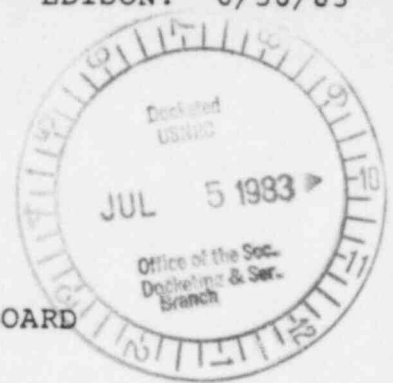


UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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))	

APPLICANT'S REPLY TO ROCKFORD LEAGUE
OF WOMEN VOTERS' PROPOSED FINDINGS OF FACT
AND CONCLUSION'S OF LAW REGARDING ALARA

Pursuant to 10 C.F.R. §2.754(a)(3) and the August 18, 1982 Stipulation of the parties, Commonwealth Edison Company ("Applicant") submits the following reply to the Rockford League of Women Voters' ("League") Proposed Findings of Fact and Conclusions of Law Regarding ALARA ("Proposed Findings").

INTRODUCTION

League Contentions 42, 111, and 112 assert, in general, that Byron Station cannot be operated so as to maintain occupational exposures as low as is reasonably achievable ("ALARA"). The three contentions encompass numerous issues which can be divided into two major sub-groups: whether Applicant has accurately assessed the potential risks from occupational exposure to radiation; and

whether Applicant's ALARA program and the station's design is sufficient to keep exposures to workers ALARA. The League's Proposed Findings regarding these issues are based on misunderstandings of the facts regarding the health effects of low-level radiation and the requirements of ALARA. In addition, the League mischaracterizes the evidence. Accordingly, Applicant submits that the Board should reject those findings. Moreover, in its Proposed Findings, the League barely mentions three of the litigated issues.* Thus, the League apparently concedes that the evidentiary record developed during the hearing demonstrates that Applicant's in-plant monitoring system, its recordkeeping program, and the design basis of the station and its steam generators are sufficient to maintain occupational exposures ALARA.

The League's casual approach to these Proposed Findings is further evidenced by its almost verbatim adoption of Applicant's discussion on the improbability that the Nuclear Regulatory Commission would issue an operating license to a plant without an acceptable ALARA program. (Commonwealth Edison Company's Proposed Findings of Fact and Conclusions of Law Regarding Seismology, Waterhammer, and ALARA, pages 33-35; League's Proposed Findings pages

* The League addresses Applicant's in-plant monitoring system only in Paragraph 34 of its Proposed Findings. The League's only reference to Applicant's recordkeeping program is an unsupported conclusion in Paragraph 20 of its Proposed Findings. In addition, the League completely fails to address the issue of the adequacy of the design basis of the plant and its steam generators.

1-3 through 1-5.) Indeed, the League's only change to Applicant's proposed "Applicable Law" section on this subject (other than a deletion of references to pertinent portions of the record) is the deletion of the words "does not" from the phrase "the Board does not find it necessary to impose a license condition . . ." that appears on pages 34 and 35 of Applicant's Proposed Findings. (League Proposed Findings, page 1-5.) Not surprisingly, there is simply no justification for such a license condition in the Proposed Findings submitted by the League.

Cancer Risk Estimate

The League's Conclusions of Law assert that the contentions challenge the Applicant's ability to maintain individual occupational exposures within the limits of 10 C.F.R. Part 20. (League Proposed Findings, page 1-3). This assertion is unsupported by any of the League's Proposed Findings or any citation to the record. Moreover, the evidence plainly contradicts it. The League's witness assumed that the Applicant would keep individual worker exposures within Part 20 limits. (Morgan, League Prepared Testimony at 12, ff. Tr. 1515).

League Proposed Findings 7, 8, 15, and 16 rely wholly or partially on the "Report to Congress, Problems in Assessing the Cancer Risks of Low-Level Ionizing Radiation Exposure," Volume 2, January 2, 1981 ("GAO Report"). This

Report was never admitted into evidence and is not part of the record. Consequently, it cannot serve as the basis for findings of fact, and to the extent that League findings rely on the GAO Report, they must be rejected.

In Paragraph 10 of its Proposed Findings, the League misinterpreted the conclusions reached by the BEIR III Committee. Although it is true that three members of the committee wrote a dissenting report, all committee members agreed that an "envelope" of risks adequately describes the range of dose-response relationships at low doses. The most conservative dose-response relationship in this envelope of risks was represented by the linear model and was endorsed by the NRC Staff and the Applicant's witness. (Fabrikant, Applicant Prepared Testimony at 18-20, ff. Tr. 1399; Fabrikant, Tr. 1400-1402; Branagan, NRC Staff Prepared Testimony at 8, ff. Tr. 1883.) The League also asserts that the chairman of the BEIR III Committee now believes that the cancer coefficient is twice as great as that given in the BEIR III Report. (League Proposed Findings, Paragraph 10.) The BEIR III Report estimated the cancer risk of whole body, low-dose, low-LET radiation to be approximately 1×10^{-4} . (Fabrikant, Applicant Prepared Testimony at 15, ff. Tr. 1399; Fabrikant, Tr. 1402-1403.) An estimation "twice as great" is only 2×10^{-4} . Such a difference is insignificant (Fabrikant, Tr. 1414) and provides no support for the League's estimation that the cancer

coefficient is 2×10^{-3} . (Morgan, League Prepared Testimony at 8, ff. Tr. 1515.)

The League also asserts that BEIR III's risk estimates are unreliable because the Committee relied on the epidemiological studies of the Hiroshima and Nagasaki atomic-bomb survivors. (League Proposed Findings, Paragraph 11.) Although the Hiroshima and Nagasaki dosimetry is being reassessed, at most the reassessment might cause the cancer risk estimates to increase to 2 or 3×10^{-4} and will more likely cause an increase to 1.1 or 1.2×10^{-4} . (Fabrikant, Tr. 1414). Such changes are insignificant (Fabrikant, Tr. 1414) and do not support the League's assertion that the cancer risk estimate is 2×10^{-3} . (Morgan, League Prepared Testimony at 8, ff. Tr. 1515.)

In Paragraph 16, the League claims that the evidence does not support Dr. Fabrikant's statement that the effects of cell and tissue repair reduce the risks from low-dose, low-LET radiation. Dr. Fabrikant reached that conclusion on the basis of his expert evaluation of certain reports on animal studies. Those studies show that extensive amounts of cell and tissue repair occur in animals which have been exposed to low-dose, low-LET radiation. (Fabrikant, Applicant Prepared Testimony at 22-24, ff. Tr. 1399; Fabrikant, Tr. 1452-1454). Although the BEIR III Committee decided not to factor the phenomenon of cell and tissue repair into its risk estimates because of the difficulty of estimating its effect, this provides even more

support for the conclusion that the BEI III Committee's approach is conservative. (Fabrikant, Tr. 1454-1455.)

Finally, in Paragraph 12, the League implies that Dr. Fabrikant agrees with the conclusion that the supra-linear model provided the best fit for the data obtained from studies of ankylosing spondylitis patients. This implication is incorrect. Although Dr. Fabrikant acknowledged that the 1982 GAO Report indicates that the supra-linear model provides the best fit for that data, Dr. Fabrikant disagreed with that conclusion. (Fabrikant, Tr. 1404-1406.)

Thus, the League has pointed to no evidence to refute the conclusions that either the linear hypothesis or the risk estimates on potential health effects contained in Section 5.9.3.1 of the Byron Final Environmental Statement are conservative.

Other ALARA Considerations

In the remainder of its Proposed Findings, the League grossly mischaracterizes the record and cites to portions of the record that either provide no support for or flatly contradict the proposition for which they are cited. This approach is too pervasive to be subject to a point by point refutation, but the following examples are particularly serious.

ALARA Program

The League extensively mischaracterizes the evidence in an attempt to assail the credibility of Applicant's witnesses, Frank Rescek and James Van Laere. In Paragraph 28, the League claims that Mr. Rescek showed a lack of understanding of the fundamentals of radiation's interaction with matter and the behavior of all forms of ionizing radiation. Yet the League's purported support for this claim is a statement by its witness, Dr. Morgan. That statement was merely an explanation of what information Dr. Morgan believes should be taught to health physics staff members. Dr. Morgan never stated that he believes Mr. Rescek does not know this information (Morgan, Tr. 1636-1637), nor was there any examination that demonstrated this lack. Indeed, the cross-examination of Mr. Rescek was to the contrary. (See, e.g., Rescek, Tr. 1165-1166; 1168-1169; 1301-1303.) Furthermore, the League asserts that Mr. Rescek was unfamiliar with maximum permissible concentration values provided in 10 C.F.R. Part 20 (League Proposed Findings, Paragraph 28), yet Mr. Rescek was never cross-examined on his knowledge of that subject.

The League also attempts to discredit Mr. Rescek by asserting that he did not know that Byron Station would have area monitors. (League Proposed Findings, Paragraphs 28 and 34.) That assertion simply mischaracterizes the evidence. The record clearly shows that Mr. Rescek's state-

ment, that no area monitors exist, was in response to a question which asked whether Byron would have area monitors for the purpose of monitoring neutron radiation dose to personnel. Mr. Rescek stated that such monitoring will be done by the use of portable radiation survey instruments instead of through area monitors. Mr. Rescek did not state that Byron will have no area monitors but rather explained that they would not be used for personnel neutron monitoring purposes. (Rescek, Tr. 1177-1178.)

The League also attacks Mr. Rescek for demonstrating a "lack of concern" about worker exposures because he stated that Applicant has a library that will enable him to determine the possible adverse health effects of neutron exposure. (League Proposed Findings, Paragraph 28.) This is nonsense. Mr. Rescek was merely responding to a question which asked if he had resources available to him that would allow him to determine the principal radionuclide found in blood following a neutron exposure accident. (Rescek, Tr. 1302-1303.)

Furthermore, the League's general attack on Mr. Rescek's qualifications is clearly unwarranted. Mr. Rescek is a Certified Power Reactor Health Physicist as certified by the American Board of Health Physics. (Rescek, Applicant Prepared Testimony at 1, ff. Tr. 1157; Rescek, Tr. 1281-1284.) During the hearing, Mr. Rescek was questioned on a

vast range of topics. His prepared testimony consisted of 27 pages with three lengthy attachments, and his testimony on the stand fills 250 pages of the record. Throughout all of this testimony, Mr. Rescek continually demonstrated his competence and his dedication to Applicant's ALARA program.

The League's criticisms of Mr. Van Laere are equally unsupportable. Twice the League claims that Mr. Van Laere did not understand, or was not required to understand, the technology involved in Applicant's ALARA program.

(League Proposed Findings, Paragraphs 26 and 35.) The only purported support for this claim in fact contradicts it: Mr. Van Laere expressly agreed that he was expected to understand the technology involved in the program. (Van Laere, Tr. 1704-1705.) The League also asserts that Mr. Van Laere could not give examples of Applicant's actions which shows its commitment to its ALARA program. (League Proposed Findings, Paragraph 27.) Again, the record clearly shows the opposite. When asked this question, Mr. Van Laere proceeded to give several such examples. (Van Laere, Tr. 1763-1764.) Throughout his direct and cross examinations, Mr. Van Laere demonstrated his extensive and detailed knowledge of the Applicant's program to maintain occupational exposures ALARA at Byron.

In Paragraphs 23 and 24 of its Proposed Findings, the League asserts that neither Mr. Rescek nor Mr. Van Laere have immediate access to top corporate or station manage-

ment. Those statements are clearly contradicted by the evidentiary record. Mr. Rescek affirmatively stated that he did have immediate access to top corporate management (Rescek, Tr. 1213), and Mr. Van Laere stated that he had the right to go directly to the station superintendent. (Van Laere, Tr. 1722.)

In Paragraph 23, the League claims the Station ALARA coordinator is not a member of any of Applicant's ALARA review committees, but in fact, that person is a member of Byron Station's ALARA Review Committee. (Van Laere, Applicant Prepared Testimony at 4, ff. Tr. 1707.) In addition, the Corporate ALARA Coordinator is a member of the Corporate ALARA Review Committee. (ALARA Manual, Applicant Exhibit 3 at 3.)

Paragraph 27 asserts that Byron Station's Health-Physics Department staff presently consists of only 18 radiation chemistry technicians, but the evidence clearly showed that the staff consists of 23 people. (Van Laere, Tr. 1717, 1759.)

The League also attempts to discredit Applicant's ALARA program by citing to a 1980 NRC appraisal of the health physics program at Applicant's Zion Nuclear Power Station. (League Proposed Findings, Paragraphs 22 and 46.) This appraisal did identify eight areas that needed improvement, but its relevance to this proceeding is questionable. On receiving the appraisal, Applicant immediately took

extensive corrective actions. The NRC inspectors subsequently found those actions to be satisfactory. (Rescek, Tr. 1244-1256.) In addition, Applicant has made significant ALARA changes since that appraisal, including the adoption of the ALARA Manual in 1981. (Rescek, Applicant Prepared Testimony at 6, ff. Tr. 1157.) Indeed, if any conclusion can be drawn from the Zion appraisal, it is that Applicant's quick and extensive response to correct the identified problems provides further evidence of Applicant's commitment to its ALARA program.

Training

In Paragraphs 30 and 31, the League claims that Applicant's Nuclear-General Employee Training ("N-GET") course does not instruct workers on radiation protection or ALARA requirements. That statement is simply incorrect and is contradicted by the record. The N-GET course instructs workers on the biological effects of radiation exposure and on their role in maintaining doses ALARA. (Rescek, Applicant Prepared Testimony at 20-22, ff. Tr. 1157; Rescek, Tr. 1187-1190, 1243, 1277; Van Laere, Tr. 1726.) The N-GET manual has 71 pages devoted to radiation protection and 7 pages on protective clothing. (N-GET Manual, Applicant Exhibit 4, Module 3 and Module 5.)

Dosimetry

In Paragraph 41, the League asserts that at the hearing, Mr. Van Laere revised the station's maximum permissible individual organ and total body burden levels. Again, this statement is incorrect. Instead, Mr. Van Laere revised the levels of individual organ and total body burdens at which an administrative review will occur. (Van Laere, Tr. 1708-1711.) These new administrative "trigger values" do not affect the maximum permissible organ or total body burdens allowed for station workers.

The League implies that Mr. Rescek criticized the accuracy of the vendor which processes Applicant's spiked film badges. (League Proposed Findings, Paragraph 39.) Although Mr. Rescek did say that the vendor provides "fairly good" results, he also went on to state that the vendor provides "an accurate assessment" of Applicant's spiked badge program. (Rescek, Tr. 1227.) Thus, Mr. Rescek was clearly praising the competency of the vendor rather than criticizing it.

The League claims that when deciding whether to delay a hot operation, Applicant may consider the operational importance of the job to outweigh the importance of the public health and safety. (League Proposed Findings, Paragraph 36.) This statement shows a basic misunderstanding of the evidence. Delaying a hot operation is one option available to the Applicant for reducing worker exposure. In

deciding whether to delay a hot operation, the potential reduction in worker exposure must be balanced against the importance of performing the job because protection of the public health and safety requires it. (Van Laere, Applicant Prepared Testimony at 22, ff. Tr. 1707). The League has misunderstood the phrase "operational importance of the job", as used by Applicant's witness. The witness used the phrase to mean the importance of performing the job from the viewpoint of the public health and safety. (Van Laere, Tr. 1739). Thus, operational importance and the public health and safety are not separate considerations that the Applicant would balance against each other.

Pregnant Women

The League's Proposed Findings claim that the Applicant does not have a policy to avoid employment disincentives for women who declare themselves to be pregnant. (League Proposed Findings, Paragraph 43.) The League unaccountably attempts to support this claim by citing the portion of Mr. Rescek's cross-examination where he states that "there would be no disadvantages to her because she is pregnant . . . or declares early." (Rescek, Tr. 1193-1194.)

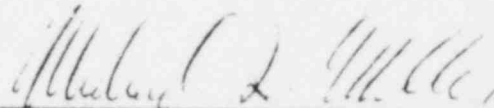
In Paragraph 42, the League asserts that procedures in the N-GET manual allow a declared pregnant women to accept assignments in areas where the fetus could receive more than 500 millirems over her gestation period. That

section of the N-GET Manual, however, merely outlines the suggestions made in Regulatory Guide 8.13. (N-GET Manual, Applicant Exhibit 4 at page 34 of 71 pages, Module 3.) Applicant has adopted more stringent standards than those suggested in Reg. Guide 8.13 and does not allow a declared pregnant women to receive an exposure of more than 500 millirem over her gestation period. (Rescek, Tr. 1203.)

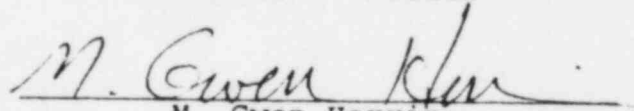
CONCLUSION

For the foregoing reasons, Applicant respectfully requests that the Board reject the League's Proposed Findings of Fact and Conclusions of Law regarding ALARA Contentions 42, 111, and 112.

Respectfully submitted,



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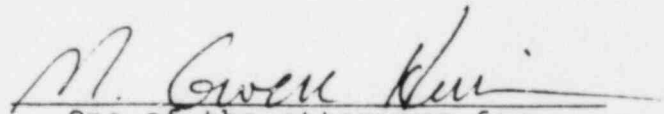
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CERTIFICATE OF SERVICE

The undersigned, one of the attorneys for Commonwealth Edison Company, certifies that she filed the original and two copies of the attached "APPLICANT'S REPLY TO THE ROCKFORD LEAGUE OF WOMEN VOTER'S PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW REGARDING ALARA" with the Secretary of the Nuclear Regulatory Commission and served a copy of the same on each of the persons at the addresses shown on the attached service list. Service on the Secretary and all parties, unless otherwise indicated, was made by deposit in the U.S. Mail, first-class postage prepaid, this 30th day of June, 1983.


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