RELATED CORRESPONDENCE

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF ILLINOIS POWER COMPANY, SOYLAND POWER COOPERATIVE, INC. and WESTERN ILLINOIS POWER COOPERATIVE, INC. (Operating Licenses for Clinton Power Station, Units 1 and 2)	)	Docket Nos. 50-461-OL 50-462-OL

RESPONSE OF ILLINOIS POWER TO PRAIRIE ALLIANCE'S FIRST ROUND OF DISCOVERY

Illinois Power Company ("Illinois Power" or "the Company" or "IP") has objected to a number of Prairie Alliance interrogatories. In some cases, all or part of the information requested in the interrogatory is provided despite the objection. The information is provided in the hope that it will resolve the issue and eliminate any perceived need for further discovery efforts. In each case, however, Illinois Power expressly reserves the right to reassert its objection in response to any additional discovery requests.

Illinois Power's Answer to General Interrogatory No. 2 applies to each Interrogatory answered herein:

> [General Interrogatory No. 2: Provide documents, including research, studies, calculations, memoranda, correspondence, reports, diagrams, computer codes, and all other records that were relied upon by IP in answering the question, and also those

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which served as the basis for the answer. Identify the particular parts of such documents that were used in formulating the answer.]

ANSWER: Illinois Power will make available for inspection at its offices all such documents in its possession, custody, or control.

Illinois Power's Answer to General Interrogatory No. 5 applies to each Interrogatory answered herein:

[General Interrogatory No. 5: State the names, addresses, titles, and qualifications of the persons IP intends to call as witnesses or experts for the answer and the subject matter which they intend to testify about.]

ANSWER: Illinois Power has not yet determined which persons it will call as witnesses should a hearing prove necessary.

Contention 1

[General Interrogatory No. 3: Identify by name, title, and qualifications the IP employee that has the expert knowledge required to support the answer to the question.]

ANSWER: The Illinois Power employee with knowledge necessary to support the answers to interrogatories submitted under this contention is John G. Cook, his title is Supervisor-Technical, and his qualifications are as follows:

Formal Education: B.S. Engineering Physics, University of Illinois, 1969

	M.S. Nuclear Engineering, University of Illinois, 1970
	M.B.A. Golden Gate University, 1976
	Registered Professional Engineer, Illinois, 1976
Training:	BWR Fundamentals CPS Systems Training
Work Experience:	Illinois Power Company
1977 - Present	Supervisor - Technical, Clinton Power Station Supervises the activities of the Nuclear Results Engineers assigned to Clinton Power Station.
1975 - 1977	Training Coordinator Supervised Training Instructors in the preparation of training courses, interfaced with outside contractors who were presenting training, taught courses related to the Clinton Power Station
Other Experience:	U.S. Navy
1970 - 1975	Instructor, U.S. Navy Nuclear Power School Taught courses in Heat Transfer, Reactor Physics, and Core Design to naval personnel.

[General Interrogatory No. 4: Explain whether IP is presently engaged in or intends to engage in any further research or work which may affect the answer. Identify such research or work.]

ANSWER: Illinois Power is currently revising the Emergency Plan for the Clinton Power Station ("CPS"). The revised Plan identifies further work that will be necessary to implement the Plan.

[1. Provide a complete copy of the Emergency Plan proposed for the C.P.S.]

ANSWER: The presently proposed CPS Emergency Plan is contained in the CPS Final Safety Analysis Report ("FSAR") as Appendix B to Chapter 13.

Illinois Power is currently revising the Emergency Plan. Draft Revision 1 ("Draft Emergency Plan") is available for inspection at the offices of Illinois Power. When the Draft Emergency Plan has been finalized, it will be provided as a revision to the FSAR that has already been furnished to Prairie Alliance.

[2. Provide all internal memoranda, studies and reports, including calculations, which analyze or determine the plume E.P.Z. and the ingestion E.P.Z. for the C.P.S.]

ANSWER: The documents requested are available for inspection at the offices of Illinois Power.

[3. Provide copies of all studies, reports, documents and internal memoranda which discuss, supplement or update the emergency plan delineated in the F.S.A.R.]

ANSWER: The documents requested are available for inspection at the offices of Illinois Power.

[4. (regarding contention 1(a)(1) State what actions if any are proposed to effect termination of activities at outdoor recreational facilities within the plume E.P.Z. and the ingestion E.P.Z.

(a) Identify by name each outdoor recreational facility for which such actions are proposed;

(b) Specify the number and types of recreational uses expected to be involved in such actions;

(c) Specify the estimated maximum and minimum numbers of the public expected to be involved in such actions;

(d) Specify the numbers and qualifications of C.P.S. personnel expected to be involved in such actions;

(e) Specify the numbers and qualifications of the emergency planning personnel expected to be involved in the planning of such actions;

(f) Describe with specificity, e.g. by brand name, type, manufacturer and the like, the types of equipment proposed to be utilized for such actions;

(g) Specify the estimated time required for the accomplishment of such actions;

(h) Specify whether there will be any pre-operational rehersals for such actions;

(i) Identify all local and state agencies which will be involved in such actions;

(j) Provide an estimate of the cost of such actions and identify the party or parties responsible for the payment of these costs.]

ANSWER: Any required termination of activities at outdoor recreational facilities will be accomplished through the cooperative efforts of Illinois Power and state and local government agencies under the integrated Emergency Plans of each entity. Illinois Power's primary responsibility, as set forth in 10 C.F.R. Part 50, Appendix E, is to notify

the appropriate governmental agencies under the notification procedures described in the Draft Emergency Plan.

Following notification by Illinois Power, offsite emergency response actions are carried out under the provisions of state and local emergency plans. Termination of activities at recreational facilities will be accomplished under the appropriate governmental agency's public notification system.

Under "The Illinois Emergency Services and Disaster Agency Act of 1975," the State has the power necessary to secure the safety and protection of the civilian population in the event of an emergency, including the power to recommend evacuation and prescribe the method of evacuation. The Act established the Emergency Services and Disaster Agency ("ESDA") for the purpose of preparing disaster plans and carrying out the program for emergency services. Illinois Power will assist state and local agencies in the preparation and implementation of their emergency plans.

The State of Illinois has prepared a plan to deal with emergencies at Illinois nuclear facilities. The plan will include provisions for CPS, it will be approved by the Federal Emergency Management Agency ("FEMA"), and emergency exercises will be conducted under the plan prior to the loading of fuel at CPS.

For the reasons explained above, the specific information requested in subparagraphs (a)-(j) of Interrogatory No. 4 concerns matters outside the scope of Illinois Power's emergency planning responsibility and authority.

[5. (regarding contention 1(a)(2).) State what actions if any are proposed to effect proper emergency responses at the special facilities described in contention #1(a)(2).

(a) Identify by name each special facility for which such actions are planned;

(b) Specify the number of people expected to be involved at each such action at each such facility;

(c) Specify the estimated maximum and minimum numbers of the public expected to be involved in such actions;

(d) Specify the numbers and qualifications of C.P.S. personnel expected to be involved in such actions;

(e) Specify the numbers and qualifications of the emergency planning personnel expected to be involved in the planning of such actions;

(f) Describe with specificity, e.g. by brand name, type, manufacturer and the like, the types of equipment proposed to be utilized for such actions;

(g) Specify the estimated time required for the accomplishment of such actions;

(h) Specify whether there will be any pre-operational rehersals for such actions;

(i) Identify all local and state agencies which will be involved in such actions;

(j) Provide an estimate of the cost of such actions and identify the party

or parties responsible for the payment of these costs.]

ANSWER: For the reasons explained in the Answer to Interrogatory No. 4, the specific information requested in subparagraphs (a)-(j) of Interrogatory No. 5 concerns matters outside the scope of Illinois Power's emergency planning responsibility and authority.

[6. (regarding 1(a)(3)) State what provision if any is made in the C.P.S. Emergency Plan for such severe weather conditions as may be expected in the site vicinity and plume and ingestion EPZs throughout the year.

(a) Describe the types of severe weather conditions which IPS has anticipated to occur in the CPS site vicinity and the plume and ingestion EPZs.

(b) Describe in detail what problems or impediments each such weather condition poses for emergency planning at the CPS.

(c) Describe what actions are planned, if any, to deal with each severe weather condition listed in response to (a) above.

(d) Specify the estimated maximum and minimum numbers of the public expected to be involved in such actions;

(e) Specify the numbers and qualifications of C.P.S. personnel expected to be involved in such actions;

(f) Specify the numbers and qualifications of the emergency planning personnel expected to be involved in the planning of such actions;

(g) Describe with specificity, e.g. by brand name, type, manufacturer and

the like, the types of equipment proposed to be utilized for such actions;

(h) Specify the estimated time required for the accomplishment of such actions;

(i) Specify whether there will be any pre-operational rehersals for such actions;

(j) Identify all local and state agencies which will be involved in such actions;

(k) Provide an estimate of the cost of such actions and identify the party or parties responsible for the payment of these costs.]

ANSWER: Since on-site emergency responses described in the Draft Emergency Plan can be carried out inside CPS buildings, they are not affected by severe weather conditions. With respect to off-site responses, for the reasons explained in the Answer to Interrogatory No. 4, the specific information requested in subparagraphs (a)-(j) of Interrogatory No. 6 concerns matters outside the scope of Illinois Power's emergency planning responsibility and authority.

[7. Identify all state and local agencies with whom IPC has executed or intends to execute agreements in the area of emergency planning and response actions.

(a) Identify the person in each named agency with whom IPC has had principal contact;

(b) Produce all agreements IPC has executed to date with each named agency;

(c) State when IPC intends to execute agreements with all agencies listed in response to Interrogatory #4 above.

(d) Identify the person(s) responsible for executing such agreements with local and state agencies.

(e) Provide copies of all communication with such agencies in regard to such existing or proposed agreements.]

ANSWER: All required letters of agreement with state and local agencies have been executed. The general agreements with ESDA and the Illinois Department of Conservation will be worked out in greater detail prior to the exercises referred to in the Answer to Interrogatory No. 13(8). Other information requested by Interrogatory No. 7 appears in the letter agreements, which are presented as Appendix B to the Draft Emergency Plan.

[8. (regarding contention 1(c)) Describe, or outline, and provide a documentary evidence of the emergency procedures training to be provided for local services personnel.

(a) Identify by agency or organization all local personnel for whom such training is planned;

(b) State when that training will be provided and how often it will be provided;

(c) Identify who if any one is responsible for training local services personnel in emergency planning and response action.

(d) State the number of people anticipated to be involved in such training;

(e) State the cost of providing such training and identify the party or parties who will be responsible for such cost.]

ANSWER: The structure of the Illinois Power training program to support emergency activites is presented in the Draft Emergency Plan and in CPS Procedure No. OAP 1102.32N, EMERGENCY PLAN TRAINING. Illinois Power will make available training that will apply to unique situations that could arise during emergencies related to nuclear power plants. This training will utilize lesson plans that have been or will be developed by the Company. The lesson plans and procedures developed to date are available for inspection at the offices of Illinois Power.

The training supplied by Illinois Power will focus on radiological theory, practices, and safety. For personnel who may require access into the facility, training will include familiarization with plant layout and hazards. A consultant will provide training for physicians and medical personnel in the treatment of radiation injuries.

General training for offsite emergency response agencies will be carried out primarily by ESDA, with the corporation and assistance of Illinois Power as needed.

Training in the integrated operation of the many independent organizations that will participate in emergency activities will be provided by exercising the plan through periodic drills in accordance with 10 C.F.R. Part 50, Appendix E, IV.F. Illinois Power will cooperate closely with offsite agencies in the training function.

The number of personnel involved in each training activity will depend on the type of training provided, the existing experience and qualifications of personnel, and on the offsite agency itself.

[9. (regarding contention 1(c)) Describe, or outline, and provide documentary evidence of the training plans for all accident assessment personnel and the "Emergency Response Organization".

(a) Identify by agency or organization all local personnel for whom such training is planned;

(b) State when that training will be provided and how often it will be provided;

(c) Identify who if anyone is responsible for training local services personnel in emergency planning and response action.

(d) State the number of people anticipated to be involved in such training;

(e) State the cost of providing such training and identify the party or parties who will be responsible for such cost.]

ANSWER: Accident assessment personnel, the emergency response organization, and security personnel will be employees or contractors of Illinois Power. All non-clerical personnel at the CPS will have some role in assessment, response, or security; this group will consist of about 300 individuals. Virtually all training that will be received by CPS personnel could be applied in response to an emergency. In general, it is not possible to separate training activities into those that are specific to emergency planning and those which are not. For this reason it is impossible to isolate

those training costs that apply to only emergency training. The total direct costs and expenses for all training up to the time of fuel load is estimated to be between four and five million dollars.

All employees receive general employee training which addresses radiological safety and the response of individuals during an emergency. Security personnel are trained as outlined in 10 C.F.R. Part 73, Appendix B. Additionally, each group receives specialty training which covers the specific activities of that group. The various training programs and materials are described in numerous manuals, lesson plans, and other documents. These documents are available for inspection at the offices of Illinois Power.

[10. (regarding contention 1(c)) Describe or outline and provide documentary evidence of the provisions if any which have been or are being made for emergency preparedness training of security personnel at the CPS.

(a) Identify all personnel by name or by position for whom such training is planned.

(b) State when that training will be provided and how often it will be provided;

(c) Identify who if anyone is responsible for training local services personnel in emergency planning and response action.

(d) State the number of people anticipated to be involved in such training;

(e) State the cost of providing such training and identify the party or parties who will be responsible for such cost.]

ANSWER: See the Answer to Interrogatory No. 9.

[11. (regarding contention 1(c)) Describe or outline and provide documentary evidence for a radiological orientation training program for local services personnel, including news medial persons.

(a) Identify by agency or organization all local personnel for whom such training is planned;

(b) State when that training will be provided and how often it will be provided;

(c) Identify who if anyone is responsible for training local services personnel in emergency planning and response action.

(d) State the number of people anticipated to be involved in such training;

(e) State the cost of providing such training and identify the party or parties who will be responsible for such cost.]

ANSWER: See the Answer to Interrogatory No. 8.

[12. Describe or outline the emergency preparedness training to be provided for local services personnel.

(a) Identify by agency or organization all local personnel for whom such training is planned;

(b) State when that training will be provided and how often it will be provided;

(c) Identify who, if anyone, is responsible for training local services personnel on emergency planning and response action.

(d) State the number of people anticipated to be involved in such training;

(e) State the cost of providing such training and who will pay for the costs involved;]

ANSWER: See the Answer to Interrogatory No. 8.

[13. (regarding contention 1(d)) Identify and describe the items listed in Contention # 1(d)(1)-(8). If no response is provided, state when, if ever, each item will be provided.

(1) The special qualifications of non-IP employees who will be utilized in emergency training operations or recovery]

ANSWER: The qualifications of consultants are identified in Section 1.4.1 of the CPS FSAR. Additionally, Radiation Management Corporation ("RMC") has 10 years' experience in emergency medical assistance, which includes training local hospital personnel. RMC acts as a consultant to aproximately 1/3 of all nuclear power plant facilities. Their training team consists of a physician experienced in treating radiation injuries and an experienced health physicist.

[13(2) The criteria for determining the need for notification and participation of local, state and federal agencies]

ANSWER: The criteria for determining the need for notification and participation of local, state, and federal agencies are contained in Chapter 6 of the Draft Emergency Plan.

[13(3) An analysis of the time required to evacuate or provide other protective measures for various sectors and distances within the plume exposure and ingestion EPZs for both transient and permanent publics]

ANSWER: Evacuation time estimates have been prepared for the plume exposure EPZ and are in Chapter 12 of the Draft Emergency Plan. 10 C.F.R. Part 50, Appendix E does not require evacuation time estimates for the ingestion EPZ.

[13(4) A sufficient identification of the persons who will be responsible for making off-site projections]

ANSWER: Identification of those responsible for CPS emergency activities including offsite dose projections is given in Chapters 4 and 15 of the Draft Emergency Plan.

[13(5) An adequate description of how off-site dose projections will be made and how the results will be transmitted to appropriate government entities]

ANSWER: Chapter 12 of the Draft Emergency Plan describes how offsite dose projections will be made. Transmission of results to state and local government agencies will be made through the Nuclear Accident Reporting System ("NARS"). Transmission of results to the Nuclear Regulatory Commission ("NRC") will be made through the Emergency Notification System. Both systems are described in chapter 8 of the Draft Emergency Plan.

[13(6) Plans for yearly dissemination to the public within the plume exposure and ingestion EPZs of basic emergency planning information, general information as to the nature and effects of radiation, and a listing of local broadcast stations that will be used for dissemination of information during an emergency]

ANSWER: Plans for the yearly dissemination of basic emergency planning information to the public within the plume EPZ are described in Chapter 9 of the Draft Emergency Plan. Dissemination beyond the plume EPZ is not required.

[13(7) An identification of the appropriate state and local government officials within the EPZ which will require notification under accident conditions]

ANSWER: Emergency information is transmitted directly by Illinois Power to ESDA, which acts as a clearinghouse for dissemination of the information to appropriate state and local government officials. The determination as to which officials require notification in a given set of circumstances is made by ESDA.

[13(8) A demonstration that state and local officials have the capability to make a public notification decision promptly upon being informed of an emergency condition.]

ANSWER: The capability of state and local officials has been demonstrated in the past by their ability to contend with numerous emergencies of a non-radiological nature. For example, according to the ESDA annual report for 1979, from January 1, 1979, through July 31, 1979, ESDA received and handled over 800 calls involving hazards. In addition to this proven capability, an exercise of emergency planning of CPS involving state and local agencies will be conducted prior to fuel load. FEMA representatives will observe

this exercise and verify that the emergency response capability is adequate.

[14. (regarding contention 1(e)) State and describe what actions will be taken to assure isolation of people from the plume and ingestion EPZz in case of an offsite or general emergency or other serious accident: For each such action state the following:

(a) The number of emergency response personnel to be involved;

(b) The criteria for determining when each such action shall be taken;

(c) The expected number of people in the general population to be involved;

(d) The time duration for implementing each action;

(e) Whether pre-operational rehersals will be held for each action;

(f) Whether the public will be involved in each such rehersal.]

ANSWER: For the reasons explained in the Answer to Interrogatory No. 4, the information requested concerns matters outside the scope of Illinois Power's emergency planning responsibility and authority.

[15. (regarding contention 1 (f)) Provide all documentation concerning provisions for following emergency support facilities:

(a) Technical Support Center

(b) Operational Support Center

(c) Emergency Operations Facility

(d) Safety Parameter Display System

(e) Nuclear Data Link.

In each facility's documentation include:

(1) Current status of provision program, including degree of completion achieved to date;

(2) Expected completion date;

(3) Personnel staffing information, including number of personnel, name of positions, qualifications required.

(4) Prospective personnel]

ANSWER: The provisions for the Technical Support Center, Operational Support Center, and Emergency Operations Facility are described in Chapter 19 of the Draft Emergency Plan. Other relevant documents are available for inspection at the offices of Illinois Power.

Neither the Safety Parameter Display System nor the Nuclear Data Link are physical facilities. They are information systems that allow the plant operators and the Nuclear Regulatory Commission ("NRC"), respectively, to monitor the power plant. Illinois Power believes that the design of the CPS control room meets the intent of the Safety Parameter Display System.

The NRC is primarily responsible for implementation of the Nuclear Data Link. Illinois Power intends to cooperate with the NRC in implementing the Nuclear Data Link

at CPS if prototype systems prove useful when they are installed in other facilities.

Contention 4

OBJECTION NO. 1: Illinois Power objects to Interrogatories 1-36 and 50-63 on the grounds that the information requested is beyond the scope of the admitted contention, and is therefore irrelevant.

Prairie Alliance Revised Contention 4 alleged that the FSAR "does not give adequate assurance that all regulatory requirements have been or will be met prior to operation," citing generally as follows: "See, e.g., FSAR Regulatory Guide 1.17, Rev. 1." In admitting this contention, the Board narrowed the general FSAR citation as follows: "See FSAR, p. 1.8-25, Regulatory Guide 1.17, Revision 1." Page 1.8-25 of the FSAR contains Illinois Power's project positions with respect to compliance with Regulatory Guide 1.17. Recognition of issues raised by specific project positions citing specific Regulatory Guide standards does not justify a general inquiry into every aspect of the CPS security plan.

OBJECTION NO. 2: Illinois Power further objects to Interrogatory Nos. 39-41, 50, 51, 59, and 60 on the grounds that the information requested (1) is not relevant, and

(2) is exempted from disclosure under 10 C.F.R. § 2.790(d)(1), and disclosure is not necessary to a proper decision in this proceeding.

[General Interrogatory No. 3: Identify by name, title, and qualifications the IP employee that has the expert knowledge required to support the answer to the question.]

ANSWER: The Illinois Power employee with knowledge necessary to support the answers to interrogatories submitted under this contention is Alan L. Ruwe, his title is Supervisor - Electrical Engineering, and his qualifications are as follows:

Formal Education:	B.S., Electrical Engineering, University of Illinois, 1970
	Graduate Program Certificate, Electrical Engineering University of Illinois, 1973
	M.S., Nuclear Engineering, University of Illinois, 1977
	Registered Professional Engineer, State of Illinois, 1976
Training:	Graduate of Operator Training course, University of Illinois research reactor facilities, 1976.
	Graduate of GE-BWR course in Plant Design and Fundamentals, 1975.
Work Experience:	Illinois Power Company
1977 - Present	Supervisor - Electrical Engineering, Nuclear Station Engineering Department. Supervisory responsibility for the design and engineering of electrical systems for the BWR unit at Clinton Power Station.

1974 - 1977	Senior Electrical Engineer - Nuclear Projects Department. Responsible for design review and coordination with consultant, vendor and NSSS contractor for the two BWR units at Clinton Power Station.
1972 - 1974	Power Plant Electrical Engineer, Engineering Department. Responsible for design and coordination of all electrical systems (including switchyard) modifications to fossil generating facilities and directing and coordinating the design work of consultants for two new fossil units.
1970 - 1972	Electrical Engineer - Substation Design, Engineering Department. Responsible for design of substation and switchyards.

[General Interrogatory No. 4: Explain whether IP is presently engaged in or intends to engage in any further research or work which may affect the answer. Identify such research or work.]

ANSWER: Illinois Power is continuously engaged in monitoring information that may affect the design, construction, or operation of the CPS. Unless new information indicates the need for further investigation, Illinois Power does not plan to conduct further research or work which may affect the answers to interrogatories submitted under this contention.

[37. With reference to the FSAR 1.8-25, why was the plant security system not considered a safety related system?]

ANSWER: The security system does not meet the criteria for safety related systems as set forth in section 3.2.3 of the FSAR. Furthermore, security systems do not meet

the criteria for safety systems described in Regulatory Guide 1.29, "Seismic Design Criteria."

[38. Who made this determination?]

ANSWER: This determination was made by Illinois Power's Nuclear Station Engineering and CPS Operations Departments.

[42. How many suppliers were electronic equipment purchased from?]

[43. Who were these suppliers?]

ANSWER: To date, electronic components for the security system have been purchased from three suppliers: Johnson Controls, Inc., Ion Track Instruments, Inc., and New Security Concept, Inc.

[44. Was competitive bidding sought and obtained prior to the purchase of such equipment?]

ANSWER: Yes.

[45. Explain why IP feels that it is entitled to deviate from the G.S.A. quality assurance program.]

ANSWER: This question apparently stems from the CPS project positions on Regulatory Guide 1.17, Revision 1, as set forth on page 1.8-25 of the FSAR. Position 1 takes exception to a QA program implied in GSA Interim Federal Specifications W-A-00450A, "Components for Interior Security Alarm Systems." Paragraph C.1.b of Regulatory Guide 1.17 states that "All intrusion alarms, emergency exit alarms, alarm systems,

and line supervisory systems should, as a minimum, meet the level of performance and reliability indicated by GSA Interim Federal Specification W-A-00450A (GSA-FSS)." The Regulatory Guide does not reference the QA requirements of the GSA specification. Illinois Power therefore takes the position that the GSA QA program is not applicable to the security system for a nuclear power plant.

10 C.F.R. Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," requires that QA programs be applied to "... structures, systems, and components that prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public." The components for the security alarm system do not meet this criterion.

[46. Define the phrase "the highest quality commercially available components".]

ANSWER: This question apparently stems from the CPS project positions on Regulatory Guide 1.17, Revision 1, which take exception to the QA program of a referenced GSA specification (see response to Question 45). The context of the phrase in question is: "Highest quality commercially available components were ordered using standard specifications." This sentence means that, although Illinois Power has not committed to the GSA QA program, overall quality of system

performance was the principal criterion for selection of equipment with similar specifications.

[47. How was such quality determined?]

ANSWER: The quality of security equipment was and is determined by: (a) reviewing proposed equipment against prepared specifications, (b) evaluating supplier qualifications, (c) considering supplier experience, (d) witnessing factory acceptance testing, (e) preoperation field and acceptance testing, and (f) continuing inspection and maintenance programs.

[48. Who made such determinations?]

ANSWER: The determinations of security equipment quality were made by Illinois Power's Nuclear Station Engineering, CPS Operations, Power Production, and Data Processing Departments, and by Sargent & Lundy. Personnel in all of these organizations contributed to the determination of system quality through the mechanisms listed in response to Interrogatory No. 47.

[49. Who was responsible for the purchase of the electronics components of the plant security system, what were their qualifications and what experience did they have in this field?]

ANSWER: All the organizations listed in response to Interrogatory No. 48, plus the Illinois Power Purchasing Department, were involved in the procurement process.

Contention 6

[General Interrogatory No. 3: Identify by name, title, and qualification the IP employee that has the expert knowledge required to support the answer to the question.]

ANSWER: The Illinois Power employee with knowledge necessary to support the answers to interrogatories relative to this contention is John P. O'Brien, his title is Supervisor-Instrumentation and Controls Engineering, and his qualifications are as follows:

Formal Education:	B.S.E.E. Iowa State University
	M.S.N.E. University of Illinois
	Presently working toward M.B.A. at Illinois State University
Work Experience:	Illinois Power Company
1976 - Present	Supervisor - Instrumentation & Controls Engineering, Generation Engineering Department. Supervision of control and instrumentation design preparation and review.
1968 - 1976	Supervisor of Systems and Programming Engineering, Data Processing Department. Supervision of computer programming on application of an engineering or scientific nature.
1967 - 1968	Senior Engineering Systems Programmer, Data Processing Department. Engaged in computer program development of an engineering or scientific nature.
1964 - 1967	Electrical Engineer - Computer Engineering Department. Involved in computer program development, installation, and processing for the Engineering Department.

1960 - 1964 Engineer. Engineering Department. Involved in generation and transmission planning related to capacity additions.

[General Interrogatory No. 4: Explain whether IP is presently engaged or intends to engage in any further research or work which may affect the answer. Identify such research or work.]

ANSWER: An evaluation of the layout and instrumentation for the CPS control room against the requirements contained in NUREG-0737 and other regulatory documents is currently in progress. Since this evaluation is not completed, no planned instrumentation beyond that described in the FSAR has been identified. If regulatory deficiencies in the layout and instrumentation for the CPS control room are found, appropriate modifications will be made.

[1. Describe and provide IP's, BWR Owners Group's, and any other research and studies pertaining to the CPS central water level monitoring system.]

ANSWER: Studies have been performed by General Electric Company ("GE") and the Boiling Water Reactor ("BWR") Owners' Group with respect to the requirements contained in NUREG-0660, NUREG-0694, and NUREG-0737. These studies have verified the reliability and adequacy of the BWR water level monitoring instrumentation system. Relevant documents are available for inspection at the offices of Illinois Power.

[2. What has IP done to address the need for level monitoring to the dome in BWRs? Provide relevant documents.]

ANSWER: The reactor water level monitoring system presently provided on CPS is capable of measuring reactor water level up to the dome. The shutdown range indicator provides this capability. Documents discussing the shutdown range level instrumentation and other relevant documents are available for inspection at the offices of Illinois Power.

[3a. What instrumentation is proposed for detecting inadequate core cooling in case of an abnormal occurrence? Provide relevant documents.]

ANSWER: The installed reactor vessel water level instrumentation, as described in CPS FSAR Sections 7.4 and 7.5, will be used tor detecting inadequate core cooling. Other relevant documents are available for inspection at the offices of Illinois Power.

[3b. Has this instrumentation been tested?]

ANSWER: The water level instrumentation to be used at CPS was developed by GE and is typical of that used in currently operating BWRs. Operating experience has demonstrated the instrumentation performance to be proper, accurate, and reliable. Instrumentation components are tested by GE to assure that they will function properly under the environmental and seismic conditions postulated to occur during a loss-of-coolant accident ("LOCA").

[3c. If so, describe and provide the tests and studies which have been conducted pertaining to the efficency of this instrumentation.]

ANSWER: The GE tests and studies concerning water level instrumentation are not in the possession, custody, or control of Illinois Power. They are in the possession of GE.

[3d. Does IP plan on following the NRC's recommendation of further instrumentation, specifically incorporation of core-exit thermocouples for BWR's? If so, provide the plan. If not, provide the documents and studies justifying IP's position, and all other relevant documents and studies.]

ANSWER: It is Illinois Power's understanding that the NRC is still reviewing the question of incore thermocouples for BWR's. See NUREG-0519, "Safety Evaluation Report Related to the Operation of LaSalle County Station Units 1 and 2," dated March, 1981. Since installation of incore thermocouples is not required by the NRC, Illinois Power does not currently plan to install them. Also, as discussed in response to Interrogatory No. 3a above, the instrumentation provided at CPS is fully capable of detecting inadequate core cooling.

Relevant documents are available for inspection at the offices of Illinois Power.

[4a. Will an accoustical monitoring system be used at CPS, pursuant to NUREG 0737 II.D.3?]

ANSWER: CPS will utilize an acoustical monitoring system to satisfy the requirement II.D.3 in NUREG-0737.

[4b. If so, how will this qualify as a direct monitoring instrument? Provide documents explaining the accoustical monitoring system and how it qualifies as a direct monitoring system, if it does.]

ANSWER: NUREG-0737 requirement II.D.3 states:

> "Reactor coolant system relief and safety valves shall be provided with a positive indication in the control room derived from a reliable valve-position detection device or a reliable indication of flow in the discharge pipe." (emphasis added)

The acoustical monitoring system ("AMS") purchased for the safety/relief valves at the CPS will satisfy this requirement by providing a reliable indication of flow in the discharge pipe. The AMS for the CPS is described in the specification and proposal utilized in the procurement of this system and other related correspondence. Relevant documents are available for inspection at the offices of Illinois Power.

[4c. Have any studies been made to assure that reliability and accuracy can be maintained, given specific conditions of BWR, for instance, core vibration that could result in deterioriation of devices and/or spurious signals? If so, describe and provide such studies. If not, explain why not.]

ANSWER: Since 1978, Technology for Energy Corporation ("TEC") has been performing research for the Electric Power Research Institute ("EPRI") in Research Project 1246 entitled

"Acoustic Monitoring for Power Plant Valves." In May 1979, the scope of that project was amended to include "Extended Relief and Safety Valve Monitoring." As part of the amended scope, TEC performed tests on various types of relief and safety valves. TEC's measurements showed that acoustic monitoring can unequivocally indicate valve position. The project verified that it is possible to differentiate positively between ordinary background noise in the plant when a valve is shut and the higher level of noise when steam is flowing through it. The technique was shown to be sufficiently sensitive that a clear distinction can be made even when the valve is slightly open.

Due to the success of this test program, acoustical monitoring systems similar in design to the one to be used at the CPS have been supplied to approximately 20 operating nuclear power station units.

[5a. What plans, if any, exist for providing a safety parameter display system for use in the main control room? Describe and explain any such plans.]

ANSWER: Illinois Power is currently planning to display safety parameters on a cathode ray tube mounted on a control room panel. The safety parameter display will be driven by the existing CPS computer system.

[5b. Provide a list of all meetings of BWR Owner's TMI Group and industry contractors where control room design and instrumentation for CPS was discussed. Provide the agendas for these meetings, and the documents produced from these meetings.]

A listing of the meetings of the BWR Owners' TMI Group and its Control Room Subcommittee is set forth below:

January 9, 1980	BWR Owners Authorize Subcommittee Activities
February 20, 1980	Subcommittee Meeting
February 21, 1980	Subcommittee and NSAC on BWR Efforts
February 29, 1980	Subcommittee and NRC on Nuclear Data Link
March 18, 19, 1980	NSAC Workshop in Dallas
March 26, 27, 1980	BWR Owners Meeting
April 16, 1980	Subcommittee and Sol Levy Inc.
April 17, 1980	AIF Subcommittee Meeting in Chicago
April 17, 18, 1980	Subcommittee Meeting
May 7, 1980	AIF Subcommittee and NRC
May 7, 8, 1980	Subcommittee Meeting
May 19, 20, 1980	BWR Owners Meeting
May 30, 1980	Subcommittee and NSAC on PWR Efforts
June 4,5, 1980	Subcommittee Meeting
June 12, 1980	Subcommittee and Consultants
July 1, 1980	BWR Owners Meeting
July 7, 8, 9, 1980	Subcommittee Meeting
July 21, 1980	Subcommittee and NSAC
July 22, 1980	Subcommittee and General Electric
July 24, 1980	AIF Subcommittee on Parameter List
July 29, 1980	Subcommittee and NRC
August 6, 1980	AIF Subcommittee and ACRS
August 12, 13, 1980	Subcommittee Meeting
August 28, 1980	AIF Subcommittee

September 2, 1980	BWR Owners Meeting
September 8, 1980	Subcommittee with Sandia on NDL
September 16, 17, 18, 1980	Subcommittee Meeting
October 8-15, 1980	Control Room Survey Workshop
October 21, 22, 23, 1980	Subcommittee Meeting
November 3-14, 1980	CRS Validation Survey at DAEC
November 19-20, 1980	BWR Owners' Meeting
December 1-3, 1980	Subcommittee Meeting
January 21,22, 1981	BWR Owners Meeting
February 2-4, 1981	Subcommittee Meeting
March 3-5, 1981	Subcommittee and General Electric
March 10-11, 1981	Subcommittee Meeting
March 18-19, 1981	BWR Owners Meeting
April 1, 1981	SPDS Working Group
April 13, 1981	SPDS Working Group
April 14-15, 1981	Subcommittee Meeting
April 29-30, 1981	SPDS Working Group
May 1, 1981	SPDS Working Group
June 1, 1981	SPDS Working Group
June 2-3, 1981	BWR Owners Group

Relevant documents are available for inspection at the offices of Illinois Power.

[6a. Describe fully the planned instrumentation for monitoring accident conditions.]

ANSWER: All currently planned instrumentation for monitoring accident conditions, except the post-accident sampling system, is described in CPS FSAR Chapters 7, 11, and 12. The post-accident sampling system is described in the specification and proposal utilized for its procurement and other

related correspondence. Relevant documents are available for inspection at the offices of Illinois Power.

[6b. Provide documentation of in-house, industry and contractor studies that relate to IP's compliance to NRC directives of additional instrumentation for monitoring accident conditions (the installing of extended range monitors and improving post-accient sampling capability). Provide the substance of design changes.]

ANSWER: Relevant documents are available for inspection at the offices of Illinois Power.

[7. Describe and provide any IP, BWR Owner's TMI Group, or contractor studies to identify and correct control room design deficiencies.]

ANSWER: Relevant documents are available for inspection at the offices of Illinois Power.

[8. Describe and provide any in-house, industry, or contractor evaluations as to control room design and instrumentation and their interaction with human factors.]

ANSWER: Relevant documents are available for inspection at the offices of Illinois Power.

[9. Describe the criteria used to arrange the physical layout of instruments and control panels in the control room. Include descriptions of any accessibility problems.]

ANSWER: The criteria used to arrange the physical layout of instruments and control panels in the control room are described in documents available for inspection at the offices of Illinois Power. No accessibility problems have been noted.

[10. What new criteria, regarding CPS control room layout and instrumentation, resulting from the accident at TMI, has been included in the FSAR? Provide documentation.]

ANSWER: The CPS FSAR has not been revised to address TMI-related requirements regarding control room layout and instrumentation. The first revision to the CPS-FSAR addressing TMI-related requirements is expected to be issued in Autumn 1981.

[11. What new criteria, regarding modification of the design of CPS, resulting from the accident at TMI, has been included in the FSAR? Provide documentation.]

ANSWER: The CPS FSAR has not been revised to address TMI-related requirements regarding control room design. The first revision to the CPS-FSAR addressing TMI-related requirements is expected to be issued in Autumn 1981.

Contention 7

[General Interrogatory No. 3: Identify by name, title, and qualifications the IP employee that has the expert knowledge required to support the answer to the question.]

ANSWER: The Illinois Power employee with knowledge necessary to support the answers to interrogatories submitted under this contention is Harry B. Perkins, Jr., his title is Supervisor-Civil Structural Engineering, and his qualifications are as follows:

Formal Education:	BSCE-Purdue University, 1949
	Graduate Certificate - University Of Illinois, 1965
	Graduate Certificate - University of California, 1968
	Graduate Certificate -University of Wisconsin, 1972
Miscellaneous:	Registered Structural Engineer-Illinois, 1955
	Registered Professional Engineer-Indiana, 1962
	Registered Land Surveyor, 1962 Certified Level III Inspection Engineer-NCEE, 1976
	Member American Concrete Institute
Work Experience:	Illinois Power Company
1979 -Present	Supervisor-Civil/Structural Engineering, Nuclear Station Engineering Department. Plan, organize, and direct design for modifications and additions to fossil fuel power plants. Direct and monitor the design for construction of Clinton Unit 1 Nuclear Power Station. Siting studies for new power plants.
1975 - 1979	Supervisor-Civil Construction Clinton Unit 1. Supervision of civil/structural staff in the construction of Clinton Unit 1. Coordination of design for constructibility and construction progress.
1974 - 1975	Senior Engineer-Civil/Structural, Nuclear Project Dept. Review of design and specifications for Clinton Unit 1.
Other Experience:	
1959 - 1974	Senior Civil/Structural Engineer; Argonne National Laboratory-design and construction of various nuclear related facilities.

1954 - 1959	Structural Engineer - Vern Alden Co., Chicago, Ill. Power plant and industrial design.
1951 - 1954	Design Engineer - A. J. Boynington Co., Chicago, Ill. - Steel mill design.
1949 - 1951	Civil Engineer-State of Indiana Resident Engineer large earth dam.

[General Interrogatory No. 4: Explain whether IP is presently engaged in or intends to engage in any further research or work which may affect the answer. Identify such research or work.]

ANSWER: Illinois Power is continuously engaged in monitoring information that may affect the design, construction, or operation of the CPS. Unless new information indicates the need for further investigation, Illinois Power does not plan to conduct further research or work which may affect the answers to interrogatories submitted under this contention.

[1. Describe the CPS design in detail regarding its capability to withstand earthquakes of the intensity of the worst that have ever been known to occur in the site region. Provide the documents containing the calculations behind the design. Provide documents relevant to the subject matter.]

ANSWER: Illinois Power objects to Interrogatory No. 1 on the grounds that the information sought is beyond the scope of the admitted contention, and is therefore irrelevant. The relevant contention is as follows:

> The seismic qualification of the CPS design does not account for the worst case seismic

activity now known to occur in the site region.

In its order issued May 29, 1981, the Board admitted this contention (Prairie Alliance Revised Contention 10(a)(2)) because "[p]art (a)(2) alleges new information." Order at 11. The "new information" cited by Prairie Alliance at the Second Special Prehearing Conference allegedly shows that a seismic event has occurred in the site region that exceeds the severity of seismic events that the CPS was designed to withstand. The Board rejected the other parts of Revised Contention 10 that challenged the CPS design. Accordingly, interrogatories are within the scope of the admitted contention only if they seek to elicit information concerning the severity of the seismic event that the CPS was designed to withstand. Interrogatory No. 1 asks for a detailed description of the CPS design itself, and for the production of design documents. It is therefore beyond the scope of the admitted contention.

The information requested in Interrogatory No. 1 is contained in the FSAR, except for "the documents containing the calculations behind the design." The relevant subsections of the FSAR are as follows:

2.5.2 Vibratory Ground Motion

3.7.1 Seismic Input

3.7.2 Seismic System Analysis

3.7.3 Seismic Subsystem Analysis

3.8 Design of Seismic Category I Structure

3.9 Mechanical Systems and Components

9.10 Seismic Qualification of Seismic Category I Instrumentation and Electrical Equipment

Other documents relevant to the subject are listed in the following subsections of the FSAR:

2.5.7 (reference number 61 through 78)

3.7.5 (all references)

[2. What are the calculations that justify the stated probabilities of impact stated in FSAR 3.5-8? Provide the documents containing the calculations and related pertinent material.]

ANSWER: Relevant documents containing the calculations and related material are available for inspection at the offices of Illinois Power.

[3. Has IP considered the probabilities of impact regarding the two private airports, Baker and Thorp, that are within a six mile radius of the CPS? If so, provide the documents containing the calculations and the probabilities of impact. If not, explain why not.]

ANSWER: The aircraft activities at Baker and Thorp airports explicitly were not considered in the probability calculations. Baker and Thorp airports are 6 miles away from the CPS. Under the criteria established in Regulatory Guide 1.70, Section 2.2.2 and Standard Review Plan (SRP) Section 3.5.1.6, the number of flights per year at those airports would have to exceed 18,000 (500 d^2, d is distance in miles)

in order to be considered in probability calculations. This level of activity translates into about 50 flights per day, which is several times higher than the actual activity at these private airports.

[4. Has IP considered the probabilities of impact regarding the three federal airways, V233, V173, and V434, that are within a six mile radius of the CPS? If so, provide the documents containing the calculations and the probabilities of impact. If not, explain why not.]

ANSWER: The federal airways V233, V173, and V434 were not considered in the probability calculations because they are more than two miles away from the CPS. Under Reg. Guide 1.70, Section 3.5.1.6, only those federal airways passing within two miles of a nuclear facility need be considered.

[5. Define "low altitude airway" as used in the FSAR in calculating impact probabilities. Explain why only low altitude airways, as opposed to higher altitude airways, are mentioned and considered by IP in the FSAR. Provide calculations and documents that justify why only low altitude airways are considered.]

ANSWER: A low altitude airway, as defined in the FSAR, includes that airspace extending upward from 1,200 feet above the surface of the earth to 18,000 feet above Mean Sea Level (MSL).

High altitude airways were not considered in the FSAR because there are no high altitude airways within two miles of CPS. Under Reg. Guide 1.70, Section 3.5.1.6, only those federal airways passing within two miles of a nuclear facility need be considered.

[6. Define "acceptably small" as used in the FSAR at 3.5-8, to describe the calculated impact probability from V313 as 2 x 10-8/year. Explain why 2 x 10-8/year is an "acceptably small" probability of impact. Provide the documents that justify the position that 2 x 10-8/year is "acceptably small" along with all other documents behind the calculations and justification.]

ANSWER: Regulatory Guide 1.70, Section 2.2.3 defines probabilities "on the order of about 10^{-7} per year" as acceptable, before an event becomes a design basis event. Similar criteria are given in SRP Sections 2.2.3 and 3.5.1.6. Based on these criteria, 2×10^{-8}/year probability of impact is acceptably small. Relevant documents are available for inspection at the offices of Illinois Power.

[7. Is the calculated impact probability from the private airport, Martin, of 2.3 x 10-7, which is larger than V313's calculated impact probability by more than a factor of 10, also considered "acceptably small"? If so, explain why, and provide the documents that justify the explanation.]

ANSWER: The calculated impact probability of 2.3×10^{-7} is "on the order of about 10^{-7} per year" and is therefore

acceptably small under the criterion established by Regulatory Guide 1.70, Section 2.2.3.

[8. Where did IP obtain the figures used in the FSAR 3.5-8 for the amount of air traffic that occurs due to the airports of V313 and Martin? Provide documents containing the calculations and justification for such figures.]

ANSWER: The amount of air traffic for Martin airport was obtained by direct contact with the airport. The amount of air traffic on Federal Airway V313 was obtained from Chicago Air Route Traffic Control Center. Relevant documents are available for inspection at the offices of Illinois Power.

[9. Has IP considered the projected increase in air traffic for airports in Champaign-Urbana, Bloomington, Decatur, and Springfield of 20%, projected by the FAA, in FAA Aviation Forecasts, FY80-91? If so, provide the documents and calculations that show this, and explain why this information is not found in the FSAR. If not, explain why this information is not considered by IP.]

ANSWER: Traffic at the four airports cited was not considered in the probability calculations because it need not be considered under criteria established by Regulatory Guide 1.70, Section 2.2.2 and SRP, Section 3.5.1.6. Each of the four airports is more than 10 miles away from the CPS. Under Regulatory Guide 1.70, therefore, the number of operations per year must exceed 1000 d^2, where d is the distance of the airport from the plant in miles, for

these airports to be considered in probability calculations. Traffic at these airports is compared with that given by the Regulatory Guide 1.70 criterion in the following table:

Airport	Distance (d) (Miles)	1000 d^2	Operations in 1978	20% Increase
Champaign /Urbana	31	961,000	188,591	226,309
Bloomington	22.5	506,250	86,970	104,364
Decatur	22.5	506,250	91,826	110,191
Springfield	51	2,601,000	141,516	169,819

As that table shows, the value for 1000 d^2 exceeds the actual number of operations at each of these airports and also exceeds any reasonable projection of the future number of operations.

[10. Identify the person or persons involved with the following activities:

a. The calculation of effects on plant buildings and structures to an earthquake of the same intensity as that of the worst ever known to have occurred in the site region.

b. The sampling of all geologic data relevant considered in calculating the on-site effects of such an earthquake.

c. The calculations of the impact probabilities due to aircraft.

d. The decision not to include the private airports of Baker & Thorp in calculating impact probabilities.

e. The decision not to include Federal vector pathways V233, V173 & V434 in calculating impact probabilities.

f. The decision to consider only "low altitude airways" in calculating impact probabilities.

g. The development of criteria, used to distinguish "acceptably small" impact probabilities as opposed to unacceptably small impact probabilities.

h. The determination of air traffic on federal airway V313 and for the private airport Martin.

i. The consideration of projected future increases in air traffic and future shifts in the types of aircraft flying air routes.

For these people, give their names, addresses, business phone numbers, and qualifications (including educational & occupational experience).]

ANSWER: The person most closely involved with the activities listed in Interrogatory No. 10 is Richard A. Witt, Associate and Senior Structural Project Engineer at Sargent & Lundy, 55 East Monroe Street, Chicago, Illinois 60603, (312) 296-7092. Mr. Witt's qualifications are as follows:

Education: M.S.C.E. 1967, South Dakota School of Mines
B.S.C.E. 1963, South Dakota School of Mines

Occupational Experience:

Mr. Witt has been working at Sargent & Lundy since 1968. He has extensive experience in the structural design and engineering of major steam-electric generating stations. Prior to assuming his present responsibilities, Mr. Witt was the structural project engineer for the Clinton Power Station and coordinated the structural and civil

engineering design effort which included plant structure design, cooling lake design, highway and trackwork alterations, site development work, and state and federal permit application work. Mr. Witt has also been an assistant chief structural engineer with responsibility for coordinating the work of several design sections within the Structural Department, including the precipitator structures design section and the coal handling structures design section. Mr. Witt has also served as a supervising design engineer on a fossil-fueled power station project, and as a structural analyst involved in the detailed design of coal power station structures. Prior to joining Sargent & Lundy in 1968, Mr. Witt was an engineering officer with the U.S. Army Corps of Engineers. He did construction work in Korea.

Professional License:

Structural Engineer, State of Illinois

The person at Illinois Power most closely involved with the activities listed in Interrogatory No. 10 is identified in the answer to General Interrogatory No. 3 under this contention.

Contention 9

[General Interrogatory No. 3: Identify by name, title, and qualification the IP employee that has the expert knowledge required to support the answer to the question.]

ANSWER: The Illinois Power employee with knowledge necessary to support the answers to interrogatories relative to this contention is Larry S. Brodsky, his title is Assis-

tant Power Plant Manager, and his qualifications are set forth in the answer to Interrogatory No. 9.4.

[General Interrogatory No. 4: Explain whether IP is presently engaged or intends to engage in any further research or work which may affect the answer. Identify such research or work.]

ANSWER: Illinois Power is continuously engaged in monitoring information that may affect the design, construction, or operation of the CPS. Unless new information indicates the need for further investigation, Illinois Power does not plan to conduct further research or work which may affect the answers to interrogatories relative to this contention.

[9.1. In reference to CPS FSAR IL 3.4.1 concerning the design objectives of the Area Radiation Monitor (ARM), state what is meant by "maintaining exposure to personnel As Low As is Reasonably Achievable." (ALARA) Include (but do not limit your answer to) the radiation level in millirems per hour which Illinois Power considers ALARA, and the method by which such a level was calculated.]

[9.2. Identify the person or persons who determined the level of radiation which Illinois Power considers ALARA. As to each person, state their name, address, and qualifications (including educational and occupational experience).]

[9.3. Identify all documents connected in any way with the determination of the ALARA level, (and attach a copy of each such document).]

ANSWER: Illinois Power objects to Interrogatory Nos. 9.1 through 9.3 on the grounds that the information sought is beyond the scope of the admitted contention, and is therefore irrelevant. Prairie Alliance Revised Contention 13 contained five subparagraphs relating to maintenance of occupational radiation exposure levels "as low as reasonably achievable" ("ALARA"). Only two of these subparagraphs were admitted: one addressed the accuracy of area radiation monitors ("ARMs"), and the other addressed the number and sensitivity of continuous air monitors ("CAMs"). The selective admission of two narrowly defined issues relating to the adequacy of radiation monitors does not justify a general inquiry into all potential ALARA issues.

The definition of ALARA requested in Interrogatory 9.1 is set forth in 10 C.F.R. § 50.34a(a). ALARA means "as low as is reasonably achievable taking into account the state of technology, and the economics of improvements in relation to benefits to the public health and safety and other societal and socioeconomic considerations, and in relation to the utilization of atomic energy in the public interest."

A definition of ALARA cannot be provided in terms of an exposure rate in millirems per hour because the concept of ALARA is based on maintaining cumulative exposure "as low as is reasonably achievable." Similarly, it is not

feasible to calculate an ALARA 'radiation level.' Therefore there are no persons responsible for, or documents connected with, calculations of an "ALARA level."

[9.4. State the number of Area Radiation Monitors which will be in constant use at the CPS, their exact placement on or near the CPS site, and the qualifications (including educational and occupational experience) of the person(s) responsible for the observation and maintenance of the Area Radiation Monitors.]

ANSWER: Illinois Power objects to Interrogatory 9.4 on the grounds that the information sought is beyond the scope of the admitted contention, and is therefore irrelevant. The information requested in Interrogatory 9.4 does not relate to the accuracy of ARMs.

The number and placement of Area Radiation Monitors are set forth in Table 12.3-2 and Figures 12.2-1 through 12.2-23 of the CPS FSAR.

The persons responsible for the observation and maintenance of Area Radiation Monitors are Larry S. Brodsky, Robert E. Harris, O. Erskin Hickman and Don Y. Cain. Their qualifications are as follows:

1. Larry S. Brodsky

Formal Education:	BS Chemistry University of Illinois, 1969
Training:	CPS Systems Training BWR Fundamentals U.S. Navy Nuclear Power Prototype U.S. Navy Nuclear Power School

Work Experience:	Illinois Power Company
1980 - Present	Assistant Power Plant Manager, Clinton Power Station. Responsibilities include overall supervision of the Operations and Radchem Departments at Clinton Power Station.
1977 - 1980	Supervisor - Plant Operations, Technical Supervisor, Plant Supervisor, Clinton Power Station. Responsibilities included plant procedure preparation and review, design review, development of Technical Specifications, training, and supervision of Operations staff.
1975 - 1977	Results Engineer, Assistant Plant Supervisor, Baldwin Power Station (fossil fueled) Responsibilities included plant testing, inspection, and supervision of operating personnel.
Other Experience:	U.S. Navy
1969 - 1975	Qualified Engineer Officer and Engineering Officer of the Watch in submarines. Responsibilities included supervision of reactor plant/steam plant operation and maintenance and training of personnel.
Memberships:	American Nuclear Society

2. Robert E. Harris

Formal Education:	B.S. Chemistry, 1975 University of Hartford (Conn.)
Training:	U.S. Navy Nuclear Power School U.S. Navy Nuclear Power Prototype U.S. Navy Engineering Laboratory Technician School CPS Operator Training Program

Work Experience:	Illinois Power Company
1976 - Present	Supervisor - Radchem at Clinton Power Station. Duties include supervision of chemistry, radiation protection and radwaste operation staff during design and construction of Clinton Power Station.
Other Experience:	
1973 - 1976	Health Physicist at Millstone Nuclear Station. Duties included supervision of H P. for 1BWR and 1 (CE) PWR during construction, startup and operation. BWR experience included two refuelings with feedwater sparger replacements.
1967 - 1973	Operations Department and Radchem Department at Connecticut Yankee Atomic Power Station, Haddam Neck, Conn. Duties included operation of plant, chemistry and radiochemistry and radiation protection. Participated in initial plant startup, four refuelings, including steam generator repair, turbine overhauls' plant modifications (LPCI installation), spent fuel shipment.
1960 - 1967	U.S. Navy nuclear program One year formal school and prototype training. Six months Engineering Laboratory School. Three years instructor duty. Three years aboard nuclear (PWR) powered submarine.

3. O. Erskin Hickman

Formal Education:	B.S., Physics, 1978, University of North Alabama

Work Experience:	Illinois Power Company
1981 - Present	Supervisor - Radiation Protection at Clinton Power Station. Duties include supervision of radiation protection staff during design and construction of Clinton Power Station.
Other Experience:	
1979 - 1981	Nuclear Engineer, Tennessee Valley Authority, Chattanooga, Tennessee. Provided engineering support to nuclear stations in the area of radioactive waste management.
1978 - 1979	Health Physicist, Browns Ferry Nuclear Plant. Provided supervision of radiation protection staff.
1976 - 1978	Radiochemical Analyst, Tennessee Valley Authority. Provided Research and development support for TVA's uranium milling and mining environmental assessment program.
1975 - 1976	Health Physics Technician, Browns Ferry Nuclear Plant. Provided Health Physics surveillance and assistance for all station operations involving radiological work.
1974 - 1975	Health Physics/Radiochemical Technician, D.C. Cook Nuclear Plant. Provided Health Physics, chemistry and radiochemistry assistance for operations.
1973 -1974	Health Physics Technician, University of Maryland. Provided Health Physics assistance for students and staff in an education environment.
Professional Organizations:	Member of American Nuclear Society, Chattanooga Section; Member of Health Physics Society; Alternate member of EEI Health Physics Committee.

4. Don Y. Cain

Formal Education:	B.S.M.E. Auburn University, 1960-1965
	M.S. in Nuclear Engineering Georgia Institute of Technology, 1971-1972
Training:	Westinghouse Nuclear Training Center, 1972-1973 SRO License Preparatory Training CPS Systems Training
Work Experience:	Illinois Power Company
1980 - Present	Assistant Power Plant Manager, Clinton Power Station. Responsibilities include overall supervision of the Mechanical, Stores Electrical and C&I Departments at CPS.
1976 - 1980	Supervisor - Maintenance, Clinton Power Station Duties include direction and supervision of the development of the mechanical, electrical and instrument/controls maintenence program, and development of the plant stores program.
Other Experience	
1971 - 1976	Alabama Power Co., Farley Nuclear Plant.
	Maintenance Supervisor. Directed development of plant mechanical, electrical, and instrument/controls maintenance program.
1969 - 1971	Alabama Power Co., Greene Country Steam Plant. Generating Plant Engineer in a 500 MW coal-fired power plant

1968 - 1969	E.E. duPont deNemours and Co., Inc. Provided engineering consulting services to several duPont plants.
1966 - 1968	Southern Electric Generating Co., Test Engineer in a 1000 MW coal-fired power station
1965 - 1966	Southern Services, Inc., Junior Engineer and Assistant Engineer in a power plant mechanical design section.

[9.5. In reference to CPS FSAR 12.3.4.1.1.1. concerning the accuracy of ARM readings:

(a) State how the accuracy figure of ±20% was arrived at, including an itemized description of all sources of the ±20% deviation and a description of the method by which the ±20% deviation from accuracy was determined.]

ANSWER: The ±20% figure in Section 12.3.4.1.1.1 of the FSAR refers to the degree of accuracy specified by Illinois Power. This degree of accuracy meets the requirements of ANSI 6.8.1. The ARMs ordered by Illinois Power are accurate to within ±15%, which is consistent with ARMs that are commercially available.

Accuracy may fluctuate by as much as ±20% because of the inherent energy dependence of the detector, which refers to the variation in response of the detector when exposed to equivalent gamma dose rates but different gamma energies. Since gamma radiation at CPS will be from a number of different isotopes within the range of 0.05 to 3 MeV, it is possible that the observed response of the

detector may deviate as much as ±20% from the true value. As part of calibration, the energy dependence of the detector will be periodically checked to ensure that it does not exceed ±20%.

[9.5.(b) Identify the person(s) responsible for making any calculations or measurements concerning the accuracy of the ARM. As to each person, state his/her/their name, address, and qualifications, including educational and occupational experience.]

ANSWER: The persons responsible for calculations and measurements during calibration are Larry S. Brodsky, Robert E. Harris and O. Erskin Hickman. Their addresses and qualifications appear on their resumes attached to the Answer to Interrogatory No. 9.4.

[9.5.(c) State why Illinois Power considers the ±20% deviation from accuracy of the ARM to be a reasonable assurance of accuracy.]

ANSWER: ANSI 6.8.1 states that ±20% energy dependence is an acceptable value. Alarm setpoints are based on conservative values to compensate for the ±20% energy dependence.

[9.5.(d) Identify and attach all documents and other papers which are connected in any way with the accuracy of the ARM]

ANSWER: Relevant documents are available for inspection at the offices of Illinois Power.

[9.6. With regard to CPS FSAR 12.3.4.2.3. concerning the monitoring of radiation levels:

(a) State the frequency or amount of monitoring which Illinois Power considers to be "minimum monitoring".]

ANSWER: A continuous air monitor ("CAM") by definition samples continuously. The reference to "frequency" or "amount" is therefore unclear.

[9.6.(b) State the method of calculation and the name(s), address(es), and qualification(s) of the person(s) making the calculation.]

ANSWER: The request for "method of calculation" is unclear. Since monitoring is continuous, there is no calculation of monitoring "frequency" or "amount," nor is there any reference to calculations in the relevant FSAR sections.

[9.6.(c) Identify and attach all documents and other papers which are connected in any way with the amount or frequency of monitoring.]

ANSWER: Relevant documents are available for inspection at the offices of Illinois Power.

[9.7. In reference to CPS FSAR 12.3.4.4.2.B. concerning the detection of maximum permissable concentrations:

(a) State what is meant by Maximum Permissable Concentrations. Include in your answer what Illinois Power Company considers to be a "Maximum Permissable Concentration", and the names, addresses, and qualifications of the persons who determine the Maximum Permissable Concentrations.]

ANSWER: The term Maximum Permissible Concentration (MPC) is an industry and regulatory standard measure of airborne radioactivity concentrations. The values for MPC are set forth in 10 C.F.R. Part 20, Appendix B.

[9.7.(b) State the reasons why it may take up to 10 hours to detect such concentrations.]

ANSWER: The 10-hour detection time is a reflection of the low levels of radioactivity being measured, not the sensitivity of the monitors. Standard Review Plan 12.3, "Radiation Protection Design Features," in paragraph II.4.b.1, states that "the monitoring system should be capable of detecting ten MPC-hours of particulate and iodine radioactivity in any compartment which has a possibility of containing airborne radioactivity and may be occupied by personnel." The CPS CAMs meet or exceed this requirement.

[9.7.(c) State what danger exists for plant workers and local residents who are exposed to more than the Maximum Permissable Concentration for periods of up to 10 hours.]

ANSWER: Illinois Power objects to Interrogatory No. 9.7.(c) on the grounds that the information sought is beyond the scope of the admitted contention, and is therefore irrelevant. The information requested in Interrogatory No. 9.7.(c) does not relate to the number or sensitivity of CAMs.

Illinois Power is not aware of any specific study of the effects of exposure to radioactivity concentrations in excess of MPC for time periods of less than ten hours, nor can Illinois Power summarize all the information in the public domain concerning effects of exposure to radiation.

[9.7.(d) State what data or calculations were utilized in determining the answer to 9.7.(c) above.]

ANSWER: Not applicable.

[9.7.(e) Identify and attach any documents or other papers connected in any way with the determination, detection, and effects of the Maximum Permissable Concentration.]

ANSWER: Illinois Power has no documents connected specifically with the determination, detection, or effects of radioactivity at MPC. Documents concerning the determination, detection, or effects of radioactivity concentrations in general are outside the scope of the admitted contention and are too numerous to identify or provide.

[9.8. In reference to CPS FSAR 12.3.4.5.1.1. concerning representative samples:

(a) State the method by which representative sampling will be performed in worker occupied zones, ventilation ducts, and other areas.

(b) If the method(s) listed in 9-8(a) deviate in any manner from the recommendations of the A.N.S.I. Guides,

state the nature of each such deviations and the reason for each such deviation. If Guides other than the A.N.S.I. Guides were used, identify the guide(s) used.

(c) State the reasons why any deviation from A.N.S.I. guides are justified.

(d) State the name(s), address(es), and qualifications of the person(s) responsible for formulating the method by which random sampling would be performed.

(e) Identify and attach all documents or other papers connected in any manner with the method of representative sampling at CPS.]

ANSWER: Illinois Power objects to Interrogatory 9.8 on the grounds that the information sought is beyond the scope of the admitted contention, and is therefore irrelevant. The information requested in Interrogatory No. 9.8 does not relate to the accuracy of the ARMs or the number or sensitivity of CAMs.

[9.9. In reference to CPS FSAR page 1.8.-161 (2) concerning Illinois Power Company's request for an exception from 10 CFR 20.203:

(a) State the reasons why Illinois Power Company is justified in seeking an exception from 10 CFR 20.203.

(b) State whether Illinois Power Company wishes to increase the radiation levels in lockout zones. If so, state the amount by which Illinois Power Company wishes to increase such levels (over the level specified in 10 CFR 20.203) and the reasons why the Company wishes to increase such levels.

(c) State the type of Administrative controls which will be utilized to insure the safety of plant workers if an exception from 10 CFR 20.203 is granted. Include in your answer the name(s) address(es), and qualifications of the person(s) who formulated the Administrative Controls.

(d) State whether the administrative controls referred to in 9.9(c) have ever been tested. If so, state the date and location of any such tests, and the name(s), address(es), and qualifications of the person(s) who formulated and/or administered, and/or evaluated such tests.

(e) State what is meant by "radiation levels requiring locking". Include in your answer an explanation of locking, and state what level of radiation requires locking.

(f) State the maximum amount of time that plant workers or personnel will be allowed in any lockout zone or area where radiation levels require locking.

(g) State in detail the location of any lockout zone or area where radiation levels require locking. Include a map of such areas in relation to the rest of the plant.]

ANSWER: Illinois Power objects to Interrogatory No. 9.9 on the grounds that the information sought is beyond the scope of the admitted contention, and is therefore irrelevant. The information requested in Interrogatory No. 9.9 does not relate to the accuracy of ARMs or the number or sensitivity of CAMs. The information requested relates to precautionary procedures under 10 C.F.R. § 20.203. Prairie

Alliance Revised Contention 13(a), which raised issues concerning compliance with 10 C.F.R. § 20.203, was specifically rejected by the Board in its Order of May 29, 1981.

[9.10. In reference to CPS FSAR page 1.8-161(3) concerning deviations from positions stated in the Regulatory Guide:

(a) State the nature of any deviations from the Regulatory Guide specified in CPS FSAR, page 1.8-161(3), and explain why such deviations are justified.]

(b) State the name(s), address(es), and qualifications of the person(s) who formulated and/or approved any procedures deviating from the Regulatory Guide.]

ANSWER: Illinois Power objects to Interrogatory 9.10 on the grounds that the information sought is beyond the scope of the admitted contention, and is therefore irrelevant. The information requested in Interrogatory No. 9.10 relates to the use of pressure gauges instead of transmitters at instrument readout locations. The information requested does not relate to the accuracy of the ARMs or the number or sensitivity of CAMs.

Contention 11

[General Interrogatory No. 3: Identify by name, title, and qualifications the IP employee that has the expert knowledge required to support the answer to the question.]

ANSWER: The Illinois Power employee with knowledge necessary to support the answers to interrogatories submitted under this contention is Larry S. Brodsky, his title is Assistant Power Plant Manager, and his qualifications are set forth in the answer to Interrogatory No. 9.4 of Contention 9.

[General Interrogatory No. 4: Explain whether IP is presently engaged in or intends to engage in any further research or work which may affect the answer. Identify such research or work.]

ANSWER: Illinois Power is continuously engaged in monitoring information that may affect the design, construction, or operation of the CPS. Unless new information indicates the need for further investigation, Illinois Power does not plan to conduct further research or work which may affect the answers to interrogatories submitted under this contention.

[11.1. In reference to CPS FSAR 12.3.4.4.2.1 page 12.3-24:

(a) State the highest and lowest anticipated radiation levels at CPS, the method by which such levels were computed, and the name(s), address(es), and qualifications of the person(s) who made the computations.

(b) State what is meant by the "sufficient margin" mentioned on page 12.3-24 in the second paragraph.

(c) State the method by which "a sufficient margin" is determined, and

the qualifications and job titles of the person(s) who would make such a determination.

(d) Identify and attach any documents or other papers relating to the determination of a sufficient margin.]

ANSWER: Illinois Power objects to Interrogatory No. 11.1 on the grounds that the information requested is beyond the scope of the admitted contention, and is therefore irrelevant. The issues raised under Contention 11 concern the effects of low-level radiation releases from the CPS. Interrogatory No. 11.1 requests information concerning occupational radiation exposures at the CPS site. Although Contention 9 relates to occupational radiation exposures, the information requested in Interrogatory 11.1 is also beyond the scope of Contention 9 for the reasons set forth in the Answer to Interrogatory Nos. 9.1-9.3.

[11.2. In reference to estimated population doses of radiation:

(a) State the method by which estimated population doses were calculated. Include in your answer the name(s), address(es), and qualifications of the person(s) making such calculations.]

ANSWER: Illinois Power objects to Interrogatory No. 11.2(a) on the grounds that the information requested is beyond the scope of the admitted contention, and is therefore irrelevant. Prairie Alliance Revised Contention 15 contained five subparagraphs relating to low-level radiation releases.

Three of these subparagraphs were admitted; the first addressed the consideration of releases from CPS Unit 2 in estimating population doses, the second addressed the validity of estimates used in calculating atmospheric effluents, and the third addressed the consideration of the effects of low-level releases in the cost-benefit analysis of the Environmental Report.

Interrogatory No. 11.2(a) requests general information concerning the calculation of estimated population doses. It is not limited to information concerning anticipated releases from CPS Unit 2, and it therefore exceeds the scope of the admitted contention.

[11.2(b) State whether gaseous effluents from Clinton Unit 2 were considered in the above calculation. If not, state the reasons why Clinton Unit 2 should not be used in such calculations.]

ANSWER: Gaseous effluents from Clinton Unit 2 were not presented in the FSAR. However, if Clinton Unit 2 doses were considered, the radiological consequences would be similar to those estimated for Unit 1.

[11.3. In reference to CPS FSAR page 1.8-20, Regulatory Guide 1.111, concerning the calculation of atmospheric effluents of routine releases:

(a) Describe in detail the methods used in the calculation of such effluents. Include in your description the name(s), address(es), and qualifications of the person(s) who made such calculations.

ANSWER: Illinois Power objects to Interrogatory No. 11.3(a) on the grounds that the information requested is beyond the scope of the admitted contention, and is therefore irrelevant. Interrogatory No. 11.3(a) requests general information concerning the calculation of atmospheric effluents. It is not limited to information concerning the validity of estimates used in such calculations, and it therefore exceeds the scope of the admitted contention.

[11.3(b) State why "conservative estimates considered here are unnecessary" (CPS FSAR Page 1.8-20).

(c) State the name(s), address(es), and qualifications of the person(s) who decided that conservative estimates were unnecessary.]

ANSWER: Regulatory Guide 1.111, Position C.3.a., allows the actual half-lives of the radionuclides to be used, thereby precluding the need for estimates.

[11.4. In reference to CPS FSAR page 1.8-169, Regulatory Guide 8.19, concerning dose assessments:

(a) State whether records of review procedures, documentation requirements, and identification of principal ALARA related changes resulting from the does assessment will be included in the assessment. If not, explain why not in detail.

(b) If the items in 11.4(a) are not to be included in the assessment, state the name(s), address(es), and qualifications of the person(s) who determined that such items should

not be included in the dose assessment.]

ANSWER: Illinois Power objects to Interrogatory No. 11.4 on the grounds that the information requested is beyond the scope of the admitted contention, and is therefore irrelevant. Interrogatory No. 11.4 requests information concerning occupational dose assessments, not the effects of low-level radiation releases. Although Contention 9 relates to ocupational radiation exposures, the information requested in Interrogatory 11.4 is also beyond the scope of Contention 9 for the reasons set forth in the Answers to Interrogatory Nos. 9.1-9.3.

[11.5. In reference to the release of radionuclides from Clinton Units 1 and 2:

(a) State whether there would be any residual low level radiation resulting from the release of radionuclides.

(b) State whether such residual radiation was assessed and factored into the N.E.P.A. cost-benefit analysis. If so, state the method by which such residual radiation was so assessed and factored, and the reasons why such assessment and factoring should be adequate under N.E.P.A. If not, explain why such residual radiation should not be properly included in a N.E.P.A. cost-benefit analysis.]

ANSWER: Effluent releases from normal operation will result in a slight increase in the general background levels of radiation near the site. This increase has not been

predicted for the CPS site because the amount of increase depends on a complex interrelationship of such variables as deposition velocity, vegetation cover, isotopic decay, release height, and meteorological conditions. It should be noted, however, that Unit 1 will be operating under the design dose objectives set forth in 10 C.F.R. Part 50, Appendix I. These objectives are 5 mr/yr whole body, 15 mr/yr beta skin, and 15 mr/yr from iodine and particulate fission products. The maximum offsite dose is therefore approximately equal to 10% of that from natural background sources.

The effects of residual low level radiation have been assessed as discussed in CPS-ER (OLS) Section 5.2. No dollar value has been assigned to these effects because this is not required by NRC Regulatory Guide 4.2, Rev. 2.

ILLINOIS POWER COMPANY

By: _____
Leonard J. Koch
Vice President

SIGNED AS TO OBJECTIONS:

_____
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Dated: July 27, 1981.

STATE OF ILLINOIS)
) SS
COUNTY OF MACON)

LEONARD J. KOCH, being duly sworn, deposes and says that he is Vice-President of Illinois Power Company, one of the Applicants in the proceeding; that he has read the foregoing Response of Illinois Power to Prairie Alliance's First Round of Discovery, and that the Answers contained therein are true and correct to the best of his knowledge, information, and belief.

Leonard J. Koch

Leonard J. Koch

SUBSCRIBED and SWORN to
before me this 27th day
of July, 1981.

Yvonne M Bell
Notary Public

CERTIFICATE OF SERVICE

I hereby certify that the original of the foregoing document was served upon the following:

Prairie Alliance
P. O. Box 2424
Station A
Champaign, Illinois 61820

and three conformed copies of the foregoing document were filed with the following:

Secretary of the Commission
United States Nuclear Regulatory Commission
Washington, D.C. 20555
Attention: Docketing and Service Branch

and that one copy of the foregoing document was served upon each of the following:

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in each case by deposit in the United States Mail, postage prepaid on July 27, 1981.

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