrity was questioned, and when Mr. Davison determined that an item was not an NCI, Mr. Bryant stated that it "demotivated" him (Tr. 6164, Bryant, 11/4/83). The board asked Bryant what he thought Mr. Davison was supposed to be doing when Mr. Bryant came to him with a Q-1A form. Mr. Bryant thought Mr. Davison's responsibility was to insure the validity of the nonconforming item; that it was his responsibility to review it for accuracy and that it had enough detail so that whoever addressed it could resolve it (Tr. 6064-65, Bryant 11/4/83). The Board probed further and asked Bryant if it was "the function of the QA design engineering people to look at the situation and say for example, well, that violates this procedure, but it is okay, anyway, and then they can override it based on engineering judgment? Mr. Davison wasn't exercising engineering judgment was he?" (Tr. 6165, Bryant 11/4/83). Mr. Bryant responded that Mr. Davison was a QA engineer and he signed the Q-1A after he reviewed it. The Board asked Mr. Bryant whether Mr. Davison at an earlier time period was doing the kind of things that Mr. Shropshire and Mr. Morgan do now. Mr. Bryant responded that he was not knowledgeable about that but he thought Mr. Davison was, but was not sure (Tr. 6165-66, Bryant 11/4/83).

their technical and engineering judgment (Apps. Exh. 2, Grier, pp. 41-43; Apps. Exh. 9, Walls, p. 13; Apps. Exh. 14, Davison, pp. 30-31; Apps. Exh. 18, Morgan, pp. 8-9; Apps. Exh. 19, Shropshire, pp. 5-6; Apps. Exh. 20, Baldwin, pp. 7-8; and Apps. Exh. 21, Allum, p. 4).

376. The NRC resident inspector testified that it is appropriate for a supervisor to invalidate an NCI based on the supervisor's judgment that the item does not represent a deficiency or violation of applicable procedures, but the basis for the supervisor's decision should be communicated to the inspector. (Tr. 9842-43, Van Doorn, 12/6/83). Also, the invalidation of NCI's based on technical and professional judgment consistent with QA procedures is not a violation of NRC regulations. (Tr. 9843, Van Doorn, 12/6/83).

377. Palmetto asserted that verbal voiding was a widespread practice which resulted in a lack of documentation of identified deficiencies. The Board was particularly concerned about this assertion and carefully examined Applicants' QA management witnesses, and the welding inspectors on this subject. Mr. Davison testified that he invalidated about 20 NCI's per year which could be considered verbally voided. This would total approximately 200 voided NCI's, while more than 17,000 NCI's have been processed and resolved during construction

of Catawba. This estimate by Mr. Davison includes NCI's from welding and all other inspector disciplines at Catawba (Tr. 4956, Davison, 10/27/83).

378. Mr. Baldwin, a Technical Supervisor responsible for reviewing NCI's at the initial stage, testified that he could only recall two instances when he verbally voided an NCI submitted by a welding inspector. (Tr. 4994-95, Baldwin, 11/27/83).

379. The welding inspectors and supervisors were examined about their experience with verbal voiding of NCI's. Mr. Ross, a first level welding inspector supervisor during the entire period of construction at Catawba stated that in his experience verbal voiding only occurred during a four to six month period during 1981, and probably occurred 18 to 20 times, or less (Tr. 6986, Ross 11/11/83). Further, Mr. Ross testified that to the best of his knowledge, all of the verbally voided NCI's were submitted as concerns by welding inspectors and these items were resolved as technically sound. There was no safety significance to verbally voided NCI's (Tr. 6987, 7052, Ross 11/11/83).

380. Mr. Rockholt, a welding inspector for five years at Catawba, considered verbally voided NCI's "a drop in the bucket" and "a very small proportion" of the total number of NCI's he had written (Tr. 6379, Rockholt,

11/8/83). He estimated that he had 30-35 NCI's voided, and did not believe that it significantly affected safety (Tr. 6366-67, Rockholt, 11/8/83).

381. Mr. Bryant, a welding inspector for 6 years at Catawba, stated that he originated about 200 NCI's, only 4 or 5 were verbally voided, and each of his voided NCI's was submitted as a concern to the Technical Task Force (Tr. 6160-62, Bryant, 11/4/83). Mr. Gantt testified that he had only 4 or 5 verbally voided NCI's (Tr. 8559, Gantt, 11/29/83). Welding inspectors William Burr, Boyce Cauthen, B.W. Deaton, Charles Crisp,^{104/} and Larry Jackson^{105/} testified that they never had an NCI voided (Tr. 5894-95, 5954, Burr, 11/3/83; 6560-61, Cauthen, 11/9/83; 5823, Deaton, 11/3/83; 8402, Crisp, 11/29/83; and 8916, Jackson, 11/30/83).

^{104/} In response to Palmetto's question whether Crisp ever had an occasion to originate a Q-1A and take it to Mr. Davison or Mr. Baldwin, Mr. Crisp responded "I have taken them to both of them. I never did have one turned down, so I never fell into this situation." (Tr. 8402, Crisp, 11/29/83). Crisp added that "he had to go back and maybe put some additional information on them or maybe location. ... but as far as rejecting it, I never did have one." (Id.).

^{105/} Mr. Jackson stated: "I have never written an NCI where I have been told not to write it. Because I write them and I have never been verbally abused by them or told not to write them, you know, because that is our job to write them" (Tr. 8916, Jackson, 11/30/83).

382. In response to Board question, Mr. Deaton stated that he had been through the whole construction phase at Catawba. (Tr. 5804, Deaton 11/3/83). In discussing the number of NCI's he had written since he had been a welding inspector or supervisor, Mr. Deaton stated that he had written a great deal. Deaton was asked for a ballpark figure between 100 and 1,000. He replied, "closer to 1,000." (Tr. 5823, Deaton 11/3/83). Deaton added that he had written 113 NCI's in one day (Tr. 5822, Deaton 11/3/83).

383. Based on this evidence, we cannot say that verbal voiding a violation of Q-1. However, what we can say is that verbal voiding was not a widespread practice as asserted by Palmetto. The practice of verbal voiding NCI's forms no basis for questioning the adequacy of the Applicants' QA program to identify and document discrepancies. Accordingly, we find that Palmetto's assertion that verbal voiding was a widespread and improper practice which calls into question the adequacy of the QA program is without merit.106/

106/ Palmetto's assertions about verbal voiding resulting in a failure to document decisions to not treat identified deficiencies as reportable items is equally without merit. As set forth in the findings relating to reportability and measures to assure corrective action, significant deficiencies are reportable to NRC. It does not appear from the evidence, nor could we reasonably infer that verbal voiding resulted in a failure to document significant deficiencies.

(vi) Procedure Interpretations by QA Supervision

384. The welding inspectors expressed concerns of lack of support from QA supervision in situations where the inspectors perceived that their supervisors interpreted QA procedures to allow deviations from the procedures as written. In some instances the inspectors were instructed to accept work that they believed violated procedures. There is no indication that inspectors were directed to accept substandard work, and the inspectors testified that they never approved substandard work. (See, e.g., Tr. 6550, 6573, Cauthen 11/9/83; 6391-92, Rockholt 11/8/83; Apps. Exh. 58, Gantt, p. 5; Apps. Exh. 68, Ledford, p. 4).

385. Based on our review of the inspectors' concerns, we find that the concerns stem from the fact that the inspectors and supervisors failed to communicate with each other. Better explanations of decisions by supervisors would have made the inspectors more comfortable accepting the necessary procedural interpretations made by QA supervision. Better communications would have enabled the inspectors to more clearly understand their role of identification of discrepancies, and supervision's role of resolving those discrepancies to assure the quality of construction at Catawba.

386. One example of a concern which illustrates the disagreement that often occurred when QA supervision interpreted procedures is the concern Mr. Rockholt expressed regarding the resolution of NCI #13,627. This NCI related to the inaccessibility of material marking on a plate in one of the two decontamination pits at the site. Because of the configuration of the plate, it could only be installed with the traceability number on the bottom, where it was inaccessible for a visual inspection. Mr. Rockholt believed that this violated traceability procedures and he sought to initiate an NCI. He was instructed by Mr. Baldwin, however, that this was not a nonconformance because the plate could be identified by its configuration in accordance with Procedure H-5. Mr. Rockholt disagrees with this interpretation (Tr. 6291, Rockholt, 11/8/83).

387. It was established that procedure H-5 provided that after the installation of such material, "identification will be by piece or mark number or by dimensional configuration." (Tr. 6396, Rockholt 11/8/83). The resolution of NCI #13,627 confirmed that "The plate can be identified by its dimensional configuration in accordance with QA Procedure H-5." (PA Exh. 89). Further, there were only two plates of this type on site, one for each decontamination pit (Tr. 6965-66, Ross, 11/11/83). This is apparent from the purchase order attached to the

NCI (PA Exh. 89). The NCI resolution was approved by three engineers (PA Exh. 89, p. 3). The Technical Task Force investigated this concern and found no technical inadequacy because dimensional configuration may be used as a method of material identification. (FF 111).

388. Mr. Rockholt agreed that his concern did not present a technical deficiency (Tr. 6391, Rockholt 11/8/83). This was confirmed by Mr. Ross, who stated that the proper plate had been installed (Tr. 7050, Ross 11/11/83).^{107/} This example illustrates how the attitude of strict adherence to procedures by welding inspectors, and the lack of communication with respect to judgments by QA supervision resulted in the lack of support concerns.

^{107/} It is important to note that the Applicants' procedures are in general more stringent than the NRC's QA requirements of 10 C.F.R. Part 50, Appendix B (see Tr. 9792-94, Van Doorn, 12/6/83). Thus, when the inspectors, applying a literal interpretation of construction procedures, identify a procedural violation, there is still a margin in which the work may be judged acceptable (Tr. 9794, Van Doorn, 12/6/83). The Staff recognizes that in general there is no violation of Appendix B in such a situation (Tr. 9795-96 and Tr. 9844, 45, Van Doorn, 12/6/83). In short, the mere fact that a procedure has been violated does not mean that there has been a violation of Appendix B.

(vii) Resolution of NCI's

389. The same factors which led to concerns about verbally voided NCI's and procedure interpretations by QA supervision underlie the concerns expressing disagreement with resolutions of NCI's.^{108/}

390. Mr. Godfrey, for example, expressed lack of management support concerns in connection with the resolutions of two NCI's (Tr. 8227-28, Godfrey 11/28/83). The first was NCI #9358 which appears in the record as PA Exh. 112. Mr. Godfrey had discovered some piping material marked with two specification numbers, A-105 and SA-105. This dual marking was inconsistent with the released pipe material log which indicated that one or the other type of material was to be used. Mr. Godfrey was not aware that these identification numbers were interchangeable (Tr. 8234, Godfrey 11/28/83). He therefore initiated an NCI on this item, citing violations of QA Procedures M-4 and F-9. The NCI was processed and was resolved based on the determination that materials marked A-105 and SA-105 are

^{108/} For example, Mr. Cauthen testified that welds which were rejected for violations of procedures were later accepted as is; the inspector was overridden (Tr. 6540-41, Cauthen 11/9/83). Mr. Cauthen noted in his prefiled testimony that he had been shown figures where the pipe thickness the Company used was greater than necessary, so despite the procedural violation, the pipes were still safe (Apps. Exh. 32, Cauthen, p. 6).

identical. This determination was made by Mr. Davison, with QA review and approval by Mr. Shropshire (PA Exh. 112; Tr. 8319-20, Godfrey 11/28/83).^{109/}

391. While Mr. Godfrey agreed that the correct material had been used (Tr. 8247, Godfrey 11/28/83), he could not accept the resolution because he does not have the knowledge or authority to determine whether A-105 and SA-105 are interchangeable (Tr. 8244, Godfrey 11/18/83). This example illustrates the proper exercise of managerial responsibility to determine whether an item is technically acceptable despite a deviation from procedures. Yet it was a lack of support concern by an inspector.

392. Mr. Godfrey's second concern related to NCI #9085 which is PA Exh. 113. In this instance, three heat numbers were found on a piece of Class E piping in the course of a final visual inspection. Mr. Godfrey was concerned that the pipe could be cut and a part of it used in a higher grade safety-related system (Tr. 8251-55, Godfrey, 11/28/83). He also felt that the traceability requirements of QA Procedure M-49 had been violated by this marking (PA Exh. 113). The resolution of the NCI was that the piping was "acceptable as is" since it satisfied the applicable design requirements, and the traceability

^{109/} The Technical Task Force investigated this concern (designated Concerns J-2 and R-27) and agreed with management's resolution of the NCI. See discussion, supra.

requirements of M-49 no longer applied to this piping (PA Exh. 113). These findings were confirmed by the Technical Task Force investigation (See discussion, supra.)

393. Mr. Godfrey did not contend that the pipe installed was defective (Tr. 8263, Godfrey 11/28/83). Rather he claimed that neither the NCI resolution nor the Technical Task Force Report adequately addressed his concern that the pipe may be used in a safety-related system (Apps. Exh. 56, Godfrey, p. 5; Tr. 8265, Godfrey 11/28/83). He recognized, however, that if the pipe were cut, the accuracy of the traceability number would be verified by subsequent inspection^{110/} (Tr. 8305, 8316, 8324, Godfrey, 11/28/83). In sum, this example, like others expressed by welding inspectors, represents a disagreement with, or failure to accept the resolution to an NCI which was based on an evaluation of the matter by experienced supervisors.

^{110/} As Mr. Davison explained, the heat number verification will ensure that the pipe is not used in a safety-related system (Apps. Exh. 14, Davison, p. 10). Furthermore, QA Procedure H-4 was revised in accordance with the Task Force recommendations to clarify marking of materials by craft (Apps. Exh. 2, Grier, p. 53).

(viii) The Use of Procedure R-2 and other methods to Resolve Discrepancies

394. In June 1982 the Applicants adopted Revision 17 to Procedure Q-1 permitting the use of Procedure R-2 to document discrepancies in welding. This revision was adopted in response to comments the Applicants received from the NRC to the effect that NCI's were being used to document insignificant matters that could be better resolved through simpler procedures. The NRC was concerned that this unnecessary use of NCI's would dilute the effectiveness of the NCI resolution process (NRC Staff Exh. 5, Bryant, p. 21; Tr. 9847, Bryant, 12/6/83; Tr. 2581-82, Grier, 10/11/83).

395. Mr. Jack Bryant, NRC inspector, explained that the type of documentation and review associated with an NCI is reserved for significant conditions adverse to quality (NRC Staff Exh. 5, Bryant, pp. 19-20). When an NCI is initiated an evaluation must be conducted to determine whether the item is reportable under 10 C.F.R. §50.55(e) and whether significant corrective action must be taken (see Tr. 2582-83, Grier, 10/11/83). Thus the use of NCI's for minor discrepancies is a waste of resources and dilutes the effectiveness of the procedure. In addition, Mr. Ross testified that the welding inspectors

- used NCI's as a vehicle to ask questions since in the
- inspector's view there was no other procedure available
- (Tr. 7009-10, Ross 11/11/83).

396. The use of Procedure R-2 in welding at Catawba resulted in a 45% reduction in the number of NCI's initiated between August 1982 and August 1983, compared with the previous twelve-month period (Tr. 3737-38, Grier 10/18/83). Under Procedure R-2, the inspector describes the discrepancy on Form R-2A and the form is forwarded to the Construction Technical Support Group, which determines the appropriate action to correct the discrepancy. After the corrective action has been taken, the QA department reviews the action to assure its sufficiency, and to assure that all actions and reinspections are performed. The NRC inspectors have free access to this documentation (Apps. Exh. 2, Grier, p. 18-22; Apps. Exh. 14, Davison, p. 23-24).

397. The use of Procedure R-2 does not result in the acceptance of deficient work or a failure to document deficiencies, nor is there a reduction in the documentation available for review by the NRC (Tr. 2926-28, 3033-34, Grier 10/13/83).

398. Some of the lack of support concerns are based on instances where inspectors were instructed to document discrepancies using procedure R-2 or process control, or were instructed to allow craft to simply correct minor

deficiencies. Some of the concerns resulted from Applicants' efforts to properly utilize procedure Q-1 for significant deficiencies. The following examples illustrate concerns of this nature. (Apps. Exh. 30, Bryant, Attachment A).

399. One representative concern involves Mr. Bryant's identification of discrepancies in hanger welds during a visual inspection.111/ The process control for these hanger welds required the inspector to identify the discrepancies to craft so that they can be corrected. Mr. Bryant became dissatisfied with craft's attempts to correct the discrepancies and decided to initiate an NCI. This NCI was invalidated and QA supervision allowed the discrepancies to be corrected in accordance with process control.112/ (Tr. 6140, Bryant, 11/4/83).

400. Another example involved Mr. Bryant's attempt to initiate an NCI when he identified a weld that had not been stenciled by both welders as required by Procedure M-49. QA supervision directed Mr. Bryant to resolve this discrepancy by allowing the welders to stencil their work. (See FF 121 and discussion supra.)

111/ This was designated as concern D-25 by the Technical Task Force. See Finding 133.

112/ Procedure R-2 would have been more appropriate to handle this situation, but R-2 was not used in welding at that time. At the hearing Mr. Bryant acknowledged the benefit of R-2. (Tr. 6166-67, Bryant, 11/4/83).

401. Another representative example involved Scott Gantt. Mr. Gantt raised one instance in which he thought there was excessive penetration in a weld. Mr. Bryant and Mr. Ross visually inspected the weld and indicated that there was excessive penetration. A radiograph (x-rays) of the weld indicated that it was acceptable. Despite the radiograph, Mr. Gantt stated that on the basis of what he and the other inspectors saw by visual inspection, the weld violated procedure L-80' (excessive penetration) (Tr. 6469, Gantt 11/29/83). This reflects the strict adherence to the visual inspection procedures, despite more sensitive non-destructive testing. Mr. Gantt testified that his true concern was with the procedure (Tr. 8550-51, Gantt 11/29/83).

402. Mr. Gantt was asked a hypothetical question about a situation in which the QA procedure was in fact violated, but because of the conservatism written into Applicants' QA procedures over and above what is required in the applicable welding codes, an engineer determined that he should accept the weld as is. Mr. Gantt stated that he would characterize this determination as a lack of support for the QA program (Tr. 8485-6, Gantt 11/29/83).

403. Mr. Gantt's testimony during the hearing revealed one of the reasons for the recurring disagreements between inspectors and supervisors; the basis for supervisory decisions was rarely communicated to

the inspectors. Usually the only explanations were stated as the resolution of the NCI. (Tr. 8486-87, Gantt 11/2/83). Mr. Gantt stated that an individual, personal explanation of the NCI resolutions or other decisions would be helpful (Tr. 8557, Gantt 11/29/83). This is now being done as a result of implementation of the various task forces' recommendations.113/

113/ See Findings related to the Technical and Non-technical Task Forces, infra.

(d) Construction Pressure

404. Allegations were made that construction pressures resulted in a diminished emphasis on QA, raising the question whether considerations of quality assurance were forced to bow to pressures of cost and scheduling, thereby compromising the safety of the plant. The concern that construction pressures might have overridden QA is best articulated in Mr. Rockholt's direct testimony, where he expressly stated that "QA has often given into construction pressure." (Apps. Exh. 31, Rockholt, p. 7). Under cross-examination, Rockholt elaborated upon this point and indicated that it was a general concern, but resulted in no safety compromises. The substance of his testimony in response to questions by Mr. Johnson was as follows:

Q Okay. You also noted on Page 7 of your prefiled that QA often gave in to construction pressure. What did you mean by that? Are they telling you to accept substandard work? Is this the same things in your concerns or more generalized?

A These are more generalized.

Q Okay. Can you give us an example?

A Just -- you know -- that we would -- construction would get on us and say hey, you are holding us up. We need to get this done. Our management would come down and say hey, we need to work with the craft. We need to cooperate with them, which we try to do anyhow, and if -- if something doesn't have to be nonconformed, don't nonconform it. Do this and do that. Everything but hinder them.

Q Were there any failings that resulted from that as far as documenting changes or modifications in the systems?

A I don't understand your question.

Q Was there any documentation that should have been filled out in that kind of situation that as a result -- I mean that had to be filled out that was not?

A I don't know of any.

Q You are not aware of any?

A I don't know of any.

Q Generally have the organizational structures of the construction and the QA department in fact compromised the quality of the integrity of the plant?

A What now?

Q Have they in fact -- the organizational structures of QA and construction -- have they in fact, to your knowledge, compromised the integrity of the plant itself?

A No.

Q Okay. Do you have any concern that the plant has been built thus far in strict compliance with relevant construction specifications and requirements of law?

A I believe that the plant is completely built within the guidelines of the procedures and within the scope and it definitely is a safe structure.

(Tr. 6356-7, Rockholt 11/8/83) (emphasis added).

It is clear, then, that Mr. Rockholt has no concern that construction pressure had compromised the safety of construction at Catawba.

405. This allegation was also articulated in the prefilled testimony of John Bryant, wherein he states:

Threats made to welding inspectors, by craft, while performing their assigned duties have not been properly handled by upper management to protect their people from future incidents. Action taken by our upper management and words spoken by our upper management led the welding inspectors to believe that their upper management supports the craft and questions their own integrity. I believe this attitude stems from construction influence on our upper management. [Apps. Exh. 30, Bryant, Attachment A, pp. 2-3) (emphasis added).]

Upon cross-examination on this statement, Bryant indicated that this statement was made in the context of management's response to instances of harassment by craft as a result of Bryant's inspection decisions. (Tr. 6049, Bryant 11/4/83). These harassment concerns have been addressed elsewhere, and the record demonstrates that they do not affect the safety of construction at Catawba.

406. The crux of Bryant's and Rockholt's testimony is that the welding inspectors should cooperate with the craft and not hinder them. This does not rise to the level of sacrificing the QA program and safety in order to meet construction schedules.

407. There is substantial evidence in the record that allays any fears that quality of construction was sacrificed because of construction pressures. Starting at the top, Mr. Warren Owen, the Company's Executive Vice President, Engineering and Construction, testified that:

". . . he (Mr. Grier, the Corporate QA Manager) is not responsible in any way for the cost or the schedule of the overall (Catawba) project, that is not his concern or his responsibility.

If there is a quality problem, it isn't his (Grier's) problem. It's my problem and the problem of those department heads that caused that problem . . .

So I shield him from any unnecessary pressures. I feel sure, and I have so instructed him, that if he felt those pressures from anybody, that he was to bring those to me.

I look with, I guess, a little more favor on his request for additional people than I would any other departments that report to me, again following the philosophy that if we're going to err, we want to err on the side of conservatism" (Tr. 2243-44, Owen 10/7/83).

Next, Mr. Dick, Vice President - Construction, testified that he had communicated to the crafts that they were responsible for building in quality and that QA was to inspect and verify that quality. Mr. Dick said his message to the craft was that intimidation, coercion or kidding would not be tolerated. (Tr. 5196-98, Dick 11/1/83). Mr. Ed McKenzie, characterized by some of the welding inspectors as one of the craft foremen who tried to put the most pressure on inspectors, when asked about his relationships with Mr. Davison, characterized by some inspectors as one who consistently knuckled under to craft, stated that in his experience Mr. Davison supported his inspectors totally (Tr. 8809, McKenzie 11/30/83).

408. Several of the welding inspectors explicitly refuted the suggestion that Company pressure ever prevented them from doing their job properly (see, e.g., Tr. 6397, Rockholt 11/8/83; Tr. 7050-51, Ross 11/11/83). Neither Ross nor Rockholt suggested that they were unable to perform their jobs properly. Mr. Rockholt explained as follows:

Q . . . Has Company pressure ever caused you not to do your job correctly?

A No it hasn't.

(Tr. 6397, Rockholt 11/8/83). In addition, Mr. Barnes, Planning and Control Manager for Construction at Catawba, appeared before the Board during the non-confidential in camera phase of the hearing and testified that pipe welding is not even on the critical path. He further testified that over the years welding has not been the item that has been holding things up. (Tr. 12,231-2, Barnes 1/30/84). Thus, it appears to the Board that there was no motive for the Company to sacrifice QA and pressure welding inspectors on items which were not delaying the completion of the project.

409. The Board received testimony concerning the issue of foremen override (addressed elsewhere under in camera concerns) which clearly indicates that the emphasis in welding was on quality, not quantity. In addressing the concerns of Mr. Nunn (a non-confidential witness),

panel members, including the welders themselves, cited examples in which welding foremen have taken welders from productive work and required them to undergo additional training to improve the quality of their work. During these training periods, however, the quantity of production is decreased. "[T]he foremen have required additional training to improve quality at the expense of quantity." (Apps. Exh. 112, Rogers and Shropshire, p. 6; see also Apps. Exh. 112, Webber, Rogers and Shropshire, p. 5; Apps. Exh. 112, Rogers, Barnes, Llewellyn and Young, p. 7).

410. The Board thus finds that there has been no sacrifice of the QA program and quality due to construction pressure and that when a conflict between quality of work and quantity of work has arisen, quality has prevailed. Therefore the allegation that construction pressure has caused quality of construction to be compromised lacks merit.

d. The McAfee and Hoopingarner Concerns

411. As we have previously noted, Palmetto Alliance, through Messrs. McAfee and Hoopingarner, raised a number of concerns. The majority of these concerns - eight in number - involved relatively narrow technical issues, such as protection of safety-related cables, improper quenching of welds, flooding of the diesel generator rooms, etc. The remaining three involved allegations such as pressure not to write NCIs, intimidation of a welding inspector, access to the NRC, harassment of an employee and wrongful termination of the employment of an employee. These issues relate generally to the broader issues we have already considered in dealing with this contention.

412. Applicants presented a total of five witnesses to address these allegations; the NRC Staff presented two; and Palmetto Alliance presented two, Messrs. McAfee and Hoopingarner.

413. The Applicants presented Messrs. R.L. Dick, D.G. Beam, S.W. Dressler, L.R. Davison and R.S. Alexander as witnesses on this issue.

414. Mr. Dick is Vice President, Construction for Duke Power Company. He has worked for Duke for thirty-five years, since graduation from North Carolina State University in 1949 with a degree in civil engineering. He has served in field charge of all power plant construction for Duke since 1959, during which time Duke has

constructed seven coal-fired power plants, three hydroelectric dams and generating stations, and the Oconee, McGuire and Catawba nuclear projects. (Apps. Exh. 24, Dick, p. 1)

415. Mr. Beam is retired from Duke Power Company. He was employed by Duke for thirty-two years, from 1949 to 1981. From 1974 to 1981 he was project manager for the Catawba project. (Apps. Exh. 26, Beam, p. 1).

416. Mr. Dressler is Engineering Manager for the Catawba Nuclear Station Construction Department and is responsible, among other things, for resolution of construction-related technical engineering problems associated with civil engineering, mechanical engineering, electrical engineering, instrumentation and welding. Mr. Dressler has been employed by Duke since 1971, and graduated in 1963 with a degree in mechanical engineering from Virginia Polytechnic Institute. (Apps. Exh. 37, Dressler, et al., p. 1; Attachment A).

417. As the record reflects, Mr. Davison is the Project Quality Assurance Manager at Catawba. His professional qualifications are outlined elsewhere in this decision.

418. Mr. Alexander served from November 1978 until October 1983 as personnel manager for the Catawba Nuclear Station in the Construction Department. In that position he had overall responsibility for safety, security,

personnel, employee relations and employment functions. Mr. Alexander graduated from Clemson University in 1966 with a Bachelor of Arts degree. He has been employed by Duke since 1970. (Apps. Exh. 37, Dressler, et al., p. 1; Tr. 7125, Alexander, 11/2/83).

419. The NRC Staff presented Messrs. J.C. Bryant, George F. Maxwell, and Milton D. Hunt.

420. Mr. Bryant is currently the NRC's Resident Inspector at the Oconee Nuclear Station. From November 1972 through December 1982 he was a section chief in Region II in Atlanta. For three years he supervised engineering specialists who inspected in the various construction disciplines at all nuclear sites under construction in Region II. For three and one-half years he supervised construction project inspectors who performed construction inspections and managed the inspection program for all nuclear sites under construction in Region II. For one and one-half years he supervised construction project inspectors for some of the sites under construction in Region II which included Catawba. For two additional years he supervised project and resident inspectors for operation and construction of the Duke Power Company facilities which also included Catawba.

421. Mr. Bryant is a 1953 graduate of the Georgia Institute of Technology with a degree in chemical engineering. He was employed in 1968 by the AEC and has carried out inspection functions since that time. His professional background reflects extensive experience in nuclear industry-related inspection activity. (NRC Staff Exh. 5, Bryant, pp. 1-4).

422. Mr. Maxwell is currently the NRC's resident inspector at Carolina Power & Light's Shearon Harris nuclear plant. He has been employed by the NRC since 1977 and was the NRC's resident inspector at Catawba from February 1980 until July 1980. (NRC Staff Exh. 6, Maxwell, p. 1; Tr. 9208-10, Maxwell, 12/2/83).

423. Mr. Hunt is the NRC's inspector who performed the inspection, and wrote the inspection report, for the incident in which the diesel generator rooms were flooded (Tr. 11,816-19, Hunt, 12/16/83).

424. Palmetto Alliance offered Messrs. McAfee and Hoopingarner.

425. Mr. McAfee was formerly employed, from March 1977 to March 1979, by Duke at the Catawba site. During his employment, he was a concrete pourer, a prepour runner, secretary in the utility department office, and an electrical quality control inspector. Mr. McAfee graduated from Park West College in 1975 and took graduate

courses in the area of the Old Testament at Vanderbilt University. (PA Exh. 93, McAfee, p. 1; Tr. 7654-55, McAfee, 11/17/83).

426. Mr. Hoopingarner was formerly employed, from 1977 to 1980, by Duke at the Catawba site. During his employment he was a rod-buster, a builder and a scaffold-builder. He is a high school graduate and took a carpentry apprenticeship course while in the Marine Corps. (PA. Exh. 94, Hoopingarner, p. 1; Tr. 7655-56, Hoopingarner, 11/17/83).

427. We now discuss each allegation presented by Messrs. McAfee and Hoopingarner.

(1) McAfee and Hoopingarner Allegation Concerning Protection of Cables

428. Messrs. McAfee and Hoopingarner alleged that they witnessed, on occasion, improper storage and protection of electrical cables after cable pulls had been completed. Mr. McAfee alleges that, following the inspection which determined that cable had been properly pulled and protected "there was no telling what might happen to the cable." He alleges that it might have a walk board placed on it, or be cut down to lie on the floor where it could be walked on, or get wet. Mr. Hoopingarner alleges that electrical cables were lying on

the ground with people walking on them, and were in water. (PA Exh. 93, McAfee, pp. 28-29; PA Exh. 94, Hoopingarner, pp. 5, 9).

429. Though neither McAfee or Hoopingarner so state, the Board infers that both are concerned that the incidents which they allege occurred deal with safety-related electrical cables and would damage them so that they pose a threat to safe operation of the facility. As set forth in more detail below, the Board finds this allegation to be without merit.

430. We note at the outset that though Messrs. McAfee and Hoopingarner both allege these incidents were widespread there is no record evidence to support such an assertion. To the contrary, the evidence submitted by both Applicants and the NRC Staff demonstrates otherwise.

431. As Applicants' witnesses point out, an investigation was conducted to determine whether violation of cable storage requirements was as widespread as alleged by Messrs. McAfee and Hoopingarner. The investigation included, among other things, a review of NCIs and discussions with Quality Assurance Inspectors. As a result of this investigation it was concluded that improper storage of cables was limited to only a few instances, and these were properly corrected. In short,

improper storage of electrical cables following pulling is not a widespread occurrence at Catawba. (Apps. Exh. 37, Dressler et al., pp. 3-4).

432. Duke Inspection Instruction Form M-41B, serial #9, which was in effect at the time of these allegations, required that cable be protected from damage due to construction activities and water. In accordance with this procedure, cables are stored, after pulling, in areas free from construction equipment and heavy traffic which could result in damage. To protect the cables from water, the ends are taped to keep excessive moisture out. (Apps. Exh. 37, Dressler, et al., p. 3). When electrical cable is being pulled, in virtually all instances there are large segments of cable at the ends of the runs which will not be used. In some cases this can be more than 40 feet. In short, when cable is being pulled there is a great deal of excess cable on the floor which will ultimately be stripped or discarded. This may give the appearance of cable unprotected contrary to applicable procedures; however, in reality, during pulling, it is correct and normal work practice. (Apps. Exh. 37, Dressler, et al., p. 4).

433. Indeed, as the record reflects, Mr. Hoopingarner made three different tours of the site with two different NRC inspectors (Apps. Exh. 37, Dressler, et al., p. 4; NRC Staff Exh. 5, Bryant, p. 13; NRC Staff Exh.

6, Maxwell p. 3; PA Exh. 94, Hoopingarner, pp. 7-9, 16-17, 18.). Despite Mr. Hoopingarner's allegations of widespread violations of cable protection procedures, he was able to point out only one instance of a violation of procedures with respect to safety-related cables (Apps. Exh. 37, Dressler, et al., p. 4; NRC Staff Exh. 5, Bryant, p. 13; NRC Exh. 6, Maxwell, p. 3). The NRC Staff testified that numerous electrical inspections were performed at Catawba from mid-1978 through August of 1980; the inspection activity of the resident inspector from February 19, 1980 through July 18, 1980 was primarily electrical. In addition, plant tours were made by the project and resident inspectors. During all this inspection activity, only one violation (that pointed out by Mr. Hoopingarner) of improper storage of electrical cables was found (NRC Staff Exh. 5, Bryant, p. 14). The numerous instances of alleged violations of cable storage procedures with respect to safety-related cables alleged by Mr. Hoopingarner involved non-safety related power cords, non-safety welding cables and hoses, and non-safety related electrical cables (NRC Staff Exh. 5, Bryant, p. 13). In fact, Mr. Hoopingarner testified that he was unable to distinguish safety-related from non-safety-related cables (Tr. 8064-65, Hoopingarner, 11/18/83).

434. Mr. Hoopingarner alleges that during his tour of the plant with Mr. Maxwell, he showed him cables in the Auxiliary Building hanging from cable trays on the floor in water (PA Exh. 94, Hoopingarner, p. 9; Tr. 806)-64, Hoopingarner, 11/18/83). However, Mr. Maxwell testified that Mr. Hoopingarner showed him some cables in the Auxiliary Building hanging from cable trays, that only one such cable was touching the floor, that he recalls no water, and that in any event the cable was non-safety related (Tr. 9586-87, Maxwell, 12/5/83). Mr. Maxwell further testified that on subsequent inspections he followed up on assuring that cables were coiled and tied up off the ground in accordance with procedures, and that he did find a "couple of instances" where cables were on the floor in an area of high humidity and dampness. He further stated that Duke returned these cables to their properly-stored condition and wrote a corrective-action notice to track that instance to determine whether it represented a wider problem. The notice was tracked out, and Mr. Maxwell concluded that there was no problem with the cables (Id. at 9595).

435. Mr. McAfee states that on numerous occasions he was aware of cable which was not properly protected (PA Exh. 93, McAfee, pp. 28-29). However, he was able to identify only one such example, and acknowledged that on that occasion he contacted the electrical foreman and the

situation was corrected to his satisfaction (Tr. 7882-84, McAfee, 11/17/83). In any event, the chance that the cables referenced by Mr. McAfee are safety-related is small. As the records shows, a total of 1583 cables had been pulled as of March 1979 (the date of the allegations). Of these, only 86 were safety-related and only 29 of those were in the Auxiliary Building (NRC Staff Exh. 5, Bryant, p. 15).

436. Consistent with their position on these matters, neither Mr. McAfee nor Mr. Hoopingarner offered any opinion as to whether these instances, even if they did occur, would have any effects on safe operation of the plant. However, both Applicants and the NRC Staff presented evidence on this question. The evidence shows that, even if improper storage of safety-related electrical cable were as widespread as alleged by Messrs. McAfee and Hoopingarner, it would not raise a question of safe operation at Catawba. The cable in question is either armored or protected in conduit, designed to withstand 500 pounds of force or elongation. This would preclude damage to the cables from normal construction activities, such as workers walking on them, or items being dropped on them. In addition, the filler material in the cables is non-wicking (that is, it does not absorb and transmit moisture) and therefore the likelihood of water damage is remote even if the ends of the cables were

left untaped (Apps. Exh. 37, Dressler, et al., p. 5; NRC Staff Exh. 5, Bryant, p. 15; Maxwell, Tr. 9589-90, 12/5/83).

437. In addition, all safety-related cable is inspected while it is pulled. If damage has occurred, or is suspected, the cable will be inspected and tested. If necessary, the cable will be replaced or repaired. Finally, all circuits are thoroughly tested prior to operation. (Apps. Exh. 37, Dressler, et al., p. 6; NRC Staff Exh. 5, Bryant, p. 15).

438. The Board concludes that this allegation of Messrs. McAfee and Hoopingarner does not raise a question of safe operation of the Catawba plant. We find that the alleged activity, improper storage of safety-related electrical cables, is not common practice; that safety-related cable used at the plant is armored or protected in conduit with non-wicking filler material, which provides protection against the activities set forth in the allegation; that the ends of the cable are taped to provide assurance that water damage does not occur; and that the cables, if damage is suspected, are inspected and, as appropriate, tested and if damage is found, the situation is corrected. Finally, each circuit is tested and verified numerous times before and after operation of the plant. Therefore, based upon the foregoing, the Board finds this allegation to be without merit.

(2) Hoopingrner Allegation
Concerning Quenching Welds

439. Mr. Hoopingarner alleges that he came out of the penetration room one day at el. 543 and saw a welder, Henry Hodges, who had just finished heating a stainless steel pipe red hot on one side. He further alleges the welder told him that to do this was contrary to procedures, but that "he had to do [it] to get the pipe right and that was a way for him to heat it up and pull the pipe so that it would be correct." (Apps. Exh. 37, Dressler, et al., p. 7; PA Exh. 94, Hoopingarner, p. 21). Mr. Hoopingarner informed the NRC of this matter, and states that, following his reporting this matter to the NRC, he informed Mr. Hodges that he "had to give [the NRC] his name" (PA Exh. 94, Hoopingarner, pp. 7-8, 10; 21-22).

440. Mr. Hoopingarner's concern with this incident is apparently based upon the fact that, as he alleges, Mr. Hodges told him "he wasn't supposed to be doing it." And he further alleges that "Henry Hodges doesn't even know which line [the weld in question] is on. They don't know where it's at in the plant. What system, or nothing." (PA Exh. 94, Hoopingarner, p. 10). In short, Mr. Hoopingarner has no idea whatsoever whether, and to what extent, this incident - if indeed it occurred - poses any potential detriment to the safe operation of the facility.

441. The unrebutted evidence of record demonstrates clearly that this allegation is without merit.

442. Applicants' direct testimony states that Mr. Hodges, while apparently the person accused of "quenching" a weld with a wet rag by Mr. Hoopingarner, says he did not apply wet rags to any stainless steel pipe while welding (Apps. Exh. 37, Dressler, et al., p. 8). Moreover, the NRC, following Mr. Hoopingarner's notification of the incident and identification of Mr. Hodges as the welder in question, investigated and reported on the matter. NRC Inspection Report No. 50-413, 414/80-08 states that Mr. Hodges stated that he had not practiced, nor had he witnessed, the quenching of welds at the Catawba site. Moreover, the NRC inspector also talked with the Authorized Nuclear Inspector and knowledgeable Duke workers. These individuals stated that they had not witnessed, nor were they aware of, quenching of welds at Catawba. In short, the NRC inspection concluded that there was no support for the employee's concern about quenching of a weld. (NRC Staff Exh. 5, Bryant, pp. 21-22). This evidence is unrebutted in the record.

443. Further, using a damp rag to quench a weld on stainless steel is permitted by Duke procedures, so long as prior approval is obtained. So if the incident did occur, and prior approval were not obtained, the most that would occur would be a violation of procedures with no

safety significance, (Apps. Exh. 37, Dressler, et al., pp. 8-9; NRC Staff Exh. 5, Bryant, p. 22), for as Applicants' testimony demonstrates, using a damp rag to more rapidly cool a stainless steel weld will not adversely affect the weld (Apps. Exh. 37, Dressler, et al., pp. 8-9).

444. The Board concludes that the unrebutted evidence of record indicates that the incident did not occur. However, even if it did occur it is insignificant for, as the unrebutted evidence of record demonstrates, at most there would have been a minor violation of procedures with no safety significance, as the quality of the stainless steel material would not have been compromised. Therefore the Board finds that this allegation does not raise a question of safe operation of the Catawba plant, and that the allegation is without merit.

(3) Hoopingarner Allegation Concerning Welding on Unsafe Scaffolds

445. Mr. Hoopingarner alleged that welders performed poor work because the scaffolds from which they welded were inadequate. He opines that "a lot of [welders] are ground people who don't like to be off the ground," and alleges that welders have told him that when they get on a scaffold they "fill the gap" and get down as fast as they can. Mr. Hoopingarner further offers the opinion that welders "didn't feel safe. If you don't feel safe you can't do a quality work." (PA Exh. 94, Hoopingarner, p.

22). Mr. Hoopingarner was unable to provide any information identifying specific welders or locations involved with his concerns. (Apps. Exh. 37, Dressler, et al. (Davison), pp. 9-10). Mr. Hoopingarner is not a welder, and could not state whether any welds were improper. Both the Applicants and the Staff addressed this allegation. As the Applicants' witnesses explained, they were unable to understand what was meant by "fill the gap." However, in their judgment, "fill the gap" was simply a slang expression for completing the necessary weld; in fact, by definition, filling the gap is what one does when making a weld. (Apps. Exh. 37, Dressler, et al. (Davison), p. 10; Tr. 7474, Davison 11/16/83). Mr. Hoopingarner himself did not define the term and while it is possible (Davison, Tr. 7474, 11/16/83) that in making a weld the gap is filled and there is not proper fusion into the sides, there is certainly no evidence in the record to suggest that "fill the gap" means anything other than completing the weld properly.

446. A certain percentage of welds are performed on scaffolds; however, scaffolds are built to satisfy the craft and craft work (i.e. welding) is not started until the craft is satisfied that the work platform is safe and adequate for the job requirements. If craft is not satisfied with quality of scaffold, changes will be made

to accommodate whatever concern they might have. (NRC Staff Exh. 5, Bryant, pp. 22-23; Davison, Tr. 7478-79, 11/16/83).

447. The NRC Staff, having been made aware by Mr. Hoopingarner of this concern, conducted an investigation, reported in Report No. 50-413, 414/80-08, discussing the subject with craft workers, inspectors, and safety assistants and supervisors. The Staff reported that none of these individuals expressed any concerns which would support Mr. Hoopingarner's allegation. In addition, Mr. Hoopingarner brought to the attention of the Occupational Safety and Health Administration (OSHA) numerous examples of improperly built scaffolds which he believe impugned the ability of craft to do their work in a safe manner; following an OSHA investigation, none of these concerns were substantiated (NRC Exh. 5, Bryant, p. 23; Davison, Tr. 7482, 11/16/83). Mr. Hoopingarner also brought this concern to the attention of Applicants' management and management conducted an investigation (PA Exh. 83; Davison, Tr. 7483-84, 11/16/83). However, no changes were made in scaffolds as a result of that investigation (Alexander, Tr. 7601-02, 11/16/83).

448. In any event, even if the term "fill the gap" were to mean anything other than a proper completion of a weld, there would not be a detrimental effect on the system in question. Applicants' panel described in detail

the inspections by which it is assured welds meet the appropriate criteria^{114/} (Apps. Exh. 37, Dressler, et al. (Davison), pp. 10-12). Based upon that description, as well as our general knowledge of the subject manner after hearing more than thirty-five days of testimony on the subject of quality assurance inspection of welds, we conclude that even if the allegation were true, an improper weld would be detected and corrected.

449. Based on the foregoing, we conclude that this allegation does not raise a question of safe operation of the Catawba plant, and that the allegation is without merit.

(4) Hoopingarner Allegation Coancerning Flooding of the Diesel Generator Rooms

450. Mr. Hoopingarner alleges that during his employment at Catawba the diesel generator rooms were flooded. He claims that the water reached a depth of four feet and remained "like that for several days." He asserts that the rooms were flooded because there was no roof on the diesel generator rooms. (PA Exh. 94, Hoopingarner, pp. 22-23).

^{114/} We would point out that, as with craft, if a welding inspector determines a scaffold is unsafe, he can demand that remedial action be taken, and may refuse to conduct the inspection until such is done (Davison, Tr. 7478-79, 11/16/83).

451. Applicants presented a seven witness panel on the above contention, consisting of Charles J. Wylie, James C. Allgood, Dwight L. Freeze, Thomas H. Weir, Alan Barich, Thomas A. Barron and George C. Karcher (collectively referred to as the "Wylie panel") (Tr. 11,870-7 to 11,900 12/16/83). The members of the Wylie panel, with the exception of Mr. Barich, all were directly involved in the assessment of potential damage to and repair and refurbishment of the diesel generators. Several of its members have extensive experience with diesel generators. The Wylie panel adopted the prepared direct testimony in Applicants' Exhibit 37, from p. 15, line 13 to p. 23, line 4.115/ The work experience and educational background of the Wylie panel is in Applicants' Exhibit 109. The panel was not cross-examined by Palmetto Alliance (Tr. 11,882-83, Guild, 12/16/83).

115/ This testimony was initially sponsored by Applicants' witness, Mr. Dressler. The Board, however, granted the motion of Palmetto Alliance to strike his testimony on this subject on the ground that Mr. Dressler lacked sufficient knowledge of the incident (Tr. 7319-20, Judge Kelley, 11/15/83). Applicants' Wylie panel subsequently adopted this testimony at the hearing on December 16, 1983, and it was readmitted in evidence (Tr. 11,870-G-70-H). The experience of the panel and their role in responding to the flood damage is described in detail infra.

452. NRC Staff presented the prepared direct testimony of Mr. Bryant (Staff Exh. 5, Bryant, pp. 26-28). In addition, Staff presented Milton L. Hunt, the NRC inspector who personally investigated and reported on the event (Tr. 11,816-20, Hunt, 12/16/83).

453. Applicants' Wylie panel testified that during a 38 hour period on the weekend of September 28-30, 1979 the Catawba site sustained approximately seven inches of rainfall (Apps. Exh. 37, Wylie panel, p. 15). Because of this extraordinary rainfall, and the fact that permanent site drainage and grading was incomplete, water flooded into diesel generator buildings 1A and 1B to levels of 41.5 inches and 8.25 inches, respectively (Apps. Exh. 37, Wylie panel, pp. 15-16).

454. Applicants had taken special measures--prior to the flooding--to protect the diesel generators in buildings 1A and 1B (Apps. Exh. 37, Wylie panel, p. 16). Among other things, Applicants followed the requirements of ANSI N-45.2.2 level C (Special), which included (1) coverings to prevent moisture from falling on equipment, (2) energizing space heaters where applicable and (3) weekly inspections of all components (Id.).

455. NRC Staff witness Bryant confirmed and elaborated on Applicants' testimony as to the cause of the flooding. He testified that in a 38 hour period on September 29-30, 1979, the Catawba site received over

seven inches of rainfall. The site grading was incomplete at that time and the rain flooded a manhole opening which was higher than any anticipated water level. The manhole contained a number of cable conduits which had not been sealed because cables were still being pulled through them. Water poured through these conduits and entered diesel generator rooms 1A and 1B. (Staff Exh. 5, Bryant, p. 26) An NRC inspection found no evidence of flooding from any other source (Tr. 11,858-61, Hunt, 12/16/83).

456. Mr. Hoopingarner testified that the water could have entered the building from the conduits in the open manhole, from a hole in the roof or from a ground level stairwell (Tr. 11,904, Hoopingarner, 12/16/83). Though Mr. Hoopingarner alleged that at least some rain came in through an equipment hatch which was left open (PA Exh. 94, Hoopingarner, p. 23; Tr. 11,907, Hoopingarner, 12/16/83), he acknowledged he was not at the site to see the hatch on the day of the flooding (Tr. 11,908, Hoopingarner, 12/16/83).

457. The Wylie panel presented extensive testimony explaining how the potential damage was assessed and what corrective actions were taken to restore the diesel generators to "as new" condition. It may be helpful to review briefly the experience of the Wylie panel and their role in the corrective action taken by Applicants.

458. For the last 31 years, panel member Karcher has worked for Transamerica DeLaval installing and inspecting diesel generator units. At the time of the flooding incident he was installing the diesel generator at Catawba. He inspected the flood damage to the DeLaval diesel engine at the site, recommended necessary corrective action and supervised and verified that corrective action. (Tr. 11,871-73, Karcher, 12/16/83).

459. Panel member Wylie is Chief Engineer of the Electrical Division of the Design Engineering Department. He is a 1950 graduate of the University of South Carolina with a B.S. in electrical engineering, has been with Duke Power Company since 1950. He personally investigated the flooding of Buildings 1A and 1B on the day of the incident and directed the design engineering activities for the restoration effort. He personally issued guidelines for restoration of the diesel generator and associated equipment, to the principal engineer he assigned to the restoration and personally reviewed and approved the actions they took in carrying out restoration. (Tr. 11,875-76, Wylie, 12/16/83).

460. Panel member Allgood, a 1977 graduate of North Carolina State University with a B.S. in electrical engineering, has been working at the Catawba site for over six years. During the time of the flood he worked as a quality-control engineer. At that time he surveyed the

diesel generator rooms, making notes of the equipment he determined to be subjected to water. He reviewed the NCI's, the construction procedures adopted for the restoration, and other records to assure himself that the restoration was properly carried out. Following the flooding incident, Mr. Allgood was transferred to the electrical technical support area in the Construction Department. He was responsible, from an engineering standpoint for the Construction Department, for, among other things, assuring that the cleanup of the diesel generator was complete and adequate. (Tr. 11,876, Allgood, 12/16/83).

461. Panel member Barron, a 1976 graduate of Clemson University with a B.S. in mechanical engineering, was a quality control engineer over the mechanical inspection group at the time of the flood. His group was responsible for all the mechanical inspections required as part of the cleanup and restoration activities related to the flood. (Tr. 11,877, Barron, 12/16/83).

462. Panel member Weir, a 1978 graduate of Clemson University with a B.S. in mechanical engineering, has worked at the Catawba site for over 5 years. During the time of the flood, he had been coordinating work on the installation of the diesel generator with the assistance of panel member Karcher. On the day after the flood, he inventoried mechanical equipment that was potentially

damaged from the flood. Based on this inventory, he wrote several NCIs, including the cleanup procedures for these NCIs (Tr. 11,878, Weir 12/16/83).

463. Panel member Freeze, a 1967 graduate of North Carolina State University, with a B.S. in civil engineering, has worked for over 16 years in Duke's Construction Department. At the time of the flood, he was Project Engineer at Catawba with overall responsibility for planning and scheduling technical support and administrative direction of control functions at the Catawba site. He inspected the flood on the day it occurred, determined the source of the water and brought in a crew to remove the water. (Tr. 11,878-89, Freeze, 12/16/83).

464. Panel member Barich is a 1969 graduate of California State Polytech College in San Luis Obispo with a B.S. in mechanical engineering. He has worked at DeLaval since graduation from college, which work has included field testing, assisting in installation, and repair of DeLaval diesel generators. He has also been involved in design of systems and components for diesel engines. He is currently Manager of Customer Service for DeLaval. His department is responsible for the complete installation and field testing of all DeLaval products. Duke Power Company asked Mr. Barich, who was not involved in the restoration of the flood damaged equipment, to

offer his professional judgment to assess the corrective actions taken and the condition of the restored equipment. (Tr. 11,880-82, Barich, 12/16/83).

465. Turning now to the specific corrective action taken, Applicants notified the NRC on October 1, 1979, the day after the flood, and personnel from the NRC were on site on October 2 and 3, 1979 to inspect the damage (Apps. Exh. 27, Wylie panel, p. 16). On October 1, 1979, Applicants also decided to take corrective action by repairing or replacing the damaged equipment as needed, so that the diesel generators and associated equipment would be in "like new" condition (Apps. Exh. 37, Wylie panel, p. 17). To accomplish this, Applicants inventoried and inspected all equipment located in the diesel generating rooms at that time of the flood to determine the extent of the damage. Applicants wrote a total of 37 NCIs for all damaged equipment. These NCIs, which set out the repair procedures, have all been closed out. (Id.)

466. Applicants restored to as-new condition the mechanical equipment affected by the flooding. Mechanical equipment restored included: diesel exhaust silencer, diesel starting air tanks, diesel starting air compressors and diesel engine (some electrical items on the diesel engine were replaced) (Apps. E.h. 37, Wylie panel, pp.

17-19).^{116/} With respect to the affected electrical equipment, Applicants restored or replaced all affected equipment. (Apps. Exh. 37, Wylie panel, p. 21). Each member of Applicants' panel testified that in his professional judgment the corrective action was adequate to restore the equipment to "as new" condition (Tr. 11,884-88, Allgood, Barron, Barich, Weir, Wylie, Freeze and Karcher, 12/16/83).

467. NRC Staff witness Bryant again confirmed the testimony of Applicants. He testified that the NRC began its inspection of the incident on October 2, 1979 and issued Report Nos. 50-413, 414/79-18, 80-19 and 81-08 (Staff Exh. 5, Bryant, p. 26). When NRC inspectors arrived, Applicants and vendor engineers had already completed an initial inspection of the damaged equipment and corrective action was under way (Staff Exh. 5, Bryant, pp. 26-27). NRC inspectors reviewed Applicants' corrective action plan, inspected Applicants' implementation of the plan and found that Applicants' corrective action was adequate (Id., Tr. 11,870, Hunt 12/16/83).

^{116/} Also restored to a "like new" condition was the RTD manifold and valves, which were not part of the diesel generator but were in the building during the flood (Tr. 11,891-2, Weir 12/16/83).

468. Applicants' panel concluded that the incident will have no adverse impact on the safe operation of Catawba because the damaged equipment has been restored to "like new" condition, and because the equipment will be tested pursuant to the rigorous testing procedures in Regulatory Guide 1.108, which requires, inter alia, over 20 consecutive successful operational tests (Apps. Exh. 37, Wylie panel, pp. 22-23). The purpose of this testing is to uncover any problems with the operation of the diesel generators (Id.). The diesel generators are currently in this testing process. As of December 16, 1983, Applicants had tested the diesel generator in building 1A (the building with the most water in it) for over 400 operating hours and the diesel generator in 1B for over 200 operating hours. This includes completion of 35 fast starts in 1A and 17 fast starts in 1B. No problems related to the flooding have resulted. (Tr. 11,888, Wylie, 12/16/83).

469. NRC Staff witness Bryant testified that the flooding has no significance to the safe operation of Catawba. He found that the water did not reach any machine parts such as main bearings, crankshaft or connecting rods and bearings, and that, in any event, all damage had been corrected. (NRC Staff Exh. 5, Bryant, p. 27). NRC witness Hunt testified that adequate steps had been taken to prevent further flooding in buildings 1A and

1B (Tr. 11,836, Hunt, 12/16/83). These included covering the manhole and providing adequate site drainage (Tr. 11,840, Hunt, 12/16/83). Mr. Hunt testified that passage of time has shown that these steps were adequate because there has been no additional flooding in building 1A and 1B (Tr. 11,836, Hunt, 12/16/83).

470. The NRC also found that the flooding does not reflect poor construction practices, carelessness or corner cutting. Mr. Bryant reasoned as follows: the plant cannot be built in one day. Because of the size of the equipment, Applicants have to install much of the equipment before it can complete the building housing. Also, Applicants cannot complete grading until the job is nearly finished because of the movement of heavy equipment, underground construction and providing necessary access. Under these conditions, Mr. Bryant found that Applicants have taken reasonable care to protect all aspects of the job, but that it is impossible to guard against every contingency. (Staff Exh. 5, Bryant, p. 27).

471. The Board notes that the cause of this incident is open to question. We believe, based on the above evidence, that an unusually heavy rainfall within a relatively short period of time and incomplete grading at the site caused the flooding in diesel generator buildings 1A and 1B. However, the cause is immaterial. What is

important is that Applicants responded immediately by notifying the NRC and by taking prompt and effective action to correct any potential damage. As shown by Applicants' evidence, the closing out of the NCIs, the testing procedures for the generators and the NRC Staff Reports, Applicants have adequately corrected the problem. As a result, the flooding has no significance on the safe operation of Catawba. We also agree with the NRC Staff that the flooding does not reflect poor construction practices, carelessness or cost cutting. Applicants took adequate measures prior to the flooding to protect the generators. Given the realities of construction, it would be unreasonable to require complete grading at the site prior to completion of the project.

472. Therefore we conclude that this incident raises no questions with respect to safe operation of Catawba.

(5) McAfee and Hoopingarner Allegation
Concerning Rain in the Control Room

473. Messrs. McAfee and Hoopingarner contend that while they were employed at Catawba they witnessed water pouring onto the control boards in the control room. They assert that this incident was caused by rain leaking through the ceiling of the control room because the roof was not sealed. (PA Exh. 93, McAfee, pp. 27-28; PA Exh. 93, Hoopingarner, pp. 23-24).

474. Applicants' witnesses explained that on December 1, 1978 Applicants discovered that condensation had formed on the surfaces of the walls, ceiling and control boards in the control room. The condensation was caused by unusual weather conditions (a sudden cold spell with rain) and the fact that the room was not yet heated. (Apps. Exh. 37, Dressler, et al., p. 23). Applicants also found a slight leak in a roof joint between the auxiliary building (control room) and the service building and determined that a small amount of this leakage may have struck one of the control boards. (Tr. 7321-25, Dressler, 11/13/83). Applicants found no moisture inside the control boards. Applicants documented this incident in NCI 4395 and 4432. (Apps. Exh. 37, Dressler, p. 24; Tr. 7843, 11/17/83; 7951-52, 11/18/83).

475. NRC Staff witness Bryant confirmed Applicants' testimony on the cause of the incident (Staff Exh. 5, Bryant, p. 11).

476. Applicants wiped off the condensation on the walls, ceiling and equipment in the control room, sealed the roof joint and installed space heaters in the control room to bring down the humidity and thus preclude further condensation (Apps. Exh. 37, Dressler, p. 24; Tr. 7344-56, Dressler 11/15/83).

477. To assure that the moisture from the incident did not adversely impact on the operation of the control boards, Applicants used a "megger test" on approximately 60 randomly-selected control board switches^{117/} (Apps. Exh. 37, Dressler et al., pp. 24-25; Tr. 7490-91, Dressler, 11/16/83). The megger test consists of applying higher than normal voltage to the switch to determine insulation resistance. The megger test detects any decrease in the resistance of the insulation that could be caused by moisture. All 60 switches passed the test -- that is, revealed no moisture damage. (Apps. Exh. 37, Dressler, pp. 24-25).

478. Confirming these megger test results is the fact that over the last five years Applicants have extensively tested the control boards pursuant to installation and start up procedures for the plant and, to date, there has been no failure of the control board switches (Apps. Exh. 37, Dressler, pp. 24-25; Tr. 7366, Dressler, 11/15/83; Tr. 7596-97, Dressler, 11/16/83).

479. NRC witness Bryant testified that Applicants investigated the incident and began corrective action on December 1, 1978. The corrective action included installing heaters in the control room and sealing the roof joint. NRC review of Applicants' records and

^{117/} Applicants use sealed switches on the control boards (Tr. 7365, Dressler, 11/15/83).

discussions with Applicants at the time of the incident showed that this was a one-day event, that drying of the area was all that was required and that the moisture had not damaged the control boards. (Staff Exh. 5, Bryant, p. 11).

480. Applicants' evidence showed this event would have no adverse impact on the safe operation of Catawba, because (1) Applicants took adequate corrective action to prevent further moisture in the control room (2) Applicants have extensively tested the control boards and found no moisture damage, and (3) Applicants will further test the control boards pursuant to start up procedures. (Apps. Exh. 37, Dressler, pp. 25-26; Tr. 7591-92, 7595-98).

481. For the same reasons, the NRC Staff agreed with Applicants that this event has no significance as to the safe operation of Catawba (St f Exh. 5, Bryant, p. 12).

482. Mr. Bryant also testified that this event was not the result of Applicants' negligence or poor construction practices; rather, unusual weather and incomplete construction caused the event. Mr. Bryant reasoned that it would have been impossible for the Applicants to have completed all things at once on the construction site. Thus, he found it was not unreasonable for Applicants to move the control boards into their permanent locations before finishing the interior walls

and installing heating and air conditioning. Mr. Bryant also found that prior to the incident the control room appeared to meet Class B storage requirements, because construction photographs of the control room taken two weeks prior to the event showed that the ceilings and walls were essentially completed, that the room was clean and dry and that there was no evidence of previous moisture. (Staff Exh. 5, Bryant, p. 12).

483. Though there is some conflict over the cause of the incident, the Board concludes that because of unusual weather conditions and the fact that the control room was not yet heated, heavy condensation formed on the ceiling, walls and equipment in the control room. Also, a leak in the roof joint may have caused a small amount of water to fall on one of the control boards. Applicants responded promptly by notifying the NRC and by taking appropriate corrective action. This included wiping the moisture off the exterior surfaces, fixing the roof leak and installing space heaters. Applicants also tested the control boards for moisture damage and found none. The control boards have been in constant use since the incident and no damage has been detected. Applicants will conduct further tests on the control boards pursuant to start up procedures. Under these circumstances, we find that Applicants' corrective action was adequate and that this event is of no significance to the safe operation of Catawba.

Finally, for the reasons given in Mr. Bryant's testimony, we find that the event was not the result of Applicants' negligence or poor construction practices.

(6) Hoopingarner Allegation Concerning Rebar and Piping

484. Mr. Hoopingarner alleged that pipes were lying on the ground at the piping fabrication shop and that, in the rebar storage yard, rebar was touching the ground and vegetation was growing through it (PA Exh. 94, Hoopingarner, pp. 17, 18).^{118/} Mr. Hoopingarner offered no opinion as to whether such incidents constitute a threat to safe operation of the facility.

485. We find both incidents to be of minimal significance. Again, we note that Mr. Hoopingarner made at least three different site tours with two different NRC Inspectors (Apps. Exh. 37, Dressler et al., p. 4; NRC Staff Exh. 5, Bryant, p. 13; NRC Staff Exh. 6, Maxwell, p. 3; PA Exh. 94, Hoopingarner, pp. 7-9, 16-17, 18). In

^{118/} In discovery (Hoopingarner Deposition, Vol. 2, pp. 76-78) Mr. Hoopingarner had raised a third allegation with respect to piping - that sections of piping were lying on the concrete floor in the Auxiliary Building. However, Palmetto Alliance did not raise this issue in its direct case. Applicants and the Staff nevertheless address this allegation in their direct cases and show that it is without merit. Applicants' storage of pipe on the floor inside the Auxiliary Building had no safety significance, nor did it reflect poor storage practices, because the pipe was to be installed soon and the floor was dry and had operational drains. (Apps. Exh. 37, Dressler, pp. 26-28; Staff Exh. 5, Bryant, p. 28).

those site tours, Mr. Hoopingarner was able to point out only one instance of rebar touching the ground in the rebar yard and one instance of piping touching the ground outside the pipe fabrication shop. This did result in a Notice of Violation concerning pipe storage which was the subject of NRC Inspection Report 50-413/80-19 and 50-414/80-19 (80-19) (PA Exh. 107).

486. With respect to rebar, we note that procedures are in place which require that rebar be stored off the ground outdoors (Apps. Exh. 37, Dressler et al., p. 27). There is no safety significance to rebar touching the ground so long as it is inspected to see that mud, dirt, excessive rust and other unacceptable contaminants are removed prior to concrete pour. The record demonstrates that this is done. (Apps. Exh. 37, Dressler, et al., p. 28; NRC Staff Exh. 5, Bryant, p. 28; Davison, Tr. 7574-7575, 11/16/83). In any event, the rebar in question was destined for use at another site (Apps. Exh. 37, Dressler, et al., p. 27; NRC Staff Exh. 5, Bryant, p. 29; PA Exh. 107). No Violation was assessed for this incident.

487. With respect to the sections of piping touching the ground at the piping fabrication shop, such has no safety significance because the piping will be inspected and inspection forms must be completed verifying its condition prior to use. Moreover, safety-related piping is internally cleaned or flushed before plant startup and

specific safety-related piping receives additional cleaning and tests (Apps. Exh. 37, Dressler, et al., p. 28; NRC Staff Exh. 5, Bryant, p. 30; PA Exh. 107, p. 3). Nevertheless, the NRC Staff did find that, in this instance, procedures had been violated and issued a Notice of Violation (PA Exh. 107, Appendix A). Applicants took prompt corrective action and issued an NCI for this violation (Id. at p. 4).

488. The record demonstrates that these are isolated incidents. Notwithstanding the fact that Mr. Hoopingarner accompanied NRC Inspectors around the site at different times for the purpose of pointing out what he believed to be deficiencies, in the area of piping and rebar only one minor deficiency, promptly corrected, was identified. Taking into consideration that the storage yard covers about 100 acres, and that more than 50,000 tons of rebar and 400,000 feet of pipe were handled on site it is not surprising that minor violations would occur from time to time. As the Staff notes, however, they have not found Applicants to be careless in materials handling. (NRC Staff Exh. 5, Bryant, pp. 29, 30; Dressler, Tr. 7445-7446, 11/16/83). There is no basis for us to find that these incidents are reflective of a systematic breakdown of Applicants material handling and storage procedures, or of its QA program. Based upon the foregoing, we find that

these allegations do not raise questions regarding the safe operation of Catawba and the health and safety of the public.

(7) McAfee Allegation Concerning Pouring Concrete in the Rain

489. Mr. McAfee alleged that while he was a pre-pour runner he saw concrete poured, at Reactor Building Number One, in a downpour of rain with no measures taken to protect the concrete or to remove the water (PA Exh. 93, McAfee, pp. 25-26). He admits he was not a concrete inspector but believes there was too much rainwater on top of the concrete (Apps. Exh. 37, Dressler et al., p. 29).

490. On cross-examination Mr. McAfee identified the specific pour in question as W83, made on January 25, 1978 (Tr. 7870, McAfee, 11/17/83; Apps. Exh. 54). Mr. McAfee also testified that although pour W83 took over five hours from start to finish, he had observed pour W83 for only 3 to 4 minutes while delivering a verbal message to the foreman in charge of the pour (Tr. 7872-75, McAfee, 11/17/83; Apps. Exh. 54). In addition, he testified that he saw only 90 degrees or half of the pour (Tr. 8093, McAfee, 11/18/83). He further testified that he did not know for a fact that pour W83 was improper (Tr. 7874, McAfee, 11/17/83).

491. The standards and precautions followed by Applicants for concrete pour which are carried out during rain are set out in the record. Applicants will not start a safety-related pour in rain or snow unless they have adequate protective measures to keep the precipitation out. If precipitation begins after the pour starts, Applicants take whatever measures are necessary to remove excess water (e.g., protective covers, pumps, withholding mixing water), and if these measures are inadequate, Applicants simply stop the pour (Apps. Exh. 37, Dressler et al., pp. 29-30).

492. Procedures require that quality assurance inspectors assure that the pour is made in accordance with designs, drawings and specifications (Tr. 7411-13, Davison, 11/16/83). Applicants' evidence shows that a QA surveillance report was made on the pour in question, W83 (Apps. Exh. 37, Dressler, p. 33; Apps. Exh. 55). The report found that it was raining slightly, that the pour was free of water and that plastic covers and pumps were being used to keep water out (Apps. Exh. 55, p. 2 of 2). This surveillance documents that the protective measures were adequate and procedures were followed (Apps. Exh. 37, Dressler et al., p. 33; Apps. Exh. 55).

493. NRC Staff witness Bryant confirmed Applicants' testimony on the QA surveillance report for pour W83 (Staff Exh. 5, Bryant, p. 7). He also testified that

examination of procedures, specifications and documentation revealed that Applicants (1) have requirements for protecting concrete from rain damage during concrete pours, (2) routinely provide protection for pours made during rain and (3) thoroughly test, evaluate and correct concrete wetted excessively as a result of rain. The Staff thus concluded that there was no evidence of a violation of regulatory requirements (Staff Exh. 5, Bryant, p. 8).

494. Based on the above evidence, we find that the allegations regarding Applicants' pour W83 on January 25, 1978 is of no significance to and does not affect the safe operation of Catawba. Although Palmetto Alliance witness McAfee testified that he saw pooling of rainwater on the concrete, he was only at the pour for 3 to 4 minutes (the pour took over 5 hours), he saw no more than half the pour, and he conceded that he did not know whether the pour was improper. Moreover, Applicants' QA surveillance report on pour W83 shows that, consistent with its specifications and industry practice, Applicants took adequate measures to protect the pour from the rain. The Board concludes that this incident raises no question with respect to the safety of operation of the plant.

(8) McAfee Allegation Concerning
QA Waiver of Requirements on
Concrete Pours

495. Mr. McAfee alleges that during the time he was a prepour runner he observed what he believed to be an improper waiver of requirements on a concrete pour by someone he believed to be a junior QA engineer. As the basis for his allegation, Mr. McAfee relates that one day the Construction Department was eager to make a pour, but that one of the QA Engineers was holding up the pour because requirements had not been met. Mr. McAfee alleges that after the pour had been held up for "several hours," one of the QA engineers stated the requirements could be waived. Mr. McAfee did not know the requirements this person referred to; he did not know whether it was appropriate for the requirements to be waived; and he did not know either the area of the plant^{119/} or the individuals involved. (Apps. Exh. 37, Dressler, et al., p. 34; NRC Staff Exh. 5, Bryant, pp. 8, 9; PA Exh. 93, McAfee, pp. 26-27).

496. Because Mr. McAfee is unable to identify the pour in question, its location, and/or the persons involved, it was impossible to identify specifically the pour during which this incident allegedly occurred. However, the Applicants and the NRC Staff performed a

119/ Mr. McAfee states that the pour "could have been" in the Auxiliary Building or Reactor Building Unit 1 (PA Exh. 93, McAfee, p. 27).

thorough investigation of this matter. Both Applicants and Staff reviewed the records relating to all concrete pours at Catawba during the period from January 1, 1978 to March 30, 1978 - the time during which Mr. McAfee was a prepour runner. As a result of these reviews, both Applicants and the Staff concluded that any waivers granted for any pour were properly done. (Apps. Exh. 37, Dressler, et al., pp. 38-39; NRC Staff Exh. 5, Bryant, pp. 9-10).

497. Mr. McAfee stated (PA Exh. 93, McAfee, p. 27) that the pour had to be a safety-related pour because QA was involved. However, as the record reflects, this is not the case. It is the policy of Duke to apply the same procedures for safety-related pours as for non-safety pours, insofar as filling out the prepour inspection sheets. (Apps. Exh. 37, Dressler, et al., p. 35; Davison, Tr. 7464).

498. The testimony of Applicants demonstrated in some detail how the process using the prepour sheet works in actual practice. The prepour inspection sheet (Form M-2A) is a checklist that sets out requirements for concrete pours. Form M-2A requires all involved crafts and inspectors to assure that items are installed in the pour in accordance with design drawings prior to placing concrete. Moreover, the form requires that all necessary QA inspections be completed prior to making the pour. As

the record shows, however, in a non-safety related pour, QA approval would not be required. (Apps. Exh. 37, Dressler, et al., pp. 35-37; Davison, Tr. 7464, 11/16/83). The principal distinction, so far as we are concerned, between the safety-related and non-safety related pours is that in the former, QA personnel may not waive QA requirements without following proper procedures, whereas if the pour is non-safety related, QA may waive their requirements, allowing the appropriate construction department personnel to make the decision as to whether the pour should proceed (Apps. Exh. 37, Dressler, et al., pp. 37-38; Davison, Tr. 7464, 11/16/83).

499. As noted earlier, both Applicants and the NRC Staff reviewed the records for each pour during the time Mr. McAfee was a prepour runner. This investigation involved 255 concrete pour numbers encompassing 344 Prepour Form M-2As. Applicants review showed first that all pours were made in compliance with procedures and all waivers were properly granted. In this regard, nine waivers were granted; three were related to safety-related pours involving spacing and location of rebar; and six were related to nonsafety-related pours. Applicants' evidence explained how waivers for spacing and location of rebar are granted, and stated that the three safety-related waivers were each properly documented and processed. (Apps. Exh. 37, Dressler, et al., pp. 38-39;

Tr. 7461-62, Davison, 11/16/83). The NRC Staff, based on its inspection of Applicants' records, concurred that all waivers, whether or not on safety-related pours, were proper, and that for nonsafety-related pours for which QA requirements are not applicable waivers were based on the judgment of the responsible person^{120/} (NRC Staff Exh. 5, Bryant, pp. 9-10).

500. As noted above, Mr. McAfee contended that the pour related to this allegation "had to be safety-related" because QA was involved (PA Exh. 93, McAfee, pp. 26-27). However, Mr. Davison testified on cross-examination that, given the circumstances described by Mr. McAfee, in his view the pour was non-safety-related. This is so because, assuming that the QA engineer did say that QA requirements could be waived based on the desires of Construction's civil engineering group, such could be done only in the event it was a non-safety-related pour, and even then only in the event the appropriate technical persons had given clearances. (Tr. 7464-67, 7468-69, Davison, 11/16/83). In fact, as Mr. Davison testified, even under the

^{120/} We note that the NRC Staff counted as waivers variation notices and NCIs, whereas the Applicants did not. This would of course result in a much higher "count" of waivers by the Staff than by the Applicants. (Apps. Exh. 37, Dressler, et al., pp. 38-39; NRC Staff Exh. 5, Bryant, pp. 9-10, Tr. 7463-64, Davison, 11/16/83). We do not regard this difference in methodology as significant; the record is clear that regardless of how the waivers were counted, each was granted pursuant to procedures and properly documented.

hypothetical posed by counsel for Palmetto Alliance (a violation of cleanliness standard) it would have not been proper for a QA engineer to waive the requirements under question; moreover, it would not have occurred. As Mr. Davison explained, under Mr. Guild's hypothetical, Form M-2A simply would not permit a QA Engineer to override the structural engineer's signoff for cleanliness. (Tr. 7464-67, Davison, 11/16/83).

501. When asked to disregard the sequence of signatures required on Form M-2A, and assume that the QA engineer, contrary to procedures and the form, had in fact overridden the structural engineer and waived the cleanliness requirement, Mr. Davison acknowledged that such would violate QA procedures, and that he could not state as a matter of fact that the situation had not occurred, but that he did not believe such had occurred (Tr. 7467-68, Davison, 11/16/83). Mr. Davison went on to explain that in the review of prepour records no evidence was discovered to show an incident occurring in any safety-related pour; that the waivers in safety-related pours were all properly documented; that he had personally spoken with a junior engineer in QA at the time in question and that person told Mr. Davison no such incident occurred on any safety-related pour; and moreover that the junior QA engineer did not feel that he had the right or responsibility to waive QA requirements in safety-related

pours. (Id.) Clearly, Mr. Davison's opinion regarding this matter is based not only upon a thorough review of all relevant records, but also upon conversations with a junior QA engineer directly involved in the pours during the relevant time (Tr. 7468-71, Davison, 11/16/83). Therefore there is no basis for us to conclude, as Palmetto Alliance sought to show, either that the records of these concrete pours are in any way deficient or that there has been an improper waiver of requirements by a QA engineer. Certainly there is no evidence in the record to show otherwise.

502. Based on the foregoing, we conclude that any waiver granted on concrete pours during the time Mr. McAfee was a pre-pour runner were properly done in accordance with procedures, and consequently this allegation does not raise a question with respect to safe operation at Catawba.

(9) McAfee Allegation of Being Told Not to Write NCIs

503. Mr. McAfee alleged that he was told not to write NCI's, but was instead told to use other means to correct nonconformances which he found during his inspections, such as the R-2A corrective action procedure or an M-40C minor deficiency report (PA Exh. 93, McAfee, p. 6). Despite the fact he did not initially recall having done so, Mr. McAfee admitted on cross-examination,

after being shown five NCI's bearing his signature, that he had written at least five NCI's during his four and one-half months as a certified inspector (Tr. 7895-96, McAfee, 11/17/83). Most often, he alleged, the inspectors would simply ask craft to fix the problem, without documentation. Typically, these deficiencies involved incorrect bracing on the cable tray support, or improper placement of unistrut (PA Exh. 93, McAfee, p. 6).

504. Mr. McAfee expressed confusion as to what was the proper method to use to identify deficiencies he found. He complained that one day the inspectors were told by Mr. Barron to document by NCI's discrepancies they found between items as constructed and the blueprint description of the items. The next day, when Mr. McAfee inspected twenty-seven hangers, he found seven to be faulty and went to the office to document these seven on NCI's. At the office, Mr. Allgood and/or Mr. Hannay allegedly told Mr. McAfee not to document these on NCI's (PA Exh. 93, McAfee, pp. 7-8). These seven hangers were indeed subsequently repaired by craft (Tr. 7862, McAfee, 11/17/83). As discussed below, however, this was the proper method to resolve such minor discrepancies which are apparent upon examination of the specifications or drawings (Apps. Exh. 37, Davison, p. 44; NRC Staff Exh. 5, Bryant, p. 19). As a result, Mr. McAfee alleged that he followed the encouragement he was given to resolve

nonconformances with craft without documentation by pointing out the problem to the craftsman, allowing craft to fix it, and then reinspecting (PA Exh. 93, McAfee, pp. 9-11).

505. Mr. McAfee complained that it was not made clear when he should use the M40C, the R2-A, the NCI, or when he should simply ask craft to correct it and reinspect later (PA Exh. 93, McAfee, pp. 11-12). Mr. McAfee acknowledges that there were inspectors who wrote NCIs, but stated that he could not remember ever having seen an NCI red tag on a cable tray hanger (PA Exh. 93, McAfee, p. 18). During the hearings, however, Applicants showed Mr. McAfee thirty-six NCI's written by electrical QC inspectors, including Mr. McAfee, during the period that Mr. McAfee was an inspector (Apps. Exh. 52). Three of these NCI's involved cable tray hangers which were tagged, and one of these was written by Mr. McAfee himself (Tr. 7851-54, 7859-61, McAfee, 11/17/83). Additionally, Mr. McAfee documented another discrepancy on an M40C (Tr. 8133-34, McAfee, 11/18/83).

506. Mr. McAfee related two other specific incidents where he found inadequate work, informed craft, and craft then fixed the work. Thus there was no documentation of these repairs. However, these were again the sort of deficiencies which were apparent from examination of the drawings, and thus required no documentation (NRC Staff

Exh. 5, Bryant, p. 20). These two incidents involved improper installation of unistrut and cable tray hangers and cable tray support grids (PA Exh. 93, McAfee, pp. 8-10, 19-21). The subsequent repairs were made to Mr. McAfee's satisfaction (Tr. 7906-08, McAfee, 11/17/83; Tr. 7990-91, McAfee, 11/18/83).

507. As Mr. McAfee testified, there are four basic means to correct discrepancies that are discovered by inspectors (PA Exh. 93, McAfee, p. 11). Although Mr. McAfee had forgotten the names of some of the procedures (Tr. 8107-08, 8149, McAfee 11/18/83), these four methods were fully explained to the Board by the Catawba QA Manager. The first method, sometimes called the "hold point" method, is the one which Mr. McAfee described. The work is inspected (in the case of the cable tray hardware described by Mr. McAfee, upon completion), any deficiencies are reported to craft and repaired, and it is inspected again. Once the work is correct, the inspector tags it as having been inspected and accepted. This method of inspection and correction is appropriate when the necessary corrective action is clear from the design drawing, requiring no engineering evaluation (Apps. Exh. 37, Davison, pp. 40-41; NRC Staff Exh. 5, Bryant, p. 20). This was the case with all three of the deficiencies described in Mr. McAfee's testimony (PA Exh. 93, McAfee, pp. 8-10, 13, 19-21). Thus the

practice which Mr. McAfee described is accepted procedure, and these instances of work in need of correction were properly dealt with (Apps. Exh. 37, Davison, pp. 43-44). Those nonconformances for which Mr. McAfee did issue NCI's were also treated appropriately (Tr. 8151-54, McAfee, 11/18/83).

508. Indeed, this conclusion is supported by the NRC Staff witness who testified on this point. He stated that, if anything, the Applicants documented too many minor matters on NCI's which should have been resolved by a simpler method (NRC Staff Exh. 5, Bryant, p. 21). The NRC regulations, Criterion XVI to Appendix B of 10 C.F.R. Part 50, require that conditions adverse to quality be promptly identified and corrected. Only in the case of significant conditions adverse to quality is the type of documentation and review undertaken with an NCI required (NRC Staff Exh. 5, Bryant, pp. 19-20). It is worth noting that Mr. McAfee only alleged that he was discouraged from documenting some nonconforming items through the mechanism of an NCI. Mr. McAfee was not told to ignore the nonconformances, only to have them corrected by other means (Tr. 8081-82, McAfee 11/18/83; NRC Staff Exh. 5, Bryant, pp. 18-19).

509. The remaining three of the four methods for resolving construction discrepancies, besides the "hold point" method described above, are more elaborate, being

designed for more complicated nonconformances. The second method is the "process control" method, whereby the inspection report itself provides the means to document a repair. This method is used primarily in welding where, for example, a final visual inspection might detect defects which would be recorded on the inspection form. The procedure for the inspection and for making the weld would provide instructions for how to correct that item (or that defect) and then provide instructions for reinspection. All of this would be documented on the Process Control Form, which serves both as a documentation of the work and the inspection of that work (Apps. Exh. 37, Davison, pp. 41-42).

510. The third method is use of the Deficiency Report Form, commonly referred to as an R-2A. There have been several different procedures available to inspectors under this method. By this method, the inspector would document the problem he identified, and send the document to the Engineering Group for construction at the site to determine necessary corrective action. If such action involved the craft redoing work, it would go to the craft to be done. The form would then be routed back to the inspector who would reinspect the work and, if satisfied, sign off on it (Id. at p. 42).

511. The final method that is available is the Nonconforming Item Procedure, Procedure Q-1 in the Quality Assurance Program Manual at Catawba. This method provides for the Inspector to identify the discrepancy, which is then reviewed by supervision and by Quality Assurance. The NCI is then sent to the appropriate party to resolve the discrepancy, e.g., Design Engineering, Construction Department, or Quality Assurance. Evaluations are reported and documented. The NCI is reviewed for reportability under 10 C.F.R. Part 21 and § 50.55(e). Once the resolution is documented, it is approved by the technical person in the group that is responsible for the resolution and is subject to QA review and approval. The actions to be taken as a result of the resolution would be identified on the report and assigned to specific groups for implementation. Once those actions are completed and signed off, the form would then be sent to QA who would conduct a final review to be sure that all of the actions have been performed and properly verified (Id. at 42-43).

512. It is not unusual or improper for an inspector such as Mr. McAfee to have gotten directions such as he described from his supervisor, as he had only been a certified QC Inspector for a short period of time (Apps. Exh. 37, Davison, p. 45).

513. Based on a consideration of the foregoing, this Board finds that contrary to Mr. McAfee's allegations, deficiencies in construction were properly handled and, where necessary, documented, in accordance with procedures. Therefore the Board concludes that this allegation does not call into question the safe operation of the plant.

(10) Hoopingarner Allegation Concerning Welding Inspector Harassment

514. Among his numerous allegations concerning harassment, Mr. Hoopingarner alleged that a welding inspector named Phil Edwards was harassed (Hoopingarner, Tr. 8042, 8047). It was alleged that, for rejecting a weld, Mr. Edwards was criticized by a welder and welder foreman who went over his head and almost got him fired (NRC Staff Exh. 5, Bryant, p. 16). The implication of such allegation is, we presume, that the inspector was prevented from properly performing his work.

515. Palmetto Alliance presented no direct testimony and asked no questions on cross-examination regarding this specific allegation. However, we note that the NRC Staff investigated this incident and reported on it in Inspection Report Nos. 50-413, 414/80-08. During its investigation, the Staff spoke directly with Mr. Edwards, who informed them that he was not intimidated by criticism from craftsmen, and their foreman, and was not threatened

with firing by his supervisor. He stated that he had his supervisor's support and that his supervisor wanted him to inspect as required by procedures (NRC Staff Exh. 5, Bryant, p. 16). It should also be noted that Mr. Hoopingarner himself acknowledges that this incident, in his view, would not impact safety (Hoopingarner, Tr. 8042, 8047).

516. Based on the foregoing, we find that this incident, if it did occur, does not raise a question respecting safe operation of the Catawba plant.

(11) Hoopingarner Allegations Concerning Order Not to Talk to the NRC, Harassment and Wrongful Termination of Employment

517. Palmetto Alliance and Mr. Hoopingarner take the position that Applicants' behavior toward Mr Hoopingarner reflects a consistent policy of harassment culminating in his firing. It is contended that such behavior was retaliation against Mr. Hoopingarner for raising concerns to his supervision, site management, the NRC and the Department of Labor's Occupational Safety and Health Administration (OSHA). It is their contention that actions against Mr. Hoopingarner consisted of a number of different incidents.

518. First, it is alleged that Mr. Hoopingarner's supervision ordered him not to approach or contact the NRC's resident inspector.

519. Second, it is alleged that Mr. Hoopingarner was harassed by his supervision, who gave him a direct order in a written letter to stop raising complaints or risk the loss of his job. Mr. Hoopingarner contends that his supervision turned his fellow workers against him. It is also alleged that Mr. Hoopingarner was harassed by reason of his transfer from the Auxiliary Building to the cooling towers, and by assignment of his work crew to clean up the rebar storage yard.

520. Third, it is alleged that Mr. Hoopingarner's employment was terminated not for the reasons officially given, but because he did complain to the NRC and OSHA.

521. These allegations were the subject of extensive testimony and cross-examination at the hearing. All parties submitted direct testimony on a number of the matters raised and all parties presented witnesses for cross-examination on all matters. Applicants' witnesses Dick, Beam and Alexander testified on these matters. The NRC Staff presented Messrs. Bryant and Maxwell, and Palmetto Alliance presented Mr. Hoopingarner.

522. After careful examination of the record, we find Palmetto Alliance's allegations to be without merit. We find that Mr. Hoopingarner, though he may have been given incorrect information regarding Applicants' policy with respect to employees access to the NRC, did not have his access to the NRC impeded by Applicants. We further

find that the instances of alleged harassment are not harassment, but instead reflect normal supervisory activities in the ordinary course of business. Finally, we conclude that the termination of Mr. Hoopingarner's employment was not retaliatory, but was instead for cause and was consistent with Applicants' normal policy as applied to numerous other persons at the site.

523. Before we address the specific allegations, we believe some background comment is in order. We begin our discussion by noting that it is evident, from the totality of the circumstances in the record, that Mr. Hoopingarner's actions and behavior presented an unusual situation for management. Mr. Dick testified that he had been personally involved with the problems raised by Mr. Hoopingarner, and the situation was unique to him. In his career, he had never dealt with another situation like the one presented by Mr. Hoopingarner.^{121/} (Apps. Exh. 24, Dick, p. 1; Tr. 5626-28, Dick, 11/2/83).

524. We would further note that the majority of Mr. Hoopingarner's complaints did not involve matters of nuclear safety, but instead were related to worker safety, which is of course not within the jurisdiction of the NRC.

^{121/} We note that Mr. Dick has been employed by Duke since 1949 and has been Vice President - Construction since 1971. In that position, he spent a substantial amount of his time - perhaps as much as fifty percent - on personnel-related matters. Such involvement continued until he received a separate personnel section in his department. (Id.)

And to the extent that the complaints he has raised in this proceeding do involve nuclear safety matters, we have found that they do not raise questions respecting safe construction or operation of the facility.

525. The record is clear that Mr. Hoopingarner spent a substantial amount of time raising concerns to his supervision, site management, the NRC and OSHA (see e.g., PA Exh. 94, Hoopingarner; Tr. 5457-58, 5461, 5470, Beam; Dick, Tr. 5464, 11/2/83; Tr. 7994-98, Hoopingarner, 11/18/83). Indeed, Mr. Hoopingarner testified that he also reported concerns to the Federal Bureau of Investigation, the United States Department of Justice, and President Reagan^{122/} (Tr. 7999-8000, Hoopingarner, 11/18/83). Mr. Hoopingarner stated that his concerns were wide-ranging in nature, many of them centering on worker safety (within the meaning of OSHA standards) and cleanliness, and began shortly after he began work at Catawba, in August 1977. They came to his attention through his observations and conversations with other workers. Many were outside his particular scope of work. (Tr. 7994-95, Hoopingarner, 11/18/83).

^{122/} In fact Mr. Hoopingarner noted that he had written two letters to President Reagan, and "I would like to get a response from him. I do want that on the record. I would like for this to be a massive open investigation and let all of it be revealed like I stated in our open hearing we had." (Id.)

526. The record shows that Mr. Hoopingarner registered a number of complaints both with and about his supervision (PA Exhs. 95, 96); that he met with site management to discuss his concerns (PA Exh. 83); that he transmitted to OSHA a number of complaints which were investigated (PA Exh. 103; NRC Staff Exh. 5, Bryant, p. 23); and that he toured the site once with Mr. Maxwell and twice with Mr. Hunt, both of whom were NRC Inspectors (PA Exh. 94, pp. 8-10, 16-19).

527. Out of all this flurry of activity, there is no evidence of widespread wrongdoing or deficiencies in construction, or violation of NRC rules, regulations or standards. After hearing the totality of Mr. Hoopingarner's complaints, site management deemed only four (out of 26) worthy of investigation, and so far as the record reflects, no changes were necessary as a result of the investigation (PA Exh. 83; Tr. 5528-29, Beam, 11/2/83; Tr. 7601-02, Alexander, 11/16/83). OSHA found no violations as a result of Mr. Hoopingarner's complaints (PA Exh. 103; NRC Exh. 5, Bryant, p. 23). The NRC found, after two different inspectors toured the site with Mr. Hoopingarner three different times, only two minor violations of no safety significance (PA Exh. 107). However, Mr. Hoopingarner remains unconvinced. Instead he characterizes the OSHA findings as a "massive coverup" and as no more than evidence of a complaint "not properly

investigated" (Tr. 7998, Hoopingarner, 11/18/83; PA Exh. 103). Mr. Hoopingarner's response to the NRC was to accuse Mr. Maxwell either of being on Duke's payroll or of being in "cahoots" with Duke (NRC Staff Exh. 6, Maxwell, p. 5; PA Exh. 110 (p. 1 of enclosure); Tr. 8051-53, 8059, Hoopingarner, 11/18/83). Such is not surprising, because so far as Mr. Hoopingarner is concerned, there is nothing anyone can do or say to change his views that the plant is not safe (Tr. 8078-79, Hoopingarner, 11/18/83).

528. With this as background, we now turn to the specific allegations raised by Mr. Hoopingarner.

(a) Hoopingarner Allegation Concerning Pressure Not To Talk To NRC

529. Mr. Hoopingarner alleges that he was given a direct order by his supervision not to talk to the NRC (PA Exh. 94, p. 5). As he relates the incident, he claims that one day on the job site he approached NRC Inspector Maxwell and asked to speak with him. After his conversation with Mr. Maxwell was complete, Mr. Hoopingarner alleges that his General Foreman, R.H. McDowell, gave him a direct order "not to talk to or approach the NRC man." Mr. Hoopingarner then discussed the matter with John Turner, of the employee relations department. Shortly after that conversation - within "a couple of days" - Mr. Hoopingarner acknowledges that he

was told by Danny Powell that the order was withdrawn. (Apps. Exh. 37, Dressler, et al., (Alexander), pp. 13-14; PA Exh. 94, Hoopingarner, pp. 5-6).

530. There is some dispute over precisely what was said to Mr. Hoopingarner. Applicants' testimony shows that on April 23, 1980, Mr. Hoopingarner approached John Turner and stated that Mr. McDowell had told him he could not talk to the NRC unless he was first approached by the NRC. The Applicants' investigation showed that this was precipitated by Mr. Hoopingarner stopping Mr. Maxwell as the NRC Inspector walked through the plant. Mr. McDowell saw this happen and told Mr. Hoopingarner that he could talk to the NRC if approached, but he should not initiate contact with the NRC Inspector. Mr. Hoopingarner then questioned Mr. Turner concerning the matter. (Apps. Exh. 37, Dressler, et al. (Alexander), pp. 13-14).

531. Applicants investigated this incident after Mr. Hoopingarner spoke with Mr. Turner and learned that Mr. McDowell had apparently misunderstood instructions he had been given regarding an employee's ability to talk to the NRC. The instructions he had been given were that an employee could talk to the NRC Inspector if approached and could approach the NRC in the work area. If an employee needed - or wanted - to talk at length, then an appointment to do so should be made. This differs from what Mr. Hoopingarner alleges he was told. Mr.

Hoopingarner was informed of Mr. McDowell's misunderstanding and told of the correct policy, but was still concerned about the "order" he believed he was given. Therefore Turner told Hoopingarner that if he considered McDowell's instructions an "order," then to consider the "order" rescinded. Turner reminded Hoopingarner again that it was a misunderstanding on McDowell's part, not a direct order. This conversation took place either the same day (April 23) or the next. (Apps. Exh. 37, Dressler, et al. (Alexander), pp. 13-15; PA Exh. 91).

532. We do not consider the disputes over who said what to whom in this instance to be of significance. What is important, we believe, is whether this incident affected Mr. Hoopingarner's ability to go to the NRC, and whether this incident might be symptomatic of Applicants' actions in discouraging its employees from contacting the NRC, thereby restricting the raising of safety concerns.

533. So far as we are concerned, this incident in no way impaired Mr. Hoopingarner's ability to go to the NRC with his concerns. Though Mr. Hoopingarner was given erroneous instructions and information about his ability to go to the NRC based upon a misunderstanding of the situation by his General Foreman, we find that to be immaterial, for the erroneous instructions - whatever they might have been - were corrected virtually immediately and

Mr. Hoopingarner was given the correct instructions with regard to talking with the NRC. As Mr. Hoopingarner himself acknowledges, he was told that the "order" was withdrawn (PA Exh. 93, Hoopingarner, p. 6). Moreover, the record is clear that this incident in no way impaired Mr. Hoopingarner's ability to approach the NRC with his concerns.

534. The record is replete with instances of Mr. Hoopingarner's contacts with NRC Inspectors, following this incident, to share with them his concerns. Mr. Hoopingarner's contacts included, but were not limited to, at least three different site tours with two different NRC Inspectors, all of which took place after this incident occurred (PA Exh. 94, Hoopingarner, pp. 7, 16-17). Mr. Hoopingarner toured the site once with Mr. Maxwell and twice with Mr. Hunt, pointing out his concerns to them each time (NRC Staff Exh. 5, Bryant, pp. 5, 13; NRC Staff Exh. 6, Maxwell, pp. 2-21; Tr. 9259-62, Bryant, 12/2/83; PA Exh. 94, Hoopingarner, pp. 7-10, 16-18; Tr. 7998, Hoopingarner, 11/18/83). Based on the evidence of record, it is clear that the incident which Mr. Hoopingarner complained of did not deter him from going to the NRC with his concerns.

535. Having resolved that matter, the next question we ask ourselves is whether this incident with Mr. Hoopingarner is symptomatic of Applicants' attitude toward

its employees approaching the NRC. We find that it is not. We begin first with the obvious observation - the instructions given to Mr. Hoopingarner were erroneous. There is extensive evidence in the record on Applicants' policy with respect to the ability of workers approaching the NRC with their concerns. Nothing in the examination of Applicants' witnesses with regard to this incident reveals information contrary to that which has gone before.

536. Counsel for Palmetto Alliance cross-examined Applicants' Mr. Alexander at some length on Palmetto Alliance Exh. 91, which is a memorandum written by Mr. Turner regarding the Hoopingarner incident. In that memorandum Mr. Turner set forth what Mr. Beam had told him regarding policy about worker contacts with the NRC. Nothing in this document was inconsistent with the testimony of Applicants' witnesses. Much was made of the fact that paragraph one of that document, which purports to be a statement of company policy, says that the NRC may talk to employees on company time so long as such is not extensive. As Mr. Alexander testified, that is not company policy, and indeed it cannot be. (Tr. 7501-02, 7507-08, Alexander, 11/16/83). Obviously the NRC can talk to anyone they want for as long as they want.

537. Counsel for Palmetto Alliance also cross-examined Mr. Alexander on the second paragraph of PA Exh. 91, which states that Hoopingarner was told that if he wished, he may approach the NRC Inspector in the work area to show him something quickly; however, if he wished to speak to the NRC Inspector at length then it would be preferable if an appointment were set up. The appointment may or may not be on company time. As Mr. Alexander stated, there is nothing inconsistent between these instructions and the stated company policy that an employee has an absolute right to go to the NRC at any point in time. (PA Exh. 91; Tr. 7505-09, Alexander, 11/16/83). We do not believe that the instructions in this memo, and given Mr. Hoopingarner, are anything more than an attempt by Applicants to make the process orderly. As Mr. Alexander testified, if the time an employee wishes to spend with the NRC is extensive, Applicants would prefer an appointment be scheduled. (Id.).

538. The Applicants' wishes in such a situation are certainly understandable, and we see nothing here inconsistent with the unrestricted right of Applicants' employees to go to the NRC. Indeed, in the totality of the circumstances surrounding Mr. Hoopingarner, Applicants' actions are certainly understandable. Mr. Hoopingarner's own testimony reflects that he spent substantial amounts of time discussing his concerns with

site management, the NRC, and the Occupational Safety and Health Administration (Tr. 7993-8000, Hoopingarner, 11/18/83). Indeed, as Applicants' witnesses testified, one of the management problems presented by Mr. Hoopingarner was that he spent an inordinate amount of time discussing concerns with anyone who would listen rather than performing productive work. The record reflects that Mr. Hoopingarner was counselled on various occasions about performing work rather than engaging in discussions. (Tr. 5461-62, Beam, 11/2/83; Tr. 6463-65, Dick, 11/2/83). Applicants not unreasonably took the position that Mr. Hoopingrner had been employed to do productive work and some of his time ought to be devoted to that, and the Company's actions are consistent with that end (Tr. 5471, 5473, Beam, 11/2/83).

539. As Mr. Dick testified, Mr. Hoopingarner's reputation for raising concerns and making charges was widespread throughout the job site. When Mr. Hoopingarner stopped Mr. Maxwell and began speaking with him it not only affected Mr. Hoopingarner's productivity, but that of others as well. In fact, everyone within sight stopped work to watch what was occurring, and the entire incident was extremely disruptive to the workplace. It was to avoid such situations that Mr. Hoopingarner was instructed that, if he wished to speak extensively with the NRC, he should arrange an appointment out of the work area. (Tr.

5474-75, Dick, 11/2/83). We believe this was proper; we note that this is the procedure Mr. Hoopingarner subsequently followed; that his ability to contact the NRC was not compromised; and that the instructions given to Mr. Hoopingarner do not reflect that Applicants sought to discourage their workers from going to the NRC.

540. We also do not believe there is a history of Applicants discouraging workers from going to the NRC. As noted, Applicants' policy on this matter is clear on the record. We further note that they have posted the requisite NRC notices regarding contacts with the NRC, and have also posted the notice required by the Board's Order of April 27, 1983 (Memorandum and Order Ruling on Palmetto Request For Remedial Measures), April 27, 1983, pp. 7-8; Apps. Exh. 37, Dressler, et al. (Alexander), pp. 14-15, Attachments D, E, and F; Tr. 7604-05, Alexander, 11/16/83).

541. The NRC Staff testified that there is no history of Catawba personnel being forbidden to talk with NRC Inspectors. The Staff witnesses stated that to the best of their knowledge, no Catawba worker other than Mr. Hoopingarner had ever made such an allegation. The NRC Staff has held two special inspections concerning work quality and employee recourse. Duke management invited workers to talk privately with NRC inspectors during the 1979 inspection (Mr. Hoopingarner was one of these workers

(PA Exh. 94, Hoopingarner, pp. 3-4)), and the NRC Staff testified that workers stated to them they were free to express concerns.^{123/} (Staff Exh. 5, Bryant, p. 25).

542. On cross-examination, all three of the NRC Staff's witnesses testified that they were not aware of pressure by Applicants on employees not to contact the NRC. Mr. Bryant, who has made numerous visits to Catawba, stated that he had not observed, nor had he had related to him, evidence of pressure by Applicants on their employees not to go to the NRC (Tr. 9819, Bryant, 12/6/83). Mr. Maxwell, who was the NRC's resident inspector for a period of time at Catawba, stated that not only was there not evidence of Duke pressuring employees not to go to the NRC, in his opinion the situation was to the contrary. Mr. Maxwell stated that at the Catawba site, employees were quite vocal. If they had a complaint, he was made aware of such, and it was his belief that no one was held back. (Tr. 9819-20, Maxwell, 12/6/83). Mr. Van Doorn stated that there was no pressure by Duke to keep employees from contacting the NRC. He testified that there was an encouragement that problems be taken up with supervision first, and some may have misunderstood that desire, but there was no evidence of general pressure not to go to the NRC (Tr. 9820, Van Doorn, 12/6/83).

^{123/} Mr. Bryant personally sat in on a number of these interviews (Tr. 9494, Bryant, 12/5/83).

543. Counsel for Palmetto Alliance cross-examined the Staff witnesses regarding what he believed was evidence to the contrary, such as Mr. Burr's testimony with regard to his meeting with Mr. Davison, and the views of some of the welding inspectors concerning their ability to go to the NRC (Tr. 9504-06, 12/6/83). Those matters are clear in the record and are covered by earlier portions of this decision. As set forth therein, the Applicants' policy is clear in the record, and reflects no such pressure. It is clear that some employees misunderstood Applicants' policy; it is also equally clear that some understood that policy.

544. We find, based on the above, that this incident did not impede Mr. Hoopingarner's access to the NRC, and that this incident is not reflective of an attitude or practice by Applicants to discourage employees from going to the NRC.

(b) Hoopingarner Allegation Concerning Harassment

545. Mr. Hoopingarner also alleges that he was harassed by his supervision and site management for bringing complaints to Duke management, OSHA, and the NRC. On examination of Mr. Hoopingarner's allegations, it appears that his complaints of harassment can be narrowed down to three discrete incidents.

546. The first of these is the letter (PA Exh. 96) which reflects a counseling session held with Mr. Hoopingarner by his supervisor, R.R. Pelfrey and the General Foreman, R.H. McDowell (PA Exh. 94, Hoopingarner, pp. 6-7; Tr. 5543-45, Dick, 11/2/83). Palmetto Alliance asserts that this meeting was an attempt by supervision to suppress Mr. Hoopingarner who was seeking to raise complaints to site management and to the NRC.

547. The second is the transfer of Mr. Hoopingarner from the crew of R.R. Pelfrey, working in the Auxiliary Building, to that of Frank Cantrell, working in the cooling towers. Palmetto Alliance and Mr. Hoopingarner assert that this transfer was punitive in nature because Mr. Hoopingarner had raised concerns to NRC Inspector Maxwell, and it also served the purpose of removing Mr. Hoopingarner from proximity to safety-related work and NRC Inspectors. (PA Exh. 94, Hoopingarner, pp. 1, 11-13).

548. The third incident is the assignment of Mr. Hoopingarner's crew to clear up the rebar storage area. Palmetto Alliance and Mr. Hoopingarner assert that this action was punitive, taken in response to Mr. Hoopingarner's contacts with NRC Inspector Hunt, as such assignment was outside the work responsibility of Mr. Hoopingarner's builder crew and instead was the responsibility of a receiving and storage crew. (PA Exh. 94, Hoopingarner, pp. 18-19).

549. We have already noted that Mr. Hoopingarner presented an unusual situation for site management. In that context, we find management actions in these matters to be reasonable. We conclude that the incident with Mr. Pelfrey and Mr. McDowell was a counseling session; that the transfer to the cooling tower was done for Mr. Hoopingarner's personal safety; and that the assignment of his crew to clean up the rebar yard was neither punitive nor discriminatory. We now discuss each of these allegations seriatim.

550. As noted above, the first of these matters is the letter (PA Exh. 96) written by Mr. Pelfrey and given to Mr. Hoopingarner by Mr. Pelfrey and Mr. McDowell. Mr. Hoopingarner has alleged that the purpose of this letter was to button his lip, that Messrs. Pelfrey and McDowell were attempting to take away his rights to continue to raise complaints (Tr. 8070, Hoopingarner, 11/18/83). However, it appears to us that the actual purpose of the letter was to use for guidance in a counseling session with Mr. Hoopingarner.

551. We note that Mr. Dick has testified that it is the company's policy to counsel employees who are having difficulty, rather than simply to terminate their employment (Tr. 5628, Dick, 11/2/83). Such is consistent with other testimony in the record. And the record reflects that the situation with Mr. Hoopingarner

certainly warranted such counseling. After all, in supervision's view, Mr. Hoopingarner had in effect accused his immediate supervisor, Mr. Pelfrey, of dereliction of duty as a supervisor, stating that he (Pelfrey) did not care about safety hazards, that certain members of Pelfrey's crew were receiving preferential treatment at the expense of others, and were not doing their share of the work, and that Pelfrey did not show sufficient interest in his workers. These accusations had not only been made to Mr. Pelfrey, but also to Mr. Pelfrey's supervisors, Mr. R.H. McDowell and Mr. J.C. Scruggs. (PA Exh. 96).

552. These allegations had been investigated by Mr. McDowell and had been found to be without merit. Mr. McDowell had interviewed seven of Mr. Hoopingarner's fellow workers and found that not only did they not support Mr. Hoopingarner's allegations, they were of the opinion that if there were a problem, it was with Mr. Hoopingarner. (PA Exh. 96). In fact, the situation was such that in Mr. Pelfrey's view both morale and productivity of the crew were affected by Mr. Hoopingarner's behavior. (Id.). That this is the case is supported by the testimony of Mr. Dick, who testified that Mr. Hoopingarner's behavior was disrupting the workplace, that his crew believed he was breaking up relations between individual members of the crew by "ratting" on

them, was interferring with his crew's performance and ability to get the job done and was chilling relations with other crews (Tr. 5474-75, 5594-96, Dick, 11/2/83).

553. Under these circumstances it is not out of place that a counseling session be held with the employee by his supervision. And we see nothing in the letter written by Mr. Pelfrey to indicate that this session was anything other than a counseling session. In fact, the letter on its face relates that its purpose was to counsel M. Hoopingarner. Moreover, we are cognizant of the fact that the letter does in fact warn Mr. Hoopingarner that if he does not cease his activities (characterized by his supervision as "accusations and bickering") the consequences could be termination of his employment. (PA Exh. 96). We see nothing improper in such a warning. Indeed, cautioning an employee of the consequences of a continued course of conduct appears to us to be an integral part of a counseling session. Under the circumstances outlined above we do not find such a warning out of line.

554. We note that Mr. Hoopingarner characterizes the letter as an "order" to "bridle my lip" (PA Exh. 94, Hoopingarner, pp. 6-7); however, we have reviewed the letter ourselves and we do not find it to be what Mr. Hoopingarner claims it to be. We find it to be a counseling document.

555. The second allegation of harassment is that, following his tour of the site with Mr. Maxwell, Mr. Hoopingarner was transferred out to the cooling towers against his will. Mr. Hoopingarner maintains that this transfer was in retaliation for his raising complaints with Mr. Maxwell. (PA Exh. 94, pp. 11-13). Palmetto Alliance contends that Mr. Hoopingarner was moved out of an area (the Auxiliary Building) where safety-related work was being done into an area where non-safety related work was being done. The implication is that in the cooling tower area Mr. Hoopingarner would not have access either to NRC inspectors or to substandard safety-related work.

556. The transfer to the cooling towers was discussed at some length in the hearing. The primary testimony on the issue was given by Mr. Dick, Vice President-Construction for Duke. As noted, Mr. Dick has extensive management experience and has spent a substantial amount of his time on personnel-related matters. Mr. Dick testified that he had made a special trip to the site to discuss the problems of managing Mr. Hoopingarner. It was at that time that he learned of the transfer to the cooling towers. (Tr. 5593-95, Dick, 11/2/83). Mr. Dick investigated the matter by reviewing the files and talking with the persons involved in the

decision. Since that time, in preparation for his testimony, Mr. Dick again reviewed the files and spoke with those involved (Tr. 5629-30, Dick, 11/2/83).

557. The transfer of Mr. Hoopingarner to the cooling towers was done to protect Mr. Hoopingarner's personal safety. Mr. Dick testified to the turmoil surrounding Mr. Hoopingarner (See, e.g., Tr. 5474-75, Dick, 11/2/83), and further testified that, preceding the decision to transfer Mr. Hoopingarner to the cooling towers, his crew had requested a meeting with Employee Relations, without the presence of Hoopingarner. They were told this was not possible, and the meeting proceeded with Mr. Hoopingarner present. The crew told the representatives of Employee Relations, John Turner and Danny Powell, of their problems with Mr. Hoopingarner. Such problems included complaints that Mr. Hoopingarner was breaking up relations between individual members of the crew, was "ratting" on other members of the crew, and was chilling relations with other crews. The crew believed that, because of Mr. Hoopingarner's activites, there was a definite morale and production problem. (Tr. 5593-96, Dick, 11/2/83).

558. Employee Relations informed the crew that their complaints provided no basis for action, and that they would simply have to adjust to the situation. At this point, the crew expressed a fear for their own safety as a result of actions which might be taken in the Auxiliary

Building against Mr. Hoopingarner, and stated that for this reason they did not care to be around him. (Tr. 5596-98, Dick, 11/2/83). As the record shows, Mr. Hoopingarner himself acknowledges that he was threatened by his fellow workers (PA Exh. 94, Hoopingarner, p. 11; TR. 8008-09, Hoopingarner, 11/18/83). Following this meeting, Mr. Powell reported to Mr. Beam that the situation was extremely tense, that the animosity in the crew was very high, and recommended to Mr. Beam that Mr. Hoopingarner be transferred to the cooling towers for his own safety (Tr. 5597, Dick, 11/2/83).

559. Mr. Beam then determined, on the basis of Mr. Hoopingarner's personal safety, to move him to the cooling towers. The record reflects numerous reasons why the cooling towers were a safer work location for Mr. Hoopingarner (Tr. 5547-50, Dick; Tr. 5550-52, Beam, 11/2/83). Mr. Beam did not consider the question of whether Mr. Hoopingarner would be able to continue to report items to the NRC after the transfer. (Tr. 5597-98, Beam, 11/2/83). However, the record clearly shows that he did so. The transfer was May 1, 1980; his two tours of the site with NRC Inspector Hunt were after that time (PA Exh. 94, Hoopingarner, pp. 1, 15-16).

560. Mr. Dick testified that, after he became aware of the transfer, he realized the quandry which faced him, and considered reversing the decision. He recognized

there was a concern about personal safety, but that on the other hand it would later be alleged Mr. Hoopingarner was moved to get him away from NRC inspectors and safety-related work. After investigating this matter he decided not to reverse the situation because of concern for Mr. Hoopingarner's personal safety. (Tr. 5547-48, Dick, 11/2/83).

561. Mr. Hoopingarner, in his description of events, acknowledges that the meeting with Employee Relations occurred, and that his crew did want him transferred. However, Mr. Hoopingarner claims that the crew had been turned against him by his supervision, who made his crew follow rules and regulations to the letter. (PA Exh. 94, Hoopingarner, p. 12).

562. There is no evidence in the record, beyond Mr. Hoopingarner's assertions, to support his allegations that supervision turned his crew against him. He claims that the crew was turned against him because supervision put pressure on the crew and on him personally by making them comply with rules and regulations that no one else had to follow.^{124/} (PA Exh. 94, Hoopingarner, p. 12; Tr. 8045-46, Hoopingarner, 11/18/83). In fact the evidence of record

^{124/} We find it ironic that Mr. Hoopingarner complains that he was harassed by being made to follow regulations to the letter. After all, he spent a substantial portion of his employment at the Catawba site complaining that those around him were not so doing!

shows that it was Mr. Hoopingarner's crew who requested a meeting with Employee Relations, and they complained of Mr. Hoopingarner's behavior, not their supervision's behavior. As noted above, the crew believed, among other things, that Mr. Hoopingarner was "ratting" on them, and were understandably upset. Mr. Hoopingarner himself acknowledged that first, he accused fellow workers of substandard work, and second that those who he was accusing of bad work were justifiably upset with him. (Tr. 5596-98, Dick, 11/2/83; Tr. 8000-05, Hoopingarner, 11/18/83; see also PA Exh. 96). Noting, as we do, that Mr. Hoopingarner, apparently on a number of occasions, accused his immediate supervisory level of dereliction of duty, accused Mr. Beam, the Project Manager, of being an "earthling" while claiming that he, Hoopingarner, was "not of this earth," and in the presence of site management called his fellow employees "earthlings" and "those slaves," we certainly find it reasonable to conclude that Hoopingarner's fellow crew members were upset with him for pointing fingers at them (PA Exh. 97; PA Exh. 83, p. 4; Tr. 5570-71, 5600, Beam, 11/2/83). In sum, we find it likely that Mr. Hoopingarner's behavior - not actions by his supervision - turned his crew against him.

563. The third and final allegation is that Mr. Hoopingarner's crew was assigned to clean up the rebar yard as a punitive measure for pointing out improper

storage in the rebar yard to NRC Inspector Hunt. Mr. Hoopingarner asserts that he knows this was a punitive measure because his crew was a builder or carpenter crew and such tasks were not properly the job of such crew. Instead the task should have been assigned to a receiving and storage crew. He further contends this was an effort by supervision to "get [his] fellow workers to hate [him]." (PA Exh. 94, Hoopingarner, pp. 18-19).

564. We have concluded that there is no evidence in the record to support the allegation that this job assignment was punitive. Applicants' witnesses testified that in fact it is the responsibility of builder craft to maintain the rebar yard, not receiving and storage. Their responsibility ceased when the rebar was received and stored. It then became the responsibility of the builder craft to maintain the area. (Tr. 7450-51, Dressler; Tr. 7455, Davison, 11/16/83).

565. The reason for this is that it is the responsibility of the builder craft to get rebar from the yard, and in moving the rebar around, some may be left on the ground. Therefore, it is the responsibility of the builder craft to maintain proper conditions. (Tr. 7455, Davison, 11/16/83). In fact, Mr. Hoopingarner acknowledged that in his own experience when builder crews went out to get rebar some would sometimes get moved or pushed off cribbing and be left on the ground (Tr. 8079-

81, Hoopingarner, 11/18/83). Because Mr. Hoopingarner was a builder, and because cleanup of the rebar yard was within the scope of his duties, there was nothing unusual or punitive about his crew being involved in the cleanup. (Tr. 7552-53, 7459-60, Davison, Dressler, 11/16/83).

566. The Board finds nothing in the record to support Mr. Hoopingarner's allegation that this assignment was retaliatory.

(c) Allegation Regarding Termination
Of Employment Of Hoopingarner

567. Palmetto Alliance claims that Mr. Hoopingarner's employment was terminated because he registered complaints with the NRC, as well as other agencies. As noted, Palmetto Alliance has alleged that Mr. Hoopingarner was pressured to keep him from going to the NRC; that failing, he was harassed by site management, who among other things attempted to turn fellow workers against him; and finally he was fired. We have already found against Palmetto Alliance on the first two allegations; we similarly find against them on this allegation. We find that the employment of Mr. Hoopingarner was terminated, in accordance with Applicants' policy, because he accumulated more than the allowed number of unauthorized absences. Such termination was not related to Mr. Hoopingarner's complaints to the NRC.

568. As set out in the record, the facts surrounding the termination of employment are not subject to a great deal of dispute; what is in dispute is the inferences the Parties believe we should draw from these facts.

569. As Mr. Hoopingarner relates the events leading up to the termination of his employment, he was at work one day when his foreman, Frank Cantrell, came up to him and told him to get his tools and come with him. Mr. Hoopingarner complied, and accompanied Mr. Cantrell while he turned in his tools, was checked out, and turned over his Company I.D. card and his brass. At this point, Mr. Hoopingarner asked Mr. Cantrell what was happening, and states that Mr. Cantrell replied: "Come on, you're out of service." (PA Exh. 94, Hoopingarner, p. 19). According to Mr. Hoopingarner's direct testimony, Mr. Cantrell told him three more times that he was "out of service," and that the reason for his being out of service was for insubordination and not following oral and written instructions (Id. at pp. 19-20). Following his removal from service to investigate that charge, Mr. Hoopingarner acknowledges that Applicants' Mr. Alexander called him at home twice to come back to work, once on a Friday afternoon to come in on Monday morning, and again on Monday morning to come in on Tuesday. Mr. Hoopingarner states that he responded by telling Mr. Alexander to contact his lawyer. Mr. Hoopingarner acknowledges that,

on what he believed to be the advice of his lawyer, he did not follow Mr. Alexander's instruction to return to work on Monday or Tuesday. When, on the instruction of his counsel, Mr. Hoopingarner reported for work on Wednesday, he was again removed from service for investigation of unauthorized absences. (Id., pp. 20-21).

570. The record is clear that Mr. Hoopingarner's employment was terminated because he accumulated three Class A violations for unauthorized absences within a 12-month period (the absences actually occurred within two months, during July and August of 1980) (Tr. 5624, Dick, 11/2/83; Tr. 7521-24, Alexander, 11/16/83). Palmetto Alliance sought to show through cross-examination of Applicants' witnesses that the firing was improper in that the normal company policy was not followed.

571. With respect to company policy, Applicants' witnesses testified that termination of employment is a three-step process. First, an employee must accumulate one or more violations (which range in severity from "A" to "C", with A being the least serious and C the most serious). When an employee has accumulated the requisite violation or violations, he or she is "removed from service." The removal from service allows for an investigation of the violations to determine whether such are warranted. The investigation is done by employee relations so that an objective look can be taken at the

situation, and the views of both supervision and the employee can be taken into account. When the investigation is completed (within a period of five days) depending on the results the employee is reinstated to service and paid for the time missed, or employment is terminated. Until termination, the employee is considered still an employee of the Company. (Tr. 5671-72, Dick, 11/2/83; Tr. 7525-26, Alexander, 11/16/83).

572. An examination of the facts in the record shows this policy was applied to the situation of Mr. Hoopingarner in a consistent and evenhandled fashion. Mr. Hoopingarner received an "A" violation for an unauthorized absence from work on July 14. The record discloses that he was given permission by his supervisor to go to the dentist on the morning of July 14 and that he was to return to work after that appointment unless medical reasons dictated otherwise. Mr. Hoopingarner did not return to work that afternoon; on the next day when he was asked why not, the only reason he gave was that he was off for personal business. Consequently he was given an "A" violation for unauthorized absence. (Tr. 7521-22, Alexander, 11/16/83). Mr. Hoopingarner appears to claim (but the statement is unclear) that he had "allotted time for personal business time or...sick time" which customarily employees are allowed to take "without any trouble whatsoever" (PA Exh. 94, Hoopingarner, pp. 15-16).

And that his receiving an "A" violation for "taking the rest of the day off" was inconsistent with the way others were customarily treated. (Id.). Indeed, it is consistent with Company policy that, if an employee has sufficient personal business hours he may take them after a medical appointment; however, such may only be done with the supervisor's permission. Mr. Hoopingarner did not get his supervisor's permission to take personal business hours, but instead simply did not return to work after his dental appointment. (Tr. 7522-23, Alexander, 11/16/83).

Therefore, there was nothing out of the ordinary about Mr. Hoopingarner receiving an "A" violation for this incident.

573. On August 13, Mr. Hoopingarner was removed from service by his foreman, Frank Cantrell, for a violation of the rules of conduct, failure to follow written or oral instructions (Tr. 7509-10, Alexander, 11/16/83; PA Exh. 94, Hoopingarner, pp. 19-20). Mr. Hoopingarner was removed from service as a result of this charge because a finding on this charge against him would have resulted in termination of his employment (Tr. 5686-87, Dick, 11/2/83). This was in full accordance with Company policy (Tr. 5685-87, Dick, 11/2/83).

574. Following the requisite investigation, it was determined that in fact the charge against Mr. Hoopingarner of failure to follow written or oral instructions was not justified (Tr. 5492-93, Dick,

11/2/83; Tr. 7511, Alexander, 11/16/83). Therefore, Mr. Alexander was assigned to call Mr. Hoopingarner to tell him to return to work. (Tr. 5496, 5499, Dick, 11/2/83). Mr. Alexander did so. As he testified - and as Mr. Hoopingarner acknowledges - Mr. Alexander spoke with Mr. Hoopingarner on Friday afternoon, August 22 to tell him to come to work on Monday morning, August 23 and again on Monday morning to come to work on Tuesday morning, August 26 (Tr. 5495, 5501-02, Dick, 11/2/83; Tr. 7512-14, 7524, 7602-03, Alexander, 11/16/83; PA Exh. 94, Hoopingarner, p. 20; Tr. 8033-34, Hoopingarner, 11/13/83). Mr. Hoopingrner did not report to work on either day. Instead he states he informed Mr. Alexander that he was being represented by counsel, that his counsel would have to be contacted, and that Duke should deal with his counsel. (PA Exh. 94, Hoopingarner, p. 20; Tr. 5505, Dick, 11/2/83; Tr. 7517-19, Alexander, 11/16/83). Mr. Hoopingarner was informed by Mr. Alexander that in a situation with an employee - which Mr. Hoopingarner still was - Duke, as a matter of policy, would not deal with an attorney. (Tr. 7514, 7519, Alexander, 11/16/83; Tr. 5506, Dick, 11/2/83).

575. In the conversations he had with Mr. Hoopingarner, Mr. Alexander told him that there had been a misunderstanding on directions he had been given, that he would be returned to work, that he would be paid for the time he had been out, and to return to work on Monday.

Mr. Hoopingarner was also specifically told that his days out would be considered unexcused if he did not report to work. (Tr. 7515, 7602-03, Alexander, 11/16/83).

576. It apparently is the contention of Palmetto Alliance that Mr. Hoopingarner's counsel and Duke's counsel were engaged in some sort of negotiations during this time and that should somehow have relieved Mr. Hoopingarner of the obligation to report to work when told to do so by Mr. Alexander. However, Mr. Alexander testified he was unaware of any such negotiations. Mr. Hoopingarner had been told that employee relations did not negotiate with employee's attorneys. (Tr. 7918-19, Alexander, 11/16/83). Instead he had explicitly been told to report back to work and that his absences would be considered unexcused if he did not come back to work. (Tr. 7524, 7602-03, Alexander, 11/16/83). At that point, it seems to us, Mr. Hoopingarner had a clear choice. He could either report to work as told by Mr. Alexander or he could rely on the advice of his attorney not to do so. Apparently he chose to do the latter.

577. On Wednesday, when on the advice of his attorney Mr. Hoopingarner reported for work (PA Exh. 94, Hoopingarner, p. 20), he was again removed from service to investigate whether the two absences of August 25 and 26 were in fact unexcused. It was determined that they were and that each constituted an "A" violation. As Mr.

Hoopingarner then had three "A" violations, all of which were within a 12-month period, his employment was terminated in accordance with Company policy. Such treatment was consistent with action taken with respect to more than 200 people also terminated at Catawba for unauthorized absences during the period 1979-1981. (Tr. 7603, Alexander, 11/18/83).

578. We find no merit in Palmetto Alliance's apparent assertion that somehow Mr. Hoopingarner's firing was improper or for the wrong reasons because he was represented by counsel who it is alleged was negotiating with Duke counsel. There is no evidence in the record regarding whether any such negotiations between counsel were being conducted, much less the substance of them. We would simply observe that Mr. Hoopingarner was represented by counsel at the time his employment was terminated and we assume that if a cause of action existed for improper termination, such would have been pursued at the time by Mr. Hoopingarner and his counsel. Indeed, we note that Mr. Hoopingarner and his counsel did in fact file a complaint with the Department of Labor, alleging that his employment had been wrongfully terminated. We further note that it appears the Department of Labor found against Mr. Hoopingarner regarding this claim. (PA Exhs. 103, 104, 105).

579. We find that the termination of Mr. Hoopingarner's employment was in accordance with Company policy and was for unexcused absences rather than having any connection with Mr. Hoopingarner's complaints to the NRC and others.

580. In sum, we find that the allegations of Mr. Hoopingarner concerning an order not to talk to the NRC, harassment, and wrongful termination of employment are without merit, and have no adverse implications for the safe operation of Catawba.

C. Palmetto Contention 16 - Spent Fuel Pool

Contention 16 reads:

Applicants have not demonstrated their ability safely to store irradiated fuel assemblies from other Duke facilities so as to provide reasonable assurance that those activities do not endanger the health and safety of the public.

Palmetto Alliance alleges that Applicants are unable to show their ability to store safely spent fuel from its other facilities in the Catawba spent fuel pools. In a Memorandum and Order dated September 6, 1983, ruling in part on Applicants and Staff motions for Summary Disposition of Contention 16, the Board specifically defined those areas to be addressed by the parties in connection with Contention 16. In summary, the Board admitted the following as issues in the proceeding:

A. Adequacy of the Spent Fuel Pool Cooling System

1. The ability of the spent fuel cooling system to maintain the anticipated pool water temperature, with Oconee and McGuire fuel in addition to Catawba fuel, at or below the Staff's acceptance criteria. (See September 6, 1983 Order, p. 5).
2. The validity of the 72 hour time calculations and whether there will be sufficient time to take corrective action needed to prevent uncovering of the fuel assemblies. (Id., p. 7).

B. Criticality, i.e., reactivity of the spent fuel storage arrangement in light of the expanded fuel storage facility. (Id., p. 8).

C. Fuel Handling, i.e., whether Applicants have shown the ability, as evidenced by experience and the existence of adequate

procedures, to meet the requirement for suitable shielding for radiation protection. (Id., pp. 10-11).

The Board rejected as issues in the proceeding allegations of Palmetto Alliance concerning the integrity of the pool liner, cask drop, and external threats, such as aircraft crashes. (Id., pp. 6, 9 and 11). The Board also cautioned Palmetto Alliance "against further attempts to reintroduce issues such as the management and transport of spent fuel from other power stations which are outside the scope of this proceeding." (Id., p. 3).

1. Adequacy of the Spent Fuel Pool Cooling System

1. Palmetto Alliance alleges that with the expansion of the Catawba spent fuel pools to accommodate storage of off-site spent fuel, Applicants have failed to show that the public health and safety are adequately protected from the alleged attendant rise in heat. Palmetto Alliance posits that the design of the expanded pools is inadequate to accommodate normal operating and accident conditions.

(See PA Supplementary Responses, 4/19/83, pp. 51-52; PA Further Supplementary Responses, 5/27/83, pp. 25-26).

2. Applicants' testimony^{125/} shows that the spent fuel pool cooling system consists of two cooling loops, one purification loop and one skimmer loop. The pool cooling subsystem consists of two full capacity pumps, each designed to pump 2840 gallons/minute, two full

^{125/} Applicants presented a panel of witnesses which consisted of Michael C. Green, Michael S. Tuckman, A. Lowell Snow, and C. William Graves.

Mr. Green is a registered Professional Engineer with a Bachelor of Science degree in Civil Engineering from the University of Tennessee who has been employed by Duke since 1972. Mr. Green is currently a supervising Design Engineer for Duke's Bad Creek Project. From June 1976 to June 1978, Mr. Green was an Assistant Design Engineer with responsibilities at the Oconee Nuclear Station and the Catawba Nuclear Station. At Catawba, Mr. Green's responsibilities included structural analysis and design of the spent fuel pool buildings, spent fuel storage racks and various equipment. Mr. Green was offered for testimony concerning the differences in design and characteristics between the current Catawba spent fuel pools and the original spent fuel pools as described in the PSAR.

Mr. Tuckman holds a Bachelor Degree in Electrical Engineering from Georgia Institute of Technology and attended graduate school at the University of Tennessee in Electrical Engineering. He participated in the U.S. Navy Nuclear Propulsion Training Program as an officer from 1965-1969 and 1972-1974. He is an NRC Certified Senior Reactor Operator and a Registered Professional Engineer in North Carolina. Mr. Tuckman became Assistant Station Manager at Oconee Nuclear Station effective October 1, 1983; prior to that he was Superintendent of Technical Services at Catawba. For three and one-half years prior to that he was a Licensing Engineer at Oconee. Mr. Tuckman was offered as a witness by Applicants to testify with regard to that part of Contention 16 which dealt with fuel handling and storage of Oconee and McGuire spent fuel at Catawba. As Superintendent of Technical Services at Catawba, Mr. Tuckman's responsibilities included

(footnote continued)

capacity heat exchangers, each designed to maintain the spent fuel pool temperatures below 150 degrees under normal heat load conditions, and associated piping and valves sufficient to take suction from the pool and return the cooled water to the pool. This equipment is arranged

(footnote continued from previous page)

review of the safety fuel handling procedures. Mr. Tuckman completed a course in reactor training in February 1982 and received additional training in the handling of off-site spent fuel.

Mr. Snow has a Bachelor of Science degree in Nuclear Engineering from the University of Tennessee, a Masters Degree in Mechanical Engineering from the University of South Carolina and has done graduate work in Mechanical Engineering toward a Ph.D. As a Design Engineer II, Mr. Snow's responsibilities include all of Duke's nuclear power stations as they relate to system-wide radwaste design review activities, licensing activities, probabilistic risk assessment and safety reviews, radioactive effluent analyses for normal and accident conditions, nuclear fuel criticality, spent fuel decay, and generic engineering activities. Applicants offered Mr. Snow to testify with regard to those portions of Containment 16 dealing with the ability of the spent fuel pool cooling system to maintain anticipated pool water temperatures at or below the NRC's acceptance criteria with Oconee, McGuire and Catawba fuel.

Mr. Graves is Superintendent of Operations at Catawba, a position he has held since 1978. As Superintendent of Operations, Mr. Graves has the responsibility for directing the actual day-to-day operation of the Station. In the event of the absence of the Station Manager, the Superintendent of Operations may, if designated, assume the responsibility and authority of the Station Manager. Mr. Graves has primary responsibility to direct the individuals who handle spent fuel. From 1969 to 1976, Mr. Graves was stationed at Oconee where he was certified as a Senior Reactor Operator. During his term at Oconee, Mr. Graves had extensive experience working as a Utility Operator, next as an

(footnote continued)

in two loops (sometimes referred to as trains), each with one pump, one heat exchanger and associated piping and valves. The details of this system are set forth in FSAR Section 9.1.3. (Apps. Exh. 89, Green, p. 2).

3. Applicants' testimony further shows that the original design of the spent fuel pool, which was shown on PSAR Figure 9.1.1-2, and which would have accommodated 281 spent fuel assemblies in each pool, was subsequently modified, first, to accommodate 664 assemblies per pool, and subsequently to accommodate 1418 assemblies per pool. (Id., p. 2). Further, Applicants' testimony shows that the expanded pool, the design of which is shown on FSAR Figures 9.1.2-2 and 9.1.2-3, has not resulted in any negative effects on the structural integrity of the spent fuel pool. (Id., pp. 3-4). FSAR Section 9.1.2-4 showed that McGuire fuel is the same configuration as Catawba fuel and that the Oconee fuel, which is slightly larger in size, can be handled in the pool by the addition of spacers. Absent a change in the depth of the water, which was not part of the pool enlargement, Applicants showed

(footnote continued from previous page)

Assistant Control Operator, and later as a Control Operator. Mr. Graves also served as an Assistant Operating Engineer at McGuire Nuclear Station. Mr. Graves attended Central Piedmont Community College and Gaston College concentrating in the general area of math and physics. Applicants offered Mr. Graves in conjunction with Mr. Tuckman to testify with regard to fuel handling and storage of Oconee and McGuire spent fuel at Catawba.

that redesign of the pool did not increase the pressure in pounds per square foot of the pool. (Tr. 10,540-42, Green 12/8/83).

4. With regard to the ability of the spent fuel pool cooling system to maintain anticipated pool water temperatures at or below the NRC's acceptance criteria, Applicants showed that the expanded pools are designed to maintain the temperature of the spent fuel pool below 150° F. consistent with guidance found in American National Standards Institute (ANSI) N210-1976 "Design Objectives for Light Water Reactor Spent Fuel Storage Facilities at Nuclear Power Stations." The cooling system is also capable of maintaining the pool water temperature below the 140° F. acceptance criteria found in the more recent Standard Review Plan 9.1.3., "Spent Fuel Pool Cooling and Cleanup System" and Regulatory Guide 1.13 "Spent Fuel Storage Facility Design Basis." (Apps. Exh. 91, Snow, p. 3).

5. With regard to the effect of increased heat load due to the increase in size of the spent fuel pool, Applicants testimony shows that no change in the cooling system was required and that the heat loads of the expanded pool could be met by the originally-designed cooling system. Applicants' testimony reflects that the primary reason for this is because of the greatly reduced heat output of spent fuel as it decays with time. This

evidence was uncontroverted and was supported by Staff. (Tr. 11,791-94, Clemenson 12/15/83). Further, Applicants noted that an increase in pump flow rate was made to accommodate the larger volume of water necessary for purification. This increased flow rate is not included in the flow to heat exchangers for cooling purposes in cooling response calculations. (Apps. Exh. 91, Snow, p. 4).

6. Applicants' testimony shows further that under both normal and abnormal heat load conditions,^{126/} the temperature of the spent fuel pool was as follows: (1) for each of the normal cases with one cooling train available, the resulting maximum fuel temperature would be less than 140^oF; (2) for the abnormal cases, with two cooling trains available, the maximum fuel pool temperatures would be less than 140^oF; (3) for the abnormal cases, with one cooling train, the temperatures would be well below 212^oF or boiling. (Id., pp. 7-8). Assuming the failure of both cooling trains, that no makeup water is supplied, and that the maximum decay heat production rate is present, Applicants testified that it

^{126/} Normal heat load is the postulated maximum achievable heat generation rate (Btu/Hr) resulting from the storage of spent fuel in a Catawba spent fuel pool which maintains a full core reserve. Abnormal heat load is the postulated maximum achievable heat generation rate resulting from the storage of spent fuel in a spent fuel pool following a full core discharge. (Apps. Exh. 91, Snow, p. 3).

would take 106 hours for assembly uncovery to occur. (Id., p. 10). In the face of such a failure, Applicants further testified that several sources of water were available to provide makeup to the spent fuel pool before boil off occurred. (Id., p. 10; Tr. pp. 10,458-59, Snov 12/8/83). Focusing on two such sources, the Refueling Water Storage Tank (FWST) and the assured fuel pool makeup source of Nuclear Service Water (lake water), Applicants testified that "these sources can be called upon well within the time calculated to assembly uncovery." (Id., p. 11).

7. Staff's analysis supports Applicants' contention that the expanded pool design will accommodate safely the addition of off-site fuel. Staff testified that "the Catawba plant will be capable of storing spent fuel from the Oconee and/or McGuire plants as described in addition to storing its own fuel assemblies without causing the storage pool and its cooling system to exceed the criteria of Section 9.1.3 of the Standard Review Plan and without causing any danger to the health and safety of the public." (Staff Exh. 17, Singh and Clemenson, pp. 7-8). Messrs. Singh and Clemenson supported Applicants' statements in FSAR 9.1.3 that a single cooling train would have sufficient heat removal capacity to keep the temperature of the pool water within the acceptance criteria of 140°F where the pool was under maximum heat

load conditions and contained the addition of non-Catawba fuel. (Id., p. 8). These conclusions were unrebutted by Palmetto Alliance.

8. With respect to the issue of makeup water, Messrs. Singh and Clemenson testified that there are three sources available for providing makeup water: (1) refueling water storage tank, (2) reactor makeup storage tank, and (3) the nuclear service water system. Staff stated that each source has a capability of providing a flow rate (more than 100 gpm) in excess of the maximum boil off rate (87 gpm) and, therefore, that the operation of any one of such sources would allow the water level in the pool to be maintained. Each of these sources is manually initiated and the Staff testified that it would take approximately one hour to initiate makeup water replacement from one of the sources. Assuming only eight hours were available, Staff concluded that there would be ample time to initiate makeup water. The Staff further calculated that it would take approximately 78 hours of boiling before the racks would be uncovered. Therefore, the Staff concluded "that makeup water can be provided on a timely basis, and that the loss of all cooling will not result in danger to the health and safety to the public." (Id., pp. 10-11).

9. Palmetto Alliance presented no witnesses concerning Contention 16. However, in cross-examination, Palmetto Alliance expressed concern that Applicants had focused on only two sources of makeup water, the refueling storage tank and the safety-related nuclear service water system, where the Staff had also included an additional source, the reactor makeup storage tank. Applicants' witness, Mr. Snow, testified that almost any source of makeup water could be routed to make up the cooling water and Applicants had simply chosen two such sources upon which to focus. (Tr. 10,458, Snow 12/8/83). In response to questions by Palmetto Alliance, Applicants' witness further testified in some detail as to the operation of the spent fuel cooling pumps and the integrated system of valves. (Tr. 10,459-76, Snow, Graves, Green and Tuckman). Applicants' testimony shows that with two cooling trains, one in operation and the other in standby readiness, adequate procedures exist to initiate the second system and put it into operation. Applicants considered in their analysis the hypothetical situation of both pumps being out of service. Although Palmetto Alliance seemed to place emphasis on the fact that such valves are to be manually operated, no evidence was presented to support a conclusion that such manual operation presented a safety issue. In fact, counsel for Applicants accurately pointed out that this Board has already ruled that manually

initiated sources can provide unlimited makeup. (Tr. 10,473, McGarry 12/8/83; Prehearing Tr. 1507, Callahan 9/12/83).

10. Palmetto Alliance also questioned Applicants' witnesses at length concerning the presence of certain radionuclides in spent fuel assemblies. Although considerable time was spent in identifying such radionuclides and asking whether such radionuclides were present in spent fuel, no specific conclusions were reached. In fact, counsel for Palmetto Alliance acknowledged that the purpose of listing each such radionuclide was solely to examine the background of Applicant's witnesses and not to deal with health effects. (Tr. 10,422-33, Snow, Tuckman and Green 12/8/83). We attach no significance whatsoever to the fact that Applicants' witnesses were apparently unable to list each and every radionuclide in a spent fuel assembly (although they listed quite a number). We note that such a list is commonly available for reference; to the best of our knowledge this proceeding is not the place for a pop quiz in radiochemistry.

11. Under cross-examination, Applicants' witness, Mr. Snow, stated that he could not explain the difference between Applicants' calculations and Staff's calculations concerning the temperature of pool water boiling and boil off without more detail and knowledge of the assumptions

used by Staff in their calculations. (Tr. 10,434-39, Snow 12/8/83). Applicants had testified that under normal heat load conditions, boiling would occur in 21 hours and Staff testified that boiling would occur in 13 hours. (Tr. 10,436, Snow 12/8/83). Under abnormal heat load conditions, Applicants testified that it would take 106 hours for boil off to occur; Staff calculated it would take 78 hours for boil off to occur. (Tr. 10,440, Snow 12/8/83).

12. The differences were later explained by the Staff witnesses. Applicants' analyses of the spent fuel pool temperature were based on the assumption that any Oconee and McGuire fuel stored therein would be decayed at least five years, consistent with their commitment to the NRC Staff. (Apps. Exh. 91, Snow, pp. 5-6; PA Exh. 122, p. 2). The NRC Staff, consistent with the analysis in the FSAR, used a decay time of 270 days, which is a considerably more conservative assumption. Under either set of assumptions, the cooling system is adequate to meet the requisite criteria. (Tr. 11,767-69, Singh; Tr. 11,770-73, Clemenson, 12/15/83). Therefore the Board concludes the differences in calculations are insignificant; under either set of assumptions the spent fuel pool cooling system is adequate.

13. On the basis of the above, the Board finds that Applicants have demonstrated the ability of the spent fuel cooling system to maintain the anticipated pool water temperature with the addition of Oconee and McGuire fuel at satisfactory levels to protect the public health and safety. Further, the Board believes that the record clearly shows that adequate sources of makeup water exist to keep boiloff from occurring in the pool.

2. Criticality

14. Applicants and Staff presented testimony concerning the ability of the Catawba spent fuel storage racks to store off-site fuel from Oconee and McGuire without endangering the health and safety of the public in the face of inadvertent criticality.^{127/} Applicants testified that two criticality analyses were performed, one for Catawba/McGuire spent fuel (which are identical) and one for Oconee spent fuel. (Apps. Exh. 91, Snow, p. 11). As the basis of the analyses, Applicants' testimony reflects the following assumptions using the methodology outlined in Standard Review Plan 9.1.2 "Spent Fuel Storage," ANSI N210 "Design Objectives for LWR Spent Fuel Storage Facilities at Nuclear Power Stations" and ANSI N18.2 "Nuclear Safety Criteria for Design of Stationary

^{127/} A steady state self-sustained chain reaction in fissionable material wherein the rate of neutron production is exactly balanced by the rate of neutron consumption is said to be critical.

PWR Plants:" (1) an initial enrichment of 3.5 weight percent U235 (this assumes no credit for boron concentration); (2) infinite storage arrays in lateral directions to establish the "worst case" Keff for the storage rack configuration; and (3) 13 1/2" center-to-center spacing. (Id., p. 11). Mr. Snow testified that the results of these analyses, in the face of a number of accident situations, showed a worst case Keff value of 0.922 for Catawba and McGuire fuel and 0.915 Keff for Oconee fuel. (Id., p. 12). Applicants testified further that the analyses included a number of conservative calculational and geometric uncertainties without which the Keff for Catawba and McGuire fuel and Oconee fuel would have been considerably lower. The calculational uncertainties contribute 0.24 to the 0.922 Keff value for Catawba and McGuire fuel. The assumption that storage rack dimensional tolerances and assembly positioning in the rack occur in the worst possible combination contributes 0.014 to the 0.922 Keff value. The conservative assumption of an infinite array contributes approximately 0.01 to the total 0.922 Keff values. The assumed absence of boron in the pool contributes approximately 0.20 to the total 0.922 Keff value. Applicants concluded then that the Keff for a Catawba storage array containing new (unirradiated) fuel from McGuire or Catawba, would be on the order of 0.674 without

the above uncertainties. With regard to the Oconee fuel, Applicants testified that the calculational method uncertainties contribute 0.28 Keff to the 0.915 worst case Keff. The assumed lack of boron and infinite array contributed 0.20 and 0.01, respectively. Although the contribution due to worst case treatment of dimension tolerances and assembly positioning was not separately calculated for Oconee fuel, it was included in Applicants' analysis. Therefore, Applicants testified that without the inclusion of the conservatisms, the worst case Keff for McGuire or Catawba fuel would be on the order of 0.674 and 0.677 for Oconee fuel assuming new fuel. Assuming new fuel adds additional conservatisms since spent fuel would result in a lower Keff. (Id., pp. 12-14).

15. In each case, then, Applicants' testimony shows that the Keff values demonstrate design compliance with the referenced NRC criteria by being less than 0.95 under all credible normal and accident conditions. (Id., p. 12).

16. As pointed out above, Applicants' testimony reflects that its criticality calculations were made without consideration of the presence of boron in the pool. (Tr. 10,506, 10,552, Tuckman 12/8/83). Applicants stated that the presence of boron in the pool water contributes approximately 20% to the margin below criticality. (Tr. 10,530, Snow 12/8/83). In response to several questions by Palmetto Alliance concerning

incidents of boron dilution at Applicants' Oconee Nuclear Station in 1980 and other plants generally, Applicants' witness, Mr. Tuckman, pointed out that all the examples referenced to by Palmetto Alliance involved reactor coolant systems and not the spent fuel pool. Mr. Tuckman pointed out that boron levels are more difficult to maintain in reactor coolant systems than in spent fuel pools, and that, in any event, the incident at Oconee did not exceed technical specifications. (Tr. 10,531-38, Tuckman 12/8/83). Further testimony by Mr. Tuckman reflects that since the boron concentration is not continually adjusted in the spent fuel pool, the opportunity for administrative error is reduced. (Tr. 10,553-54, Tuckman 12/8/83). In any event, in that these criticality analyses, which show that criticality in the spent fuel pool is acceptable, do not take credit for boron in the water, we find that line of questioning irrelevant.

17. Staff's analyses supported Applicants' conclusions. Staff testified that the acceptance criteria for criticality in spent fuel storage pools is that the calculated value of the effective neutron multiplication factor (K_{eff}) of the racks shall not exceed 0.95 when all uncertainties have been included in the calculation and certain conservative assumptions have been made. (NRC Staff Exh. 15, Brooks, p. 2). Staff testified that the

standard review procedure is described in a letter known as the "Grimes Letter" and that its review of Applicants' procedures were made in accordance with that letter. (Tr. 10,795, Brooks 12/9/83). Staff further testified that when certain calculation, mechanical and materials uncertainties are included, a conservative analysis shows that the Applicants' analysis of the criticality of the spent fuel racks is acceptable and that the racks meet the Staff's criterion of a Keff less than 0.95. (Id., pp.7-8).

18. Staff further considered the effect of design basis accidents on criticality and found that the spent fuel racks meet its acceptance criterion for criticality during accident events. (Id., p. 9). In addition, Staff confirmed that their analysis also assumed the absence of boron in the pool and that the presence of boron in the pool would reduce the Keff of the pool by approximately .25. (Id., p. 5). Staff, therefore, further confirmed that Applicants' calculation of the margin of criticality was conservative. (Tr. 10,820-22, Brooks 12/9/83).

19. Considerable interest was expressed by Palmetto Alliance with regard to the array of assemblies and the effect of such array on criticality in the pool. As noted above, Applicants' testimony reflected an assumption of 13 1/2" center-to-center spacing. Under cross-examination by Palmetto Alliance, Staff's witness, Mr. Brooks, testified that assuming 13 1/2" center-to-center spacing, part of

the criticality calculations will assume as a geometric uncertainty a variation in that spacing of 50 to 100 mils. (Tr. 10,704-05, Brooks 12/9/83). Mr. Brooks further testified that because the racks were tied, the assemblies would remain spaced apart and that absent a change in the distance between the racks, there would be little effect on reactivity caused by leaning of the racks. (Tr. 10,707-09, Brooks 12/9/83). In fact, Staff testified that no possible jumbling of the assemblies could lead to criticality because of the presence of boron in the pool. It is most likely that such jumbling could be caused by a seismic event, for which NRC's analysis procedures permit credit for the presence of boron. (Tr. 10,722-23, Brooks 12/9/83).

20. Based on the above evidence and the fact that such evidence remains uncontroverted, the Board finds that the Keff for the Catawba spent fuel pools meets the acceptance criteria for criticality by having a Keff well below 0.95. Applicants' testimony clearly showed that their methodology for calculating the 0.922 Keff for Catawba and McGuire fuel and 0.915 for Oconee fuel would have been in the range of 0.674 and 0.677 respectively, without the inclusion of the calculational and geometric uncertainties. And, further, these Keff values would have been even lower if Applicants had not included the

additional conservatism of using new fuel rather than spent fuel which has even lower reactive configuration in storage arrays. (Apps. Exh. 91, Snow, pp. 12-14).

3. Fuel Handling/Storage

21. Both Applicants and Staff presented evidence relating to the adequacy of radiation protection measures committed to by Applicants with regard to fuel handling operations.^{128/} Palmetto Alliance maintained that the

^{128/} The fuel handling operations consist of the following: (1) preparation for the receipt of fuel at Catawba, including notification of personnel that the spent fuel is due to arrive, checking of radiation monitors and other equipment; (2) inspection of the flatbed carrying the cask and the personnel barrier for external radiation contamination levels; (3) the personnel barrier is removed and the cask is inspected for external radiation levels; (4) impact-limiting structures and the cask tie down bolts are removed; (5) the cask is removed from the flatbed and placed in the decontamination pit; (6) the outer cavity drain valve covers, outer closure head bolts and the outer closure head of the cask are removed and inspected for damage and health physics personnel survey the inner closure head and adjacent cask surfaces; (7) the cask is flushed with water; (8) the cask is lifted out of the contamination pit and lowered into the upper platform of the spent fuel pool where approximately 1 1/2 feet of the cask remains above water; (9) the cask is then moved to the lower platform where it is totally covered by water (approximately 25 feet of water is above the top of the cask); (10) with the inner head removed, the assembly is lifted clear of the cask and transported to the location in the designated area of the spent fuel pool. During all of the steps, various measures are taken to keep employee radiation exposure ALARA: (1) the design of the cask provides shielding; (2) health physics personnel perform surveys of the cask for radiation levels and contamination; (3) additional health physics coverage is provided throughout the unloading and (footnote continued)

Applicants' lack of experience and absence of written procedures combined with the large number of casks expected to arrive from Oconee and McGuire raise serious questions about the Applicants' ability to meet the requirement for suitable shielding for radiation protection. Applicants testified that although no finalized written procedures existed for handling and storage of Oconee and McGuire spent fuel at Catawba, draft procedures were available which are essentially the same as those approved for use at both Oconee and McGuire. (Apps. Exh. 90, Tuckman, p. 3). Applicants set out the procedures used at Oconee and McGuire, (Id., pp. 3-8) and testified that "Catawba personnel have familiarized themselves with these procedures, have observed fuel handling operations, and in some instances, have participated in fuel handling operations at Oconee and McGuire." (Id., p. 3.). Applicants have transferred several hundred spent fuel assemblies between the spent fuel pools at Oconee and have shipped assemblies from Oconee to McGuire. In that the unloading process for each of these transfers or transshipments is identical to the

(footnote continued from previous page)
handling process; (4) the venting of the cask directly to the spent fuel ventilation system; (5) the inner closure head of the cask is removed under water. (Apps. Exh. 90, Tuckman, pp. 3-9).

Catawba fuel handling procedures at issue here, it is obvious that Applicants have substantial experience in the contemplated activity. (Id., pp. 2-3).

22. Mr. Tuckman testified further that the following measures had been taken to keep employee radiation exposure as low as reasonably achievable (ALARA): (1) the design of the spent fuel cask provides shielding to workers; (2) health physics personnel perform surveys of casks for radiation levels and contamination before unloading begins; (3) health physics coverage is provided throughout the unloading and handling process to assure that proper radiation protection practices are followed and to detect any abnormalities; (4) the cask is vented through a particulate filter directly to the spent fuel pool ventilation system; and (5) the inner closure head of the cask is removed under water. (Id., pp. 8-9).

23. Staff's testimony set forth the NRC inspection procedures used to monitor fuel handling procedures. (Staff Exh. 16, Serbu and Jape, pp. 8-14). The Staff's witnesses testified as to the inspection practices they would use to review Applicants' procedures for handling spent fuel at Catawba and indeed committed to do so prior to receipt of the first assembly. (Tr. 10,777, Jape 12/9/83).

24. Messrs. Serbu and Jape testified that the Staff had reviewed Applicants' measures for assuring that plant workers are adequately protected from radiation exposure and had found that "the radiation protection measures incorporated at Catawba will provide reasonable assurance that occupational doses will be maintained as low as is reasonably achievable and below the limited of 10 CFR Part 20. The Staff also found that Applicants' measures are consistent with the guidance of Regulatory Guide 8.8." (Id., pp. 3 and 7).

25. With regard to an incident of shipment of Oconee fuel to McGuire by Applicants, the Board admitted, except as it related to the transportation of spent fuel, a December 1, 1981 letter in which Applicants reported to the Commission that a cask containing Oconee spent fuel had been filled with water rather than helium as required. Staff testified that the incident occurred as a result of an incorrect coupling of two cask hoses (Tr. 10,641, Jape 12/9/83). Staff further testified that corrective procedures have been implemented to ensure that the incident would not reoccur. (Tr. 10,649, Jape 12/9/83). No threat to the public health and safety was presented. (PA Exh. 126; Tr. 10763, Jape 12/9/83). Based on the testimony presented by Applicants and Staff and the fact

that this incident represents a single event out of many successful shipments, the Board does not find the incident to be significant or relevant to the issue at hand.

26. The Board finds that based on the evidence presented by Applicants and Staff, Applicants' procedures for handling off-site spent fuel are adequate to provide protection from radiation exposure under the requirements. Palmetto Alliance provides no evidence to rebut this finding. Although Palmetto Alliance attempted to impugn the testimony of Mr. Tuckman by showing a certain lack of knowledge concerning specific actions to be taken during individual spent fuel handling procedures in an earlier deposition (Tr. 10,377-79, Tuckman 12/8/83), the Board does not find that Mr. Tuckman's lack of familiarity at the time of his deposition was critical, nor did it affect his ability subsequently to testify, at which time he showed himself to be adequately familiar with the procedures. Nor does the Board find that the absence of final written procedures for Catawba is significant in that Applicants' testimony shows that such procedures will be in place prior to the time they are needed. The record reflects that there have been between 900 and 1,000 shipments of spent fuel by Applicants over the past eight years with only two minor incidents. (Tr. 10,764-65, Jape 12/9/83). In addition, confidence was expressed by Staff in Applicants' ability to follow the proper procedures

once they are developed. (Tr. 10,765, Jape 12/9/83).

Staff testified that based on the fact that Applicants had successfully obtained a license and implemented procedures for McGuire, they could see no objection to Applicants getting a similar approval for Catawba. (Tr. 10,768-69, Jape 12/9/83)

27. The Board concludes that the spent fuel pool cooling system is capable of maintaining the anticipated pool water temperatures, with Oconee, McGuire and Catawba fuel, at or below the Staff's acceptance criteria and that there will be sufficient time to take action to prevent uncovering pool assemblies.

28. The Board further concludes that the expanded fuel storage facility is capable of safely storing spent fuel from Oconee, McGuire and Catawba in a subcritical arrangement. The Board acknowledges that the analyses employed to determine the reactivity of the spent fuel storage arrangement are conservative.

29. The Board concludes that the Applicants, through extensive experience in transferring and transshipping spent fuel and through experience in developing and implementing procedures to transfer and tranship spent fuel, have demonstrated reasonable assurance that they will be able safely to handle such fuel upon its receipt at Catawba without undue risk to the public health and safety. Such reasonable assurance includes the ability to

meet the requirement for suitable shielding for radiation protection. The Board notes that implementing procedures need not be fully developed at this time. See Long Island Lighting Company (Shoreham Nuclear Power Station, Unit 1), Docket No. 50322-06, Order of August 19, 1983.

C. Palmetto Contention 44/CESG Contention^{129/} -
Embrittlement of the Reactor Vessel^{129/}

Intervenors' Contention 18/44, reads as follows:

The license should not issue because reactor degradation in the form of a much more rapid increase in reference temperature than had been anticipated has occurred at a number of PWRs including Applicants' Oconee Unit 1. Until and unless the NRC and the industry can avoid reactor embrittlement, Catawba should not be permitted to operate.

1. The central point of Contention 18/44 involves the concept of reference nil-ductility temperature ("RT_{NDT}"), which is often viewed as the temperature below which the reactor vessel in question may be subject to brittle failure.^{130/} The reference temperature is used in developing heat-up and cool-down pressure-temperature curves for the plant to address normal, upset and test operating conditions (Apps. Exh. 92, Mager, p. 4).

^{129/} CESG Contention 18 and Palmetto Alliance Contention 44 ("Intervenors' Contention 18/44") are identical. By order of June 20, 1983, the Licensing Board ruled that "[s]ince Palmetto Alliance's and CESG's information about and interest in this [contention] are, by Palmetto's own admission, identical, we are, in the interest of more efficient hearing management, consolidating the two intervenors with regard to Contention 44, and are designating CESG as lead intervenor on this contention." June 20 Board Order at p. 17.

^{130/} Technically, RT_{NDT} is defined as the greater of the drop weight nil-ductility transition temperature or the temperature 60° F less than the 50 ft-lb and 35 mils lateral expansion temperatures determined from Charpy specimens (Apps. Exh. 92, Mager, p. 4).

2. The initial RT_{NDT} for a reactor vessel is determined by testing unirradiated samples of the reactor vessel material. The initial RT_{NDT} values for the Catawba Units 1 and 2 are $-8^{\circ}F$ and $15^{\circ}F$, respectively (Apps. Exh. 92, Mager, p. 10). Intervenors admit that the initial RT_{NDT} values were determined in accordance with appropriate regulations (Tr. 11,164, Riley 12/13/83), and thus, are not in issue in this proceeding. Rather, the Intervenors' contention revolves around the determination of the shift in the RT_{NDT} values over the lives of the two Catawba reactor vessels, and the corresponding determinations of the end-of-life ("EOL") RT_{NDT} values.

3. Due to the phenomenon of neutron fluence, that is, the bombardment of the reactor vessel by neutrons from the reactor core, RT_{NDT} will increase over the life of the plant (Apps. Exh. 92, Mager, p. 3). Thus, the adjusted value of RT_{NDT} at any time during the life of a plant (the initial RT_{NDT} plus any change due to neutron bombardment) becomes significant in determining whether a reactor vessel may be susceptible to brittle failure over the course of its life.

4. In Contention 18/44, Intervenors maintain that the increase in the reference temperature will be much more rapid than anticipated and, therefore, estimates of RT_{NDT} will be nonconservative. At the root of the contention is Intervenors' concern that the degradation of

the reactor vessel material due to neutron bombardment cannot be accurately measured. In that these measurements contribute significantly to the determination of the adjusted reference temperature, Intervenors submit that RT_{NDT} cannot be accurately determined.

The Staff, Applicants and Intervenors all presented testimony on this contention.

1. Applicants' Testimony

5. Applicants testified that the effects of radiation^{131/} on reactor vessel materials has been extensively studied, clearly established, and will result in a predictable change in RT_{NDT} (Id. at pp. 2-3). Applicants stated that based on the results of literally hundreds of tests involving surveillance capsules^{132/} from other Westinghouse reactors, trend curves were developed which provided the shift in reference temperature as a function of the neutron fluence and the weight percent of copper in the vessel material.^{133/} (Id. at p. 6).

^{131/} Applicants stated that neutron radiation (neutron fluence) is the only component of the total radiation spectrum that has a significant effect on pertinent material properties of the reactor vessel (Apps. Exh. 92, Mager, p. 3).

^{132/} Surveillance capsule specimens are specimens that have been placed in capsules and inserted into the reactor for a period of time (thus being exposed to measured neutron fluence), have been removed from the reactor, and tested (Apps. Exh. 92, Mager, p. 8).

^{133/} While phosphorous and nickel also have an effect on (footnote continued)

6. Based on these trend curves and considering the neutron fluence and material composition of the Catawba vessels, the end of life RT_{NDT} values were determined to be $86^{\circ}F$ and $109^{\circ}F$ for Units 1 and 2, respectively (Id. at p. 10). Subsequent to these calculations, the data base for the trend curves used by Applicants have tripled in size, giving additional data regarding reactor vessels in the low copper content ranges such as the Catawba vessels (Id. at p. 11). Applicants maintain that these data support their previous calculations of RT_{NDT} and, indeed, reflect that they were conservative (calculations reflecting the new data base show RT_{NDT} for Units 1 and 2 at $66^{\circ}F$ and $98.9^{\circ}F$, respectively).

7. Applicants testified that in addition to the trend curves they used (Westinghouse curves), other trend curves had been developed plotting RT_{NDT} as a function of neutron fluence and reactor vessel material (Id. at p. 12). Specifically, the NRC has provided a set of curves in Regulatory Guide 1.99, and the Guthrie Formula represents a set of trend curves (Id.). Applicants

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change in RT_{NDT} , the effect of phosphorous is generally masked by the presence of copper, and nickel does not become important until the copper content exceeds approximately 0.20 weight percent (Apps. Exh. 92, Mager, p. 7). Applicants maintain that for the reactor vessel materials of the Catawba Units 1 and 2 vessels (the limiting vessel materials have 0.08 and 0.09 weight percent copper, respectively), the effects of phosphorous and nickel are insignificant (Id.).

reported that both the Westinghouse and NRC trend curves represent a bounding of data for the various vessel material compositions which include different copper levels (Id.). Applicants stated that they compared their calculated RT_{NDT} values against those determined by the Staff using methodology set forth in Regulatory Guide 1.99 and found the values to be essentially equivalent (Id. at p. 14). Applicants stated, however, that they did not compare their RT_{NDT} values with those determined using the Guthrie Formula because the Guthrie Formula did not consider copper levels in the material when calculating standard deviation, and accordingly, would overestimate RT_{NDT} for the low copper content Catawba vessels (Id. at p. 13).

8. In sum, based on the substantial studies in this area and verification by substantial experimental data, Applicants testified that RT_{NDT} values calculated for the Catawba reactor vessels will not increase more rapidly than anticipated (Id. at p. 3).

9. Applicants testified that RT_{NDT} was also used to evaluate the susceptibility of reactor vessel integrity for emerging and faulted (accident) conditions (Id. at p. 15). The concern regarding accident conditions is that a transient may lead to a severe cool-down of the reactor vessel coincident with a high pressure in the primary reactor coolant system. This condition is called

pressurized thermal shock (PTS) (Id.). Assuming other conditions, if RT_{NDT} is not below a prescribed value, PTS could hypothetically lead to a nonductile condition of the reactor vessel (Id.).

10. Applicants testify that to assure PTS does not occur, a conservative methodology has been developed by the Staff to calculate RT_{NDT} values, (i.e., using the Guthrie Formula which overestimates RT_{NDT} for low copper reactor vessels such as Catawba) (Id.). These calculated values are then compared against the following NRC Staff screening criteria set forth in SECY-82-465:

- (1) the maximum acceptable RT_{NDT} value for longitudinally oriented welds and base plates and forgings is 270°F , and
- (2) the maximum acceptable RT_{NDT} value for circumferentially oriented welds is 300°F .
[Id.]

11. Applicants conducted an analysis of the validity of such criteria and determined that if the screening criteria are not exceeded, the risk of reactor vessel fracture due to PTS is 6×10^{-6} occurrences per reactor year of operation.^{134/} Further, Applicants submitted that upon extrapolation, the analysis reflected that if the RT_{NDT} values conservatively calculated for Catawba using the Guthrie Formula (102.5°F and 126°F for Units 1 and 2, respectively) is not exceeded, the risk of reactor vessel

^{134/} Applicants stated that their analysis is in line with the results of the risk analysis set forth in and extrapolated from SECY-82-465 (Id. at p. 17).

fracture due to PTS is less than 10^{-8} occurrences per year of reactor operation (Id. at p. 17). Both figures are well below the Commission's safety goal regarding core melt of 10^{-4} occurrences per year of reactor operation (Id.).

12. In view of this large margin of safety, coupled with the conservative calculational methodology required by the Staff to determine the pertinent PTS RT_{NDT} values, Applicants testified that the likelihood of a transient resulting in a nonductile condition in either Catawba reactor vessel is so remote that it is essentially nonexistent (Id.).

13. Applicants stated that, in any event, the estimated shift in RT_{NDT} is periodically verified and, as necessary, adjusted through the use of actual data (Id. at p. 8). Pursuant to 10 C.F.R. Part 50, Appendix H, the Applicant is required to engage in a surveillance program. Under this program, samples of material from the two Catawba reactor vessels, including samples of the welds, heat affected zones and base material, are placed inside capsules^{135/} and inserted into the two Catawba reactors (Id.). Once inside the reactor vessels, these samples, or

^{135/} Each surveillance capsule contains sixty Charpy V-notch specimens, nine tensile specimens and twelve 1/2T-CT specimens (Apps. Exh. 92, Mager, p. 8). The sixty Charpy specimens include specimens of the heat-affected zone, the base material and limiting material (Id.).

coupons, will be irradiated during operation. Indeed, Applicants testified that the location of the capsules was such that their irradiation would take place much more quickly than that of the vessel as a whole (Tr. 10,938, Mager 12/12/83).

14. The surveillance capsules are withdrawn from the core at various intervals dictated by 10 C.F.R. Part 50, Appendix H and ASTM E 185-82. Because of the accelerated rate of irradiation, Applicants stated that the coupons effectively foreshadow the change in material property of the reactor vessel over time caused by neutron fluence (Tr. 10,938, Mager 12/12/83). For example, a coupon removed after 10 years will exhibit the material properties of the reactor vessel material at the end of the reactor life (Tr. 10,938, Mager 12/12/83). Upon removal, the RT_{NDT} of the coupons is determined using methods specified by the ASME Code. This RT_{NDT} , when compared to the initial RT_{NDT} , yields the actual shift due to neutron irradiation. Should the coupons exhibit a greater shift in RT_{NDT} than predicted, the estimate of RT_{NDT} could be revised and, if needed, the operating limits of the plant could be revised (Tr. 10,924, 10,938, Mager 12/12/83). It is standard Westinghouse practice to use six surveillance capsules per reactor vessel. (Apps.

Exh. 92, Mager, p. 9). However, ASTM E-185, endorsed by Appendix H to 10 C.F.R. Part 50, would only require Catawba Units 1 and 2 to each have three capsules. (Id.).

15. There was extensive cross-examination of Applicants' witnesses by CESG (Tr. 10,872-928 and 10,945-57, Mager and Meyer 12/12/83). During cross-examination CESG inquired into topics such as the actual hydrostatic testing of the reactor vessels; Applicants' witness, Mr. Mager, testified that they were hydrostatically tested to 1.25 times their design pressure (design pressure being 2500 psi) (Tr. 10,881, Mager 12/12/83). Further, CESG questioned the scattered pattern of Charpy impact test specimens for heat effective zone material; Mr. Mager explained that this scattered pattern reflects that the heat effective zone material is probably tougher than the base metal or weld metal (Tr. 10,869-91, Mager 12/12/83). CESG also attempted to illustrate that the capsule specimens would not be representative of the tensile strength of vessel material because there was no cyclical loading on the specimens (Tr. 10,906, Meyer 12/12/83). However, Mr. Meyer stated that there is no relationship between steady state cycle loading and tensile strength (Tr. 10,906, Meyer 12/12/83).

16. The Board conducted examination of Applicants' witnesses in areas including the irradiation response and testing of capsule specimens (Tr. 10,936-40, Mager

12/12/83), the correlation between the Guthrie Formula and Applicants' estimate of RT_{NDT} (Tr. 10,941-43, Mager 12/12/83), and the experience to date regarding the leveling off of RT_{NDT} at various plants (Tr. 10,943-45, Mager 12/12/83).

2. NRC Staff Testimony

17. The Staff's testimony supported Applicants' position that the shift in RT_{NDT} would not increase more rapidly than expected (Staff Exh. 18, Elliot, p. 20). In this regard, the Staff originally computed the change in RT_{NDT} by use of Regulatory Guide 1.99 methodology (Id. at p. 4). Regulatory Guide 1.99 methodology used existing data to produce bounding curves reflecting the change in RT_{NDT} (Id.).

18. More recently, however, because of its greater data base, the Staff has used the Guthrie Formula to predict the expected change in RT_{NDT} over the lifetime of various reactors, to include the Catawba reactor vessels (Id. at p. 5). The Staff states that the Guthrie Formula will accurately reflect the shift in RT_{NDT} because of several factors to include the similarity in the materials comprising the data base and the materials in the Catawba reactor vessels (Id. at pp. 6-7). As an added measure of conservatism, the Staff adds to the Guthrie Formula calculation two standard deviations, or 48°F (Id. at pp. 5 and 11). Statistically, the final result is accurate in

95 percent of the cases, and in only 2.5 percent of the cases will the shift in RT_{NDT} exceed the statistical prediction (Id. at p. 14). The EOL RT_{NDT} values computed by the Staff using the Guthrie Formula for the Catawba Units (including the addition of two standard deviations) are $102^{\circ}F$ and $125^{\circ}F$ for Units 1 and 2, respectively (Id. at p. 13).

19. With regard to pressurized thermal shock the Staff testified that it had analyzed the effects of PTS, and had stated in Commission Report SECY-82-465 that so long as RT_{NDT} is below the specified PTS screening criteria, the risk of a crack developing in the reactor vessel is within acceptable limits (Id. at pp. 2-3). The screening criteria are $270^{\circ}F$ for axial welds and $300^{\circ}F$ for circumferential welds on the reactor vessel (Id. at p. 3). Based on the Staff analysis, the shift in RT_{NDT} would have to exceed the predicted value by six standard deviations before PTS could be a problem at Catawba; the probability limits for this exceed 99.99 percent^{136/} (Id. at 15).

136/ It should be noted that the PTS criteria are six standard deviations above the Staff's predicted EOL RT_{NDT} . Since the Staff's predicted EOL RT_{NDT} contains a two standard deviation addition to the Guthrie Formula, based on the Staff analysis the screening criteria are eight standard deviations above the value predicted by the Guthrie Formula.

This is greater than the level of certainty that Intervenors state should be required (Tr. 11,205, Riley 12/13/83).

20. With regard to the surveillance program, the Staff testified that the coupons are prepared and tested in accordance with Appendices G and H, 10 C.F.R. Part 50 (Id. at p. 8). Further, the Staff maintains that the capsules are made from material representing the beltline materials and are irradiated inside the reactor vessel near the vessel wall (Id. at p. 7). The coupons are placed in capsules, which are located inside the reactor vessel, at the approximate mid-height of the core and, as a result, the coupons receive neutron radiation from the core and are at reactor coolant water temperature (Id. at p. 8). Thus, the Staff submits that the effect of neutron radiation on the RT_{NDT} may be determined for a particular set of coupons (Id.).

21. In sum, the Staff testified as follows:

The increase in RT_{NDT} for the Catawba reactor vessel materials can be predicted because the Staff can utilize an empirical formula (i.e., "Guthrie Formula") supplemented by the test results from the Catawba reactor vessel material surveillance program to predict the increase in RT_{NDT} . Until the irradiated Catawba reactor vessel material surveillance data becomes available, the Staff uses the upper bound (95 percent probability limit) "Guthrie Formula" projection for RT_{NDT} to ensure that the shift in RT_{NDT} used for calculating pressure-temperature limits for hydrostatic test and any conditions of normal operation, including anticipated operational occurrences, is conservative, and that the screening criterion for PTS is

satisfied. Since the limiting materials and samples of weld material from the Catawba reactor vessel beltlines are contained in the Catawba reactor vessel material surveillance capsules, the Staff will be able to confirm from the material surveillance data that the margins of safety for hydrostatic test, normal operation including anticipated operational occurrences, and PTS conditions can be met for the service life of the Catawba reactor vessels. [Id. at p. 20].

22. Intervenors conducted extensive cross-examination of the Staff witness, Mr. Elliot (Tr. 10,970-11,052, Elliot 12/12/83). In the cross-examination, Intervenors inquired as to the consideration of flaws in the reactor vessel (Tr. 10,985, Elliot 12/12/83). Mr. Elliot indicated that flaws were considered pursuant to Appendix G to 10 C.F.R. Part 50 (Tr. 10,986-9, Elliot 12/12/83). Additional cross-examination addressed topics including limiting beltline material (Tr. 10,999-11,011, Elliot 12/12/83), testing (Tr. 11,011-18, Elliot 12/12/83), and the Guthrie Formula (Tr. 11,018-30, Elliot 12/12/83).

23. The Board examined the Staff witness in the areas of Staff evaluation of RT_{NDT} (Tr. 11,061-69, Elliot 12/12/83) and Charpy testing (Tr. 11,069-74, Elliot 12/12/83).

3. Intervenors' Testimony

24. Intervenors challenged the Applicants' and Staff's positions that the RT_{NDT} values could be accurately estimated for end-of-life conditions. As the

basis for their position, Intervenors testified that the technology used to generate the trend curves and formula used to calculate RT_{NDT} was immature and not predictable (CESG Exh. 133, Riley, pp. 6-7). Specifically, Intervenors alleged that periodic amendments to 10 C.F.R. Part 50, Appendix H, as well as the high predicted EOL RT_{NDT} at Applicants' Oconee plant, demonstrated the inherent uncertainty of the technology (Id. at p. 6).

25. Intervenors testified that, in Appendix H to 10 C.F.R. Part 50, the Commission made clear that it never anticipated that there would be an EOL RT_{NDT} greater than $100^{\circ}F$ (Id.). However, in cross-examination it was pointed out that the substance of Appendix H has remained unchanged since its promulgation in 1973, and it provides for three categories of predicted EOL RT_{NDT} values viz., (1) less than $10^{\circ}F$; (2) between $100^{\circ}F$ and $200^{\circ}F$; and (3) greater than $200^{\circ}F$. (Tr. 11,165-6, Riley 12/13/83). Thus, obviously the Commission anticipated that some plants would experience EOL RT_{NDT} values of greater than $100^{\circ}F$.

26. As to Intervenors' concerns regarding Applicants' Oconee plant, there is no question that the Oconee units have experienced a large shift in RT_{NDT} .^{137/} However, the Staff testified that the Oconee units also

^{137/} The predicted EOL RT_{NDT} at the Oconee facility is $381^{\circ}F$ (Staff Exh. 18, Elliot, p. 5).

contain high levels of copper, up to 0.35 percent by weight (Staff Exh. 18, Elliot, p. 15). In addition, expert testimony showed that when copper exceeded 0.20 percent by weight, the amount of nickel in a vessel would also enhance the effects of neutron fluence (Apps. Exh. 92, Mager, p. 7). The Oconee vessels contain 0.71 percent nickel by weight (Staff Exh. 18, Elliot, p. 15). Thus, there is little similarity between the Oconee and Catawba facilities with respect to neutron fluence effects (Staff Exh. 18, Elliot, p. 16). Therefore, the experience at the Oconee facility is not transferable to any predicted experience at the Catawba facility.

27. Intervenors also challenge the sufficiency of the surveillance program. We note here that the particular surveillance program adopted by Applicants is mandated by 10 C.F.R. Part 50, Appendices G and H. Intervenors readily admit that Applicants have complied with these regulations (Tr. 11,145, Riley 12/13/83). Indeed, Applicants testified that they go beyond the requirements of the regulations by designing a program utilizing six surveillance capsules, rather than the four required under Appendix H.^{138/} Significantly,

^{138/} Under Appendix H, where the predicted EOL RT_{NDT} is not expected to exceed 200 F -- as is the case with both Catawba units -- only four capsules are required. 10 C.F.R. Part 50, Appendix H (Apps. Exh. 92, Mager, p. 9). In addition, many of the specimens in each capsule, specifically the 1/2T-CT (footnote continued)

Intervenors' challenge in this area constitutes a direct attack upon the Commission regulations. Indeed, Intervenors' witness admits as much (Tr. 11,112, Riley 12/12/83). Accordingly, the issue is not subject to litigation in this proceeding.

28. In any event, Intervenors' primary argument regarding the issue is that the surveillance coupons will exhibit a different change in RT_{NDT} than that of the Catawba reactor vessels because the coupons are not subjected to the same stress of 200 cycles of heating (pressurization) and cooling (depressurization) as the Catawba reactor vessels (CESG Exh. 133, Riley, p. 5). Mr. Riley testified that, in his opinion, stress and fatigue significantly influenced the RT_{NDT} of a material by weakening its tensile strength (Id.). He based his assertion in part on an ASME chart that he interpreted as stating that 200 cycles of heat-up and cool-down significantly reduce the tensile strength of a reactor vessel (ASME Code, Section III, Fig. 1-9-1) (Id.). However, an examination of Fig. 1-9-1, reveals that it does not show that 200 cycles of heat-up and cool-down will cause a reduction in the vessel materials' tensile strength; rather, the figure shows that to cause vessel failure in 200 cycles would require an alternating stress

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specimens, are not required by regulation (Tr. 10,898, Mager 12/12/83).

(Sa) of approximatley 140,000 psi. This stress level is many times the stress incurred during a heat-up and cool-down cycle.

29. The Board allowed Mr. Riley to testify as an expert on these matters. However, Mr. Riley is neither a metallurgist nor mechanical engineer. He has no formal education, training, or experience in either field. Much of his knowledge in this area was gleaned from a reading of the Applicants' discovery material (Tr. 11,098-104, Riley 12/12/83). Accordingly, the Board ruled that Mr. Riley's lack of qualifications on the subjects of metallurgy and mechanical engineering would affect the weight given that testimony (Tr. 11,122, Board 12/12/83).

30. Applicants, on the other hand, offered the testimony of Thomas R. Mager and Theodore A. Meyer on the issue. Both testified that the phenomenon of neutron fluence on RT_{NDT} was clearly established and well understood (Apps. Exh. 92, Mager, p. 2). Both testified that RT_{NDT} is unaffected by either fatigue or the presence of defects and flaws in the reactor (Id., at p. 15). Specifically, Mr. Mager testified at Tr. 10,906:

A. [Mr. Mager] If I understand the question, there is no relationship between your cyclic loading and degradation of your ultimate tensile stress or your yield stress.

Q. [Mr. Riley] Are you telling me that there is no relationship between fatigue, history, and ultimate tensile?

A. [Mr. Mager] That is correct.

At the end of vessel life in the absence of irradiation, if we start out with a tensile strength of 80,000 psi, we would end up with a tensile stress or ultimate stress of 80,000 psi.

31. Both Mr. Mager and Mr. Meyer are well qualified in their fields (Apps. Exh. 92, Mager, at Attached Professional Qualifications). Mr. Mager is a metallurgist and metallurgical engineer (Id.). He is presently the manager of the Metallurgical Group in the Structural and Equipment Engineering Department of Westinghouse. He has long and considerable experience in the field of metallurgy and nuclear power (Id.). Mr. Meyer is a mechanical engineer who is presently the Manager of the Reactor Vessel Integrity Program at Westinghouse. He too has long and considerable experience in the fields of mechanical engineering and nuclear power (Id.). The unequivocal testimony of Mager and Meyer, both highly qualified experts in the field, must be accepted in light of Mr. Riley's lack of expertise in this highly technical area.

32. Intervenors also allege that the surveillance program will not reveal structural defects or flaws in the reactor vessel (CESG Exh. 133, Riley, p. 4). In making this allegation, Intervenors misconceive the very purpose of the program. The purpose of the surveillance program is not to test the structure of the reactor vessel for

flaws or defects, but rather to measure the change in RT_{NDT} as a consequence of neutron fluence. Consequently, while Intervenors are correct in asserting that the surveillance capsules offer little information concerning the existence of defects or flaws in the vessel, they are correct only because the capsules are not intended to provide such information. Intervenors do not contend that Applicants are not in compliance with surveillance regulations contained in 10 C.F.R. Part 50, Appendices G and H; indeed, the Applicant has apparently gone beyond the scope of the requirements of the regulations by stipulating that it will inspect 100 percent of all welds during the first 10 year inspection cycle (Tr. 11,148-9, McGarry 12/13/83). Further, an analysis of vessel integrity pursuant to 10 C.F.R. Part 50, Appendix G is conducted with the assumption of a flaw in the vessel up to one and one-half inches in depth and as long as the circumferential weld (Tr. 10,986-89, Elliot 12/12/83; Tr. 11,149-50, Riley 12/13/83). This was determined by the Staff to be the largest plausible flaw that would exist in the vessel (Id.). Intervenors have admitted that they have no evidence to indicate that a larger flaw could exist (Tr. 11,177, Riley 12/13/83).

33. Finally, throughout the hearing Intervenors challenged the adequacy of the Charpy V-notch test used in the surveillance programs to assist in determining RT_{NDT}

(CESG Exh. 133, Riley, pp. 4-5; Tr. 11,145 and 11,160).

At the outset, it should be noted that the Charpy V-notch test is mandated by the regulations in Appendix G. To the extent the Intervenors assert that the test is inadequate, this constitutes an impermissible challenge to the regulations. In any event, testimony at this hearing revealed that the Charpy V-notch test is literally a standard in the field of metallurgy and mechanical engineering. Intervenors admit that it is widely accepted by industry and used both in and out of the nuclear power field and by the ASME Code (Tr. 11,145, Riley 12/13/83). We find that its widespread acceptance and use as a metallurgical standard by industry and under the ASME Code overrides any vague uncertainties that Intervenors have expressed regarding the test.

34. In their testimony, Intervenors propose the use of strain gauges to monitor reactor vessel integrity as a solution to the problems which they allege exist in the surveillance program. (Tr. 11,208, Riley 12/13/83). In that the reactor surveillance program for the determination of RT_{NDT} (the issue presented here) is well structured and mandated by regulation, Intervenors' suggestion constitutes an impermissible attack on Commission regulations and is not subject to litigation in this proceeding. This, of course, does not bar Intervenors from filing a petition for rulemaking

advancing their proposal before the Commission. In any event, Intervenors have admitted at the hearing that strain gauges would not measure change in RT_{NDT} or embrittlement (Id.). Accordingly, this issue is beyond the scope of Intervenors' contention.

35. The Board finds that based on the evidence presented by Applicants, Staff and Intervenors, there is reasonable assurance that the increase in RT_{NDT} over the life of the Catawba reactor vessels will not be more rapid than has been estimated. Further, the Board finds that there is reasonable assurance that data to be provided by the Catawba reactor vessel surveillance program will accurately reflect the effects of neutron fluence on the vessel materials, and will give advance warning of any unexpected increase in RT_{NDT} such that corrective action, if necessary, can be taken to assure protection of the public health and safety. Further, the Board notes that all evidence indicates that the Applicants are meeting all applicable regulations with respect to vessel integrity.

D. Palmetto/CESG Contention DES-17 -
Adverse Meteorology

1. Contention 17, as proposed by Intervenors

Palmetto Alliance and CESG and admitted by this Board, states:

The DES^{139/} is concerned with environmental impacts. Presumably, these are best represented as the entire range from trivial to serious, in conjunction with the estimates of likelihood. The DES averages meteorological conditions in its consideration of accidents, 5.9.4.5. Because atmospheric inversions and quiet air are a very common feature in this region, accident consequences should be calculated for the extreme condition of inversion and very slow air movement.

In the matter of assessing serious accidents, the environmental assumptions are complex and again do not appear to consider extreme weather, p. 5-37. The DES, which differs from the CP FES in considering severe accidents, is at fault in not considering the full range of radiological impacts by not considering extreme, but frequently encountered, weather conditions.

2. In its Memorandum and Order of December 1, 1982, at p. 21, the Board admitted Contention 17 and paraphrased it as ". . . contend[ing] that the DES does not properly evaluate impacts of design basis and severe accidents because it does not isolate and analyze those impacts assuming extreme weather."

^{139/} The DES (Draft Environmental Statement) contained the Staff's initial assessment of the environmental impact associated with the operation of the Catawba Nuclear Station.

3. In January, 1983, the Staff of the Nuclear Regulatory Commission (NRC) issued its Final Environmental Statement (FES or NRC Staff Exh. 12), pursuant to the guidelines of the National Environmental Policy Act of 1969 (NEPA) and Title 10 of Code of Federal Regulations, Part 51 (10 C.F.R. 51), as amended, of the NRC regulations.

4. Thus, the issue for determination at the December, 1983 hearings in this proceeding was whether the Staff adequately considered the "extreme" weather conditions of inversion and very slow air movement in the accident evaluations contained in the FES for the Catawba Nuclear Station.

5. The Staff^{140/} testified that meteorological data

^{140/} The Staff testimony was presented by a panel: Jacques B. J. Read; James E. Fairobent; and Millard L. Wohl. Mr. Read is the leader of the Radiological Analysis Section of the Accident Evaluation Branch of the NRC, where he has worked since 1974. His duties since joining the NRC have been primarily in the areas of risk assessment and technical evaluation regarding fission product behavior and chemical phenomena involved in the safety of nuclear reactors. He received an A.B. from Princeton in 1957 (physical chemistry), and M.S. from Yale in 1958 (statistical mechanics), and a Ph.D. from Yale in 1962 (chemistry and physics). He is a member of the American Chemical Society and Sigma Xi. He has authored or co-authored articles in Physical Review and Journal of Inorganic and Nuclear Chemistry. (NRC Staff Exh. 20, Read, Fairobent, Wohl, Attachment 1)

Mr. Fairobent is a meteorologist in the Meteorology Section and Effluent Treatment Branch of the NRC. His principal duty is evaluation of the meteorological aspects of nuclear reactor siting and
(footnote continued)

collected at the site over a period of two years, and independently confirmed as representative by using off-site (Charlotte airport) data, formed the basis for its analysis regarding potential consequences of accidents.

(NRC Staff Exh. 20, Read, Fairobent, Wohl, p. ., Tr. 11,235, Fairobent 12/13/83). Applicant testified that actual on-site measurements made from December 17, 1975, through December 16, 1977, included wind direction and speed, ambient and dew point temperatures, vertical

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operation. He joined the Atomic Energy Commission in 1973 and became responsible for evaluating meteorological aspects of nuclear power plant siting and design for Construction Permit and Operating License applicants. In 1979 he joined the Staff of the National Commission on Air Quality (NCAQ) as its only meteorologist. His particular responsibilities included atmospheric dispersion modeling and long-range transport of air pollutants. He returned to the position of meteorologist with the NRC in 1981. He received both a B.S. (1970 - meteorology and oceanography) and an M.S. (1972 - meteorology) from the University of Michigan. He is a member of the American Meteorological Society, the National Weather Association and the Air Pollution Control Association. He has co-authored several technical papers and chapters in textbooks on atmospheric dispersion. (NRC Staff Exh. 20, Read, Fairobent, Wohl, Attachment 2).

Mr. Wohl is a nuclear engineer in the Accident Evaluation Branch of the NRC. His duties are to conduct site and accident analyses and the safety-related studies for nuclear power facilities, including probabilistic risk assessment analyses. He received a B.S. from Case Western Reserve University in 1956 (physics) and an M.S. from Indiana University in 1958 (physics). He has taught physics, mathematics, and statistics at Baldwin-Wallace College, Ohio State University and Cuyahoga Community College. (NRC Staff Exh. 20, Read, Fairobent, Wohl, Attachment 3).

temperature gradient and precipitation, and that all of these measurements complied with the recommendations contained in NRC Regulatory Guide 1.23. (Apps. Exh. 94, Casper, p. 2; Final Safety Analysis Report (FSAR) Section 2.3). Applicants' witness Casper^{141/} also testified that based upon his research of the records for the 14-year period immediately preceding 1975, the meteorological conditions for the 2-year period used in the Staff's analysis (including the frequency and extent of "worst-case", stable air inversion, low wind speed conditions) were representative of past conditions and were likely to occur over the next 40 years. (Apps. Exh. 94, Casper, p. 2; Tr. 11,575-77, Casper 12/14/83).

6. With this site meteorology data in hand, the Staff analyzed the consequences of postulated "design basis" accidents (DBAs) and "severe" accidents by using:

1. "Median" meteorological dispersion conditions represented as relative concentration (X/Q) values that may be exceeded 50% of the time [FES 5.9.4.5.(1), 5-35];

^{141/} Mark A. Casper has been a meteorologist with Duke Power Company's Design Engineering Department since January 1981. His duties include conducting meteorological analyses regarding Duke's electrical generating stations. These analyses generally consist of diffusion applications involving estimates of atmospheric transport/diffusion of pollutants related to electric generating stations and synoptic applications involving estimates of specialized short-term weather forecasts. He received both B.S. and M.S. degrees in meteorology from the University of Michigan (1979, 1980). He is a member of the American Meteorological Society and the Air Pollution Control Association. (Apps. Exh. 94, Casper, Attachment 1).

2. "Very poor" meteorological dispersion conditions represented as relative concentration (X/Q) values which may be exceeded no more than 5% of the time for all sectors at the Exclusion Area Boundary (EAB); and
3. A representative sampling, using computer code, of one complete year (8160 consecutive hours) of meteorological data gathered at the site (severe accident analysis).

It is important that each of these evaluations be briefly summarized to understand how the Staff considered extreme weather conditions in its analysis of design basis and severe accidents.

7. The Staff's first analysis of the environmental consequences of DBAs was performed using median atmospheric dispersion conditions. (NRC Staff Exh. 20, Read, Fairobent, Wohl, p. 2). During the two-year period of meteorological data used by the Staff, the predominant meteorological condition in the Catawba site area in terms of joint frequency was one of stable air (inversion conditions) and low wind speed. (NRC Staff Exh. 20, Read, Fairobent, Wohl, p. 5; Apps. Exh. 94, Casper, p. 4). In fact, Intervenors, Staff and Applicants all agree at least on the point that a combination of stable atmospheric conditions accompanied by low wind speed occurs frequently at the Catawba site. (NRC Staff Exh. 20, Read, Fairobent, Wohl, p. 5; Apps. Exh. 94, Casper, p. 3; PA Exh. 133, Purvis, p. 1). Accordingly, "average" meteorological conditions (50 percentile or median) used by the Staff are

reflective of conditions which are skewed toward the frequent occurrence of stable air and low wind speeds. (Apps. Exh. 94, Casper, p. 4). Staff witness Fairobent testified that this relatively high frequency of stable atmospheric conditions and low wind speeds was reflected in the two years of on-site data considered for the evaluation of the environmental consequences of DBAs. (NRC Staff Exh. 20, Read, Fairobent, Wohl, p. 5). Thus, the median atmospheric dispersion conditions, used to analyze the consequences of postulated design basis accidents, included the stable air and low wind speed conditions typically encountered at the Catawba site.

8. Staff's second analysis of design basis accidents using "very poor" meteorological conditions included extremely adverse conditions (inversion and low wind speeds) to attain X/Q values which theoretically would not be exceeded more than five percent of the time over all sectors. However, as Applicant testified, given the conservatisms inherent in the calculation of X/Q values, the likelihood of more extreme meteorological conditions which would result in greater actual ambient concentrations is remote. (Apps. Exh. 94, Casper, p. 4; Tr. 11,551, Casper 12/14/83). For instance, the X/Q calculation assumes no time variation in such items as wind speed and direction except on an hourly basis. (Apps. Exh. 94, Casper, p. 4; Tr. 11,552, Casper

12/14/83). The analysis further assumes that the exact same conditions will exist over the entire travel area of the hypothetical plume. (Apps. Exh. 94, Casper, p. 4; Tr. 11,555, Casper 12/14/83). In addition, the analysis assumes no mechanical dispersion caused by downwind obstructions, and that the center line worst-case concentration of the hypothetical plume will continuously be at ground level. (Apps. Exh. 94, Casper, p. 4; Tr. 11,556-57, Casper 12/14/83). In our judgment, these four assumptions cause the calculation of the relative concentration (X/Q) values to be conservative, i.e., smaller actual ambient concentrations would be more likely to occur in the event of DBAs. The Board, therefore, finds that all meteorological conditions, including extreme conditions, were considered by the Staff and factored into its evaluation of the potential consequences of DBAs.

9. Third, Staff testified that its evaluation of the environmental impacts of severe accidents used the following meteorological data: wind speed, wind direction, atmospheric stability and precipitation taken for one complete year (8160 consecutive hours) at the Catawba site. (NRC Staff Exh. 20, Read, Fairobent, Wohl, p. 11). This data was used with a computer code (CRAC) to calculate X/Q values for ground level exposures for each time and space interval. (NRC Staff Exh. 20, Read,

Fairobent, Wohl, p. 10). Hourly meteorological data was used in order to estimate the speed of transport of the plume, the concentrations of radionuclides in the plume at various times and locations, and enhanced deposition due to precipitation. (NRC Staff Exh. 20, Read, Fairobent, Wohl, p. 10). To calculate consequences, Staff postulated accident sequences at 91 selected times starting every 4 days on 13-hour intervals. This sampling technique represents diurnal and seasonal variations in the meteorological data and produces data representative of historical and expected future conditions. (Apps. Exh. 94, Casper, p. 5). Because the Catawba meteorological data contained many entries with stable atmospheric conditions accompanied by low wind speeds, some fraction of the duration of most of the sequences sampled contained such entries. (NRC Staff Exh. 20, Read, Fairobent, Wohl, p. 6). Of the 91 meteorological sequences used, 15 sequences yielded the least favorable consequences for one or more of the 38 types of consequence considered. (NRC Staff Exh. 20, Read, Fairobent, Wohl, p. 12). Thus, the unfavorable conditions of stable air and low wind speed were fully included in the Staff's severe accident evaluations.

10. Staff acknowledges that at Catawba maximum human health consequences were found to be associated with very stable, low wind sequences, which occurred frequently in

the meteorological data. (Staff Exh. 20, Read, Fairobent, Wohl, p. 10). The greatest number of fatalities from acute radiation syndrome was found to occur for the postulated sequence in which low and diminishing winds persisted long enough to transport the plume over Charlotte, followed by several hours of precipitation. This scenario and others involving conditions almost as adverse were included in Staff's consequence calculations. (Tr. 11,561-62, 11,595, Casper 12/14/83). Staff testified that a substantial portion of the 91 meteorological sequences used by the CRAC code were moderately adverse at high population locations and, several were very adverse. (NRC Staff Exh. 20, Read, Fairobent, Wohl, p. 14). It bears reiteration that actual meteorological conditions at the Catawba site were used as the basis for the severe accident assessments. (Tr. 11,577, Casper 12/14/83). The Board, therefore, finds that the Staff adequately accounted for extreme meteorological conditions, including the extreme conditions which Intervenors point out as the worst case conditions reflecting their concerns, in its assessment of the environmental impacts of severe accidents.

11. In summary, Intervenors have not challenged the accuracy of any of the meteorological data gathered at the site and used by the Staff in its analyses. In fact,

Intervenors' meteorological witness Purvis^{142/} agreed the data was accurate. (Tr. 11,651, Purvis 12/14/83). Rather than challenge the underlying data, Intervenors have supported their contention that extreme weather conditions were not considered in Staff's accident evaluations with only general and inspecific weather information. Purvis summarized his own testimony as stating that Charlotte is substantially more at risk than a representative community of the same size at the same distance from a nuclear plant because of the direction of prevailing winds, the frequency of low wind speeds/inversion conditions, and greater than average rainfall in the area. (PA Exh. 133, Purvis, p. 5). When asked whether he had reviewed the Staff's accident analyses, Purvis candidly admitted that he did not have the expertise to do so. The Board, therefore, finds that Purvis' testimony is of little assistance in the determination of this issue.

^{142/} John Purvis has been State Climatologist for the Water Resources Commission of South Carolina since his retirement from the United States Weather Service in December, 1981. He worked for the weather service in Spartanburg, South Carolina; District of Columbia; Boston, Massachusetts; Swan Island (West Indies); Charlotte, North Carolina; and Columbia, South Carolina. In Columbia, he served as meteorologist in charge of the Forecast Office. He received a B.S. from Wake Forest University in 1940 and an M.S. from the University of South Carolina in meteorological studies. (PA Exh. 133, Purvis, Attachment 1).

12. All parties have agreed, and the Board finds, that the actual meteorological data gathered at the Catawba site demonstrates that the combination of stable atmospheric conditions accompanied by low wind speeds occurs frequently at Catawba. In its evaluation of DBAs, the Staff gave full and fair consideration to these "extreme," as Intervenors characterize them, weather conditions by calculating X/Q values large enough to be exceeded only rarely at the site and by using representative meteorological data with the high frequency of stable conditions accompanied by low wind speeds. In its evaluation of severe accidents, Staff's consideration of a year's worth of hour-by-hour data from the site in a model to assess transport of a plume of radioactive material from the time of release to the time it reaches the end of the last spatial interval results in a reasonable analysis of the risk results.

13. As stated above, the Board finds that the Staff gave ample consideration to extreme weather conditions in its evaluation of both design basis and severe accidents. Included in the Staff's analysis were the "worst-case" meteorological conditions pointed out by Intervenors. The Board would further note that if the Staff in its analyses had relied solely or principally upon "worst possible case" meteorological conditions, as Intervenors contend should be done, inappropriate weight would have been given

to remote or speculative consequences, thereby distorting a reasoned consideration of the risks. Consideration of "remote and highly speculative consequences" is not required by the National Environmental Policy Act (NEPA), 42 U.S.C. §4331 et seq. E.g., Trout Unlimited v. Morton, 509 F.2d 1276, 1283 (9th Cir. 1974). The "rule of reason" requires only that reasonably foreseeable environmental consequences of the NRC's actions be considered. Id. The Board finds not only that no additional meaningful information would be gained by a separate assessment of probability and consequences of extremely low likelihood events, but also there is an absence of any Commission requirement that the Staff do so in preparing the FES.

IV. CONCLUSIONS OF LAW

In an operating licensing proceeding, the Board is called upon to decide only the issues in controversy among the parties (10 C.F.R. §2.760a and Appendix A to 10 C.F.R. Part 2, §VIII). In this hearing, the contentions and evidence have placed in issue the general subjects of Quality Assurance, storage of spent fuel, embrittlement of the reactor vessels and consideration of adverse meteorology in accident analyses.

Based upon the foregoing Summary of Decision on Contested Issues and Findings of Fact which are supported by reliable, probative and substantial evidence as required by the Administrative Procedure Act and the Commission's Rules of Practice, and upon consideration of the entire evidentiary record in this proceeding, the Board concludes that Applicants have met their burden of proof and have demonstrated a reasonable assurance on the following contentions:

- (1) Neither the welding inspector concerns, nor the Hoopingarner/McAfee concerns nor the in camera witnesses' concerns provide evidence supporting the position that systematic deficiencies in plant construction and company pressure to approve faulty workmanship exists such that the plant cannot operate without endangering the health and safety of the public.
- (2) The ability to safely store irradiated fuel assemblies from other Duke facilities without endangering the health and safety of the public has been demonstrated.

- (3) The amount of reactor material degradation for the Catawba reactor vessels can be accurately measured, as reflected in the Applicants' and NRC's projections of the amount of increase in reference temperature RT_{NDT} , which are conservative. Thus, it can be said that the Catawba reactor vessels can and will be operated within acceptable safety margins for material degradation.
- (4) All meteorological conditions, including extreme conditions, were considered by the Staff and factored into its evaluation of the potential consequences of design basis accidents. In addition, the Staff adequately accounted for extreme meteorological conditions, including the extreme conditions which Intervenors point out as the worst case conditions reflecting their concerns, in its assessment of the environmental impacts of severe accidents.

VI. ORDER

WHEREFORE, IT IS ORDERED, in accordance with 10 C.F.R. §§ 2.760, 2.762, 2.785, and 2.786, that this partial initial decision shall become effective immediately and shall constitute, with respect to matters resolved herein, the final decision of the Commission thirty (30) days after issuance hereof, subject to any review pursuant to the above cited Rules of Practice.

Applying the rationale of Boston Edison Co. (Pilgrim, Unit 2), ALAB-632, 13 NRC 91, 93 n.2 (1981); Duke Power Co. (Perkins, Units 1, 2, and 3), ALAB-597, 11 NRC 870 (1980); and Houston Lighting and Power Co. (Allens Creek, Units 1 and 2), ALAB-301, 2 NRC 853 (1975), this partial initial decision is appealable at this time. Any exceptions to this partial initial decision must be filed with the Atomic Safety and Licensing Appeal Board within ten (10) days after service of this decision. A brief in support of such exceptions must be filed within thirty (30) days thereafter (forty (40) days in the case of the NRC.) Within thirty (30) days after service of the brief of the

appellant (forty (40) days in the case of the NRC Staff), any other party may file a brief in support of, or in opposition to, such exceptions.

Respectfully submitted,

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February 8, 1984

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
DUKE POWER COMPANY, et al.) Docket Nos. 50-413
) 50-414
(Catawba Nuclear Station,)
 Units 1 and 2)

CERTIFICATE OF SERVICE

I hereby certify that copies of "Applicants' Proposed Findings of Fact in the Form of a Partial Initial Decision" in the above captioned matter has been served upon the following by deposit in the United States mail this 8th day of February, 1984.

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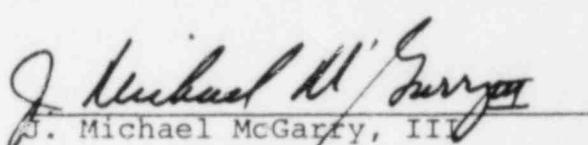
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** Due to confidentiality only these parties were served
with Appendix A dealing with the in camera witnesses.