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)	)	

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

Volume I

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INDEX

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges*
James L. Kelley, Esq., Chairman
Dr. Richard F. Foster
Dr. Paul W. Purdom

In the Matter of	)	
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DUKE POWER COMPANY, et al.	)	Docket Nos. 50-413
	)	50-414
(Catawba Nuclear Station, Units 1 and 2)	)	ASLBP No. 81-463-01 OL

PARTIAL INITIAL DECISION

I. SCOPE OF DECISION

Duke Power Company (Duke or the Company), North Carolina Municipal Power Agency Number 1 (NCMPA-1), North Carolina Electric Membership Corporation (NCEMC) and Saluda River Electric Cooperative (SREC) (the Applicants) are the joint owners and applicants for operating licenses for Units 1 and 2 of the Catawba Nuclear Station (Catawba).1/

This proceeding was contested with respect to quality assurance, the storage of spent fuel, embrittlement of the reactor pressure vessels, assessment of adverse

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* The Board as originally constituted included Dr. Dixon Callihan, who was replaced by Dr. Paul Purdom. (See, Notice of Reconstitution of Board, September 30, 1983).

1/ Duke has exclusive responsibility for the design, construction and operation of Catawba.

meteorology in accident analyses and emergency planning issues. We now decide all issues except emergency planning. We decide in the Applicants' favor by the strong, if not overwhelming, weight of the evidence.[2/] Our decision on the adequacy of emergency plans, the only remaining issue, will come at a later date.

II. FACTUAL, LEGAL AND PROCEDURAL BACKGROUND

A. Site Location and Plant Description

The Catawba facility consists of two pressurized water nuclear reactors located on Applicants' site in York County, South Carolina. The reactors are designed to operate at core power levels up to 3411 thermal megawatts, with a net electrical output of 1145 megawatts per unit. The facility is on the shore of Lake Wylie, which is impounded from the Catawba River by the Wylie Dam, and is approximately 17 miles southwest of Charlotte, North Carolina.

B. Major Regulatory Requirements

1. Quality Assurance (QA)

Nuclear power plants are to be designed, fabricated, constructed, tested and operated with quality to protect the public health and safety. The Nuclear Regulatory Commission (NRC or Commission) regulations provide

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2/ The length of this partial initial decision is not an indication that the Board had difficulty reaching its decision; rather, it is reflective of the voluminous record compiled and the large number of matters raised and dealt with in this proceeding.

eighteen specific criteria that must be complied with. These criteria include management commitment to QA, organization requirements, and requirements for certain activities such as design control, document control, procurement control, inspection, control of materials, special processes, tests, and measurement and test equipment, nonconforming materials, corrective action, records, and audits. These criteria are set forth in Appendix B to 10 C.F.R. Part 50.

The hearing focused primarily upon subjects involving Criterion I (organization), II (QA Program), X (Inspection), XV (nonconformance) and XVI (corrective action). Criterion I requires that the QA Program be independent from schedule and construction pressures. Criterion II requires the implementation of a satisfactory QA Program. Criterion X requires that an inspection program be established to verify conformance with documented instructions, procedures and drawings, with such inspections performed by individuals other than those who performed the activity being inspected. Criteria XV requires that Applicants establish measures to control materials, parts, or 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. 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.

2. The Storage of Spent Fuel

The storage of spent fuel pool contention focuses on the effect of Oconee and McGuire[3/] spent fuel to be stored at Catawba. The contention has three parts: the cooling capability of the spent fuel pool; criticality analysis; and the actual handling and storage activities.

With regard to cooling, the NRC Staff (Staff) has established acceptance criteria regarding temperatures that spent fuel pools should maintain.[4/] These criteria, which implement General Design Criteria (GDC) 61 and 63 (see, 10 CFR Part 50, Appendix A), are set forth in the NRC's Standard Review Plan at §9.1.3., and Regulatory Guide 1.13 at Positions C.1, C.2, C.6 and C.8. These criteria require a cooling system that is capable of

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3/ Oconee and McGuire are other nuclear facilities owned and operated by Duke.

4/ Staff acceptance criteria is not binding; however it provides useful guidance which unless otherwise called into question will be subscribed to by this Board.

maintaining the pool water temperature below 140°F. under maximum normal heat load conditions and below boiling under maximum heat load conditions. The "maximum normal heat load" assumes the operation of a single cooling train, one-third core of assemblies fully irradiated and decayed for seven days, one full core of empty cells to accommodate a full core off-load and the remaining spaces filled with fully irradiated fuel from previous yearly refuelings. The "maximum heat load" assumes two cooling trains operating under fuel conditions described in the "maximum normal heat load" scenario except the spaces left empty for a full core off-load have been filled with such full core off-load.

With regard to criticality, the NRC has established criteria to implement GDC 62 which calls for maintaining a storage array neutron multiplication factor (Keff) less than 0.95 under all credible normal and accident conditions. The criteria and methodology for attaining this value is set forth in the NRC's Standard Review Plan at §9.1.2 and Regulatory Guide 1.13, Positions C.1 and C.4. See also American National Standards Institute (ANSI) N210, "Design Objectives for LWR Spent Fuel Storage Facilities at Nuclear Power Stations" and ANSI N18.2, "Nuclear Safety Criteria for the Design of Stationary PWR Plants."

With regard to spent fuel handling and storage, 10 CFR Part 50, Appendix I requires that radiation exposures be kept as low as is reasonably achievable (ALARA). Regulatory guidance is provided in Regulatory Guides 8.8 and 8.10. In addition, ALARA is to be applicable to occupational doses, which are to be below the limits set forth in 10 CFR Part 20.

Appendix A of Regulatory Guide 1.33 includes procedures for operating fuel handling equipment, the receipt and storage of new and irradiated fuel, and the use of radiation monitoring instrumentation. As to the local handling systems, the guidelines of Regulatory Guide 1.13, which implement GDC 61, come into play.

3. Embrittlement of the Reactor Pressure Vessels

To ensure that the reactor vessel will be safe from brittle fracture during hydrostatic tests and any condition of normal operation, including anticipated operational occurrences, the Staff requires that the reactor vessel must be operated within the pressure-temperature limits that are defined in Appendix G, 10 CFR 50, "Fracture Toughness Requirements." The relevant reference point, referred to as the "reference temperature" (RT_{NDT}), is conservatively calculated by the method set forth in Regulatory Guide 1.99.

Another means of calculating RT_{NDT} is contained in Commission Report Secy-82-465. Therein the Staff statistically evaluated the increase in RT_{NDT} resulting from irradiation damage from all PWR reactor vessel surveillance materials. The Commission evaluation resulted in the "Guthrie Formula." (Page E-6, Appendix E, SECY-82-465) which had a standard deviation of 24°F.

In addition, the Commission requires that all commercially operated reactor vessels comply with the requirements of Appendix H, 10 CFR Part 50, "Reactor Vessel Material Surveillance Program Requirements." This program requires that samples from the limiting reactor vessel materials be placed inside reactor vessel surveillance capsules which are irradiated within the reactor vessel. According to the withdrawal schedule referenced in this Appendix, the capsules must be withdrawn and the materials must be tested to determine the amount of reactor vessel material embrittlement resulting from neutron irradiation damage.

The Staff ensures safe operation of the reactor vessel during normal, anticipated upset and test conditions by requiring the vessel to be operated within the limits of Appendix G, 10 CFR Part 50. According to this Appendix, the RT_{NDT} for the limiting reactor vessel material is the basis for the reactor vessel operating limits. The Staff will compare the results of the

surveillance program with the Staff projection methods (i.e., "Guthrie," or Reg. Guide 1.99) and will use the higher RT_{NDT} for calculating operating limit curves.

The Staff ensures safe operation of the reactor vessel during faulted and emergency conditions by requiring the vessel RT_{NDT} to comply with the screening criteria of Commission Report SECY-82-465. This report on page 6 states that "the risk from PTS events for reactor vessels with RT_{NDT} values less than the proposed screening criterion (270°F for axial welds and 300°F for circumferential welds) is acceptable."

To ensure that the reactor vessel will be resistant to a pressurized thermal shock (PTS)[5/] during the life of a nuclear plant, the Staff requires that the end-of-life (EOL) reference temperature (RT_{NDT}) for the limiting reactor vessel beltline material must be less than the screening criterion (270°F for axial welds, and 300°F for circumferential welds) identified in Commission Report SECY-82-465.

5/ PTS events are those pressurized water reactor (PWR) transients and accident conditions that result from severe overcooling of the reactor vessel, concurrent with pressurization or repressurization.

4. Assessment of Adverse Meteorology in Accident Analyses

With regard to consideration of adverse meteorology in accident analyses, the NRC, in implementing the National Environmental Policy Act of 1969 (NEPA) mandate for an environmental impact statement (EIS), requires the Staff EIS to include "reasoned consideration of environmental risks (impacts) attributable to accidents" giving equal attention "to the probability of occurrence of releases and to the environmental consequences of those releases." Statement of Interim Policy, 45 Fed. Reg. 40101 (1980). NEPA also requires that a "rule of reason" is to apply to environmental assessments[6/] and that remote or speculative impacts need not be considered.[7/]

C. Procedural Background

On October 27, 1972, Duke filed an application with the Atomic Energy Commission, now the NRC,[8/] for permits to construct and operate Catawba. Construction Permits Nos. CPPR-116 and CPPR-117 were issued on August 7,

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6/ Natural Resources Defense Council v. Morton, 148 U.S. App. D.C. 5, 458 F.2d 827 (1972).

7/ Environmental Defense Fund v. Corps of Engineers, 348 F. Supp. 916, 933 (N.D. Miss. 1972); First National Bank of Homestead v. Watson, 363 F. Supp. 466 (D.D.C., 1973).

8/ Pursuant to the Energy Reorganization Act of 1974, 42 U.S.C. §5801 et seq., the NRC assumed the licensing and regulatory functions of the Atomic Energy Commission.

1975,[9] following reviews by the Commission's Regulatory Staff (Staff) and the Advisory Committee on Reactor Safeguards, as well as public hearings before an Atomic Safety and Licensing Board on January 23-24, February 5-7, and April 22-26, 1975 in Rock Hill, South Carolina and on February 12-14, and April 29-30, 1975 in Charlotte, North Carolina.

On June 25, 1981, the Commission published in the Federal Register (46 Fed. Reg. 32974) a notice of the receipt of an application by the Applicants for facility operating licenses for the Catawba facility. In response to that notice, five parties filed petitions to intervene; the Carolina Environmental Study Group (CESG), Charlotte-Mecklenburg Environmental Coalition (CMEC), Safe Energy Alliance (SEA), the State of South Carolina, and Palmetto Alliance (Palmetto). In its March 5, 1982 Memorandum and Order, the Board admitted Palmetto, CESG, and CMEC as parties to the proceeding, but denied the petition of SEA.[10] The petition of the State of South Carolina to intervene as an interested state, pursuant to 10 C.F.R.

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[9] The construction permits were subsequently amended to reflect the ownership interests of NCMPA-1, NCEMC, and SREC.

[10] SEA did not file contentions in support of its initial petition, and did not appear at the January 12-13, 1982 prehearing conference. Under these circumstances, the Board considered the petition as having been withdrawn, or in the alternative, denied the petition for lack of prosecution.

§2.715(c), was granted.

The intervening parties filed a total of fifty-two (52) separate contentions. CESG filed twenty-two (22) contentions, CMEC filed four (4) contentions, and Palmetto filed forty-eight (48) contentions, nineteen of which were identical to nineteen contentions filed by CESG. The Applicants and NRC Staff separately opposed the majority of these contentions. The Board admitted twenty-five (25) contentions subject to certain specified conditions, and admitted one contention unconditionally. (See March 5, 1982 Memorandum and Order). After an appeal by Applicants challenging the standards used by the Board in conditionally admitting these contentions, and the Appeal Board's decision,[11] the Board reconsidered its initial conditional admission of these twenty-five contentions. In a December 1, 1982 Memorandum and Order, the Board admitted, in whole or in part, eleven of the twenty-five previously conditionally admitted contentions.[12]

The Board also made rulings in the December 1, 1982 Order on new or revised contentions submitted based on the Staff's Draft Environmental Statement (DES). In a joint filing, Palmetto and CESG filed twenty-three (23)

11/ See, ALAB-687, 16 NRC 460 (1982), CLI-83-19, 17 NRC 1041 (1983). The Commission's decision did not disturb the Board's reconsideration.

12/ The Board admitted the following contentions: CMEC 1-4; Palmetto 6 (in part), 7, 8, 16 (in part), 27; and CESG 8 (in part) and 18 (Palmetto 44).

contentions concerning various aspects of the DES, and CMEC filed a revised version of its Contention 4. To avoid confusion between the DES contentions and the previously admitted contentions, the Board added "DES" to the contention number and admitted two of the Palmetto/CESG Joint DES Contentions.[13/] The Board deferred ruling on DES-11 until the Final Environmental Statement (FES) was available, and deferred ruling on DES-10 and DES-19 pending clarification of the applicability of Table S-4[14/] to these contentions. In a February 25, 1983 Memorandum and Order, DES-10 was rejected and DES-19 was admitted in part, and in a March 24, 1983 Memorandum and Order, DES-11 was admitted in part; the previously admitted portion of DES-22 was reconsidered and rejected.

In sum, seventy-five (75) contentions were originally filed by the Intervenors in this proceeding. After various Board rulings, fourteen (14) were admitted in some form for litigation.

During the course of discovery, Applicants filed a Motion for Sanctions against Palmetto which sought dismissal of several contentions. In a June 20, 1983

13/ DES 17 and 22 (in part).

14/ 10 CFR §51.20.

Memorandum and Order, the Board dismissed Palmetto Contentions 7 and 8 because of Palmetto's failure to comply with a discovery order issued by the Board.

On June 23, 1983, CMEC and Applicants submitted a stipulation which settled all of CMEC's contentions, and jointly requested approval of the stipulation, which would withdraw the contentions. The stipulation was approved in a July 14, 1983 Memorandum and Order which dismissed CMEC as a party to the proceeding.

After discovery on the remaining contentions was completed, the Applicants and Staff filed Motions for Summary Dispositon. The Board granted the motions with respect to Palmetto Contention 27, DES-11 and DES-19.15/ After completion of the prehearing stage of this proceeding, four contentions remained for hearing:16/ Palmetto Contention 6 relating to QA, Palmetto Contention 16 relating to the storage of spent fuel, Palmetto Contention 44 (CESG Contention 18) relating to the

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15/ The Board also narrowed other contentions during the prehearing phase of the case. This procedural background is set forth, infra (see also, Board Orders filed on August 26, September 6, 8, 9 and 30, and October 18, 1983).

16/ CESG Contention 8, which was admitted, proposed that the City of Rock Hill be included in the Emergency Planning Zone. The Board noted at the time the contention was admitted that it might become academic if the emergency plans, when completed, included Rock Hill. The emergency plans, which will be the subject of a separate decision, do include the City of Rock Hill. Therefore, CESG Contention 8 is not considered in this decision.

embrittlement of reactor pressure vessels, and DES-17 relating to assessment of adverse meteorology in accident analyses.17/ These contentions are set forth below:

17/ QA issues also have been raised by four Board witnesses referred to as the in camera witnesses. Due to confidentiality considerations with respect to two of these witnesses, the Board's discussion of these in camera witnesses issues will be treated in a separate portion of this decision. This separate portion will be denominated Appendix A and will receive limited distribution, i.e., to those who have signed affidavits of non-disclosure, the Appeal Board and Commission. With respect to the remaining two in camera witnesses, Mr. Langley and Mr. Nunn, discussion of their issues are set forth herein inasmuch as they do not seek confidentiality. [Note, given the constaints of time, and the late developing waiver of confidentiality by Mr. Nunn, Applicants have included the discussion of Mr. Langley and Mr. Nunn in Appendix A.]

Palmetto Contention 6:[18]

Because of systematic deficiencies in plant construction and company pressure to approve faulty workmanship, no reasonable assurance exists that the plant can operate without endangering the health and safety of the public.[19]

18/ In its December 1, 1982 Memorandum and Order, the Board recast Contention 6 and accepted it as worded here for litigation in the proceeding. Contention 6 as originally proposed in this proceeding read as follows:

> Substandard workmanship and poor quality control strongly suggest that actual plant construction is substantially below NRC standards in many safety related areas. Applicants have failed to provide a Quality Assurance program which meets the requirements of 10 CFR Part 50, App. B, and no reasonable assurance exists that the plant can operate without endangering the health and safety of the public. The Commission has noted that 'the regulated industry . . . bears the primary responsibility for the proper construction and safe operation of licensed nuclear facilities.' Federal Tort Claim of General Public Utilities Corp., et al., CLI 8-10, 13 NRC 773, 775-776 (1981). The NRC's Systematic Assessment of Licensee Performance Review Group found the Catawba facility 'Below Average' among power reactor facilities under construction particularly 'in the areas of quality assurance including management and training.' NUREG 0834, NRC Licensee Assessments, August 1981, p. B-1. A number of former Duke Power Company construction workers, including a certified Quality Control Inspector, have complained of systematic deficiencies in plant construction and company pressure to approve faulty workmanship.

19/ In its December 1, 1982 Memorandum and Order, the Board noted (p. 5) that "[m]uch of Palmetto 6, which is concerned with substandard workmanship and poor quality control, lacks sufficient specificity. The last sentence, however, concerns alleged 'corner cutting' and does supply a sufficient basis for a

(footnote continued)

Palmetto Contention 16:

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.20/

Palmetto Contention 44 (CESG Contention 18):

[T]he NRC's projection of the amount of increase in reference temperature RT^{NDT}, which results from neutron irradiation damage, is nonconservative, that the amount of reactor material degradation for the Catawba reactor vessels cannot be accurately measured, and, as a result, that there is not reasonable assurance that the Catawba reactor vessels can and will be operated within acceptable safety margins for material degradation.21/

DES-17:

The DES 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

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(footnote continued from previous page)
contention . . . . The thrust of this contention is primarily toward alleging company attitudes and practices; proof of this contention, presumably involv[es] specific instances of misfeasance . . . ." (See Memorandum and Order, June 13, 1983, Limitations of Contention 6).

20/ The Board rejected as issues in the proceeding Palmetto allegations concerning the integrity of the pool liner, cask drop, and external threats, such as aircraft crashes, as well as transport of spent fuel from other power stations. (see, i.e., Memorandum and Order of September 6, 1983, pp. 3, 6, 9 and 11).

21/ The Board noted that those aspects of the contention which constitute an attack on NRC regulations are excluded. (see Memorandum and Order of September 8, 1983, pp. 8-10).

> 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.22/

Hearings were conducted for forty-five days, running continuously from October 4, 1983 to December 16, 1983 (with a recess week for Thanksgiving) and resuming on January 30 and 31, 1984. During this time the Board issued a notice to Applicants' present and former employees informing them of an opportunity to raise concerns confidentially in an in camera proceeding. (see Board ruling of October 12, 1983 (Tr. 2601-15)). Three persons came forward to testify in camera; additionally, Mr. Harry Langley, a fourth former employee, came forward independent of the Board notice. Mr. Langley was included in the in camera procedure for convenience.23/

22/ In its Memorandum and Order of December 1, 1982, at p. 21, the Board admitted DES 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."

23/ As noted in n. supra, Mr. Nunn, an in camera witness waived confidentiality at the January 1984 hearings.

At the hearing all parties were represented by counsel, presented evidence, and cross-examined witnesses. The Board heard testimony from 85 witnesses - 68 from the Applicants, 4 from the Intervenors, and 13 from the Staff. In addition, the Board called four witnesses, i.e., the in camera witnesses. Over 280 exhibits were admitted into evidence. The record was closed as to the matters discussed in this decision on December 16, 1983.24/ Thereafter, each party submitted extensive proposed findings of fact and conclusions of law.

This partal initial decision covers the four above-referenced contentions, as well as issues raised by the four in camera witnesses.

III. SUMMARY OF DECISIONS ON CONTESTED ISSUES

A. Introduction

This section summarizes the detailed findings of fact in the following section. It includes a statement of each major issue, a description of the positions of the parties and a brief summary of their evidence, and the main reasons for the result we reach. This section provides a relatively brief narrative description of what we have decided, and why -- central elements that are sometimes lost in lengthy and technical findings of fact.

24/ Five in camera issues were carried over to the January 30-31, 1984 hearings. The record was closed as to these remaining matters on January 31, 1984.

This section is intended not only to explain, but also to supplement the findings of fact. Accordingly, it has independent legal significance. Should any unintended inconsistency arise, however, between this section and our findings, the findings govern.

B. Palmetto Contention 6 - Quality Assurance

The Quality Assurance (QA) issue was the primary focus of the forty-five days of hearing. It can be divided into three parts; welding inspector concerns; McAfee/Hoopingarner concerns; and, in camera witnesses concerns. Each will be discussed below.

1. Welding Inspector Concerns

The concerns of various welding inspectors were formally raised in January 1982 in response to management's request. Much underlies the raising of these concerns.

a. Overview

Before examining the QA organization and program at Catawba and the specific allegations that have been made with respect thereto some preliminary remarks which have a direct bearing on our decision are necessary. This action on our part is precipitated by the voluminous record that has been amassed in this case. If we did not provide such a perspective at the outset, the decision could well be exceedingly difficult to follow.

The construction of the Catawba Nuclear Station, or any nuclear plant, is a massive undertaking. We would be naive were we to expect that each construction activity would be done perfectly, or to expect that each member of the work force is compatible with all other members of the work force. Neither the Atomic Energy Act nor the applicable regulations require perfection; rather they require a finding of reasonable assurance. Power Reactor Development Co. v. Electrical Union, 367 U.S. 396 (1961); 10 C.F.R. §50.57(a)(3). In this regard it is reasonable to assume that there will be errors in construction work, just as we know there will be conflicts between and/or among certain members of the work force. The record reflects that indeed there have been errors in construction and there have been conflicts between members of the work force at Catawba. The question we must answer - indeed the issue in this case - is whether the record demonstrates a systematic breakdown in the QA program at Catawba such that the program will not fulfill its intended inspection function - to detect and correct deficiencies in construction.

There are three principal matters before us in our deliberations regarding whether the evidence demonstrates such a breakdown. The first is the concerns raised in late 1981 and early 1982 by a group of welding inspectors at Catawba. The second is the concerns raised by two

former employees at the Catawba plant, Mr. McAfee and Mr. Hoopingarner. The third is the concerns raised by certain Board ("in camera") witnesses. With respect to the latter two sets of concerns, the evidence is straightforward and we do not address them further in this preamble.

Our focus is upon the welding inspector concerns which consumed approximately three-quarters of the forty-five total hearing days we held through the fall of 1983. The evidence before us respecting these concerns is voluminous. It includes three different task force reports, hundreds of pages of direct evidence, hundreds of exhibits, and thousands of pages of transcript. These welding inspector concerns arose during a recourse procedure associated with a pay reclassification for the welding inspectors. When the welding inspectors expressed concerns which appeared to raise safety questions, a task force was appointed to investigate the matter and the welding inspectors were explicitly requested to submit all their concerns to the task force. The record reflects they did so.

The welding inspector concerns are divided into two areas, technical and non-technical. They total approximately 150. Of these, 114 are "technical" in nature, involving specific pieces of hardware, welds, or procedures. The remainder are "nontechnical" and involve human relations problems.

With respect to the technical concerns, we begin by observing that construction of Catawba commenced in 1974. Since that time the QA program has functioned to identify deficiencies in construction activities, document such deficiencies, and assure that those deficiencies are corrected. With regard to documentation, the record reflects that more than 17,000 nonconforming items have been written; more than 17,000 deficiency reports (R2As) have been written, and thousands of variation notices and other process control forms have been issued (Tr. 9777-79, Van Doorn, 12/6/83). These numbers take on added significance when one realizes that there are "hundreds of thousands" of inspections at the Catawba site (Apps. Exh. 99, Davison, p. 3). In sum, the amount of activity in the welding area, coupled with the voluminous records amassed by inspectors in the normal course, lead us to conclude that the scope of the welding inspectors' technical concerns is an extremely narrow universe which on its face does not support a claim of systematic deficiency.

However, we do not conclude our inquiry at that point. Rather, we have asked ourselves whether these 114 items raise concerns leading us to conclude the plant is not safe. To that question the answer is clearly no. The Task Force which studied these issues found that none presented any safety significance (Apps. Exh. 11, Cobb, pp. 8, 12-13; Tr. 3598, Cobb 10/8/83). And the very

welding inspectors and first-line supervisors who raised the concerns testified at the hearings - or proffered sworn testimony - that they were aware of no unsafe construction at Catawba (Apps. Exh. 2, Deaton, p. 4; Apps. Exh. 29, Burr, p. 7; Apps. Exh. 30, Bryant, p. 7; Apps. Exh. 31, Rockholt, p. 7; Tr. 6404, 6408, Cauthen 11/8/83; Apps. Exh. 32, Cauthen, p. 7.; Apps. Exh. 34, Ross, pp. 7-8; Apps. Exh. 56, Godfrey, p. 5; Apps. Exh. 57, Crisp, pp. 5-6; Apps. Exh. 58, Gantt, p. 6; Apps. Exh. 61, Jackson, p. 5; Apps. Exh. 67, Harris, p. 4; Apps. Exh. 68, Ledford, p. 4). These facts confirm the existence of a QA Program which is built around a conservative system of safeguards and which does not allow individual procedure violations to compromise the effectiveness of the program or the safety of the plant (Tr. 3889-90, Grier, 10/19/83; PA Exh. 34).

We have also asked ourselves whether these technical concerns demonstrate a consistent lack of compliance by Applicants' management with QA procedures. The record before us shows that the welding inspectors who raised the concerns, while unanimous in their conclusion that no safety problem exists, thought in numerous instances that the specific concerns demonstrated violation of QA procedures. In fact, a large measure of the dispute in this case is whether QA procedures relating to those concerns were violated. In certain cases they were.

However, this is where the question of perspective comes into play. Again, we look to the number of incidents involved and, even assuming that in each of the 114 instances the welding inspectors were correct, and that a violation of QA procedures did exist, we do not find this to be unreasonable or cause us concern as a general matter given the enormous scope of the project. Simply, what becomes clear is that these 114 instances represent an extremely small number of violations, given the number of procedures that must be met each day during the life of the construction project (See, e.g., Apps. Exh. 6). In any event, none of these violations represents any safety significance.

We would note, that in examining the record regarding these 114 concerns only a portion of such would support a claim of a procedural violation, and in those instances only a limited number of such procedural violations could be characterized as greater than minor. Despite these facts, Palmetto suggests that a broader issue exists. Specific reference is made to the non-technical concerns.

With respect to the non-technial concerns, we begin by observing that these types of human relations questions involving, as they must, areas of subjective value judgments are always more difficult to evaluate than technical issues. Indeed, we note that in most instances such issues are beyond our jurisdiction. What we must do

is satisfy ourselves that, where they do exist, such human relations conflicts do not keep inspectors from doing their jobs and thereby contribute to a systematic breakdown of the QA program at Catawba. In this inquiry we must determine, among other things, whether there has been company pressure to approve faulty workmanship.

The complaints of the welding inspectors in the non-technical area essentially centered on four issues: harassment, access to NRC, lack of support/communication and construction pressure.

The record contains voluminous evidence of alleged examples of such issues. The welding inspectors and supervisors who raised their complaints testified that while they might at some point have experienced difficulty in fulfilling their job requirements, the quality assurance program continued to fulfill its function of identifying deficiencies and assuring such deficiencies were resolved. The testimony reflects that while these matters may have made their jobs more difficult, the situation did not reach the point of affecting the ability of the QA program on site to perform its main inspection - function - to detect deficiencies in construction (Apps. Exh. 14, Davison, pp. 21-22).

The Board notes that every single welding inspector and welding inspection supervisor who testified in this proceeding, or who proffered prefiled testimony,

unequivocally stated that they did their job and did it correctly (See, e.g., Tr. 8685, Reep, 11/30/83; Tr. 9059, Harris, 12/1/83; Apps. Exh. 32, Cauthen, p. 4; Tr. 5800, Deaton, 11/3/83; Tr. 6148-49, Bryant, 11/4/83; Tr. 5930-31, Burr, 11/3/83). Each one stated that they know of no instance of faulty workmanship that would lead to an unsafe plant. This leads us to conclude that the quality assurance program as represented by those who raised the concerns in the first instance did not suffer a systematic breakdown.

It has not been lost on this Board that the welding inspectors and their supervisors are part of a quality assurance program. These welding inspectors are proud to be a part of the quality assurance program and the record reflects they have gone the extra mile to assure that the program has worked (See, e.g., Tr. 6269, Rockholt, 11/8/83; Tr. 8489, Gantt, 11/29/83).

The welding inspectors brought their concerns forward, albeit with varying degrees of difficulties. Thereafter management took immediate action. Various task forces were assembled to examine the concerns. While the parties dispute the adequacy of such reports, there can be no doubt as to Applicants' attitude toward resolving the welding inspectors' concerns. Beginning with the Executive Vice President, Engineering and Construction, Duke took the concerns seriously, investigated them, made

recommendations and took corrective action (Apps. Exh. 1, Owen, pp. 14-16). This attitude impresses us. What also impresses us is the fact that the Company itself, as opposed to some outside agency, recognized the significance of the concerns and took appropriate corrective action which the welding inspectors state has resulted in an improved atmosphere. Lastly, it is of significance that the NRC Staff performed an independent review of the allegations of the welding inspectors and concluded that while there may have been a breakdown in communications and limited violations of procedures, that the quality assurance program as a whole was working and that there was not a systematic breakdown.

Condensed, the record reflects that at times there has been a breakdown in communication but not in the quality assurance program. In sum, the evidence leads to only one result; a finding that Palmetto Contention 6 is not well taken.

b. Background

1. Transfer of Welding Inspectors

In February 1981, Quality Control (QC) inspectors, including the welding inspectors, were transferred from the Construction Department to the QA Department. 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.

The Board finds that this allegation is beyond the scope of the contention. Rather, it is collateral attack on the construction permit Licensing Board's decision which found the Company's QA organization, including the placement of QC inspectors in the Construction Department, to be in compliance with regulatory requirements. Duke Power Company (Catawba Nuclear Station, Units 1 and 2), LBP-75-34, 1 NRC 626, 646, 649-650 (1975), aff'd. ALAB-355, 4 NRC 397 (1976). In any event, it was abundantly clear from the evidence that the standards and criteria applied by the inspectors were developed 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. The Board finds that this assertion is not supported by the evidence, and is simply without merit. (FF 34-37).25/

Palmetto also asserted that the Company's organizational structure failed to allow the QA program freedom from improper cost and scheduling pressures. Duke's Corporate QA Manager testified that under the present organizational structure he has the independence

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25/ For purposes of clarity and to assist in understanding this lengthy decision, we will include at the close of each paragraph in this summary a supporting reference to the detailed findings of fact e.g. (FF 34-37) is a reference to findings of fact 34, 35, 36 and 37 on pages 163-165.

to implement the QA program without schedule or cost constraints. This testimony was not contradicted by Palmetto in any fashion. The Board finds that the QA Department has been given the freedom and independence necessary to implement the QA program. While Mr. Grier is kept apprised of cost and schedule information for planning purposes within his department, he is not made aware of the impact of implementing the QA program on the cost and schedule of the plant. (FF 38-41).

Palmetto's additional contention that QA management at Catawba sacrificed the QA program on the alter of timely completion of the plant thereby demonstrating QA's lack of independence is equally without foundation in the record. Mr. Davison, the Company's Project QA Manager, testified that under his supervision a method was developed to communicate the schedule of work activities to QA supervision. The objective of this plan was to enable better scheduling of QA inspectors as work was completed. This scheduling information had no impact on the type of inspections to be performed or on the standards to be applied. The Board finds this practice reflective of good management, rather than a lack of independence of the QA program. (FF 42-45).

2. Pay Reclassification

In July 1981, the Company implemented the results of its most recent evaluation of inspector positions. The pay grade of welding inspectors at each of Duke's nuclear projects was reduced as a result of this evaluation. The pay grade of other inspector groups was also adjusted, some upward, some downward. (FF 46, 56).

With regard to the welding inspectors, it is important to note that the initial welding inspectors used by the Company (in 1967 to work on the Oconee project) were transferred from within the Company. These individuals met the then-existent Duke commitment to the Commission at Oconee by having two years welding experience. To attract these welders to inspector position the Company offered them more money than they made as craft welders. (FF 47).

In June 1978, the two years experience requirement was changed when the certification procedures were standardized along the lines of the ANSI standard for inspectors. In the summer of 1980, Duke's Non-Exempt Evaluation Team, using the Hay Associates method, reviewed and evaluated a revised position analysis for welding inspectors. The Team took into account the changes in the required experience. 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. This re-evaluation resulted in the movement in the pay grade for Welding Inspectors from Grade 11 to Grade 10. With this reduction the pay differential between welding inspectors and craft that existed when the welding inspection position was created became only a few cents per hour. (FF 49, 53-55).

These changes in pay grade were implemented at the time of the July 1981 general salary increase. At that time welding inspectors 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 inspectors a smaller salary increase to bring the pay in line with their grade classification. (FF 57).

The pay reclassification was explained to the welding inspectors during July 1981. Many inspectors, from all of Duke's nuclear stations, disagreed with the reclassification and elected to pursue the matter through the Company's Employee Recourse Procedure. The matter finally reached W.S. Lee, then President of the Company, who upheld the pay reclassification. (FF 59-60, 62).

Palmetto attempted to show that there were quality assurance considerations involved in the pay reclassification that the Company failed to consider. (FF 63).

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. 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. (FF 64).

Second, Palmetto asserted that the pay reclassification was in retaliation for the welding inspector concerns. This allegation is not supported by the evidence especially since the concerns did not surface until after the pay reclassification was accomplished. If any inference were to be drawn by the Board, it would be precisely the opposite; the pay reclassification drove the welding inspector concerns to the surface. (FF 65).

Third, Palmetto contended that the pay reclassification was in retaliation for the 1981 SALP report assigning a "below average" rating to Catawba. This argument is without substance in light of the testimony by Mr. Grier that the committee evaluating the job positions did not even consider the SALP report in its work. More telling is the fact that the Company was not advised of the SALP rating until after the pay reclassification had been implemented. (FF 66).

3. Emergence of Welding Inspector Concerns

During the Company's investigation of the pay reclassification recourse, Ms. Gail Addis, of the Corporate Employee Relations Department, interviewed various inspectors at the various nuclear stations. During these interviews 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. Mr. Wells, the then Corporate QA Manager, who had accompanied Ms. Addis, was apprised of similar complaints. Ms. Addis and Mr. Wells reported these concerns to Mr. Owen, Executive Vice-President, Design and Construction. (FF 67).

4. Task Force I

As a result of the report of Ms. Addis and Mr. Wells, a task force was appointed to determine whether technical inadequacies existed and, if so, to determine the scope of the problem. This task force, known as Task Force I, first gathered information through interviews with Mr. Wells and Ms. Addis. It then conducted on-site interviews with numerous inspectors at various nuclear facilities. The Task Force also interviewed management and supervision in the QA and QC organizations. (FF 69-71).

Task Force I completed its report in late December 1981. It concluded, with respect to Catawba, that the QA program was satisfactory and that no unacceptable work affecting safety existed. It found that the welding inspectors were concerned with deviations from written work procedures by craft and had discussed several examples of such deviations. None of the inspectors identified any work that was technically inadequate. It characterized the problem associated with the inspectors' concerns as a "communication problem" between the inspectors and their supervisors as well as construction personnel. In the opinion of Mr. McMeekin, a member of Task Force I, a result of the poor communications was that some inspectors misconceived their role as one which would require the strict adherence of all work to specific procedures rather than to document variances from such

procedures. When decisions were made by the proper persons that work which varied from these procedures was in fact acceptable, these inspectors concluded that they were receiving inadequate support from supervision and management. This was because they felt that the craft was routinely permitted to vary from procedures and that such variances were not thoroughly analyzed for acceptability. (FF 72).

In presenting its report to Mr. Owen, Task Force I recommended that it would be prudent to investigate the specific technical concerns of the inspectors. (FF 73).

The report of Task Force I was not seriously questioned by the Palmetto Alliance. (FF 74).

c. Technical Concerns

(1) Technical Task Force

In response to Task Force I's recommendations, Applicants commissioned a five-member Task Force, known as the Technical Task Force, to investigate those concerns and make recommendations to resolve any identified deficiencies. Contrary to Palmetto's allegations, the Board finds that the investigation of the Technical Task Force was fully independent of Duke's management and was subject to the oversight and review of Management Analysis Company (MAC), an independent consultant that evaluated the qualifications of the Task Force members, verified the adequacy of the investigation, and assessed the actions

taken to correct the concerns. (FF 88, 91, 93). We are also satisfied that the Technical Task Force possessed the necessary engineering expertise to address the concerns. (FF 75-77).

C. Technical Concerns

(1) Technical Task Force

(a) The Technical Task Force Investigation

The principal objective of the Task Force was to determine whether there were any actual or potential inadequacies (i.e., safety implications) associated with the welding inspectors' technical concerns. If any actual or potential inadequacies were identified, the Task Force was to make specific recommendations to resolve them. (FF 80).

Each of the technical concerns was assigned to a Task Force member for evaluation according to his area of expertise, and each evaluation was verified independently by either another member of the Task Force or a separate party. The recommendations were reviewed and implemented in accordance with a Management Implementation Plan, and the results of the investigation were reviewed with the inspectors. Responsibility for the implementation of each specific action recommended was assigned to a Department head. Mr. Grier, the Corporate QA Manager, along with an Implementation Coordinator, verified that each specific action had in fact been carried out, and the

implementation was audited by Mr. Zwissler of MAC. The final Task Force report was made available to the NRC by the Applicants' QA Department. The two volumes of the report appear in the record as Attachments 4 and 5 to the testimony of Mr. Cobb, Apps. Exh. 11. (FF 81-82, 87-91, 94).

In all there were 114 different technical concerns raised. The Task Force found that these could be classified into nine generic 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. The investigation revealed no actual technical inadequacies, though 24 potential inadequacies were discovered and subsequently found to pose no safety concern. A review of the Task Force findings indicates that the principal areas of concern were Material Control, Welding Procedures and QA Procedures. (FF 83).

The Task Force reached three basic conclusions. First, it concluded that the relationship between the inspectors and their supervision contributed significantly to the concerns. More specifically, the inspectors felt that they were not receiving adequate support from their supervisors in that the supervisors' responses to their technical questions as well as the verbal instructions on

the acceptability of work were not being thoroughly explained. The same sort of problem arose where NCIs were invalidated by the supervisors. Second, many of the concerns arose out of disputes over the interpretation and implementation of procedures. According to the Task Force, approximately 54% of the concerns involved either actual or potential violations of procedures, and there were quite a few others where the inspectors believed that a violation of procedures had occurred. It is important to note that no welding inspector said that these procedural violations resulted in unsafe work; rather such gave rise to a feeling of lack of support which, if left uncorrected, could have affected the QA program. Third, the Task Force concluded that some of the concerns could be alleviated by revisions to procedures, especially in the area of reworkable deficiencies. These subjects are discussed further in the following section of this decision. (FF 84-85, 92).

It must be noted that the 114 concerns brought forth by the welding inspectors represented, in the view of the Task Force, only "a microscopic sample size of the total volume of work associated with the areas reviewed. . . ." In addition, the majority of the concerns had come from only two inspectors. When one considers the tremendous number of welds inspected and the thousands of NCIs written by the welding inspectors, it is evident that

these concerns are not indicative of a systematic deficiency in the QA program. It should also be noted that the Task Force accepted the welding inspectors' concerns as stated and did not question the accuracy of their concerns. Thus, Palmetto's principal challenge to the Technical Task Force report, i.e., its failure to interview each welding inspector who had raised a concern, is rendered moot. (FF 86).

(b) Resolution of Welding Inspectors' Technical Concerns

It will be useful to discuss the resolution of the technical concerns according to the nine generic classifications used by the Task Force. Following this discussion, we will address certain overriding concerns, such as management support for the inspectors and deviations from procedures, and explain why we believe these have been adequately resolved by the Applicants.

(i) Process Control

There were a total of 20 concerns in this category. The Task Force classified 11 of these as involving actual procedural violations and three as involving potential procedural violations. There were no actual technical inadequacies identified, though four of the concerns were found to present potential technical inadequacies. (FF 97).

It appears that Process Control was not a controversial area inasmuch as the inspectors were satisfied with all the Task Force resolutions of these concerns and no challenge to them was presented by Palmetto. Nevertheless, a thorough review of the Process Control procedures and practices was carried out by the Applicants in accordance with the Task Force recommendations. This review found that in general the procedures were adequate and well understood by the inspectors and craft personnel. Periodic meetings are now held with QA, craft, and Construction Technical Support personnel for the purpose of reviewing problems in using Process Control procedures. (FF 98-99).

(ii) Welding Inspection

In this area there were 30 total concerns, of which ten involved actual procedural violations and five involved potential procedural violations. Six potential technical inadequacies were identified by the Task Force. The major concern in the area of welding inspection related to the validity of verbal instructions given by supervision on the acceptability of questionable conditions and minor QA procedure violations. Several items in this category involved disagreements between inspectors and supervisors on matters of technical judgment. (FF 100).

Although the majority of concerns in this area were resolved to the satisfaction of the welding inspectors who raised them, ten of the concerns were disputed in the sense that either the inspector expressed dissatisfaction with the Task Force resolution or the matter was pursued during cross-examination. However, none of these concerns presented an uncorrected safety inadequacy, and we therefore find that they have been satisfactorily resolved. (FF 100-102)

Furthermore, we agree with the Task Force that on matters of technical judgment the decisions of the supervisors, Level III inspectors and Design Engineering personnel must prevail over the inspector's opinion. But we also believe, as the Task Force pointed out, that inspectors should not be expected to sign for work which they consider unacceptable, and that the rationale for supervisors' verbal instructions should be explained more fully. In addition, QA and Construction procedures, as well as design specifications, should continue to be clarified to reflect practices which are acceptable to supervision. Several welding inspectors have stated that measures such as these have been implemented and are working to alleviate their concerns (Apps. Exh. 30, Bryant, pp. 4-5; Apps. Exh. 34, Ross, p. 5). (FF 100).

Several other enhancements to the Welding Inspection program resulted from the Task Force recommendations. These include training sessions conducted by Technical Services personnel to explain the intent of procedure revisions, the development of workmanship samples to illustrate acceptance criteria, and the implementation of procedures for documenting technical decisions of QA, Design Engineering and Construction supervision. (FF 101).

(iii) Nonconforming Item Report (NCI) Resolution

Of the eight concerns in this category, six presented actual procedural violations and two presented potential technical inadequacies. All but one of these concerns were resolved to the satisfaction of the inspectors (for a discussion of the resolution of the specific concerns, see FF 106-107). But it should be noted that the resolution of NCIs has in the past been an area of some disagreement, though there is no indication that this ever resulted in compromising the safety of the plant. Problems in this area, however, have been significantly alleviated through procedural changes adopted after the concerns were submitted. Specifically, the procedures have been revised so that NCIs may no longer be discarded once they are initiated, and QA Procedure Q-1 has been revised to provide increased assurance of adequate resolution of NCIs (see Apps. Exh. 30, Bryant, p. 5). (FF 104-107).

(iv) Design Drawings

There were a total of five technical concerns raised in this category. The Task Force identified one actual procedural violation, one potential procedural violation, and one potential technical inadequacy. The principal area of concern related to the proper methods of detailing particular weld symbols on drawings. Additional training has been conducted by Design Engineering to emphasize the importance of clarity in drafting. All the concerns in this area were satisfactorily resolved. (FF 108).

(v) Material Control

This was one of the more controversial areas in that eight of the 24 concerns were either not entirely acceptable to the inspectors who raised them or were pursued by Palmetto during cross-examination. Seven of the concerns presented actual procedural violations, five presented potential procedural violations, and three involved potential technical inadequacies. Among the typical findings in this area were that violations of Material Control procedures are not always documented, that craft may not fully understand the importance and purpose of marking materials before cutting, and that material identifications are sometimes obliterated or made inaccessible prior to inspection. In accordance with the Task Force recommendations, a review of Material Control procedures was conducted, resulting in the clarification

of certain procedures governing the marking of structural steel and piping materials (Apps. Exh. 2, Grier, p. 53, and Attachment 4 thereto). The Board is satisfied that the Applicants have adequately resolved the concerns and have shown that the concerns did not present any actual safety problems. (FF 109-111).

(vi) Construction Procedures

Only five concerns were raised in the area of Construction Procedures. The Task Force identified one actual procedural violation, but otherwise no problems were found in this area. Its findings indicated that craft may need some additional training in QA and Construction Procedures, though in general there was proper understanding and implementation of procedures by craft and QA personnel. (FF 112).

The resolutions of the Construction Procedure concerns are discussed in detail in the findings. There were two concerns which the welding inspectors felt had not been satisfactorily resolved by the Task Force. But their disagreements with the Task Force evaluation related to whether procedures had been violated, not to the technical adequacy of the work (see FF 114). We therefore find that no safety issue remains in this area. (FF 113-114).

The Technical Task Force identified 18 total concerns in this area. It found that five of them presented actual procedural violations, four presented potential procedural violations, and six represented potential technical inadequacies. The problems identified 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. (FF 115).

While most of these concerns were resolved by the Task Force to the satisfaction of the welding inspectors, some questions were raised about a few of the Welding Procedure concerns. The resolutions are discussed in the findings, and it can be seen from that discussion that the technical adequacy of each item has been established. Accordingly, the Board finds that no safety problem remains in this area. (FF 116-117).

(viii) Variation Notice Processing

Variation Notices (VN) are issued by Design Engineering to clarify drawings and make changes needed to facilitate construction. Inasmuch as only one concern was raised in the area of VN processing, this was not a major area of interest. Moreover, that concern did not raise a question of technical adequacy, and the inspector agreed with its resolution. (FF 118).

(ix) QA Procedure

There were a total of 16 concerns in this category. The Task Force found that two of them represented actual procedural violations and eight presented potential procedural violations. In addition, two potential technical inadequacies were identified. Among the typical findings of the Task Force were that NCIs were being initiated on reworkable deficiencies when procedures would allow them to be handled by other methods; that violations of QA procedures were not always documented; and that NCIs which were found to be invalid were not being properly filed. As was explained above, these types of procedural problems have been corrected by changes to QA procedures and the methods of resolving NCIs (see, e.g., Apps. Exh. 2, Grier, p. 57a; Apps. Exh. 30, Bryant, pp. 4-5; Apps. Exh. 34, Ross, p. 5). (FF 119).

While most of the concerns in this area have been resolved to the satisfaction of the inspectors, a few of them were addressed in more detail on the record. The resolutions of these are discussed in the findings. The record indicates that no technical inadequacies or safety problems remain.26/ (FF 120-121).

26/ A few additional technical concerns, not submitted to the Task Force, were raised by the inspectors in their prefiled testimony or during cross-examination. These are dealt with in Finding 122, where it is shown that no problem with the technical adequacy of the work is presented.

(c) The General Problems Associated With the Technical Concerns

The basic problem associated with the technical concerns was the perception of lack of management support by many of the welding inspectors. This was manifested, as the Technical Task Force discovered, in several ways. First of all, the inspectors complained that many times the supervisors failed to explain the rationale and technical basis for their decisions on the acceptability of questionable items. In some cases, supervisors gave verbal instructions to inspectors to approve work that they, the inspectors, believed to be unacceptable (but which was shown to have no safety significance). This problem, however, has been corrected. The Applicants have now implemented a policy that an inspector may not be verbally instructed to sign for an item of work that he or she feels is unacceptable (see Apps. Exh. 2, Grier, p. 57a). Applicants have reinforced the use of its Technical Recourse Program which enables inspectors to obtain a resolution of any disagreements over technical decisions (Apps. Exh. 2, Grier, p. 36; see also Apps. Exh. 29, Burr, p. 5). (FF 100-102).

Secondly, the inspectors appeared to be concerned with the way management handled deviations from procedures. It must be noted, in this connection, that the determination of whether an item of work is acceptable

in spite of a deviation from procedures is a matter for the exercise of engineering judgment. And it is the supervisors and Design Engineering personnel rather than the welding inspectors who possess the necessary engineering expertise. The role of the welding inspector is to identify violations of procedures, not to make decisions involving engineering judgment (Apps. Exh. 1, Owen, p. 17; Apps. Exh. 2, Grier, p. 42; see also Tr. 6375, Rockholt, 11/8/83; Tr. 6758, 6988, 7023 and 7051, Ross, 11/10/83). Moreover, there is a considerable degree of conservatism built into the Applicants' QA Procedures, so that an item that deviates from procedures may still be technically adequate (see Apps. Exh. 2, Grier, p. 42; Tr. 6763, Ross, 11/10/83). Finally, many inspection discrepancies from procedures can now be corrected satisfactorily through the use of the R-2A process (Apps. Exh. 2, Grier, pp. 18-19; Tr. 6006, Bryant, 11/4/83; Tr. 6398, Rockholt, 11/8/83). (FF 104).

The third and final problem area was the handling of NCIs. The inspectors complained of the supervisors' practice of discarding an NCI once it was determined to be invalid. As is explained elsewhere in this decision, this practice was extremely limited. Further, Applicants have now established the policy that an NCI Report (Q-1A) may not be discarded once it has been initiated, and Procedure

Q-1 has been revised to provide increased assurance that NCIs are adequately resolved (see Apps. Exh. 2, Grier, p. 53; Apps. Exh. 30, Bryant, pp. 4-5). (FF 104-107).

On the basis of its review, it was the ultimate conclusion of the Technical Task Force that the concerns raised by the welding inspectors did not affect the safety of the Catawba plant. No technical deficiencies were found to exist in the welded structures and systems at Catawba, and any potential problems were corrected through specific follow-up actions. This was confirmed by each of the welding inspectors who testified.27/ (FF 92).

We also conclude that the welding inspector technical concerns do not reveal any systematic deficiencies in the Applicants' QA program. Procedural violations did occur; however, the number of such violations represented an extremely small portion of the total volume of work performed by the welding inspectors at Catawba. In addition, the procedural violations did not call into question the safety of the plant. Further, we are satisfied that the QA program has functioned adequately to identify problems and to have them corrected. Lastly, the

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27/ See Apps. Exh. 30, Bryant, pp. 6-7; Apps. Exh. 29, Burr, p. 7; Tr. 6575, Cauthen, 11/9/83; Apps. Exh. 57, Crisp, p. 6; Apps. Exh. 28, Deaton, p. 4; Apps. Exh. 58, Gantt, p. 6; Apps. Exh. 56, Godfrey, p. 5; Apps. Exh. 67, Harris, p. 4 ; Apps. Exh. 61, Jackson, p. 5; Apps. Exh. 68, Ledford, p. 5; Apps. Exh. 31, Rockholt, p. 7; Apps. Exh. 34, Ross, p. 7.

program has been enhanced by procedural changes which have been adopted in accordance with the Task Force recommendations. (FF 95).

d. Non-technical Concerns

1. Non-technical Task Force

As a result of the Technical Task Force's initial review of the welding inspector's concerns, it was determined that certain non-technical concerns had been raised. It was determined that a group other than the Technical Task Force should investigate these matters. On February 22, 1982, Mr. N. Alexander was appointed to head a Non-technical Task Force to review and make recommendations as necessary with regard to these non-technical concerns. Mr. D. Powell was appointed to assist Mr. N. Alexander. Both gentlemen possessed expertise in personnel management. (FF 123-124).

The Non-technical Task Force reviewed all the welding inspector concerns and developed a list of the non-technical concerns which it discussed with the Technical Task Force to assure that each concern was considered by one of the task forces. The Non-technical Task Force differentiated between technical and non-technical concerns by characterizing administrative or personnel matters as non-technical. A non-technical concern would

not relate to the actual hands-on performance of work or the resolution of an NCI or other deficiency. (FF 125-126).

Next, the Non-technical Task Force determined that many of the non-technical concerns were similar in nature and accordingly general categories to deal with all the non-technical concerns were established. These categories 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 ategories were treated individually. (FF 127).

The Non-technical Task Force then went about gathering information regarding these non-technical concerns. This effort entailed a review of documents submited by the welding inspectors and, where necessary, interviews of individual welding inspectors to obtain additional information so that the concern could be addressed. Thereafter, the Non-technical Task Force performed its evaluation of information. (FF 128).

The Non-technical Task Force Report was submitted to Mr. Owen on March 24, 1982. The Report made findings and recommendations and drew conclusions with respect to six areas which embraced the general categories originally

identified, as well as the several individual concerns which did not fall within any of the general categories. These areas were:

1. NCI/Resolutions
2. Procedures
3. Work Direction
4. Recourse
5. Qualifications
6. Communications

The essential findings of the Report indicated that there were areas that needed management attention, such as communications, a method for employees to address concerns to management and confusion over the inspectors' role in relation to the craft. (FF 133, 135).

The Non-technical Task Force Report made several recommendations including:

- o Training of supervisors in communications take place.
- o Inspectors have their role and responsibilites explained to them.
- o A "Team Work" program be implemented.
- o Procedures be developed for resolving employee concerns, and communicating answers to their questions. (FF 135).

The recommendations made in the Non-technical Task Force Report were accepted by Duke Power Company management and thereafter implemented. Implementing actions included

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 to the QA organization.

3. Implement a Departmental Employee Recourse Procedure for addressing employee concerns at the lowest possible level.

4. Implement a Departmental Technical Recourse Procedure to allow employees an avenue for airing technical concerns as they arise.

5. Implement a Departmental Harassment Procedure to deal with any employee Harassment problems.

6. Communicate to Inspectors the kind of instruction that can be given to craft personnel by inspectors.

7. Train supervisors and inspectors in communication skills both oral, written and dealing with other people.

8. Implement an employee forum program for QA personnel to establish two way communication.

9. Schedule QA management for the Effective Management Program. (FF 137).

Mr. Alexander testified that the implementation of the Non-technical Task Force recommendations while complete is continuing so as to enhance the communication and skills of the inspectors and supervisors in dealing with the various communication programs. (FF 143).

Palmetto makes various assertions concerning alleged 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. (FF 145).

First, Palmetto asserts that Mr. Alexander, as a result of his responsibilities directly in the area of personnel over the welding inspectors, had a conflict of interest when he conducted the investigation of the non-technical concerns of the welding inspectors. The record reflects 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; that the concerns which were the focus of his investigation were concerns that involved instances of past activities at Catawba; and that with regard to implementing actions, he was simply carrying out the management approved implementation plan. (FF 146-147).

Second, Palmetto asserts that the Management Implementation Plan for non-technical concerns was not implemented and/or was not taken seriously by the QA Department and 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. (FF 149).

In point of fact, the QA Department took the Non-technical Task Force recommendations and the Management Implementation Plan very seriously. The record recounts the extensive steps that were taken to implement the Non-technical Task Force recommendations. The record also

amply supports the position that the Construction Department properly considered the recommendations of the Non-technical Task Force. (FF 150).

Palmetto inquired particularly about the Construction Department's harassment procedure in relation to the QA harassment procedure. Mr. Dick, Vice-President, Construction, responded at several points that the type of alleged harassment experienced by the welding inspectors was included in the Construction Department harassment procedure. Palmetto took issue with Mr. Dick's view. In response to a question by the Board about the Construction Department harassment procedure covering harassment of welding inspectors, Mr. 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.

Mr. 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. (FF 152-153).

Palmetto also examined Mr. Dick with regard to whether the Construction Department had implemented programs to train craft in dealing with welding inspectors similar to the QA Department approach. Mr. 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." (FF 154).

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. All questioned answered affirmatively. (FF 155).

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. Palmetto's assertion rests on the fact that Alexander began his investigative work on February 26, 1982, and concluded with the submission of his report to Owen on March 24, 1982. 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 time frame. (FF 156).

To support this assertion 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, four stated that the Non-technical Task Force had contacted them; four stated that they could not recall whether the Non-technical Task Force had contacted them; and, three had no non-technical concerns. (FF 157).

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 concerning 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. With the exception of those matters discussed below, each welding inspector's non-technical concerns have been satisfactorily resolved. As to those matters which follow, the majority of them have likewise been resolved; however, Palmetto contends otherwise. (FF 158-194).

(a) Harassment

Palmetto alleges that welding inspectors have been harassed by supervision and craft. These alleged harassments take several forms: (1) retaliation related to job activities (i.e., poor job ratings, lack of

promotion/transfer), and (2) intimidation related to job activities (i.e., physical actions by craft, threats). However, prior to addressing the specific allegations it is important to understand harassment and how it relates to the QA contention.

Harassment is an ill-defined concept, not unlike, by analogy, obsenity. As Justice Potter Stewart said about pornography in a concurring opinion in Jacobellis v. Ohio, 378 U.S. 184, 197 (1964):

> I shall not today attempt further to define the kinds of material I understand to be embraced within that shorthand description; and perhaps I could never succeed in intelligibly doing so. But I know it when I see it and the motion picture involved in this case is not that. [emphasis added].

So it is with harassment. There is no clear definition; rather focus is directed to the impact the alleged action has upon an individual and whether such impact, real or perceived, has the effect of hindering an individual (or others) in the proper performance of his job. As such, the circumstances surrounding an incident or action become controlling. Of importance are the facts giving rise to the incident or action and the setting and specific nature of the incident or action.

With respect to the contention at hand, the question the Board must ask itself is whether any harassment existed and if so did it result in systematic deficiencies in plant construction. To this end inquiry must be made

into whether the alleged action kept the individual (or others) from properly performing the assigned tasks at the time in question or subsequent thereto. The other aspect of the contention which the Board must focus upon is whether such alleged action can support a claim of company pressure to approve faulty workmanship. In this regard the role of management and the corrective action taken are of importance.

In sum, the Board must determine whether the alleged harassments call into question the safe operation of the plant. The specific incidents or actions are discussed below.

(i) G.E. (Beau) Ross

Mr. Ross alleges that his conditions of employment and compensation for employment have been adversely affected by his expressing concerns of no support from QA management and their not following procedure. (FF 195).

At the heart of Mr. Ross' harassment allegation are two matters: (1) Mr Ross recent job evaluations wherein he received fair ratings in contrast to prior competent ratings, (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. Each concern is discussed below. (FF 196).

[1] Job Evaluations

In 1982 and 1983, Mr. Ross' job performance was rated as fair. Prior to that time he had received higher ratings. Primary focus at the hearing was placed upon Mr. Ross' 1983 evaluation. However Mr. Ross stated that his supervisor, Mr. Art Allum, agreed that Mr. Ross' 1982 fair rating was in retaliation for raising concerns. Mr. Allum did not make such a statement on the record. Rather, to the contrary, in explaining the basis for both the 1982 and 1983 fair ratings, Mr. Allum stated that Mr. Ross' communication had gone down such 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. (FF 197).

The 1983 evaluation consisted of two parts: an interim and a final evaluation. (FF 202).

The interim evaluation of Mr. Ross was performed by his supervisor, Mr. Allum, in October 1982 for the period April 1982 until October 1982. The interim evaluation reflected, in part, that Mr. Ross'

> 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.

Illustrative areas of improvement were identified in the interim evaluation, including the following:

> 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 quetions 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 a 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.

In explaining the matter, Applicants' stated:

> 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.' (FF 203-206).

In countering this aspect of the interim evaluation, Palmetto Alliance suggested that it was appropriate for Mr. Ross to inform an inspector to file a recourse in a situation where Mr. Ross agrees with his inspector and someone up the line disagrees. 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. (FF 207).

Palmetto Alliance further attempted to characterize this evaluation as a management action taken against Mr. Ross because he would not go along with a management decision he thought was wrong. Applicants refuted this allegation, restating that a supervisor has an obligation to get an answer for his employees and to assure himself that the employee understands the answer. However if he disagrees with the answer, he has the right to file a recourse questioning the technical adequacy of the resolution. (FF 208).

When Mr. Allum informed Mr. Ross of the interim evaluation in January 1983, he characterized Mr. Ross' job performance during the April-October 1982 period as marginal but that at the time of the January 1983 meeting, Mr. Allum had noticed an improvement in Mr. Ross' job performance. (FF 209).

On April 15, 1983, Mr. Ross received his annual evaluation. This evaluation reflected a 2 (fair) rating. (FF 210).

Mr. Allum was responsible for Mr. Ross' annual 1983 evaluation. The evaluation consisted of 10 categories. With respect to four categories Mr. Ross was rated

competent; with respect to three of the remainig six categories Mr. Ross was rated the same as his first line supervisor peers. Accordingly, only three categories require our attention; these areas are:

- o Resolving technical problems concerning quality.
- o Support of management decisions and communications between Mr. Ross, his crew, and craft and Technical Support personnel.
- o Interface: proper communications with other groups and departments. (FF 211-212).

With regard to resolving technical problems concerning quality 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.

Mr. Allum summarized the problem as follows:

> 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]. (FF 217).

Mr. Allum stated that Mr. Ross would infer that he agreed with his inspectors on a technical position and that Mr. Allum 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. (FF 218).

The record reflects that Mr. Ross was instructed to use his judgment and that if he could not answer the question, he was to go get the answer and communicate such to the emloyee rather than simply sending the matter up the supervisory chain. However, contrary to this instruction Mr. Ross 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," rather he would permit the inspector to take the matter up the supervisory chain. (FF 219-220).

Another aspect of this evaluation involved Mr. Ross' keeping concerns in notebooks (which is perfectly permissible) but refraining from bringing them forward for resolution. The record is replete with references, and Mr. Ross had been so instructed, that when an employee is not satisified with management's explanation of a technical concern, he should pursue the matter through

Applicants' recourse procedure; he should not keep matters stored away in a notebook. Mr. Ross alleges that that due to managements response to his concerns he "got tired" of arguing and rather than pursuing concern he would document such in a notebook. However, he never stopped raising concerns and giving management an opportunity to resolve the matter. He simply failed to pursue matters through all the steps available to him. (FF 223).

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." An example of such lack of support involves an incident involving a transfer request made by one of Mr. Ross's crew. The salient facts are these: Mr. Feemster, a welding inspector, not supervised by Mr. Ross, requested a transfer out of welding inspection. This request was approved by management because Mr. Feemster's supervisor said he could afford to let him go. However, when looking at all areas of welding inspection, management realized that it had a need 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?" Significantly, Mr. Ross said he needed Mr. Rockholt and thus the transfer was

not approved. However, rather than informing Mr. Rockholt of this fact Mr. Allum stated that Mr. Ross told Mr. Rockholt that management had approved a transfer request of another crew, but they turned it down in Ross' crew. This resulted in Mr. Rockholt feeling that he was being singled out because management did not approve his transfer request. There is no contradictory evidence in the record on this point. The Board finds that such example, as well as others, do serve as a basis for the fair rating given for this category. (FF 224).

With regard to Ross' interface and proper communications with other groups and departments Mr. Allum stated that Mr. Ross needed to improve communication with craft and technical support personnel. Mr. Allum stated that Mr. Ross would use another inspector to investigate problems and concerns of craft, rather than doing it himself. 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." Again, there was no contradicting evidence on this point. (FF 227).

On April 18, 1983, in accordance with Applicants' procedures, Mr. Ross instituted a recourse of his 1983 evaluation alleging that such was in retaliation for his having raised concerns in January 1982. The matter was initially investigated by 3rd level management who concluded that there had been no retaliation. (FF 228-229).

Palmetto sought to imply that Mr. Ross' recourse was prejudiced because Mr. Davison, Project QA Manager and Mr. Grier were aware of, and particiapted in, Mr. Ross' 1983 annual evaluation and initial recourse (see i.e., Tr. 3862-77, Grier and Davison, 10/19/83). Both Mr. Grier and Mr. Davison denied this charge and explained that they would routinely review and approve employee evaluations, even though they may subsequently be asked to hear the employees' recourse disputes. (FF 230).

Thereafter, on May 12, 1983, Mr. Ross pursued his recourse to Mr. Davison. Mr. Davison investigated the matter. The investigative steps taken by Mr. Davison 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. (FF 233).

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. (FF 234).

[2] Transfer

Mr. Ross alleges that because he has raised concerns he has not been allowed to transfer to QA Operations because Duke wants to keep him on construction until there is no place to go and then lay him off.

Applicants explained that there have been transfers from Construction QA into Operations QA, but that such were not common. Applicants further explained that transfer was dependent upon an assessment of need, availability and seniority. (FF 235).

With regard to the specifics of Mr. Ross' case, Applicants stated that he

> 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.

Applicants explained that only two first line supervisor positions had been filled in Operation QA but such were not in the welding area. (FF 235).

With regard to the prospect that Mr. Ross will be laid off, Applicants emphatically stated that they did not intend this to happen. (FF 235).

Mr. Ross also references a lack of promotional opportunity as another form of alleged harassment. Mr. Grier explained promotions in the welding inspecting organization have not been very frequent because many of the inspectors have been with the Company for a long time and thus have reached the top of their pay classification. Due to Duke's present construction plans, promotional opportunities are very limited. (FF 235).

[3] Additional Considerations

The record also reflects several other factors which have a bearing on an evaluation of Mr. Ross' evaluation. First, the 2 rating does not connote that Mr. Ross' performance is unsatisfactory; rather, it indicates that there are some areas that need improvement. (FF 237).

Second, Mr. Ross' job evaluation has not diminished his stature in the workplace where he is thought of highly by his crew and peers. (FF 238).

Third, Mr. Ross stated that the 18-20 people working 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. (FF 238A)

Fourth, the two other welding inspector supervisors during this, Mr. Deaton and Mr. Ledford, received a 3 rating in 1983. However Mr. Deaton, like Mr. Ross, had raised concerns. (FF 239).

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. (FF 240).

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." 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. Indeed, Mr. Ross himself stated that despite whatever harassment inspectors may have felt, they "did not compromise on their inspections." (FF 241).

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. Mr. Ross stated that despite the harassment he felt, and his inability to work with his supevision, he continued to raise concerns and to document such. He also stated that conditions had improved; that doors of communication are open. (FF 242).

Based on the above facts the Board concludes that the harassment alleged by Mr. Ross to have occurred, to wit, an adverse job evaluation and limitations on promotional and transfer opportunities stemming from his raising of concerns, is a personnel matter which is not cognizable by this Board. Rather a remedy has been provided by Section 210 of the Energy Reorganization Act, 42 U.S.C. §5851, whereby individuals who believe their employment has been adversely affected by virtue of raising concerns may seek relief. At most, the allegation raised by Mr. Ross is limited to an inquiry by this Board as to whether it gave rise to, or is indicative of, systematic deficiencies in plant construction or company pressure to approve faulty workmanship. Simply put, we must determine whether the allegation reasonably calls into question the safety of

the plant. To this question we must answer no. Mr. Ross specifically states that, despite the difficulties he allegedly experienced he continued to perform his job in the highest fashion thereby enabling him to state that based upon the work he performed, the plant was safe. Further, the record reflects that every welding inspector who testified in this proceeding, and those whose testimony was made part of an offer of proof, stated unequovically that they did their job and that the plant was safe. There is no evidentiary basis for us to find otherwise with respect to this allegation. (FF 244).

Such being our ruling there is no need to explain further. However, given the amount of attention focused on this point, the Board believes that it is appropriate to provide our further views, and do so below.

Mr. Ross has worked for Duke Power Company for many years. In 1982 and 1983, he received a fair rating. Prior to his raising concerns he had received higher ratings. Applicants have shown that his 1983 evaluation, which was the focus of the hearing on this matter, was premised upon his performance in ten separate areas. In four of those areas he received a competent rating and we need pursue the matter no further. In six of the areas he received a less than competent rating. However, in three of those areas he received the same rating as all other

first line supervisors and thus a claim of discrimination does not appear to lie. It is to the remaining three that we turn our attention.

With regard to the first item (resolving technical problems concerning quality) Mr. Ross appears close to his crew and vice versa. While this is an admirable quality, it has its drawbacks. In this case the drawbacks gave rise to the 2 rating. Specifically, Mr. Ross does not appear to make decisions that are unacceptable to his crew. If he can show an inspector in black and white that the inspector's concern is ill-founded he will do so. However, in areas where judgment comes into play and Mr. Ross must explain to an inspector that there are other ways of handling matters, he accedes to the inspector, saying that it is the inspectors' prerogative to write an NCI if he thinks such is appropriate and to take it to higher supervision if he so wishes. Such action is contrary to Mr. Ross' proper exercise of judgment, the exercise of which he has been counseled on and recognizes he must employ. Mr. Ross, as a manager, is expected to make decisions; he is not expected to simply pass the matter up the supervisory chain.

When an inspector voices a concern it is Mr. Ross' duty to see that the inspector gets an answer. If necessary, Mr. Ross must take the matter to his supervision and obtain an answer. The answer is then to

be communicated to the inspector. Again the record reflects that Mr. Ross, at times did not go to management to get answers. In those instances where he did seek answers, the record reflects that, at times, such answer was not fully conveyed.

Lastly, in those situations where he or a member of his crew was dissatisfied with management's resolution of a matter, Mr. Ross has been instructed to follow Applicants' recourse procedure. However, the record reflects that contrary to this instruction, Mr. Ross did not utilize the recourse procedure, nor did he inform his crew to do so. Rather, he wrote concerns down in notebook and failed to carry them forward for resolution despite being instructed to the contrary. With respect to the second item (support of management decision) the record is replete with examples where Mr. Ross did not present a management decision in its best light. Some of these examples are more convincing than others. However on the whole the Board concludes that there is a basis for stating that Mr. Ross' managerial skills need improvement. It appears that Mr. Ross has more closely identified with his crew than with management and yet the record reflects that he is a part of management. Again, this close allegiance to his crew works against Mr. Ross' obligation to carry out his managerial responsibilities.

With rspect to the third item (proper communications with other groups and departments) this matter did not receive much attention at the hearing. Applicants stated that it is necessary for Mr. Ross to investigate problems and concerns of craft rather than assigning this function, as he has, to his inspectors. There is no contradictory evidence on this point. Accordingly, the Board finds that Applicants' observations are not unreasonable and can serve to support an evaluation which states that improvement is necessary.

In sum, the Board finds that a basis exists to support the job evaluation. The Board would note that such a finding has involved a weighing of various competing statements; such weighing, in turn, involves the balancing of many factors. In the final analysis the Board finds that Applicants did not give Mr. Ross a 2 rating to harass him or to teach him a lesson; rather, we find such rating is reflective of the need to assure that better communications exist between employees and management.

The Board would be less than candid if it did not state the difficulty it has had in evaluating the allegation of Mr. Ross. Each welding inspector and welding inspection supervisor asked to comment on Mr. Ross' ability spoke highly of him. However, the evaluation in question was not an evaluation conducted b

his crew or his peers but rather by management and accordingly it is proper to focus on Mr. Ross' ability to carry out his managerial goals. We have discussed these goals above and have found that Applicants have not discriminated against Mr. Ross with regard thereto.

Another area over which we carefully deliberated involved the fact that Mr. Ross was the only first line welding inspection supervisor to receive a less than competent rating. However, the facts reveal that of the two other first line supervisors' at the time in question, one of them, Mr. Deaton, raised concerns, and yet the raising of concerns did not result in a fair rating. Further, no allegations were made that any individual who raised a concern was fired or demoted for raising such a concern. These facts coupled with (1) our finding that Applicants' explanation regarding transfer and promotion opportunities is reasonable, and (2) Applicants' statement that Mr. Ross is in no danger of losing his job; that his work had not been totally unsatisfactory; that his work has been improving; and that Duke has no intention of laying him off once the job runs out lead us to conclude that Mr. Ross was not discriminated against for having raised concerns. This conclusion takes on added significance in light of Mr. Ross' statements that things are improving, doors are opening, communication is better.

Lastly, we would make several observations. First, Applicants in the first instance called Mr. Ross as their witness; they made his testimony which contains the various matters discussed above part of their case. Such a forthright approach to a sensitive matter has not gone unnoticed by this Board. Second, the job evaluation in question was rendered only seven months prior to the commencement of the hearing. Given the development of the case at that time it was clear that such action could have an impact on the proceeding. Under such circumstances it appears to the Board that a reasonable person would not unnecessarily inject an issue into the case unless good cause exists. We have observed the demeanor of the principals involved in evaluating Mr. Ross and find them to be responsive and forthright. We also find that, based on their performance of their jobs as set forth in the record, to be reasonable individuals. Accordingly, it is difficult for us to assume that these individuals evaluated Mr. Ross in an unreasonble or irresponsible fashion. Third, there was unrest in Mr. Ross' crew. Under such a circumstance it was reasonable for management to inquire as to the cause. It was also reasonable for such inquiry to closely scrutinize the supervisor of the crew, Mr. Ross, to ascertain his effectiveness in dealing with such unrest. It was upon such close scrutiny that

Mr. Ross was found to be in need of improvement in certain areas: it was found that Mr. Ross' improvement in certain managerial functions would aid in abating such unrest.

(ii) Reep - Jones Incident

The Reep-Jones incident involved QA welding inspector Philip M. Reep (Reep) finding Construction Department welder G.R. Jones (Jones) lying on the floor on his side in the work area with a mat under him. Importantly, Reep found that Jones was not in control of his welding pouch and filler material which were hanging from a pipe in the area approximately 35 to 40 feet away from Jones contrary to Company procedure (FF 245-247).

Upon seeing Jones' welding rods, Reep reached into Jones' pouch, and took the filler material out. Reep's acting lead man also observed the uncontrolled welding rods. Thereafter Reep started the inspections that he had come to perform. As Reep was doing so Jones approached Reep, removed the filler material from Reep's pocket and placed it back in his rod pouch. Thereafter, words were exchanged (FF 248).

Reep continued inspecting. During this time he 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 this pouch some six to seven feet away. Reep continued inspecting. When he finished and was preparing to leave the area Jones came up

beside him and took the filler material out of Reep's hand. Words were again exchanged and Reep left the area (FF 249).

Later, on the same day, Reep reported the incident to his supervisor and initiated an NCI report regarding the uncontrolled filler material. 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 jobs (FF 250).

The final resolution of the NCI report was that the filler material in question was returned to the rod issue station and welder Jones received a violation, i.e., a written reprimand for leaving welding rods uncontrolled. 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. One of the conclusions reached on the harassment charge investigation was that while Jones was 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 (FF 251).

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 (FF 251).

Both Reep and Jones agreed with the final actions taken by their respective departments. NRC inspector Kim Van Doorn concurred that Duke responded appropriately and took corrective action regarding the Reep-Jones incident (FF 252).

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 which occasionally surfaces in a busy workplace. The Board further finds that with respect to the matter before it, neither the quality of construction or the safety of the Catwba plant was in any way affected by this incident. The "uncontrolled" welding rods in question were the correct type of filler material for the specific weld joints being inspected by Reep. Reep stated that there was no evidence that filler material was ever improperly used in welds in the area in question (FF 253-255).

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, performing his job. Furthermore, the record reflects that the incident did not thereafter keep Reep or other inspectors from performing their job. (FF 253-254).

(iii) Jackson - McKenzie Incident

The Jackson-McKenzie incident involved welding inspector Larry S. Jackson (Jackson) and power house mechanic foreman Edward J. McKenzie (McKenzie). At issue was whether one of Mr. McKenzie's crew had been grinding with an improperly marked grinding disk. Mr. Jackson took the disk from pipe fitter Fox and as he was leaving the area met Fox's supervisor McKenzie and discussed the matter. At McKenzie's request, Jackson handed him the disk from his work pouch, whereupon McKenzie looked at it and put it in his own shirt pocket. 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. 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 non-conforming item (NCI) report. Nothing further happened and Jackson then left the work area. (FF 256-259).

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 point. McKenzie then apologized to Jackson and the two men shook hands and returned to work. Later that day Jackson initiated an NCI report regarding the section of pipe on which Fox was working at the time the incident arose. (FF 260).

The next day, Jackson went to the area to place a red NCI tag on the section of pipe upon which Fox had been grinding the previous day. According to Jackson, he asked Fox to point out that section of pipe, which Fox did, and Jackson tagged it. 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. Jackson immediately went to his supervisor and filed a formal harassment charge against McKenzie for verbally abusing him. (FF 261).

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. (FF 262).

After resolution of the NCI report, Jackson's harassment charge was investigated thoroughly. Duke's Vice President, Construction, Mr. 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. The investigation found that Jackson's actions had contributed to escalation of the confrontation and their recommendation that the incident did not result in harassment of Jackson was accepted and endorsed by management. (FF 264).

As a result, McKenzie was counseled about the incident and told that his language was unprofessional. 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. In addition, a verbal reprimand was given to McKenzie's entire crew. (FF 265).

Jackson was also counseled that he had behaved in an unprofessional manner in reaching for the disk and provoking McKenzie. Jackson testified that management took his harassment charge seriously and investigated it seriously. He also testified that the manner in which his charge of harassment was handled would not discourage other welding inspectors from filing harassment charges if the situtation called for it. He also testified that this incident did not discourage him from doing his job. (FF 266).

This Board does not resolve personnel disputes. However, 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. Moreover, Mr. Dick testified that there was "not safety significance in using the wrong disk," and that it was just a workmanship matter. 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. (FF 267).

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. 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. 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. (FF 268-269).

(iv) Harris-Mullinax Incident

The Harris-Mullinax incident involved welding inspector Lindsay H. Harris, Jr. (Harris) and steelworker foreman Thomas H. Mullinax (Mullinax). Mr. Harris was working in the area where Mr. Mullinax's crew was engaged in fitting-up the upper personnel airlock in Unit 2 reactor building. Mr. Harris 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. Harris told the crew they had not properly preheated the plate and to "get the preheat up." 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. (FF 270-273).

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. 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." (FF 274).

The next day Mullinax was called to a meeting with the Job Superintendent who had called the steelworker craft superintendent in from vacation to this meeting. Mr. Mullinax was reprimanded and told him that this type of statement from him t any inspector would not be tolerated; that he was responsible 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. (FF 275).

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 aggrevated and might take action. Mullinax also apologized to Harris and asked him to put the matter behind them. Harris also testified that the airlock joint was properly fit-up and inspected in accordance with procedures and that the incident did not prevent Harris from doing his job. (FF 276).

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. 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." Despite the incident, Harris testified that he and Mullinax had worked together often and without

problems since. 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. (FF 277).

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. 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. (FF 278).

At this juncture, the Board must point out that former welding inspector Harry F. Langley (a Board in camera witness) also claimed to have been involved and harassed in the incident between Mullinax and Harris. However, we find it very difficult to mesh Langley's version of the incident with the accounts given by any of the principals involved. It is clear from the record that Harris and Langley worked together briefly in early 1978 inspecting the lower airlock in Unit 2 reactor building. Various Applicants' witnesses testified they were not aware of any involvement of Langley in the Harris-Mullinax incident which occurred months after Langley left Duke's employment. However, even if the Board were to accept

Langley's account as accurate, the incident has little, if any, significance. This is so especially 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. (FF 279).

In summary, the Board finds that the incident amounted to little more than a regrettable, but in the context of the situation, understandable, verbal exchange. Harris himself testified, "He (Mullinax) wasn't really threatening my life or nothing." 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. (FF 280).

(v) Boyce Cauthen Incidents

Mr. Boyce Cauthen raises three harassment concerns. One concern, which involved Mr. Reep, has been discussed. (See § III.B.1.f.(1).(b)). (FF 281).

The first of the two remaining concerns involved harassment from other inspectors. While conducting a final inspection of a system (M4-I inspection) some

inspectors under Mr. Cauthen's control found welds which did not meet the L-80 procedure and they were NCIed. The other inspectors who had previously approved the welds gave Mr. Cauthen "a hard time" for turning them in. Mr. Cauthen stated he felt he was just doing his job. (FF 282).

The second harassment also involved M4-I inspections and the failure of a weld to meet the L-80 procedure. The inspector who originally approved the weld which Mr. Cauthen NCIed verbally abused him. (FF 283).

Despite these incidents, however, Mr. Cauthen testified that such did not keep inspectors from doing their job. They continued to write NCIs on all nonconforming welds. He testified that he thinks the plant is safely constructed in those areas he has checked. Additionally, Mr. Cauthen has heard of no substandard work existing uncorrected in other areas. (FF 283).

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. (FF 284).

(vi) Deaton Incident

The Deaton incident occurred during 1977 while welding inspector Billy Wayne Deaton (Deaton) was proceeding on Interstate 77 enroute home from work one day with several other people, including a steelworker foreman

in the car. 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. Deaton recognized the man holding the rifle as a steelworker (Shires) whose work he had to continuously reinspect. (FF 286-287).

The next day Deaton reported the incident to his supervisor, G.E. Ross, and went to work. Apparently, at about the same time, Shires had gone to his foreman, T.H. Mullinax, and asked Mullinax "to terminate him upon request." The matter went to Project Manager Doug Beam who, after considerable discussion, allowed the worker to quit rather than be terminated. Beam was concerned that he had insufficient evidence of an incident which took place away from the job site to involuntary terminate the worker. (FF 288).

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. NRC inspector Kim Van Doorn was of the opinion that Duke took appropriate corrective action in response to the rifle pointing incident. (FF 289).

The Board is inclined to accept Deaton's statement without reservation, especially when it is noted that Deaton's prepared testimony, which raised other concerns, failed to include any mention of this incident. (FF 289).

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. (FF 289b).

(vii) John Bryant Incidents

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 that he was to handle them in a professional manner. (FF 290).

The treatment by management of the scaffold incident was cited as an example of management siding with the craft. However, under cross-examination by the State of South Carolina, Mr. Bryant testified that incident was satisfactorily resolved by management. 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. (FF 291).

The second incident involved a threat by a general foreman to have him removed from the auxiliary building. 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. (FF 292).

With regard to the impact of these harassment incidents and management response, Mr. Bryant stated that such did not affect his job performance nor the performance of other welding inspectors. On the basis of the above, the Board concludes that these matters do not call into question the safety of the plant. (FF 293).

(vii) John Rockholt Incidents

Mr. Rockholt's personal experience with instances of alleged harassment is limited to two specific incidents. The first involved 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. 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. (FF 295).

The second incident involves Cindy Crimminger's appointment to a surveillance team. 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. Rockholt acknowledged that he had no knowledge of Ms. Crimminger's ability to do the job. Rockholt gives this as an example of intentionally deteriorating the QA program by using people who do not have qualifications. On redirect examination, Rockholt acknowledged that the intentional deterioration of QA did not result in substandard workmanship on his part. (FF 296-297).

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. Further, Mr. Rockholt stated that such was "not of a nature that would have presented anything that would be a detriment to nuclear safety." (FF 298)

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

(ix) Burr-Ledford Incident

This incident involved a conversation between welding inspector William H. Burr (Burr) and his supervisor, Stanley W. Ledford (Ledford). The substance of the 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." Burr understood this message to be that his future advancement with Duke would be limited, if not non-existent, if he did not "ease-off." (FF 300-304).

Ledford, on the other hand, does not recall telling Burr to "ease-off the craft." Rather, he 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.

According to Ledford, when Burr found anything "borderline," he would go and get someone to verify whether it was right or wrong. In Ledford's opinion, Burr was not confident enough of his own decisions although he was capable of making them. 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. Ledford also remembers telling Burr not to be afraid to make decisions on his own. (FF 305-306).

As it turned out, 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. Burr stated that the part of the Catawba plant he had been directly involved with was in full compliance with all codes and laws. He also believed that his job and employment opportunities had not been affected by the incident. (FF 307).

After reviewing all the evidence concerning this incident, the Board finds that this incident amounts 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. (FF 308).

(b) Employee Access to the NRC

Palmetto alleges that Duke's supervision discouraged welding inspectors from voicing their concerns directly to the NRC by threatening or otherwise warning welding inspectors of possible retaliatory measures by the Company if they circumvented Duke's established procedures. (FF 310).

Duke's stated corporate policy regarding access to the NRC, which is contained in its April 25, 1977 letter signed by R.L. Dick, is set forth below:

> (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. (FF 313).

The above language came directly from the NRC in an April 6, 1977 letter from Mr. Volgennau. (FF 314).

Duke's interpretation of the NRC letter, and Duke's corporate policy, is that employees are encouraged to bring concerns to the Company but this did not mean employees were not free to go to the NRC first. (FF 315).

The Board sees nothing wrong with the position that the NRC encourages employees to bring concerns, in the first instance, to the company, so as to give the company an opportunity to resolve the matter. To hold otherwise, would be to prejudge company attitudes toward employees who raise concerns. This we will not do. The linchpin to

our position is the additional recognition that an employee has the right at anytime of going to the NRC, be it in the first instance, during his resolution of the matter with the Company or after the Company has rendered it views. With this in mind we turn to the primary instances of alleged impropriety in this regard. (FF 317).

In October of 1980, Mr. Davison, who at the time was Senior Quality Control Engineer had believed that inspectors were possibly going to the NRC on non-safety related issues, where the NRC had no jurisdiction, as a result of a meeting with the resident NRC inspector. Thereafter Mr. Davison held a series of meetings with welding inspectors at Catawba to inform them of Duke's recourse procedure and its application to any concern, technical or nontechnical. Davison further advised the welding inspectors that while they had a responsibility to follow the recourse procedure such in no way would replace their right by law to go to the NRC at any time. (FF 318-320).

Welding Inspector Burr's impression of the meeting was that welding inspectors were being reprimanded for the fact that they had brought concerns to the NRC and not to Duke. The Board examined Burr's recollection of the meeting he had with Davison and determined that Burr felt

he could go to the NRC without going through channels and in fact he had done this without any adverse effect on his job. (FF 321-322).

Other welding inspectors who testified and recalled meeting with Davison in October of 1980 stated that they did not have the sense that Davison reprimanded them or was advising them that they could not contact the NRC directly. Those welding inspectors who testified but could not recall the meeting with Davison or did not meet with Davison had the perception that they were not prohibited or otherwise limited from going directly to the NRC even though Duke had expressed the desire for them to approach Duke first. (FF 323).

The Board concludes that although Burr in fact may have had an overall opinion based upon his meeting with Davison that Davison was reprimanding him for not bringing concerns to Duke before approaching the NRC, the balance of welding inspectors who recalled meeting with Davison do not share Burr's opinion. To the contrary it is apparent that Davison imparted to the welding inpectors Duke's concern that Duke's procedures should be utilized but that direct access to the NRC was nonetheless open to them if they so desired. More importantly, with respect to the issues in this case, the record does not support the claim that Davison's remarks created the impression that Duke

would take retaliatory measures against employees who went directly to the NRC; no retaliation has been demonstrated nor has any compromise of safety been evidenced. (FF 324).

On January 27, 1982, Mr. W.H. Owen met with Catawba welding inspectors to encourage them, among other things, to express all their concerns to a Task Force that had been appointed to investigate such. (FF 325).

Palmetto asserts that during the meeting with the welding inspectors which had been recorded, Owen in responding to a question posed by one of the inspectors about their ability to contact the NRC without fear of retaliation essentially stated that retaliation by Duke could not be ruled out if the welding inspectors went directly to the NRC. In response to that question Owen stated that Duke would not rule out the possibility of appropriate action depending upon the circumstances of the case. (FF 327).

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 recourse procedure that is provided. (FF 333).

The Board examined Owen on what his perception was of the Duke's policy on access to the NRC. Owen, in response to a Board question that

> Q . . . 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 That's the policy of the Company. That's my personal philosophy, and I support it, and believe I have always. (FF 335).

The Board in reviewing the witness' testimony and exhibits concludes that although Mr. Owen was not perfectly clear in his response to the welding inspectors question about possible retaliation to employees who went to the NRC first, the Board is satisfied that the weight of the testimonial evidence by Owen supports the conclusion that Duke's policy on access to the NRC as reflected in Owen's meeting did not include retaliatory actions by the Company. This position is supported by testimony of various welding inspectors. (FF 336).

Mr. Rockholt, the inspector who raised the question, stated that he feared possible retaliation. During cross-examination by Palmetto Rockholt stated that he had believed for a time Duke policy was that employees should raise concerns with Duke before going to NRC but that now he is aware they can go to NRC at any time. The Board asked Rockholt what message he got from Owen's remarks and Rockholt said the impression was that it would be better if he didn't go to the NRC. However, on redirect Rockholt responded to a series of questions to the effect that Owen never said we could not go to the NRC although it would be better if we went through the 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 disciplined. (FF 329).

Vernon Godfrey testified that he came away from the meeting feeling that he would be free to go to the NRC without fear of retaliation. (FF 330).

Mr. Ross stated that he left the Owen meeting with the impression that there might be punishment if employees did not go to Applicants first, however he stated further that he believed that Owen's comments did not come out the way he intended. Further questioning of Ross by the Board disclosed that Ross thought Owen meant to convey that Duke would prefer employees discussing concerns in-house first. In addition, 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. Ross further stated that he does not think Applicants would retaliate against anyone who went to the NRC. (FF 331).

Mr. Crisp, a welding inspector at Catawba, 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 them. 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 11/28/83). (FF 332).

We note that there were some employees who did not understand completely the Company's policy; some communications were perhaps not as clear as they could have been. However, based on the weight of the evidence we have concluded that Applicants' policy is that an employee may go to the NRC at any time, and that there will be no retaliation for an employee who does go to the NRC. We find that this allegation does not raise a question with respect to the safety of the Catawba plant. (FF 337).

(c) Lack of Management Support/Communication

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. 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 procedures to handle discrepancies.

Palmetto contends that these concerns not only reflect a lack of support for welding inspectors, but reflect significant and systematic breakdowns in the QA 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. 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 reportble to NRC; and

C. Improper processing of non-conforming item reports (NCI's), including the widespread practice of 'vebal voiding' NCI's, and improper overturning of NCI's by Construction supervision. (Tr. 1862-64, 1867, Guild, 10/5/83).

Applicants characterized these concerns as the result of a failure of communications within the QA Department, particularly in the area of NCI resolution. 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. The welding inspectors agree that their concerns do not reflect a breakdown in the QA program which would result in an unsafe plant, but reflect their belief that they did not receive the necessary support they needed from QA supervision to require strict adherence to procedures.

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. 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 critria set forth in Appendix B. However, Palmetto's allegations essentially challenge Applicants' compliance with Criteria X, XV, and XVI, which govern inspection of 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.

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 CFR Part 50, App. B).

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. 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.

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.

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 instrutions on how to correct the 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.

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, 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, 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 in Form R-2A is reviewed by Construction and QA under this same criteria to determine if it should be upgraded and handled using Procedure Q-1. (Apps. Exh. 2, Grier, pp. 18-19; Apps. Exh. 14, Davison, pp. 23-24; Apps. Exh. 6, QA Manual, Procedure R-2; Tr. 2079-80, Grier, 10/6/83).

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 hold point; or (e) which was discovered outside of a preplanned inspection under circumstances where there is no planned inspection which would check for that type discovery.

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 CFR Part 50, App. B). The process established for resolution of NCIs is set forth in Procedure Q-1.

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," with instructions necessary to implement the disposition. The NCI is also evaluated at this stage for reportability under 10 CFR §50.55(e) and 10 CFR Part 21.

Next the NCI receives a technical review for clarity, completeness and proper technical content by an engineer within the department providing the disposition.

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 Engineeirng 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.

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 CFR Part 50, App. B).

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.

If there is a need for significant corrective action, then the provisions of Procedure R-6, Significant Corrective Action, are carried out. Under the R-6 procedure, a designated individual in QA Design and Construction is responsible for determining the required corrective action. 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.

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. These trend reports also reflect generic or repetitious problems that require significant corrective action.

Applicants are required by 10 CFR §50.55(e) and 10 CFR Part 21 to report all significant deficiencies to the NRC. QA Engineering assigns all NCI's to the appropriate department to determine if the item is reported to NRC.

With regard to the 4 general issues raised by the welding inspectors verbal voiding was prominent. This allegation involved the situation wherein a non-serialized NCI was rejected by QC supervision and not maintained as a part of Duke's QA records. We are unable to find that this practice violated procedures. In this regard we note that the NRC resident inspector testified that it is appropriate for a supervisor to invalidate an NCI based on the supervisor's judgment that the NCI does not represent a deficiency or violation of applicable procedures. The basis for the supervisor's decision should be communicated to the inspector. The invalidation of NCI's based on technical and professional judgment is not a violation of NRC regulations. (FF 339, 376).

Regardless, we need not reach the question, except to say that in our view the procedures permitted the handling of the manner in either way. Rather, this finding is based upon, among other things the fact that the Board was particularly concerned about this assertion and carefully examined Applicants' QA management witnesses, and the welding inspectors on this subject. The sum and substance of the responses is that about 20 NCI's per year which could be considered verbally voided. This would be approximately 200 voided NCI's, while more than 17,000 NCI's have been processed and resolved during construction of Catawba. (FF 377).

With regard to procedure interpretations by QA supervision the welding inspectors expressed concerns of lack of support from QA supervision in situations where the inspectors perceived that supervisors interpreted QA procedures to allow deviations from the procedures as written. The evidence does not support such a finding. 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. Further, there is no indication that management was in error in its interpretation of procedures in regard to the acceptance of work. At most, there was a difference of opinion. (FF 356, 382).

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 supervisions role of obtaining resolution to those discrepancies to assure the quality of construction at Catawba.

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 to NCI's. In each instance discussed herein, the condition under consideration was found to be safe. The problem again was the lack of communication of this fact. (FF 390-394).

As to the last matter under consideration (the use of Procedure R-2 and other methods to resolve discrepancies), 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. As the Staff explained, the type of documentation and review associated with an NCI is reserved for significant conditions adverse to quality. (FF 395-396).

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. This did not, however result in the acceptance of deficient work, a

failure to document deficiencies, or a reduction in the documentation available for review by the NRC. (FF 397-398).

In sum, based upon the evidence in the record we conclude that, while matters could have been handled better by both QA management and the welding inspectors, there has been no systematic breakdown in the QA program in the plant, nor has there been company pressure to approve faulty workmanship.

d. Construction Pressure

Allegations were made that construction pressures resulted in a diminished emphasis on quality assurance, raising the question whether considerations of quality assurance were forced to bow to considerations of cost and schedule. (FF 37).

This issue was raised in the direct testimony of two welding inspectors, who stated in their direct testimony that QA gave in to construction pressure and that QA management supported the craft as opposed to the inspectors. Upon examination, however, it was determined that one inspector referred to such pressure only in a general sense, and that he was never told or pressured to perform his work in other than an acceptable manner. The second inspector had in mind support by his management in specific instances of harassment which are dealt with elsewhere in this opinion. (FF 37-38).

There is abundant evidence in the record that the QA program did not bow to construction pressures. Mr. Owen, the Company's Executive Vice President, Engineering and Construction, testified that Mr. Grier, the Corporate QA Manager, was not in any way responsible for the cost or schedule of the Catawba project. Mr. Owen further stated that he shielded QA from any unnecessary pressures and saw to it that the QA Department had sufficient manpower to perform its mission. Mr. Dick, Vice President - Construction testified that craft was instructed not to interfere with inspectors in the performance of their jobs. Mr. McKenzie testified that Mr. Davison consistently backed his inspectors, and Mr. Barnes testified that, at the Catawba project welding was not on the critical schedule path. 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 completion of the project. Finally, we note that on the foreman override issue, craft foreman consistently sacrificed quantity for quality. We conclude that the issue of construction pressure does not raise a question with respect to the safety of the plant. (FF 40-43).

3. The McAfee/Hoopingarner Concerns

Palmetto presented Messrs. McAfee and Hoopingarner, who testified regarding incidents they allege occurred during their employment at the plant which cause them to

question the quality of construction at the facility. Several of these issues deal with specific technical matters. Some deal with more subjective matters, such as allegations of harassment, which are related to the broader areas in Contention 6. Specifically, Mr. McAfee alleges that he was discouraged from writing NCIs. Mr. Hoopingarner alleges that he was ordered not to go to the NRC, was harassed for expressing complaints, and ultimately was fired from his job for expressing concerns to the NRC. We discuss briefly each of these matters in turn.

We note, however, before we start, that neither of these gentlemen has a professional engineering background. Consequently they are not qualified to, nor in most instances do they, express opinions as to whether these incidents which they allege occurred have a potential adverse effect on the safe operation of the facility. Indeed, in the majority of instances they are simply silent on the ultimate question which is at issue - whether such incident affects safe operation of the facility.

1. McAfee and Hoopingarner Allegation Concerning Protection of Electrical Cables

Messrs. McAfee and Hoopingarner alleged that in many instances electrical cables being pulled at Catawba were improperly stored, such as being placed on the floor in water with boards on them with people walking on them. (FF 428-29).

Both Applicants and NRC Staff presented evidence on the issue. Applicants explained their procedures for protecting electrical cable used at the plant after it had been pulled and why, even assuming some cable were subjected to the conditions alleged by intervenors, such would not have an effect on safe operation of the plant. Applicants also explained that the incidents alleged by McAfee and Hoopingarner were not widespread. The NRC Staff generally supported Applicants' position, pointing out that Mr. Hoopingarner's concerns relating to electrical cables included such things as power cords and welding cable and hoses. The Staff also confirmed that the practices alleged by Messrs. McAfee and Hoopingarner were not widespread at the site. (FF 430-37).

Mr. McAfee was able to point to only one instance of improper storage of safety-related cable, which he acknowledged was quickly corrected. Mr. Hoopingarner, in three different site tours with two different NRC

inspectors, was able to point out to NRC inspectors only one instance of improper storage of safety-related cable. (FF 433-35).

The Board finds that the allegations of Messrs. McAfee and Hoopingarner respecting improper storage of electrical cables will not adversely affect safe operation at the plant. (FF 438).

2. Hoopingarner Allegation Concerning Quenching of Welds

Mr. Hoopingarner alleged that he had seen a welder, who he identified, quench a weld on a stainless steel pipe with a wet rag. (FF 439-40).

Both Applicants and the NRC Staff presented evidence which showed the welder denied that the incident had occurred, and the Staff testified that as a result of their investigation they were unable to substantiate any quenching of welds at Catawba. (Ff 441-42).

Both Applicants and Staff presented evidence to show that, even if the incident did occur, it would have no safety significance; at most there would have been a minor violation of procedures. (FF 443).

The Board finds that the allegation of Mr. Hoopingarner regarding the quenching of a weld presents no question with respect to safe operation of the plant. (FF 444).

3. Hoopingarner Allegation Concerning Welding on Unsafe Scaffolds

Mr. Hoopingarner alleges that because scaffolds on the job site were improperly built, welders were unable to weld properly when standing on them. He alleges that he was told by welders that they "filled a gap" while on these scaffolds, which he cannot define but believes means the welds are improper. (FF 445).

Both Applicants and Staff presented evidence on this issue. Applicants noted that Mr. Hoopingarner had not provided any information as to specific welder or welds, nor had he defined "fill the gap." Applicants stated their belief that "fill the gap" was simply a way of the welder expressing that he completed his work. (FF 445).

The majority of Applicants' evidence went to explaining the inspection processes by which it is assured welds meet the appropriate criteria, as such is the best assurance that, regardless of the conditions under which the welder works, the welds are acceptable. In addition, this record contains voluminous information respecting these processes. (FF 448).

The NRC Staff conducted an investigation of the allegation, and concluded that it was without merit. The Staff's investigation disclosed that, after discussions with craft workers, QA inspectors and safety assistants and supervisors, no statements were made that supported

the allegation. To the contrary, the record reflects that scaffolds are built to satisfy craft workers and inspectors, and job duties do not commence until the worker is satisfied that the work platform is safe and adequate for the job requirements. (FF 446-47).

The Board has concluded that because welds are subject to varying degrees of inspection to determine their adequacy, and because the evidence shows that work platforms are built to satisfy the worker, this allegation does not raise an issue which affects safe operation of the plant. (FF 449).

4. Hoopingarner Allegation Regarding Flooding In The Diesel Generator Room

Mr. Hoopingarner alleges that the diesel generator rooms at Catawba were flooded. (FF 450).

The incident did occur, and the Board's focus is not on why the incident occurred (other than to assure ourselves it was not the result of unacceptable construction practices). Rather, our focus is whether the corrective actions taken are adequate to assure that this incident will not have an adverse effect on the ability of the diesel generators to function properly. Both Applicants and the NRC Staff presented witnesses to testify as to the cause of the occurrence and the corrective actions taken. (FF 451-53).

Applicants presented a panel of witnesses. The panel included the Company's chief electrical engineer, who personally directed the corrective actions taken, and two representatives of the diesel generator manufacturer, Trans-America Delavel (TDI). One of these gentlemen is manager of TDI's Customer Service Department, responsible for assuring that diesel engines are properly installed and functioning; the other was TDI's field service representative who was assigned to the Catawba site and personally directed the clean-up and refurbishment activities associated with the diesel engines in this incident. The remainder of the panel consisted of employees of the Company who are mechanical or electrical engineers and were personally involved in supervising or inspecting clean-up and refurbishment activity. (FF 457-64).

Applicants' panel explained in detail how each piece of equipment either directly or potentially affected was identified and either replaced, repaired, or refurbished so that the diesel generators and associated equipment were returned to "like new" condition. (FF 465-66, 468).

The NRC Staff presented two witnesses who explained the actions they took to assure themselves that in fact the Company had adequately identified all equipment which

either was or could be affected by the flooding and had taken proper corrective action to assure that the diesel generators would function properly. (FF 467, 469-70).

There was some dispute over the cause of the incident; however the record reflects that proper protective measures were in effect; that the status of construction was such that yard grading and drainage were not completed; that because of construction activity certain manhole covers were necessarily left open; and that the rainfall which precipitated the event was unusually heavy. (FF 454-56, 471).

The Board concludes that the occurrence itself does not reflect improper or inadequate construction practice on the part of Applicants. The Board further finds that the steps which Applicants took to identify and refurbish the affected or potentially affected components are adequate to assure that the diesel generators will properly perform their intended function. The Board is comforted by the fact that Applicants' diesel generators are in the testing process and one (the one flooded to the deepest level) has run more than 400 hours and the other has run more than 200 hours. The Board concludes, based on the above, that the incident of flooding of diesel generators at Catawba will have no effect on the safe operation of the plant. (FF 465-72).

5. McAfee and Hoopingarner Allegations Concerning Rain In The Control Room

Messrs. McAfee and Hoopingarner allege that while they were at Catawba, rain leaked through the roof of the control room and soaked the control boards. (FF 473).

The incident did occur. Both Applicants and the NRC Staff presented testimony which addressed the cause of the incident and explained the measures Applicants took to determine the extent of the damage, and correct such damage. (FF 474-75).

The Applicants' testimony demonstrates that the incident was thoroughly assessed to see if damage had occurred, and appropriate corrective actions were taken. Because the control room was in the early stages of completion, the majority of the switches (all of which were sealed) were installed on the panel but were not wired. Moisture was only on the exterior of the panels. Corrective action consisted of drying off the control panels and installing space heaters in the room to bring down the level of humidity. Following that, a number of switches were randomly selected for testing. None of the switches tested showed any signs of damage. (FF 476-77).

As Applicants noted, in the five years since this incident occurred, these switches have been used and tested numerous times. In addition, prior to operation the control boards will be checked and tested numerous

times in pre-startup activities. To date, during five years of use, no malfunctions attributable to this incident have been noted. The Staff's testimony on this point is supportive of Applicants. (FF 478-79).

A good bit of evidence was adduced regarding the cause of the event. Both Applicants and Staff take the position that there was an extremely high level of humidity which, when coupled with the fact there were no environmental controls in the room, caused condensation to form on the control panels. Messrs. McAfee and Hoopingarner, on the other hand, state they believe rain pooled on the roof of the control room and soaked through the ceiling. This question is immaterial so far as we are concerned. We agree with the Staff, and find that there is no evidence the incident occurred because of sloppy construction practices. We further find that Applicants took proper corrective actions following the occurrence, conducted a sufficient investigation to determine no damage occurred, and the history since that time bears out that fact. (FF 474, 479-83).

We find that this incident does not raise an issue with respect to safe operation of the facility. (FF 483).

6. Hoopingarner Allegation Regarding Storage Of Rebar and Piping

Mr. Hoopingarner alleges that rebar and piping were improperly stored. His allegation was based on three separate events: (1) rebar touching the ground in the rebar storage area (2) three sections of stainless steel piping touching the ground at the piping fabrication shop; and (3) sections of piping lying on the concrete floor in the auxiliary building. (FF 484).

Both the Applicants and the Staff presented evidence on this matter. The Applicants discussed the general standards applicable to storage of such items, and explained how, in light of the inspections and cleaning which would be done before these items were installed or used, the instances complained of did not present a question with respect to unsafe construction. The NRC Staff, who had accompanied Mr. Hoopingarner on a tour of the site while he pointed out what he alleged were instances of improper storage, found only one example of such storage in violation of procedures; though a violation was issued for that incident, it was of no safety significance. (FF 485-87).

The evidence also is clear that there was no pervasive violation of storage requirements at the site. There were enormous quantities of construction materials on site; it is inevitable that some of these materials

will not be handled properly. However, procedures are in place to assure these materials will be fit for their intended purpose. (FF 488).

The Board finds that this allegat ~es not raise a question with respect to safe operation of the facility. (FF 488).

7. Allegation Regarding Pouring Concrete In The Rain

Mr. McAfee alleges that while he was a concrete pre-pour runner he witnessed concrete being poured in the rain with no protection. He admits that he was not a concrete inspector but believes there was too much rainwater on top of the concrete. (FF 489).

Applicants and the NRC Staff each put on evidence in this matter. The Applicants' evidence discussed the standards applicable to pouring concrete at the site, and is corroborated by that of the Staff. On cross-examination Mr. McAfee was able to identify the pour in question as Pour W83, a reactor building shell wall pour made January 25, 1978. A quality assurance surveillance was performed on that pour. The surveillance records show that adequate protection was taken to protect against rain and that the pour was made in accordance with all applicable procedures. (FF 490-93).

The evidence shows that Applicants have procedures for pouring concrete in the rain, that protection is routinely employed should concrete be poured during rain and, as regards the pour in question such procedures were followed and such protection provided. (FF 491-93).

The Board finds that this allegation does not present a question with respect to safe operation of the plant. (FF 494).

8. Allegation Regarding Waiver of QA Requirement On Concrete Pours

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. (FF 495).

The Applicants and the NRC Staff both presented evidence in support of their position on this allegation. Mr. McAfee was unable to identify the particular pour in question, its location, and/or the persons involved. Therefore it was necessary for the Applicants' and the Staff to inspect the concrete pour records for each pour made between January 1, 1978 to March 30, 1978, the period during which Mr. McAfee was a prepour runner. (FF 495-96).

The Applicants presented testimony which discussed in detail the means by which it is assured that the applicable procedures and requirements are met during concrete pours. Such is done through sign-offs on the proper forms. The examination of the records of the pours

by both Applicants and NRC Staff disclosed that all waivers on safety-related pours were properly granted. (FF 497-99).

Applicants explained the process for waiving requirements on a non safety-related pour, and Applicants' witness testified that in his view Mr. McAfee had witnessed a waiver of a requirement on a non-safety related pour. The Staff opined that Mr. McAfee could have witnessed either a waiver done in accordance with applicable procedures, on a safety-related pour or a waiver of a requirement on a non-safety-related pour. In any event, the evidence shows that all QA waivers on all pours were properly granted. (FF 498-501).

The Board finds that this allegation does not present a problem with respect to safe operation of the plant. (FF 502).

9. Allegation Regarding Instructions Not To Write NCIs

Mr. McAfee alleges that while he was a certified QC inspector he was told not to write NCIs reflecting construction deficiencies. Significantly, Mr. McAfee, while asserting that he was told not to document non-conforming items as NCIs, does not state that he was told to ignore such items, only that he was told to have them corrected by other means. (FF 503).

Both Applicants and the NRC Staff presented testimony on this issue. Applicants explained in some detail the four methods of documenting and correcting discrepancies in construction that are followed at Catawba. There is also voluminous evidence in the record on this matter. Mr. McAfee discusses a number of incidents in which he alleges that his supervisor suggested he should discuss matters with the craft foreman, rather than write an NCI, to have the craft correct the defect. Applicants' testimony demonstrated that each of those instances was properly handled by a means of documenting and correcting discrepancies in construction other than an NCI. (FF 504, 506-11).

Mr. McAfee testified that to his recollection, as a result of being discouraged from writing NCIs, he wrote none during the short period of time he was an inspector. However on cross-examination when confronted with NCIs he had written, as well as an M40C, Mr. McAfee acknowledged he had done so. It is significant that Mr. McAfee does not allege he was told not to document deficiencies, but merely that he was told to document and/or resolve them by the methods other than NCIs. (FF 503-05, 508).

The Board finds that McAfee being told not to write NCIs in lieu of other means of handling matters presents no question with respect to the safe operation of the plant. (FF 512-13).

10. Hoopingarner Allegation Concerning Welding Inspector Harassment

Mr. Hoopingarner alleged that a welding inspector named Phil Edwards was harassed for rejecting a weld, for which the welder foreman almost got him fired. (FF 514).

The NRC Staff investigated this incident and spoke directly with the inspector, who stated that he was not intimidated by criticisms from craft and was not threatened with firing. Mr. Hoopingarner himself acknowledged that this incident, even if it did occur, would not affect safety. (FF 515).

We find that this allegation does not present a problem with respect to safe operation of the plant. (FF 516).

11. Hoopingarner Allegations Concerning Orders Not To Talk To The NRC, Harassment, and Wrongful Termination of Employment

Mr. Hoopingarner alleges that, because he insisted on raising complaints to his supervision, site management, the NRC and the Occupational Safety and Health Administration he was systematically harassed by his supervision and site management and ultimately his employment was terminated. Mr. Hoopingarner states that the harassment consisted of his supervision ordering him not to talk to the NRC, of his being ordered to stop complaining about safety concerns to supervision and site management, of his being transferred to the cooling towers

against his will, and of his crew being required to clean up the rebar yard. Finally, Mr. Hoopingarner contends, when he would not stop raising concerns to the NRC, among others, his employment was terminated in retaliation. (FF 517-21).

All parties presented evidence on these issues. With respect to the alleged order to Mr. Hoopingarner not to talk to the NRC, there is some dispute over what was said to Mr. Hoopingarner. However, the record shows that whatever was said, it was clarified quickly. Most importantly, it did not affect his ability to go to the NRC, and we find the alleged order to Mr. Hoopingarner is not symptomatic of an attempt by Applicants to pressure its employees not to go to the NRC. (FF 521-22, 526, 529-44).

With respect to the other allegations of harassment by Mr. Hoopingarner, the record fails to support his assertions. The allegation that his supervisors ordered him to "bridle his lip," or stop complaining, turns out, on examination, to be some much-needed counselling of Mr. Hoopingarner by his supervision. The transfer to the cooling towers, alleged to be in retaliation for his talking to the NRC, turns out to have been made for his personal safety. The assignment of his crew to clean up

the rebar yard, alleged to be in retaliation for his talking to the NRC, was a routine work assignment clearly within the job responsibility of his crew. (FF 545-66).

Finally, Mr. Hoopingarner's allegation that his employment was wrongfully terminated in retaliation for his having raised concerns is without merit. We have examined the extensive record on this matter carefully, and find that his discharge was in full compliance with evenhandled administration of company policy. We also note that the Department of Labor, under whose jurisdicton such matters fall, found no wrongful discharge. (FF 567-79).

Therefore the Board finds that the allegations of Mr. Hoopingarner with respect to harassment and wrongful termination of employment are without merit. (FF 522, 524, 544, 579-80).

C. Palmetto Contention 16 - Spent Fuel Pool

> 3. No procedures have yet been adopted for handling the spent fuel from other stations to be received at Catawba. Therefore the Applicants have not demonstrated reasonable assurance that they can safely handle the spent fuel from other stations which will be received at Catawba. In addition, inadequate consideration has been given to occupational doses resulting from increased exposures from handling additional spent fuel assemblies.28/

28/ See statement by Palmetto's counsel (Tr. 10,292, 10,296-97, Guild, 12/8/83).

Both the Applicants and the NRC Staff offered evidence to refute the conclusory allegations raised by Palmetto. This decision will address each of the matters raised by Palmetto under these subject areas: (1) the spent fuel cooling system; (2) the criticality analyses, and (3) the spent fuel handling procedures to be used. Within each of these subject areas, the Board has considered the evidence put on by Applicants and Staff which Palmetto contends supports its arguments and which Applicants and Staff contend refutes Palmetto's arguments. This Board concludes that the spent fuel pool cooling system is sized to maintain the load of the spent fuel pool within appropriate limits under both normal and abnormal heat load conditions. The assumptions used took account of both Oconee and McGuire spent fuel stored in the Catawba spent fuel pool. Further, the evidence demonstrates that, under the most severe assumed conditions, ample time exists to supply makeup water from any of a number of readily-available sources to prevent uncovering of the stored spent fuel assemblies. Therefore we conclude that the spent fuel pool cooling system is capable of maintaining the anticipated pool water temperature with the addition of Oconee and McGuire fuel at satisfactory levels to protect the public health and safety. (FF 1-13).

The Board concludes that criticality analyses were performed by the Applicants which demonstrate that, under varying configurations and assumptions, including storage of McGuire and Oconee spent fuel stored in the pool, a Keff of less than 0.95, which is the Staff's acceptance criterion, will be maintained under all credible normal and accident conditions. The Staff performed an analysis which showed that Applicants' analyses were acceptable and that the storage meets Staff's criterion of a Keff less than 0.95. The Board finds that the criticality analyses performed by Applicants and Staff demonstrate the ability of the Catawba spent fuel storage racks to store fuel from Oconee and McGuire without endangering the health and safety of the public due to inadvertent criticality. (FF 14-20).

Applicants testified that draft procedures for handling and storage of spent fuel from Oconee and McGuire were available. The draft procedures are based on similar procedures which are in existance at Oconee and McGuire. Several hundred transfers of spent fuel from one pool to another have taken place at those stations which, in the unloading phase consist of activities identical to those to be carried out at Catawba. Final procedures for Catawba are not yet available; this is reasonable, for any shipment from Oconee or McGuire to Catawba is several years in the future. (FF 21).

Applicants have transferred several hundred spent fuel assemblies from one spent fuel pool to another to Oconee. There are only a few minor instances, with no adverse implications for the public health and safety, of violation of procedures in this extensive history. (FF 21).

The NRC Staff explained their inspection procedures to monitor fuel handling procedures, expressed its confidence that Applicants would be capable of developing the requisite procedures and would comply with them, and committed to inspect and approve these specific procedures prior to receipt of spent fuel shipments from Oconee and McGuire. (FF 23-24).

The Applicant explained the measures that would be taken to keep employee radiation exposures as low as reasonably achievable (ALARA). The Staff testified it had reviewed Applicants' ALARA program and found it acceptble within appropriate regulatory guidelines. (FF 22, 24).

The Board finds that the evidence of record provides reasonable assurance that Applicants will be able safely to store irradiated fuel assemblies from other Duke facilities at Catawba without endangering the public health and safety. Therefore we conclude that the authority sought by Applicants in this regard should be granted. (FF 27-29).

D. Palmetto Contention 44 (CESG 18) - Embrittlement of Reactor Vessel

The central point of Contention 18/44 involves the concept of reference nil-ductility temperature (RT_{NDT}) which can be viewed as that temperature below which a material will be subject to brittle failure. The reference temperature is used to assist in developing operating curves for the Catawba units. (FF 1).

The Intervenors do not question the determination of the initial RT_{NDT}. Rather, the Intervenors' contention revolves around the determination of the end-of-life (EOL) RT_{NDT}. 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. Thus, the value of RT_{NDT} at the end of the plant's life, or more exactly, the magnitude of the change in RT_{NDT}, becomes significant in determining whether a reactor vessel will be safe from embrittlement during the course of its life. Specifically, Intervenors argue that the technology for determining with any precision the effects of neutron fluence on material properties is immature. As a consequence, they argue, the conservatism of the predictions for RT_{NDT} is insufficient. (FF 2-4, 24).

The Staff originally computed the change in RT_{NDT} by use of Regulatory Guide 1.99. Regulatory Guide 1.99 was simply a bounded curve on which all existing data on the change in RT_{NDT} had been plotted. Recently, however, the Staff has generated a statistical expression of available data, known as the Guthrie Formula. That formula predicts, based on the statistical evidence, the expected change in RT_{NDT} over the lifetime of the reactor vessel. The standard deviation for the Guthrie formula is $\pm 24^{\circ}F$. As an added measure of conservatism, the Staff adds to the Guthrie Formula calculation two standard deviations, or $48^{\circ}F$. Statistically, the final result is accurate in 95% of the cases, and in only 2.5% of the cases will the shift in RT_{NDT} exceed the statistical prediction. (FF 7).

Westinghouse, the designer of Applicants' reactor vessel, has constructed an alternative method for calculating the shift in RT_{NDT}. Westinghouse's formula is based upon a larger data sample than the Guthrie Formula. Westinghouse's formula compared favorably with the results predicted by Regulatory Guide 1.99. (FF 6).

The evidence demonstrates clearly that the Staff's calculation of EOL RT_{NDT} is sufficiently conservative. First, there are the two standard deviations added to the Guthrie Formula that provide a certainty of 97.5%. Second, expert testimony established that the effects of neutron fluence on the change in RT_{NDT} is in large part

enhanced by the presence of copper in the reactor vessel limiting material and that Applicant's units are characterized as extremely low in copper content. Third, the Guthrie Formula does not distinguish between high copper and low copper vessels in determining the standard deviation. Consequently, the initial value yielded by the Guthrie Formula, after the addition of two standard deviations, will overestimate the effects of neutron fluence on the Catawba reactor vessels, and thus the EOL RT_{NDT}. (FF 6).

The EOL RT_{NDT} values for Applicants' plants as computed by the Staff -- including the addition of two standard deviations -- are 102°F for Unit 1 and 125°F for Unit 2. (Westinghouse's most recent prediction of EOL RT_{NDT} is 66°F for Unit 1 and 98.9°F for Unit 2.) Under normal operating conditions temperatures in the vessel exceed 550°F, and thus provide a greater than 425°F margin.29/ (FF 6, 8-10).

29/ In the case of a pressurized thermal shock (PTS), the situation is somewhat changed. A PTS situation arises when the reactor vessel experiences a severe cool-down coincident with high pressure in the primary reactor coolant system. In analyzing the effects of PTS, the Staff has determined, in Commission Report SECY-82-465 that, so long as RT_{NDT} is below specified screening criterion, the risk of a crack developing in the reactor vessel is within acceptable limits. The screening criterion is 270°F for axial welds and 300°F for circumferential welds on the reactor vessel. Thus, even in a PTS situation, the Staff's predicted EOL RT_{NDT} contains a 145°F cushion (i.e. 270°F minus 125°F). Expressed differently, the certainty level

(footnote continued)

Intervenors also contend that the data itself is unreliable. That is, any actual data generated by the surveillance program will not accurately reflect what is happening to the reactor vessel itself. The coupons are not subject to stress, Intervenors contend, and thus do not accurately reflect the material property of the reactor vessel which is under stress. In addition, Intervenors maintain that the coupons reveal little if anything about the structural integrity of the vessel -- whether it contains significant flaws and how resistant it is to flaw propagation. (FF 28).

Applicants' surveillance program is mandated by 10 C.F.R. 50 Appendices G and H. Intervenors acknowledge that Applicants have complied with these regulations; indeed, Applicants have gone beyond the requirements of the regulations be designing a program utilizing six surveillance capsules, rather than the four required under Appendix H. Therefore, Intervenors cannot contend that the Applicants do not comply with the regulations, but only that the information provided by the surveillance process will be insufficient for the determination of EOL RT_{NDT}. (FF 13-14).

(footnote continued from previous page)
that RT_{NDT} will not rise above the PTS screening criteria exceeds 99.99% or on the order of six standard deviations above the Staff's prediction. (Apps. Exh. 92, Mager, p. 15).

Intervenors' primary argument is that the surveillance coupons will exhibit a different change in RT_{NDT} than that of the reactor vessel because the coupons are not subjected to the same stress of 200 cycles of heating (pressurization) and cooling (depressurization) as the Catawba reactor vessels. Intervenors' witness, Mr. Jesse Riley, testified that stress and fatigue significantly influenced the RT_{NDT} of a material by weakening its tensile strength. 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. (FF 28-29).

Applicants' expert witnesses, Mr. Thomas Mager and Mr. Theodore Meyer, testified that RT_{NDT} was not affected by stress. Both testified that RT_{NDT} is unaffected by either the fatigue or the presence of defects and flaws in the reactor. Both Mr. Mager and Mr. Meyer are well qualified in their fields. Mr. Mager is a metallurgist and metallurgical engineer. Mr. Meyer is a mechanical engineer. (FF 31).

Intervenors' argument that the surveillance program will not reveal structural defects or flaws in the reactor vessel is also without merit, though for different reasons. 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. In any event, an analysis of vessel integrity pursuant to 10 C.F.R. 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. (FF 32).

Finally, throughout the hearing Intervenors challenged the adequacy of the Charpy V-notch tests conducted to provide information regarding shift in RT_{NDT}. Several points must be noted here. First, the Charpy V-notch test is mandated by the regulations in Appendix G. To the extent the Intervenors claim that the test is inadequate, they challenge the regulation, and this is impermissible. Second, testimony at this hearing revealed that the Charpy V-notch test is literally a standard in the field of metallurgy and mechanical engineering. It is widely accepted by industry and used both in and out of the nuclear power field and by the ASME Code. We find that its widespread acceptance and use as a metallurgical standard by industry and under the ASME Code overrides any uncertainty that Intervenors may perceive in the test. (FF 33).

In sum, 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 provide adequate assurance of public health and safety. The Board rejects Intervenors' arguments concerning the structural integrity of the vessels as beyond the scope of Contention 18/44. The Board notes, however that all evidence indicates that the Applicant is meeting all applicable regulations with respect to vessel integrity. (FF 35).

E. Palmetto Alliance/CESG Contention DES 17 - Adverse Meteorology

With respect to this contention, Palmetto/CESG took the position that the NRC Staff's environmental assessment of the consequences of severe accidents was fatally flawed because it did not take sufficient account of conditions of adverse meteorology in its Final Environmental Statement. Intervenors believe that the NRC Staff should conduct a separate analysis of the consequences of severe accidents in extreme and unfavorable weather conditions. (Palmetto Alliance and CESG Responses to Applicants' May 23, 1983 Followup Interrogatories on DES Contentions 11, 17 and 19, p. 9; Memorandum and Order (Ruling on

Applicants and Staff Motions for Summary Disposition of DES Contention 17), October 18, 1983, at p. 6). The issue considered is whether the Staff adequately considered the "extreme" weather conditions of inversion and very slow air movements in the accident evaluations contained in the FES.

The Staff testified that its FES evaluation was based on representative weather conditions at the site, as confirmed by offsite (Charlotte) data to determine the potential consequences of accidents. The Staff analyzed the consequences of the "severe" accidents by using meteorological data taken for one complete year at the Catawba site. The "worst-case" meteorological data at the site is a combination of stable atmospheric conditions with low wind conditions. All witnesses, Applicants', Staff's and intervenor's, testified that such conditions were a not uncommon occurrence. The Staff postulated accident sequences at 91 selected times through this data-year, beginning every 4 days on 13-hour intervals. Because the data included many entries with the "worst-case" meteorological conditions, some part of the duration of most of the entries contained these conditions. Therefore the unfavorable conditions of stale air and low

wind speed were fully included in the Staff's severe accident evaluations. Applicants' evidence generally supported the Staff's assessment.30/

The Board concludes that the Staff's evaluation of severe accidents in the FES does indeed include adverse meteorological conditions. The question then is whether as intervenors contend, the NRC Staff is required to conduct an analysis of severe accidents which includes only the worst-case meteorological conditions. We find that is not required.

In our view the Staff's analysis is not required to isolate and address solely the effects of extreme meteorological conditions. The statute governing the NRC Staff's environmental analysis is the National Environmental Policy Act (NEPA), 42 U.S.C. § 4331 et seq. Under NEPA, the NRC is not required to assess "remote and highly speculative consequences," but instead is guided by a "rule of reason" which requires that only the reasonably foreseeable environmental consequences of their actions be addressed. E.g., Trout Unlimited v. Morton, 509 F.2d 1276, 1283 (9th Cir. 1974). We have already determined, as shown above, that the NRC Staff included adverse meteorological conditions in its assessment of the

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30/ Intervenors presented a witness whose testimony focused exclusively on the meteorological conditions in the region (a matter not generally in dispute among the parties) and which by his own admission bore no relation to the contention.

consequences of severe accidents. We find the Staff's inclusion to be sufficient to comply with NEPA's requirements.