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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSIONBEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	Docket Nos. 50-413
DUKE POWER COMPANY, <u>et al.</u>)	50-414
)	
(Catawba Nuclear Station,)	May 27, 1983
Units 1 and 2))	

PALMETTO ALLIANCE FURTHER SUPPLEMENTARY RESPONSES TO
APPLICANTS INTERROGATORIES REGARDING CONTENTIONS 6,
7, 8, 16, AND 44; TO STAFF INTERROGATORIES REGARDING
CONTENTION 7;

AND

PALMETTO ALLIANCE RESPONSES TO APPLICANTS FOLLOW-UP
INTERROGATORIES REGARDING CONTENTIONS 16 AND 27; AND TO
STAFF FOLLOW-UP INTERROGATORIES REGARDING CONTENTIONS 6,
8, 16, 27, AND 44.

As directed by the Board in its May 13, 1983, Memorandum and
Order (ruling on Applicants Motion to Compel), Palmetto Alliance
herewith submits its Responses to Discovery by Applicants and NRC
Staff as captioned above.

Except as herein amended, modified, or supplemented, Palmetto
Alliance hereby reiterates its previous responses to Applicants
and NRC Staff with respect to discovery on these contentions,
including particularly its most recent Supplementary Responses
filed April 19, 1983.

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PALMETTO ALLIANCE FURTHER SUPPLEMENTARY RESPONSES TO
APPLICANTS INTERROGATORIES REGARDING CONTENTIONS 6, 7, 8,
16, AND 44

CONTENTION 6

With respect to the following responses to interrogatories regarding Palmetto Alliance Quality Assurance Contention 6, it should be noted that by the pleading dated and served May 25, 1983, Palmetto Alliance filed its "Motion To Establish Discovery Schedule on Its Quality Assurance Contention 6," wherein Palmetto described the present status of discovery with respect to Contention 6 including particularly the recently revealed evidence of significant Quality Assurance Program breakdowns at Catawba and sought by way of relief the extension of discovery on this contention and the adoption by the Board of of the proposed discovery schedule and plan for acquiring and analyzing further evidence on this issue. In the following responses to specific interrogatories with respect to Contention 6 Palmetto Alliance expressly incorporates therein by reference this May 25, 1983, Motion and the Attachments thereto, numbered 1 through 11, including particularly the affidavit of Billie Pirner Garde of the Government Accountability Project reflecting an analysis of evidence now available regarding quality assurance and workmanship at Catawba, Attachment 2; and "Handwritten Notes from QC and QA Inspectors Which Set Forth Their 'Specific Problems and Concerns,'" Item 10 of Attachment 1 to April 12, 1983, Duke Power

Company letter, Attachment 4. This Motion and its attachments reflect the preliminary character of analysis and investigation to date of the evidence recently to come available through discovery, in the public domain, and otherwise regarding Contention 6; and Palmetto Alliance's articulated bases for seeking Board relief to permit needed further investigation and analysis through an extension of discovery. The Board and the parties' attention is directed to the analysis and evidentiary references made in this Motion and Attachments in considering the following responses with regard to this contention.

Board and parties should also note that as requested by the Applicants and Staff and as directed by the Board in its May 13, 1983, Order, Palmetto Alliance has made available to Applicants and NRC Staff its members Nolan R. Hoopingarner, II, and William R. McAfee for depositions on May 19, and 20th, 1983, at Duke Power Company's corporate offices in Charlotte, N.C. Messrs. practice here bears practice of verbal voiding fully to all questions propounded by Applicants and the NRC Staff. Applicants have arranged, at their expense, for the stenographic transcription of the testimony of Hoopingarner and McAfee (as well as of all other witnesses from whom depositions were taken). Detailed information as to evidence on this contention known to these identified potential witnesses is, therefore, readily available to both Applicants and Staff. In response to the following interrogatories, therefore, Palmetto Alliance also directs the Board and parties attention to the information given by them in those depositions which will not be repeated

hereafter.

Applicants have informed Palmetto of their intention to withdraw from availability all documents produced in response to discovery to date on this and all other contentions. Palmetto hereby notes its position that all such materials be preserved and maintained in an accessible form to Palmetto during the pendency of this proceeding.

35. On the basis of the preliminary analysis and investigation of massive evidence very recently made available to it; See, Motion of May 25, 1983, and Attachments: Palmetto Alliance believes that significant and systematic breakdowns have occurred in the Quality Assurance Program as implemented at the Catawba Nuclear Station. Such a breakdown in Quality Assurance strongly suggests that the as-built condition of the station, including systems and components of safety significance, is of indeterminate quality impugning the assurance that it is capable of operation without endangering the public health and safety. Of particular importance to this position is the recognition that quality control at Catawba has historically suffered from the fatal flaw of domination by, and therefore lack of required independence stemming from, organization direction and domination by Duke Power Company construction department supervision. Palmetto believes that the so-called Catawba Welding Inspector incident which followed a systematic downgrading of pay levels of Quality Control Inspectors endorsed by the highest Duke management reflects disturbing inadequacy in the quality control work in all other functional construction areas. As suggested in the Garde

Affidavit referred to above, such a downgrading of the quality control workers and function produce the deficiencies in QC qualification as has been seen at the Zimmer Plant. Many of the Catawba welding inspectors have raised specific technical concerns regarding the improper processing of non-conforming item reports (NCIs), specifically including the wide-spread practice of verbal voiding and overturning of non-conforming items by construction supervision. Such a practice here bears striking similarities to the practice of improper processing of non-conforming items through use of informal "IPIN's" at the Midland Plant resulting in the imposition of a \$60,000 civil penalty and a massive reinspection requirement.

Palmetto takes the position that the real issue reflected in this series of interrogatories on this Contention is the systematic inadequacy of the Catawba Quality Assurance Program to establish the as-built quality of construction and safety related systems at the plant. To focus on specific faulty workmanship only, as has Duke in its "whitewash" of welding inspector concerns, with the acquiescence of NRC Region II Staff (and as suggested by this Board's observations in its May 13, 1983, Order) is to miss the "forest for the trees" and fail to focus on the need to discover and correct the root problem. It is these systematic deficiencies in the Quality Assurance Program (which itself must detect and facilitate correction of faulty workmanship) which must be the focus of further investigation and analysis through extension of discovery on this contention.

The specific evidence of substandard workmanship in plant

construction and poor quality control now known to Palmetto is represented by the complaints of the Catawba Quality Control Welding Inspectors previously identified. Palmetto Alliance has no knowledge at this time of specific uncorrected faulty workmanship of safety significance at Catawba; but believes that the existence of such faulty workmanship is strongly indicated by the deficient Quality Assurance Program as herein described.

The March 15, 1982, Memo from NRC Resident Inspector Van Doorn to Alderson on the subject of "Allegations Concerning QC Welding Inspection at Catawba Nuclear Station" is Attachment 3 to Palmetto's May 25, 1983, Motion. The "Handwritten Notes from QC and QA Inspectors which Set Forth Their 'Specific Problems and Concerns'" authored by some 19 Catawba welding inspectors and reflecting specific instances of poor quality control, faulty workmanship, falsification of documents, harassment and systematic Quality Assurance Program breakdowns, as well as identifying specific components and systems involved, names of persons involved, dates and places, are Attachment 4 to the May 25, 1983, Motion.

Palmetto asserts that the Quality Assurance breakdown at Catawba is violative of specific criteria of 10 CFR Part 50, Appendix B. Specific QA criteria believed to be involved on the basis of information now known to Palmetto were set forth in cicipates that a number of present and former Catawba worke 19, 1983, Answers.

52. By the term "safety related" Palmetto means generally those components, systems and areas of the facility identified by the Applicants and NRC Staff as important to the safe operation of the facility. Palmetto understands that many of the technical concerns of the Catawba Welding Inspectors were with respect to the construction and fabrication of systems and components which were "safety related" including the welding of safety related pipe and pipe hangers. Palmetto, however, is also concerned with other safety related areas such as electrical systems where specific faulty workmanship or quality control defects may yet be undetected.

At present, Palmetto Alliance knows of no specific instances of substandard workmanship that have not been corrected beyond those already identified. Beyond the instances of poor quality control previously identified, Palmetto Alliance knows of no further instances of poor quality control not corrected.

57. The specific defects believed by Palmetto to exist in Applicants' Quality Assurance Program, now known to Palmetto, are indicated in the affidavit of Billie Garde, Attachment 2 to Palmetto's May 25, 1983, Motion.

82. As referred to in response to interrogatory 76 of April 19, 1983, Palmetto has identified a number of present and former Catawba workers from whom Palmetto will seek support for its Contention 6. The documentary information produced in discovery

regarding the allegations of Catawba Welding Inspectors is believed by Palmetto to support our position on this contention. This documentary information is identified above.

94. Beyond Mssrs. Hoopingarner and McAfee, Palmetto has previously identified the concerns expressed to both Duke Power Company and the Nuclear Regulatory Commission Staff by the Catawba Welding Inspectors.

114. At this time Palmetto can identify the documents reflecting complaints by the Catawba Welding Inspectors previously identified as the bases for their evidence regarding Company pressure to approve faulty workmanship. These individual welding inspectors are known to Duke Power Company and the NRC Staff and are identified above. The inspectors generally complained of harassment by craft and supervision to approve faulty work as well as Duke Power Company management pressure as reflected in the reclassification of welding inspector pay grade and efforts to downgrade the role of Quality Control Inspectors at the facility.

121. Beyond the statements of Mssrs. Hoopingarner and McAfee, the Catawba Welding Inspectors previously identified document the approval of faulty workmanship by themselves and their supervision through the improper signing off of inspection

records and the voiding, destruction, and overriding of NCI's. The only instances of such approval known to Palmetto are identified in the welding inspector concerns, Attachment 4 to Palmetto's May 25, 1983, Motion.

CONTENTION 7

25. Palmetto Alliance has attempted to make clear both on the record before the Licensing Board and in its pleadings and responses to discovery all information known to it with regard to this "track record" contention, the "gravamen" of which "is the alleged 'consistent failure' to adhere to proper procedures." Memorandum and Order, May 13, 1983, at p. 7. As stated in our April 19, 1983, Response to Interrogatory 10 on this contention:

Generally this track record contention reflects Palmetto's concern that past failures by Duke Power Company to adhere to required Commission operating and administrative procedures impugns the assurance that the Catawba facility will be operated safely. Since the Applicants are largely self-regulated and are trusted by the NRC with compliance with the standards, subject to the most modest Commission inspection of Applicants' activities, a history of non-compliance which has been characterized as "repetitive and chronic" by the NRC, causes Palmetto great concern. Thus, the failure to adhere to operating and administrative procedures at one facility is predictive of probable future failure at the Catawba facility.

Palmetto Alliance Supplementary Responses, April 19, 1983, at p. 25.

The sole bases for Contention 7, now known to Palmetto Alliance, is represented by Duke Power Company's "track record" with the Nuclear Regulatory Commission. In much the same fashion that a prospective employer or professional standards body such as a medical or legal licensing authority, would rely on an applicant's criminal record as reflecting on its face disqualification for employment or professional licensing, Palmetto Alliance relies on Duke Power Company's licensing record and enforcement history with the Nuclear Regulatory Commission and its predecessor agency, The Atomic Energy Commission. We believe that it is this track record of Duke Power Company which itself disqualifies it from entitlement to an operating license for the Catawba facility on the grounds that such a licensing and enforcement record itself precludes compliance with the general standard of qualification of 10 CFR 50.57(a)(3).

Palmetto Alliance further believes that Duke Power Company's "track record" with the Nuclear Regulatory Commission and its predecessor likely represents only the tip of the iceberg of Duke's actual history of regulatory infractions in its construction and operation of nuclear power plants. Given the Commission's modest enforcement resources, coupled with the Commission's own short-comings in effectiveness and zeal and Duke Power Company's understandable efforts to evade detection and enforcement, Palmetto Alliance believes that much significant evidence of non-compliance remains undocumented.

The Catawba Welding Inspector revolt, Duke Power Company's internal "whitewash", and the Nuclear Regulatory Commission's

ultimate acquiescence provides an apt illustration that the official track record of the Applicants belies a history of much more serious regulatory infraction. Please refer to Palmetto Alliance's Responses to Interrogatories Regarding Contention 6, and to Palmetto Alliance Motion to Establish Discovery Schedule on Its Quality Assurance Contention 6 of May 25, 1983, with accompanying attachments for a detailed treatment of the Catawba Welding Inspector allegations and Applicants and NRC response.

Thus, the only specific regulatory violations upon which Palmetto relies in support of its track record contention are those documented by the NRC and AEC in their own reports which have been previously identified. Palmetto believes that these identified reports of the NRC reflect the time, place, and details of the incidents of non-compliance. No further information regarding these incidents is now known to Palmetto Alliance. On May 20, 1983, Palmetto Alliance took the deposition of Gerald Vaughn, Duke Power Company's General Manager of Nuclear Stations, who had been identified by Duke as the individual most knowledgeable on the subject matter of Palmetto's Contention 7. Mr. Vaughn disclaimed knowledge of regulatory compliance matters with respect to nuclear power station construction matters. With respect to operational compliance at the Applicants' Oconee and McGuire Stations, Mr. Vaughn was asked to provide information as to the bases for the incidents of non-compliance identified by the NRC Staff in the SALP reports and to provide information as to the corrective action by Applicants with respect to these incidents. Generally, Mr. Vaughn disclaimed any detailed

information beyond that stated in the referenced NRC documents and his belief that corrective action had been appropriate. Mr. Vaughn directed Palmetto to the NRC Staff for further information regarding the Staff's findings with respect to these incidents.

23. As previously stated, "it is Applicants track record" of non-compliance which represents a violation of 10 CFR 50.57(a)(3);" which is the basis for Palmetto's view that Applicants remain in non-compliance with NRC requirements. Palmetto has no other information in response to this interrogatory.

1 and 2. Please see the further response to Interrogatory 25, above. Palmetto has no independent information as to the "operating procedures" referred to by the NRC as previously identified.

12 and 14. Palmetto Alliance has no further independent information regarding these administrative procedures referred to by the NRC Staff as previously identified.

44. Palmetto understands these terms to represent some level of non-compliance by Duke's employees with certain operating and administrative procedures presumably known to the NRC Staff. It is the NRC Staff's identification of this non-compliance which is significant in establishing Duke's track record for purposes of this contention. The term was used by the NRC Staff with respect

to operations at Oconee Units 1, 2 and 3, NUREG-0834, A-3.

45. Specifically the term "weaknesses" as used in the text of Contention 7 and quoted in Interrogatory 44, above, refers to NRC findings with respect to operations at Oconee and not at Catawba. However, a reference to B-1 of NUREG 0834 reflects that with respect to Catawba the NRC SALP Review Board found "weaknesses in the area of quality assurance, including management and training . . . characterized by instances of inadequate design reviews, procedures not issued, specifications and commitments not translated into procedures, and audit programs not established. . . attributed to weakness in the licensee's quality assurance and management overview process." Palmetto has no further independent knowledge on this subject.

48. Palmetto is relying on the SALP Report, NUREG 0834, at p. A-3, where, with respect to Oconee 1, 2, and 3, the SALP Review Board observed, "the licensee displayed weaknesses in personnel adherence to operating and administrative procedures" Palmetto has no independent knowledge of the "group of personnel" who "have not adhered to operating and administrative procedures."

49, 50 and 52. These interrogatories probe the meaning of the term "failure to follow procedures," what "procedures" are referred to, and the particular "failures" referred to. As should be clear from the earlier responses, Palmetto has no

independent knowledge with respect to use of these terms by the NRC SALP Review Board, the underlying factual bases for the NRC SALP Review Board's findings. For purposes of this contention, Palmetto asserts that it is the Staff's findings on these matters which are significant in establishing Duke's track record.

28 and 54. Palmetto has no independent information beyond that described above on the NRC SALP Review Board's conclusions in NUREG 0834.

CONTENTION 8

8. As the April 19, 1983, response to Interrogatory 2 makes clear, Palmetto believes that it is important to maintain a distinction between hands-on operating experience at a nuclear power station and training and education. The INPO definition of "nuclear power plant experience" (INPO 82-008, "Control Room Operator, Senior Control Room Operator, and Shift Supervisory Qualifications") collapses training into experience. Training in design and construction of plants, service with military "non-stationary or production" nuclear plants, on-the-job training, and experience in reactor simulator programs, all count toward nuclear plant experience. Palmetto would like to maintain the integrity of the phrase "nuclear power plant experience" by restricting its meaning to experience operating a nuclear power plant. Thus, it is our contention that Cawtawba reactor operators and shift supervisors lack sufficient hands-on experience. Given the fundamental importance of these positions for the safe operation of the plant, we believe that it is reasonable to expect the Applicants, and not the Palmetto Alliance, to articulate a meaningful definition of nuclear power plant experience and assure the public that it's personnel are qualified. As it stands, the definition of "experience" that is in use allows the building of concrete forms in the construction of a plant to help qualify an individual to operate a nuclear power plant. And the Applicants themselves have exhibited some confusion as to what are appropriate personnel qualifications.

The applicant's initially contended (in response to Interrogatory 3) that 2 years of operating experience were required to become a Senior Reator Operator. It was only during the deposition of B. Graves, months later, that Applicantss corrected themselves and reported that to FSAR 13.1.3.1 required only 1 year of operating experience for a Senior Reactor Operator.

38. As a report on the Three Mile Island incident, commissioned by the NRC, concludes "human error severely compromises the safety and profitability of nuclear power plants. Major gains in both areas could be achieved if the frequency of operator mistakes could be reduced."

NUREG/CR1270, Vol. 1, "Human Factors Evaluation of Control Room Design and Operator Performance at Three Mile Island-2". The "Human Factors" investigation is indicative of the sort of operator mistakes that could have dire consequences for the public health and safety. The Report cites the following "operator factors in human error incidence"....fatigue, disorientation, distraction, motivation, forgetting, confusion, expectancy or set, psychological stress, inadequate reasoning/problem solving capability, inadequate skill levels, inadequate knowledge." NUREG/CR 1270, P.11. The report goes on to specify operator failures that had a significant impact on the course and severity of the accident in four major operational sequences (see pages 11-22). Palmetto Alliance believes that hands-on experience is essential to reducing the type of operator errors evident at Three Mile Island. The consequences of

increased operator errors, that is, the failure to meet challenges to plant safety adequately, are fairly obvious given the dangers to plant personnel, the public, and the environment that a nuclear accident poses.

68. A review of the qualifications of Catawba supervisory personnel FSAR Vol. 12, Table 13.1.3-11 reveals that several individuals have no previous hand-on experience in operating a nuclear power plant at all. [See response to Interrogatory 72]. In addition, there are a number of individuals who lack sufficient previous experience in the operation of nuclear power plants. From the job descriptions contained in Section 13.1.2 of Vol. 12 of FSAR the following positions involve "operations" (as defined in our response to Interrogatory 2): Operating engineers, Shift Supervisors, Assistant Shift Supervisors, and Reactor Operators. Of those who will serve in these capacities at Catawba many individuals have very little previous experience in such operating positions. Among those individuals are:

John M. Hill, Assistant Shift Supervisor, 3 weeks operating experience at McGuire.

Robert Smith, Assistant Shift Supervisor, 1 week operating experience at McGuire.

B. A. Sigmen, Assistant Shift Supervisor, 7 weeks operating experience at McGuire.

Reginald Kimray, Assistant Shift Supervisor, 7 weeks operating experience at McGuire.

Sidney H. Ballenger, Assistant Shift Supervisor, 4 weeks operating experience at McGuire.

Mark D. Raven, Assistant Shift Supervisor, 3 weeks

operating experience at McGuire.

Some of the individuals listed above have experience in refueling operations, and as "Utility Operators," and "Assistant Nuclear Control Operators." Without descriptions of these positions it is not possible to tell whether or not they entail performing the operations that constitute hands-on experience.

Finally, four Shift Supervisors--Thomas Baumgardner, S. Cooper, Gail Ice, and Phillip Loss--have very little previous experience beyond service as "Control Operators" or "Assistant Control Operators." Again, without more information on the nature of these positions it is impossible for Palmetto Alliance or the public to reach any conclusions as to whether or not they represent hands-on experience.

Palmetto Alliance has no further information at this time as to the adequacy of "two years or three years" [NRC Board's May 13 Memorandum and Order] as an appropriate standard for hands-on operating experience. It is Palmetto Alliance's position that the Applicant has the burden of demonstrating the adequacy of their personnel's qualifications for protecting the public health and safety pursuant to 10 CFR 50.57(a)(3). Palmetto Alliance believes that the Applicants have not adequately demonstrated ent responsibility" is d

72. The following individuals have no previous experience in operating a nuclear power plant:

W. W. Miller, Shift Supervisor

Mike Janeski, Assistant Shift Supervisor
C. W. Senn, Assistant Shift Supervisor
Larry B. Long, Assistant Shift Supervisor
Chris O'Dell, Assistant Shift Supervisor

Mr. O'Dell does have experience as a "Utility Operator" and as a "co-op Student in Operations." Without a description of these positions it is not possible to ascertain their relevance to operational experience.

82. See response to Interrogatory 8.

83. Yes. Palmetto believes that the levels of previous experience in operating a nuclear plant are not sufficient in view of 10 CFR 50.57(a)(3). Training, education, observation and construction experience can not substitute for actual experience in reducing and meeting challenges to plant safety. Experienced operators are essential for ensuring "that the activities authorized by the operating license can be conducted without endangering the health and safety of the public."

50. Yes. Inadequate performance by those with "primary management responsibility" for the safe operation of the Catawba facility may potentially endanger the public health and safety.

51. No. While Interrogatory 51 is somewhat unclear, Palmetto does not contend that "primary management responsibility" is

defined by an NRC regulation (see response to Interrogatory 49 above), that Applicants violate such non-existent regulation, "or otherwise fail to provide primary management responsibility." However, Palmetto does not endorse the adequacy of the qualification of those charged with "primary management responsibility."

52. For bases please see responses to General Interrogatories and Interrogatory 2 of Palmetto's August 19, 1982, responses.

13. All of the concerns raised in Palmetto's response to Interrogatory 2 call into question the Applicant's compliance with 10 CFR 50.57(a)(3) which requires reasonable assurance that the activities authorized by the operating license can be conducted without endangering the health and safety of the public. In addition, these problems suggest Applicant's failure to meet General Design requirements of 10 CFR 50, Appendix A.

(1) General Design Criterion 2 provides that "Structures, systems, and components important to safety shall be designed to withstand the effects of natural phenomena....without loss of capability to perform their safety functions." Palmetto Alliance believes that while possible aircraft crashes are not, strictly speaking, "natural" phenomena, they are nonetheless unpredictable external events that a defensible safety apparatus must take into consideration. Aircraft crashes may also come within the scope of GDC 4 which demands that the structures, systems, and components important to safety "be appropriately protected against dynamic effects, including the effects of missiles, pipe whipping, and discharging fluids, that may result from equipment failures and from events and conditions outside the nuclear power unit." Palmetto believes it important to note that the NRC Staff's conclusion that GDC 2 was met at Catawba was based on a consideration of the effects of earthquakes, flooding, and tornado missiles but no mention was made of the nearby airport, its flight patterns or the capability of Catawba's safety systems

for withstanding an airplane crash.

(2) Palmetto contends that accidents involving mishandling of spent fuel casks including inadvertant unshielded removal of cask lids and cask drop accidents involving the cask handling crane are made much more likely by the massively increased volume of cask handling incidents required under the Duke Power Company cascade plan. As for the inadvertant removal of cask lids the May 12, 1983 depostion testimony of Catawba Technical Services Supervisor M. Tuckman reflects a present absence of any written procedures at the station for proper handling of non-Catawba spent fuel. While Mr. Tuckman admits that special training procedures and additional staff and supervision must be developed in order to handle the 300 shipments per year of non-Catawba spent fuel under the cascade plan, very limited information exists as to Applicant's cask handling plans. For example, he was unable to describe the specific procedures for cask lid removal or the configuration of the cask lid bolts and tools necessary for lid removal. Further, deposition testimony reflects that the 17 ft. long cask described in the FSAR cask drop accident figure would protrude some 2 ft. above the shielding water in the cask handling pit where the cask lid is to be removed!

Palmetto contends that the Applicants have not adequately demonstrated that they have met GDC 61 which requires that "the fuel storage, and handling, radioactive waste and other systems which may contain radioactivity shall be designed to assure adequate safety under normal and postulated accident conditions."

These systems, among other things, "shall be designed with suitable shielding for radiation protection."

As for the likelihood of cask drop accidents, the present uncertainty as to handling procedures, training, personnel and equipment contribute to the possibility of mishandling. Deposition testimony on May 12, 1983 of Design Engineer Michael Green reflects that FSAR figures fail to accurately portray the present cask handling crane range which now includes rails permitting transit of a cask directly over spent fuel. Applicants apparently planned to re-install mechanical stops to limit cranes range at some future point in time. Witnesses Tuckman and Green testified that cask drop-criticality analyses (assuming a postulated cask-drop-into-fuel-pool accident) had been performed at other Duke facilities but not at Catawba. Tuckman acknowledged that the McGuire design made such a cask drop accident sufficiently probable that such a criticality analysis was necessary. He contended that Catawba design alterations--specifically lowering the wall height between the de-contamination area and the fuel handling pit would prevent such an accident at Catawba. Such assurance has not been demonstrated.

Palmetto contends that the Applicants have not adequately demonstrated that they have met GDC 61's requirements for fuel storage and handling and radioactivity control nor have they demonstrated fulfillment of GDC 62 since the possibility of a cask dropping onto the fuel assemblies is a significant threat to the prevention of criticality in fuel storage and handling. GDC

62 requires that "Criticality in the fuel storage and handling system shall be prevented by physical systems or processes, preferably by use of geometrically safe configurations." (3)

Palmetto Alliance believes that there is an unacceptably high probability that the water in the Catawba spent fuel pool will reach and surpass the 150° F heat limit which could result in ruptures in the pool liner plate, pool water leakage, and boil-off. This could in turn result in fuel element degradation, hydrogen gas generation and potential radiation release. Such an occurrence is made more likely because of the fact that design modifications at Catawba that more than double the number of fuel assemblies to be stored (thereby dramatically increasing the heat load) have significantly reduced the margin for error. In other words, the cooling trains and other "structures, systems, and components important to safety" were designed to operate with respect to a much lower heat load than the subsequent modifications of the cascade plan call for. If the safety related systems were designed so as to prevent water temperature in the pool from reaching dangerous levels when the pool contained a maximum of 662 fuel assemblies, then expanding the pool to hold 1418 assemblies significantly increases the heat load and reduces the margin for error. Thus it now seems likely that the failure of one of the two cooling trains might well bring the temperature of the pool to more dangerous levels more quickly than would have been the case before the cascade plan. Or, to take another example, loss of on-site and off-site power might result in dangerously high temperatures more quickly than

would have been the case before the modifications of the spent fuel pool. Therefore, Palmetto Alliance believes that the Applicant has not demonstrated compliance with: a) GDC 44, which requires that "the system safety function shall be to transfer the combined heat load of these structures, systems, and components under normal operating and accident conditions." b) GDC 61, which requires, among other things, that fuel storage and handling be designed with "a residual heat removal capability having reliability and testability." We believe that this capability has been seriously compromised. c) GDC 62, which mandates prevention of criticality in fuel storage and handling.

CONTENTION 44

With respect to Interrogatories on Palmetto Alliance Contention 44, Palmetto Alliance adopts as its own the CESC responses to NRC Staff interrogatories on CESC Contention 18. While there are some differences between the Applicant's questions and those of the NRC Staff, there is substantial overlap. In order to assist the Applicants and the Board in their review of Palmetto/CESG responses we have cross-referenced Applicants' Interrogatories with the CESC responses where appropriate.

Applicant

Interrogatory

1-9	See CESC response to NRC Staff Interrogatories 12, 31, 32, 34, 35, 36, 37, 38, 39, 40, 41.
10	See CESC response to NRC Staff Interrogatories 5, 6, 7, 8.
15-20	See CESC response to NRC Staff Interrogatories 6, 49, 50.
27	See CESC response to NRC Staff Interrogatory 1.
33	See CESC response to NRC Staff Interrogatories 40, 41, 45.
41	See CESC response to NRC Staff Interrogatory 45.
42	See CESC response to NRC Staff Interrogatories 5, 6, 7.
49	See CESC response to NRC Staff Interrogatories 5, 6.

Palmetto has no further independent information to offer response to the interrogatories on Contention 44.

PALMETTO ALLIANCE FURTHER SUPPLEMENTARY RESPONSES
TO NRC STAFF'S MAY 7, 1982, INTERROGATORIES ON CONTENTION 7

Palmetto provides the following Supplemental Answers to the Staff's First Set of Interrogatories on Contention 7, numbers 12, 13, 14, 15 and 17, as directed by the Board in its May 13, 1983, Order at page 12.

12. Palmetto Alliance relies entirely on the findings made by the NRC staff with respect to Duke Power's track record. For specific references known to Palmetto from NRC documents please see earlier responses to Interrogatories on Contention 7, above. Palmetto has no further independent knowledge with respect to Duke's track record.

13. As stated in response to Applicant's Interrogatories on this contention Palmetto is concerned that past failure by Duke Power Company to adhere to required commission operating and administrative procedures impugns the assurance that the Catawba facility will be operated safely. Such assurance is required by 10 CFR 50.57(a)(3). Palmetto has no independent knowledge of the rules and regulations not adhered to except as concluded by the NRC Staff.

14. Except by referring to the documentary source identified in the body of Contention 7, NUREG 804, Licensee Assessment, August 1981, pp. a-3, b-1, and the NRC document from which the quoted

references are taken, Palmetto has no independent knowledge of the NRC Staff's findings. It is these Staff findings which are relied upon as supportive of our Contention that "no reasonable assurance can be had that the Catawba facility can be operated without endangering the public health and safety."

15. As stated in response to Applicant's Interrogatory 10 on this Contention, Palmetto's supplementary responses of April 19, 1983:

"Since the applicants are largely self regulated and are entrusted by the NRC with compliance with these standards, subject to the most modest commission inspection of Applicant's activities, a history of non-compliance which has been characterized as "repetitive and cronic" by the NRC causes Palmetto great concern. Thus the failure to adhere to operating and administrative procedures at one facility is predictive of probable of future failure at the Catawba facility.

17. Please see response to Applicant's Interrogatory 11 on Contention 7 of April 19, 1983, for the bases for all of the above answers.

PALMETTO ALLIANCE RESPONSES TO APPLICANTS FOLLOW-UP
INTERROGATORIES REGARDING CONTENTIONS 16 AND 27

4. See response to Applicants' Interrogatory 13 above.
6. Palmetto Alliance does contend that the fuel liner plate cannot withstand temperatures in excess of 150⁰ F. The deposition given by Lowell Snow, identified by the Applicants as knowledgeable in this area, confirmed that the liner plate is designed to withstand temperatures of 150⁰ F and that it is expected that the plate may buckle and rupture if temperatures exceed 150⁰ F. A consequence of a ruptured liner plate is leakage of water from the spent fuel pool, possibly exposing fuel assemblies and further raising the temperature of the water in the pool.
7. "Pool water boil off" refers to a situation where the water in the spent fuel pool reaches a temperature where it changes from liquid to gas with bubbling called boiling. This reduces the volume of liquid in the pool. We contend that the probability of this boil off occurring is greater because of the increased heat load that will prevail at Catawba now that Oconee, McGuire, and Catawba spent fuel assemblies will be stored there.
8. We use "on-site and off-site" power in the same way that the NRC understands the terms. That is, they distinguish between electric power (necessary for the operation of the pool cooling and other safety systems) that originates from outside the

nuclear power plant grounds (used in normal power plant operation) and electric power generated at the plant which serves as a back-up system should off-site power be lost.

9. See response to Applicants' Interrogatory 13, above.

CONTENTION 27

1. Palmetto Alliance contends that without the information provided by real time monitors the Applicants cannot specify the effluent parameters which must be included in the classification and action level scheme called for in 10 CFR 50.47(b)(4). This contention is strengthened by the deposition of Mary Birch, identified by the Applicants as the most knowledgeable source in these matters, that indicates that Ms. Birch was unable to identify any plant parameters at all.

2. As stated several times in response to Applicants first set of interrogatories, 10 CFR 50.57(a)(3) and 10 CFR 50.47(b)(4) and (9) require Duke Power Company's monitoring methods, systems, and equipment to provide reliable and timely means for assessing and monitoring off-site releases during a radiological emergency. Without such timely and reliable information that a real time monitor can provide, Duke Power cannot:

1) specify effluent parameters as required by 10 CFR 50.47(b)(4).

2) claim that its methods, systems and equipment for assessing and monitoring actual or potential off-site consequences of a radiological emergency are adequate as required by 10 CFR 50.47(b)(9).

3) provide reasonable assurance that the public health and safety will be protected as required by 10 CFR 50.57(a)(3).

3. Palmetto contends that system of real time monitoring should

be installed off-site around the Catawba station such as are described in part 4.0 "Instrumentation Requirements, Availability and System Cost" of NUREG/CR-2644 AN ASSESSMENT OF OFF-SITE, REAL TIME DOS MEASUREMENT SYSTEMS FOR EMERGENCY SITUATIONS (April 1982) and which are installed at some seven nuclear stations as identified in Table 8, p. 47 of that study. Applicant's system will be less effective because the needed monitoring information will not be provided in "real time".

4. See response to Interrogatory 2 above.

5. Palmetto Alliance does not contend that the Applicant's system is less capable of accurately reading gamma radiation levels.

6. Palmetto Alliance contends that real time monitors provide the immediate information necessary to comply with the NRC regulations cited in response to Interrogatory 2 above. We do not contend that the Applicant's system is less accurate. It is incomplete in the sense that it does not provide a reasonable assurance that in the case of an unplanned release of radiation the health and safety of the public will be protected.

7. Yes

8. Table 1 Operational Radiological Environmental Monitoring program footnote f at p. 9 states:

One or more instruments, such as a pressurized ion chamber, for measuring and recording dose rate continuously may be used in place of, or in addition to, integrating Dosimeters. For the purposes of this Table, a thermoluminescent dosimeter may be considered to be one phosphor and two or more phosphors in a packet to be considered as two or more dosimeters. Film badges should not be used for measuring direct radiation. The 40 stations is not an absolute number. This number may be reduced according to geographical limitations, e.g. at an ocean site, some sectors will be over water so that the number of dosimeters maybe reduced accordingly.

No.

9. Applicant's reliance on TLD's, mobile teams and effluent stream monitors is inadequate since it is dependent upon the reliability and proper functioning of single monitoring system to detect the actual release, the reliability of the personnel and equipment to be used by the field monitoring teams, including the reliability of their monitoring point designations and their dispatching to those monitoring points under accident conditions, and the timeliness of the transmittal of the information gained from such a system. As Applicants state in their response to Palmetto Interrogatory 21 of September 22, 1982 on this Contention "the principal advantage of using real time monitors to measure off-site dose rates at Catawba during emergency conditions is that they provide essentially immediate information." Dose information from TLDs is not available until at least one to three hours after collection of the TLDs from the field. Applicant's September 22, 1982 response to Interrogatory 15.

10. Palmetto intends these terms to reflect the "direction of movement of the radioactive cloud and the spacial characteristics of the cloud as well as the ground level dose rates in the cloud and adjacent areas." This information can be determined by real time monitors permanently placed in a more timely fashion but otherwise in the same manner as proposed by Applicants in use of the field monitoring equipment now planned.

11. No.

12. No.

13. There is no inconsistency. The deposition testimony of Duke Power Company witness Mary Birch confirms the superior accuracy of real time monitors over TLDs.

14. In Applicant's September 22, 1982 response to Palmetto's Interrogatory 15 on Contention 27 you state: "intergrated dose information from TLDs is available from one to three hours after collection of TLDs from the field." Actual reterival time is unknown but assuming one-half hour for retrieval, dose information from the TLDs will be available no sooner than one and one-half hours after exposure.

PALMETTO ALLIANCE RESPONSE TO NRC STAFF FOLLOW-UP
INTERROGATORIES REGARDING CONTENTIONS 6, 8, 16, 27, 44

CONTENTION 6

1. Not beyond evidence already identified.
3. Beyond the occurrences identified by Messrs. Hoopingarner and McAfee, Palmetto intends to rely upon the occurrences described by the Catawba Welding Inspectors in documents known to the Applicants and NRC Staff and designated Attachment 4 to Palmetto's May 25, 1983, Motion to Establish Discovery Schedule on Its Quality Assurance Contention 6. Those welding inspector complaints identify dates, times, locations, individuals involved, and provide other information with respect to each occurrence. Palmetto has no other independent information.
4. Quality control deficiencies at Catawba, beyond those identified by Messrs. Hoopingarner and McAfee, are described by the Catawba Welding Quality Control Inspectors in the same documents referred to in response to Interrogatory 3, above.
5. The occurrences identified by Messrs. Hoopingarner and McAfee differs from the concerns identified by Catawba Welding Inspectors. Palmetto believes that Welding Inspector concerns largely corroborate the evidence provided by these Palmetto members.
6. At this time Palmetto lacks sufficient information to form

position in agreement or disagreement with Task Force reports, findings or recommendations. Palmetto has sought an extension of discovery on Contention 6 in order to further investigate the Task Force's findings, among other matters.

9. At this time, Palmetto can identify only Messrs. Hoopingarner and McAfee who are expected to testify in Palmetto's behalf on Contention 6 in this proceeding. Although no further individuals have been identified, Palmetto anticipates that a number of present and former Catawba workers may later agree to be Catawba welding inspectors to support of Palmetto's position on its Contention 6. Unless these individuals seek protection of their identities, for which Palmetto will seek Board support, such further witnesses will be identified to the parties as they become known to Palmetto.

CONTENTION 8

1. No. Palmetto Alliance contends that actual experience in operating a nuclear power plant is essential to "sufficient hands-on operating experience."

2. An appropriate means for obtaining hands-on experience is to be employed in a position that entails actual operation of a large PWR like Catawba. For example, experience as an Operating Engineer, Shift Supervisor, Assistant Shift Supervisor, or Reactor Operator (positions that entail actual "operations" as defined by federal regulations and summarized by Palmetto in their response to Applicants August 19, 1983 Interrogatory 2) at McGuire or Oconee would constitute actual hands on operating experience at an up and running nuclear station.

3. Yes.

4. Palmetto Alliance has no information at this time that would indicate that the Applicant's training program is faulty. It is "inadequate" in the sense that it is necessary but not sufficient for qualifying an individual to operate a nuclear power plant.

6. As noted in Interrogatories 1 and 2 above and in response to the Applicant's August 19, 1983 Interrogatories, there is justification for crediting those who have been well-trained as more qualified than those who have not been well-trained. But this does not directly address the problem of hands-on experience

that must be gained actually operating a nuclear power plant.

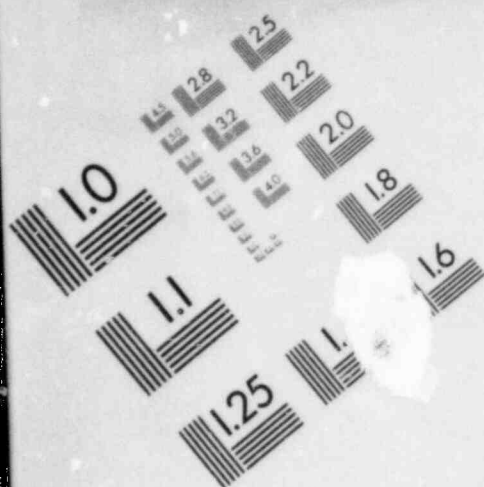
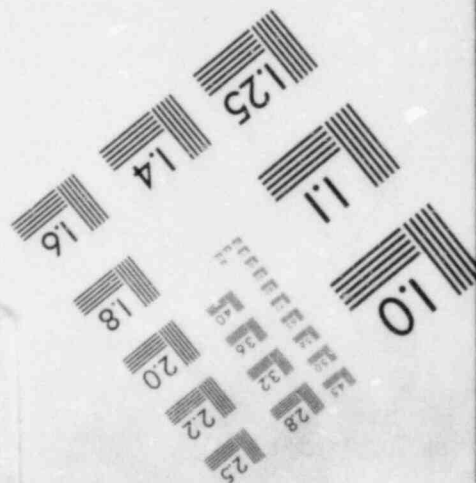
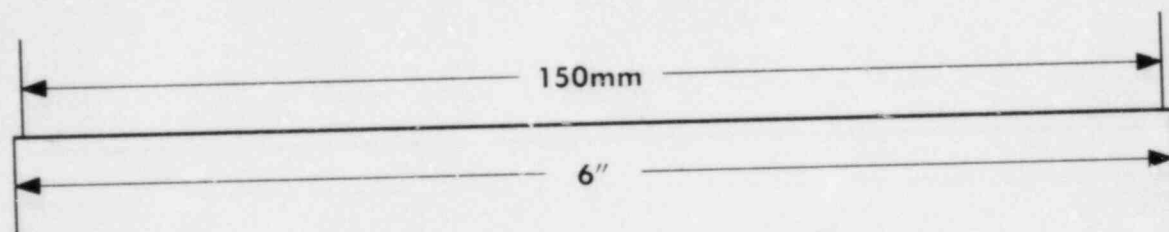
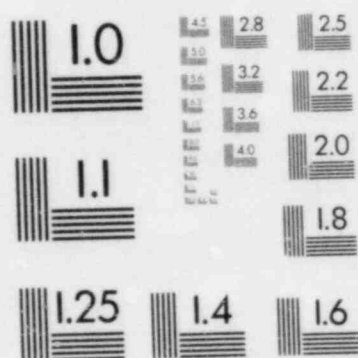
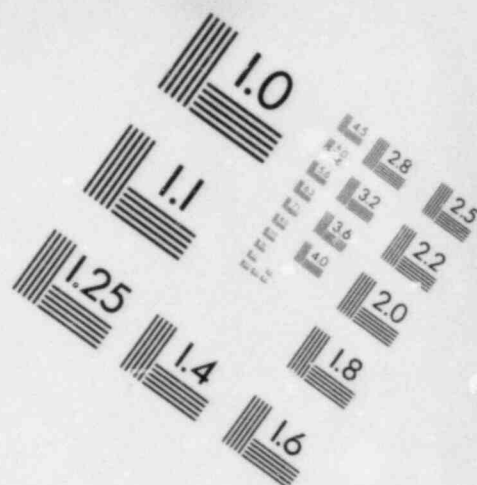


IMAGE EVALUATION
TEST TARGET (MT-3)



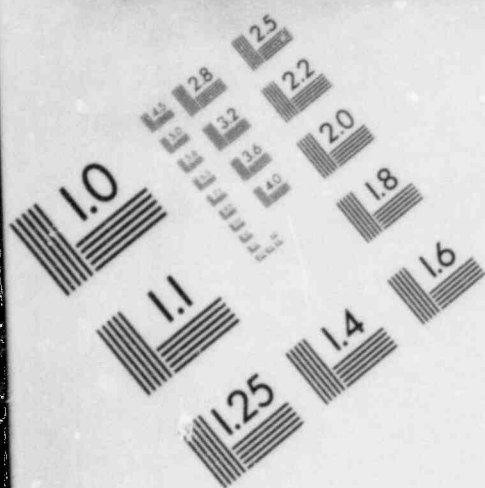
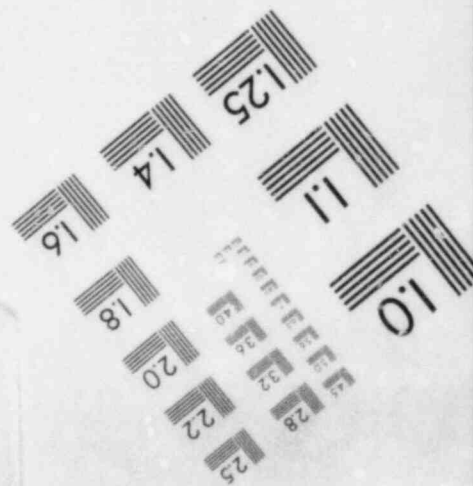
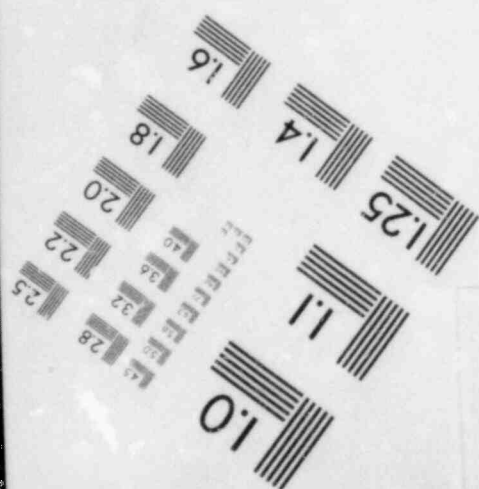
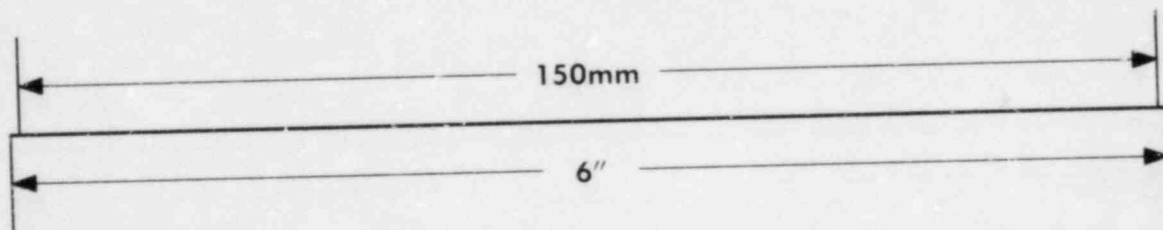
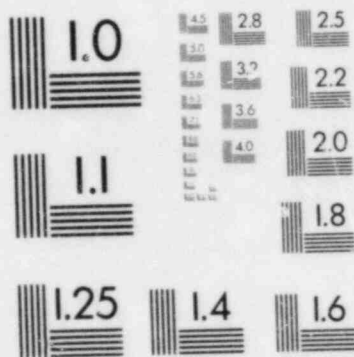
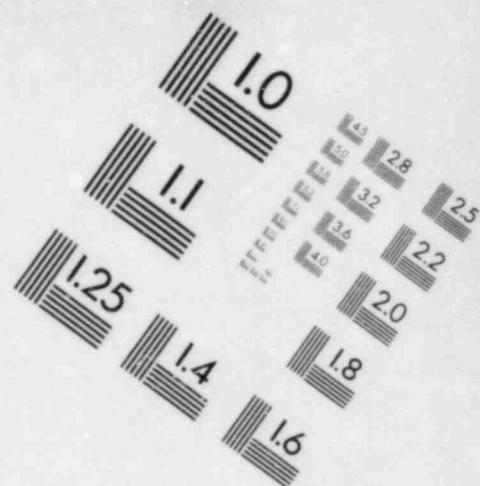


IMAGE EVALUATION TEST TARGET (MT-3)



CONTENTION 16

1. See Palmetto Alliance response to Applicant's Interrogatory 13 (part 3 in particular) and 5, above.

2. Because of the reduction in the margin for error caused by the expanded heat load planned for Catawba (see Palmetto's response to Applicant's Interrogatory 13, part 3) loss of on-site/off-site power might result in dangerously high temperatures more quickly than would have been the case before Duke Power expanded the number of fuel assemblies to be stored at Catawba. Palmetto Alliance has no way to know exactly how quickly dangerous temperatures would be reached. But as Duke Power's study makes clear, these temperatures would be reached more quickly given an expanded heat load. Since Duke Power has significantly expanded the projected heat load at Catawba without altering the heat removal system, Palmetto believes that Duke Power should be required to show how soon after loss of power the water in the spent fuel pool would reach dangerous temperatures. Such a loss of on-site/off-site power needed to operate the spent fuel pool cooling system might be initiated by a lightening strike in the switch yard or by the effect of an electromagnetic pulse.

3. See Palmetto Alliance response to Applicant's Interrogatory 13, above.

4. See Palmetto Response to Applicant's Interrogatory 13, above.

5. See Palmetto Response to Applicant's Interrogatory 13, above.
6. See Palmetto Response to Applicant's Interrogatory 13, above.
7. See Palmetto response to Applicant's Interrogatory 13, above.
8. See Palmetto response to Applicant's Interrogatory 13, above.
9. See Palmetto response to Applicant's Interrogatory 13, above.
10. See Palmetto response to Applicant's Interrogatory 13, above.
11. What is inadequate is the lack of specific procedures for handling non-Catawba spent fuel. See Palmetto response to Applicant's Interrogatory 13, above.
12. Yes.
13. See Palmetto response to Applicant's Interrogatory 13, above.
14. See Palmetto response to Applicant's Interrogatory 13, above.

CONTENTION 27

1. Applicant's proposed use of mobile off-site monitoring teams equipped with real time monitors provides information which is insufficiently reliable and timely to satisfy Palmetto's concerns.

2. An adequate system of fixed real time monitors such as is described in part 4, "Instrumentation Requirements, availability and system cost," of NUREG/Cr-2644, AN ASSESSMENT OF OFF-SITE, REAL TIME DOSE MEASUREMENT SYSTEMS FOR EMERGENCY SITUATIONS (April 1982) presents the advantage over use of mobile teams of providing instantaneous "real time" data as to off-site radiation exposure and the meteorological information needed to assess the public health and safety threat necessary to take effective protective action. Mobile teams cannot perform this function in a timely fashion. For example, a fifteen mile per hour southwest wind would likely carry major atmospheric release from Catawba completely over downtown Charlotte, North Carolina long before mobile monitoring teams could be dispatched and transmit information to site personnel needed to take effective protection action.

CONTENTION 44

1,2,3,4 and 5. With respect to these Staff Interrogatories, Palmetto Alliance directs the Staff's attention to its earlier answers to staff Interrogatories on this Contention where it adopted the answers and position expressed by Carolina Environmental Study Group which sponored the identical Contention 18. Palmetto Alliance has no independent information on this subject to provide in response to these Interrogatories. The Staff's attention is further directed to the deposition testimony of Applicant's employee's Sharpe and Hendrix of May 12, 1983 where all substantive questioning was conducted by CESC representative Jesse Riley.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

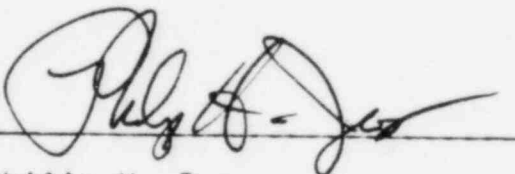
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	Docket Nos. 50-413
DUKE POWER COMPANY, <u>et al.</u>)	50-414
)	
(Catawba Nuclear Station,)	May 27, 1983
Units 1 and 2),)	

AFFIDAVIT OF PHILIP H. JOS

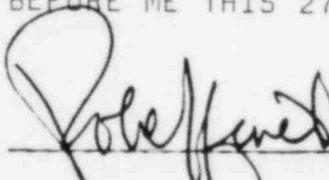
I, Philip H. Jos, do affirm as follows:

I am duly authorized to participate in answering interrogatories and requests for production regarding Palmetto Alliance contentions 6, 7, 8, 16, 27 and 44, and I affirm that the responses given are true and complete to the best of my knowledge.

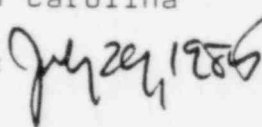

Philip H. Jos

AFFIRMED AND SUBSCRIBED

BEFORE ME THIS 27TH DAY OF MAY, 1983.



Notary Public of South Carolina

My Commission Expires: 

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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(Catawba Nuclear Station,)	May 27, 1983
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PALMETTO ALLIANCE FURTHER SUPPLEMENTARY RESPONSES, ETC.

CERTIFICATE OF SERVICE

I hereby certify that copies of Palmetto Alliance Supplementary Responses have been served by Express Mail upon the parties denoted by *, on May 27, 1983, and have been served upon the following by depositing same in the United States Mail, postage prepaid, on the 31st day of May 1982.

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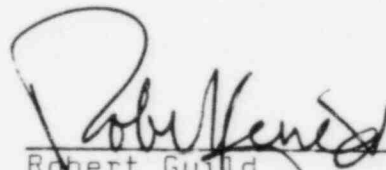
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