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May 24, 1985

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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OFFICE OF SECRETARY
DOCKETING & SERVICE
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In the Matter of:	)	
	)	
COMMONWEALTH EDISON COMPANY	)	
	)	Docket Nos. 50-456OL
(Braidwood Nuclear Power	)	50-457OL
Station, Units 1 and 2)	)	

MOTION TO ADMIT AMENDED QUALITY ASSURANCE CONTENTION

Pursuant to the Commission's Rules of Practice, 10 C.F.R. Section 2.714, and the Licensing Board's Special Prehearing Conference Order, April 17, 1985, Intervenors Bridget Little Rorem, et al., by their undersigned counsel, hereby move to admit an amended quality assurance (QA) contention for litigation in this proceeding. In support of this Motion Intervenors set forth a specification of the factual bases for Intervenors' claim that a serious breakdown has occurred in the quality assurance program at the Braidwood Nuclear Station, together with an explanation of the manner in which the known evidence of widespread quality assurance flaws provides overwhelming basis for this contention. Documentary materials supporting this amended contention, referenced in the discussion below and identified in an index preceding the materials, are attached hereto as exhibits. Among these materials are portions of the transcript of testimony of Nuclear Regulatory Commission Regional Administrator James G. Keppler and Branch Chief Robert F. Warnick given in deposition

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May 20, 1985, as authorized by this Board in its April 17, 1985 Order (pp. 38-39). The Keppler and Warnick depositions, NRC inspection reports and other documents detail the widespread QA failures at Braidwood which are the bases for Intervenors' amended contention.

I. THE QA BREAKDOWN AT BRAIDWOOD

There can be virtually no dispute that a pervasive breakdown has occurred in the Quality Assurance program at Commonwealth Edison's Braidwood Nuclear Power Station. Serious, programmatic failures to comply with twelve of the eighteen Quality Assurance criteria required by 10 C.F.R. Part 50, Appendix B, preclude the "reasonable assurance" conclusion that Braidwood has been constructed in such a manner that it can be operated without endangering the public health and safety. 10 C.F.R. Section 50.57(a); Union Electric Company (Callaway Plant, Unit 1), ALAB-740, 18 NRC 343 (1983).

The NRC enforcement record at Braidwood amply substantiates the seriousness of the quality assurance violations by Edison and its site contractors as well as the pervasive scope of this breakdown and its hardware implications. The significance of these QA violations at Braidwood is confirmed by the conclusions of NRC Regional Administrator Keppler, who stated publicly last year on the heels of the Byron license denial,

> "I'm more concerned about Braidwood than Byron at this point. ... We have had hardware deficiencies at Braidwood. I'm not comfortable with making a statement as I did with Byron that Braidwood was built properly."

("Will County A-Plant Faulted - 'Worse' than Byron," Chicago Tribune, Feb. 1, 1984 and excerpts from Keppler Deposition, Tr. 91-104, Exhibit 1.)

While the existence and extent of these quality assurance failures at Braidwood have been acknowledged by the NRC Regional office, it remains most troubling that such acknowledgement did not occur until so late in the plant's construction that much, if not most, of the safety-related hardware at Braidwood was already installed. The initial significant NRC QA findings at Braidwood did not occur until the February 2, 1983, $100,000 civil penalty imposed for "a breakdown of your quality assurance (QA) program as it relates to the installation and installation inspection of mechanical safety-related equipment." (February 2, 1983 Letter, Keppler (NRC) to O'Connor (CE Co.), Exhibit 3.)

Only months earlier, a special NRC quality assurance team inspection designed to identify QA problems similar to those just found at the Zimmer facility, (excerpt from Keppler Deposition, Tr. 113, Exhibit 2), wholly failed to detect the serious QA flaws at Braidwood. (Inspection Report 82-03, July 16, 1982, Exhibit 4.) Mr. Keppler now concedes that this earlier QA inspection was "... not a very good effort ... not a very effective inspection" (excerpts from Keppler Deposition, Tr. 118, Exh. 2), and that the Braidwood plant had received only "minimal" NRC attention before 1983. (Id., Tr. 119.)

It was not until mid-1984 that the NRC staff finally acknowledged widespread evidence of "inadequate contractor programs and workmanship, inadequate licensee reviews of the

contractor programs, and inadequate licensee quality assurance overview to ensure contractor activities met all requirements" at Braidwood. (May 7, 1984 Letter, Keppler (NRC) to O'Connor (CE Co.), p. 2, Exhibit 5.) In the accompanying Inspection Report 83-09, the NRC cites Edison for six severity level IV violations involving the major site contractors in programmatic failures to comply with the Commission's quality assurance criteria for "Corrective Actions; Instructions; Procedures and Drawings; Quality Assurance Program; Audits; Document Control; and Design Control." Id. An additional violation remains open to this day, identified only as an "Unresolved Item" pending the completion of a 100% reinspection of all installed ASME piping materials for evaluation of safety significance. Mr. Keppler disclosed that this "Unresolved Item" is classified as "at least a Severity III violation based on the unknown quality of some installed piping materials," but potentially a severity level II violation if the reinspection discloses further hardware problems. (excerpts from Keppler Deposition, Tr. 40-41, 47, Exh. 2; April 4, 1984 Memo, Keppler (NRC) to DeYoung (NRC), Exhibit 6.)

As a direct result of the widespread and serious quality assurance failures identified by the NRC's Region III at Braidwood, sweeping corrective action programs were imposed upon Commonwealth Edison beginning in mid-1984. The seriousness of the QA problems at Braidwood dictated the necessity for corrective action which not only reorganized the quality assurance program and management to oversee future work, but required massive efforts to address the indeterminate quality of

existing plant construction which resulted from the programmatic quality assurance breakdown.

> The fact that we have required the company to institute a program of the magnitude of BCAP is indicative that we have concerns about construction. I wouldn't ask them to do that if I didn't have concerns about construction ...
>
> Yes. We have concerns. The purpose of the BCAP program is to determine whether or not there are real hardware problems, major hardware problems.
>
> ... the BCAP program is a major encompassing type program. It's looking at past construction work, it's dealing with future work, and it's dealing with an overview of problems that they identify as a result of the past construction review. ...
>
> ... that effort is being carried out in response to general concerns that were raised that might be indicative of concerns in other areas. ...
>
> The concerns were that the utility was not exercising control over its contractors, and that the contractor QA programs in certain areas were not being implemented effectively. The 83-09 inspection effort focuses on three major areas: It focused on piping, electrical and, I believe -- I believe, heating, ventilation and air conditioning work. ...
>
> I believe there were a number of common problems.

(Excerpts from Keppler Deposition, Tr. 108-111, Exh. 2.)

Pertinent excerpts from the depositions of Messrs. Keppler and Warnick are appended to this pleading as Exhibit 2; the full text of the deposition is separately bound and submitted to the Board for its use. Applicant had the opportunity to question Messrs. Keppler and Warnick in a telephone conference conducted Thursday, May 23, 1985. While a transcript of Mr. Keppler's responses to Applicant's questions was not yet available at the time of this filing, Mr. Keppler reiterated that the jury is still out on QA

at Braidwood. The impact of the QA flaws and the extent of the failure of hardware to meet regulatory requirements remain indeterminate. The Staff's conclusions regarding the safety of Braidwood must await review of the findings of BCAP and the other corrective action programs. The full transcript of the most recent portion of the Keppler-Warnick deposition will be filed with the Board for its consideration.

Over 20 major corrective action programs remain underway at Braidwood, (excerpts from Warnick Deposition, Tr. 206-07; Exh. 2), with additional programs addressing unresolved deficiencies of varying levels of scope and significance. Id. In addition to these "top twenty" corrective action programs whose projected completion dates extend into the Fall of 1985 and perhaps beyond (April 8, 1985 Letter, Smith (CE Co.) to Keppler (NRC), Exhibit 7), the NRC required Edison to evolve the "Braidwood Construction Assessment Program" (BCAP), beginning in June 1984, to persuade the NRC that notwithstanding the widespread quality assurance breakdown "Braidwood Station has been constructed in accordance with regulatory requirements." (June 22, 1984 Letter, O'Connor (CE Co.) to Keppler (NRC), Exhibit 8.) The NRC does not expect BCAP to be completed and a report to be submitted to the NRC until August or September, 1985. (Excerpt from Warnick Deposition, Tr. 196, Exh. 2.)

What is established based on the existing record at Braidwood is a quality assurance program so riddled with systematic flaws that even the NRC's Regional Administrator could not vouch for the quality of its construction (excerpts from

Keppler Deposition, Tr. 92-93, Exh. 2.) This QA breakdown is of such seriousness that it has resulted in the failure to effectively identify existing hardware deficiencies, id., and has created a condition where the quality of safety-related structures, systems and components at Braidwood is indeterminate. (e.g., April 5, 1984 Memo, Keppler to DeYoung, Exh. 6.) Consistent with the standard enunciated by the Appeal Board in Callaway, supra, this Board simply cannot conclude that there is "reasonable assurance" that the Braidwood Nuclear Power Station has been constructed such that it can be operated without endangering the public health and safety.

Intervenors submit that upon admission of their amended quality assurance contention, appropriate procedural vehicles such as stipulations, admissions and summary disposition are available to eliminate from this proceeding those facts or claims which are not genuinely in dispute. Intervenors believe it likely that substantial aspects, if not most aspects, of their amended quality assurance contention will be established without the necessity of trial. The existing record of a quality assurance breakdown at Braidwood is simply beyond reasonable dispute.

Having established as a threshold matter the existence of a pervasive breakdown in the Braidwood quality assurance program, the focus of litigation on this amended contention will appropriately shift to the anticipated affirmative defense that notwithstanding the QA breakdown the safety-related components, systems and materials at Braidwood are built to required codes,

specifications and procedures and will perform satisfactorily in service. 10 C.F.R. Part 50, Appendix B, "Introduction." It is expected that Applicant, who bears the burden of proof on its application for an operating license (10 C.F.R. §2.732) would rely upon its still incomplete corrective action programs including particularly the Braidwood Construction Assessment Program to demonstrate construction quality. Intervenors, upon establishment of their claim on the merits, would be prepared to go forward with litigation on the results, effectiveness and reliability of BCAP and the other corrective programs. However, at the present time there is no room for genuine dispute that a serious, pervasive QA breakdown occurred at Braidwood. The only real issue in the hearings will be whether the corrective action programs, once they are completed, will remedy that unquestioned breakdown.

II. THE PENDING CORRECTIVE ACTION PROGRAMS

It is premature to predict whether the more than 20 major corrective action programs at Braidwood (including BCAP) will, upon completion, remedy the QA breakdown at the plant. Moreover, even though it is too early for full evaluation, serious flaws have been identified in each of the three elements of BCAP. These flaws have required significant further corrective action, caused delays in BCAP program performance or necessitated BCAP program rework, and have cast doubt on the eventual reliability of BCAP program results. For example, the level of "reinspection discrepancies" i.e., failure to effectively perform reinspec-

tions, identified by the NRC under the BCAP "Construction Sample Reinspection" element necessitated a suspension of reinspection activity and "the partial repeat reinspections" of previously reinspected hardware. The subject of BCAP reinspection deficiencies has been identified an an unresolved item by NRC (Inspection Report 85-02, p. 7, Exhibit 9) and was a concern expressed by the NRC Construction Appraisal Team (CAT) inspections. (CAT Inspection Report 84-44/40, p. III-7, Exhibit 10.) Even where the BCAP reinspection has identified previously uncorrected discrepancies, concerns have been raised about the improper "invalidations" of these discrepancies by the site Architect-Engineer Sargent & Lundy (S&L). An Unresolved Item was opened on this concern, (id., pp. 5-6), and a violation of 10 C.F.R. Part 50, Appendix B, Criterion XVI was cited for failure to take proper corrective action. (Inspection Report 85-06, March 8, 1985, pp. 4-5, Exhibit 11.)

The initial review work of the second BCAP element - Reverification of Procedure to Specification Requirements (RPSR), involving a review of all site contractor installation and inspection procedures did not begin until January 31, 1985. Its review of procedures which were "current" as of June 30, 1984, will fail to account for the numerous changes which have been made since that date. This concern was an NRC open item. (Inspection Report 85-02, p. 8, Exh. 9.)

The third BCAP element seeks to reverify some (not all) of the more than twenty other Braidwood corrective action programs. Beyond the numerous problems which exist in those other programs,

the reliability of this BCAP element has been questioned for failing to include any actual hardware inspections to establish the effectiveness of the corrective action program itself in assuring actual construction quality. (Inspection Report 84-30/28, p. 6, Oct. 4, 1984 and encl. 5 thereto (meeting minutes), Exhibit 12.)

The NRC Staff has expressed concerns about the reliability of a number of Edison's specific corrective action programs. For example, the Material Traceability Verification Program (MTV) which was instituted in response to NRC findings in Inspection Report 83-09 (Exh. 5), has identified some 3150 piping components which have no traceability markings. Some 566 piping components did have traceability markings but had no corresponding source documentation. How inspectors could have verified the traceability of these components remains unclear. Inspection Report 85-15/16, p. 11, Exhibit 13.

The QA Inspector Reinspection Program was established to address concerns regarding hardware acceptability and inspector qualifications. As reported in the May 16, 1985, Inspection Report 85-15/16, pp. 19, 20, Exh. 13, Edison is only now reformulating the program from the ground up to address fundamental flaws in the program's original form and execution. Inadequate program inspector training and the absence of effective program procedures resulted in wide variances in inspector reject rates. The NRC has identified concerns regarding the QC Inspector Reinspection Program as an open item. Id. Of the Applicant's "top twenty" corrective action programs,

twelve project completion dates for June 1985 or later, two as late as December, 1985, and for three no completion dates at all were projected as of March 8, 1985. (Letter, Smith (CE Co.) to Keppler (NRC), transmitting updates on "top twenty" corrective action programs at Braidwood, Exh. 7.)

Finally, the very existence of so many major corrective action programs underway simultaneously with construction at Braidwood, as noted by the CAT team, raises further questions about licensee's ability to build the plant safely: "The major areas of concern to the NRC CAT are: (1) the dependence on final walkdown inspections late in the construction program to identify and resolve problems; and (2) the ability to manage the large number (over 20) of ongoing major corrective action programs and ensure that current work is correctly performed." (Transmittal letter to CAT Inspection Report 84-44/40, p. 1, Exh. 10.)

The foregoing examples of NRC concerns about the effectiveness of BCAP and other programs are intended simply to illustrate the point that the reliability of these corrective action programs must be the subject of scrutiny on these and such other more fundamental grounds as the independence and objectivity of those performing the reviews as well as the scope and depth of the reviews themselves. Only when their results are available for scrutiny and review can a reliable assessment be made of whether they have remedied the QA breakdown at Braidwood. In addition, the jury is still out on the issue of the extent of QA and construction deficiencies yet to be identified at Braidwood.

III. ADDITIONAL POINTS

Intervenors urge that the amended contention is amply supported by factual bases "set forth with reasonable specificity." 10 C.F.R. §2.714(b). While the evidence cited of a pervasive QA breakdown at Braidwood is compelling, it need not be evaluated at this pleading stage beyond its acknowledgement as establishing sufficient basis for admission and litigation. Mississippi Power & Light Company (Grand Gulf Nuclear Stations, Units 1 and 2), ALAB-130, 6 AFC 423 (1973).

In its April 17 Order, the Licensing Board observes (pp. 42-43) that the identification of witnesses and the subjects of their expected testimony by Intervenors would aid it in passing on the admission of any amended QA contention. Intervenors submit that the evidence discussed in this pleading will be offered to establish substantial elements of its claims of quality assurance breakdown. Indeed, the individuals and organizations with substantial quality assurance expertise which counsel have consulted since receipt of the Board's April 17 Order have confirmed that the record evidence itself at Braidwood best establishes the claim of quality assurance breakdown. Should it prove necessary, or appear helpful to the Board, Intervenors would expect to present expert opinion testimony to evaluate the QA record at Braidwood and establish that it does represent a pervasive failure of the QA system. Intervenors have also undertaken to retain expert QA assistance to evaluate the effectiveness of the BCAP and other Braidwood corrective action

programs. Although QA experts to perform this evaluation effort have not yet been retained, counsel expect to do so in a timely fashion in light of the incomplete status of BCAP and the Board's anticipated October hearing schedule. Several firms and individuals believed by counsel to be highly qualified on these subjects have been consulted since the Board's April 17 Order. Intervenors expect to be able to identify their expert consultants in time for the scheduled pre-hearing conference and to schedule their review efforts in light of the present hearing schedule.

Finally, two other matters are memorialized herein at the direction of the Board Chairman. First, in a conference call on May 10, 1985, the Board granted Intervenors' four additional days, until May 24, to file their amended contention. Second, by way of background for our specification of detailed underlying data supporting Intervenors' QA contentions, Intervenors describe herein their efforts to question "NRC Staff personnel knowledgeable about Braidwood QA/QC issues," believed by Intervenors to be most able to "supplement the testimony Mr. Keppler provides at his deposition with underlying data and any in depth analysis Staff may have performed." Special Prehearing Conference Order, April 17, 1985, p. 38. In order to effectively shoulder this burden of specification, Intervenors identified to NRC Staff counsel the following NRC personnel and areas of Braidwood QA knowledge for inclusion in the deposition panel to supplement the testimony of Regional Administrator Keppler: Braidwood Resident Inspectors R.D. Schultz and W.J. Kropp, each of whom had

conducted a number of inspections at Braidwood where QA deficiencies were identified; Braidwood BCAP Inspector R.N. Gardner, who has been specially assigned to inspect and review the BCAP program; W. Forney, former Chief, Projects Section 1A, who has supervised and approved Braidwood inspection activities over the last year; Tony Varela, specialist inspector from NRC Region I, who recently inspected at Braidwood in response to concerns regarding concrete problems; and those members of the NRC Construction Appraisal Team (CAT) who performed the recent CAT Inspection at Braidwood, most knowledgeable in the following areas where significant adverse QA findings were made: Project Management, Corrective Action Systems, Mechanical Construction, QC inspection activities, the six identified potential enforcement actions, and the four identified program weaknesses requiring increased management attention. Inspection Report 84-44/40, February 15, 1985, Exec. Sum., p. A-1, Exh. 10.

NRC Staff counsel declined to make any of these identified NRC personnel available for deposition, and took the position that discovery was not yet appropriate. Staff took the position that Mr. Keppler needed no help in explaining what he meant by his August 1, 1984, Byron testimony which acknowledged serious QA questions at Braidwood. Branch Chief R.F. Warnick was selected by Staff to assist Mr. Keppler. Staff counsel and counsel for Intervenors agreed that the dispute concerning the production of these staff witnesses should be taken before the Board for resolution. It was agreed that Intervenors' counsel would ask the Board Chairman to arrange for an on-the-record conference

call to hear the dispute.

On May 14, 1985, counsel for Intervenors telephoned the Board Chairman and made a request for consideration of this matter. The Chairman declined to entertain this dispute and instructed Intervenors to go forward with the deposition without the additional witnesses. The Chairman asked counsel to identify in this filing those persons sought for deposition, and stated that the Board could consider the need for further relief later.

IV. THE CONTENTION

Applicant Commonwealth Edison Company has failed to establish and execute an effective quality assurance program for the Braidwood Nuclear Power Station, Units 1 and 2 as required by 10 C.F.R. Part 50, Appendix B. The breakdown in quality assurance procedures and pervasive failure to carry out the required quality assurance program raise significant doubt as to whether safety-related components, structures and systems have been designed, fabricated and installed in accordance with applicable codes, specifications and procedures such that they will perform satisfactorily in service. The as-built quality of construction of the Braidwood Nuclear Power Station is indeterminate. Because of the failure by Commonwealth Edison and its contractors to carry out effective quality assurance programs, there is insufficient confidence that all deficiencies at Braidwood will be identified and corrected. Actual hardware deficiencies have gone unidentified and uncorrected by the quality assurance program. Because of the failures by Commonwealth Edison and its contractors to carry out an effective quality assurance program it cannot be concluded that the Braidwood Nuclear Power Station has been constructed in conformity with the construction permit, and the application as amended, the provisions of the Atomic Energy Act, and the rules and regulations of the Commission; nor is there reasonable assurance that that facility will be operated in conformity with applicable requirements and without endangering the public health

and safety. No operating license may be issued. 10 C.F.R. §50.57(a).

The overall serious and pervasive nature of Applicant's QA breakdown at Braidwood is reflected in the following statements by NRC Region III Administrator James G. Keppler, each statement either made under oath or reaffirmed by him under oath:

> We do have concerns with actual construction work at Braidwood ....
>
> If you were to talk to [NRC] inspectors at both plants, the feeling is there are more problems at Braidwood than at Byron ....
>
> I have not been able to pinpoint why all the violations occurred that lead to fines last year ....
>
> One has to question whether the workload has become unmanageable for the staff they have, and I've raised that for management to consider. But I have to be concerned they are spread thin at the top ....
>
> I'm more concerned about Braidwood than Byron at this point. ... We have had hardware deficiencies at Braidwood. I'm not comfortable making a statement as I did with Byron that Braidwood was built properly.
>
> ("Will County A-Plant Faulted - 'Worse' Than Byron," Chicago Tribune, Feb. 1, 1984, affirmed under oath, May 20, 1985 (Exh. 2, Tr. 92, 93, 98-104)
>
> We have got serious quality assurance questions at Braidwood ... and major reinspection efforts are underway to deal with these concerns.

(August 1, 1984 Testimony of James G. Keppler in Byron proceeding, Tr. 10,134; excerpts from Keppler Deposition, Tr. 105-105, Exh. 2)

> The fact that we have required the company to institute a program of the magnitude of BCAP is indicative that we have concerns about construction. I wouldn't ask them to do that if I didn't have concerns about construction ...

Yes. We have concerns. The purpose of the BCAP program is to determine whether or not there are real hardware problems, major hardware problems.

... the BCAP program is a major encompassing type program. It's looking at past construction work, it's dealing with future work, and it's dealing with an overview of problems that they identify as a result of the past construction review. ...

... that effort is being carried out in response to general concerns that were raised that might be indicative of concerns in other areas. ...

The concerns were that the utility was not exercising control over its contractors, and that the contractor QA programs in certain areas were not being implemented effectively. The 83-09 inspection effort focuses on three major areas: It focused on piping, electrical and, I believe -- I believe, heating, ventilation and air conditioning work. ...

I believe there were a number of common problems.

(Excerpts from Keppler Deposition, Tr. 98-99, 109, 110A, Exh. 2)

In order to avoid duplication Intervenors have cited each QA violation under only the single Appendix B Criterion cited by the NRC Staff. However, many of these deficiencies constitute violations of multiple criteria and Intervernors hereby allege each such deficiency to be a violation of each and every applicable criteria. Further, to the extent not expressly stated in the body of the contention, Intervenors hereby allege those matters stated in the body of their preceding Motion as further support for our quality assurance claims.

Applicant has failed to carry out an effective quality assurance program in the following particulars:

1. Contrary to Criterion I, "Organization" of 10 C.F.R. Part 50, Appendix B, Commonwealth Edison has failed to effectively oversee the quality assurance activities of its site contractors for which it retains responsibility. Widespread deficiencies have occurred in the quality assurance activities and workmanship of the principal Braidwood site contractors including the mechanical (piping and supports/restraints) equipment and instrumentation installation contractor Phillips, Getschow Company; the electrical contractor, L.K. Comstock Company; the heating, ventilation and air conditioning (HVAC) contractor, Pullman Sheet Metal Company; and the concrete contractor, G.K. Newberg Company.

A. On February 2, 1983, Commonwealth Edison Company was cited a $100,000 Civil Penalties for severity level III violations at Braidwood "evidenced by a breakdown of your quality assurance (QA) program as it relates to the installation and installation inspection of mechanical safety-related equipment." (Keppler (NRC) to O'Connor (CE Co.) transmitting Notice of Violation and Proposed Imposition of Civil Penalties, Exh. 3.) The serious quality assurance deficiencies involved activities by the site mechanical equipment installation contractor, Phillips, Getschow Company, and related to the installation of the four Unit 1 Steam Generators, the four Unit 1 and 2 Residual Heat Removal Pumps and the four Safety Injection Pumps. Edison failed to take timely and effective corrective action after identifying related significant problems that occurred at its Byron station. Edison failed to report this significant breakdown in the quality assurance program to the NRC as required by 10 C.F.R.

50.55(e)(1), although it had identified the problems with Phillips, Getschow Company over two years earlier. (Exh. 3.)

B. On May 7, 1984, NRC Region III Administrator James G. Keppler cited Commonwealth Edison for serious quality assurance violations involving Braidwood site mechanical contractor Phillips, Getschow Company; HVAC contractor, Pullman Sheet Metal Company; electrical contractor L.K. Comstock Company and Architect/Engineer Sargent & Lundy. "A major factor contributing to the deficiencies were inadequate contractor programs and workmanship, inadequate licensee reviews of the contractor programs, and inadequate licensee quality assurance overview to ensure contractor activities met all requirements. The violations indicate the need for more aggressive CE Co. management involvement in and support of the CE Co. QA program to ensure that all safety-related activities performed by contractors' personnel are in accordance with regulations, codes, standards, and license requirements." (Keppler (NRC Region III) to O'Connor (CE Co.), transmitting Inspection Report 83-09, Exh. 5.)

These QA deficiencies resulted in stop work orders and construction deficiency reports in the areas of small bore piping hangers, HVAC welding activities and piping material control. Deficiencies concerning piping material control resulted in the quality of some installed piping being indeterminate and resulted in some material being installed that did not meet design requirements. (Inspection Report 83-09, Exh. 5).

C. Deficiencies noted by the NRC CAT inspection in a number of hardware installations indicate a need for more

management attention. The deficiencies included examples of inadequate hardware inspection and examples of inadequate quality assurance and engineering review of deficiencies for general application. The major areas of concern to the NRC CAT are: 1) the dependence on final walkdown inspections late in the construction program to identify and resolve problems; and 2) the ability to manage the large number (over 20) of ongoing major corrective action programs and ensure that current work is correctly performed. (CAT Inspection Report 84-44/40, Exh. 10.)

D. The NRC CAT identified a number of construction program weaknesses that require increased management attention. These are:

* The effectiveness of first level quality control (QC) inspection activities needs to be improved, particularly in the pipe support/restraint and welding areas.

* A large number of final inspection activities are being included in a final walkdown, when greater difficulty will be encountered in identifying deficiencies because of interferences, accessibility and the pressure of schedule.

* The identification and resolution of cable tray and conduit electrical separation deficiencies is inadequate.

* An excessive number of incidents of damage to installed equipment has been caused by current construction activities.

The foregoing identified weaknesses require additional management attention to assure that completed installations meet design requirements. (CAT Inspection Report 84-44/40, Exh. 10.)

E. The NRC CAT inspection found that contractor QC inspections and site QA programs have not been effective in assuring that installed pipe supports/restraints meet design requirements. The inspection and acceptance criteria provided for activities such as QC inspection and document review and control need to be strengthened and clarified. (CAT Inspection Report 84-44/4C Exh. 10.)

F. The NRC CAT inspection concluded that additional management attention is required to improve contractor performance in the areas of contractor deficiency trending, and craft and quality control inspector training.

2. Contrary to Criterion I, "Organization" of 10 C.F.R. Part 50, Appendix B, Commonwealth Edison Company and its contractors have failed to provide sufficient authority and organizational freedom as well as independence from cost and schedule as opposed to safety considerations to permit the effective identification and correction of quality problems. Harassment, intimidation, retaliation and other discrimination contrary to 10 C.F.R. §50.7 against employees who express safety and quality concerns discourages the identification of quality problems.

A. Present and former Braidwood site employees have contacted Intervenors and counsel for Intervenors in confidence, to express concerns regarding quality and safety at the Braidwood facility. Site employees have expressed fear of retaliation from Edison and its contractors because of their expression of safety and quality concerns and complain of having experienced harass-

ment, intimidation and retaliatory treatment from their employers for raising such concerns.

B. Intervenors are informed and believe that present or former Braidwood site employees have complained of harassment, intimidation and discriminatory treatment against them because they raised safety and quality concerns. Intervenors believe such complaints have been made to Edison and its site contractors, to the NRC and to the U.S. Department of Labor. Applicant and its contractors have not fairly and objectively investigated such complaints, nor have they taken effective actions to address the problem of harassment and intimidation. Intervenors are informed and believe that the recently instituted "Quality First" site program is merely an "allegation management" device which does not effectively address either the quality or harassment concerns that are brought to it. (Inspection Report 84-31/29, p. 5, Exhibit 13; Inspection Report 85-07, p. 9, Exhibit 14.)

C. At least five Braidwood site quality control inspectors employed by the electrical contractor, L.K. Comstock Company, have complained of harassment and intimidation by their supervision in connection with the performance of their quality assurance work. Comstock QC Inspector John B. Seeders complained to his management and the NRC that he was pressured to sacrifice quality in order to meet scheduling considerations and to sign off work without regard to its acceptability:

> I was told that he would have people do my leg work and make out checklist and that I was to sign the paperwork. I feel this was a violation of NRC regulations. I refuse to falsify documentation. After this incident I was once again harassed, intimidated, and threatened disciplinary action.

(Letter, Seeder to Comstock, August 17, 1984, Exhibit 15.)

Four other Comstock QC inspectors joined Seeders in alleging harassment and intimidation. A large number of other Comstock QC inspectors supported their concerns regarding Comstock management in meetings with the NRC. (Excerpts from Warnick Deposition, Tr. 177, Exh. 2.)

The NRC considers this allegation closed after meeting with Comstock and Edison management. (Inspection Report 84-34/32, December 31, 1984, p. 4, Exhibit 16.) Mr. Warnick of the Regional Office dismisses these serious complaints: "intimidation and harassment are in the eyes of the beholder" (excerpts of Warnick Deposition, Tr. 178, Exh. 2), yet acknowledges that the Comstock supervisor who was the object of their concerns was, at least temporarily, relieved from duty. The NRC response to these concerns was entirely inadequate to address this serious matter.

3. Contrary to Criterion II, "Quality Assurance Program," of 10 C.F.R. Part 50, Appendix B, Commonwealth Edison Company has failed to establish a quality assurance program which complies with the requirements of Appendix B and which is documented by written policies, procedures, and instructions and is carried out in accordance with those instructions. Edison has failed to assure that its QA program provides controls over activities affecting quality and that such activities are accomplished under

suitably controlled conditions and are appropriately verified for quality by inspection.

A. A special NRC QA inspection reported May 7, 1984 that:

* Instructions were not appropriate to the circumstances in that welding procedures specifying the essential variables were not prescribed on drawings or welding sequences (travelers) for each specific HVAC installation, and Quality Control inspections during the welding process were not of adequate scope and frequency to assure the use of correct welding variables.

* Quality Control was not required to examine the HVAC components for fit-up prior to welding on those components where fit-up tolerances cannot be determined after welding, such as all-around fillet welds and full penetration welds. Consequently, there was a lack of records documenting the conformance with the requirements of AWS D1.1-1977, Section 3, and the Edison QA Manual. Additionally, instructions to the quality control inspectors regarding fillet weld gaps <u>after</u> welding were not appropriate to the circumstances in that the HVAC contractor Visual Weld Inspection Procedure, B10.2.F, stated that a 3/16" gap was acceptable whereas AWS D1.1-1977, Section 3.3, states that a 3/16" gap is allowed only if the leg of the fillet weld is increased by the amount of the separation or the contractor demonstrates that the required effective throat has been obtained.

* Quality Control was not required to examine the base metal prior to welding to assure that surfaces and edges were free of discontinuities. Consequently, there was a lack of records documenting conformance with the requirements of AWS D1.1-1977, Section 3, and the Edison QA Manual.

* Edison's control of site designed small bore (2" and under) process and instrumentation piping systems was considered inadequate and ineffective based on the following deficiencies:

-- The programs and procedures established by Edison and the Architect-Engineer Sargent and Lundy prior to October 1983 did not provide sufficient assessments and verifications of Phillip, Getschow Co. design capabilities prior to authorizing field routing of Class 2 and 3 small bore piping and field design of supports/restraints. The lack of assessments and verification resulted in inadequate understanding of the S&L specifications by Phillips, Gotschow to ensure the field routing of small bore piping was performed within the design requirements. Furthermore, the field routing of Class 2 and 3 small bore pipes, without detailed drawings being issued by S&L or Phillips, Gotschow, resulted in the Applicant's established QA Program requirements being bypassed and prevented the timely identification of nonconforming conditions.

-- The Phillips, Gotschow small bore pipe routing procedures lacked specific quantitative field design, installation, and inspection criteria to provide clearance and/or separation from equipment and components as required by S&L specification, F/L-2739, Paragraph 301.11.

-- Procedure Phillips, Gotschow CP 22 requirements had not been completely followed for small bore piping calculations performed by Phillips, Gotschow for lines 1CCE3AA-1/2", 1CCE3BA-1/2", 1DOD8BC-2", and 1DOD8BA-01.

-- Field Engineer authorities, duties, and qualifications were not fully delineated in the Phillips, Gotschow QA Manual, Rev. 0, dated September 26, 1983, in that some of the specific work functions being performed by field engineering, such as pipe hanger design and calculation, were not adequately described.

-- The Phillips, Gotschow training program was considered to be inadequate and ineffective based on the numerous errors identified in the Phillips, Gotschow hanger calculations.

-- The use of the Information Request System by Phillips, Gotschow, in lieu of the Field Change Request (FCR) system, compromised the final design change acceptance review and approval. (Inspection Report 83-09, Exh. 5.)

B. Phillips-Getschow piping crews failed to adequately control the modifications of beams. The Applicant had not established an inspection program for structural beams that were modified during piping installations, and had not established an adequate craft training program with regard to nonsafety-related piping installation activities resulting in field design modifications to safety-related structural steel. (Inspection Report 85-15/16, Exh. 17.)

C. The Applicant's electrical contractor (Comstock) utilized Level I Quality Control Inspectors for inspection and acceptance of electrical welds. This involved 14 different

Level I inspectors over four years. (Inspection Report 85-06, Exh. 11.)

4. Contrary to Criterion II, "Quality Assurance Program," of 10 C.F.R. Part 50, Appendix B, Commonwealth Edison Company has failed to effectively provide for the indoctrination and training of personnel performing activities affecting quality as necessary to assure that suitable proficiency is achieved and maintained.

A. Comstock failed to establish program for identifying the required reading for weld inspectors and conducting practical tests. G.K. Newberg failed to implement the personnel indoctrination and training for QC inspector tests. (Inspection Report 84-07, Exh. 18.)

B. Four Comstock weld inspectors were not proficient in American Welding Society Structural Welding Code. (Inspection Report 84-07, Exh. 18.)

5. Contrary to Criterion III, "Design Control," of 10 C.F.R. Part 50, Appendix B, Commonwealth Edison Company has failed to establish measures to assure that applicable regulatory requirements and design bases are correctly translated into specifications, drawings, procedures, and instructions including provisions to assure that appropriate quality standards are specified in design documents and that deviations from such standards are controlled. Applicant has also failed to require that measures are established for the identification and control of design interfaces and for the coordination among participating design organizations, that the measures include the establishment

of procedures among participating design organizations for the review, approval, release, distribution, and revision of documents involving design interfaces; and that the design control measures provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program.

A. The NRC CAT inspection concluded that in the area of the most significant finding was the failure to annotate unincorporated design changes on controlled design documents. The most significant finding in the area of design change control was design change documents written against superseded revisions of the approved design drawings. In at least one instance, this deficiency resulted in a pipe support being installed and inspected to other than the latest approved design. (CAT Inspection Report 84-44/40, Exh. 10.)

B. Repairs to coatings by Midway Industrials in the Unit 1 and 2 containments were performed utilizing a coating system not qualified for the Design Basis Accident in accordance with Section 5 of ANSI N101.2 (1972). (Inspection Report 85-15, Exh. 17.)

C. Edison employed designs for safety related HVAC duct supports based on chapter E36.0 of S&L's Structural Standard Document which did not limit the slenderness ratio for ceiling mounted duct supports. (Inspection Report 84-43/39, Exh. 19.)

6. Contrary to Criterion V, "Instruction, Procedures and

Drawings," of 10 C.F.R. Part 50, Appendix B, Commonwealth Edison Company has failed to ensure that activities affecting quality are prescribed by documented instructions, procedures, or drawings, and are accomplished in accordance with these instructions, procedures, or drawings.

A. Approved procedures for the installation or installation inspection of mechanical safety-related equipment did not exist until July 16, 1980, although numerous pieces of this equipment were finally or partially installed prior to this date. Equipment installed prior to July 16, 1980, included the four Unit 1 Steam Generators, the four Unit 1 and Unit 2 Residual Heat Removal Pumps and the four Safety Injection Pumps. Further, the procedure developed by the installation contractor, Phillips, Getschow Company, subsequent to July 16, 1980, was not consistently implemented in that the four Unit 2 Steam Generators and seven of the eight Primary Reactor Coolant Pumps were installed without use of the installation procedure. This violation was in part the basis for the imposition of the 2/2/83 civil penalty for "a breakdown of your Quality Assurance (QA) program." (Exhibit 3)

B. A special NRC QA inspection reported May 7, 1984 that:

* Phillips, Getschow Company, Field Drawing M-2539C-4, Revision D, was not stamped with Field Change Request No. L-9194 and Field Drawing M-2542C-121, Revision A, was not stamped with Field Change Request No. 9988.

* Edison's Quality Assurance Manual, Revision 77, Q.P.

No. 7-1, "Control of Procured Material and Equipment - Receiving and Inspection," Section 5.2.1.5.7, "Dimensional," requires visual checks be performed on a random basis to assure that interface dimensions conform to drawings and/or specifications. However, random visual checks of interface dimensions of piping components were not being done.

* Contrary to Phillips, Getschow Company Quality Procedure, there was no documented record or log specifying that a calibrated instrument was used to measure numerous pipe bends for ovality requiring inspection measurements to the thousands of an inch. Examples include the bends on Drawings M-2546C-72, M-2546C-44, MC-2546C-42, and M-2546C-31.

* Contrary to Phillips, Getschow Company Construction Procedure, Field Change Orders were not written for revisions involving ASME Section III, Subsection NF welds for component support Drawings M-1RH02017R, Revision E, and M-1SI16021X, Revision B.

* Contrary to L.K. Comstock Quality Assurance Manual, drawings located in site document Station No. 5 were voided in that they were up to four revisions old and were neither returned to Document Control as voided drawings nor marked as being voided drawings for information only. (Inspection Report 83-09, Exh. 5.)

C. The piping contractor, Phillips, Getschow, did not have a procedure or documented instruction stipulating a systematic method for producing an accurate In-service Inspection drawing, including determinining the number and location of all

field welds and shop welds. (Inspection Report 85-07, Exhibit 14.)

D. Support plates were installed between the concrete pedestal base and the anchor bolt hold down plate for the Unit 1 and 2 containment spray pumps. However, they were not specified on the drawings and therefore these plates, including the size, type or grade of material, were not analyzed for design basis. Furthermore, these additional plates were not identified during quality control installation inspections. (Inspection Report 85-07, Exh. 14.)

E. Cables 2AF307and 2AF154 were not routed by Comstock per pull cards, and the QC inspector accepted the cable pulls documenting that the cables were pulled in accordance with the pull cards. (Inspection Report 84-31/29, Exhibit 13.)

F. In June, 1984, Phillips-Getschow, piping contractor, found piping that violated minimum wall requirements. This defect was not reported to owner in accordance with 10 C.F.R. 21.21. (Inspection Report 84-21/20, Exhibit 20.)

G. Applicant placed purchase orders with an unapproved bidder, H.H. Howard Corp. of Chicago, that did not have an approved QA program. Purchase orders were for cleaning of 206,744 feet of safety-related piping. (Inspection Report 84-17, Exhibit 21.)

H. Sargent and Lundy did not prescribe clearance criteria for safety-related HVAC components or safety related large bore piping and electrical items in relation to other items such as equipment, conduit, etc. (Inspection Report 84-09,

Exhibit 22.)

I. Material installed for the pipe whip restraint plate was not of proper specifications. (Inspection Report 84-09, Exh. 22.)

7. Contrary to Criterion VI, "Document Control," of 10 C.F.R. Part 50, Appendix B, Commonwealth Edison Company has failed to ensure that measures are established to control the issuance of documents and these measures assure that changes to those documents are reviewed for adequacy and approved for release by authorized personnel and are distributed to and used at the location where the prescribed activity is performed.

A. A special NRC QA inspection reported May 7, 1984 that adequate measures had not been established to control field changes to drawings being made during the installation of ASME Boiler and Pressure Vessel Code, Section III, Class 2 and 3, 2" and under piping. Craft personnel had been making field changes to the drawings by rerouting lines, assigning weld numbers, and adding material which resulted in a lack of necessary control of approving, updating, and releasing drawings. (Inspection Report 83-09, Exh. 5.)

8. Contrary to Criterion VIII, "Identification and Control of Materials, Parts and Components," of 10 C.F.R. Part 50, Appendix B, Commonwealth Edison Company has failed to ensure that measures are established for the identification and control of materials, parts and components including partially fabricated assemblies in order to prevent the use of incorrect or defective

material, parts or components.

A. Identification of traceability records were not maintained as required for some of the large cap screws used to secure the steam generator to its supporting columns. At least 19 of 192 screws were cut off and the identifying numbers were neither transferred nor marked on tags and records traceable to the screws. Further, adequate traceability records were not maintained for several hundred of these screws which were transferred back and forth between the Byron Station, the Braidwood Station, Rockwell Engineering (for QC checks) and Teledyne Brown Engineering (the installation contractor). This violation was in part the basis for the imposition of the 2/2/83 civil penalty for "a breakdown of your Quality Assurance (QA) program." (Exhibit 3)

B. 10,500 feet of General Electric "VULKENE" switchboard wire was received at Braidwood. Some of this wire has been installed without appropriate qualification to IEEE 383-1974. (CAT Inspection Report 84-44/40, Exh. 10.)

C. Phillips-Getschow hangers in lower cable spreading room did not utilize ASTM A307 fasteners per S&L standard. Also, battery racks had bolting material that did not meet the requirements of ASTM A307. (CAT Inspection Report 84-44/40, Exh. 10.)

D. Shoe covers were not worn by personnel entering the recirculation sump area during BWPT EF-11 and some debris was noted in the sump water during preoperational test. (Inspection Report 85-08, Exhibit 23.)

E. Permanent spool pieces for Residual Heat Removal

Suction Lines and Containment Spray Pump Suction Lines were found with inadequate or non-existent coverings for protection against damage or deterioration of these components. (Inspection Report 85-08, Exh. 23.)

F. During tours of the 1A positive displacement charging pump room, the following was observed: empty cans in the room cooler, plastic sheeting strewn about the area, partially eaten food items, accumulation of flammable material and a layer of dust on all equipment in the room. (Inspection Report 85-08, Exh. 23.)

9. Contrary to Criterion IX, "Control of Special Processes," of 10 C.F.R. Part 50, Appendix B, Commonwealth Edison Company has failed to ensure that measures be established to assure that special processes, including welding are controlled and accomplished in accordance with applicable codes, standards, specifications, criteria and other special requirements.

A. 127 safety-related structural steel fillet welds were painted prior to acceptance of the work and the welds were subsequently visually inspected for acceptance, with 79 accepted in the painted condition. In addition, visual weld inspections were not performed on safety-related full penetration welds completed under the jurisdiction of Structural Specifications F/L-2735 and F/L-2722 prior to May 1, 1984. The welds were accpeted based on other methods of nondestructive examination, but were not accepted in accordance with the requirements of Section 8.15, Quality of Welds, Visual Inspection. (Inspection Report 84-21/20, Exh. 20.)

B. A newly designed reactor coolant pump lateral support anchorage was installed in Units 1 and 2 without records to establish the material heat number, charpy impact tests, lamination tests, welder identification, weld procedure, weld filler material, in-process inspections and other quality related records. (Inspection Report 84-21/20, Exh. 20.)

C. Nine L.K. Comstock filler metal withdrawal authorization forms documented the release of E7018 weld rod for cable pan welds between May 25, 1982 and July 28, 1982. (Inspection Report 84-13, Exhibit 24.)

D. Quality structural steel was not approved for use by the Architect-Engineer, Sargent & Lundy, but was released for use in installation by the structural steel contractor and documented as being used for cover plate welds. Furthermore, the welder documented as performing the welding was not qualified. In addition, RPS Division loop B, reactor coolant flow, completed socket weld joints, have no piping records identifying the welder or weld filler metal utilized. (Inspection Report 84-17, Exh. 21.)

E. Napolean Steel Contractors, Inc. QA program did not require fit-up inspections for safety-related structural steel members joined by welds and therefore, QC personnel did not inspect and insure acceptable gaps for weld joints. (Inspection Report 84-08, Exh. 25.)

10. Contrary to Criterion X, "Inspection," of 10 C.F.R. Part 50, Appendix B, Commonwealth Edison Company has failed to

ensure that a program for inspection of activities affecting quality was established and executed by or for the organization performing the activity to verify conformance with the documented instructions, procedures, and drawings for accomplishing the activity.

A. An inspection program was not developed to verify the proper installation, including bolting, of the main steam generators in either Braidwood Unit 1 or 2. Although the manufacturer's procedure for setting major nuclear steam supply system (NSSS) components, including bolt installation, was available and suggested that the installation contractor provide a detailed setting procedure for the manufacturer's review, such a procedure was not developed. No records exist indicating that travelers, or process sheets, were used or reviewed by the quality control department to establish either surveillance or hold points. As of August 1982, installation inspections of the majority of mechanical safety-related equipment were either not conducted, were inadequate, were incomplete or were not documented. This violation was in part the basis for the imposition of the 2/2/83 civil penalty for "a breakdown of your Quality Assurance (QA) program." (Exhibit 3)

B. A special NRC QA inspection reported May 7, 1984 that deficiencies concerning piping material control resulted in the quality of some installed piping being indeterminate and resulted in some material being installed that did not meet design requirements. A documented inspection program had not been implemented to assure correct material installation for 2"-

and-under safety-related piping prior to July 1983; therefore, inspection records verifying correct material installation prior to that date do not exist. A documented inspection program had not been implemented to assure correct material installation for safety-related piping over 2" prior to November 1982; therefore, inspection records verifying correct material installation prior to that date do not exist. During the March 7, 1984, enforcement conference Edison described a verification program which will include a 100% inspection of all installed piping and associated records. The results of that program and the completion of any necessary corrective actions that might result are required to ensure that all installed piping material meets design requirements. Since the NRC will need to evaluate the results of this verification effort in order to fully assess the significance of the programmatic deficiencies, enforcement action was not being taken on this violation at that time. Following the NRC's review of Edison's efforts, it will determine the appropriate enforcement action. Until that time, this matter is being classified as Unresolved Items. This violation is extremely serious and has been classified as a potential severity level II depending upon the extent of deficient hardware identified in the on-going corrective action program. (Exh. 6.)

C. Applicant's QA inspectors failed to identify areas where Phillips-Getschow siesmic category I and other pipe supports/restraints have not been constructed in accordance with design requirements. (CAT Inspection Report 84-44/40, Exh. 10.)

D. Applicant failed to provide an adequate inspection

program in that electrical separation criteria were not sufficient to identify installations of raceway and cables by Comstock violating design requirements for separation. (CAT Inspection Report 84-44/40, Exh. 10.)

E. Program for inspection of activities affecting quality was not effectively implemented in that weld sizes in structural pipe support/restraints were not identified to be proper weld configurations. (CAT Inspection Report 84-44/40, Exh. 10.)

F. Electrical contractor, Comstock, inspected and accepted a junction box which was later determined to have deficiencies in the location of the anchors used for mounting of the junction box. Anchors were accepted even though they were 3" from the required location specified by S&L drawing 20E-1-3571.

11. Contrary to Criterion XV, "Nonconforming Materials, Parts or Components," of 10 C.F.R. Part 50, Appendix B, Commonwealth Edison Company has failed to ensure that measures were established to control materials, parts, or components which do not conform to requirements in order to prevent their inadvertent use or installation.

A. Seventy to 72 Steam Generator support bolts (exact number not known by Edison or the contractor) were received in January 1979 and identified as nonconforming. No record exists to show the disposition of these bolts and no Nonconformity Report was issued as required by Phillips, Getschow Company's Quality Assurance Manual, Section 15. This violation was in part the basis for the imposition of the 2/2/83 civil penalty for "a

breakdown of your Quality Assurance (QA) program." (Exhibit 3)

B. For Penetration Nos. E2 and E51, L.K. Comstock Inspection Reports were found which documented loose crimps at the determination blocks. No corrective action documents were written to identify and track these nonconforming conditions. Additionally, the cables from Comstock were not terminated and were tagged with orange out-of-service cords which are not controlled by the QA program. (Inspection Report 84-39/36, Exhibit 26.)

C. 337,500 feet of safety-related pipe was received in 1977 and rejected on April 9, 1979 due to rust, scale, and failure to cap pipe ends. Some of pipe was installed in plant. In addition, the rejected pipe was not properly dispositioned in that only 206,744 feet of pipe was chemically cleaned. (Inspection Report 84-17, Exh. 21.)

D. Comstock weld inspectors allowed craft personnel to repair/work weld defects identified during final QC inspections. (Inspection Report 84-07, Exh. 18.)

12. Contrary to Criterion XVI, "Corrective Action," of 10 C.F.R. Part 50, Appendix B, Commonwealth Edison Company has failed to ensure that measures were established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. And in the case of significant conditions adverse to quality, Applicant failed to ensure that the cause of the condition is determined

and corrective action taken to preclude repetition.

A. Edison did not assure that a matter potentially adverse to quality was promptly identified and corrected at the Braidwood Station. Edison identified a significant problem with bolting of the steam generator supports that occurred at its Byron Station. Timely or adequate corrective action was not taken by Edison to prevent the same or a similar problem from occurring at Braidwood Units 1 and 2. It should be noted that Byron and Braidwood have a common FSAR, a common construction specification, a common system for drawings, ECNs and FCRs and a common architect engineer. Thus, the construction problem at Byron should have indicated a need for a more thorough evaluation for Braidwood. Nonconformity Report No. 332 concerning this bolting problem was issued at Braidwood on December 2, 1981, yet effective corrective action was not taken until August 1982.

In addition, effective corrective action was not taken by Edison relative to Phillips, Getschow Company's failure to implement and utilize installation procedures (identified during Edison audits conducted June 30-July 9, 1980 and June 23-25, 1981), concerning installation and installation inspection of mechanical safety-related equipment. The same deficiencies were again identified during a surveillance conducted by Phillips, Getschow Company on February 19, 1982. This violation was in part the basis for the imposition of the 2/2/83 civil penalty for "a breakdown of your Quality Assurance (QA) program." (Exhibit 3)

B. A special NRC QA inspection reported May 7, 1984 that:

* 1/2" S/80, SA-312, Type 304, ASME Boiler and Pressure Vessel Code, Section III, Class 1, NB pipe heat number 745107 were discovered in Section III installations without material test reports or records of receiving and receipt inspections by either Commonwealth Edison Company or Phillips, Getschow Company as identified by Phillips, Getschow Co. on September 17, 1982, on Nonconformance Report No. 789. The disposition of the Nonconformance Report resulted in accepting the pipe, after only obtaining material test reports, without examining the pipe, initiating and maintaining receipt inspection records, or determining the total quantity of the pipe in storage and installed.

* The HVAC contractor, Pullman Sheet Metal Co., had not established a corrective action program to assure that conditions adverse to quality such as deficiencies and deviations were analyzed for significance and subsequently that the causes of any significant conditions were determined and corrective action taken to preclude repetition. Through August 4, 1983, 2,513 Correction Notices had been written by the HVAC contractor for deficiencies and deviations, including numerous welding deficiencies and deviations, but the contractor's Quality Assurance Program did not require that Correction Notices be analyzed for significance.

* Corrective action was not adequate concerning Nonconformance Report No. BR-08, dated June 15, 1981, since the nonconforming welds completed by unknown welders were "accepted-as-is" after only a visual examination. The acceptance of the

weld by visual examination pursuant to AWS D1.1 is based on the fact that a qualified welder performed the welding in accordance with the qualified process. (Inspection Report 83-09, Exh. 5.)

C. The Applicant's site QA organization inappropriately closed Nonconformance Report No. 600 and as a result did not assure that conditions adverse to quality were corrected. The inspector subsequently identified two supports detailed in Report 600 and one support not detailed which were not procured and examined in accordance with ASME Section III, section NF. (Inspection Report 85-15/16, Exh. 17.)

D. Applicant's corrective actions for NCR's were found to be inadequate: 1) no documentation supporting statement that corrective action concerning defective welds was "N/A", and 2) based on numerous weld deficiencies after rework, the corrective action for this NCR was ineffective. (CAT Inspection Report 84-44/40, Exh. 10.)

E. Although BCAP had identified that Level I QC inspectors had inspected and accepted construction activities, this nonconforming condition was not documented as a BCAP observation. (Inspection Report 85-06, Exh. 11.)

F. In addition, 37 BCAP observations were invalidated by S&L even though the documented basis for the invalidations of the observations did not support the invalidations. (Inspection Report 85-06, Exh. 11.)

G. After an NRC inspection (82-05) identified that the Applicant failed to implement a QA program for the erection of mechanical safety-related equipment, Phillips-Getschow contractor

identified numerous pieces of equipment that had been installed without QC verification of internal cleanliness. (Inspection Report 84-21/20, Exh. 20.)

H. Edison did not take appropriate corrective action with regard to Audit QA-20-80-22, in that an assessment of QC inspectors qualifications were not performed to address the potential impact on work performed prior to the audit finding. (Inspection Report 84-07, Exh. 18.)

I. Edison QA identified inspection deficiencies but failed to take corrective action with respect to Napolean Steel Contractors' past welding inspection activities to assure that defects do not exist in multi-pass welds. (Inspection Report 84-08, Exh. 25.)

J. In two areas, supports/restraints and piping runs, deficiencies were identified by the NRC CAT that were not identified by the BCAP inspectors. On the basis of the limited sample overinspected, it appears that BCAP inspection effort needs to be improved in areas of supports/restraints and piping runs.

13. Contrary to Criterion XVII, "Quality Assurance Records," of 10 C.F.R. Part 50, Appendix B, Commonwealth Edison Company has failed to ensure that sufficient records were maintained to furnish evidence of activities affecting quality. The records are to include at least the following: results of reviews, inspections, tests, audits, monitoring of work performance, and materials analyses. Applicant has failed to make such records identifiable and retrievable.

A. With few exceptions, official records were not generated or maintained relative to the installation of mechanical safety-related equipment by either Edison or their erection contractor, L.K. Comstock Company. Records that failed to show compliance with quality assurance, design, and code requirements included: (1) equipment releases to engineering for installation, (2) travelers or process sheets to identify required installation activities and inspections, (3) installation inspections, (4) pretensile loads for bolting, and (5) data on final equipment settings. This violation was in part the basis for the imposition of the 2/2/83 civil penalty for "a breakdown of your Quality Assurance (QA) program." (Exhibit 3)

B. Sargent & Lundy Engineers calculations which provided the original justification for the factor design methodology and magnitude were not retrievable. (Inspection Report 84-43/39, Exh. 19.)

14. Contrary to Criterion XVIII, "Audits," of 10 C.F.R. Part 50, Appendix B, Commonwealth Edison Company has failed to ensure that a comprehensive system of planned and periodic audits is carried out to verify compliance with all aspects of the quality assurance program and to determine the effectiveness of the program. The Applicant also failed to ensure followup action, including reaudit of deficient areas.

A. Inadequate audits were performed by Edison prior to June 30-July 9, 1980 relative to mechanical equipment erection and inspection activities of Phillips, Getschow Company. This

important activity involves the installation of most of the critical nuclear steam supply system and other mechanical safety-related equipment. Significant amounts of this equipment, including Steam Generators, Residual Heat Removal Pumps and Safety Injection Pumps, had either been finally or partially installed prior to this date. Further, no followup audit was conducted by Edison until June 23-25, 1981, to determine the effectiveness of the Phillips, Getschow Company's quality assurance program for these installations, or to verify that proper quality records were being generated and maintained as required, although a major finding during the June-July 1980 audit was that Phillips, Getschow Company had not implemented an approved procedure for installing equipment and inspecting that installation. This violation was in part the basis for the imposition of the 2/2/83 civil penalty for "a breakdown of your Quality Assurance (QA) program." (Exhibit 3)

B. A special NRC QA inspection reported May 7, 1984 that:

* Mechanical contractor Phillips, Getschow Co. has not established and executed a plan for auditing the implementing procedures of the quality assurance program on a period basis to determine the effectiveness of the program in accordance with the Phillips, Getschow QA Manual.

* Electrical contractor L.K. Comstock Co./L.K. Comstock Engineering Company auditing activities neither conformed with the comprehensive annual schedule of planned and periodic audits established as required by QA Program Manual

Section 4.14.1, nor did they verify compliance with all aspects of the Quality Assurance Program.

* HVAC contractor Pullman Construction Industries, Inc., did not meet their yearly schedule for audit activities required by their QA Manual, Section 18, in that the following implementing procedures were not audited:

- B 3.1.F, Design Control
- B 5.1.F, HVAC Repair Adjustment
- B 9.3.F, Expansion Anchor Installation
- B 10.2.F, Visual Weld Inspection

* Edison's audits of the installation of small bore instrumentation and process piping were inadequate in that contractor hanger design calculation problems were not identified for more than two years. (Inspection Report 83.09, Exh. 5.)

* * *

V. CONCLUSION

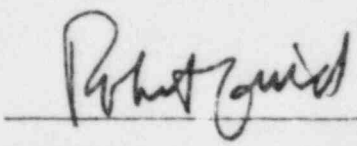
For the foregoing reasons, the amended quality assurance contention of Intervenors' Rorem et al. should be admitted for litigation in this proceeding.

May 24, 1985

Respectfully submitted,

Robert Guild
Douglass W. Cassel, Jr.
Timothy W. Wright, III

Attorneys for Intervenor Bridget Little Rorem, et al.

By: 

Robert Guild

For Service:

Robert Guild
Douglass W. Cassel
Timothy W. Wright, III
109 North Dearborn, #1300
Chicago, Illinois 60602
(312) 641-5570

VOLUME 1 OF 2 VOLUMES

INDEX OF EXHIBITS TO

MOTION TO ADMIT AMENDED QUALITY ASSURANCE CONTENTION

1. Newspaper article, "Will County A-Plant Faulted - 'Worse' than Byron," Chicago Tribune, dated February 1, 1984, and pp. 91-104 from deposition of James G. Keppler relating thereto.

2. Excerpts of depositions of James G. Keppler and Robert F. Warnick, dated May 20, 1985.

3. Transmittal letter from James G. Keppler (NRC) to James J. O'Connor (CE Co.), and Notice of Violation and Proposed Imposition of Civil Penalties, dated February 2, 1983.

4. Transmittal letter and pp. 14-17, Inspection Report 82-03, dated July 16, 1982.

5. Transmittal letter from James G. Keppler (NRC) to James J. O'Connor (CE Co.) and Inspection Report 83-09, dated May 7, 1984.

6. Memorandum from James G. Keppler to Richard C. DeYoung (NRC), dated April 4, 1984.

7. Transmittal letter from David H. Smith (CE Co.) to James G. Keppler (NRC) and summary of "top twenty" corrective action programs, dated April 8, 1985.

8. Transmittal letter from James J. O'Connor (CE Co.) to James G. Keppler (NRC) re BCAP scope document dated June 22, 1984 and excerpts of scope document.

9. Transmittal letter and Inspection Report 85-02, dated February 13, 1985.

VOLUME 2 OF 2 VOLUMES

INDEX OF EXHIBITS TO

MOTION TO ADMIT AMENDED QUALITY ASSURANCE CONTENTION (cont.)

10. Transmittal letter and Construction Appraisal Team Inspection Report 84-44/40, dated February 20, 1985.

11. Transmittal letter and Inspection Report 85-06, dated March 8, 1985.

12. Transmittal letter and Inspection Report 84-30/28 and Enclosure 5 thereto (meeting minutes), dated October 4, 1984.

13. Inspection Report 84-31/29, dated November 26, 1984. pp. 1, 7-8.

14. Inspection Report 85-07, dated April 4, 1985, pp. 1, 9-12, 17-18.

15. Letter from John D. Seeders to Irv DeWald (Comstock), dated August 17, 1984.

16. Inspection Report 84-34/32, dated December 31, 1984, pp. 1, 4.

17. Inspection Report 85-15/16, dated May 16, 1985, pp. 1, 5-18.

18. Inspection Report 84-07, dated July 20, 1984, pp. 1, 4-7.

19. Inspection Report 84-43/39, dated March 15, 1985, pp. 1-2, 50, 76-78.

20. Inspection Report 84-21/20, dated November 20, 1984, pp. 1, 3-6.

21. Inspection Report 84-17, dated October 16, 1984, pp. 1, 3-14.

22. Inspection Report 84-09, dated July 2, 1984, pp. 1, 3-6.

23. Inspection Report 85-08, dated April 18, 1985, pp. 1-7.

24. Inspection Report 84-13, dated August 7, 1984, pp. 1, 9-12.

25. Inspection Report 84-08, dated May 22, 1984, pp. 1, 3-6.

26. Inspection Report 84-39/36, dated March 15, 1984, pp. 1-3.