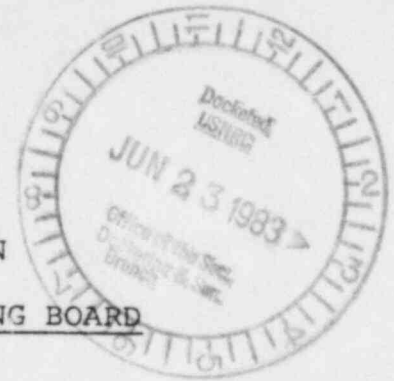


UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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))	

COMMONWEALTH EDISON COMPANY'S
PROPOSED FINDINGS OF FACT
AND CONCLUSIONS OF LAW REGARDING
EMERGENCY PLANNING

June 20, 1983

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** See Applicant's June 7, 1983 submittal.

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FINDINGS OF FACT

III. CONTENTIONS

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Intervenors' Revised Emergency Planning Contention raises several issues regarding the offsite emergency planning for Byron Station. The Revised Contention consisted of 13 issues set forth in 13 separate paragraphs, but, pursuant to a stipulation of the parties, only four of the issues and portions

* These proposed findings are presented in the form of a partial initial decision which addresses one of the eight litigated issues, specifically, the emergency planning contention. The proposed findings on the other seven issues have been or will be submitted in accordance with the schedule stated in the "Procedural History" section of "Commonwealth Edison Company's Proposed Findings of Fact and Conclusions of Law Regarding Seismology, Waterhammer, and ALARA" filed on May 31, 1982, into which this document is incorporated.

of a fifth issue were litigated. (The remaining issues presented by the Revised Emergency Planning Contention are being resolved through an informal procedure established by the stipulation between the parties.) (Finding 230.)

The following discussion evaluates the evidence presented on each of the litigated issues in light of specific applicable regulatory requirements and guidance. In reaching its conclusions on all of the issues, the Board has also been mindful of the general requirement that before an operating license may issue, the Commission must find reasonable assurance that adequate protection measures can and will be taken in the event of a radiological emergency. 10 C.F.R. §50.47(a)(1). We have found such reasonable assurance in regard to the litigated issues though some of our findings are necessarily predictive in nature, recognizing that the emergency planning process is currently underway and not yet fully implemented. This practice of making predictive findings on emergency planning has been authorized by the Commission. 47 Fed. Reg. 30232 (July 13, 1982). In those instances where the findings are predictive in nature, the reasonable assurance we find is based on the evidence presented.

Paragraph 2 - The Evacuation Time Study

This paragraph of the Revised Emergency Planning Contention is comprised of several sub-paragraphs, only three of which were litigated - sub-paragraphs 2(c), 2(e), and 2(k). The litigated subparagraphs contend that the "Evacuation Time

Estimates Within the Plume Exposure Pathway Emergency Planning Zone for the Byron Nuclear Generating Station" dated December, 1982, (hereafter the "Byron Evacuation Time Study", Applicant's Exhibit No. 18), which was prepared by Applicant's consultants, does not conform to the guidelines presented in Appendix 4 to NUREG-0654/FEMA-REP-1, Rev. 1 (hereafter "NUREG-0654", Board Exhibit No. 3). Thus, it is contended, the Byron Evacuation Time Study will not provide accurate or useful guidelines for choosing protective actions during an emergency. Specifically, the sub-paragraphs contend respectively that the Byron Evacuation Time Study does not address the relative significance of alternative assumptions, does not consider the impact of peak populations (including behavioral aspects), and does not use site weather characteristics as presented in the FSAR. (Finding 231.)

Applicable Law

10 C.F.R. §50.57(b) requires that:

The onsite and offsite emergency response plans for nuclear power reactors must meet the following standards:

* * * * *

(10) A range of protective actions have been developed for the plume exposure EPZ [emergency planning zone] for emergency workers and the public. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed...

This standard is addressed by a specific criterion in NUREG-0654 which states, inter alia;

10. The organization's plans to implement protective measures for the plume exposure pathway shall include:

* * * * *

1. Time estimates for evacuation of various sectors based on a dynamic analysis (time-motion study under various conditions) for the plume exposure pathway emergency planning zone (See Appendix 4);...

(NUREG-0654, at pp. 61-63.) The referenced Appendix 4 gives "an example of what shall be included in an evacuation times assessment study and how it might be presented." (NUREG-0654, at p. 4-1.)

Intervenors' theory appears to be that the Byron Evacuation Time Study does not meet the specific standards recommended by Appendix 4 to NUREG-0654, and therefore the Study cannot serve its purpose. At the outset, we note three problems with this theory. First, NUREG-0654 does not set forth regulatory requirements itself. It only provides guidance on how the regulations may be met. Second, the Intervenors have ascribed to the Evacuation Time Study a greater purpose than the study was designed to serve. Consequently, they argue that it should account for most every conceivable scenario. Although evacuation time estimates "will be used by those emergency personnel charged with recommending and deciding on protective actions during an emergency", (NUREG-0654, at p. 4-1), such estimates are only one of the tools that decision makers will use. The Illinois Emergency Services and Disaster

Agency, ("IESDA"), is the agency with ultimate responsibility for implementing a protective action. The IESDA witness stated that the Byron Evacuation Time Study would serve as a baseline to which the responsible officials would apply their own judgment based on an informed evaluation of current conditions to arrive at a recommended protective action. (Tr. 5301.) An evacuation time study is not meant to be an evacuation plan in itself. (Finding 239.)

A third difficulty with the Intervenor's approach is that their challenge to the adequacy of the Evacuation Time Study is premised on their own interpretation of isolated clauses selected from Appendix 4 to NUREG-0654. The meaning of those clauses is not clear in isolation and several of them have been taken out of context. The NRC Staff witness, who was one of the principals involved in the development of NUREG-0654, explained that the document is a committee document that reflecting diverse ideas. The witness candidly conceded that NUREG-0654 is therefore not concise, and he warned against trying to "hang your hat on any sentence" lest you get "led astray very quickly." (Tr. 5418.)

Sub-paragraph 2(c) - Relative Significance
of Alternative Assumptions in the
Evacuation Time Study

Appendix 4 to NUREG-0654 provides that evacuation time estimates should address "the relative significance of alternative assumptions, especially with regard to time dependent traffic loading of the segments of the evacuation roadway

network." (NUREG-0654, at p. 4-7.) The NRC Staff witness indicated that this clause reflects a concern at the time of drafting NUREG-0654 that alternative assumptions for the loading of the roadway network might significantly affect evacuation times. (Finding 240.) The purpose of considering alternative assumptions, therefore, is to develop a range of evacuation time estimates to indicate the sensitivity of the roadway network to various conditions. (Finding 241.) This knowledge can assist responsible decision makers in selecting the appropriate protective action. (Finding 242.)

Because the Byron emergency planning zone (EPZ), unlike many other emergency planning zones, has a relatively low population density, the capacity of the roadway network is not a constraining factor on evacuation time. (Findings 244, 245.) Consequently, the analysis presented in the Byron Evacuation Time Study is not greatly sensitive to different assumptions about traffic loading. (Finding 245.) The Study does consider the critical alternative assumptions which Appendix 4 to NUREG-0654 specifies should be included in an evacuation time study, e.g. day versus night, workday versus weekend, peak transient versus off-peak transient and evacuation on adjacent sectors versus nonevacuation. (NUREG-0654 at p. 4-7.) Moreover, the significance of alternative assumptions relative to time dependent traffic loading is further discussed and illustrated in the Study. (Finding 246.) Thus, the Byron Evacuation Time Study addresses the alternative assumptions which may significantly affect the time estimates. (Finding 247.)

Intervenors repeatedly suggest that alternative assumptions other than those already presented in the Byron Evacuation Time Study should also be included. (See, e.g., the following discussions concerning behavioral aspects and weather characteristics.) If the Byron Evacuation Time Study were to be the sole guidance in an emergency, we might find merit in this position. But, as we have already noted, an evacuation time study is only one of several tools that assist the responsible emergency decision makers. The purpose of considering alternative assumptions is to demonstrate the sensitivity of the estimates to various conditions, and not to present estimates that consider every conceivable event. (Finding 241.)

Sub-paragraph 2(e) - Consideration of
Peak Populations and Behavioral Aspects
in the Evacuation Time Study

Appendix 4 to NUREG-0654 provides that "[c]onsideration shall be given to the impact of peak populations including behavioral aspects" (NUREG-0654 at 4-10). Intervenors' witness cites this clause and asserts, without elaboration, that the Byron Evacuation Time Study is deficient in this regard. (Affidavit of Paul Holmbeck, Joint Intervenors' Exhibit No. 13, at 50.) The Board can find no basis for this assertion. The Byron Evacuation Time Study considers peak populations in two ways. First, the Study considers summer and winter populations. Summer populations include transient populations resulting from recreational facilities in the area. Second, special events which attract significant numbers of additional

transients are analyzed in separate simulations. The results of these simulations are reflected in the Study. (Finding 249.)

The Byron Evacuation Time Study sets forth its assumptions regarding the behavior of people during an evacuation. Basically, the Study assumes that people will follow instructions and will not panic. This assumption is supported by reputable studies (Finding 250) and by experience with large scale evacuations in other emergencies, including the first-hand experience of one of Applicant's witnesses. (Finding 251; Tr. 4890-4892.) As indicated by the NRC Staff witness, NUREG-0654 intends that any special behavioral characteristics of a population be factored in the analysis. (Finding 252.) For example, the population of religious communities, such as the Amish, do not use motor vehicles. (Tr. 5406.) No evidence was presented, however, to suggest that people in the Byron EPZ contrary to the assumptions of the Evacuation Time Study. (Finding 253.)

Sub-paragraph 2(k) - Weather Characteristics
in the Evacuation Time Study

Appendix 4 to NUREG-0654 provides that two weather conditions--normal and adverse--are to be considered in the evacuation time study. (NUREG-0654, at p. 4-6.) The adverse weather condition considered in the Byron Evacuation Time Study is rain, which is assumed to reduce the roadway capacity to 70 percent of normal road capacity and increase the time required to travel home from 30 to 45 minutes. (Finding 257.)

Intervenors assume that NUREG-0654 requires that the most severe weather condition be considered (which, in the case of Byron, would be a severe winter storm). (Affidavit of Paul Holmbeck, Joint Intervenors' Exhibit No. 13, at 48.) However, that position was rebutted by the testimony of the witnesses for the Applicant and the NRC Staff. In their opinion, the purpose of considering adverse weather is to define the sensitivity of the analysis to the selected events. (Findings 255, 256.) The adverse weather scenario for an evacuation time study is not intended as a worst case scenario, which would essentially render evacuation impossible, but rather to demonstrate weather conditions under which an evacuation is feasible but would take longer due to environmental conditions. (Finding 256.) Under conditions in which an evacuation is not feasible, such as a heavy snowfall, the amount of time necessary to make the roads passable would be considered by the responsible decision makers in addition to the amount of time needed for evacuation as presented in the analysis. (Finding 259.) Of those witnesses who were asked, all agreed that inclusion of road clearing time in the Evacuation Time Study would not be useful since such information is best obtained at the time of the emergency from knowledgeable local officials who have experience with road clearing. (Finding 259.)

We conclude that the Byron Evacuation adequately considers the site weather characteristics of the Byron EPZ to demonstrate the sensitivity of its time estimates to various weather conditions and thus the study can assist the responsi-

ble decision makers in their choice of protective action.
(Finding 261.)

Conclusions

The Board concludes that the Byron Evacuation Time Study adequately considers the relative significance of alternative assumptions and the impact on evacuation time estimates of peak populations, including behavioral aspects, and site weather characteristics. The analysis of these considerations conforms to the guidelines of Appendix 4 to NUREG-0654. The Board therefore concludes that the estimates arrived at in the Byron Evacuation Time Study are useful and accurate. (Findings 248, 254, 261.)

Paragraph 3 - Emergency Medical Services

Paragraph 3 of the Revised Emergency Planning Contention challenges the adequacy of the medical facilities and services in the Byron area to cope with emergency needs arising from a radiological accident at Byron. (Finding 232.)

Applicable Law

10 C.F.R. §50.47(b)(12) provides:

- (b) The onsite and offsite emergency response plans for nuclear power reactors must meet the following standards:

* * * *

- (12) Arrangements are made for medical services for contaminated injured individuals.

The Commission has recently interpreted this standard, specifying the scope of the arrangements for medical service that should be provided for two classes of victims: (1) those who become injured and are also contaminated, and (2) those who may be exposed to dangerous levels of radiation. Further, the Commission stated:

With respect to individuals who become injured and are also contaminated, the arrangements that are currently required for onsite personnel and emergency workers provide emergency capabilities which should be adequate for treatment of members of the general public. Therefore, no additional medical facilities or capabilities are required for the general public. However, facilities with which prior arrangements are made and those local or regional facilities which have the capability to treat contaminated injured individuals should be identified. Additionally, emergency service organizations within the plume exposure pathway emergency planning zone (EPZ) should be provided with information concerning the capability of medical facilities to handle individuals who are contaminated and injured. With respect to individuals who may be exposed to dangerous levels of radiation, treatment requires a lesser degree of advance planning and can be arranged for on an as-needed basis during an emergency. Emergency plans should, however, identify those local or regional medical facilities which have the capabilities to provide appropriate medical treatment for radiation exposure. No contractual agreements are necessary and no additional hospitals or other facilities need be constructed.

Southern California Edison Company (San Onofre Nuclear Generating Station, Units 2 & 3) CLI - 83-10, at 2-3, 17 NRC _____, April 4, 1983.

Contaminated Injured Persons

The San Onofre decision makes it clear that a utility's arrangements for treatment of its own contaminated injured personnel is the cornerstone for similar emergency medical treatment of members of the general public. As it has done with all of its other nuclear power plants, Applicant has made arrangements with a local hospital, the Rockford Memorial Hospital, and an ambulance service, the Byron Fire Protection District, for its Byron personnel who may suffer traumatic injury accompanied by contamination. (Finding 262.) The Rockford Memorial Hospital is in the process of constructing a new emergency wing which, with Applicant's input, is being adapted for treatment of contaminated injured persons. (Finding 263.) Also in keeping with the practice it has established at its other plants, Applicant has contracted with Radiation Management Corporation (RMC), a nationally recognized expert consultant in health physics, for a complete service program which includes training of the hospital and ambulance staff who would treat contaminated injured persons, provision of inventories of equipment and supplies for use in handling radiation victims, and availability of an emergency medical team and medical facilities in an emergency. (Finding 264, 265.) Applicant also has a Radiation Protection and Chemistry Department at the Byron Plant, as well as at each of its other nuclear power plants, that could assist in the treatment of contaminated injured persons. (Finding 266.) The Illinois Department

of Nuclear Safety also maintains a staff that is prepared to provide support to hospitals for the treatment of contaminated injured persons. (Finding 267.)

The hospitals which have made arrangements with the Applicant for treatment of contaminated injured persons and which receive the services of RMC have been (or will be) identified in the Byron emergency plan. The Illinois Department of Nuclear Safety ("IDNS") maintains a list of those hospitals as well as other hospitals located near Applicant's nuclear power plants that IDNS has determined to be capable of treating contaminated injured persons. The list of hospitals is included as part of a standard operating procedure of IDNS for treatment of contaminated injured persons. (Findings 268, 269.) As part of the State's training program planned for them, the local emergency response support organizations will be made aware of those hospitals which are capable of treating contaminated injured persons. The local organizations could also readily obtain such information at the time of an emergency by contacting IDNS. (Finding 270.)

The Byron emergency plan identifies six ambulance services in or near the EPZ (including the Byron Fire Protection District) which will provide support in a radiological emergency, including transportation of contaminated injured persons to one of the hospitals identified as capable of handling such injuries. These six identified ambulance services will receive training in radiation protection and dosimetry equipment. The Illinois Emergency Services and Disaster Agency

(IESDA) is pursuing mutual aid agreements with other services outside the EPZ that have extensive transportation resources and could provide backup support. (Finding 273.)

Radiation Exposure Victims

With respect to individuals who may be exposed to dangerous levels of radiation, the San Onofre decision specifies that emergency plans should identify those local or regional medical facilities which can provide appropriate medical treatment for radiation exposure. Applicant's Supervisor of Emergency Planning and the IDNS witness both identified the Northwestern Memorial Hospital as capable of treating persons who have been exposed to dangerous levels of radiation. The Northwestern Memorial Hospital is included in the list of hospitals maintained by IDNS as part of its standard operating procedure for treating contamination victims. Further, Applicant has an agreement with the Northwestern Memorial Hospital for treatment of its personnel who may become exposed to dangerous levels of radiation. (Finding 272.)

Conclusion

Applicant has identified the arrangements it has made for treatment of its personnel who may become contaminated and injured. Further, the Byron emergency plan identifies the hospitals and ambulance services which could provide treatment and transportation for contaminated injured persons during a radiological emergency. In regard to persons exposed to danger-

ous levels of radiation, the Northwestern Memorial Hospital has been identified as a hospital in the region of the Byron plant which could provide care for their injuries. The Board concludes that this planning satisfies the requirements for emergency medical services under 10 C.F.R. §50.47(b)(12) as interpreted by the Commission in the San Onofre decision.

Paragraph 8 - Protective Actions

Both Applicant and IDNS have developed procedures which will guide them in their choice of a recommended protective action during a radiological emergency. In paragraph 8 of the Revised Emergency Planning Contention, Intervenor challenge the capability of the emergency plans to offer sufficient guidance for the choice of protective actions during an emergency, since Applicant and the State planners allegedly have yet to determine adequately the local protection (measured in dose reduction) afforded by various measures including evacuation, sheltering, and administration of potassium iodide. (Finding 233.)

Applicable Law

The guidance offered by NUREG-0654 provides:

The organization's plans to implement protective measures for the plume exposure pathway shall include:

* * * * *

(m) The bases for the choice of recommended protective actions from the plume exposure pathway during emergency conditions. This shall

include expected local protection afforded in residential units or other shelter for direct and inhalation exposure, as well as evacuation time estimates;

(NUREG-0654, at pp. 61-64, footnote omitted.)

Evacuation versus Sheltering

The goal of a protective action is to maximally reduce or eliminate the dose commitment of the public in a radiological emergency. (Finding 276.) Thus, timely evacuation is always the preferred protective action since it reduces dose commitment by 100 percent. (Finding 277.) However, when an evacuation cannot be timely executed, sheltering is considered a viable alternative if it will be more effective than evacuation in reducing dose commitment. (Finding 277.) To determine which action will be more effective, Applicant and IDNS have developed procedures which utilize a generic factor for the dose commitment reduction afforded by sheltering. (Findings 278, 279.)

Intervenors' witness suggests that the sheltering capability of individual structures in the EPZ must be evaluated before the feasibility of sheltering as a protective action can be evaluated. (Affidavit of Paul Holmbeck, Joint Intervenors' Exhibit No. 13, at 11-12.) We cannot agree. As the witness for the NRC Staff pointed out, NUREG-0654 does not require that all homes be surveyed for their individual sheltering capability. Rather, there need be only an approximate determination for the vicinity of the plant of the average

shielding factor. (Finding 282.) Further, the Applicant's witness set forth several persuasive reasons why information concerning the sheltering capability of individual structures would be of little or no value. He pointed out that such information would be unmanageable in an actual emergency and that evacuation is of groups, not of individuals, and thus would not be selective based on the individual's sheltering capability. Also, Applicant's witness stated that the process of determining who should be evacuated based on the sheltering capability of specific structures would require a burdensome and inefficient use of emergency personnel. (Finding 280.)

There was also a suggestion that buildings which would serve as congregate shelters should be surveyed for their sheltering capability. (Tr. 5144-5145.) Applicant's witness is also persuasive in denying that such selective surveying would be of any greater usefulness. He reasoned that it would be self-defeating to call for people to mobilize and congregate at a shelter within the EPZ when they could just as readily evacuate to locations outside the EPZ and be assured of total dose commitment reduction. (Finding 281.)

Administration of Potassium Iodide

The distribution of potassium iodide is recognized as a protective action that could be taken in a radiological emergency to reduce the consequences of exposure to radiation. However, the relative protection afforded by administration of potassium is limited. As evidenced by the policy statement

presented by the IDNS witness, the State has considered the relative protection afforded by potassium iodide and determined that it is effective only for reducing dose commitment to the thyroid gland from ingestion or inhalation of radioactive iodine. Because of this consideration, plus the problems associated with its distribution, the State has determined that administration of potassium iodide is not appropriate as a protective action for the general public. However, IDNS does distribute potassium iodide to certain identifiable groups, such as emergency workers and residents of special facilities, who may remain in the EPZ following an evacuation. (Finding 283.)

Conclusion

The Board concludes that, in compliance with 10 C.F.R. §50.47(b)(10) and the guidance of NUREG-0654, the Applicant and State emergency planners have adequately determined the relative protection in terms of dose commitment reduction afforded by the various protective measures, to assure sufficient guidance in the choice of the appropriate protective action during a radiological emergency. (Finding 284.)

Paragraph 10 - Reliance on Volunteers

Intervenors challenge the viability of the Byron emergency plan to the extent that it relies on volunteers. Specifically, the plan is criticized for its purported failure to indicate the necessary number of volunteers, to assess their

availability in view of personal or employment conflicts, and to consider the untested performance of volunteers in the face of a radiological accident. (Finding 234.)

Applicable Law

Although several standards found in 10 C.F.R. §50.47(b) address staffing requirements for on-site organization and the principal response organizations, no standard addresses staffing for the local response support organizations. The standards provide only that such support organizations "capable of augmenting the planned response" be identified. See 10 C.F.R. §50.47(b)(3). We will consider the issue of the capability of volunteers to augment the planned response in the context of the general requirement that there be reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. 10 C.F.R. §50.47(a)(1).

Discussion

The viability of relying on volunteers in emergency plans was addressed by several witnesses, most notably Mr. E. Erie Jones, the Director of the Illinois Emergency Services and Disaster Agency. Mr. Jones has been involved with emergencies in Illinois on a daily basis over the past 10 years and it is his observation that if volunteers are adequately trained, there is every reason to expect that they will respond to an emergency as well as paid employees. Mr. Jones reasons that by the very fact of their volunteering, volunteer emergency work-

ers demonstrate their motivation to perform a public service. Mr. Jones believes that reliance on volunteers in emergency planning is well placed and his belief has been borne out in his observations of volunteers' performance in life threatening situations such as fires and hazardous materials spills.

(Findings 285-287, 290.) Mr. Jones conceded that some volunteers may fail to show up to assist in an emergency but he believes that their numbers would not be so great as to impair the implementation of the emergency plan. In his experience, there has never been an emergency where there were not enough volunteers available. (Finding 288.)

There was no evidence presented to support the Inter-venors' notion that volunteers who perform well in non-radiological emergencies may not perform well in a radiological emergency, ostensibly because radiation, unlike most other perils, cannot be detected by the senses. To the contrary, Mr. Jones testified that volunteers have responded well in emergency situations that pose risk questions similar to those that would be posed by a radiological emergency. (Finding 291.)

Mr. Jones and the NRC Staff sponsored witness from the Federal Emergency Management Agency (FEMA) pointed out that training and awareness of the dangers involved are the key to effective performance by volunteers in an emergency. (Findings 286, 293.) Mr. Jones testified that the training of volunteer emergency workers will include education in the risks associated with a radiological accident. (Finding 289.)

Conclusion

The Board concludes that there is reasonable assurance that reliance on volunteers in the Byron emergency plan is well founded and that a sufficient number of volunteers can be expected to perform and effectively implement the plan. (Finding 294.)

Paragraph 13 - Planning Coordination and Communication

Intervenors allege that the Byron emergency plan has been developed without sufficient communication between planning officials and emergency response organizations to assure that the organizations will be able to fulfill their assigned responsibilities. (Finding 235.)

Applicable Law

10 C.F.R. §50.47(b)(1) provides in relevant part:

The onsite and, except as provided in paragraph (d) of this section, offsite emergency response plans for nuclear power reactors must meet the following standards:

(1) Primary responsibilities for emergency response by the nuclear facility licensee and by State and local organizations within the Emergency Planning Zones have been assigned, the emergency responsibilities of the various supporting organizations have been specifically established... .

Intervenors interpret this standard as implying that emergency responsibilities can only be effectively assigned after there has been sufficient communication between the

emergency planners and the response organizations. We believe this reasoning is sound. The question thus becomes whether there is reasonable assurance that sufficient communication has occurred or will occur to enable the emergency response organizations to fulfill their assigned responsibilities.

Discussion

Intervenors presented one witness and affidavits of several other persons, who, as school officials and nursing home administrators, expressed concern over the lack of contact that they have had to date with emergency planning officials, especially in view of the fact that the Byron emergency plan addresses or relies upon their respective facilities. (Tr. 5618 et. seq., and Intervenors' Exhibits Nos. 14-19.)

At the outset, we take heed of the testimony of the IDNS witness and the FEMA witness that the emergency planning process is occurring on a schedule separate from the operating license proceeding. (Findings 303, 304.) Thus, we note that the Intervenor's concern may be prematurely raised. Nonetheless, we are bound by the licensing schedule and we will review the evidence to determine whether there is reasonable assurance that the Intervenors' concerns will be met prior to the operation of the Byron plant.

The Applicant sponsored witnesses from IESDA and IDNS testified to the emergency planning program which is taking place for the Byron EPZ. Their evidence demonstrated that a comprehensive program is in place and in progress. The program

includes identification of all the organizations which have responsibilities under the Byron plan. The State emergency planners have had initial contact with these organizations and will work with them more extensively in the near future in the further development of the plan. (Findings 295-298.)

The IESDA witness pointed out that the local response organizations identified in the plan are given an opportunity to review the plan during its development. Further, he indicated that the planning process is flexible and can accommodate the specific concerns of the local response organizations. (Findings 299, 300.)

Liability Question

Several of Intervenor's witnesses have raised questions concerning the liability of emergency response organizations during an emergency. These questions have been brought to the attention of IESDA and that organization will address them accordingly. (Finding 301.) The IESDA witness testified that liability coverage is provided to the emergency response organizations for their participation in emergency exercises to the extent that they are not covered already. (Finding 304.))

Conclusion

The witnesses from the State planning organizations have demonstrated that a thorough program for the development of the Byron emergency plan is being implemented. We are impressed with their competence in this area and we have no

reason to doubt that they will effectively carry out their stated intentions. Therefore, we conclude that, in compliance with 10 C.F.R. §50.47(b)(1), there is reasonable assurance that sufficient communication will occur between the emergency planners and the local response organizations to enable those organizations to effectively fulfill their respective responsibilities. (Finding 306.)

FINDINGS OF FACT

230. In December, 1982, by order of the Licensing Board and by agreement of the parties, three contentions concerning emergency planning were admitted for purposes of litigation. The admitted emergency planning contentions were DAARE/SAFE Contention 3 and Rockford League of Women Voter's Contentions 19 and 108. On February 21, 1983, Intervenor's filed their "Amendment and Consolidation of DAARE/SAFE Contention 3 and Rockford League of Women Voter's Contentions 19 and 108" (hereafter, the "Revised Emergency Planning Contention") which raised various emergency planning issues in 13 separate paragraphs. By stipulation of the parties, it was agreed that Intervenor's would withdraw DAARE/SAFE Contention 3 and League Contentions 19 and 108, that certain paragraphs of the Revised Emergency Planning Contention would be litigated, and that the remaining paragraphs of the Revised Emergency Planning Contention would be resolved informally outside of the hearing process. (The Stipulation of the parties, however, does provide a mechanism for formal resolution of the emergency planning

issues in the event the informal process fails.) These findings are limited to those issues which the parties agreed to litigate and for which evidence was presented and the record closed, specifically Revised Emergency Planning Contention paragraphs 2(c), 2(e), 2(k), 3, 8, 10 and 13.

231. The parties agreed to litigate three subparagraphs of paragraph 2 of the Revised Emergency Planning Contention which concerns a document entitled "Evacuation Time Estimates Within the Plume Exposure Pathway Emergency Planning Zone for the Byron Nuclear Generating Station", (hereafter, the "Evacuation Time Study", Applicant's Exhibit No. 18). The Evacuation Time Study was prepared by an independent consultant under contract to Applicant. The litigated portion of Paragraph 2 states:

In violation of 10 CFR Section 50.47(b)(10). Commonwealth Edison's "Evacuation Time Estimates for the Plume Exposure Pathway Emergency Planning Zone of the Byron Nuclear Generating Station" does not conform to NUREG 0654, Appendix 4 and will not provide accurate or useful guidelines for the choice of protective actions during an emergency because the study:

* * * * *

- (c) does not address the relative significance of alternative assumptions;

* * * * *

- (e) does not consider the impact of peak populations, including behavioral aspects;

* * * * *

- (k) does not use site weather characteristics as presented in the FSAR;...

232. The parties also agreed to litigate paragraph 3 of the Revised Emergency Planning Contention which states:

In violation of 10 CFR Section 50.47(b) (12), the emergency planning for the ingestion exposure EPZ of the Byron Station does not sufficiently address the fact that there are inadequate medical facilities to provide the required bed space for an evacuation; that there is an insufficient number of medical and para-medical personnel to render medical assistance during an evacuation; that there are insufficient procedures for the screening, treatment, and isolation of persons sustaining radiological injuries; and that there is an insufficient number of materials, supplies, equipment, and vehicles to provide for the transportation of injured persons during a radiological disaster.

233. The parties also agreed to litigate paragraph 8 of the Revised Emergency Planning Contention which states:

In violation of 10 CFR 50.47(b)(10), emergency plans are incapable of offering sufficient guidance for the choice of protective actions during an emergency since applicant and state planners have yet to adequately determine the local protection afforded (in dose reduction) by various protective measures including evacuation, sheltering, and radioprotective prophylaxis.

234. The parties also agreed to litigate paragraph 10 of the Revised Emergency Planning Contention which states:

The emergency planning relies too heavily upon volunteer personnel to effect an evacuation. The emergency plans fail to indicate the number of volunteer personnel who are necessary or available to perform the responsibilities assigned to them. Furthermore, the plans do not:

- (a) assess the availability of volunteers during hours in which many are employed outside the EPZ;

- (b) take into consideration inevitable personal conflicts in the responses of volunteers who have families in the EPZ; and
- (c) give consideration to the possibility that some volunteers who might perform well in non-radiological disasters might refuse to participate in a radiological disaster at the Byron Station.

235. Lastly, the parties agreed to litigate paragraph 13 of the Revised Emergency Planning Contention which states:

In violation of 10 CFR 50.47(b)(1), the emergency plans, specific tasks, and responsibilities have been formulated without sufficient communication between planning officials and primary and support response organizations so as to enable said organizations to fulfill their assigned roles.

236. Applicant presented the testimony of five witnesses. Ms. Jean L. McCluskey and Dr. Thomas J. Horst, employees of Stone & Webster Engineering Corporation, presented joint testimony and appeared as a panel. Ms. McCluskey is the Project Manager for the Byron Station Evacuation Time Study. Dr. Horst is responsible for the technical aspects of the Study. Ms. McCluskey and Dr. Horst testified as to the purpose, assumptions, and limitations of the Evacuation Time Study, which was the subject of Paragraphs 2(c), 2(e), and 2(k) of the Revised Emergency Planning Contention. Dr. John Golden is Applicant's Supervisor of Emergency Planning and his testimony addressed medical arrangements and protective actions, the subjects of paragraphs 3 and 8. Dr. Golden also answered questions on examination pertaining to the Evacuation Time Study. Mr. David Ed of the Illinois Department of Nuclear Safety (IDNS) addressed

medical arrangements, protective actions and planning coordination, the subjects of paragraphs 3, 8, and 13. Mr. David Smith, Chief of Field Services for the Illinois Emergency Services and Disaster Agency (IESDA), addressed medical arrangements, volunteers and planning coordination, the subjects of paragraphs 3, 10, and 13. Mr. Smith also answered questions on questions to the Evacuation Time Study. Mr. Ed and Mr. Smith appeared as a panel. Mr. E. Erie Jones, Director of IESDA, addressed the use of volunteers in emergency planning, the subject of paragraph 10. Mr. Jones also addressed emergency planning in Illinois and for Byron Station in general.

237. The NRC Staff presented three witnesses. Dr. Thomas Urbanik is associated with the Texas Transportation Institute of Texas A & M University and is responsible to the NRC for reviewing evacuation time estimates for nuclear facilities. Dr. Urbanik testified as to his review of the Evacuation Time Study, the subject of paragraphs 2(c), 2(e), and 2(k) of the Revised Emergency Planning Contention. Mr. Monte B. Phillips, an Emergency Preparedness Analyst with the NRC, addressed the Evacuation Time Study, medical arrangements, and protective actions, the subjects of paragraphs 2(c), 2(e), 2(k), 3, and 8. Mr. Gordon Wenger, a Community Planner with the Federal Emergency Management Agency (FEMA), addressed medical arrangements, protective actions, volunteers, and planning coordination, the subjects of paragraphs 3, 8, 10 and 13.

238. Intervenors presented the written testimony of 9 witnesses in affidavit form. The testimony was prepared prior

to the Stipulation which removed many of the issues from litigation. Consequently, their prepared testimony has been edited by agreement of the parties to exclude those portions made irrelevant by the Stipulation. Intervenors' lead witness was Mr. Paul Holmbeck. Mr. Holmbeck appeared on a panel with two of the other witnesses, Mr. James Murphy and Mr. Joel Cowen. The panel addressed a survey of ambulance services conducted by Intervenors pertaining to medical arrangements, the subject of paragraph 3 of the Revised Emergency Planning Contention. The prepared testimonies, as edited, of Mr. Holmbeck and Mr. Murphy subsequently became part of the evidentiary record as Joint Intervenors Exhibits 13 and 20 respectively, pursuant to a stipulation of the parties, approved by the Board. (Tr. 6854-60.) Mr. Cowen's testimony was deemed by the Board to be unacceptable evidence and, therefore, was excluded from admission into evidence. (Tr. 6105-06.) Mr. Thomas Bowes, Administrator of the White Pines Manor Nursing Home, appeared as a witness and addressed protective actions, volunteers, and planning coordination, the subjects of paragraphs 8, 10, and 13. The written testimony of the remaining 5 witnesses was admitted into evidence as edited as Joint Intervenors' Exhibits Nos. 14-19 pursuant to a stipulation of the parties and as approved by the Board. (Tr. 6854-60.) Their testimony addresses the same issues addressed in Mr. Bowes testimony. The five witnesses include: Mr. Gary Montel, Administrator of Pine Crest Manor Home; Mr. J. Michael Maloney, Superintendent of Schools for the Leaf River Community Unity; Mr. Charles Lamb,

Director of the Ogle County Educational Cooperative; Mr. David Turner, Superintendent of Schools for the Mt. Morris Community Unit; and Mr. David Miller, Superintendent for the Meridian Community Unit. Pursuant to the stipulation of the parties, none of the Intervenor's witnesses was deemed to have expertise in determining sheltering capability of specific structures. (Tr. 6854-60.)

Paragraph 2 - The Byron Evacuation Time Study

239. An evacuation time study is not an evacuation plan. Rather it is an assessment of the time required for evacuation of the area around a nuclear power plant which considers the roadway network, the population distribution and a range of seasonal population and weather conditions. An evacuation time study should be useful for identifying potential problem areas in an evacuation. As such, an evacuation time study should provide useful information to the appropriate decision makers as to the feasibility of evacuation as a protective action. (McCluskey & Horst, Applicant Prepared Testimony, at 4-5, 10, ff. Tr. 4834; McCluskey, Tr. 4839-4849; Golden, Tr. 5089-5113; Smith, Tr. 5296-5310; Urbanik, NRC Staff Prepared Testimony, at 6, ff. Tr. 5391; Urbanik, Tr. 5404-5; Phillips, NRC Staff Prepared Testimony, at 2-3, ff. Tr. 5509).

Sub-paragraph 2(c) - Relative Significance of Alternative Assumptions in the Evacuation Time Study

240. At the time of the drafting of NUREG-0654, there was concern that alternative loading assumptions might signifi-

cantly affect evacuation times. (Urbanik, NRC Staff Prepared Testimony, at 5, ff. Tr. 5391.)

241. The purpose of considering alternative assumptions is to present a range of times to indicate the sensitivity of the roadway network to various conditions, not to present the evacuation times under every conceivable event. (Urbanik, Tr. 5398-5399.)

242. Knowledge of the sensitivity of the evacuation time estimates to various conditions can assist the responsible decision makers in their choice of protective action. (Urbanik, Tr. 5399.)

243. The assumptions made in the Evacuation Time Study are all indicated and are reasonable based on existing knowledge. (Urbanik, NRC Staff Prepared Testimony, at 5, ff. Tr. 5391.)

244. The Byron area being a low population density and, thus, preparation and travel times and not roadway capacity are the constraining factors on evacuation time. (Urbanik, NRC Staff Prepared Testimony, at 5, ff. Tr. 5391; Urbanik, Tr. 5399.)

245. The analysis in the Byron Evacuation Study is not sensitive to such assumptions as to which an analysis for a more densely populated site might be sensitive. (Urbanik, Tr. 5399.)

246. The relative significance of the assumptions identified in NUREG-0654 at 4-7 is quantitatively summarized in the Evacuation Time Study. The significance of alternative

assumptions relative to time dependant traffic loading is discussed and illustrated in the study. (McCluskey & Horst, Applicant Prepared Testimony, at 5-6, ff. Tr. 4834; Applicant's Exhibit No. 18, at Tables 1-1 and 1-2, Section 4.1-2, and Figure 4-1.)

247. The Evacuation Time Study details those alternative assumptions which might significantly affect the time estimates. (Horst, Tr. 4896.)

248. The Board finds that the Byron Evacuation Time Study addresses the relative significance of alternative assumptions in compliance with 10 C.F.R. §50.47(b)(10) and the guidance of Appendix 4 of NUREG-0654.

Sub-paragraph 2(e) - Consideration of Peak Populations and Behavioral Aspects in the Evacuation Time Study

249. The Byron Evacuation Time Study considers peak populations in two ways. First, the study considers summer and winter populations. Summer populations include transient populations resulting from recreational facilities in the area. Second, special events which attract significant numbers of additional transients are analyzed in separate simulations. Based on these simulations, the analysis determined that the presence of additional transient populations associated with the special events do not increase the time required to evacuate. (McCluskey & Horst, Applicant Prepared Testimony, at 6, ff. 4834; Applicant Exhibit 18, at 6-2.)

250. The Byron Evacuation Time Study assumes that persons will evacuate in an orderly manner and not panic. This

assumption in the Study concerning behavior is based on available research in this area by individuals qualified to determine behavioral characteristics, including the findings of a 1974 EPA report that concluded that the idea that people will panic in the face of danger is unsubstantiated. (McCluskey & Horst, at 7, ff. Tr. 4834; McCluskey, Tr. 4862-67; Applicant Exhibit 18, at Section 4.1.3.)

251. The assumption that people will not panic in a large scale evacuation is substantiated by experience with past emergency evacuations. (Urbanik, NRC Staff Prepared Testimony, at 5-6, ff. Tr. 5391.)

252. Consideration of behavioral aspects as used in Appendix 4 to NUREG-0654 means that if there is some basis for believing that people might act in a particular way that such behavior should be factored into the analysis. (Urbanik, Tr. 5406.)

253. No evidence was presented to provide any basis for believing that people will act in a way contrary to the behavior assumed by the Evacuation Time Study.

254. The Board finds that the Evacuation Time Study considers the impact of peak populations, including behavioral aspects, in compliance with 10 C.F.R. §50.47(b)(10) and the guidance of Appendix 4 to NUREG-0654.

Sub-paragraph 2(k) - Weather Characteristics in the Evacuation Time Study

255. The relative significance of adverse weather versus normal weather is included in the Time Evacuation Study

so the decision maker can have an idea of how the time estimates are affected by adverse weather. (Horst, Tr. 4961, 4966, 4978.)

256. The adverse weather scenario for an evacuation time study is not intended as a worst case scenario but rather to demonstrate weather conditions that occur with frequency. The weather conditions used should be severe enough to define the sensitivity of the analysis to the selected events. It is intended to reflect conditions under which an evacuation is feasible but would take longer due to environmental conditions. The adverse weather scenario presented in the Evacuation Time Study is consistent with NUREG-0654 and demonstrates the sensitivity of the time estimates to weather conditions. (Urbanik, NRC Prepared Testimony, at 4-5, ff. 5391; Urbanik, Tr. 5393-6.)

257. The adverse weather which was used in the Evacuation Time Study was the most common adverse weather i.e. rain which was assumed to reduce road capacity to 70 percent of normal road capacity and increase the time required to travel home from 30 to 45 minutes. (McCluskey & Horst, Applicant Prepared Testimony, at 8-9, ff. Tr. 4834.)

258. The Evacuation Time Study uses the most typical adverse weather condition as found in the FSAR. (Horst, Tr. 4957-58.)

259. As conditions depart from those considered in the Evacuation Time Study, the decision makers will be required to use their own judgment. The time required to clear the roadway after a heavy snowfall, a condition which would make

the roads impassable, is not included in the Evacuation Time Study nor would it be helpful or necessary to include such information. The local officials responsible for road clearing are in the best position to determine the time required to make the roadways passable. Road clearing time would be considered by the responsible decision makers using their independent judgment in addition to the time estimates presented in the Byron Evacuation Time Study. (Urbanik, NRC Staff Prepared Testimony, at 5, ff. Tr. 5391; Urbanik, Tr. 5402, 5419-20; McCluskey & Horst, Applicant Prepared Testimony, at 8-9, ff. Tr. 4834; Horst, Tr. 4957, 4963, 4970-71, 4976-78, 4983-4984, 5132; McCluskey, Tr. 4992-4993, 5132; Golden, Tr. 5090, 5131-5132.)

260. The 30 percent reduction in roadway capacity for adverse weather is conservative and reflects a wide variety of conditions. (Urbanik, Tr. 5414-5415; Horst, Tr. 4965-6.)

261. The Board finds that the Evacuation Time Study adequately considers site weather characteristics, (including those presented in the FSAR) in compliance with 10 C.F. R. §50.47(b)(10) and the guidance of Appendix to NUREG-0654.

Paragraph 3 - Emergency Medical Services

262. Applicant's arrangements for treatment of its Byron Station personnel who may suffer a traumatic injury accompanied by contamination include agreements with the Rockford Memorial Hospital for medical services with the Byron Fire Protection District for ambulance transportation. (Golden, Applicant Prepared Testimony, at 3-4, ff. Tr. 5035.)

263. The Rockford Memorial Hospital is constructing a new emergency room which will be adapted to facilitate treatment of contaminated injured persons. (Golden, Applicant Prepared Testimony, at 4-5, ff. 5035.)

264. Personnel from the Rockford Memorial Hospital and the Byron Fire Protection District who may be involved in treatment of contaminated injured personnel will receive annual training in treatment of such injuries from Radiation Management Corporation (RMC), a nationally recognized expert consultant in health physics. (Golden, Applicant Prepared Testimony, at 5-6, ff. 5035; Ed, Applicant Prepared Testimony, at 9, ff. Tr. 5174.)

265. As part of the RMC service program, RMC will provide inventories of plant and hospital equipment and supplies for use in handling radiation victims. RMC also provides emergency expert consultation and access to its own Radiation Emergency Medical Team and access to a medical center equipped for definitive evaluation and treatment of radiation injuries. (Golden, Applicant Prepared Testimony, at 5, 7, and "Golden Exhibit 6" thereto, ff. Tr. 5035.)

266. The Radiation Protection and Chemistry Department from the Byron plant and Applicant's other nuclear power plants stand ready to provide any needed radiation protection and contamination control assistance needed by hospital personnel in treatment of contaminated injured persons. (Golden, Applicant Prepared Testimony, at 6, ff. Tr. 5035.)

267. The Illinois Department of Nuclear Safety (IDNS) is also prepared to provide any support needed by hospitals in the treatment of contaminated injured persons. Their staff includes at least 6 health physicists. The IDNS Staff would be on hand in the event of a radiological accident at Byron. (Ed, Applicant Prepared Testimony, at 4-5, 9, ff. Tr. 5174.)

268. IDNS maintains a Standard Operating Procedure for Radiological Decontamination of Personnel that would apply for treatment of members of the public who are contaminated and injured. (Ed, Applicant Prepared Testimony, at 8 and Attachment 4 thereto, ff. Tr. 5174.)

269. As part of the above Standard Operating Procedure, IDNS maintains a list of hospitals that IDNS has identified as capable of handling contaminated injured persons. The list includes hospitals in the proximity of Illinois' nuclear power plants which IDNS has determined are capable of providing care for contaminated injured persons based on the hospitals facilities and their experience in dealing with radiation and nuclear materials. IDNS is investigating those hospitals in the Byron area to determine which are capable of handling contaminated injured persons. The list of hospitals also includes those hospitals that are under agreement with Applicant to provide medical service for its personnel at its nuclear power plants. These are hospitals which receive the RMC training and services. The next revision of the list will include the Rockford Memorial Hospital. (Ed, Applicant Prepared Testimony, at 8-9, and Attachment 4, Table 2 thereto, ff. Tr. 5174.)

270. The local emergency support organizations will be apprised of the hospitals that are capable of handling contaminated injured patients. (Ed, Applicant Prepared Testimony, at 10, ff. Tr. 5174; Smith, Applicant Prepared Testimony, at 4-5, ff. Tr. 5170.)

271. IDNS has developed decontamination procedures to be utilized at relocation/decontamination centers. Approximately 20 relocation/decontamination centers will be identified in the Byron area. (Ed, Applicant Prepared Testimony, at 7 and Attachments 2-5 thereto, ff. 5174.)

272. The Northwestern Memorial Hospital has been identified as a facility that is capable of treating individuals who may be exposed to dangerous levels of radiation. (Ed, Applicant Prepared Testimony, at 10-11, ff. Tr. 5174; Golden, Applicant Proposed Testimony at 4 and "Golden Exhibit 5" thereto, ff. Tr. 5035.)

273. The draft Byron site-specific volume of the Illinois Plan for Radiological Accidents (IPRA Vol. 6, Applicant's Exhibit No. 19) identifies six ambulance services in or near the emergency planning zone (EPZ) around the Byron plant that will provide support in a radiological emergency including transportation of contaminated injured persons to one of the hospitals identified as capable of handling such persons. The six ambulance services have a total of nine ambulances and three other vehicles and all have at least two way radio communication with their dispatcher. All of the identified ambulance services will receive training in radiation protection

and dosimetry equipment. IESDA is pursuing mutual aid agreements with other ambulance services outside the EPZ that have extensive transportation resources and could provide backup support. (Smith, Applicant Prepared Testimony, at 3-5, ff. 5170.)

274. Intervenors offered into evidence a survey of ambulance services in the region of the Byron plant. (Joint Intervenors' Exhibit No. 14.) However, in view of the Commission decision in San Onofre that the medical arrangements for the on-site workers should be adequate for treatment of members of the general public, the Board finds those aspects of the survey concerning ambulance services beyond the EPZ to be irrelevant. Thus, those aspects of the survey concerned with the ambulance services outside the EPZ have been excluded from admission into evidence. Further, some portions of the survey were excluded on relevance grounds, primarily because they concern matters which have become the subject of a stipulated commitment, e.g. training of emergency workers. Of those portion of the survey admitted into evidence, we can accord little weight. The weakness we find is that the survey failed to garner any response from the Byron Fire Protection District, the ambulance service with which Applicant has made its arrangements for transportation of its on-site personnel who may suffer contamination and injuries. (Tr. 6101-6121.)

275. The Board finds that there is reasonable assurance of adequate arrangement for medical services for contaminated injured individuals as required by 10 C.F.R. §50.47(b)(12)

as that section has been interpreted by the Commission in the recent San Onofre decision.

Paragraph 8 - Protective Actions

276. The goal of emergency planning for a radiological incident is to totally eliminate or maximally reduce the dose commitment accumulated by the general population in a radiological emergency. (Ed, Applicant Prepared Testimony, at 11, ff. Tr. 5174.)

277. The State of Illinois has developed a position regarding the relative merits of the protective actions of sheltering, evacuation, and administration of potassium iodide. Evacuation is favored as the most effective protective action since it reduces radiation exposure to zero if timely achieved. Sheltering is utilized only when it is estimated to be more effective in dose reduction than evacuation, i.e. only when timely evacuation is impractical or impossible. (Ed, Applicant Prepared Testimony, at 11 and Attachment 1 thereto, ff. Tr. 5174.)

278. For circumstances in which timely evacuation is impractical or impossible, DNS has developed a standard operating procedure which would guide DNS in choosing between evacuation and sheltering as their recommended protective action. This procedure has been approved by FEMA and NRC. The formulae used in the procedure dose commitment reduction factor derived from the EPA report entitled "Protective Action Evaluation Part II, Evacuation and Sheltering as Protective Actions Against

Nuclear Accidents Involving Gaseous Releases", (EPA 520/1-78-001B) (which is one of the sources referenced by NUREG-0654, at p. 64.) The procedure compares the dose reduction factors of sheltering with that for a delayed evacuation (i.e. an evacuation that cannot be timely done so as to reduce dose commitment by 100 percent) and recommends a protective action based on the one which affords the greater dose commitment reduction. (Ed, Applicant Prepared Testimony, at 11-13, ff. Tr. 5174; Ed, Tr. 5349-5352.)

279. Applicant has developed a procedure for preparing a protective action recommendation which was detailed by Applicant's Supervisor of Emergency Planning. In guiding the choice between evacuation and sheltering for a protective action, the procedure does not rely on a knowledge of the sheltering capability of every structure in the EPZ nor is it necessary to have such knowledge. The procedure uses a generic shelter protection factor. (Golden, Applicant Prepared Testimony, at 10-11, ff. Tr. 5035; Golden, Tr. 5112-5121.)

280. Obtaining information on the sheltering capability of structures in the EPZ would be difficult and generally useless for several reasons. Such a volume of information would be unmanageable in an actual emergency. Evacuation is of groups, not individuals, i.e. evacuation is not selective based on the individual's sheltering capability. A determination of whom to evacuate based on specific structures would be inefficient use of emergency personnel. (Golden, Tr. 5141-5143.)

281. It is impractical to identify structures for sheltering large numbers of people since it would be self defeating to order people who are capable of being evacuated to move to a building still within the EPZ. (Golden, Tr. 5145.)

282. The Criterion in NUREG-0654 regarding sheltering does not require that all homes have basements or be constructed of brick nor does it require that all homes be surveyed to determine their individual sheltering capability. Rather, there need be only an approximate determination for the vicinity of the plant of the average shielding factor. (Phillips, NRC Prepared Testimony, at 9-10, ff. 5509; Phillips, Tr. 5572.)

283. Distribution of potassium iodide to the general public as a protective action is not considered appropriate by IDNS sinse it is effective for reducing dose commitment only to the thyroid gland due to ingestion or inhalation of radioactive iodine. However, potassium iodide will be distributed to certain identifiable groups who may remain in the EPZ following an evacuation. (Ed, Applicant Prepared Testimony, at 13 and Attachment 1 thereto, ff. Tr. 5174.)

284. The Board finds that the Applicant and the state planners have adequately determined the local protection afforded (in dose reduction) by the various protective actions, including sheltering, evacuation and administration of radioprotective iodide, to provide sufficient guidance for the choice of protective action in an emergency.

Paragraph 10 - Reliance on Volunteers

285. Past experience indicates that volunteer workers perform as well in emergency situations as paid workers.

(Smith, Applicant Prepared Testimony, at 5-6, ff. Tr. 5170; Smith, Tr. 5312.)

286. Based on ten years of experience with emergency volunteers in Illinois, it is the opinion of the Directors of IESDA that, if they are adequately trained, there is every reason to expect that volunteers will respond to an emergency as well as paid employees. (Jones, Applicant Prepared Testimony, at 5-6, ff. Tr. 5444; Jones, Tr. 5453-5454.)

287. The Director of IESDA believes that volunteers can be counted on to respond to an emergency since they are generally motivated solely by a desire to perform a public service. He has personally witnessed the response of volunteers in life threatening situations and has seen volunteers participate in nuclear training exercises. Based on these observations, the Director of IESDA is confident that reliance on volunteers in the Byron emergency plan is well placed. (Jones, Applicant Prepared Testimony, at 6, ff. Tr. 5444.)

288. The Director of IESDA conceded that some volunteers may not show up at an emergency because of other commitments, but he believes that their numbers would not be so great as to impair the implementation of the emergency plan. There are plenty of volunteers at all times. (Jones, Tr. 5458-5459.)

289. As part of their training, volunteer workers will be apprised of the risks associated with a radiological emergency and radiation exposure. (Jones, Tr. 5461-5462.)

290. Volunteers are accepted based on their motivation and their residency in the community. The fact that they are volunteering is a good indication of their motivation. (Jones, Tr. 5468.)

291. Volunteers have responded well to new situations, such as accidents involving hazardous materials, which pose risk questions similar to those that would be posed by a radiological emergency. (Jones, Tr. 5472-5475.)

292. The experience of the Federal Emergency Management Agency (FEMA) indicates that in crisis situations of all scales volunteers show up and do the job. (Wenger, NRC Staff Prepared Testimony, at 6, ff. Tr. 5511.)

293. Planning and training, such as are occurring in the Byron area, assures that volunteers will have a comprehensive knowledge of their roles and that they will thus be able to perform in a radiological emergency as well as they would in a non-radiological emergency. (Wenger, NRC Staff Prepared Testimony, at 6, ff. Tr. 5511.)

294. The Board finds that there is reasonable assurance that reliance on volunteers in the plan for Byron is well founded and that a sufficient number of volunteers can be expected to perform and effectively implement the emergency plan.

Paragraph 13 - Planning Coordination and Communication

295. IESDA has developed an Emergency Response Training Plan Matrix (Applicant's Exhibit No. 20) which is essentially a guide to all of the organizations with which IESDA already has had initial contacts and will work with them more extensively in the near future to further develop the Byron plan. These organizations have emergency responsibilities under the Byron plan (IPRA Vol. 6) in the event of a radiological emergency. The Training Plan Matrix identifies the specific aspects of the Byron plan for which each group is responsible and their training requirements. (Smith, Applicant Prepared Testimony, at 6, ff. 5170; Applicant's Exhibit 20.)

296. IESDA is working with the organizations and developing the Byron Emergency Plan in accordance with a schedule depicted by the bar graph chart presented in evidence. (Applicant's Exhibit 22; Smith, Tr. 5175-5176, 5192-5194.)

297. IESDA will work directly with each organization with emergency responsibilities to develop standard operating procedures. (Smith, Applicant Prepared Testimony, at 6-7 and "Smith Exhibit D" thereto, ff. Tr. 5170; Smith, Tr. 5195-5196.)

298. IDNS interfaces with agencies at all levels and the Applicant in development of the technical emergency plans for Byron. A planning team comprised of representatives of IESDA, IDNS, and the Applicant is working in the Byron area to develop the emergency plan in coordination with the local response organizations and lay the groundwork for their train-

ing. (Ed, Applicant Prepared Testimony, at 13-14, ff. Tr. 5174.)

299. The local response organizations are given an opportunity to review the plan during its development to ensure that it reflects their organizational structure, and their resources. (Smith, Tr. 5204.)

300. The planning process is flexible. If local officials indicate some need, IESDA can adapt the planning process to those needs. (Smith, Tr. 5206-5210.)

301. Several of Intervenor's witnesses have raised questions concerning the liability of emergency response organizations during an emergency. These questions have been brought to the attention of IESDA and that organization will address them accordingly. (Joint Intervenor's Exhibits Nos. 16, 18 and 19; Smith, Tr. 5214, 5220, 5354-5355.)

302. The Byron plan, IPRA Vol. 6, will probably have four revisions. The plan is currently in its first revision. (Smith, Tr. 5209-5210, 5221.)

303. FEMA will review the second revision of the Byron emergency plan, IPRA Vol. 6, upon its completion. The FEMA witness recognized that at the time of the hearing sufficient time has not yet been allowed for the Illinois State and local officials to complete the planning activities in accordance with their normal progression. (Wenger, NRC Staff Prepared Testimony, at 7-8, ff. Tr. 5511, 5534-5536, 5604-5608.)

304. The timing of hearing for the operating license for Byron is ahead of the schedule for the development of the

Byron emergency plan. Consequently, at the time of the hearing, aspects of the emergency plan are still being prepared. However, IESDA is adhering to its schedule and anticipates that the plan will be completed and account for the problems raised by Intervenor's witnesses. (Ed, Tr. 5353-5354.)

305. The issue of liability has been considered in the context of emergency preparedness exercises. In that instance, coverage is provided for activities which are not covered by the liability coverage of the participating organization. (Smith, Tr. 5365.)

306. The Board finds that the emergency plans, specific tasks and responsibilities are being formulated with sufficient communication between planning officials and the emergency response organizations so as to allow those organizations to fulfill their assigned roles. Further, the Board finds reasonable assurance that the final plans will reflect adequate input from the local response organizations to ensure that they can fulfill their assigned roles.

The foregoing document, "Commonwealth Edison Company's Proposed Findings of Fact and Conclusions of Law Regarding Emergency Planning" is respectfully submitted by the undersigned attorneys for Commonwealth Edison Company.

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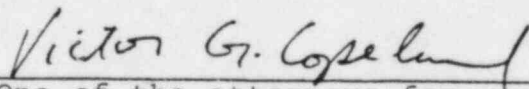
UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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 "COMMONWEALTH EDISON COMPANY'S PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW REGARDING EMERGENCY PLANNING" 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 20th day of June, 1983.



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