

RELATED CORRESPONDENCE

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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In The Matter Of )  
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COMMONWEALTH EDISON COMPANY ) Docket Nos. 50-454-OL  
 ) 50-455-OL  
(Byron Nuclear Power Station, )  
Units 1 & 2) )

SUMMARY OF WALLACE B. BEHNKE, JR.'S  
TESTIMONY ON CONTENTION 1  
(OVERVIEW OF QUALITY PROGRAMS - WORK QUALITY)

- I. Wallace Behnke is the Vice Chairman of Commonwealth Edison Company. Until March 1984 he was the senior corporate officer to whom the corporate manager of quality assurance reported.
- II. In 1973, Edison's QA organization was revised. A separate QA department was established which reported directly to Mr. Behnke (then executive VP). Edison's QA department has always met NRC requirements for independence and has conducted audits and inspections in accordance with a documented quality assurance program and has been upgraded over the years.
- III. QA management personnel are professionals who have received special training in quality assurance.
- IV. Edison's QA program prescribes many and varied audits and surveillances at its nuclear construction sites.
  - A. Initial responsibility for quality is delegated to the contractors performing the work.
  - B. Contractor audits and inspections are complemented by a thorough Edison effort:
    1. directly through Edison's own QA department, and
    2. through PTL, which conducts independent over-view and unit concept inspections at Byron and Braidwood.
- V. There has been continuous enhancement of the quality assurance functions since 1980.

- A. The level of supervision of the site QA organizations was increased in 1980.
  - B. A commitment to increased overinspection led to implementation of the Unit Concept Inspection program at Byron and Braidwood in 1982.
  - C. Special comprehensive management audits were conducted at Byron and Braidwood in 1983.
- VI. QA personnel have consistently been given complete freedom to uncover problems and to take whatever action is required to protect work quality.
- VII. Edison's QA program has been regularly reviewed for effectiveness.
- A. Edison has commissioned bi-annual independent management audits of the program since 1975.
  - B. Edison has, at least semi-annually, performed corporate audits and evaluations of QA activities at the Byron site using experienced personnel not directly responsible for the work at Byron.
  - C. Tri-annual certification surveys are conducted by ASME.
- VIII. The routine functioning of the QA organization has been adequate to assure the quality of Hunter's work.
- IX. Hatfield's activities resulted in senior management attention on three occasions.
- A. Multiple items of noncompliance and a stop-work order in 1980 resulted in a meeting concerning quality between Edison's president and Hatfield's president.
  - B. An increased Hatfield audit schedule was implemented in 1981.
  - C. An extensive reinspection of cable pan hangers installed by Hatfield was initiated in 1982.
- X. The quality control inspector reinspection program produced no indications of serious problems with Edison's QA program.
- XI. The existing quality programs adequately control the quality related activities of Hatfield and Hunter, and provides reasonable assurance that the overall quality of the work of Hatfield and Hunter is adequate. This judgment is reinforced by the results of the quality control inspector reinspection program.

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TESTIMONY OF WALLACE B. BEHNKE, JR.

Q.1. State your full name.

A.1. Wallace B. Behnke, Jr.

Q.2. By whom are you employed?

A.2. Commonwealth Edison Company.

Q.3. What is your present position with the Company?

A.3. I am Vice Chairman of the Company.

Q.4. What are your responsibilities as Vice Chairman?

A.4. I am generally responsible for corporate financial and accounting matters. Until March of 1984 I was the senior corporate officer to whom the corporate manager of quality assurance reported. On that date those responsibilities were transferred to Mr. James J. O'Connor, Chairman and President of the Company.

Q.5. Please describe your professional education.

A.5. I hold Bachelor of Science and Bachelor of Science in Electrical Engineering degrees from Northwestern University. I am a registered professional engineer in the State of Illinois, a member of the National Academy of Engineering, a fellow of the Institute of Electrical and Electronic Engineers and a member of the American Nuclear Society. I am past president and honorary member of the Western Society of Engineers and am currently Chairman of the Board of the Atomic Industrial Forum, Inc.

Q.6. Please describe your employment at Commonwealth Edison Company.

A.6. I have been employed by the Company since 1947. My association with the Company's nuclear power construction and quality assurance activities stems from 1965 when I was appointed Assistant to the President with responsibilities that included nuclear licensing, environmental affairs and related corporate planning activities. These responsibilities encompassed the Company's early involvement in formalized quality assurance systems. In 1970, I was elected Vice President of the Company with primary responsibility for the Company's service divisions as well as its

research and development related to the liquid metal fast breeder reactor. Since 1972 I have served as Chairman of Project Management Corporation, the non-profit Corporation established to represent the electric utility industry's interest in the Clinch River Breeder Reactor Project. In this capacity, I was involved along with the United States Atomic Energy Commission and the Tennessee Valley Authority in setting up the quality assurance system for this project. In 1973, I was elected Executive Vice President of the Company and was assigned responsibility for engineering, construction, production and division operations. In 1976, in accordance with our company's normal rotation of top executives, I relinquished my then current duties to James J. O'Connor, then Executive Vice President, and assumed responsibility for the Company's corporate, financial, accounting and related affairs. I was elected a director of the Company in 1978 and Vice Chairman in 1980. As Vice Chairman I was responsible for quality assurance activities until last March, when I relinquished this responsibility to Mr. O'Connor.

Q.7. What is the scope of your testimony?

A.7. The scope of my testimony is to provide the Licensing Board and the parties with my conclusions with respect

to the efficacy of the Company's quality assurance program as it relates to the work of Hatfield Electric Company ("Hatfield") and Hunter Corporation ("Hunter") at the Byron site.

Q.8. Please describe how the quality assurance function has developed at Commonwealth Edison Company over time.

A.8. In 1973, when I was elected Executive Vice President, the Zion Nuclear Power Station was nearing completion and we were proceeding with pre-construction planning and engineering for our LaSalle County, Byron and Braidwood nuclear power plant projects. As a part of this effort, I revised the Company's quality assurance organization and established a separate Quality Assurance Department reporting to me. Mr. Shewski was named head of that department, a position he holds today. Since then, the Company's quality assurance department has met NRC requirements for independence and has conducted audits and inspections in accordance with a documented quality assurance program. (This program was described generally in the testimony of Mr. Shewski, which was bound into the transcript of this proceeding on March 28, 1983). The program has expanded significantly over the years. There has been a substantial growth in the number of management per-



sonnel assigned to this function, from 62 in 1976 to 142 in mid-1984. These individuals are highly trained professionals. Eighty-five of these people are graduate engineers with degrees in various engineering disciplines related to nuclear power. The remaining professionals have degrees in non-engineering fields and/or years of hands-on experience involving nuclear power plant operation, maintenance, construction, engineering and related technical activities. Some have had experience with the naval reactors program. All have had special training in quality assurance. There has been a concomitant growth in quality assurance departmental expenditures from about \$1.3 million in 1976 to \$6.8 million estimated for expenditure in 1984.

Our quality assurance program prescribes a large number and varied type of audits and surveillances to be conducted at our nuclear construction sites. Commonwealth Edison Company's practice is to delegate the initial responsibility for quality control and quality assurance to the contractors actually performing the work. This is done because of our belief that the organization doing the work will produce a higher quality product if it inspects and audits itself. This is also consistent with the Company's policy to

insist on obtaining documented quality performance from each of the contractors and vendors with whom it does business. However, the contractor inspections and audits are complemented by a thorough Commonwealth Edison Company effort, both directly through our own quality assurance organization and through the use of Pittsburgh Testing Laboratory ("PTL"). PTL acts as an arm of our quality assurance department in conducting overview and unit concept inspections at Byron and Braidwood. (The functions of PTL are fully described in Mr. Shewski's current testimony.)

Since 1980, when I again assumed senior management responsibility for the quality assurance function, there has been a continuous enhancement of the quality assurance function. I decided with Mr. Shewski to increase the level of supervision of the site quality assurance organizations in 1980. This led to the appointment of Quality Assurance Superintendents at each construction site. Following an enforcement conference with the NRC Staff regarding items of noncompliance at Braidwood Station in 1982, Mr. Shewski and I discussed an increased overinspection program at that site and at Byron, as well. These discussions led to the implementation of the Unit Concept Inspections by PTL at Byron and Braidwood. Most recently we



decided to conduct a special and more comprehensive management audit at Byron and Braidwood in 1983.

At all times, personnel assigned to the Quality Assurance Department have been given a free hand to ferret out problems and to take whatever action they feel is required to protect the quality of the work. In my judgment the Company's quality assurance personnel have vigorously pursued their responsibilities.

I want to stress that the activities of the Quality Assurance Department have taken place in an overall corporate context in which there has been an unequivocal management commitment to quality. Quality assurance has received support at the highest levels of corporate management. Mr. Shewski is able to communicate with me freely and informally. Both Mr. O'Connor (to whom the Company's Generating Stations Projects department reports) and I make sure that the views of the Quality Assurance Department receive appropriate and sympathetic consideration.

Q.9. Has the quality assurance program been reviewed for effectiveness from time to time?

A.9. Yes. At my direction, the Company has commissioned bi-annual independent management audits of the system

beginning in 1975. The Company implemented all the recommendations made in the course of these audits with respect to construction sites. The recent change in Mr. Shewski's reporting relationship, from me to Mr. O'Connor, resulted from a recommendation made by the organization conducting the 1983 independent audit. This change was implemented to further demonstrate the Company's commitment to Quality Assurance by having that function report to the same coordinate level in the Company as Project Construction.

In addition, the Company, at least semi-annually, has performed corporate Quality Assurance audits and evaluations of quality assurance related activities at the construction site utilizing experienced personnel not directly responsible for the work at Byron. The conclusions expressed by the third party management audits and the corporate Quality Assurance audits are that the overall system provides adequate control of construction activity.

Further confidence in the adequacy of the Company's system has been derived from the tri-annual certification surveys conducted by the American Society of Mechanical Engineers ("ASME"). These surveys have resulted in issuance and several successive renewals

of "N" certificates plus "NA" and "NPT" certificates to the Company. These certificates grant authority to design, fabricate and install items that must meet ASME code requirements for nuclear reactor systems.

In addition to the verification activities which have been performed regularly throughout the course of the construction project, a special intensive evaluation of the Byron project was performed in late October, 1982. The basis for the evaluation was the Institute of Nuclear Power Operations Performance Objectives and Criteria. Commonwealth Edison Quality Assurance coordinated this self-initiated evaluation. The evaluation was carried out by a twenty-man team, consisting of senior management personnel with broad backgrounds in construction, engineering and operating along with five consultants. The team looked, in depth, at the plant facilities, work under construction, construction practices, design input, design output and design review. The Byron project was found to measure up well against the INPO Criteria. Corrective action for the deficiencies identified by the Team were readily undertaken.

Q.10. What specific actions has senior management taken to assure that Hunter and Hatfield provide quality work at the Byron site?

A.10. I recall nothing specific regarding Hunter, indicating to me that the routine functioning of the quality organizations, directed by Mr. Shewski, were sufficient to assure the quality of Hunter's work.

With respect to Hatfield, I recall three separate occasions on which that organization's activities resulted in senior management attention. In 1980, an NRC inspection of Hatfield's activities at the Byron site led to multiple items of noncompliance and issuance of a stop-work order by the Quality Assurance organization (of which I was informed and concurred in). At my suggestion Mr. O'Connor met with the President of Hatfield, and communicated directly and forcefully to him Commonwealth Edison Company's concerns regarding the quality of Hatfield work. In 1981, an increased audit schedule of Hatfield by the Company's QA Department was discussed and, with my concurrence, implemented. In 1982, I participated in discussions which led to an extensive reinspection of cable pan hangers installed by Hatfield. This reinspection was deemed necessary

because of incomplete documentation of inspections by Hatfield.

Q.11. Are there any other factors which relate to your evaluation of the effectiveness of the Company's policies and programs bearing on the quality of work of Hatfield and Hunter at Byron?

A.11. Yes. The quality control inspector reinspection effort produced no indication of programmatic inadequacy or a systematic breakdown of the Company's quality assurance program. Testimony by others in this proceeding that the reinspection program has confirmed the competency of quality control inspectors also reinforces my confidence in the effectiveness of the quality assurance program.

Q.12. What is your conclusion regarding the effectiveness of the Company's quality programs, particularly as they relate to control of the activities of Hatfield and Hunter through the Company's quality assurance program?

A.12. At the Byron site, I believe the quality programs in place adequately control the quality related activities of Hatfield and Hunter. The efficacy of the QA system is demonstrated by the quantity of inspections, audits and surveillances undertaken of the work of

these two contractors as well as the number of discrepancies identified. A summary tabulation of these data was prepared at my direction and is attached to my testimony as Attachment A. This tabulation lists, by year, the audits and surveillances conducted by each contractor's quality assurance organization, those conducted by CECO's Quality Assurance organization, PTL overview inspections and PTL Unit Concept Inspections. In addition, the number of Commonwealth Edison audit findings, non-conformance reports ("NCR") and PTL discovered deficiencies are also listed.

The identification of discrepancies indicates basically that the quality assurance program is functioning effectively. I am satisfied that the discrepancies in construction which were identified by the various audits, surveillances and inspections have either been corrected or are correctible in the normal course of construction activity and therefore are not a matter of concern.

There are no implications of systematic problems and programmatic deficiencies that I have derived from these data that have not been resolved. Analysis of the data from the Unit Inspection Program likewise indicates no programmatic inadequacy of potential



safety significance or systematic breakdown of the quality assurance program. Moreover, I am generally familiar with the NRC non-compliance history at Byron and conclude that it does not undermine the credibility of the Company's quality assurance program. I am satisfied that the quality assurance system provides reasonable assurance that no potentially safety significant quality problem has gone undetected. The primary basis for this judgment is the coverage and scope of the quality assurance program which provides multiple layers of inspections and audits and gives me confidence that all discrepancies of potential safety significance are being identified and controlled.

Q.13. Are you able to reach a conclusion regarding the overall quality of the work of Hatfield and Hunter at Byron?

A.13. Yes. In my opinion, there is reasonable basis for concluding that the work by Hatfield and Hunter is generally adequate. The primary basis for this judgment is the underlying integrity of the Company's quality assurance program and my assessment of the information with respect to these two contractors produced by this program and the Quality Control Inspection Reinspection Program. While we have experienced

some problems with the performance of Hatfield and Hunter, I am satisfied that the discrepancies are being identified and controlled. Those that have not been closed out are of a character that would normally be resolved in the course of the construction program.

Q.14. What use have you made of the results of the Quality Control Inspector Reinspection Program in reaching your conclusion?

A.14. The fact that the reinspection program examined over 200,000 inspection points (about 160,000 of these inspection points involved the work of Hatfield and Hunter) without detecting any discrepancies having design significance clearly adds to my confidence in the quality of the work of Hatfield and Hunter. This judgment is reinforced by the conclusions of the quality control inspector reinspection program itself and the review of that program by Mr. John Hansel. That program indicated that the quality control inspectors employed by those contractors prior to September, 1982 were competent to perform their assigned tasks. Competent inspectors can be expected to catch discrepancies in a construction program of this magnitude, especially any with potential safety significance. The results of the program show that

this occurred at Byron. Moreover, the conclusions reached by Sargent and Lundy and Mr. Robert V. Laney as to the quality of the work of those two contractors following their review of the results of the reinspection program also are factors in my own analysis.

HATFIELD

Year	<u>Hatfield</u>		<u>CECo</u>				<u>PTL Overview</u>		<u>PTL UCI</u>	
	Audits	Surv.	Audits	Findings	Surv.	NCRs	<u>Inspect.</u> Performed	Def.	<u>Inspect.</u> Items Reviewed	Def.
Col. 1	2	3	4	5	6	7	8	9	10	11
1976	2	33	5	6	7	1	-	-	-	-
1977	5	183	11	14	65	2	143	21	-	-
1978	4	191	3	8	79	5	90	14	-	-
1979	5	164	6	13	33	8	113	33	-	-
1980	4	181	6	16	132	26	242	69	-	-
1981	19	188	10	24	246	44	583	209	-	-
1982	28	421	10	7	100	7	713	79	1,398	143
1983	30	589	13	12	355	28	1007	98	16,846	435
1984*	6	102	6	2	70	14	447	26	7,564	69
	103	2052	70	102	1087	135	3338	549	25,808	647

\* Through 4/30/84

In addition to the audits, surveillances and inspections referred to above, CECco has processed three 50.55(e) reports with respect to the activities of Hatfield, 1 in 1981 and 2 in 1984.

There have been three reinspections implemented by Hatfield. Concrete expansion anchors in 1979, cable crossover bridges and risers, conduit support cable tray stiffeners and cable routing in 1981; and cable pan hanger installation connection detail from 1982 through 1984.

KEY

The columns from left to right represent the following:

- Col. 1: Year in which activity took place.
- Col. 2: Number of audits conducted by Hatfield Quality Assurance.
- Col. 3: Number of surveillance conducted by Hatfield Quality Assurance.
- Col. 4: Number of audits conducted by CECco Quality Assurance.
- Col. 5: Number of audit findings documented in CECco Quality Assurance audits.
- Col. 6: Number of surveillances conducted by CECco Quality Assurance.
- Col. 7: Number of CECco Nonconformance Reports initiated with respect to Hatfield activities.
- Col. 8: Number of PTL overinspections of Hatfield activities performed.
- Col. 9: Number of deficiencies identified by PTL in overinspections.
- Col. 10: Number of Hatfield items reviewed in PTL Unit Concept Inspections.
- Col. 11: Number of deficiencies identified in PTL Hatfield Unit Concept Inspections.

HUNTER

Year	<u>Hunter</u>		<u>CECo</u>				<u>PTL Overview</u>		<u>PTL UCI</u>	
	Audits	Surv.	Audits	Findings	Surv.	NCRs	<u>Inspect.</u> Performed	Def.	<u>Inspect.</u> Items Reviewed	Def.
Col. 1	2	3	4	5	6	7	8	9	10	11
1977	31	122	4	15	92	6	0	0		
1978	20	269	4	8	62	4	0	0		
1979	16	242	4	1	62	13	0	0		
1980	13	250	5	11	114	10	0	0		
1981	9	329	4	3	85	1	5	0		
1982	6	301	6	8	106	8	0	0	1,207	33
1983	8	303	13	10	155	7	31	28	17,396	418
1984*	2	101	3	0	53	1	0	0	7,139	100
	105	1917	43	56	729	50	36	28	25,742	551

\* Through 4/30/84

One 50.55(e) report was processed for Hunter in 1983, in addition, reinspections of concrete expansion anchors and pipe hangers were conducted in 1979 and 1980, respectively.

KEY

The columns from left to right represent the following:

- Col. 1: Year in which activity took place.
- Col. 2: Number of audits conducted by Hunter Quality Assurance.
- Col. 3: Number of surveillance conducted by Hunter Quality Assurance.
- Col. 4: Number of audits conducted by CECQ Quality Assurance.
- Col. 5: Number of audit findings documented in CECQ Quality Assurance audits.
- Col. 6: Number of surveillances conducted by CECQ Quality Assurance.
- Col. 7: Number of CECQ Nonconformance Reports initiated with respect to Hunter activities.
- Col. 8: Number of PTL overinspections of Hunter activities performed.
- Col. 9: Number of deficiencies identified by PTL in overinspections.
- Col. 10: Number of Hunter items reviewed in PTL Unit Concept Inspections.
- Col. 11: Number of deficiencies identified in PTL Hunter Unit Concept Inspections.