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April 14, 1986

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Re: In the Matter of Commonwealth Edison Company
(Braidwood Station, Units 1 and 2)
Docket Numbers 50-456 and 50-457 OL

Dear Administrative Judges:

Enclosed please find the direct testimony of Michael Wallace on Subcontention item 1 and the direct testimony of James W. Gieseker for Subcontention items 4.A and 4.B. Due to administrative difficulties, this testimony was omitted from Applicant's prefiled direct testimony sent via Federal Express on Friday, April 11, 1986.

Very truly yours,

Philip P. Steptoe

PPS:mg
Encl.

cc: Service List

OA DS03

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter Of:	)	
	)	
COMMONWEALTH EDISON COMPANY	)	
	)	Docket Nos. 50-456
(Braidwood Station, Units 1 and 2)	)	50-457
	)	

CERTIFICATE OF SERVICE

I, Philip P. Steptoe, one of the attorneys for Commonwealth Edison Company, certify that copies of Applicant's Prepared Testimony of James W. Gieseker for subcontention items 4.A and 4.B and Letter, dated April 14, 1986, have been served in the above-captioned matter on all persons listed on the attached Service List by Federal Express on the 14th day of April, 1986, except where service has been made as otherwise noted.

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Testimony of

Michael J. Wallace

on Contention Item 1

Q.1. State your name, business address and employer and current position.

A.1. My name is Michael Joseph Wallace. I am employed by Commonwealth Edison company as the Braidwood Project Manager and also the Assistant Manager of Projects. My business address is Post Office Box 767, Commonwealth Edison, Chicago, Illinois 60690.

Q.2. What are your duties as Project Manager and Assistant Manager of Projects?

A.2. As Project Manager of Braidwood, I have primary responsibility for completion of the Braidwood Project, through fuel load of Unit 2, including the management of construction, testing, licensing, and operating activities. More specifically, my management responsibilities include, among other things, ensuring compliance with regulatory commitments, the scheduling and completion of construction activities, and verification and corrective action programs, giving due consideration to quality, budgetary, and schedule constraints. As Assistant Manager of Projects, I act for the Manager of Projects in his absence, and I carry out duties and other responsibilities as prescribed from time to time by the Manager of Projects.

Q.3. Describe your educational background since high school (including any honors) and your employment experience.

A.3. I received my undergraduate degree in electrical engineering from Marquette University in 1969 and later received a Master of Business Administration from the University of Chicago in 1978. I am a registered professional engineer in the State of Illinois, and a member of the American Nuclear Society. Following my undergraduate education, I accepted a commission as an officer in the U. S. Navy. I held various positions with the Navy, including Division Officer for the Reactor Controls Division and later for the Machinery Division aboard the USS Thomas Jefferson. During my time in the Navy I qualified as Engineering Officer for Navy Nuclear Power Plant, and I was awarded the Navy Achievement Medal by the Secretary of the Navy for professional accomplishments. Following five years in the US Navy, I joined Commonwealth Edison in 1974. As an Edison employee, I held positions in the Quality Assurance organization of the Clinch River Breeder Reactor Project for three years, including NSSS Quality Assurance Program Manager responsible for the establishment and implementation of Quality Assurance Programs within the three major NSSS supplier organization (Westinghouse, General Electric, and Atomic International) beginning in 1974. Later I held positions as: Field Cost Engineer for LaSalle, Byron and Braidwood Projects for one year beginning in 1977; Project Coordinator for Byron Project for one year beginning in 1978; Assistant Station Superintendent of State Line Station (490 MW Fossil Station) for one and one-half years beginning in 1979; Station Superintendent of Waukegan Station (875 MW Fossil Station) for one year beginning in 1981; Assistant Manager of Projects from May 1982 to present; and Project Manager of Braidwood since September 1982. I am also a member of the Industry Review Group for the Evaluation and Assistance Division of the Institute of Nuclear Power Operations (INPO).

Q.4. What is the purpose of your testimony?

A.4. My testimony addresses those aspects of Contention 1 that deal broadly with the asserted failure by Edison to effectively oversee the quality assurance activities of its contractors as required by Criterion 1 of 10 CFR Part 50, Appendix B. This asserted failure is specified in Contention 1 by a number of examples which are drawn from Inspection Report 82-05, Inspection Report 83-09 and the CAT Inspection Report. My testimony is not intended to address the specific corrective actions that are responsive to the individual sub-contention items which are the subject of other testimony. In particular, Inspection Report 82-05 supplies the bases for subcontention items 1A, 6A, 8A, 10A, 11A, 12A, 13A and 14A. Inspection Report 83-09 is referenced in subcontention items 1B, 3A, 5B, 7A, 10B, 12B, and 14B. The CAT Inspection Report is referenced in subcontention items 1C, 1D, 1E, 1F, 5A, 8B, 8C, 10C, 10D, 10E, 12D and 12J. Other Edison witnesses address each of these subcontentions. I do address two specific observations found in the CAT Inspection Report and referred to in subcontention item 1C regarding management's ability to manage corrective action programs and the use of final walkdowns as an inspection technique.

Q.5. Describe the circumstances under which you became Project Manager for Braidwood.

A.5. At the Enforcement Conference on August 31, 1982 which was the precursor to the issuance of Inspection Report 82-05, the NRC expressed serious concerns regarding Commonwealth Edison's implementation of our Quality Assurance Program at Braidwood, as it related to the installation and inspection of safety-related equipment. At the time of the Enforcement Conference, it was not clear to us what the real nature or extent of the problems might be at Braidwood. At that time, I was Assistant Manager of Projects with responsibility for Byron and Braidwood; while, as a part of our implementing the replicate plant concept, the Project Manager for Byron was also the Project Manager for Braidwood. Edison Corporate management identified the need to immediately establish a full-time Project Manager for Braidwood as a first

step in quickly and effectively addressing the concerns raised by the NRC and assessing what additional steps might be necessary in order to establish confidence that the Braidwood Project was proceeding in a satisfactory manner with respect to meeting all quality and regulatory requirements. It was the judgment of top Corporate management, that, on at least an interim basis, I should additionally assume the responsibilities of full-time Project Manager for Braidwood. I reported to the Braidwood site, in that capacity, on September 7, 1982.

Q.6. What, if any, direction did you have from your superiors in terms of your activities at Braidwood?

A.6. Upon assuming the role of full-time Project Manager for Braidwood, I was directed to fully address the NRC's concerns, as expressed at the Enforcement Conference on August 31, 1982, and to take whatever actions I might deem necessary in order to confirm our confidence in the effectiveness of the site organization in meeting regulatory requirements, or to implement organizational, procedural or personnel changes, where needed. Corporate management indicated that they viewed this situation very seriously and that I had their full support, including whatever corporate resources might be required, in carrying out my assignment.

Q.7. Which site organizations did you assess when you first became Braidwood Project Manager?

A.7. The Project Construction Department (PCD) and the contractor organizations including their quality assurance and quality control departments.

Q.8. How did you evaluate the activities of PCD and the contractor organizations when you first arrived at Braidwood?

A.8. Upon my arrival on the Braidwood site, one of my first actions was to organize the Braidwood Project Technical Support Group, to evaluate the overall effectiveness of current Quality Assurance/Quality Control programs and work activities for contractors at the Braidwood site. Additionally, I requested Commonwealth Edison Company Quality Assurance to move the scheduled Fall General Office Quality Assurance audit up by one month to begin on September 13, 1982. The scope of the audit was greatly broadened and the duration was lengthened to seven days. Later, based on the results of the TSG review, I initiated a more detailed review of the mechanical contractor, Phillips-Getschow, by a team of experienced engineers from Daniel Construction.

In addition to the above reviews, I discussed with site contractor and Commonwealth Edison Company personnel the status and conditions of Braidwood on a regular basis. In particular, I became directly involved in determining a course of action for the resolution of issues raised by the NRC in their August 31, 1982 enforcement conference, including the reinspection of mechanical equipment by the mechanical contractor and the removal and reinstallation of steam generator bolts. In addition, I interacted daily with Commonwealth Edison Company and contractor site personnel on a myriad of issues, as Project Manager, with particular emphasis on quality related issues. My discussions with Commonwealth Edison Company and contractor management personnel provided an insight into their strengths and weaknesses, which aided in my decision making relative to subsequent Commonwealth Edison Company and contractor reorganizations, staffing level increases, and personnel additions.

Q.9. Describe the staffing of the Technical Support Group.

A.9. The Technical Support Group (TSG) was formed by me specifically to evaluate the overall effectiveness of Quality Assurance/Quality Control programs and work activities of

contractors at Braidwood. It consisted of first three, and soon after, six Commonwealth Edison Company engineers from three Commonwealth Edison Company nuclear construction sites (Byron, Braidwood, and LaSalle) having both a comprehensive understanding of Quality Assurance/Quality Control principles and practices and strong construction field experience. The members of the Technical Support Group (TSG) were Dick Tuetken, the Assistant Superintendent Byron Project Construction Department (PCD); Bob Byers, Structural Field Engineer, Byron PCD; Jim Gieseker, Lead Licensing Engineer, LaSalle Tech. Staff; Dick Braun, Senior Engineer, Project Engineering, LaSalle; Larry Tapella, Electrical Field Engineer, Braidwood PCD; and Gerry Groth, Mechanical Field Engineer, Braidwood PCD.

Q.10. Describe the staff of the General Office Audit Team.

A.10. The General Office Audit Team, mentioned above, consisted of six auditors from the General Office Quality Assurance Department and from other Commonwealth Edison Company quality departments other than Braidwood Construction Quality Assurance. The team included: B. K. Hall, Quality Assurance Engineer from LaSalle; R. C. Kinsinger, Quality Assurance Engineer from Dresden; A. M. Montalto, Quality Assurance Inspector from LaSalle; R. G. Rowland, Quality Assurance Inspector from Dresden; E.F. Wilmere, Quality Assurance Supervisor/Operating from Braidwood; and the team leader, E. L. Martin, Quality Assurance Coordinator of Station Nuclear Engineering Department.

Q.11. Describe the function and staff of the Daniel Construction Company effort.

A.11. The Daniel Construction Company was selected from a number of other firms experienced in nuclear power plant construction to perform a detailed evaluation of Quality documentation programs of Phillips, Getschow Company, the piping/mechanical contractor. Daniel was selected because it was an experienced ASME certified

contractor with a proven track record in nuclear plant construction, including such plants as Brunswick, Robinson, Surry, Turkey Point, Callaway, Harris, Summer, Farley, Wolf Creek, and Fermi. I asked Daniel management to provide their best personnel for this evaluation. In response, Daniel assigned Michael Derylak, Senior Quality Engineer, and James Witherspoon, Senior Welding Engineer, to form the evaluation team. Mr. Derylak had ten years of quality engineering experience and a B.S. in Mechanical Engineering. Mr. Witherspoon had twelve years of construction experience, over ten of which directly related to Weld Engineering, and a B.S. in Metallurgical Engineering.

Q.12. State separately for each of the above organizations the scope of its inquiry and the duration of its activities.

A.12. The scope of the TSG Evaluation included the overall effectiveness of Quality Control and Quality Assurance Programs and work activities for eight contractors at the Braidwood Project Site. The methodology employed by the Technical Support Group in its evaluation was similar to that of a management review. The evaluation was a high level review by personnel of broad construction and Quality Assurance experience. Unlike the structure of a formal audit, the evaluation was not constrained by pre-defined checklists or pre-determined areas of review. Rather, it represented a horizontal look at all construction, with additional in-depth reviews in some areas identified by team members as the evaluation progressed. Additionally, the broad experience of the team allowed it also to effectively investigate potentially subjective elements of overall contractor strengths and weaknesses. Such elements included aggressiveness of management personnel, weaknesses in organizational structures, or the effectiveness of practices or procedures that may have conformed to the letter of requirements, but were not sufficiently rigorous to ensure a level of compliance expected by Edison.

Three of the team members began their evaluation on September 14, 1982. Shortly thereafter, the additional three team members were added. The contractor evaluation effort was completed on September 24, 1982, for a total evaluation duration of nine working days. Two members of the team of six were chosen from the site to facilitate the follow-up to contractor and PCD responses to concerns identified by the TSG.

The scope of the G.O. Quality Assurance audit included a review of the adequacy and implementation of the five major site contractors' Quality control inspection programs; the adequacy of contractors' procedures for field design changes, procurements, document control, status of equipment and construction tests; and the adequacy and effectiveness of the contractor's Quality Assurance Audit programs. Additionally, the audit examined the Commonwealth Edison Company site Quality Assurance Departments audit and surveillance programs, corrective action system, and training program. The audit began September 13, 1982 and concluded September 21, with the issuance of the audit report on September 28, 1982. Over 300 manhours were expended in this effort.

The scope of the Daniel Construction Company Evaluation was limited to one contractor, Phillips, Getschow. Its purpose was to identify inefficiencies in the Phillips, Getschow Company's documentation program, deficiencies in the Quality Assurance/Quality Control program and its implementation, and any inadequacies in documentation and recordkeeping. It included an evaluation of the generation and processing of piping, instrumentation, and hanger/support traveler documentation; a review of traveler documentation retrievability; an evaluation of Quality Control's ability to support the construction effort; an evaluation of the generation and processing of hanger retro-fit documentation; and a review of traveler documentation to

determine if it provided the requisite information to complete ASME Code N-5 Data Reports. The initial evaluation duration was from March 7, 1983 through March 28, 1983, representing an effort of 26 man days.

I requested that Daniels perform a follow-up evaluation to assess Phillips, Getschow Company's responsiveness to the recommendations of the first evaluation and to determine the extent to which Phillips, Getschow Company implemented the resultant planned improvements. This follow-up evaluation began on May 5 and lasted through June 7, 1983, representing an effort of 25 man days.

Because of the many management and program changes that had occurred at the Braidwood Nuclear Station since the original evaluation was conducted in March, 1983, I requested that a second follow-up evaluation be conducted in early 1984. This follow-up evaluation included a review of Phillips, Getschow Company's responses to the original Daniel evaluation of their document program; the effects of the new organization and management team; the effectiveness of the new procedures and programs; the status of the hanger retro-fit program and the progress of the new installations; and an overview of the quality of the work performed during the installation of ASME Code Piping. This evaluation lasted from January 23 through February 5, 1984.

Q.13. What were the results of each such inquiry and analysis?

A.13. The results of the TSG Evaluation are detailed in the report by the TSG forwarded by my letter of November 9, 1982 to J. Maley, then Manager of Projects. The results can be summarized by contractor as follows:

- G. K. Newberg engineering is effective, as is quality control involvement for concrete, grout, and steel erection activities. However, additional field involvement of Q.C. in design document control, miscellaneous steel erection, and concrete expansion anchor installation was desired. Additional Quality Control inspectors and a Quality Assurance/Quality Control manager should be provided.

- Phillips, Getschow's management structure needs enhancement. Their Quality Control organization is too involved in line activities in support of construction. Documentation accountability needs improvement. Deficiency document dispositioning needs streamlining. Phillips, Getschow Company should inspect those attributes of CEA inspections not addressed by PTL.

- L. K. Comstock should perform 100% inspection of hanger configuration in lieu of the sampling method previously employed. Their documentation systems are cumbersome, causing inspection backlogs and difficulty in determining inspection status.

- Pullman Sheet Metal should perform 100% inspection of configuration in lieu of the sampling method previously employed. Additional Q.C. Staff should be added in support of these additional inspections. Inspection procedures should provide more detailed inspection criteria.

- V. S. Wallgren lack documentation for internal block wall column erection. Concerns were raised regarding division of Q.C. responsibility between various contractors involved in block wall erection and inspection.

- The Napolean Steel and NISCO Quality Programs were effective, although a potential for certain administrative enhancements was identified.

- The Midway program appears effective.

As a result of this review, significant program improvements were undertaken at each contractor. In addition, many verification efforts, such as those for HVAC configuration, structural steel for block wall columns, and electrical documentation, were initiated. This evaluation, in part, resulted in the generation of reports to the NRC pursuant to 10CFR50.55(e) for structural steel inspections for block wall columns and HVAC hanger configuration inspections.

The General Office Quality Assurance audit team concluded that the five Braidwood site contractors had done an adequate job in implementing their Quality Control inspection programs, their quality related procedures and their Quality Assurance audit programs. Also, the team determined that the site contractors had followed the latest approved design documents, procedures and standards in the construction and inspection of the Braidwood Station. The review of site Quality Assurance audit and surveillance programs identified that these programs were adequate. Although a number of deficiencies were identified, the audit team concluded that the overall quality program at Braidwood was being effectively implemented.

The results of the Daniel evaluation identified no areas in which significant Quality Assurance/Quality Control deficiencies existed. There were, however, several areas identified in which improvements were warranted. The team recommended that a Quality Control documentation review group be established to perform technical and completeness reviews, that documentation legibility be improved, that Quality Assurance procedures be clarified, that the welding supervisor review all weld control records issued to the field, and that a system for the preparation of N-5 Data Reports be developed. They expressed a concern that some small bore piping systems documentation was not completed in a timely manner creating a backlog of incomplete documentation.

The first follow-up reviewed the beginning of Phillips, Getschow Company's implementation of changes resulting from the first Daniel evaluation. Weekly reports described the progress of Phillips, Getschow Company generation of document review checklists and procedures for N-5 reports, and assessed the effectiveness of early changes to the Phillips, Getschow Company Quality Control organization. While these initial organizational changes were seen as having a positive affect, it was clear that further enhancements of the Phillips, Getschow Company management structure were indicated.

The second follow-up closed many of the findings identified in the first evaluation. A review of the management and organizational changes, revised procedures, quality of work on piping systems, and the hanger retro-fit program produced positive comments.

Q.14. What actions did you take after reviewing the results in terms of Commonwealth Edison Company activities and personnel and contractor activities and personnel? Why were changes made?

A.14. Based on the results of the Technical Support Group and my own personal observations, I saw a general need to increase the overall effectiveness of the Braidwood Quality Assurance Program in order to assure more timely and complete responsiveness to quality related issues and to assure a more rigorous application

of the quality philosophy through greater attention to implementation of quality assurance activities. To achieve the increase in effectiveness, various changes were made in the areas of organization, practices and procedures, and personnel. I saw a need and an opportunity to raise the level of quality consciousness across all Project activities, addressing NRC and Commonwealth Edison Company identified quality related issues, while building a stronger basis for everyone to be confident that Braidwood was being properly constructed in accordance with regulatory requirements.

The process of increasing program effectiveness was not based merely on a set of organizational, procedural, and personnel changes in late 1982, but rather was an evolving process which continued from that time forward. When problems were identified, they were dealt with directly, but, in addition, I continually evaluated the results achieved through various organizational, procedural, and personnel changes, and, if in my judgment a higher level of quality assurance program effectiveness was needed, I made additional changes. For that reason, Commonwealth Edison Company and contractor organizational, procedural and personnel changes continued after late 1982, with a significant overall change apparent by March, 1984, as compared to September, 1982, as was discussed with the NRC at an enforcement conference in March, 1984.

While the Technical Support Group (TSG) initially provided important information, subsequent reviews and evaluations were equally important, particularly with respect to making judgments about the effectiveness of the Phillips, Getschow Company organization. After the Technical Support Group review, I saw the need to conduct a more detailed review effort which focused on the effectiveness of the Phillips, Getschow Company Quality Assurance Program. The effort was undertaken, utilizing experienced personnel from Daniel Construction Company, in March 1983. Based on my reservations about the ability of the then-current Phillips, Getschow Company management to effectively implement the changes recommended by the first evaluation, I subsequently directed Daniels to undertake a follow-up evaluation in May, 1983. At the conclusion of the follow-up evaluation, and after consideration of the effects of various organizational, procedural, and personnel changes in the Phillips, Getschow Company organization, it was my judgment that the Phillips, Getschow Company organization would be considerably enhanced by the addition of a team of construction managers with current nuclear project experience. That led to a number of personnel additions and changes which began in August, 1983. It was my view that these changes would bring considerable additional talent and experience to mechanical installation activities, and, as they became fully effective, would further raise the effectiveness of the Phillips, Getschow Company Quality Assurance Program and provide increased confidence that mechanical construction work would be in full compliance with quality requirements.

Q.15. Describe the major personnel changes which took place after August 31, 1982.

A.15. As a result of the aforementioned efforts, significant organizational and management changes were made within the Commonwealth Edison Company organization, as well as within our site contractor organizations.

Commonwealth Edison Organization and Management Changes

A new Project Mechanical Supervisor was assigned within the Project Construction Department. This individual had extensive construction and quality assurance experience at our LaSalle County and Dresden Stations. The individual worked for a period of time within the Phillips, Getschow Company organization for the purpose of assessing firsthand the effectiveness of their operation.

In late 1982, I retained an individual from the Technical Support Group in the position of Project Quality Control Coordinator. This individual reported directly to me. The Project Quality Control Coordinator was charged with the responsibility for follow-up on Technical Support Group recommendations, and to coordinate Braidwood Site responses to NRC and Quality Assurance Department items.

Throughout 1983, six (6) additional experienced Construction Field Engineers joined the Project Construction Department. Many of these engineers had experience from our LaSalle County Station.

In mid-1983, the Braidwood Site Project Field Engineering Group was established. Additionally, the Project Engineering Manager, Supervisors and most of the staff engineers had extensive LaSalle County engineering or construction experience.

In order to effect the timely resolution of construction installation problems, I directed the "on-site" Sargent and Lundy Engineering Group to be increased. The staffing level of this group grew from approximately 20 to 329 by the end of 1983. I perceived this move of the engineering effort closer to the field to be a major method of improving the communications between construction and engineering, and assuring the timely resolution of field problems. Nearly 80 of the Sargent and Lundy site engineering personnel came with experience from either our Byron or LaSalle County Station.

In order to incorporate our overall LaSalle County and Byron experiences in the area of system completion, turnover and testing, I established the new position of Startup Superintendent for Braidwood Station. The individual assuming this position had extensive Byron startup experience and earlier Zion startup experience. I perceived this to be a major mechanism for incorporating both the overall methodologies, as well as the

specific experiences gained at our Byron and LaSalle County Stations into the startup approach to be used at Braidwood Station.

In April, 1984, I established the Project Licensing and Compliance Group with a Superintendent reporting directly me. The individual assuming this position had extensive LaSalle County technical and licensing background. The formation of this group was to assure high level Project Management attention and responsiveness to NRC, Quality Assurance, and INPO matters. This organization replaced the previous Project Quality Control Coordinator position.

In May, 1984, the former LaSalle County Station Construction Superintendent, who had been the Braidwood Project Field Engineering Manager since the inception of Project Field Engineering, became the Braidwood Project Construction Superintendent. Concurrent with this change, the former Project Mechanical Supervisor was promoted to a newly created position of Braidwood Project Construction Assistant Superintendent. This arrangement allowed the Construction Superintendent to devote the majority of his efforts toward Quality Assurance and NRC matters.

Finally, there have been various enhancements in the Commonwealth Edison Company Quality Assurance Department. In early 1984, the reporting level of the Manager of Quality Assurance was changed from the Vice Chairman to the Chairman and President. This

change was made to further assure full responsiveness to and interface with Quality Assurance by the Projects organization. Additionally, the new position of Assistant Manager of Quality Assurance was created, whose work location currently remained full-time at the Braidwood site.

Contractor Organization and Management Changes

Following the Enforcement Conference in 1982, I met with management of all Braidwood Site Contractor, Production, and Quality Control/Quality Assurance personnel. During these meetings, I stressed the importance of quality and quality documentation as a top priority among all site activities in comparison to production oriented goals. I encouraged those contractors to bring in the best available management talent in order to accomplish the Braidwood Project goals.

Phillips, Getschow Company Organizational Changes

As a result of the previously described reviews and activities carried on in early 1983, I determined the need to substantially increase the level of management talent in the Phillips, Getschow Company organization. Phillips, Getschow Company was encouraged to seek the best available people. Phillips, Getschow company responded by hiring into their organization a number of personnel previously employed by the LaSalle County Station mechanical contractor. Specifically, beginning August 1, 1983, Phillips,

Getschow Company added a Site Manager, an Assistant to the Site Manager, a Site Superintendent, a Staff Assistant to Quality Control/Engineering, and a Project Engineer. In September and October, 1983, Phillips, Getschow Company added two Area Superintendents, an Area Assistant Superintendent, an Area General Foreman, and a Night Superintendent. All the above individuals had prior nuclear experience with construction at LaSalle County Station.

In the Engineering area alone, besides the Project Engineer, Phillips, Getschow Company added an Assistant Project Engineer and four Group Supervisors with a combined total nuclear experience of forty-five years. Later, seven other experienced personnel were added in the the Engineering area. To improve coordination with Quality Control on systems completion, the Engineering Group developed a Systems Turnover and Testing Group.

When several concerns were identified in the quality documentation area, the new Phillips, Getschow Company management established what came to be called the "Document Station Concept". This concept was based on Phillips, Getschow Company's desire to have standardized and stringent control over all processed documents. Six Field Engineers were placed into four separate field documentation stations. This Document Station

Concept was successfully implemented at LaSalle County Station. Of the nineteen document technicians utilized for this concept, eight technicians had previous LaSalle County experience.

Several changes were made in the Phillips, Getschow Company Quality Control organization. The organization was split into a field section and an office section. The overall Quality Control workforce was increased from 57 people to 125 people. A new Phillips, Getschow Company Quality Control Supervisor was assigned to the Braidwood Site. Additionally, Phillips, Getschow Company assigned a General Foreman of Field Inspectors in order to provide more direct field supervision of the quality inspection efforts. Phillips, Getschow Company also established the position of Lead Quality Control Technician with eight individuals functioning in that position. These individuals were involved in the document review areas. Three of the eight people had LaSalle County experience.

Phillips, Getschow Company revised their Quality Control Technician Certification Procedure and increased the number of quality control technicians from eighteen to fifty-six. These technicians increased their involvement in the initial and final reviews of quality documentation. They also became involved in early implementation of the ASME Section III N-5 Review Program.

The number of field inspectors increased from twenty-five inspectors to fifty inspectors, which resulted in a substantial increase in the amount of in-process construction work monitoring performed by Phillips, Getschow Company Quality Control.

In October, 1982, a full-time Quality Assurance Manager function was established on-site within the Phillips, Getschow Company organization. Three additional Quality Assurance engineers were hired in early 1983. This group performed increased auditing and surveillance activities of the Phillips, Getschow Company work activities.

L. K. Comstock Company Organizational Changes

Several management, engineering and quality control organizational changes were made within the L. K. Comstock Company organization. The number of ANSI N45.2.6 Level II inspectors was increased from 11 to 47 . The overall inspector workforce increased from 22 people to 51 people. Further, when Quality Control office personnel were added, the overall Quality Control manpower increased from 25 people to 64 people.

Several Quality Control management changes and operational improvements were made by L. K. Comstock Company. In November, 1982, a new Quality Control Manager was hired and charged with improving the organization and retrievability of quality documentation. This individual was replaced in August, 1983 when

very little progress was made toward improving quality documentation retrievability. During 1983, a position of Supervisor of Inspectors was established, as were the positions of Lead Inspectors. This organizational change allowed better control over the inspection effort and assured timely completion of inspections. An inspection status/control system was implemented which allowed for timely and accurate determination of inspection status.

Full-time Quality Assurance Engineers were hired by L. K. Comstock Company in 1982 and 1983. The amount of auditing and surveillance of the L. K. Comstock quality program was significantly increased with the addition of these quality assurance personnel.

Pullman Sheet Metal Organizational Changes

Pullman Sheet Metal increased non-production craft personnel from eighteen to eighty, and at the same time increased Quality Control/Quality Assurance personnel from three to nineteen. The Pullman Sheet Metal personnel increases were made in order to provide better control and review of documentation, and to implement the various aspects of ongoing verification efforts. Specifically, Pullman added several new departments including

Engineering and Document Control (9 people), Survey and Research (5 people), Field Change Requests/Field Engineering Notices (5 people), and Correction Notices Group (3 people).

G. K. Newberg Organizational Changes

Within the G. K. Newberg Company organization, Quality Control manpower was increased from three to six throughout 1983. Additionally, the G. K. Newberg site engineering department assumed greater responsibilities for preparation of traveler documents prior to issuance to the construction forces.

Q.16. Have the Commonwealth Edison Company and contractor organizations continued to change? Why? Describe these changes.

A.16. As described in my answer to question No. 14, I continually made changes to increase the effectiveness of the quality assurance program. In addition, large nuclear construction projects extend over a period of several years and experience a "Project dynamics" as certain activities are more or less prevalent and significant at any time in the Project's life. As such, it is not uncommon for a number of personnel and organizational changes to take place during the life of the Project. For example, during the early phases of plant construction, work emphasis is on the completion of bulk quantities, without regard to system. Examples of early construction include pouring concrete, erecting

structural steel, welding large bore piping, and erection of electrical raceway. As Project construction progresses, construction work is driven by testing schedules and thus geared toward system completion. Construction efforts shifts to pulling and termination of cable and pipe hanger erection. These later activities, associated with document reviews which occur at system turnover, tend to be more Quality Control intensive than those during the early phases of construction.

Such has been the case on the Braidwood Project, particularly in the latter stages of completion when the coordination and interfacing of a number of work groups and the reviewing of a large volume of documentation for final acceptance become significant activities. Similarly, within the contractor organizations, "Project dynamics" were also at work which led to a complementary set of personnel and organizational changes.

In summary, changes and personnel increases were made not only to improve the effectiveness of the site Quality Assurance Program, but also in response to significant increases in the craft workforce and due to the nature of activities at plant completion becoming more Quality Assurance/Quality Control intensive as final documentation reviews are undertaken and inspection activity becomes more focused on specific items.

Q.17. Describe the nature of your superior's involvement with the management of construction at Braidwood.

A.17. As the Project Manager for Braidwood, I report to the Manager of Projects who in turn reports to the Chairman and President of the Company. The Manager of Projects, presently Tom Maiman and previously Jim Maley, engages in daily communication with me regarding status of the Project, with particular attention to whatever critical issues the Project might be addressing at any particular point in time. While the decisions regarding the day-to-day running of the Project are made by the Project Manager, the Manager of Projects is involved in those issues which have a broader impact on cost or schedule. In addition, the Manager of Projects is involved in key organizational and personnel changes, including those which might be based on the desire to strengthen the overall effectiveness of the organization to assure the quality of the completed plant and the proper implementation of regulatory requirements. With frequent visits to the sites, and participation in many of the key meetings and discussions that take place at the site, the Manager of Projects also provides guidance based on his own personal observations of the overall apparent effectiveness of the Project organization.

On a regular basis, the Chairman of the Company reviews Project progress either on-site or off-site with Project personnel. In his various interactions with Project personnel, the Chairman

routinely evidences his expectations regarding the attention that Project Management must continually place on doing things right, and meeting quality requirements, in order to assure the successful completion and future operations of the Braidwood Plant. The Chairman has assisted several times in assuring the availability of general or specific resources which project management has identified as needed in order to meet overall objectives.

Q.18. Have Mr. Maiman or Mr. O'Connor had any direct dealings with contractor personnel regarding quality-related issues? When? What were the specific subjects addressed?

A.18. On several occasions, Mr. Maiman and Mr. O'Connor have participated in meetings directly involving contractor personnel. Such meetings have generally included a discussion of quality related issues, and generally include senior corporate personnel from contractor organizations. In 1984 and early 1985, Mr. Maiman and Mr. O'Connor participated in the following meetings:

a. A meeting with Senior Commonwealth Edison Site Management personnel from Engineering, Construction, Startup, Operating, and Quality Assurance to review Project status -- March 6, 1984.

b. A meeting with Commonwealth Edison Management personnel on-site, and key individuals from the contractor organizations to discuss the overall status of the Braidwood Project -- March 31, 1984.

c. A meeting with lead personnel from the Commonwealth Edison Site Project Organizations and Quality Assurance, to discuss detailed Project status, focusing on critical issues -- March 31, 1984.

d. A meeting with key Commonwealth Edison Company Site personnel to review Project status, with a specific emphasis on quality and Quality Assurance issues -- August 30, 1984.

e. A meeting with lead Commonwealth Edison Site personnel to review construction and testing status -- August 31, 1984.

f. The Braidwood Project 1984 Goals Review and 1985 Goals presentation. The meeting was attended by all key Site personnel, and several off-site Commonwealth Edison personnel -- January 4, 1985.

g. Separate meetings with two (2) key contractor organizations on-site attended by Corporate Management from the contractor organizations -- January 17, 1985.

h. Separate meetings with three (3) key contractor organizations on-site addressing specific construction goals for both production and quality issues, and attended by contractor Corporate Management -- February 15, 1985.

i. A meeting at the Site with personnel from two (2) contractor organizations including a discussion of production as well as quality related issues -- May 29, 1985.

j. Separate meetings with two (2) key contractor organizations on-site addressing specific goals for both production and quality issues, and attended by contractor corporate management -- August 7, 1985.

k. Separate meetings with three (3) key contractor organizations on-site addressing specific goals for both production and quality issues, and attended by contractor corporate management -- October 4, 1985.

l. A meeting with key contractor and consultant management addressing both production and quality issues -- March 10, 1986.

Prior to early 1984, Mr. O'Connor visited the site, but such visits were not documented.

During most of the meetings, contractor personnel discuss the

status of production activities as well as the status of activities related to implementation of Quality Assurance Programs. While a variety of specific subjects are presented (including, at times, the installation of safety-related mechanical equipment and the Material Traceability Verification Program, among others), they are not discussed in great detail; the meetings are mainly established in order to allow an opportunity for Mr. O'Connor and Mr. Maiman to express their views regarding the importance of both carrying out a timely and effective Quality Assurance program and meeting production schedules. The meetings provide a forum in which contractor personnel receive a very clear message from top Edison management that doing things right and meeting quality requirements while maintaining reasonable levels of productivity is of the utmost importance in completing the construction of Braidwood.

Q.19. When did you first become aware of the NRC's inspection findings which eventually were set forth in Inspection Report 83-09?

A.19. I first became aware of the NRC's concerns, as expressed in Inspection Report 83-09, in June of 1983 during the course of inspections being performed by the NRC inspectors. Other issues came out during subsequent inspection periods in August and October of 1983 and in January and February of 1984. Within those several time periods, the NRC inspectors looked at, separately, piping installation, electrical installation, and

HVAC installation. The NRC inspectors concerns were the subject of a number of discussions and meetings throughout 1983, including several management meetings involving Region III personnel both on the site and in the Region's offices. Some of these topics were also the subject of telephone conversations between Region management and Project personnel. Until shortly before the enforcement conference in December, 1983, I was unaware of the NRC's aggregation of these heretofore unrelated individual findings (identified over the course of a nine-month inspection period) and their apparent attempt to establish the aggregation of these findings as the basis for the existence of pervasive inadequacies in the contractors' quality programs and in Edison's reviews thereof. Ultimately many of the NRC concerns were discussed at that Enforcement Conference on December 20, 1983 and at another Enforcement Conference on March 7, 1984.

Q.20. From a management perspective what, if anything, did that Inspection Report disclose about the Company's efforts to improve the effectiveness of its oversight of contractor quality programs?

A.20. In Inspection Report 83-09, the NRC indicated a need for more aggressive Edison management involvement in and support of the Commonwealth Edison Company Quality Assurance Program. They identified the major factors contributing to Inspection Report deficiencies as: inadequate contractor programs and workmanship; inadequate licensee reviews of the contractor programs; and

inadequate licensee quality assurance overview to insure contractor activities met all requirements. The NRC further expressed concern that the deficiencies identified in the report existed even though Edison had recently conducted comprehensive reviews of the performance of all site contractors in response to the civil penalty issued on February 2, 1983.

Q.21. Did the Company agree with the NRC assessment?

A.21. No, we did not agree with their assessments as documented in their 83-09 Inspection Report. Rather, we believed that the NRC staff was essentially unaware of our progress in enhancing the Quality Assurance/Quality Control Programs and also misunderstood some key aspects of our Quality Assurance/Quality Control Program and that of our contractors. For example, their May, 1984 report characterized the mechanical contractor's program for maintaining piping material traceability as being programmatically deficient. Later the NRC agreed that the then-existing system did adhere to ASME Code and 10CFR50 Appendix B requirements, albeit with some minor problems with regard to its implementation.

Q.22. What actions, if any, did the Company take to respond to the criticisms of management set forth in Inspection 83-09?

A.22. Subsequent to the December 20, 1983 Enforcement Conference concerning the specific issues embodied in Inspection Report 83-09, Edison analyzed the specific NRC concerns raised at that Conference. The results of that analysis were submitted to the NRC on January 12, 1984.

As a result of this review and on the basis of what we believed were significant programmatic improvements which had been implemented over the preceeding year, Commonwealth Edison Company did not believe that a "major factor" contributing to the "deficiencies" described by Mr. Keppler in the May 7, 1984 letter transmitting Inspection Report 83-09 was "a lack of aggressive management involvement and support of the Edison Quality Assurance Program, including oversight of contractor quality programs". But it was apparent that the regional staff and Mr. Keppler lacked confidence in the quality programs at Braidwood at that time. In fact, Mr. Keppler was reported to have said in February, 1984 that there were "concerns with actual construction work" at Braidwood and that management was "spread thin at the top." Mr. Keppler reiterated his statements regarding his concern over quality assurance issues at Braidwood in testimony before the Byron ASLB in August, 1984.

Q.23. When did you first become aware of those statements?

A.23. I first became aware of the statements made by Mr. Keppler with respect to "concerns with actual construction work" and management "spread thin at the top" in February of 1984. Those statements were contained in a Chicago Tribune newspaper article dated February 1, 1984 which involved an interview with Mr. Keppler.

These comments were made at the same time that I was becoming aware of the nature of the Staff's concerns set forth ultimately in Inspection Report 83-09.

Q.24. Was the basis for them ever discussed with Mr. Keppler?

A.24. I am not aware of any specific discussions with Mr. Keppler indicating what the basis might have been for his comments. However, I recognized when the news article came out that it was not long after our December 20, 1983 Enforcement Conference. Although Mr. Keppler was not present at that Enforcement Conference, some of the concerns raised by members of his staff at that conference indicated their belief that there were problems with the construction work at Braidwood.

With respect to the comment "spread thin at the top", it was my understanding that that related to the Edison management responsible for the operations of our completed nuclear plants rather than to the management for the plants under construction.

That understanding is based on reading in total context the Tribune article of February 1, 1984.

Q.25. What, if anything, did Commonwealth Edison Company do to respond to those observations?

A.25. As Project Manager, I caused a number of actions to be taken throughout 1983, even as the NRC was identifying specific concerns, such that only a few additional measures were taken in 1984 (and subsequent to the statement by Mr. Keppler). At the Enforcement Conference on March 7, 1984, I presented an overview of the changes which we made throughout 1983, and, at the prior request of the NRC staff, specifically discussed our plan for addressing the NRC's concerns related to piping heat number traceability (the Material Traceability and Verification Plan - MTV Plan). The specific features of the MTV plan had been finalized after several discussions in 1983 and early 1984, and in direct response to a request by the NRC staff.

In addition, at that same Enforcement Conference, Commonwealth Edison described several additional measures that were being taken to improve communications with NRC Region III personnel and to respond to their apparent lack of confidence in the construction of Braidwood. As Project Manager, I discussed our plan in the following areas:

a. Quality Review and Verification Program -- Near the end of 1983, Region III management expressed concerns regarding the quality of past work, based on the observations being made during the 83-09 periods. In informal discussions at that time, we made the NRC aware of a number of quality confirmation or reinspection efforts that we had underway of which they were not previously aware. They asked us to consider summarizing the efforts that we had underway in a form that could be discussed with them in early 1984. As a follow-on to that discussion, we presented a potential approach which we called a Quality Review and Verification Program. Subsequently, we expanded our initial concept beyond that which we discussed with the NRC at this Enforcement Conference. Ultimately the proposed QRVP Program evolved into our Braidwood Construction Assessment Program (BCAP), which was presented to the NRC in June, 1984.

b. Licensing and Compliance Group -- As the culmination of discussions which began in November of 1983, we announced the formation of a formal Project Licensing and Compliance Group, on-site, at Braidwood. This Group would serve to improve communications between the NRC and Braidwood site personnel and also to better assure the timeliness and completeness of our actions in response to NRC violations, concerns, and questions.

In addition, several other actions were taken by Edison Corporate management, and also announced at the March, 1984 Enforcement Conference, including the following:

a. Quality Assurance Reporting Directly to the Chairman -- Mr. O'Connor announced that the Manager of Quality Assurance, who previously reported to the Vice Chairman of the Company, would now report directly to him.

b. Independent Overview Identified -- Mr. O'Connor indicated that John Hansel had been retained to serve in an independent role overviewing the activities which would be undertaken under the Quality Review and Verification Program (which ultimately became the Braidwood Construction Assessment Program (BCAP)).

Q.26. What were the results of these activities?

A.26. The actions that we took, as discussed above, included: organizational changes, personnel changes, changes in practices and procedures, specific actions responsive to individual items of non-compliance, and implementation of BCAP. The result of all these actions is that individual items of non-compliance have been fully addressed and resolved, and, in most cases, subsequently closed by NRC inspectors. Further, the composite result of all our actions is a perceived increase in the NRC's confidence in the quality of construction and management of the Project at Braidwood (see NRC SALP-5 discussion in response to question no. 42.

Q.27. A number of observations contained in the letter transmitting the CAT Report and in the body of that report are set forth in subcontention items 1.C. through 1.F. One of these observations (subcontention item 1.C.) comments adversely on the Company's ability to manage corrective action programs while ensuring that current work is correctly performed. What do you understand the term "corrective action program" to mean as used in the CAT report?

A.27. At the time of the NRC CAT Inspection, Commonwealth Edison continued to place considerable management attention toward assuring prompt and effective attention to completion of corrective action and quality confirmation efforts, while simultaneously insuring that current work is correctly

performed. As a management tool and initiative, to assure that a consistent high level of attention was directed by all levels of management, including the contractor organizations, Commonwealth Edison developed a list of "quality related" efforts that were underway at the time, which were monitored by the Project Manager. It was this list of efforts, entitled "Top Twenty Corrective Action Programs" that was given to the CAT personnel.

This list, however, included not only active corrective action programs, but also quality confirmation programs. While corrective action programs correct or identify and correct deficiencies, quality confirmation programs serve to provide additional confidence in the existing quality of previously completed work. An example of a quality confirmation program is the Material Traceability Verification (MTV) Program, which served to validate the Phillips, Getschow Company stores request system as an acceptable means of maintaining material traceability pursuant to the ASME Code. MTV served to confirm existing hardware and documentation quality.

This list of such efforts was developed to include each of the major on-site contractors, and was used to focus attention to the need for overall high level management attention to quality related efforts and assure continued awareness of the importance of quality-related aspects of all construction activities. The

complexity and stage of completion of each of the identified programs varied, and were chosen, in part, so that a program involving each major active site contractor was included.

Q.28. How has Commonwealth Edison Company managed these corrective action programs over time at Braidwood?

A.28. The manner in which Commonwealth Edison has managed various quality confirmation and corrective action programs has varied, over time, at Braidwood. As we identified more effective ways for organizing, planning and controlling our activities associated with implementation of these programs, we adjusted our approach.

In general, a specific Edison engineer was assigned responsibility for each program; in many cases, however, we utilized the services of outside consultants to provide engineering personnel augmenting our own resources and functioning as Commonwealth Edison engineers. Further, within the mechanical and electrical Commonwealth Edison Construction groups, we established separate sub-groups to deal specifically with implementation of these programs as well as addressing all quality related issues, within each discipline, as raised both by Commonwealth Edison and contractor organizations, as well as by the NRC inspectors. Moreover, from the summer of 1984 until the fall of 1985, the Construction Superintendent exercised direct

responsibility over [illegible]on of quality related issues, including management of corrective action programs, while the Assistant Construction Superintendent exercised direct responsibility over production related activities. In general, specific individuals or groups of individuals within applicable contractor organizations were assigned direct implementation responsibility for quality confirmation and corrective action programs.

Our progress in completing these programs was monitored and reviewed in a variety of ways, including periodic status reviews at appropriate levels of detail within various levels of management. Finally, a number of unscheduled meetings and discussions were held on one specific program or another, as the need arose, throughout implementation of these programs. Particular focus was placed on completion of these efforts, throughout 1985, through the separate identification of quality related goals and production related goals, assuring high visibility and management attention to the completion of these programs coincident with accomplishment of production activities. After the contention was admitted, the requirements of hearing preparation also affected our schedule for these programs.

Q.31. What is the status of those corrective action programs presently?

A.31. Most of those programs and others that were then underway are now completed. Of the twenty programs, twelve are currently completed and another six are scheduled for completion in April and May, 1986. The remaining two programs are currently scheduled to be complete in August, 1986.

Q.32. Other observations in the CAT report commented adversely on the Company's apparent reliance on final walkdowns as an inspection technique (subcontention items 1.C. and 1.D.). What did you understand the term "final walkdowns" to mean as used in the CAT report?

A.32. In the normal course of construction activities, it is common practice, in the last stages of the job, to perform certain inspection, verification, and design-information-gathering activities. In some cases (for example: clearance checks) this represents a final effort to assure that the completed plant does not evidence any previously undetected problems; in other cases (for example: thermal movement readings) it represents the appropriate time in the job to gather performance and as-built construction data. These types of activities are normally referred to as "walkdowns" since the nature of the activity generally involves individuals walking down the routings established by plant systems or walking through the plant in a manner where observations are made on components, structures, or areas.

In addition to the above activities, a number of other activities completed late in the Project at Braidwood, were also termed "walkdowns". In several instances, the follow-up actions which the Braidwood Project undertook in response to identified problems included inspection or verification activities for classes or groups of structures, systems, or components installed in the plant. In some instances, we judged that those follow-up actions could be most effectively and efficiently completed if they were done during the final stages of plant completion. As such, we scheduled completion of those corrective action activities later in the job coincident with the activities discussed above. At Braidwood, the composite of all these activities (i.e., traditional late-in-the-job inspection, verification, and data gathering activities, as well certain Braidwood corrective action follow-up activities) were called "final walkdowns". I understood these activities to be the ones to which the NRC CAT inspectors referred in their report.

Q.33. Describe the functions to be performed during a final walkdown.

A.33. The functions to be performed during a walkdown vary with each particular walkdown. But, as this term is used at Braidwood, these functions fall generally into three categories. The first category includes those associated with the final check on the general completeness and adequacy of the construction. These walkdowns are performed when construction is substantially

complete in order to identify any possibly deliterious effects of ongoing construction activities, such as damage, undocumented disassembly, or intercomponent clearance deviations. It is desirable to perform these activities in the late stages of construction in order to increase the likelihood that any deliterious effects of ongoing construction activities will be identified. The types of deficiencies that could be identified in this walkdown include such things as chipped paint, missing identification tags, and other cosmetic defects, as well as more significant deficiencies such as equipment inaccessibility or loosened fasteners.

A second category of functions to be performed during a walkdown involve essentially normal construction activities required to be performed in the later stages of construction, after system completion or during pre-operational testing. They involve the gathering of performance data or as-installed construction measurements, and include such things as stroking of pipe snubbers, adjusting the variable pipe supports when a system is hot, and taking measurements on hot piping movements as a result of thermal expansion.

A third category of activity performed during a walkdown, as the term is used at Braidwood, involves completion of follow-up actions associated with previously identified deficiencies, that are intended to provide added assurance that other similar deficiencies do not also exist.

Q.34. What activities are subject to final walkdowns?

A.34. A wide variety of activities are subject to final walkdowns, as suggested by the variety of functions performed during final walkdowns. Corresponding with the three categories of walkdowns discussed in question no. 33, the Project has developed three lists of walkdowns. The first list addresses walkdowns generally associated with assuring complete and adequate construction, and include: area walkdowns for completion, damage walkdowns for HVAC, pipe supports, and electrical components; and physical clearance walkdowns for adequate seismic and electrical separation. The second list addresses construction activities that are planned to be performed in the latter stages of the Project, and include such activities as: piping spring can setting; checking clearances of hot piping under normal temperature conditions; checking control room air leakage during HVAC testing and balancing; and assuring the integrity of piping under hydro conditions prior to the installation of insulation. The third list addresses follow-up activities to previously identified problems, and includes such activities as: checking installation of flexible electrical conduit; and gathering final electrical hanger configuration data.

Q.35. Are there other inspection activities which precede the final walkdown?

A.35. In most cases, the items which are subject to final walkdowns will have been previously subjected to various inspection activities. Final walkdowns are not a substitute for effective first time quality control inspections.

Q.36. Why is a final walkdown necessary for these activities?

A.36. For many work items, regardless of how rigorous initial procedures are, walkdowns are still important to attain high confidence that no subsequent construction activities caused damage. In some cases, although initial inspection activities were performed and deemed to be effective at the time of inspection, past experiences indicate the need for additional verifications of certain attributes of construction that have the potential for being affected by ongoing construction activities (e.g., damage, intercomponent clearances, tagging, accessibility, and electrical separation). In many cases, attributes of construction subject to final walkdown were subject to prior Quality Control inspections. In other cases, walkdowns are, in essence, follow-up actions in response to potential deficiencies identified by NCR's, audit findings, and NRC concerns, involving inspection of hardware in order to further confirm the adequacy of the installation where some question may exist. In all areas, as a result of having performed the walkdowns, we expect to have even greater confidence in the quality of the total installation.

Q.37. How will any construction or documentation discrepancies observed during the final walkdown be dispositioned?

A.37. The method of documenting discrepancies identified during a final walkdown varies from walkdown to walkdown. Examples of such documents include NCRs or lower tier deficiency documents and procedure checklists. The method of documenting deficiencies is described in the applicable procedure governing the walkdown; or, if the walkdown is controlled by an NCR, the required documentation may be the NCR itself or be described in the disposition of the NCR.

For those cases in which walkdowns are designed to identify the status of construction completion, incomplete construction need not be identified on deficiency documentation.

Q.38. Do you have any basis for comparing the nature and extent of final walkdowns at Braidwood with those at other contemporary nuclear plants? If so, how do they compare?

A.38. Final walkdowns have been very effectively utilized in the completion stages at our other nuclear generating stations and are common in the utility industry. Over three-fourths of those walkdowns planned for Braidwood have their origin at Byron. We are performing these walkdowns based on our experiences and lessons learned at Byron. As such, the nature and extent of these walkdowns compare closely with those performed at Byron.

Q.39. Please analyze, from a management perspective, the remaining CAT Report observations and describe their implication, if any, with respect to Commonwealth Edison Company's control of contractor quality activities.

A.39. After the completion of approximately 2500 manhours of inspection activity, the CAT team made several observations concerning

activities at the Braidwood Project, as reflected in their report. While several of those observations involve deficiencies which we subsequently evaluated and addressed, they did not identify any new significant issues. The depth of their look, combined with an absence of any major adverse findings, increased my overall confidence that we had been successful in identifying and addressing any significant issues. The team itself "noted no pervasive breakdown in meeting construction requirements in the samples of installed hardware inspected by the team or in the applicant's Project controls for managing the Braidwood Project". Moreover, "the NRC team observed that Commonwealth Edison Company was implementing some good construction practices at the Braidwood site", including "active Commonwealth Edison Company management involvement in the construction of the Project". Comments made by CAT team members during their review, presented in the Exit Meeting, and reflected in their final report all served to increase my level of confidence that we had control of contractor quality activities and had been effective in identifying any significant quality issues.

Q.40. After the initial assessments of PCD, Quality Assurance and contractor organizations in 1982 and 1983, have there been other evaluations of Commonwealth Edison Company control of quality assurance activities?

A.40. After 1982, other major assessments of Commonwealth Edison Company and its control of the contractor process were subsequently initiated. These assessments were performed by the NRC, outside agencies (including INPO), and by organizations within Commonwealth Edison Company having independence from those with construction responsibilities

Q.41. Identify each such assessment.

A.41. A description of each QA assessment follows:

General Office Quality Assurance Audits

Site design, construction, testing and Quality Assurance activities were audited by Commonwealth Edison Company Corporate Quality Assurance on a four-to-six month cycle throughout the course of the Braidwood Project. The Corporate Quality Assurance audits were performed to ensure that the Commonwealth Edison Company Quality Assurance and other organizations and the contractors on-site were performing their responsibilities acceptably as required by the respective Quality Assurance Programs, design documents and procedures for the ASME Code- and safety-related aspects of the Braidwood Station Project.

Four General Office audits were performed in 1983 and two were performed in 1984. One of the audits, performed in September and October 1983, was exceptionally comprehensive. While the five General Office audits performed during this time frame averaged 30 man days of effort, the comprehensive audit included 34 Quality Assurance personnel for eight days for a total expenditure of 2800 manhours. This comprehensive audits was, in part, formulated as a response to NRC criticisms of the depth of Commonwealth Edison Company Quality Assurance audits.

Management Audits

A management audit and assessment of the implementation by Commonwealth Edison Company of its quality programs is performed every other year by an independent consultant organization. The scope of these audits includes all nuclear-related construction and operations activities. The scope at Braidwood included examination and evaluation of organization and administration, maintenance, operations, technical support, training, quality assurance, quality control, procurement, stores, record management, and document control. One such audit was performed

at Braidwood during June 1983, while another was performed during the Fall of 1984.

INPO

The Institute of Nuclear Power Operations (INPO) conducted an evaluation of the Braidwood construction project and the Sargent and Lundy Engineers design offices during the weeks of June 3, 11, and 25 1984.

INPO conducted evaluations of all nuclear construction projects, against a standard of excellence, to evaluate the control of design and construction processes and to identify areas needing improvement. Their evaluation process includes analyzing information from discussions, interviews, observations, and reviews of documentation.

The INPO evaluation team examined organization and administration, design control, construction control, project support, training, quality, and test control. The team observed actual work performance and test performance. A portion of the evaluation focused on a detailed vertical path examination through the design and construction of the project, combined with a horizontal examination at several points. The team at the design office reviewed the design control, and the team at the project site examined, in some detail, the installed equipment.

CAT

The NRC Construction Appraisal Team (CAT) inspection was conducted by the Office of Inspection and Enforcement (IE) on December 10-20, 1984 and January 7-18, 1985 at the Braidwood site. The Construction Appraisal Team was composed of seven members of IE and NRC Region III and nine consultants. The inspection covered construction activities authorized by the NRC Construction Permit for Braidwood.

The results of these inspections were used to evaluate the management control of construction activities and the quality of construction.

The effort consisted primarily of detailed inspection of selected hardware subsequent to quality control inspections, a review of selected portions of the Quality Assurance Program, examination of procedures and records, observation of work activities, and an examination of the project management.

BCAP

Commonwealth Edison Company developed Braidwood Construction Assessment Program (BCAP) to provide additional assurance, above that provided by the existing Quality Assurance programs, that construction at Braidwood was of acceptable quality. The program consisted of three elements. The first provided for the reinspection of samples of completed construction activities and a review of the associated quality documentation. The second element reviewed all then-current contractor work and Quality Assurance/Quality Control procedures to ensure inclusion of essential requirements of the specifications and the FSAR. The third element provided assurance that a number of representative corrective action and quality confirmation programs undertaken by Commonwealth Edison Company and its contractors were appropriately established, effectively implemented, and suitably documented. On the basis of the results of these three elements, conclusions of the BCAP could be drawn concerning the adequacy of past, ongoing, and future safety-related construction activities at Braidwood.

SALP

The Systematic Assessment of Licensee Performance (SALP) program is an integrated NRC staff effort to collect available observations and data on a periodic basis and to evaluate

licensee performance based upon this information. SALP is supplemental to normal regulatory processes used to ensure compliance to NRC rules and regulations. SALP is intended to be sufficiently diagnostic to provide a rational basis for allocating NRC resources and to provide meaningful guidance to the Licensee's management to promote quality and safety of plant construction and operation.

An NRC SALP Board meets to review the collection of performance observations and data to assess the licensee performance in accordance with the guidance in NRC Manual Chapter 0516, "Systematic Assessment of Licensee Performance."

The SALP-4 was the SALP Board's assessment of the licensee's safety performance at Braidwood Nuclear Station for the period January 1, 1983 through June 30, 1984. The SALP-5 was the Board's assessment for the period July 1, 1984 through November 30, 1985.

The licensee performance is assessed in selected functional areas depending on whether the facility is in a construction, pre-operational or operating phase. Each functional area normally represents areas significant to nuclear safety and the environment.

One or more of the following functional areas is assessed.

1. Management involvement in assuring quality
2. Approach to resolution of technical issues from a safety standpoint
3. Responsiveness to NRC initiatives
4. Enforcement history
5. Reporting and analysis of reportable events
6. Staffing (including management)
7. Training effectiveness and qualification

Q.42. From an overall management perspective, what significant conclusions were drawn, from these assessments?

A.42. From an overall perspective, the results of these various assessments generally confirmed that the organizational, personnel, practice and procedure changes being implemented were effective in assuring that any significant problems were being identified and addressed.

Of the General Office Quality Assurance Audits performed, the most significant was the Comprehensive Audit of 1983. Although, this audit identified several findings related to construction activities, it concluded that there was no major breakdown in any of the contractors' quality assurance programs and that their programs were effective in achieving the requisite quality. Not unexpectedly, the other General Office audits in 1983 and 1984 also identified findings, however, collectively, when those findings are compared to the evidence of procedural and programmatic compliance identified during the audits, I do not consider their results to detract from my positive conclusion about the overall quality assurance program effectiveness. Rather, actions taken in evaluating and resolving the findings from these audits serve to further strengthen and enhance contractor quality assurance programs.

The management reviews performed in 1983 and 1984, looking very broadly at the quality programs for the construction of

Braidwood, did not identify any significant concerns. They served to confirm my confidence that from an overall organizational and management perspective our program was functioning effectively.

The INPO Construction Evaluation in 1984 identified no new significant issues. Further, the INPO evaluation was performed against a standard of excellence with consideration for what INPO considers to be best practices being implemented in the industry in specific areas, rather than against minimum acceptable standards or requirements. Accordingly, while several areas were identified where improvements were recommended, they did not suggest any significant quality assurance problems. In a number of cases, INPO identified areas for improvement to meet their standard of excellence, which we expected would be addressed through the many actions we had already taken. Given the high standard which formed the basis for the INPO review, the comprehensive nature of their evaluation, and the experience and depth of review of their evaluators, it was not surprising, and moreover was generally expected, that areas were identified for improvement. However, the affirmation given by INPO personnel to the efforts we already had underway, and the absence of any new significant issues provided me with additional confidence that our efforts were effective.

The results of the CAT evaluation are described in the response to question no. 39. Further, it is noteworthy that the CAT

review was performed very soon after the completion of the INPO review (the INPO evaluation report was issued in October, 1984, with the CAT review beginning in December, 1984). Considering the fact that these two reviews occurred at nearly the same point in time, that we made both groups fully aware of the changes which took place on the Project throughout 1983 and 1984, and with the results of the INPO review being broadly distributed, it was not surprising that those two reviews identified several common issues.

The BCAP effort which we undertook also provided good confirmation about the adequacy of our actions in 1983 and 1984, while also providing a further basis for our confidence in the overall quality of construction at Braidwood. The BCAP effort involving over 100,000 manhours and lasting over a year was undertaken by a group of individuals with significant industry experience and was overviewed by several organizations, including the NRC, in a way that served to confirm the credibility of the overall effort. As with the other assessments mentioned above, this review also did not identify any new significant issues related to implementation of the quality assurance program at Braidwood. This effort also served to confirm in a very positive way the adequacy of the organizational, personnel, practice and procedural changes that had been implemented.

The NRC's assessment of the Quality Assurance Program at Braidwood also indicated an increasingly positive perception of

the program. The SALP-4 report states "Overall the licensee's performance was found to be acceptable. During the first part of the SALP period the licensee's performance with regard to implementing corrective actions to resolve known problems and nonconforming conditions was of significant concern to the NRC. Toward the end of the SALP period the licensee's performance improved considerably and, in most cases, the licensee's recent corrective actions have been responsive and adequate." In the SALP-5 report, the NRC discussed our recent performance in the context of earlier concerns, as they stated:

> In meetings and in correspondence with you following our inspections in 1982 and 1983, we had stated that we had serious questions about the quality of work at Braidwood and had expressed concern about the need for more aggressive Commonwealth Edison Company management involvement in and support of the Commonwealth Edison Company Quality Assurance program. In the letter accompanying the SALP 4 Board Report, we had noted that during the last part of that SALP period, your overall regulatory performance was showing an improved trend. The current SALP 5 report indicates that this trend continued, resulting in improved performance particularly in the three important areas in which you had been rated Category 3. The results of your efforts to date and the continuation of this level of effort will provide adequate assurance that construction deficiencies of the past have been corrected and that ongoing work is being properly carried out.

Q.42. Please describe the Quality First Program, the reasons it was initiated and what its results have been.

A.42. By early 1984, I became aware of the apparent success that several utilities were having with various types of "exit interview" programs which were implemented to provide an opportunity for workers leaving the job site to express any concerns that they might have about the quality of construction. It was our goal to assure that we provided an opportunity for any

employee on the job site to raise a concern when it first occurred so that it could be fully evaluated and resolved in a timely manner. I appointed an individual to head this effort with the first assignment to survey existing programs at various utilities in the country. Subsequently, after developing the appropriate policies and procedures, we implemented the Braidwood Quality First Program in October of 1984.

The purpose of the Quality First Program is to establish a forum, separate from normal project organization groups, in which any personnel at the Braidwood Project can communicate any concern they might have regarding the quality of construction. The Quality First Program is not intended to replace the normal organizational channels for communicating and resolving such concerns. Rather, the program provides an alternative line of communication for those who have not had their concerns satisfactorily resolved or who wish to remain anonymous in raising their concerns.

The program encourages individuals to voice their concerns, and establishes a group separate from all other site organizations to interview individuals, receive their concerns, and assure that they are adequately evaluated and resolved while maintaining the confidentiality of the individual. Quality First also feeds back the results of the reviews or investigations, whenever possible. In addition, through this program, we have taken steps to communicate our overall policy regarding the importance of quality as the first consideration in all activities undertaken at Braidwood.

Q.43. Do you have an opinion as to the adequacy of Commonwealth Edison Company oversight of contractor quality activities at the Braidwood site? Describe the basis for your conclusions.

A.43. In late 1982, the NRC identified concerns regarding the implementation of the Quality Assurance Program for the mechanical erection contractor, Phillips, Getschow Company. To address those concerns, I undertook a number of reviews which led to broad based organizational, personnel, practice and procedural changes for the major contractors on the site. The primary focus of activities and reviews in early 1983 was to address the concerns related to work performed by the mechanical installation contractor and to confirm our confidence in the work performed by all other contractors on-site, while raising the overall level of quality consciousness across the Project. The efforts we undertook in that time period led to an increase in our confidence that all significant problems had been identified and addressed, and particularly that the concerns identified in Inspection Report 82-05 were fully addressed.

Through the inspections that were conducted in 1983, as ultimately reflected in Inspection Report 83-09, the NRC expressed concern about the adequacy of our Quality Assurance Program in areas other than safety-related mechanical equipment (addressed in 82-05). Clearly there were deficiencies identified throughout 1983, both by Commonwealth Edison and the NRC, some of which were more substantial than others. By the end of 1983, there was, however, a significant difference in our perception of the effectiveness of the Braidwood Quality Assurance Program, and that of the NRC. At times, it seemed that questions that the NRC raised in 1983 concerning the adequacy of past work soon became characterized as significant "problems" with the adequacy of past work. While we too had questions in many areas and were taking action to address those questions, the NRC at times moved quickly from "legitimate questions" to "perceived problems". This is perhaps best manifest in the manner in which the Material Traceability Verification (MTV) issue developed throughout 1983 and the fact that it was, at times, in early 1984, characterized as a significant hardware problem. Based on the actions which we undertook in late 1983, our confidence on this issue was

increasing, as our initial questions associated with material traceability were not turning out to involve significant hardware problems. However, the NRC was not similarly convinced. In response to their questions and concerns, we undertook a significant effort (the MTV Program) to establish an even stronger basis for confidence in the installed hardware and to demonstrate that the "questions" raised were not indicative of "hardware problems". As discussed in the testimony of others, the MTV Program ultimately showed that the NRC's perceived problems were not real, that our initial confidence in this particular work activity was well placed and confirmed, and that what really existed at the end of 1983 was a significant difference in overall confidence between Commonwealth Edison and the NRC in the quality of construction and the effectiveness of our Quality Assurance Program.

Following the actions taken in 1983 and 1984, I had confidence that we had effectively addressed the management issues raised by the NRC in 1982. Further, I had confidence in the overall effectiveness of the Braidwood Quality Assurance Program and in the quality of construction at Braidwood. Each of the assessments discussed in answers 39 and 41 served to progressively increase my level of confidence since they did not identify any new significant issues which were not already being addressed by the Braidwood Project organization. The INPO and CAT team reviews were particularly encouraging due to the comprehensive nature and high experience level of the personnel involved. Finally, the NRC staff's conclusions in SALP-5 were further confirmation to us that it too now had confidence in the quality of construction and in the implementation of the Braidwood Quality Assurance Program.

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TESTIMONY OF JAMES W. GIESEKER
ON ROREM Q.A. SUBCONTENTION 4A and 4B

Q.1. Please state your full name for the record.

A.1. James W. Gieseker

Q.2. Who is your employer and what is your occupation?

A.2. I am employed by the Commonwealth Edison Company (CECo). I have been working at Braidwood Station as an electrical engineer since August 6, 1984. My title is Supervising Engineer in the Project Construction Department (PCD).

Q.3. Please state your education and professional experience.

A.3. I graduated in 1971 from Valparaiso University with a Bachelor of Science Degree in Electrical Engineering.

I have been employed by Commonwealth Edison since July 19, 1971. Prior to my transfer to Braidwood Station, I was assigned to the LaSalle Nuclear Generating Station. While at LaSalle, I worked in the Quality Assurance Department, the Station/Production Construction Department and the Station Operating Department. I worked in the Quality Assurance Department from May 1976 to August 1979, where I conducted surveillances and audits to assure that

various site contractors, including the electrical contractor, adhered to their QA programs. I also reviewed and approved site work instructions and procedures for these contractors in conjunction with Engineering and the Station Construction Department. In general, I was familiar with the daily operation of the contractors' quality assurance departments.

In August of 1979, I transferred into the Station Construction Department where I worked in the electrical group. Our group was responsible for overseeing the electrical contractor's Quality Department and was the main contact for Nuclear Regulatory Commission (NRC) inspectors in the electrical area. I transferred to the Station Operating Department Technical Staff at about the time the construction of LaSalle was nearing completion. As a member of the Technical Staff, I was first in charge of the Licensing Group and then the Engineering Group. The Engineering Group was responsible for the development and coordination of construction modifications to plant.

Q.4. What are your responsibilities with respect to the Braidwood project?

A.4. I am presently an Electrical Group Leader. My Group has responsibility for working with L.K. Comstock's Quality Control Department. L.K. Comstock is the site contractor performing the electrical work at Braidwood. I also assist in the development and review of CECo positions and responses to various questions and matters raised in the electrical area by the NRC as a result of their inspection activities. During the course of my work, I have acquired knowledge of LKC's QC inspector certification and weld inspection programs at Braidwood.

Q.5. What is the purpose of your testimony?

A.5. The purpose of my testimony is to respond to Rorem QA Subcontention Items 4A and 4B. The specific aspects of Subcontention Items 4A and 4B which I address state that 1) LKC "failed to establish a program for identifying the required reading for weld inspectors and conducting practical tests" and 2) that "four L.K. Comstock weld inspectors were not proficient in American Welding Society Structural Welding Code."

Q.6. Since the required reading/practical tests and knowledge of the AWS D1.1 Code issues involve events that occurred prior to your assignment to Braidwood, please explain how you became knowledgeable with respect to this matter.

A.6. I studied the pertinent documents on the issues and discussed the matter with co-workers. In particular, I reviewed the original NRC inspection report, CECo's response to the items of noncompliance, the LKC QC inspector qualification/certification procedure, LKC weld procedures and discussed the issue with LKC QC personnel.

Q.7. What is the basis for this contention?

A.7. A special NRC safety inspection was conducted on March 26, 28-29; April 3-5, 10-12; and May 23 and 31, 1984 by R. Schultz, J. Malloy and W. Kropp from the U.S. Nuclear Regulatory Commission, Region III. The report setting forth the results of these inspections is documented in NRC Inspection Report 50-456/84-07, 50-457/84-07 dated July 20, 1984.

Q.8. Inspection Report 84-07 states that LKC failed to establish and implement a program for identifying the required reading for weld inspectors as part of their required training for certification and for conducting practical tests for the purpose of ascertaining if prospective weld inspectors were proficient in identifying weld defects. What is your understanding of the underlying concerns which resulted in this noncompliance?

A.8. At the time of the NRC Staff inspection, the LKC training program included a familiarization log which consisted of a listing of the specific codes and procedures to be read. The familiarization log did

not specifically indicate which of the listed codes/procedures were to be read when training for a specific inspection activity.

The NRC Staff noted that the required reading completed by weld inspectors was not consistent for each individual. The inconsistencies were as follows:

a) One QC Inspector did not read QC Manual Section 4.8.15, "Document Control" and the AWS D1.1 Code.

b) One QC Inspector did not read QC Manual Section 4.8.2, "Manual Inert Gas (MIG) Welding Inspection" and Section 4.3.14, "Manual Shielded Metal Arch Welding Stainless Steel."

c) One QC Inspector did not read QC Manual section 4.8.2, "MIG Welding Inspection."

The NRC Staff also reviewed the practical test given to four prospective weld inspectors. For practical tests, Comstock typically used recently installed items which were inspected by the prospective weld inspector under the supervision of a Level II weld inspector. The installations used to test the four prospective weld inspectors did not contain any weld defects (i.e., undercut, crack, porosity) so the NRC Staff concluded that this did not test the individuals' capability of identifying weld defects.

The NRC Staff included both of these findings in one severity level V violation.

Q.9. Do you agree with the NRC Staff concerns discussed in question/answer 8 above?

A.9. I agree that the then existing training program could be enhanced by making the required reading consistent. During the same time frame as the NRC Staff inspection discussed above, CECo QA characterized this lack of consistency as a deficiency in Audit Report #20-84-521, dated April 30, 1984. However, I believe that the inspectors' ability to perform required inspections was not significantly compromised by this deficiency. Required reading is only one aspect of the certification program, which consists of: prior experience; required reading; one hour formal lecture; eight hours lecture/demonstration; at least 40 hours on-the-job training (OJT) performing and documenting mock inspections; a test to demonstrate basic knowledge of Quality Assurance programs, a practical test using the checklist and inspection tools for all major types of different items to be inspected; and a 40 question general inspection proficiency test.

The required reading is the first thing a prospective inspector does when he starts LKC's training process. The inspector then receives lectures and demonstrations, 40 hours of OJT, evaluations by a trainer and is then tested. Therefore, required reading must be

put into its proper perspective in relationship to the overall certification program and that is, it is only one small portion of a comprehensive program. This is particularly true because these QC inspectors are not expected to work from memory of this required reading. As discussed in answer 12 below, the inspectors carry with them in the field weld inspection procedures which contain detailed instructions and guidance.

I also agree that ensuring that practical tests include weld defects is a good idea. But I think this also must be put into context. When conducting practical tests, LKC typically used actual field installations. Therefore, depending on the particular installation, rejectable indications may or may not have been included in the practical test. The prospective inspector didn't know in advance whether there would be rejectable indications, so he or she couldn't be lax in preparing for the test.

In addition, the prospective inspector isn't even allowed to take the practical test until the prospective inspector has completed at least 40 hours of OJT and both the prospective inspector and the instructor (a Level II inspector) agree that he or she

is ready for it. If either one thinks the prospective inspector is not ready, additional OJT is given.

Therefore, I agree with the NRC Staff's assessment of these two concerns as Severity Level V, that is, violations that have minor safety significance.

Q.10. Describe the corrective action, if any, that has been taken to resolve the NRC conerns discussed in question/answer 8 above.

A.10. A matrix has been added to the LKC familiarization log to specifically indicate which codes/procedures are to be read for each area of certification. This matrix was incorporated in procedure 4.1.3, Qualification, Classification and Training of Quality Control Personnel, Revision C. The corrective action to CECo QA Audit 20-84-521 included a review of certification packages for required reading to the requirements of the new matrix. The review included certfication packages for current inspectors as well as any previous inspector certified after the issuance of Revision A to LKC procedure 4.1.3, which was the first LKC procedure that required documentation of required reading. This review is intended to make a statement about the entire LKC training program after the issuance of LKC procedure 4.1.3 Revision A. Apparent

omissions of required reading are documented and addressed on a case by case basis in LKC Nonconformance Reports. Basically the results of this review are falling into the following categories:

1) The procedure or procedure revision which the inspector did not read was not in effect at the time of the certification. Therefore no nonconforming condition really existed.

2) The code or procedure or procedure revision was in effect but the reading material related to administrative matters, and would not directly affect any technical requirements in the area of certification.

3) The procedure or procedure revision was in effect at the time of certification and was in the area of certification, however the particular inspector passed all the required tests.

For the concern on known defects being included in the practical test, CECo Quality Assurance issued a letter to site contractors on April 18, 1984 requiring that samples with known defects be included in practical tests for QC weld inspectors. In the Revision C to 4.1.3 LKC revised paragraph 3.5.1.2 to state that, when practical, items with and without known defects will be used for practical examinations.

Q.11. Inspection Report 84-07 also states that four LKC weld inspectors were not proficient in the American Welding Society Structural Welding Code, AWS D1.1. According to the Inspection Report, this was evidenced by their inability to answer questions pertaining to the repair of weld cracks and fit up tolerances. What is your understanding of the underlying concern of this noncompliance?

A.11. The NRC inspectors conducted interviews with four Level II weld inspectors to asses their working knowledge of the AWS D1.1 Structural Welding Code which is the applicable welding code for LKC activities. The NRC inspectors concluded from the interviews that the LKC inspectors had not achieved the necessary level of competency to perform weld inspections because they could not state the correct tolerance for weld fit-up and the proper technique for the repair of cracks as required by AWS D1.1. The NRC Staff characterized this as a Severity Level IV violation.

Q.12. Do you agree with the NRC item of noncompliance discussed in question/answer 11 above?

A.12. Training in the AWS D.1 welding code provides for an enhanced training program, however, I believe that LKC weld inspectors are competent and have been competent to perform their assigned weld inspection tasks. The electrical job specification F/L-2790, Electrical Installation describes what the welding requirements are for LKC. This specification states that the

electrical welding is to be in accordance with the AWS D1.1 Code with certain exceptions that are listed in the specification. (This is allowed per AWS D1.1 para 1.1). Installation and inspection procedures are then generated and approved based on those specification requirements. These installation and inspection procedures, rather than the AWS D1.1 welding code itself, are what the LKC weld inspectors need to know to do their work. In fact, they carry the inspection procedures with them in the field. As far as I know, the NRC Staff has not questioned the adequacy of the inspection and installation procedures.

Q.13. Describe the corrective action, if any, that has been taken to resolve the NRC concern indicated in question/answer 11 above.

A.13. Although LKC procedure 4.8.3, Weld Inspection, always incorporated AWS D1.1-1975 requirements as interpreted in specification L-2790, that procedure was revised to further clarify the weld inspection requirements of AWS D1.1-1975 as interpreted in specification L-2790. In addition, after the NRC staff inspection finding, LKC weld inspectors received on-site training on specification L-2790 and weld inspection requirements by the Level III Corporate Welding Engineer of LKC. Moreover, the required reading matrix included in procedure 4.1.3 Revision C specified the AWS D1.1

welding code and specification L-2790 as required reading for weld inspectors.

Q.14. What assurance do you have that the corrective actions indicated in questions/answers 10 and 13 above have been carried out?

A.14. The revisions to LKC procedures 4.1.3 and 4.8.3 discussed in answers 10 and 13 have been approved and implemented. The training session indicated in answer 13 above has been completed. CECo QA has reviewed contractor certification/recertification packages prior to the inspector performing any related inspections per a CECo QA Hold Point. Under this Hold Point CECo QA reviewed certification package compliance to the requirements of procedure 4.1.3, including ensuring that required reading has been done and ensuring that the practical exams of weld inspectors contained known defects. It is my understanding that, based on LKC's satisfactory performance, this QA hold point will soon be lifted. However, the LKC site QA, LKC Corporate QA and CECo QA organizations will continue to audit LKC activities in these areas.

Q.15. What is the overall significance of these concerns in relation to 10 CFR 50, Appendix B, Criterion II?

A.15. As I stated above the changes resulting from these items of noncompliance are program enhancements. For

the reason stated above I do not believe these items of noncompliance represent significant violations of Criterion II. I think they are illustrations of the NRC Staff's policy in recent years of seeking to improve the training and capability of QC inspectors.

Q.16. Does this conclude your testimony?

A.16. Yes.