

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

DOCKETED  
USNRC

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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In the Matter of )  
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CAROLINA POWER AND LIGHT COMPANY AND )  
NORTH CAROLINA EASTERN MUNICIPAL )  
POWER AGENCY )  
 )  
(Shearon Harris Nuclear Power Plant, )  
Units 1 & 2) )

OFFICE OF SECRETARY  
DOCKETING & SERVICE  
BRANCH

Docket No. 50-400 OL

NRC STAFF TESTIMONY OF PAUL R. BEMIS ON  
JOINT INTERVENORS' CONTENTION NUMBER 1, MANAGEMENT QUALIFICATIONS

Q1. State your name, position, and business address.

A1. Paul R. Bemis

Section Chief, Projects Section 1C  
United States Nuclear Regulatory Commission Region II  
101 Marietta Street, N.W., Atlanta, GA 30323

Q2. State your professional qualifications.

A2. Education:

B.S. Major: Mathematics University of South Carolina  
Cognates: Business Administration, Physics, Chemistry, Computer  
Science

Graduate Work  
Business Administration University of South Carolina  
Nuclear Engineering University of South Carolina  
Statistics University of South Carolina

Societies:

American Nuclear Society, Health Physics Society, Honorary Math Society

I have had formal course work in Management (theory and applied), Organization, (structure and restructure), Personnel Management, Utility Management, Finance, Accounting, Business Law, and Statistics. I have formal course work at the graduate level in the following areas: Business Administration, Nuclear Engineering and Statistics (business and technical applications).

In college, I attended numerous courses both on the undergraduate and graduate level studying many aspects of management and business administration. In addition, I have attended many industry courses on management and organization.

During 1966-1974 I was in the Army. I was continuously promoted ahead of my peer group and in most of my jobs soon found myself in supervisory positions. My nuclear background began while in the military. I was selected to attend a one year tri-service academic program at Ft. Belvoir, Va. which included in-depth study in nuclear theory, operations and a specialty in Health Physics. After graduating first in my class, I entered the SM-1 nuclear power plant to train for and obtained positions through shift supervisor and acting operations manager. In addition to the operations area in the plant, I worked as a health physicist and health physics supervisor.

My next assignment was at the Walter Reed Army Medical Center where I worked as a health physicist and supervised the radiation protection program at the Walter Reed Institute of Research, Armed Forces Institute of Pathology and

Walter Reed Hospital. In addition to my normal assignment, I developed and taught a program to the MD's and Ph.D's in radiation effects on the human body.

During the past ten years, I have held supervisory/management positions in the Utility industry, Consulting Business and Federal Government. During the period August 1974-April 1978, I was in charge of nuclear training at SCE&G's V. C. Summer nuclear station where I developed and implemented management training programs in the areas of operations, craft, and technical training. In addition, I gave short courses to management and engineers and developed a structured, self paced program for operations personnel at the utility's fossil plants. While in this position, I also attended a nine month licensing program which used the Zion Nuclear Station where I certified as a Senior Reactor Operator.

During 1980-1981, with General Physics Corporation, I coordinated the efforts of engineers at Three Mile Island. Later, at Chem Nuclear Systems, Inc., I managed a group of highly technically qualified individuals who supported both the company and the nuclear industry in the areas of regulatory compliance, training, operator licensing, specialized operational programs, rad waste programs and all other technical work. While in this position, I turned the division around from being continually non-profitable to making a profit in one year.

During the periods 1978-1980, and 1981 - Present, I was employed by the NRC. I have worked with the two largest NRC offices: Inspection and Enforcement

(IE) and Nuclear Reactor Regulation (NRR) as well as the largest Regional Office - Region II. From April 1978 to June 1979, my position with IE headquarters was Nuclear Engineer/Operating Reactor Technology Specialist. In that position, I developed and implemented a "modified" SRO program for future resident inspectors. I also developed and implemented programs for the technical staff at NRC in the areas of systems, security, radwaste, health physics, and statistics. I served as a technical assistant to the Korean and Taiwan Governments in the area of operations and health physics. I served as an operations specialist for the Commission during and after the TMI incident. In 1978, I had direct contact with CP&L as a nuclear engineer assigned to the Office of Inspection and Enforcement, PWR Technology Section. At that time, I performed an in-depth review of a reactor coolant pump seal failure that occurred at the H. B. Robinson site, in 1975, in order to utilize the lessons learned in a systems training program for NRC resident inspectors.

In June 1979, I was promoted to a position in NRR, Reactor Engineer/Operator Licensing Examiner. In that position, I developed and administered examinations to reactor operators and senior reactor operators at PWR's, BWR's, and research reactors. I served on numerous licensing task forces which dealt with problem identification and analysis as well as management issues during the immediate post TMI period. During the period 1979-1980, I interfaced with CP&L at all three of their nuclear sites. I developed and administered reactor and senior reactor operator licensing examinations at Robinson; reviewed training being performed at the Harris Energy Center, which included a PWR simulator, craft training for the CP&L System, and

Harris operator training; and developed questions (for reactor and senior reactor license examinations) to be used for examination of operators and supervisors at Brunswick.

In Region II, I was on the Management Programs Team (April-November 1981) where I assisted a team of inspectors in reviewing all facets of management programs to include: operations, surveillance, maintenance, quality assurance/quality control, training, procedures, procurement, regulatory adherence, qualifications and technical capabilities. During 1981, I performed inspections at CP&L's three nuclear sites and at the corporate offices for Region II which covered quality assurance, license and non-license training, management qualifications including formal education and experience, operations, surveillance, health physics (program management), and maintenance.

I was promoted in October 1981 to Senior Resident Inspector where I was in charge of all onsite inspection and coordination of regional inspection at McGuire Nuclear Station, a large two unit facility where one unit was in the pre-startup through commercial phases and the other unit was in the construction and preoperational phases. I was promoted in October 1982 from this position to the Regional Office as a Technical Assistant where I assisted the Regional Administrator in establishing policies and guidance governing the mission of the Region II Division of Engineering and Technical Programs. I conducted and supervised assigned special projects, inspections, safety analyses and investigations. I provided the Administrator with appraisals of and recommendations for improving the effectiveness and

efficiency of Regional inspection and licensing programs. I served in an advisory capacity to the Administrator on technical, policy, and administrative matters coming to the Administrator's office for resolution in the areas of operator licensing, health physics and radiation protection, management programs, and all facets of engineering. I was promoted in November 1982, to my present position of Section Chief. As Chief, Reactor Projects Section, I supervised the implementation of a program for the routine and reactive inspections of assigned power and research reactors during all phases of construction, testing, and operation, to assure the safety of NRC licensing facilities and activities, compliance with NRC requirements, and to enforce the provisions of NRC licenses, rules, regulations, orders and other directives pertinent to the protection of the public health and safety and to the common defense and security.

In the fall of 1982, the Regional Administrator and his top management staff decided that due to numerous continuing problems at CP&L facilities, in particular the Brunswick site, a break from a conventional NRC management style was required and a radical management style would be put into place. In November 1982, I was promoted to my present position with direct responsibility for managing the performance of the NRC inspection and enforcement program at all of the CP&L facilities. Rather than managing solely from the Regional Office I was detailed to observe first hand the operations at the individual nuclear sites and corporate office. During the first six months of this new assignment, I spent approximately 85% of my normal work time assignment at CP&L nuclear sites and the corporate office evaluating: the management at the nuclear sites, and at the corporate

office; plant operation, including support groups; and progress of the Brunswick and Robinson Improvement Programs to ensure that lessons learned from these programs were implemented at Harris. During the past year, I have been evaluating the programs put in place to ensure that progress is being achieved, evaluating implementation of the new corporate and site organizations including individual managers, and following closely the Robinson Steam Generator Repair Project, the implementation of the Brunswick and Robinson Improvement Programs, and the construction progress at the Harris facility.

The Region has senior resident inspectors at each site who implement the direct day by day inspection program for their site while I managed the interface with the senior site managers and CP&L corporate management. When I was onsite, I spent a major part of my time directly observing operations and talking with both Applicants and contract workers. As opportunities for program improvement were identified by myself, the resident and/or regional inspectors, and Region II management, I would discuss these with the appropriate level of CP&L management up to and including the site Vice Presidents; the Senior Vice President, Nuclear Generation, Mr. M. A. McDuffie; the Executive Vice President, Power Supply and Engineering and Construction, Mr. Ed Utley; President/Chief Executive Officer/Chairman of the Board, Mr. Sherwood Smith; and the Board of Directors. Mr. Smith, and Mr. Utley, and other corporate officers have listened to the NRC concerns I expressed and in many, though not all instances, acted with vigor to respond to the concerns of the NRC.

I have been in over half of the nuclear plants in the country and have had a chance to study and observe those utilities' management and organization first hand. The ability to observe different organizations actually functioning has allowed me to adopt the concepts that work and discard the concepts which do not work.

Q3. What is the purpose of your testimony?

A3. The purpose of my testimony is to address, on behalf of NRC staff, Joint Intervenors Contention Number 1 which states:

"The Applicants have not demonstrated the adequacy of their managing, engineering, operating and maintenance personnel to safely operate, maintain and manage the Shearon Harris Nuclear Power Plant as evidenced by their record of safety and performance at their other nuclear power facilities. A pattern of management inadequacies and unqualified and/or inadequate staff is likely to be reproduced at Shearon Harris Nuclear Power Plant and result in health and safety problems."

Q4. What is the basic regulatory authority in this area.

A4. The Atomic Energy Act states in 42 U.S.C. 2232, Section 182(a) that an application for a license shall provide such information as the Commission may determine to be necessary to decide the technical qualification of the applicant to perform the functions to be licensed. 10 CFR 50.40(b) states, in substance, that the Commission will determine if the applicant is technically qualified to perform the tasks for which it is licensed, in this instance to operate the Harris Nuclear Plant.

Q5. What are the primary standards by which the Staff determines whether an applicant complies with the Commission's requirements of technical competency?



A5. To assess an applicant's technical qualifications, the NRC routinely reviews management technical qualification as part of the routine inspection program and a special review is performed by NRC prior to issuance of the operating license using the Standard Review Plan (SRP) and the applicant's commitments which have been accepted by NRC.

As part of I&E's routine inspection program we have inspection modules that ensure that licensee personnel meet the requirements of the various regulations and guidance documents accepted by NRC to which the licensee has committed. In addition to the modules devoted to technical qualifications and organization the majority of the modules that inspect work require inspection of qualifications of those performing the work.

The following modules are those which predominately inspect technical qualifications and/or organization.

- ° 36301 Operational Staffing
- ° 36700 Organization and Administration
- ° 36701 Personnel Qualification Program
- ° 36300 Organization
- ° 40301 Safety Committee
- ° 40700 Onsite Review Committee
- ° 40701 Offsite Review Committee
- ° 40703 Offsite Support Staff
- ° 40806 Safety Committees

In addition to the modules used to inspect technical qualifications and management capability there are sections of the Standard Review Plan which address management capability/qualifications/organization. The licensee should comply with the following SRP sections before the NRC would support an operating license. These sections are:

- 12.5.1            Radiation Protection Organization
- 13.1.1            Management and Technical Support Organization
- 13.1.2-13.1.3   Operating Organization
- 13.2.1            Reactor Operator Training
- 13.3.2            Training for Non-licensed Plant Staff
- 17.2              QA Organization
- 17.3              QA Program

Q6. What is the Standard Review Plan?

The Standard Review Plan (SRP) is prepared for the guidance of staff reviewers in the Office of Nuclear Reactor Regulation in performing safety reviews of applications to construct or operate nuclear power plants. The principal purpose of the SRP is to assure the quality and uniformity of staff reviews and to present a well-defined base from which to evaluate proposed changes in the scope and requirements. It is also a purpose of the SRP to make information about regulatory matters widely available and to improve communication and understanding of the staff review process by members of the public and the nuclear power industry.

- Q7. As a framework for discussing enforcement actions, such as those in the above contention, would you briefly describe the classification system used in NRC enforcement actions?
- A7. Prior to October 7, 1980, the NRC classified noncompliances in three categories: (1) violation, (2) infraction, and (3) deficiency. A violation was a noncompliance severe enough to warrant civil penalty action. An infraction was a noncompliance not having major safety significance. A deficiency was a minor noncompliance, such as procedural error, again having very little safety significance. A violation in the pre-October 7, 1980 policy would be comparable to the current severity level I and II and the most severe of the level III violations. An infraction would be comparable to the less severe of the level III violations, and the level IV violations. A deficiency would be comparable to severity V in the current policy.

Between October 7, 1980 and March 9, 1982, an interim NRC enforcement policy was used containing six levels of violations. This interim policy was replaced by the current enforcement policy, 10 CFR Part 2, Appendix C, March 9, 1982, which classified violations into five levels. Severity levels for the vast majority of violations from Joint Contention 1 are described in Supplement I "Reactor Operations" of the current policy. Even though violations related to other supplements occurred, the classifications used in Supplement I are representative. The supplements provide guidance to the staff in determining the severity levels of violations. Severity levels are broad measures of safety significance. Numbers of violations

alone do not determine the acceptability of licensee performance. The severity levels, the repetitiveness of similar violations, and licensee actions to remedy and prevent violations are better measures of performance.

Q8. Briefly describe the severity levels in the present enforcement policy.

A8. The severity levels described in 10 CFR Part 2, Appendix C, Supplement I are as follows.

A. Severity I - Very significant violations involving:

1. A Safety Limit, as defined in 10 CFR 50.36 and the Technical Specifications, being exceeded;
2. A system<sup>1/</sup> designed to prevent or mitigate a serious safety event not being able to perform its intended safety function<sup>2/</sup> when actually called upon to work;
3. An accidental criticality; or

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1/ "System" as used in these supplements, includes administrative and managerial control systems, as well as physical systems.

2/ "Intended safety function" means the total safety function, and is not directed toward a loss of redundancy. For example, considering a BWR's high pressure ECCS capability, the violation must result in complete invalidation of both HPCI and ADS subsystems. A loss of one subsystem does not defeat the intended safety function as long as the other subsystem is operable.

4. Release of radioactivity offsite greater than ten times the Technical Specification limit.<sup>3/</sup>

B. Severity II - Very significant violations involving:

1. A system designed to prevent or mitigate serious safety events not being able to perform its intended safety function; or
2. Release of radioactivity offsite greater than five times the Technical Specifications limit.

C. Severity III - Significant violations involving:

1. A Technical Specification Limiting Condition of Operation being exceeded where the appropriate Action Statement was not satisfied that resulted in:
  - (a) Loss of a safety function; or
  - (b) A degraded condition, and sufficient information existed which should have alerted the licensee that it was in an Action Statement condition;
2. A system designed to prevent or mitigate a serious safety event not being able to perform its intended function under certain

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<sup>3/</sup> The Technical Specification limit as used in the Supplement (Items A.4, B.2, and C.5) does not apply to the instantaneous release limit.

conditions (e.g., safety system not operable unless offsite power is available; materials or components not environmentally qualified);

3. Serious dereliction of duty on the part of personnel involved in licensed activities;
4. Changes in reactor parameters which cause unanticipated reductions in margins of safety;
5. Release of radioactivity offsite greater than the Technical Specifications limit; or
6. 10 CFR 50.59 such that a required license amendment was not sought.

D. Severity IV - Violations involving:

1. 10 CFR 50.59 that do not result in a Severity Level I, II, or III violation;
2. Failure to meet regulatory requirements that have more than minor safety or environmental significance; or
3. Failure to make a required Licensee Event Report when the reported matter does not constitute a violation.

E. Severity Level V - Violations that have minor safety or environmental significance.

Q9. Describe the Brunswick enforcement history and what measures the Staff has taken to address it.

A9. It is the NRC's responsibility after a license is granted, to inspect and evaluate performance of the licensee under the license conditions to assure the continued appropriateness of the licensee's retention of that authority. Where actions are needed to improve licensee performance, appropriate enforcement measures will be taken by the NRC.

Brunswick's enforcement history has been poor. This is indicated by poor Systematic Appraisal Licensee Performance (SALP) ratings and numerous violations some of which involved escalated enforcement that occurred in the past. The poor enforcement history included a large civil penalty in February 1982, for violations associated with surveillance and quality assurance activities. Originally, it was thought that only a few surveillance requirements were missed but after a thorough check of the Technical Specifications it was determined that a large number of Limiting Conditions for Operation could not be verified. When the magnitude of these problems was recognized, CP&L management shut down both units, performed the required verifications, and began development of the Brunswick Improvement Program (BIP). By mid-1982, the Regional Office had concluded that no substantial program improvements had been observed since the Cantrell concerns were aired in the 1979 ASLB hearings on Harris. Therefore, the

NRC insisted on a formal improvement program. The NRC gave general input to the BIP requirements. The general requirements of this program were:

- ° Establish a centralized tracking system to insure all regulatory requirements and commitments are met.
- ° Rewrite all procedures required for safe plant operation insuring technical adequacy.
- ° Upgrade the corporate and site QA organization.
- ° Continue post-maintenance testing program.
- ° Upgrade training and discipline of operations.
- ° Upgrade the corporate and site Nuclear Safety organizations.
- ° Implement the findings of several previous outside audits.

This program was confirmed and imposed by an NRC Order on December 22, 1982. Enforcement actions since this program was initiated greatly declined. This was due to a responsive management organization. Many weak programs were upgraded significantly and restructured to provide for rapid and permanent resolution of deficiencies. An adequate program for improvement has resulted and is expected to continue.



In the late 1970's, CP&L QA developed a procedure for Brunswick, AI-33, which if kept current would have greatly reduced the probability of the problems which were the precursor to the large civil penalty. This procedure was a cross reference of all T/S surveillance requirements to a procedure. Due to the large number of changes to T/S, Brunswick decided to not expend the effort to keep this procedure current. There was no NRC requirement for this procedure. This procedure is now kept current at Brunswick, and Harris presently has a similar system to cross reference surveillance requirements.

Improved programs and group coordination at the site are in part, responsible for the successful installation of an augmented off-gas system at Brunswick. The scope of this project was exceeded only by initial facility construction in complexity and demands on the entire organization. System performance since startup testing has been noteworthy.

A significant improvement in the area of radwaste control and handling has spurred numerous inquiries by other industry facilities into the CP&L techniques that were implemented to gain control over this problem area. The performance of the radwaste group at Brunswick improved significantly and currently is performing well. The success is due to a management being more receptive to supervisor and employee input and an application of good engineering practices.

Although the initiation of these programs was hastened by earlier NRC enforcement actions, these programs have been successful in bringing about

necessary changes, and have promoted an attitude toward continued improvement that the NRC considers an integral part of safe operation.

CP&L management attention to overcoming past problems at Brunswick and their present close attention to the construction of Harris cause the staff to conclude that the construction of the Harris project will be completed in accordance with regulatory requirements.

Q10. Based on CP&L's enforcement history, what are your conclusions as to CP&L management's technical competence to safely operate the Harris unit?

A10. First, not every violation of NRC requirements is germane to management's ability to safely operate a nuclear facility. Violations occur for a multitude of reasons, not the least of which are personnel errors, vendor equipment, and procedural ambiguities. While it is important to identify and correct the root causes of all deficiencies, historically, most violations have been of the lesser severity levels. Individual violations are simply that; they by themselves usually do not directly reflect on overall management, although the NRC does track repetitive violations to try to prevent programmatic breakdowns. Taken as a time series, my review of the enforcement history of CP&L sites indicates violations are becoming fewer in number. More importantly, the level of severity of the violation is decreasing. This indicates that violations which have potential to affect public health and safety are decreasing. The NRC recognizes that errors will be made in the construction and operation of a nuclear plant.

Our task, in part, is to see that major safety problems are obviated and that programs are implemented to prevent major safety problems.

Second, the Operating License, if issued, will include Technical Specifications which contain specific requirements that must be followed to ensure safe operation of the plant. Sections 2, 3 and 4 of the Technical Specifications, however, are most applicable to direct protection of the public in that they govern specific safety limits, limiting safety system settings, operability of equipment, limiting conditions for operation of safety equipment, and to require tests to ensure that safety equipment remains operable.

My assignment in November 1982 to this position came just prior to issuance of the largest civil penalty issued by NRC at the time to CP&L for problems identified during the summer of 1982 at Brunswick. At the time of my assignment my impression about the management at all levels of the CP&L structure was that they were not being kept informed as to what was occurring at the nuclear facilities, that they were only interested in meeting the minimum requirements, and that they did not understand the difference in operating a nuclear facility with its many different rules and regulations for protection of the public health and safety and operating a fossil facility. We in nuclear regulation call this a "fossil mentality". This does not mean that nuclear plants were being operated unsafely. It means that they did not give the level of care, attention, and importance to the potential for adverse effects that we in NRC felt was necessary.

The development of the Brunswick Improvement Program in 1982 and the issuance of the civil penalty for the breakdown in management controls was where I feel that CP&L's genesis of a "nuclear mentality" took place. From the summer of 1982 to present I found strong dedication from all CP&L management not only to meet the NRC regulations, but to exceed our requirements when possible. I have had numerous conversations with the President and Chief Executive Officer of CP&L, Mr. Sherwood Smith, and almost daily contact with the Executive Vice President, Mr. Ed Utley, who has direct responsibility for the nuclear organization and site managers. I found management open minded about preventative enforcement. By this I mean they would envelop areas that the resident inspectors and I would see as having potential enforcement concerns and implement immediate corrective measures in these areas prior to NRC being required to institute enforcement actions. I was asked to speak to CP&L's Board of Directors recently and found them to be quite knowledgeable about the past shortcomings and the present programs for improvement. The Board members definitely support continued improvement in nuclear management controls. This direct involvement of the highest management at CP&L was necessary and has allowed CP&L to make great strides towards regulatory recovery.

The violations identified at Harris over the past three years were, for the most part, violations of specific requirement which did not represent programmatic or management control system failures. Also, these types of violations are generally not applicable to the plant once operating due to increased personnel awareness that comes about with having fuel in the core and the potential for a radiation hazard. CP&L has already begun training

the operations staff to react as if fuel was in the core in an attempt to avoid careless errors later.

Therefore, the staff concludes that historical violations at Harris do not generally involve programmatic failures. It is NRC's position that Harris management has the technical capability to safely operate the Harris plant in conformance with NRC requirements.

Q11. Can you give some specifics concerning adequacy of corrective actions for violations at Harris?

A11. There are two areas that are noteworthy that occurred during the previous two years.

The first area was in CP&L's receipt inspection of vendor products. The CP&L and NRC inspection program had discovered numerous problems with equipment received onsite after inspection by their contractor EBASCO. EBASCO inspection is performed under CP&L Supervision. After findings by NRC and CP&L's inspection organization that EBASCO inspection was inadequate, the licensee decided that rather than relying on their contractor, with CP&L only performing an audit, they would perform a 100% receipt inspection of vendor products for those vendors who had created past problems. This program has prevented major rework efforts at a later date by preventing defective equipment from being installed. We call this preventative enforcement.

The second area where CP&L management's attention has been beneficial is in the pipe hanger inspection program. Due to CP&L and NRC findings in the pipe hanger program, CP&L completely shut down the inspection program of pipe hangers from July thru December 1983. During this time, they developed an in-depth program where as many as 47 attributes, which exceeds industry standard, are inspected in each hanger package. There are approximately 19,000 seismic hangers to which this program will apply. CP&L then began a 100% reinspection of all pipe hangers. The preliminary results (of some 2500 packages) of this inspection show only problems with minor significance and only 17 hangers will require weld rework to correct minor cosmetic defects. This will be addressed in more detail in Staffs' testimony on Eddleman Contention 41.

One indicator of positive licensee management performance is the willingness and ability to take effective corrective actions for identified problems. The above examples indicate that CP&L management is capable of taking adequate corrective actions and establishing ongoing programs for assuring safe plant construction and operation. NRC will continue monitoring of Harris plant construction and testing.

- Q12. Does Brunswick's and Robinson's history, to the extent it may be relevant, evidence adequate management of the facility in regard to projects similar to the construction and the eventual operation of Harris?
- A12. Our experience with direct observation of CP&L's participation in significant projects during the period December 1982 to present, including the

installation testing and startup of an Augmented Off-gas System, retubing of the Brunswick Unit 1 Main Condenser, recirculation system piping repairs and the steam generator replacement, allows us to evaluate CP&L's performance. The staff concludes CP&L's performance as described above is adequate.

The Brunswick facility has shown steady improvement over the past 18 months in management programs, control and ability to adhere to regulatory requirements. Each project improved over its predecessor indicating a management committed to improvement. NRC concerns expressed in a December 22, 1982 meeting (this meeting is documented in IE report nos. 50-261/82-43, 50-324/82-47) with CP&L included, "lack of meticulous compliance with regulatory requirements", "corrective action programs appear to be well conceived, but the ability to fully implement such programs has not been demonstrated", and "insufficient attention has been focused on facility procedures". CP&L acknowledged these NRC concerns and was able to implement corrective actions in such a way that many major improvements resulted, bringing about a more enlightened and aggressive staff attitude that was more sensitive to detail and NRC regulations than before implementation of the Brunswick Improvement Plan. This was accomplished through restructuring management, more involvement of key corporate individuals stationed in management positions at the site, providing corporate support as well as initiation and follow-up on the many phases of the Brunswick Improvement Plan. CP&L recognized where weak areas existed and filled positions with capable individuals from outside the company when necessary. The result has been an improved, more closely coordinated operation, capable of performing difficult, integrated site projects. Region II feels that the Brunswick of today is significantly

improved over the Brunswick of five years ago. Our aggressive inspection and enforcement program gives us confidence that CP&L will continue to improve its management and operation of its entire nuclear program.

Improved management has been manifested in several successful long term goals. These included a significant rewrite of the Brunswick facility operating procedures which required control of the integrated activities of operations, quality assurance, and the onsite nuclear safety group. The project remained on schedule after approximately 18 months of work. There was also good coordination of vendor and health physics personnel in the repair of intergranular stress corrosion cracking indications in recirculation piping.

The quality of the overall plant operation at all three sites has improved significantly with direct contributions by onsite nuclear safety and quality assurance staff personnel. CP&L found that expansion of these organizational units, both in personnel and types of activities, would augment their improvement programs, while supplying a self check on completion of many of the plant commitments. Furthermore, the site assumed a more responsive role toward these organizations as they began to generate valid and constructive issues. The aggressive nature of the two groups at the site level indicates a commitment at the corporate level to excellence and discipline demanded of site organizations.

Thus, CP&L has evidenced steady improvements. We conclude that CP&L has adequate management, and technical capability to perform projects of the



scope and size of the construction and the operation of the Harris plant within regulatory requirements.

Q13. Do you believe the problems experienced at Brunswick related to management indicated those problems exist at Harris?

A13. Some of the management problems at Brunswick were also related to Harris' problems. The following comparisons between Brunswick and Harris highlight the extent to which past problems at Brunswick affected activities at Harris. Where problems were identified specifically to the corporate organization, the problems were reflected at both Brunswick and Harris but to a lesser degree at Harris due to Harris being in the construction stage.

From startup of the plant, a lack of management attention and followup, and a poor flow of information caused many issues at Brunswick to be lost somewhere in the CP&L organization, and subsequently they were not addressed. Problems were associated with both corporate and onsite management controls. Management changes at Brunswick over the last two years addressed the past problems at Brunswick, resulting in tighter controls and a better disciplined operation. A larger turnover of personnel at Brunswick made it hard to keep highly qualified people. However, due to management directed changes at Brunswick over the past 18 months, employee morale has improved and site attrition has dropped from greater than 11% to less than 4% per year. For the past five years Brunswick's work force has had to work highly extended hours. This was due to extensive numbers of modifications required by TMI, and a large amount of plant rework required by equipment

failure. The majority of the work required to be performed has been completed and NRC regulations on number of hours worked has reduced the existence of extended work hours for long periods of time. This has increased quality of work performed and morale of the workers.

There were numerous problems at Brunswick in the past dealing with the radiation protection program. The problems occurred, in NRC's view, due to poor management control of the program. In the summer of 1980, the radiation protection problems culminated with a large civil penalty being issued for Brunswick allowing contaminated material to be dumped in a clean area. CP&L management then took decisive action by installing a new manager over the program and gave him the required backing to completely restructure the radiation protection program. Upgrading procedures, additional upgrading of equipment, and more qualified personnel were installed at the facility. This program has seen continued improvement to the present and is reflected in each SALP rating since that time. Harris on the other hand has two major factors working for it. One is the fact that it is a pressurized water reactor, whereas Brunswick is a boiling water reactor which is inherently a greater radiation problem. In addition, the Harris program has benefited from the problems experienced at Brunswick, in that personnel are better trained from the beginning, a superior program will be in place at fuel load, and Harris has state-of-the-art equipment to begin operation. These items lead the NRC to conclude that the Harris radiation program will meet requirements and not have the problems experienced at Brunswick.

The major violations identified at Brunswick involved numerous examples and long periods of time. The problems associated with Harris relating to insufficient management oversight were of a much lesser magnitude. Site management at Harris picked up on problems more quickly and maintained followup. Identified violations at Harris were, generally, isolated events.

Q14. Have CP&L's corrective actions and performance since the civil penalty referenced above convinced you that CP&L's quality assurance program is capable of ensuring that the construction and operation of Harris will be conducted safely and within regulatory requirements?

A14. Yes. Since implementation of the Brunswick and Robinson Improvement Programs, licensee attention to detail and preventative enforcement has improved, as has the attitude toward quality assurance. The quality assurance group has dedicated itself to developing substantive findings, conveying these findings to the plant staff in a more professional manner, and identifying probable root causes rather than mere symptoms of problems. This was achieved by personnel, policy, and program changes aimed at upgrading the QA department role to insure quality operations. Quality assurance and onsite nuclear safety groups are two onsite groups that share common corporate management. For this reason, uniformity of corrective actions and improvements between sites is expected. NRC is closely monitoring the uniform application of the improvement program at all CP&L nuclear facilities to ensure that corrective actions resulting from previous enforcement actions are effective.

Since 1981, CP&L has expanded the quality assurance/quality control staff and broadened their responsibilities. This has improved the ability to perform surveillances of safety related activities and has broadened the expertise of the staff. Still further staff expansion has begun to cover construction activities and allow qualification and monitoring of contractor inspectors. Overall, the onsite staff appears strong in construction-related and administrative control expertise. Additionally, the onsite nuclear safety staff supplements the quality assurance staff in review of plant operations. Based on the adequacy of the onsite quality assurance staff in the past, ongoing staff increases, and pre-planning, Region II believes adequate quality assurance controls will be in place to ensure that the construction and operation of Harris can be performed safely and in compliance with NRC requirements.

Q15. How will NRC ensure that the operation will be done without endangering the public health and safety?

A15. The NRC reviews events and findings not only between sites belonging to the same utility, but also among utilities within the Region and utilities in other regions. A resident inspector will often contact other residents at similar facilities when he is investigating an issue. The resident inspector and region based inspectors also relay issues to regional management where the issue are addressed for generic implications. If there is a generic safety concern, the identifying region will make notification to the other regions and the cognizant Headquarters offices in a time frame consistent with the urgency. Thus, the NRC addresses all problems on an as needed generic basis, not just between sites of a particular utility.

The NRC has given considerable attention to CP&L due to past performance and is performing an aggressive inspection program at CP&L sites. Even though implementation of the Brunswick and Robinson Improvement Programs (which closely resembles the Brunswick Program) appear to have corrected past deficiencies, the NRC will continue an aggressive program to ensure that measures taken to correct past deficiencies will continue to be effective and that future problems are remedied.

Q16. Has the NRC performed a review of CP&L's corporate and Harris site organization?

A16. Yes. In accordance with the April 17, 1980 Commission Order CLI-80-12, 11 NRC 514 (1980), the staff performed a preliminary assessment of the organization and management of Carolina Power and Light Company as part of the acceptance review of the operating license application for the Shearon Harris Nuclear Power Plants Units 1, 2, 3 and 4. Results of this review were furnished to the Commission in SECY 81-617, were made available for public inspection in the Commission's Public Document Room, and were placed in the Wake County Public Library, 104 Fayetteville Street, Raleigh, North Carolina.

On the basis of its assessment in Chapters 12, 13, and 17 of the most recent SER, the staff concluded that the proposed organization and management for operation of the Harris facility, at both the corporate and plant levels, are acceptable. The staff will review the final organization and management

of CP&L as part of its detailed review of the Harris application and will report the results of that review in a supplement to the Harris SER.

Q17. Would you outline the corporate and technical support organizations?

A17. Carolina Power and Light Company is responsible for the design, construction, modification, and overall operation of the Shearon Harris plant. CP&L personnel have the benefit of experience gained in the design, construction, modification, operation, training, support engineering, security, and fire protection required at CP&L's three operating nuclear plants. One of these plants, H. B. Robinson, Unit 2, is similar to Harris even though it is an older design and the remaining two plants are BWRs.

On August 24, 1983, CP&L underwent a major restructuring of the corporate organization. This was explained to NRC as a major step in CP&L's movement toward nuclear consolidation in the CP&L organization. In December 1983, the applicant submitted a revision to its management capabilities report that reflect this organization change, and a subsequent revision to the FSAR will also incorporate the recent changes.

The Executive Vice President (EVP), Power Supply and Engineering and Construction (PSE&C), is responsible for the coordination of all nuclear (as well as fossil, transmission, and distribution) activities within the company that primarily are housed in the Nuclear Generation Group.

The EVP is kept abreast of the design, construction, staffing, training, and other aspects of the Shearon Harris facility through reports prepared by the Nuclear Generation Group, the Operations Support Group, the Corporate Nuclear Safety and Research Department, and the Corporate Quality Assurance Department. In addition to participating in senior management meetings for each site on a monthly basis, the EVP also communicates, as required, directly with the group, department, and section managers to receive first-hand information. The EVP renders the decisions, when required, on any interfaces that may arise between the groups and departments that perform nuclear activities.

The Nuclear Generation Group (NGG) is under the direction of a Senior Vice President, who reports to the EVP PSE&C. Six departments report directly to the Senior Vice President. The departments are: (1) Harris Nuclear Project; (2) Robinson Nuclear Project; (3) Nuclear Plant Engineering and Licensing; (4) Nuclear Construction; (5) Nuclear Support Staff; and (6) Engineering and Construction Support Services. The Nuclear Generation Group is responsible for engineering, construction, startup, operations, and maintenance of the company's nuclear plants, except for Brunswick, which reports directly to the EVP PSE&C. The facilities of the NGG include the staff support such as engineering, licensing, and administrative.

The Vice President of the Nuclear Engineering and Licensing Department, who reports to the Senior Vice President NGG is responsible for providing engineering support for the company's operating nuclear plants and for managing the company's nuclear licensing activities. This vice president is

also responsible for ensuring that operations and engineering feedback on both internally and externally generated nuclear plant safety issues are incorporated into new plant design and into modifications to operating plants. Four sections and one unit report to this Vice President: (2) Engineering Support Sections, (1) Nuclear Licensing Section; (1) Nuclear Engineering Project Section; and (1) Safety Review Unit.

The Vice President of the Nuclear Plant Construction Department, who reports to the Senior Vice President NGG, is responsible for providing construction support to the company's nuclear projects. Currently, this support includes responsibility for construction procurement and contracting and construction support on plant modification projects or new plant construction as requested by the Harris, Robinson, and Brunswick Nuclear Project Managers.

The Manager, Engineering and Construction Support Services Department, who reports to the Senior Vice President NGG, has as primary functions budgeting, cost control, and scheduling for the NGG.

The Manager of Nuclear Staff Support, who reports to the Senior Vice President NGG, is accountable for optimizing nuclear operations and supporting the Senior Vice President in meeting department objectives and goals and in department planning, control, coordination, communication, and overall management and direction. He does this by providing administrative and technical support; by recommending, developing, and implementing policies and procedures; representing the Senior Vice President in meetings with other departments; assisting plant management others in directing



problems to department management levels; carrying out recurring and special projects often of major scope and importance; representing the department on task forces; and ensuring the validity of information and accuracy of reports, presentations, and speeches prepared for the Senior Vice President.

This manager is also responsible for effective interface and communication with the new media, regulatory agencies, and audit groups and the public in behalf of the Senior Vice President NGG.

The Operation Support Group (OSG) is under the direction of a Senior Vice President who reports to the EVP PSE&C. The OSG provides offsite technical and managerial support in the Areas of nuclear fuel procurement, refueling operations support, plant procurement support, operation and draft training and technical support.

The Manager of Fuel, who reports to the Senior Vice President OSG, is responsible for the management of nuclear fuels used for the production of electrical power. The manager is responsible for forecasting, planning, accounting, and procuring nuclear fuel materials in order to meet the company's needs. The manager is also responsible for providing technical and administrative support to the nuclear plants on fuel-related licensing, regulatory, and other activities.

The Vice President of Materials Management, who reports to the Senior Vice President OSG, is responsible for the effective management of purchasing, materials control, warehousing, and salvage and disposal of the company's

material needs. This Vice President is responsible for overseeing the activities of the Purchasing and Materials Control Sections.

The Vice President of the Operations Training and Technical Service (OTTS) Department, who reports to the Senior Vice President OSG, is responsible for overseeing the management of and provision for a broad variety of nuclear support functions to coordinate regulatory and ecological matters; coordinate environmental and radiological matters; coordinate nuclear plant training for plant personnel; coordinate emergency preparedness activities; and provide other special services and technical expertise. The following sections and units reports to this vice president: (1) Nuclear Training Section; (2) Radiological and Chemical Support Section; (3) Emergency Preparedness Unit; (4) Environmental Technology Section; (5) Lands Section; and (6) Permits Unit.

The Manager of Corporate Quality Assurance (CQA), who reports to the Executive Vice President PSE&C, is responsible for the consolidation efforts of quality assurance (QA), quality control (QC), and audit functions. Each nuclear plant site now has onsite QA/QC staff to oversee QA/QC activities for engineering, construction, and operation. The Manager of Corporate Quality Assurance is also responsible for oversight of QA/QC activities at each of the nuclear plants and oversight of the Quality Assurance Services Section. In this way, the Corporate QA Department Manager oversees the QA/QC activities of both the Power Supply and the Engineering and Construction Groups while maintaining independence from any responsibilities within those groups.

The Vice President, Corporate Nuclear Safety and Research Department (CNS&R), who reports to the Executive Vice President PSE&C, provides the CP&L Senior Management (including the Chairman/President and Board of Directors) with a continuing assessment of current nuclear safety or quality assurance issues requiring immediate attention. The Vice President CNS&R has the authorized organizational freedom to contact anyone within the company, including the Chairman/President and the Board of Directors, to resolve such concern to his satisfaction. This department includes the following sections: (1) Corporate Nuclear Safety; (2) Corporate Health Physics; and (3) Research. Figure 3 shows this organization.

Q18. Do you find this organizational structure adequate to operate within the regulations?

A18. Yes, subject to the concerns listed in A20 below and in the SER.

Q19. Did you review the technical qualifications of these individuals?

A19. Yes. The staff has reviewed the resumes of the individuals filling primary technical support positions and finds that each meets the specified standard listed in the SRP for his position and is acceptable.

Q20. What conclusions did you make concerning the CP&L corporate organization?

A20. The applicant has described the organization for the management of, and the means for providing technical support for the plant staff during operation

of the facility. As mentioned in Section 13.1.1 of the SER, CP&L underwent a restructuring on August 24, 1983, to take a major step in consolidation of nuclear activities within CP&L. The following conclusions and confirmatory items are based on the recent organization change as applied to the acceptance criteria of SRP 13.1.1. None of the items below would require a rating of unacceptable by the regulations, but until the NRC can evaluate the organization as it functions these items will remain under review.

SRP 13.1.1 states: "A corporate officer should clearly be responsible for nuclear activities, without having ancillary responsibilities that might detract from his attention to nuclear safety matters." The only corporate officer responsible for all nuclear activities is the Executive Vice President, PSE&C. However, he also is responsible for all fossil generation, transmission, and distribution for the company. Although not a violation of the regulations, this does not meet the portion of the SRP acceptance criteria stating that the person in charge of nuclear activities should have no ancillary responsibilities, but CP&L is planning further steps toward consolidation. The staff finds that the present organization within CP&L is acceptable for the operation of the Brunswick and Robinson sites, although further nuclear consolidation is desirable. This matter is still under review.

The nuclear training organization is not under the nuclear generation group. It reports to the Operations Support Group, where the Group Senior Vice President could become directly involved, when needed, if training were not being determined by the needs of the plant, but rather by a corporate

organization. The Group Senior Vice President, Operation Support, has stated and is formulating company policy that site training needs will be determined by the plant with a very strong "dotted line" of reportability to site management. The appointment of a new corporate training manager who was previously a Plant General Manager should solidify this policy. The staff finds the reportability of this organization to be acceptable. This matter is still under review.

The Corporate Quality Assurance and the Corporate Nuclear Safety and Research Departments report to the Executive Vice President, PSE&C rather than to the corporate officer who has primary responsibility for nuclear support activities, which appears to be common industry practice. The reportability of the departments was determined by the applicant to give these departments additional independence. However, not only does this place excessive direct responsibility on the Executive Vice President who is already responsible for the largest majority of the company employees and operation, it also removes the day-to-day decision-making capabilities involving interface with the departments from the corporate officer who is considered as the primary corporate officer for nuclear support activities. The staff finds this reportability to be acceptable for the three sites at this time. However, the staff will continue to review this organization in practice.

The transition into the new organization has taken place; new people are filling key positions. Even though the individuals filling the positions have extensive nuclear backgrounds to include management, several positions

responsible for operational areas are not filled by individuals with direct operations experience. A nuclear reactor and the organizations to support it are highly complex in nature and require a total commitment by experienced management to attain a high degree of confidence that the unit will be run so the health and safety of the public will not be endangered. Because CP&L has multiple sites, the organizations required for support are even more complex. The staff recognizes that there have been deficiencies in the past operation of CP&L's nuclear units, but a strong continuous commitment by CP&L management to excellence should overcome past deficiencies. The staff will closely monitor these activities to determine whether actual performance is clearly demonstrated during major evaluations.

Q21. Would you outline the Harris project organization?

A21. The August 24, 1983, reorganization created a new corporate level position at each site. This position at Harris is filled by a corporate officer, Vice President Harris Nuclear Project.

In addition, new section level positions were created to remove administrative burden from the plant general manager. We find this to be an acceptable organizational structure.

Q22. Have you reviewed the qualifications of the Harris plant personnel?

A22. Yes. In FSAR Section 13 Revision 9, the applicant identified those plant staff positions for which the qualification requirements are as provided in

the draft ANS 3.1-September 1979, "Standard for Selection and Training of Personnel for Nuclear Plants," and Second Proposed Revision 2 to Regulatory Guide 1.8. September 1980, Personnel Qualification And Training. It should be noted that this standard is post TMI and incorporates experience gained through analysis of the TMI accident. The applicant committed to this standard in FSAR Chapter 1.8. These positions include the key personnel and the operations staff. The staff has reviewed the resumes of all individuals presently assigned to supervisory positions and above (including reactor operators and above in operations) against the applicable standard, and all meet or exceed the requirements, with the exception of the Plant Manager. ANS 3.1 requires the Plant Manager to have held a SRO license or have received the equivalent training. The Plant Manager has been scheduled to receive the equivalent training, but has not started as of this date. The staff will ensure the Plant Manager meets this requirement.

Of the 384 people in the plant organization as of October 1, 1983, 64 people had degrees in engineering and 57 had degrees in other fields. Of the 111 people in the plant operations organization, 15 people had degrees in engineering and 17 had degrees in other fields. The individuals in the line operating organization had the following qualifications: the operations supervisor is an engineer and has been previously SRO licensed; all four shift foremen have held an SRO license, and three have previous experience as shift foremen; one senior control operator has been previously licensed; all 12 control room operators have been previously licensed, with 9 having previous experience. CP&L is aware that the staff requires at least one individual on each operating shift who has substantive previous PWR

operating experience, including startup and shutdown of the PWR and under conditions that one might expect to encounter during the initial startup and power escalation at the Harris Plant. This individual is not required to be licensed on the Harris plant nor to be a CP&L employee, but may be retained as a consultant or an advisor to the Harris shift crew. The staff requires that this individual be assigned to each shift until the plant achieves the 100% power level. In the judgment of the staff, by that time the Harris operating personnel will have acquired sufficient operating experience to operate without such consultants. The staff further requires that the applicant submit to the NRC a description of (1) the qualifications of each of the individuals on whom the applicant will rely for this experience and (2) the details regarding the location of these individuals during the shift and how they will interact with the shift organization. We will closely monitor CP&L in this area.

Q23. What conclusions have been drawn on the Harris site organization?

A23. Following the criteria of Standard Review Plan (SRP) 13.1.2, the staff concludes that the applicant (1) has established an acceptable organizational arrangement for plant startup testing and operation, (2) has provided a sufficient number of candidates for licensed positions, (3) has made an acceptable commitment to provide shift technical advisors (STAs) in accordance with the requirements of TMI Action Plan Item I.A.1.1, and (4) has established acceptance qualification requirements for plant personnel.



As noted in Sections 13.1.2.1 and 13.1.2.2 of the Harris SER which are management sections, the applicant will submit final figures showing the project and plant organizations for staff review before the staff makes its determination regarding the acceptability for staffing plans. Verification of the numbers and qualifications of these personnel is a ministerial matter which Region II will review prior to issuance of the operating license. As noted in section 13.1.2.3 of the Harris SER, the staff will require at least one individual on each shift to have substantive previous PWR operating experience. This will be made a license condition.

Q24. Previously you have mentioned SALP reports. What is a SALP Report?

A24. A formal licensee performance assessment program that was implemented in accordance with the procedures discussed in the Federal Register Notice of March 22, 1982. This program, the Systematic Assessment of Licensee Performance (SALP), is applicable to each operator of a power reactor or holder of a construction permit. The SALP program is an integrated NRC staff effort to collect available observations of licensee performance on a periodic basis and evaluate performance based on these observations. Positive and negative attributes of licensee performance are considered with emphasis placed on understanding the reasons for a licensee's performance in important functional areas, and sharing this understanding with the licensee. The SALP process is oriented toward furthering NRC's understanding of the manner in which: (1) the licensee directs, guides, and provides resources for assuring plant safety; and (2) such resources are

used and applied. The integrated SALP assessment is intended to be sufficiently diagnostic to provide meaningful guidance to the licensee. The SALP program supplements the normal regulatory processes used to ensure compliance with NRC rules and regulations.

Q25. Has the SALP process evidenced the improvement in CP&L's management technical capability you have described above?

A25. Yes. The most recent SALP should be issued in late August 1984. This SALP will be the NRC's most recent appraisal of the licensee's performance. When the SALP report is issued it will be sent to all parties and it will be offered as Staff evidence. As of the date I completed this direct testimony, the report had not been released to the public. But I have read all the inputs to the SALP report and in my judgment, I can say there has been improvement observed in most areas from all types of inspectors. On a recent visit to Brunswick by the Director of the office of Inspection and Enforcement, he compared this visit to one he made 18 months ago; he expressed his "amazement" at the positive changes at the site. The changes are being seen in Washington as well as at the sites. The NRR personnel have seen significant change in their licensing interface with the corporate office. The Director of the Office of Nuclear Reactor Regulation, on a recent visit to Brunswick, made positive remarks about the improvements at the site.

The comments from others as well as my personal observations on site, supports the Staff view that CP&L has come a long way. However, the NRC and

CP&L recognize the need for maintaining this progress and for continued management attention and improvement. CP&L appears committed to pursuing further improvement and the NRC will aggressively monitor their progress to assure continued improvement.

Q26. What is the NRC's position on CP&L's technical ability to operate the Harris Nuclear Plant?

A26. The Harris plant has had the benefit of the CP&L operating plants improvement programs as well as completing most backfits and TMI modifications prior to operation. They are training enough people to start operation with six shifts and many of their operating shift supervision have held NRC licenses. Region II supports the licensee's operating license application, with the noted reservations relating to the overall corporate organization, and will continue to support licensing as long as improvements continue.

Q27. Would you summarize your conclusions?

A27. The staff concludes CP&L is technically qualified to operate the Harris facility within the purview of the regulations and with due regard for public health and safety. The Region II inspection and enforcement program will be applied to assure the CP&L continues to operate within the regulations and continues to make improvements in the nuclear program.