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RELATED CORRESPONDENCE

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

DOCKETED
USNRC

'84 JUN 15 A10:24

IN THE MATTER OF ILLINOIS POWER COMPANY, SOYLAND POWER COOPERATIVE, INC. and WESTERN ILLINOIS POWER COOPERATIVE, INC. (Operating License for Clinton Power Station, Unit 1)	))))))))	Docket No. 50-461 OL

NOTICE

TO: Hugh K. Clark, Esq., Chairman
P.O. Box 127A
Kennedyville, Maryland 21645

Dr. George A. Ferguson
School of Engineering
Howard University
2300 Sixth Street, N.W.
Washington, D.C. 20059

Dr. Oscar H. Paris
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Executive Legal Director
United States Nuclear Regulatory Commission
Washington, D.C. 20555

Philip L. Willman
Assistant Attorney General
Environmental Control Division
160 North LaSalle Street
Room 900
Chicago, Illinois 60601

Jean Foy
511 W. Nevada
Urbana, Illinois 61808

8406150367 840531
PDR ADOCK 05000461
Q PDR

D503

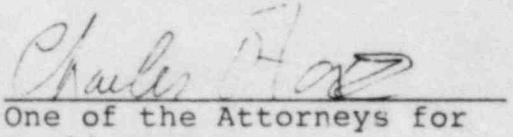
Prairie Alliance
Box 2424
Station A
Champaign, Illinois 61820

Herbert H. Livermore
U.S. Nuclear Regulatory Commission
Clinton Nuclear Power Station
RR 3, Box 229A
Clinton, Illinois 61727

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

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

PLEASE TAKE NOTICE that I have today filed with the Secretary of the United States Nuclear Regulatory Commission a letter from Donald P. Hall, Vice President, Illinois Power Company to Mr. James G. Keppler, Regional Administrator, Region III, dated May 31, 1984 regarding the Independent Design Review for the Clinton Power Station in the above-captioned matter. A copy of this letter is attached and hereby served upon you.



One of the Attorneys for
Applicants

Sheldon A. Zabel
Charles D. Fox IV
Sara L. Johnson
SCHIFF HARDIN & WAITE
7200 Sears Tower
233 South Wacker Drive
Chicago, Illinois 60606
(312) 876-1000

ILLINOIS POWER COMPANY
Docket No. 50-461

0982-L
U-10161

DOCKETED USNRC
'84 MAY 15 A10:24

CLINTON POWER STATION, P.O. BOX 678, CLINTON, ILLINOIS 61727

May 31, 1984

Mr. James G. Keppler
Regional Administrator
Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Subject: Clinton Independent Design Review

Dear Mr. Keppler:

This letter presents for your comments and concurrence an Illinois Power Company (IP) program to provide further confirmation that the Clinton Power Station (CPS) design is consistent with the design description of the Final Safety Analysis Report (FSAR), the Safety Evaluation Report (SER) and its supplements. In addition, this letter presents, for your information, a summary of past and current activities relating to the confirmation of the quality of design of CPS.

The Clinton Independent Design Review (IDR) proposed in this letter supplements past design reviews of the architect/engineer (AE) (Sargent & Lundy) and nuclear steam supply system (NSSS) vendor (General Electric) for CPS. These past reviews were either Clinton specific or associated with the design and construction of other nuclear plants. They were performed by diverse organizations including IP, other utilities, other AE's, Institute of Nuclear Power Operations (INPO), Nuclear Regulatory Commission (NRC), etc.

IP considers that the above reviews combined with the results of the preoperational Clinton test programs will provide adequate confidence in CPS design. However, to provide even greater confidence, IP proposes an additional independent review to evaluate selected elements of the plant design.

PAST AND CURRENT CLINTON DESIGN OVERVIEW

Since the inception of CPS design in 1972, IP has had an active program to review the activities of General

Electric (GE) and Sargent & Lundy (S&L). These reviews include approvals of essential design elements such as criteria and specifications, Quality Assurance (QA) auditing of the design process, independent confirmatory calculation checks, performance of supplementary independent design evaluations, etc. These reviews, some of which are described in Attachment 1 to this letter, provide additional assurance that the Clinton design is appropriate. As described in Attachment 1, these reviews are continuing.

This overview of GE and S&L for the Clinton Project has not been limited to IP activities. GE is providing IP a nuclear power plant that is essentially a standard product that, in one form or another, has been supplied to 37 utilities. This reactor plant design has been reviewed in detail by these utilities, their consultants, the NRC, and the ACRS over the 30 years it has been under development and in use. S&L has actively participated in the design of 14 nuclear power plants. These design activities have also been reviewed in detail by their clients, consultants, NRC and others.

Because the Clinton plant is one of the latest in the series of plants under design by GE and S&L, many review findings for these earlier plants have been resolved or incorporated in a planned manner in the original design, and will not be installed as late changes to CPS. The Clinton design has benefited by being one of many, and one of the latest, GE and S&L products.

INDEPENDENT DESIGN REVIEW

Recently, it has become the practice of nuclear utilities, either on their own initiative or at the request of NRC, to have a portion of the design of their nuclear plants reviewed by an independent auditor. These design reviews have concentrated on the activities of the architect engineer and the balance of the plant effort subcontracted to other design organizations. These reviews have consisted of what are referred to as horizontal and vertical reviews.

The horizontal review has been an assessment of the design system in use by the design organization. This includes review of the design procedures, design tools, staff training, records, interface controls, QA etc.

The vertical review consists of examining the design of specific elements of a system or systems to confirm the design accuracy. In this case, specific design details are examined by the reviewer.

IP has concluded that an IDR will be made for CPS. The services of an outside independent organization, Bechtel Power Corporation, will be obtained to conduct this review. The scope of this review will be based upon the following considerations:

- In the last two years, several reviews have been made of S&L's design program. These reviews include the Cygna review for Fermi, the Teledyne review for LaSalle, the NRC review for Byron, and the Bechtel review for Byron (currently underway). S&L operates as a matrix organization and as such, many of its people and design methods are common to different projects. Therefore, IP considers that the results of these past reviews of S&L provide a satisfactory data base for the evaluation of the adequacy of the S&L overall design system for the Clinton project.

- The results of these reviews will be evaluated for applicability to the Clinton project and, based upon the results of these evaluations, IP will assure that any corrective action necessary to support the Clinton project has been taken. This evaluation will attempt to assure that the underlying root causes for these findings are discovered and addressed. The results of this evaluation, which will constitute a horizontal review, will be provided to the NRC.

- As there was no significant balance of plant design work performed by a subcontractor, the IDR will concentrate on S&L activities.

- Subject to satisfactory negotiations, it is proposed that Bechtel perform the Clinton IDR as an extension of their current review for the Commonwealth Edison Byron Plant. Two Clinton systems will be selected by IP extending the Bechtel review of the S&L design process to a total of five systems. As part of their Clinton effort, Bechtel will be asked to evaluate the applicability of any Byron findings to CPS. (Even though the Byron systems are different than the equivalent Clinton systems, the design methods and procedures used by S&L are expected to be similar.)

A description of the proposed Clinton IDR is attached.

Your early comments on the concepts presented in this letter and the proposed Clinton IDR is requested to enable us to proceed with an IDR that concurrently meets both IP and NRC needs. At your convenience, IP would be pleased to meet with you to further discuss this program. IP is submitting this letter in order to establish a base for further discussions of the program. If you have any questions, please contact me or my assistant J. D. Geier (217-424-6995).

Sincerely yours,

D. P. Hall
Vice President

DPH/jsm

cc: NRC Resident Office
Director, Office of I&E, USNRC, Washington, DC 20555
NRC Clinton Licensing Project Manager
Illinois Department of Nuclear Safety

Attachments:

(1) Summary of Clinton Engineering Design Control and Surveillance

(2) Clinton Independent Design Review

ATTACHMENT 1

SUMMARY OF CLINTON
ENGINEERING DESIGN CONTROL AND SURVEILLANCE

Illinois Power Company (IP) has maintained a continuous program of design control and surveillance which dates back to the beginning of the project in late 1972. The program was executed by the combined efforts of two IP project groups - Engineering and Quality Assurance (QA). In the early stages of the project the activities of these two groups were combined under one department, i.e., the Nuclear Station Engineering Department (NSED). In 1980 the groups were separated when QA was elevated to full department stature.

I. Early Programs

A. QA Program

In early 1973 the Clinton Power Station (CPS) design was started. IP QA recognized that CPS would require a different QA program than Sargent & Lundy (S&L) had been using on earlier nuclear power plants. The existing S&L QA program did not address the complex and extensive new requirements of the "rainbow series" of ANSI N45.2 daughter standards. Consequently all nuclear safety-related design and engineering activities of S&L were suspended in June 1973.

As a prerequisite for resumption of CPS work S&L was required to develop a revised quality assurance program acceptable to IP. In March of 1974, an independent third party was retained to audit the new proposed S&L QA program. It was found that S&L had successfully corrected prior QA program deficiencies. Subsequently, IP authorized S&L to resume nuclear safety-related design work on CPS.

B. Engineering Surveillance/QA Audit Program

With the resumption of nuclear safety-related design activities at S&L, IP instituted a long-range audit plan and program to maintain surveillance of S&L activities. One feature of this plan was to audit the activities at S&L at least once per year. Between 1973 and 1983 there were approximately twenty-six major IP audits of the design and engineering activities at S&L. In addition there was a concurrent program of surveillance of S&L work by both IP QA and Engineering Departments.

The surveillance was performed using IP resources, sometimes assisted by outside consulting personnel. It produced detailed challenges to S&L procedures, layouts, specifications, code and standard usage/selection, regulatory requirements interpretations, etc. These were subsequently resolved or corrected by S&L.

C. Design Reviews

IP maintained continuous surveillance of S&L design engineering through the entire CPS design cycle. S&L's nuclear safety-related engineering design criteria were reviewed and accepted by IP. A majority of the specifications related to nuclear safety were reviewed. Tracking and follow-up for IP review comments was maintained and documented. These reviews were made for technical adequacy of the work and from the standpoint of operability, maintainability, and constructability.

The quality assurance requirements to be included in all S&L specifications for nuclear safety-related work were defined by IP and approved prior to general use as "boiler plate requirements" for the specifications. These reviews and approvals were completed prior to issue of specifications for procurement. IP Engineering and QA personnel also participated in the review and coordination of S&L and Baldwin Associates (BA) procurement activities for nuclear safety-related equipment, materials, and systems.

All sections of the Preliminary Safety Analysis Report (PSAR) were systematically reviewed and controlled by NSED prior to final issue. A formal documented system of review comments and follow-up was maintained to assure adequate control of input to these documents. All presentations to the NRC staff were made or coordinated by NSED personnel to assure appropriate feedback and correction to the PSAR. All revisions to these documents were controlled directly by NSED.

II. Later Project Stages

As the CPS design matured, the character of IP surveillance and control also changed. Specific aspects of the design were reviewed and challenged for end product adequacy. These activities were applied to many phases of the work including the following typical examples:

A. Intergranular Stress Corrosion Cracking (IGSCC)

In 1979 when NUREG 0313 was published, it was recognized that the CPS design would be affected. The project design (both nuclear and balance of plant) was reviewed for general adequacy and compliance with the requirements of NUREG 0313. Major system material changes and rework were undertaken so that there is no longer any sensitized material in the primary pressure boundary. One of the results of this change was a significant rework of the previously fabricated recirculating cooling system piping.

B. Control Room

The CPS control room is the first-of-a-kind combination of Nuclenet and Power Generation Control Complex (PGCC). The design of this part of CPS was considered to be particularly sensitive to interface controls. It warranted extraordinary surveillance and control. IP established a special task force to coordinate the exchange of design information between S&L and General Electric (GE). This task force was responsible for the final stages of development of the design and for surveillance of manufacturing and testing to assure that the design intent was carried through the end product.

Some of the special measures that were taken to assure the engineering and design included:

1. During the early design stage, a full-scale mock-up of the main control panels was used to evaluate the layout of the controls and instrumentation.

2. At a critical stage of initial implementation of S&L drawings, IP authorized six S&L engineers to temporary assignment in the GE factory. The purpose was to maintain and assist in interpretation of the S&L drawings to effectively convey critical information that had to be translated to GE drawings of the PGCC Nuclenet complex.

3. An IP staff engineer was designated as test director and a group of IP Engineering, Startup, and Operations personnel (including a resident group of five for a period of eighteen months) were sent to the GE factory to test, perform final design checkout and documentation review of the control room. These activities included all significant phases of testing,

procedure preparation, supervision of test activities, review of design changes, and corrective action appropriate to completion of the control room in accordance with the required quality level.

4. After the control room equipment - preassembled and tested at the GE factory - was shipped to the site, additional surveillance and design control measures were taken. This assured that the final field details of installation check-out and testing were properly reviewed for design changes. Installation related design control was carefully reviewed and documented at all appropriate levels.

C. Equipment Qualification

Regulatory requirements have been established for seismic and environmental qualification of mechanical and electrical equipment. Additional regulatory requirements also exist for pump and valve operability.

A combined engineering effort was undertaken to review the specifications and design documents to assure that requirements are met and have been properly documented. Standing organizations were set up at S&L offices and at CPS. They address these engineering and design requirements and the fulfillment of such by detailed reviews of records which are being assembled for formal NRC audit.

These activities have resulted in identification of equipment deficiencies and have identified the need for corrective action. Corrective measures have included replacement of equipment. In addition IP has established a program to properly establish qualification requirements for CPS-unique equipment and systems.

D. Safety Analyses

All of the principal CPS design features are supported by appropriate safety analyses and analytical studies. These demonstrate that the design concepts are properly integrated into the overall safety analyses of the plant. Safety analyses and other supporting technical information are documented in the Final Safety Analysis Report (FSAR).

NSED has maintained continuous independent surveillance of the engineering and design to establish the fundamental safety of CPS. The effort

includes independent reviews of applicable analytical methods, computer programs, calculations and analyses used by the design engineer.

Specific examples of NSED analyses and independent checks of S&L's analytical and safety work include the following:

1. Piping - Piping stresses and design work performed by S&L have been selectively checked and verified. The NUPIPE code and other alternate methods have been used for this purpose. Both ASME boiler code piping and noncode work have been sampled. Piping associated with various plant systems has been reviewed.

2. Shielding - Various S&L radiation shielding designs have been checked. Independent analyses using (in some cases) different methods have been employed. Shielding sources as well as attenuation calculations have been verified. A variety of shielding, both permanent structures and block shield walls, have been evaluated. Specific systems checked include the biological shielding, radwaste equipment, and various cubicle configurations.

3. Safe Shutdown Capability Following Loss of Power to Instruments and Controls - A review of the adequacy to obtain safe shutdown upon a loss of any Class 1E on non-1E bus supplying power to safety or non-safety related instruments and controls was performed.

4. Suppression Pool Dynamics - NSED calculations and analyses have been performed using independent methods for verification and confirmation of S&L and GE analyses of suppression pool dynamics effects. Checks have also been made of hydrogen releases and hydrogen effects including local combustion and various environmental considerations. Checks have been made on structural loadings inside the containment. Postaccident pool temperatures and temperature distribution have also been examined.

   An IP (NSED) developed analytical code is available to measure the rate of pool warm-up and the effects of lowering reactor vessel water level under postulated ATWS conditions. The correlation with the GE analytical approach has also been evaluated.

5. Core Analyses - Independent NSED checks and verifications of GE nuclear physics data have been made. Programs have been run independently to evaluate core thermal hydraulics. Transient analyses are under development using both GE and EPRI source data.

III. Recent Project Stages

In the last several years, CPS design has reached the stage where meaningful "bottom line" analyses and checks have become possible. NSED has examined S&L design work to independently verify selected specific parts of the overall design. This work includes the following:

A. Seismic Assessment Program

A documented IP program was established to review the plant seismic design. The purpose of this program is to assure that equipment of the decay heat removal systems and their power supplies are adequately designed for seismic events. The program evaluates seismic design in three ways: (1) small bore piping design methods are reviewed; (2) mechanical interaction of components (including walkdowns in the field); and (3) determination and comparison of stress levels from the revised seismic response spectra to the maximum allowable stress level for components. The system provides for documented feedback of observed potential problems. S&L is required to evaluate potential problems identified by this system.

B. Piping Design Review

1. Small bore pipe - On site design review of small bore (2" and under) piping systems is performed regularly by NSED. The review is performed according to detailed checklists developed by NSED to assure in-depth analysis and verification of piping design. Selected calculations for span and support loads are reviewed to assure that technical procedure requirements are met and calculations are completed properly.

2. Large bore pipe - Design work is reviewed by NSED at S&L offices in Chicago using appropriate piping and support design checklists developed by NSED. One subsystem is reviewed each month by a team of three NSED engineers. The review includes a check to ensure that the design specifications meet ASME code

requirements. Checks are also made to determine appropriate verification of computer input accuracy through line-by-line comparison of basic data with construction and as-built drawings. Detailed review of stress reports is made to ensure that all loading combinations are considered. In addition, documentation is reviewed for completeness and legibility.

C. Structural Design Calculations

Approximately 5% of all S&L civil structural calculations are being checked independently by NSED. These calculations relate to engineering analyses of soils, concrete, structural steel, masonry, ASME code work, etc. The checks are being performed both on a numerical comparison basis and by using separate independent methods for comparison of results. The checks are being performed to the computer data input level.

D. General Design Control

Stone & Webster (S&W) under contract to IP performed a review of CPS design control system. As a result of this study, S&W proposed a set of twenty general topics to be examined as part of independent in-house reviews of engineering and design control. These include design input information; design change control and documentation; procurement change feedback and control; load tracking; environmental qualification; compliance with NRC bulletins, information notices, SER's; and other broad design control topics. Each subject has been assigned one or more independent engineers to perform a review and documented analysis of the specifically assigned subjects. Appropriate corrective action based on the results of these reviews is anticipated.

E. Interaction Analysis/Surveillance

As the plant systems and equipment reach the final stages of installation, it has become possible to perform various inspections to identify potential interactions which may not be readily apparent on the drawings. Such interactions could occur between safety-related equipment and nonsafety-related equipment. These must not be detrimental to the continued safe performance of critical parts of the plant. Periodically, important parts of the plant are inspected by qualified teams of S&L and IP engineers. Suspected interaction conditions are documented and reported to S&L for further review and possible design changes. These activities

provide another level of assurance that the design intent of the drawings and specifications is in fact achieved. They also assure that conditions which are often difficult to envision from drawings and specifications are identified and properly controlled or corrected.

F. Licensing

Certification of FSAR amendments, reviews and coordination with the NRC is controlled and documented by NSED. This assures that the design configuration is maintained and is consistent with the original criteria. These activities will culminate in a final IP certification of the accuracy and completeness of the FSAR. Certification will be completed shortly before the operating license is expected to be issued. The certification will be based on a comprehensive review of the entire FSAR including appropriate disposition of all documented commitments made in both the FSAR and PSAR.

G. Nuclear System Protection System (NSPS) Solid-state Design Review

NSED initiated a review of the NSPS design. This design review which was performed by Stone & Webster included an examination of the control logic and the implementation of the logic in the solid-state design. The purpose of the review was to make a determination of the overall adequacy of the NSPS with respect to design philosophy and hardware used for implementation. Additionally, the NSPS was reviewed for conformance to applicable regulatory guides and industry standards as outlined in Section 1.8 of the FSAR.

IV. Miscellaneous

The examples selected above are typical of the independent engineering and design control and verification activities of IP. Many other examples could have been selected including the following:

1. Several joint reviews with EPRI were made to determine the adequacy of the IGSCC preventive measures for the project. These reviews considered the state-of-the-art of all available measures including material substitutions, reworking of materials, and special processes such as stress improvement techniques.

2. A safety parameter display system verification and validation team has been assembled to perform an

independent review of that work. The bases for this program are the requirements of NUREG 0737, Supplement 1, Requirements for Emergency Response Capability.

3. IP has played a lead role in the review and disposition of the generic BWR-6 issues identified by the NRC. This was accomplished through the formation of the License Review Group-II (LRG-II). Approximately 50 issues have been resolved through generic position papers which are endorsed by each members docket and resolved through the Safety Evaluation Reports.

4. Twenty-five percent of all of the as-built documentation for the containment liner and reactor vessel pedestal were re-reviewed. The Hartford Steam Boiler Inspection and Insurance Company was selected as an independent reviewer for this purpose. Documentation and records were reviewed from the standpoint of their acceptability to an authorized nuclear inspector on the assumption that code requirements applied except for stamping the work.

5. A number of INPO reviews have been performed including the formalized self-evaluation, the construction assistance audit, and the operations assistance audit. These reviews were performed in accordance with established INPO procedures including provisions for management analysis of the findings and formulation of acceptable corrective action programs.

6. A TMI task force was assembled prior to issue of the NRC task action plan in NUREG 0660. A large number of potential problems were investigated. When the final NRC task action plan was published, this program was transformed into a long-range accountability and action program based on documented consideration of each applicable lesson learned and action plan requirement. The task action plan has resulted in reviews of the project design. It also provided for detailed design changes and augmentation of the design to include new requirements in accordance with the TMI lessons learned and task action plan documentation.

7. Analyses of off-site radiation doses resulting from bypass leakage during a design basis accident were performed. These analyses demonstrated adequate margin for the proposed bypass leakage criteria.

8. An independent review of the drywell cooling HVAC system has been performed. This review included verifying heat load and cooling capacity calculations.

ATTACHMENT 2

CLINTON INDEPENDENT DESIGN REVIEW

I. INTRODUCTION

To provide additional assurance that the design of Illinois Power Company's (IP) Clinton Power Station (CPS) meets the requirements of the Final Safety Analysis Report (FSAR) and the Safety Evaluation Report (SER), IP is obtaining the services of an outside consultant (Bechtel Power Corporation) to conduct an Independent Design Review (IDR). The IDR will consist of a horizontal review of the design system and a vertical review of two of the Clinton systems. The consultant is to include, as part of his review, the mechanical, civil structural, control and instrumentation, electrical and fluid system aspects of the design.

II. CHARTER

For the horizontal review, the consultant is to evaluate the adequacy of the Sargent & Lundy (S&L) overall design system for the Clinton project. This review should use as a data base the results of the Cygna review for Fermi, the Teledyne review for LaSalle, the NRC review for Byron, the Bechtel review for Byron (currently underway), and any other information from previous reviews by IP and others. In addition to evaluating the applicability of these findings to IP, the consultant should determine the adequacy of resolutions of applicable findings. Special emphasis should be placed on determining the underlying root causes of these findings and ensuring that the resolutions adequately addressed these root causes.

For the vertical review, the consultant is to review the High Pressure Core Spray System and the Standby Liquid Control System:

1. Determine that the design meets the FSAR requirements,

2. Evaluate the adequacy of the design,

3. Evaluate the adequacy of the Sargent & Lundy (S&L) design process,

4. Evaluate the engineering judgments and assumptions, and the basis on which they were

exercised and utilized,

5. Evaluate the use of the standard design methods,

6. Review the S&L design interface with General Electric (GE),

7. Evaluate the adequacy of the documentation of design calculations, and

8. Identify the underlying causes for any deficiencies identified.

III. SCOPE OF WORK

The requested review areas and implementing guidance are listed below. The review of each system shall include:

1. Safety Classification

The independent reviewer shall review the classification of the system and structures and their components to verify that they have been properly classified per 10CFR50.

2. Design Process

The independent reviewer shall review the design records to verify the adequacy of the design process, the adequacy of design, and the consistency between design documents and FSAR commitments.

3. Design Change Control

The independent reviewer shall review the design change controls, including the procedures for Field Change Requests (FCR's), Non-Conformance Reports (NCR's), and Engineering Change Notices (ECN's) to verify that the design has been properly controlled.

4. Design Review

The independent review team should examine the design reviews performed by S&L for the two selected systems. An assessment should be made regarding the effectiveness of the S&L

design review for these systems and the review process in general.

5. Root Causes

The independent reviewer shall attempt to discover the underlying causes for any identified deficiencies.

6. Construction Verification

No construction verification is required, although the reviewer may visit the site if he feels it is necessary.

7. Period of Review

The IDR should cover work through April 1, 1984.

IV. GENERAL

General Electric is the NSSS supplier and Sargent & Lundy (S&L) is the Architect Engineer (AE) for CPS. S&L will open their offices to the independent reviewer and provide all documentation and calculations requested. The boundaries of the two systems to be reviewed are shown on the enclosed drawings.

The independent reviewer need not perform detailed calculations and analysis. It is sufficient that the existing calculations be reviewed; however, the independent reviewer may perform such calculations as he feels necessary.

In performing this work, the independent reviewer should become familiar with the FSAR. In addition, the independent reviewer should become familiar with S&L procedures and instructions necessary to conduct this review.

IP recognizes that S&L documents and information reviewed for the purpose of the IDR are the property of S&L and may be proprietary. Such documents shall not be used for any purpose other than the IDR without the expressed approval of S&L. All S&L documents not specifically included in the report shall be returned to S&L.

V. INTERNAL REVIEW

Observations (potential discrepancies) shall be submitted in a timely manner to an internal review committee, within the independent reviewer's organization, composed of senior technical personnel with

broad experience in technical management. This internal committee is to determine if the observation is accurate and has the potential for a safety concern. If the committee determines that the observation is accurate, but is not a safety concern, it shall be properly documented, classified by the committee as an observation in the final report, and dispositioned. Dispositioning of observations may involve discussions or additional analyses, by either IP or S&L, to demonstrate that required design margins are maintained. All dispositioning shall be documented in the final report.

If the first level review committee determines that observation is a potential safety concern, the second level internal committee will review the observation expeditiously. IP will be notified immediately when an item is sent to the second level review committee. In the event that the second level review committee agrees that such an item is a potential safety concern, IP will then be notified immediately. IP will then promptly make a determination of reportability in accordance with NRC regulations.

VI. INDEPENDENCE

All team members and all review committee members must meet the requirements of independence. All individuals involved in this design review, including all staff shall complete Exhibit 1 and shall be free of substantive interest in IP and S&L. It is recognized that Bechtel is currently reviewing S&L activities for Commonwealth Edison. This activity is not considered to impair Bechtel's independence.

Examples of substantive interest are:

1. Team or staff members: any work experience in design, construction, or quality assurance of CPS with IP, with S&L or with Clinton site contractors currently or within the past five years.

2. Immediate family of team or staff members employed by IP, S&L, or a Clinton site contractor; or engaged directly or indirectly in the design and construction of CPS.

VII. QUALIFICATIONS

All team or staff members should have appropriate technical expertise, with background and experience in the area they are reviewing. It is expected that the team will have QA/QC, engineering, and nuclear power

plant design expertise. Oualifications of the staff shall be documented and the names of proposed staff members shall be submitted to IP for approval. Qualifications also shall be submitted in the final report.

VIII. QUALITY ASSURANCE (QA) REQUIREMENTS

The independent reviewer should implement the applicable portions of his QA program for the systems being reviewed in the IDR. The applicable portions of the QA program that are used should be discussed in the final report. Plans and procedures used should also be described. IP QA will perform audits and/or surveillances of the IDR effort at S&L.

IX. SCHEDULE

The schedule for completion of this IDR is to be based upon a maximum period of six months from signing of the contract to completion of the final report. The independent reviewer is to provide a schedule for all IDR activities including the proposed start of the review, completion of the review, issuance of conclusions on all potential findings and issuance of the final report.

EXHIBIT 1

Independence Criteria

IP will utilize the answers to the following questions to evaluate the independence of the company conducting the IDR and the individuals which the company will utilize in the review. Minimal or insignificant contacts will not necessarily disqualify candidates for the IDR.

1. Has the company or individual involved had any previous involvement with the Clinton Project? If yes, please provide details.

2. Has the company or individuals involved been previously hired by any of the IP, Sargent & Lundy (S&L), or Clinton site contractors to perform similar audits? If yes, please provide details.

3. Has any individual involved been previously employed by any of the IP, S&L, or Clinton site contractors? If yes, please provide details.

4. Does the company or any individual involved own or control stock of any of the IP, S&L, or Clinton site contractors? If yes, please provide details.

5. Is any member of the present household of any individual involved employed by any of the IP, S&L, or Clinton site contractors? If yes, please provide details.

6. Is any relative of any individual involved employed by any of the IP, S&L, or Clinton site Contractors? If yes, please provide details.

7. Has the company or any individual been offered future employment by any of the IP, S&L, or Clinton site contractors? If yes, please provide details.

CERTIFICATE OF SERVICE

I hereby certify that an original and two conformed copies of the foregoing document were served upon 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:

Hugh K. Clark, Esq., Chairman
P.O. Box 127A
Kennedyville, Maryland 21645

Dr. George A. Ferguson
School of Engineering
Howard University
2300 Sixth Street, N.W.
Washington, D.C.

Dr. Oscar H. Paris
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Executive Legal Director
United States Nuclear Regulatory Commission
Washington, D.C. 20555

Philip L. Willman
Assistant Attorney General
Environmental Control Division
160 North LaSalle Street
Room 900
Chicago, Illinois 60601

Jean Foy
511 W. Nevada
Urbana, Illinois 61808

Prairie Alliance
Box 2424
Station A
Champaign, Illinois 61820

Herbert H. Livermore
U.S. Nuclear Regulatory Commission
RR 3, Box 229A
Clinton, Illinois 61727

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

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

in each case by deposit in the United States Mail, postage prepaid on June 12, 1984.

Charles D. Fox

One of the Attorneys for
Applicants

Sheldon A. Zabel
Charles D. Fox IV
SCHIFF HARDIN & WAITE
7200 Sears Tower
233 South Wacker Drive
Chicago, Illinois 60606
(312) 876-1000