

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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BEFORE THE ATOMIC SAFETY AND LICENSING BOARD ~~83~~ OCT -5 A11:31

In the Matter of)
COMMONWEALTH EDISON COMPANY)
(Byron Nuclear Power Station,)
Units 1 & 2))

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

Docket Nos. 50-454 OL
50-455 OL

APPLICANT'S ADDITIONAL PROPOSED FINDINGS
OF FACT AND CONCLUSIONS OF LAW REGARDING
QUALITY ASSURANCE AND QUALITY CONTROL

September 30, 1983

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* * * * *

II. CONTENTIONS

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H. Rockford League of Women Voters' (League)
Contention 1A -- Quality Assurance and
Quality Control

By Memorandum and Order dated June 21, 1983, the Board reopened the evidentiary record on quality assurance and quality control as it relates to the following issues: (1) whether John Hughes, a former Hatfield Electric Company level II quality control inspector, was properly trained, tested and certified by Hatfield; (2) whether Hatfield inspectors were provided with test answers when they were retested on examinations they had previously failed; (3) the current status of allegations which have been received by

the NRC Staff regarding Hatfield's quality assurance program in general, including the status of the Staff's investigations of these allegations; and (4) a detailed description of the expanded reinspection program at Byron, which is being implemented in order to evaluate the qualifications of quality control inspectors. (Findings 740, 741.)

TRAINING, TESTING AND CERTIFICATION
OF JOHN HUGHES.

Mr. Hughes alleged that he did not receive proper training as a Hatfield level II quality control inspector; that he was certified to perform, and did perform, inspections within two weeks of his employment with Hatfield; and that he failed one of his certification examinations and was retested within the hour with correct answers available to him during retesting. (Findings 738, 742, 763.) These allegations have been refuted by convincing testimony presented in this proceeding.

At the time Mr. Hughes was trained at Hatfield, quality control personnel were required to possess specified levels of formal education and previous work experience, depending upon the nature of the work to be performed. Each inspector-trainee also received classroom training and on-the-job training, and was tested to ensure that he or she had thoroughly learned the job to be performed. (Finding 746.)

John Hughes was to be trained as a cable pan and cable pan hanger inspector. (Finding 747.) To confirm that

he possessed sufficient experience, Hatfield obtained an employment certification from Mr. Hughes' previous employer, Nuclear Energy Service (NES). The certification document indicates that Mr. Hughes possessed at least two years, nine months of experience as a level I quality control inspector. The integrity of this document is undisputed. Such prior experience more than satisfied the requirements for a Hatfield level II inspector. (Findings 748, 749.)

As a matter of policy, Hatfield requires that all Hatfield quality control inspectors, regardless of work experience, have earned a high school diploma or an equivalency diploma. John Hughes was made aware of this requirement, and he received his graduate equivalency diploma (GED) from the Rockford, Illinois Regional Office of Education on October 29, 1982. (Findings 750, 751.)

Mr. Hughes received eight hours of classroom training on 10 C.F.R. Part 50, the Hatfield quality assurance manual, and Hatfield Procedures 9A, 9B and 9E. He was originally to be certified to Procedures 9A, 9B and 9E. For certification to all three procedures, Mr. Hughes was required to have at least 40 hours of on-the-job training for each procedure. Mr. Hughes' certification records show that he received 64 hours of on-the-job training for Hatfield Procedure 9A. Of these, 48 hours were able to be verified by the NRC Staff. Ultimately, Mr. Hughes was certified only to Procedure 9A, cable pan hanger installation. His 48 verified hours of on-the-job training for this procedure exceeded the minimum requirements. (Findings 752-54.)

John Hughes took and passed six examinations: a general quality assurance program examination, a general level II inspector's examination, three tests on various Hatfield Procedures, and a test specifically for Procedures 9A, 9B and 9E. Mr. Hughes was required to pass each of these tests before he could be certified to perform inspections for Hatfield. (Finding 756.)

Prior to his certification to Procedure 9A, John Hughes did prepare discrepancy reports. These reports were based upon inspections participated in by Mr. Hughes during his on-the-job training. The record establishes that anyone may initiate a discrepancy report. A worker need not be certified, or even specifically authorized, to complete such reports. (Finding 757.)

Mr. Hughes alleged that he was certified to perform, and did perform, inspections within two weeks of his employment with Hatfield. However, witnesses for both Applicant and the NRC Staff testified that Mr. Hughes did not perform any inspections prior to his certification, except for inspections participated in during on-the-job training. The Staff reviewed approximately 1800 inspection reports, covering the entire period Mr. Hughes was employed by Hatfield. (Finding 762.) Mr. Hughes, was unable to remember when he was certified. Indeed, Mr. Hughes could not even recall to which Procedure or Procedures he was certified. (Finding 760.)

Mr. Hughes' certification document indicates that he was certified to Procedure 9A on November 1, 1982. Mr. Hughes was not

tested specifically for Procedure 9A until October 28, 1982. His training summary was submitted October 29, 1982. Finally, his GED was dated October 29, 1982 and showed a date of October 28, 1982 for all tests. (Finding 761.) The Board finds that John Hughes was certified to Procedure 9A on November 1, 1982, and that he performed no inspections, except those during his on-the-job training, prior to his certification. The Board further finds that John Hughes was properly trained, qualified and certified as a Hatfield level II quality control inspector.

HATFIELD RETESTING PROCEDURES

John Hughes also alleged that he originally failed one of six certification examinations and was retested within an hour, with his old test, now containing correct answers, before him. (Hughes, Tr. 7056, 7057.) The record simply does not support this allegation.

Initially, the Board notes that Mr. Hughes' memory of his retesting has been demonstrated to be inaccurate in numerous respects. For example, he was unable to specify which of the six tests he claims originally to have failed. Moreover, his allegation that he was retested within an hour after having failed is contrary to the handwritten date on the examination he gave to the NRC Staff as the one he purportedly had failed. That date is October 8, 1982. Applicant's records, including the copy of the test Mr. Hughes ultimately passed, show that he

passed that same test on October 12, 1982, fully four days after he supposedly failed it. (Findings 767, 770.)

Mr. Hughes claimed that the "testing procedure" that was followed with respect to the test that he failed also was utilized for other Hatfield inspectors. The basis of his claim in this regard was the fact that his desk was located directly across from the desk of the QA supervisor, and Mr. Hughes was able to overhear the supervisor and trainees discussing tests that the trainees had failed. Thus Mr. Hughes did not testify that he observed or was aware of trainees being retested with corrected tests in front of them. (Finding 772.)

Mr. Allen Koca, Hatfield's quality control supervisor during the period of John Hughes' training and examination, testified that it was contrary to Hatfield procedures for inspector-trainees to possess corrected original tests during retesting. The trainee was required to return the failed test before being retested. Mr. Koca further testified that he had no knowledge to indicate that any Hatfield inspector-trainees had corrected tests available to them while they were being retested. (Findings 768, 773.)

The Board finds that the record as a whole does not warrant the conclusion that Hatfield inspector-trainees had corrected tests, or any other source of correct answers, available to them during retesting.

Moreover, Hatfield has since changed certain procedures to further enhance the integrity and the effectiveness of the examination process. At the time Mr. Hughes was certified, trainees were retested with tests identical to the ones which they had failed. Presently, if an inspector fails a test, he must pass a second test with different questions. In addition, the trainee must wait at least two days before retesting. (Finding 771.)

OTHER ALLEGATIONS CONCERNING
HATFIELD'S QUALITY ASSURANCE PROGRAM.

The NRC Staff has received allegations from several individuals concerning Hatfield's quality assurance program in general. These individuals have made 86 allegations over a period of six months. Of these, 64 are considered by the Staff to be unique or nonrepetitive of other allegations. To date, 34 allegations have been investigated and 30 have not been investigated. Of the 34 allegations which have been investigated, 28 have been closed on the ground that they are either without substance, unsubstantiated, or of no safety significance. Of the other six allegations which have been investigated, five have been substantiated. Two of the substantiated allegations have led to items of noncompliance being issued. Two allegations remain open and await further action by Applicant and follow-up by the Staff. Nine of the uninvestigated allegations have been referred to the Office of Investigations. (Findings 775-778.)

The substance of the uninvestigated allegations is such that the passage of time will not compromise the Staff's ability to investigate these allegations. (Finding 779.)

The Staff will not recommend issuance of an operating license until all outstanding allegations have been investigated. (Finding 780.)

The Board finds that the NRC Staff is taking adequate steps to ensure that all Hatfield quality assurance allegations will be investigated and resolved before the Applicant receives an operating license.

THE BYRON REINSPECTION PROGRAM

Inspection Report 82-05 (Applicant's Ex. 8), the report of the special team inspection at Byron, identified inconsistencies and inadequacies in the certification of contractor quality control inspectors. The Staff recognizes a difference between the "certification" and the "qualification" of inspectors. Certification is a documented method to demonstrate qualification. Inspection Report 82-05 did not identify any inspectors who were unqualified, nor did it identify any deficient inspections by an inspector. Nevertheless, the Staff concluded that the Applicant should apply standardized inspector certification requirements, based on ANSI Standard N45.2.6-1978, to all Byron contractors. (Findings 781-785.)

In response, Applicant reviewed the parameters set forth in N45.2.6-1978 and translated its general guidelines into quantified standards to be met by each contractor. Site contractors were required to revise their training and certification procedures to incorporate these standards. These revised procedures were submitted for approval to Applicant's quality assurance department. Applicant also directed each site contractor to review all current inspectors to verify that they met the revised standards. Any inspectors who did not satisfy the revised standards were to be retrained and recertified by the employing contractor. (Findings 786, 787, 789.)

Hatfield's revision of its certification procedures included setting specific minimum hours of on-the-job training required for certification to any procedure. The minimum number of hours of on-the-job training was set at 40, pursuant to Applicant's directive. In addition, Hatfield set a minimum number of questions for certification examinations. The minimum number of test questions was set at 40, for each area of certification, also pursuant to Applicant's directive. (Finding 788.)

Approximately half of the 60-70 inspectors at Hatfield required retesting pursuant to the new certification standards, because in the past Hatfield had administered examinations containing less than 40 questions. At least half of the Hatfield inspectors required additional training, because

they had not compiled at least 40 hours of documented on-the-job training. (Findings 790-791.)

Applicant's quality assurance department has reviewed 100% of contractor inspector certification packages. This review verified that all certification requirements had been properly documented. Applicant's quality assurance department did not independently verify the accuracy of information contained in the certification documents. Applicant also has reviewed the certification packages of inspectors who have been recertified in accordance with upgraded standards. In addition, whenever an inspector is newly hired, or certified in a new area, Applicant's quality assurance department reviews his certification package. (Finding 792.)

The NRC Staff also considered it advisable for Applicant to initiate a reinspection program to determine whether work performed by inspectors before the team inspection was adequate and whether any hardware problems existed at Byron. The Staff believed that detection of inadequate inspections could be achieved by selecting a sample of quality control inspections from the total population for each contractor and re-inspecting work these inspectors originally inspected during their first few months of inspection activity. (Finding 795.)

Applicant is currently overseeing such a reinspection program at Byron. The program is designed to verify that deficiencies in past contractor quality control personnel training and certification identified by the NRC Staff has not resulted

unsatisfactory work going undetected. This reinspection program is very extensive and comprehensive. It looks at a sampling of almost all of the safety-related work that has been completed at Byron. (Finding 796-804, 806-810, 815.) Any work found during reinspection to have been improperly performed is reworked and then reinspected. (Finding 805.)

The reinspection program involves work performed as of September, 1982. By September, 1982, the new standardized inspector certification requirements were being implemented by each contractor. (Finding 810.) Mr. Hayes testified for the NRC Staff that he does not believe unqualified inspectors are working for Hatfield at this time. (Finding 811.)

A reinspection program audit was conducted by Applicant's quality assurance department between June 21 and July 6, 1983. The NRC Staff, in I & E Report 83-16, stated that it would have been prudent for Applicant to have conducted the audit earlier. The reinspection audit determined that Hatfield had certified two inspectors without verifying their educational backgrounds. While a high school diploma is not a formal program requirement, Hatfield as a matter of policy does require that each inspector have obtained a high school diploma or an equivalency diploma. At Applicant's request, the certification of these inspectors was suspended until they obtained high school diplomas or equivalency diplomas. At the time of the audit, neither of these inspectors had yet performed any inspections. Other items identified involved

clarification of specific aspects of the reinspection program, and did not involve work quality. Application's quality assurance department will follow up on all audit items to make certain that they have been properly resolved. (Findings 812-13.)

Electronic data processing is being used to ensure that the appropriate inspections are being reinspected. (Findings 814-815.) In addition, although the reinspection program presumably will result in the reinspection of only a sample of inspectors, other overinspections of work performed at Byron are conducted by the independent testing laboratory on site. The numerous overinspections include overinspections of bolt torque and cable pans. (Finding 816.)

Mr. Forney testified that it will take three months for the NRC Staff to review and evaluate the results of the reinspection program. The Staff will not recommend issuance of an operating license until it has completed its evaluation of the results of the reinspection program, and all identified deficiencies have been satisfactorily resolved. (Finding 819.)

The Board finds that the reinspection program is adequate to determine whether inspectors were qualified to perform, and did perform, adequate inspections.

FINDINGS OF FACT

III. CONTENTIONS

* * * * *

H. Rockford League of Women Voters' (League) Contention 1A -- Quality Assurance and Quality Control

737. John Hughes was employed by Hatfield as a quality control inspector for approximately three months beginning October 1, 1982. (Koca, Applicant's Prepared Testimony at 3, ff. Tr. 7418; Hughes, Tr. 7028.)

738. On April 25, 1983, Mr. Hughes prepared a statement to accompany a motion by Intervenor to reopen the quality assurance record to admit additional testimony concerning Hatfield's quality assurance program. Intervenor's motion was dated April 27, 1983. Mr. Hughes' statement contained several allegations: (1) that he failed a written exam and was retested thirty minutes later following review of the failed exam and after being provided correct answers; (2) that he signed documentation for inspections he did not perform; (3) that he saw a brace welded to a pressure pipe; (4) that welding of a cable tray support was performed while cable was lying in the tray; (5) that he saw welds with uneven profile and excessive undercut; and (6) that he also saw peening of welds. (Region III Panel, NRC Prepared Testimony at 12, ff. Tr. 7801.)

739. A special inspection was conducted by the NRC Region III Office between April 27 and May 10, 1983, to deter-

mine whether Mr. Hughes' allegations could be substantiated. Based on the results of the special inspection and information obtained from earlier interviews with Mr. Hughes and others concerning these matters, the staff could find no safety significance to any of the allegations in Mr. Hughes' statement. (Id.)

740. On May 26, 1983, John Hughes was deposed before the Board. On the basis of additional information elicited from Mr. Hughes during this deposition and the stipulated testimony of Junius Ogsbury and Irvin Souders, the Board determined that further inquiry into certain of the issues raised by Mr. Hughes was warranted. Specifically, the Board reopened the evidentiary record on the issues whether Mr. Hughes was properly certified by Hatfield and whether Hatfield inspectors were provided with test answers when they were retested on examinations that they had failed. (Id. at 12,13; Board Memorandum and Order Reopening Evidentiary Record, dated June 21, 1983, at 2.)

741. In its June 21 Memorandum and Order, the Board also directed an evidentiary presentation explaining the current status of allegations which have been received regarding Hatfield's quality assurance program in general, including the status of the NRC Staff's investigations of these allegations. (Memorandum and Order Reopening Evidentiary Record, dated June 21, 1983, at 3, 4.) Finally, the Board requested detailed testimony concerning the enlarged reinspection program at Byron, which covers all contractor quality control inspectors. (Id. at 4,5.)

742. A special investigation was conducted by the Region III office during June 23 and July 1, 1983, to obtain further information concerning Mr. Hughes' training and certification as a level II quality control inspector for Hatfield. The inspection focused on whether Mr. Hughes' allegation that he was certified to perform, and did perform, inspections as a level II quality control inspector within two weeks of his employment at Hatfield could be substantiated. (NRC Staff Prepared Testimony at 13, ff. Tr. 7801.)

743. During the special investigation, Region III conducted a detailed review of Mr. Hughes' training, qualification and certification, and inspection records to determine (1) whether Mr. Hughes received required training, (2) the specific date he was certified as a level II inspector at Byron, (3) the activities he was certified to inspect, and (4) whether he conducted official inspections prior to his certification. (Id. at 13, 14.)

744. Allen J. Koca, Hatfield's quality control supervisor at that time, supervised John Hughes' training during October, 1982. (Koca, Applicant's Prepared Testimony at 3, ff. Tr. 7418.)

745. Hatfield's training program was required to meet standards established by Commonwealth Edison Company. These standards were based on 10 C.F.R. Part 50, Appendix B, and on ANSI standard N45.2.6-1978. In addition, certification requirements particular to Hatfield inspectors were established in Hatfield Electric Company Procedure 17, entitled "Qualification

and training of Inspection and Audit Personnel." (Id. at 3, 4.)

746. At the time Mr. Hughes was trained at Hatfield, quality control personnel were required to possess specified levels of formal education and prior work experience, depending upon the nature of the work to be performed. Each individual also received classroom training and on-the-job training, and was tested to ensure that he had thoroughly learned the work to be performed. (Id. at 4; Koca, Tr. 7423.)

747. John Hughes was to be trained as a cable pan and cable pan hanger inspector. (Koca, Applicant's Prepared Testimony at 4, ff. Tr. 7418.)

748. Hatfield's work experience requirement is one year as a level I inspector in a corresponding inspection category or class. (Id. at 4, Ex. A; Koca, Tr. 7432.) To confirm that Mr. Hughes possessed the required work experience, Hatfield obtained a certification of employment from Mr. Hughes' previous employer, Nuclear Energy Service (NES). (Id. at 5, Ex. B; Koca, Tr. 7441-42.) In addition, Hatfield contacted NES by telephone to confirm Mr. Hughes' prior employment. (Koca, Applicant's Prepared Testimony at 5, ff. Tr. 7418.) Mr. Hughes' NES certification document indicated that he possessed at least two years, nine months of experience as a level I quality control inspector. (Id. at Ex. B; Koca, Tr. 7444.) This satisfied the experience requirement for a Hatfield level II inspector. (Koca, Ex A, 5.5.1.1.)

749. The Staff considers this to have been adequate verification by Hatfield of Mr. Hughes' prior employment. (Hayes, Tr. 7960.)

750. As a matter of policy Hatfield requires that all Hatfield quality control inspectors, regardless of work experience, have earned a high school diploma or an equivalency diploma. (Koca, Applicant's Prepared Testimony at 5, ff. Tr. 7418; Koca, Tr. 7432.) Mr. Hughes was aware of the requirement that he possess a high school diploma or an equivalency diploma in order to be certified. (Hughes, Tr. 7200.)

751. John Hughes received a graduate equivalency diploma ("GED") prior to his certification as a Hatfield level II quality control inspector. (Id.; Koca, Tr. 7510, 7531-32.) Mr. Hayes testified that he spoke with Ms. Darlene Lee of the Rockford, Illinois Regional Office of Education concerning Mr. Hughes' receipt of a GED. Ms. Lee stated that Mr. Hughes completed the final examination required for his GED on the evening of October 28, 1982. (Hayes, NRC Staff Prepared Testimony at 16, 17, ff. Tr. 7418.) John Hughes received a GED from the Rockford, Illinois regional office of education on October 29, 1982. (Koca, Applicant's Prepared Testimony at Ex. D, ff Tr. 7418; Hayes, NRC Staff Prepared Testimony at 16, ff. Tr. 7801; Hughes, 7200-01.)

752. Mr. Hughes received eight hours of classroom training on 10 C.F.R. Part 50, the Hatfield quality assurance manual, and Hatfield Procedures 9A, 9B and 9E. (Koca, Applicant's Prepared Testimony at 6, ff. Tr. 7418; Koca, Tr. 7460;

Hughes, Tr. 7192-93.) This classroom training was documented in training memoranda signed by each person at the training sessions. (Koca, Applicants Prepared Testimony at 6, Ex. F, ff. Tr. 7418; Koca, Tr. 7461; Hughes, Tr. 7191-92.)

753. Mr. Hughes originally was to be certified in three different procedures: 9A, 9B and 9E. (Koca, Applicant's Prepared Testimony at 6, ff. Tr. 7418.) In order to be certified for all three procedures he was required to have a minimum of 40 hours of on-the-job training for each of the three procedures. (Koca, Tr. 7467.)

754. Mr. Hughes' certification records show that he received 64 hours of on-the-job training in Hatfield Procedure 9A. (Koca, Applicant's Prepared Testimony, Ex. G, ff. Tr. 7418.) Of these, 48 hours were verified by the NRC Staff. The 16 hours that could not be verified involved hangers that subsequently were reinspected, and the inspection records, which included Mr. Hughes' participation, were inadvertently lost or destroyed as a result of the reinspection/rework operations. (Hayes, NRC Staff Prepared Testimony at 14, ff. Tr. 7801; Hayes, Tr. 7944-46.) Mr. Hughes' on-the-job training consisted of accompanying a certified level II inspector in the field during inspections of cable pan hangers. (Koca, Tr. 7473.) Ultimately, Mr. Hughes was certified only to Procedure 9A, cable pan hanger installation. His 48 verified hours of on-the-job training in this procedure exceeded the minimum requirements. (Hayes, NRC Staff Prepared Testimony at 15, ff. Tr. 7801; Hayes, Tr. 7944-46.)

755. Mr. Hughes does not remember all the training he received. (Hughes, Tr. 7055.) Thus he was unable to testify to the precise amount of classroom and on-the-job training that he received. (Hughes, Tr. 7191, 7192.)

756. John Hughes took and passed six examinations: a general quality assurance program examination, a general level II inspector's examination, three tests on various Hatfield Procedures, and a test specifically for Procedures 9A, 9B and 9E. (Koca, Applicant's Prepared Testimony at 7, ff. Tr. 7418; Hughes Tr. 7109-10.) Mr. Hughes was required to pass each of these tests before he could be certified to perform inspections for Hatfield. (Koca, Applicant's Prepared Testimony at 7, ff. Tr. 7418.)

757. Prior to his certification to Procedure 9A, John Hughes did prepare discrepancy reports. (Koca, Tr. 7478; Joint Intervenor's Ex. 26.) These discrepancy reports were derived from inspections participated in by Mr. Hughes during his on-the-job training. (Koca, Tr. 7506.) Anyone may initiate a discrepancy report; a worker need not be certified, or even authorized, in order to complete such reports. (Koca, Tr. 7478, 7502; Forney, Tr. 7390.)

758. At the conclusion of Mr. Hughes' training, the lead level II inspector prepared a memorandum summarizing Mr. Hughes' training. This memorandum, dated October 29, 1982, noted that Mr. Hughes was not yet qualified to perform inspections to Hatfield Procedures 9B and 9E, because Mr. Hughes did not yet possess the required amount of on-the-job training in

those procedures. (Koca, Applicant's Prepared Testimony at 8, Ex. N, ff. Tr. 7418; Hughes, Tr. 7171.)

759. Mr. Hughes claimed that he was certified as a Level II inspector, and the he performed inspections as if he were a certified inspector, within his first two weeks on the job. (Hughes, Tr. 7208.) This claim, however, is clearly contrary to the great weight of the record evidence.

760. Mr. Hughes stated that he was unable to remember the date on which he was certified. (Hughes, Tr. 7059.) Indeed, Mr. Hughes was unable to specifically recall the Hatfield procedure or procedures to which he was certified. (Id., Tr. 7060.)

761. The record demonstrates that Mr. Hughes was certified to Procedure 9A on November 1, 1982, on which date he received a Certificate of Qualification from Hatfield. (Koca, Applicant's Prepared Testimony at 8, Ex. O, ff. Tr. 7418; Hayes, NRC Staff Prepared Testimony at 17, ff. Tr. 7807.) First, Mr. Hughes' training summary was not submitted until October 29, 1982. (Koca, Applicant's Prepared Testimony at 8, ff. Tr. 7418; Hughes, Tr. 7171.) Second, Mr. Hughes was not tested specifically for Procedure 9A until October 28, 1982. (Hughes, Tr. 7118-27.) Finally, Mr. Hughes' GED, which uncontroverted testimony has established was a prerequisite to certification, was dated October 29, 1982. (Hughes, Tr. 7200.) The Board therefore finds that Mr. Hughes was certified to Procedure 9A on November 1, 1982.

762. Witnesses for both Applicant and the NRC Staff testified that Mr. Hughes did not perform any inspections prior to his certification, except for inspections he participated in during his on-the-job training. (Koca, Applicant's Prepared Testimony at 8, 9, ff. Tr. 7418; Hayes, NRC Staff Prepared Testimony at 17, ff. Tr. 7810.) Mr. Hayes testified that the Staff reviewed approximately 1800 inspection reports covering the entire period Mr. Hughes was employed by Hatfield. Based upon these reports, and also based upon discussions by the Staff with Hatfield inspectors who worked with Mr. Hughes, the NRC Staff concluded that there was simply no support for Mr. Hughes' allegation that he performed inspections during his first two weeks on the job, or at any time prior to his certification on November 1, 1982, other than the inspections which comprised his on-the-job-training. (Hayes, NRC Staff Prepared Testimony at 17, ff. Tr. 7810.)

763. The NRC Staff found no substantiation to Mr. Hughes' allegation that he did not receive the training required for certification. (Hayes, Tr. 7944.) Mr. Hayes concluded that the documents he reviewed, and which indicated that Mr. Hughes received the requisite amount of training, were valid, based on the fact that many of them had been initialed by Mr. Hughes. In addition, Mr. Hayes interviewed inspectors who personally accompanied Mr. Hughes during much of his training. (Hayes, Tr. 7944.)

764. In sum, Mr. Hughes' allegation that he was certified to perform, and did perform, inspections as a level

II quality control inspector within two weeks of his employment by Hatfield was unsubstantiated by the NRC Staff. (Hayes, NRC Staff Prepared Testimony at 18, ff. Tr. 7801.)

765. John Hughes believed he was qualified to perform the quality control inspections he in fact performed for Hatfield. (Hughes, Tr. 7116.)

766. The Board finds that John Hughes was properly trained, qualified, and certified as a Hatfield level II quality control inspector.

767. Allen Koca had no recollection of Mr. Hughes' failing any of the six examinations. (Koca, Applicant's Prepared Testimony at 9, ff. Tr. 7418.) Mr. Hughes himself was unable to recall which test he claims to have failed. (Hughes, Tr. 7110.) Mr. Hughes' allegations concerning the failed test are still being investigated by the Staff. (Connaughton, Tr. 7934, 7935.)

768. According to Hatfield procedures, when an inspector-trainee did fail a test, Mr. Koca reviewed the incorrect answers with the trainee and explained the right answers. The trainee then reviewed the test on his own, and then returned the test to Mr. Koca. The trainee next conducted any necessary independent review of the subject matter. He was then retested. Mr. Koca testified that he ripped up and threw away a failed test after an inspector passed the test. Thus, if Mr. Hughes did fail one of his original tests, that test should have been collected from him before he was retested. It was contrary to Hatfield procedures for inspector-trainees to possess corrected

original tests during retesting. (Id. at 13.) (Koca, Applicant's Prepared Testimony at 10, 11, ff. Tr. 7418.)

769. Generally, at least one day elapsed between the original test and any retesting, although Mr. Koca testified that on occasion both tests would occur on the same day, with the first test being taken early in the day and the second being taken toward the end of the day, often on overtime. (Id. at 11.)

770. Although Mr. Hughes alleged that he was retested 30 minutes after he failed the test, the test that Mr. Hughes gave to the NRC Staff as the one that he purportedly had failed had the handwritten date of October 8, 1982 on it. (Koca, Tr. 7546; Staff Ex. 5.) However, Mr. Hughes did not pass this test until several days later, on October 12, 1982. (Koca, Applicant's Prepared Testimony, Ex. K, ff. Tr. 7418; Hughes, Tr. 7535-36.)

771. At the time Mr. Hughes received his certification training and testing, trainees were retested by taking tests that were identical to the ones which they had failed. This procedure was later changed. Presently, if an inspector-trainee fails a test, he must pass a second test with different questions. In addition, the trainee must wait at least two days before retesting. (Koca, Applicant's Prepared Testimony at 12, ff. Tr. 7418.)

772. Mr. Hughes claimed that the "testing procedure" that was followed with respect to the test that he failed also was utilized for other Hatfield inspectors. The basis of his claim in this regard was the fact that his desk was located

directly across from the desk of the QA supervisor, and Mr. Hughes was able to overhear the supervisor and trainees discussing tests that the trainees had failed. (Hughes, Tr. 7059.) Thus Mr. Hughes did not testify that he observed or was aware of trainees being retested with corrected tests in front of them.

773. Mr. Koca testified that he had no knowledge to indicate that any Hatfield inspector-trainees had corrected tests available to them when they were retested. (Koca, Applicant's Prepared Testimony at 13, ff. 7418.)

774. The Board finds that the record as a whole does not warrant the conclusion that Hatfield inspector-trainees were retested on examinations that they had failed with the corrected tests in front of them.

775. The NRC Staff has received allegations from several individuals concerning Hatfield's quality assurance program in general. These individuals have made 96 allegations over a period of six months. Of these, 64 are considered by the Staff to be unique or nonrepetitive of other allegations. To date, 34 allegations have been investigated and 30 have not been investigated. Of the 34 allegations which have been investigated, 28 have been closed on the ground that they are either without substance, unsubstantiated, or of no safety significance. Of the other six allegations which have been investigated, five have been substantiated. Two of the substantiated allegations have led to items of noncompliance being issued. Two allegations remain open and await further action

by Applicant and follow-up by the Staff. Nine of the uninvestigated allegations have been referred to the Office of Investigations. (NRC Staff Prepared Testimony at 8-11, ff. Tr. 7801.)

776. One allegation was that the Hatfield quality assurance manager was inept and incapable of performing as a quality assurance manager. To investigate this allegation, Mr. Forney of the Staff reviewed the manager's certification package. (Forney, Tr. 7918.) Neither Hatfield nor the Applicant had performed an in-depth review of the manager's educational background. (Forney, Tr. 7920.) Instead, Hatfield and Applicant relied upon a certification letter from a company in the business of providing managers. That letter stated that a review had been performed, and that the quality assurance manager was qualified, but would need specific training in the nuclear area. (Forney, Tr. 7919, 7920.)

777. The Hatfield quality assurance manager had spent a number of years as a manager of different companies in Rockford and other areas. (Forney, Tr. 7919.) Because his past experience as a manager involved quality assurance functions only part of the time, Mr. Forney determined that this prior experience should be entitled only to partial credit toward the background requirements of a quality assurance manager. On this basis, Mr. Forney concluded that the Hatfield quality assurance manager did not have sufficient prior work experience to be properly certified. Mr. Forney therefore issued an item of noncompliance. (Forney, Tr. 7920.)

778. To correct this situation, the quality assurance manager was removed from his position. (Forney, Tr. 7349, 7353.) He is still with Hatfield. In addition, Applicant reviewed the certification packages of all Hatfield quality control inspectors. (Forney, Tr. 7921.) Mr. Forney personally has reviewed the records of all the Level III supervisors who were working for Hatfield at the time he reviewed the quality assurance manager and issued the noncompliance. (Forney, Tr. 7929.)

779. The substance of the uninvestigated allegations is such that the passage of time will not compromise the Staff's ability to investigate these allegations. (Forney, Tr. 7878.)

780. The Staff will not recommend issuance of an operating license until all outstanding allegations have been investigated. (Forney, Tr. 7882; Hayes, Tr. 7321, 7962.)

781. The NRC Staff Region III Office of Inspection and Enforcement conducted a special team inspection at Byron in March, April and May, 1982. (Stanish, Applicant's Prepared Testimony at 1, ff. Tr. 7549.)

782. The Staff found inconsistencies in the certification programs of the various on-site contractors, including Hatfield Electric Company. (Stanish, Tr. 7552.) The Staff also determined that Hatfield's certification documents were in certain respects incomplete. (Stanish, Tr. 7556.)

783. The report of the special team inspection, Inspection Report 82-05 (Applicant's Ex. 8), did not identify any inspectors who were unqualified to perform their particular

functions. (Stanish, Tr. 7745.) Moreover, Inspection Report 82-05 did not identify any deficient work which had been performed by an inspector. (Forney, Tr. 7964.) Inspection Report 82-05 did identify inspectors who were not properly certified. (Stanish, Tr. 7746.) Certification is a documented method to demonstrate qualification. (Stanish, Tr. 7745.)

784. The Staff recognizes a difference between the certification and the qualification of inspectors. If an inspector has all the proper qualifications, but is not properly certified, the consequences to quality are minimal. However, if certification fails to ensure requisite qualifications, the consequences to quality may be significant and might pose safety concerns. (Forney, NRC Staff Prepared Testimony at 4,5, ff. Tr. 7801.)

785. The NRC Staff Region III concluded that the Applicant should apply standardized inspector certification requirements, based on ANSI Standard N45.2.6-1978, to all Byron contractors. (Stanish, Applicant's Prepared Testimony at 2,3, ff. Tr. 7549; Forney, Tr. 7969.)

786. In response to Inspection Report 82-05, Applicant reviewed the parameters set forth in N45.2.6-1978 and translated its general guidelines into quantified standards to be met by each contractor. (Stanish, Prepared Testimony at 3, ff. Tr. 7549; Stanish, Tr. 7565.)

787. Site contractors were required to revise their training and certification procedures to incorporate these standards. Revised procedures of each contractor were sub-

mitted for approval to Applicant's quality assurance department. (Stanish, Prepared Testimony at 4, ff. Tr. 7549.)

788. Hatfield's revision of its certification procedures included setting specific minimum hours of on-the-job training required for certification to any procedure. The minimum number of hours of on-the-job training was set at 40, pursuant to Applicant's directive. In addition, Hatfield set a minimum number of questions for certification examinations. The minimum number of test questions was set at 40, for each area of certification, also pursuant to Applicant's directive. (Stanish, Tr. 7565, 7580-82; Connaughton, Tr. 7949, 7950.)

789. Each site contractor was directed to review all presently employed inspectors to verify that they met the revised standards. Inspectors who did not satisfy the revised standards were to be retrained and recertified by the employing contractor. (Stanish, Prepared Testimony at 4, ff. Tr. 7549.)

790. Approximately half of the 60-70 inspectors at Hatfield required retesting pursuant to the new certification standards, because in the past Hatfield had administered examinations containing less than 40 questions. (Stanish, Tr. 7580.)

791. At least half of the Hatfield inspectors required additional training, because they had not compiled at least 40 hours of documented on-the-job training. (Stanish, Tr. 7580, 7582.)

792. Applicant's quality assurance department has reviewed 100% of contractor inspector certification packages.

This review verified that all certification requirements had been met and that the certification process has been properly documented. (Stanish, Applicant's Prepared Testimony at 4,5, ff. Tr. 7549; Stanish, Tr. 7633-35.) Applicant's quality assurance department did not independently verify the accuracy of information contained in the certification documents.

(Stanish, Tr. 7636.) Applicant also has reviewed the certification packages of inspectors who have been recertified in accordance with upgraded standards established by Applicant. In addition, whenever an inspector is newly hired, or certified in a new area, Applicant's quality assurance department reviews his certification package. (Stanish, Tr. 7639.)

793. To verify that Hatfield inspector-trainees in fact attend training sessions, Applicant's quality assurance people frequently attend Hatfield training sessions. The frequency of attendance by Applicant has increased since the beginning of 1983, in response to allegations by John Hughes. (Stanish, Tr. 7659.) This frequency is now about 10%. (Stanish, Tr. 7662.)

794. Applicant's quality assurance organization also reviews on-the-job training of contractor inspectors by accompanying trainees and trainers in the field. (Stanish, Tr. 7659, 7662.)

795. Because of certification inadequacies and inconsistencies discovered by Region III during its Special Team Inspection, the Staff considered it appropriate for Applicant to initiate a reinspection program to determine whether work

performed by inspectors before the team inspection was adequate and whether any hardware problems existed at Byron. (Forney, NRC Staff Prepared Testimony at 5, ff. Tr. 7801.) The Staff believed that detection of inadequate inspections could be achieved by selecting a sample of quality control inspections from the total population for each contractor and reinspecting work these inspectors originally inspected during their first few months of inspection activity. (Id.)

796. Applicant currently is overseeing such a reinspection program at Byron. The program is designed to verify that deficiencies in past contractor quality control personnel training and certification identified by the NRC Staff has not resulted in unsatisfactory work going undetected. (Tuetken, Applicant's Prepared Testimony at 3,4, ff. Tr. 7760.) This reinspection program is very extensive and comprehensive. It looks at a sampling of almost all of the safety-related work that has been completed at Byron. (Hayes, 7955-56.)

797. For six contractors, every fifth quality control inspector has been selected from a chronological listing based on the date of certification of each inspector since the beginning of the project. In addition, at least three more inspectors for each contractor have been selected by the NRC Staff senior resident inspector. All inspections performed during the first three months by the selected inspectors are being reinspected, where accessible. (Id. at 4.)

798. For two contractors, Powers-Azco-Pope and Johnson Controls, the first three months of inspections is being rein-

spected where accessible for each quality control inspector certified since the beginning of the project. (Id.) These two contractors are being reinspected on this basis because of specific concerns with certain features of their certification procedures which were in effect prior to the Special Team Inspection. For example, these contractors permitted open book testing of qualifying inspectors, unlike the other contractors on site. (Id. at 5.)

799. An inaccessible inspection is one which would require dismantling to gain access. Examples are components embedded or buried in concrete, and internal piping alignments. (Id.)

800. Inaccessible inspections are also those which cannot be recreated. Examples include tension achieved during cable pulling operations, welding interpass temperature, etc. (Id.)

801. If all or most of an inspector's inspections are inaccessible, another inspector is selected and his first three months of inspections are reinspected. (Id., Tuetken, Tr. 7770.)

802. The reinspection program is designed to ensure that the work of each inspector attains a 95% quality level for objective attributes and a 90% quality level for subjective attributes. Objective attributes are those which are readily measurable or discernable, such as dimensional configuration or material type. Subjective attributes are those which require interpretation by the inspector, such as weld profile or under-

cut. (Tuetken, Applicant's Prepared Testimony at 5,6, ff. Tr. 7768.)

803. No inspector is reinspecting his own work.
(Tuetken, Tr. 7783.)

804. If the reinspection program establishes that an inspector has failed to meet required quality levels with respect to any attribute inspected by him during his first three months, the inspector's next three months of inspections of that attribute are reinspected. If this sample also fails to meet required quality levels, 100% of the inspector's inspections of the particular attribute are reinspected. In addition, the original sample of inspectors whose work is being reinspected is expanded by 50% for the particular attribute.
(Tuetken, Applicant's Prepared Testimony at 6, ff. Tr. 7760; Tuetken, Tr. 7772,7787; Connaughton, Tr. 7988.)

805. Any work found during reinspection to have been improperly performed is reworked or evaluated to an acceptable level. (Tuetken, Applicant's Prepared Testimony at 7, 10, ff. Tr. 7760.)

806. Twenty-two Hatfield inspectors were selected through this process. Eighteen of these inspectors were selected randomly; four were selected by the NRC Staff senior resident inspector. This sample represents about 25% of the population of Hatfield inspectors certified as of September 10, 1982, the date Hatfield's revised certification procedures were approved by Applicant. (Id., Tuetken, Tr. 7770.)

807. Areas which were inspected by Hatfield inspectors, and which thus are now being reinspected, include equipment settings, equipment modifications, conduit and conduit hangers, cable pan and cable pan hangers, bolting, welding and cable terminations. (Tuetken, Applicant's Prepared Testimony at 8, ff. Tr. 7760.)

808. Only one Hatfield inspector will likely fail to achieve an acceptable quality level with respect to his first three months of inspections. The area involved concerns weld inspection, a subjective area. The area includes weld detail, type and profile, size, length, cracks, fusion, porosity, undercut, slag, crater and overlap. The majority of inspection deficiencies identified to date involve weld undercut and overlap. This inspector will achieve approximately a 75% acceptability level for his first three months of inspections. However, his inspections in the next three months appear likely to meet the 90% acceptability criteria for subjective attributes. If this inspector does fail to meet the 90% acceptability criteria in the second three months, all inspections performed by him will be reinspected, and in addition the original sample of Hatfield inspectors will be expanded by 50% with regard to the attributes at issue. That is, the original sample of 18 inspectors (only the inspectors selected at random, and not those selected by the NRC senior resident inspector, constitute the basis for the calculation) will be expanded by 9 weld inspectors. (Id. at 9-10; Tuetken, Tr. 7763, 7764.)

809. In Mr. Tuetken's prepared testimony as originally filed, he indicated that two Hatfield inspectors were apparently failing to achieve required quality levels upon reinspection of their initial three months of inspections. (Tuetken, Applicant's Prepared Testimony at 9, ff. Tr. 7760.) Based on additional reinspection information, it now appears that the second inspector in fact will achieve an acceptable quality level during his first three months of inspections. (Tuetken, Tr. 7787-89.) Mr. Tuetken's prepared testimony has been modified as a result, and now indicates that only one inspector is expected to fail to meet required quality levels during his first three months of inspections. (Tuetken, Applicant's Prepared Testimony at 9, ff. Tr. 7760; Tuetken, Tr. 7787-89.)

810. The reinspection program involves work performed up to September, 1982. (Forney, Tr. 7978.) By September, 1982, the new standardized inspector certification requirements were being implemented by the contractors. (Forney, NRC Staff Prepared Testimony at 8, ff. Tr. 7801; Forney, Tr. 7978.)

811. The Staff does not believe that unqualified inspectors are working for Hatfield at this time. (Hayes, Tr. 7890.)

812. A reinspection program audit was conducted by Applicant's quality assurance department between June 21 and July 6, 1983. The audit concluded that with few exceptions, the reinspection program is being implemented adequately. (Stanish, Tr. 7699; Stanish, Applicant's Prepared Testimony at

5, ff. Tr. 7549.) The NRC Staff, in I & E Report 83-16, stated that it would have been prudent for Applicant to have conducted the audit earlier. (Stanish, Tr. 7700.)

813. The reinspection audit determined that Hatfield had certified two inspectors without verifying their educational backgrounds. (Stanish, Tr. 7725.) While a high school diploma is not a formal program requirement, Hatfield as a matter of policy does require that each inspector have obtained a high school diploma or an equivalency diploma. At Applicant's request, the certification of these inspectors was suspended until they obtained high school diplomas or equivalency diplomas. At the time of the audit, neither of these inspectors had yet performed any inspections. (Stanish, Tr. 7726.) Other items identified involved clarification of specific aspects of the reinspection program, and did not involve work quality. Applicant's quality assurance department will follow up on all open audit items to make certain that they have been properly resolved. (Stanish, Applicant's Prepared Testimony at 5,6, ff. Tr. 7549.)

814. In a meeting with Applicant on August 4, 1983, the Region III Staff expressed concern about the difficulty of ensuring that the components being reinspected were actually those components which were inspected by the inspector whose work is being examined. The potential problem arises from the fact that project records are filed by type of inspection, and not by inspector; therefore, in situations where components have been reworked or reinspected, a painstaking and diligent

review of the records is required to verify that the item being reinspected is in the same condition as it was at the time of its inspection by the inspector being reviewed. If a careful review of the records is not performed, inspections not actually performed by an inspector might inadvertently be included in the population of the inspector's work being reviewed, thereby rendering inaccurate the sample of work being reinspected. The Staff did not necessarily believe that reinspection personnel were not properly ensuring that reinspections corresponded to the appropriate inspections; rather, the Staff expressed its concern that the difficulties involved in reviewing the records could possibly lead to an inaccurate reinspection program. (Tuetken, Tr. 7756-7758.)

Mr. Tuetken testified, however, that Applicant was aware of this potential problem, and that the reinspection effort has been conducted with appropriate diligence to ensure that the reinspection effort encompasses the proper inspections. (Tuetken, Tr. 7758-7759.)

815. The purpose of Hatfield's record-keeping system is to maintain records according to the type of inspection, and thus the system was not designed to facilitate the type of reinspection program being implemented. (Tuetken, Tr. 7785.) However, Applicant is in the process of developing an electronic data processing system which will cross-correlate Hatfield's records in a way which will facilitate confirmation that the appropriate inspections have been reinspected. This electronic data processing system will be utilized to double-check each

reinspection performed in order to ensure that the program has in fact reviewed the work performed by the subject inspectors. (Tuetken, Tr. 7786.)

816. The reinspection program by its own terms does not necessarily encompass a reinspection of each inspector's first three months of work or of 100% of an inspector's work throughout his tenure at Byron. All the work of all inspectors would be reinspected only if so many inspectors failed the reinspection that expansions of the number of inspectors reviewed led to a 100% reinspection. However, although the reinspection program presumably will result in the reinspection of only a sample of inspectors, other overinspections of work performed at Byron are conducted by the independent testing laboratory on site. The numerous overinspections include overinspections of bolt torque and cable pans. (Tuetken, Tr. 7787, 7792.)

817. On August 9 and 10, 1983, the Board met, ex parte and in camera, with representatives of Region III and the Office of Investigations to learn the status of pending investigations of allegations made against Hatfield. After hearing the presentations of Region III and the Office of Investigations the Board finds as follows: First, with regard to the allegations being investigated by the Office of Investigations, these pending investigations are in such early stages that evidentiary presentations on them would not produce reliable results. Second, with regard to the pending Region III inspections, some of the inspections are not material to proceedings

before this Board and the others are at such early stages that evidentiary presentations concerning them would not produce reliable results. The Board will receive completed investigation and inspection reports and will determine on a case-by-case basis whether reopening the evidentiary record on any of the issues encompassed by the reports is warranted. (Tr. 7615-7618; Board Memorandum and Order dated August 17, 1983.)

818. Mr. Tuetken testified for the Applicant that phase I of the reinspection program, i.e., a review of the first three months of inspections of the selected inspectors, would be completed during the second or third week in August. (Tuetken, Tr. 7784; Tuetken, Applicant's Prepared Testimony at 7, 10, ff. Tr. 7760.)

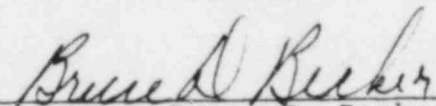
819. Mr. Forney testified that it will take three months for the NRC Staff to review and evaluate the results of the reinspection program. (Forney, Tr. 7858.) The Staff will not recommend issuance of an operating license until it has completed its evaluation of the results of the reinspection program, and all identified deficiencies have been satisfactorily resolved. (Forney, Tr. 7809, 7859.)

820. The Board finds that the reinspection program is adequate to determine whether inspectors were qualified to perform, and did perform, adequate inspections.

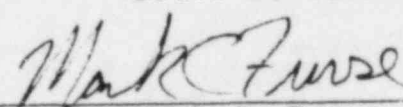
The foregoing document, "Applicant's Additional Proposed Findings of Fact and Conclusions of Law Regarding Quality Assurance and Quality Control" is respectfully submitted by the undersigned attorneys for Commonwealth Edison Company.



Michael I. Miller



Bruce D. Becker



Mark C. Furse

ISHAM, LINCOLN & BEALL
Three First National Plaza
Chicago, Illinois 60602
(312) 558-7500
Firm Code 90405

Dated: September 30, 1983

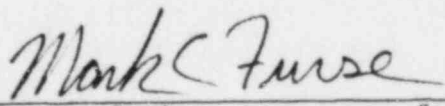
UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

CERTIFICATE OF SERVICE

The undersigned, one of the attorneys for Commonwealth Edison Company, certifies that he filed the original and two copies of the attached "APPLICANT'S PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW REGARDING QUALITY ASSURANCE AND QUALITY CONTROL" with the Secretary of the Nuclear Regulatory Commission and served copies on the persons and at the addresses shown on the attached service list. Service on the Secretary and all parties was made by deposit in the U.S. Mail, first-class postage prepaid, this 30th day of September, 1983.



One of the attorneys for
Commonwealth Edison Company

ISHAM, LINCOLN & BEALE
Three First National Plaza
Chicago, Illinois 60602
(312) 558-7500
Firm Code 90405

SERVICE LIST

COMMONWEALTH EDISON COMPANY -- Byron Station
Docket Nos. 50-454 and 50-455

Mr. Ivan W. Smith
Administrative Judge and
Chairman
Atomic Safety and Licensing
Board
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

Dr. Richard F. Cole
Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

Atomic Safety and Licensing
Board Panel
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

Chief Hearing Counsel
Office of the Executive
Legal Director
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

Dr. A. Dixon Callihan
Union Carbide Corporation
P.O. Box Y
Oak Ridge, Tennessee 37830

Mr. Steven C. Goldberg
Ms. Mitzi A. Young
Office of the Executive
Legal Director
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

Atomic Safety and Licensing
Appeal Board Panel
U.S. Nuclear Regulatory
Commission
Washington, D.C. 20555

Secretary
Attn: Chief, Docketing and
Service Section
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Ms. Betty Johnson
1907 Stratford Lane
Rockford, Illinois 61107

Ms. Diane Chavez
SAFE
326 North Avon Street
Rockford, Illinois 61103

Dr. Bruce von Zellen
Department of Biological
Sciences
Northern Illinois University
DeKalb, Illinois 60115

Joseph Gallo, Esq.
Isham, Lincoln & Beale
Suite 840
1120 Connecticut Ave., N.W.
Washington, D.C. 20036

Douglass W. Cassel, Jr.
Jane Whicher
BPI
Suite 1300
109 N. Dearborn
Chicago, Illinois 60602

Ms. Patricia Morrison
5568 Thunderidge Drive
Rockford, Illinois 61107

Mr. David Thomas
77 South Wacker
Chicago, Illinois 60621