

ILLINOIS POWER COMPANY



CLINTON POWER STATION, P.O. BOX 678, CLINTON, ILLINOIS 61777

September 28, 1984

Docket No. 50-461

Mr. James L. Milhoan  
U. S. Nuclear Regulatory Commission  
East West/South Towers Building  
Room 303-Mail Stop EW/S 305B  
4340 East West Highway  
Bethesda, Maryland 20014

Dear Mr. Milhoan:

By our letter of May 31, 1984 to the NRC proposing an Independent Design Review (IDR), a document identified on page 7 under Item D., (General Design Control), was labeled the Stone and Webster study. Per your recent telephone conversation with J. D. Geier, you requested a copy of this document and any related findings. For your review, a copy of the document is included as attachment 1. The purpose of this letter is to describe the origin of this document by providing the following information:

1. In response to a request from Illinois Power Company (IPC) in late 1983, a Stone and Webster manager, in conjunction with IP, developed a list identifying twenty (20) generic industry problems related to design control. This list became locally known, inaccurately, as the "Stone and Webster study". This term was used in the IDR letter to describe the list.
2. In a memorandum dated December 6, 1983, D. P. Hall directed the Nuclear Station Engineering Department (NSED) to prepare a point paper on each of the twenty (20) topics. A copy of this memorandum is included as attachment 2. The intent of this effort was to have cognizant working level engineers conduct "desk top" engineering reviews to assess the applicability of these twenty (20) items to Clinton. The information obtained was intended for use locally to achieve a meaningful appraisal of some of the problems facing the NSED engineers.

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3. This effort of preparing point papers will be complete in November, 1984. Each of the twenty (20) topics will be reviewed by IP management and will be made available to Bechtel as part of the IDR should Bechtel so desire. They can also be made available to the NRC.

Sincerely yours,



D. P. Hall  
Vice President

DPH/HRV/jsm

Attachments

cc: See Attached Distribution List

## ILLINOIS POWER, CLINTON STATION, SUGGESTED REVIEW ITEMS

## 1. System to Control Design Information

There must be some form of document control system to ensure that information provided by Engineering to Construction is current and has been approved to the degree required, and is supported by current analysis, etc. There should also be documented evidence that the design and all changes have been reviewed for compliance with all licensing commitments.

## 2. System to ensure that all design changes are accomplished and documented.

There is a need to ensure that any changes made by construction forces in advance of engineering approval are entered into the engineering system. Similarly, changes made to engineering documents during the construction phase must be verified as having been accomplished.

## 3. Effect of Construction Changes on Purchased Equipment

There should be a system in effect to evaluate the effect of Construction changes in relation to the following items for purchased equipment:

- a. Code Compliance
- b. Seismic Qualification
- c. Environmental Qualification

## 4. Load Tracking

Each discipline must be able to demonstrate that design criteria has been maintained up-to-date and that changes made by other disciplines or in construction are included in the final analysis.

Examples of areas where this is needed are:

Changes to power distribution system when motors are added or motor sizes are substantially increased (This also affects control sizing).

Loads on structures due to concentration of equipment or pipe supports.

Tank storage capacity due to system parameter changes.

## 5. There should be a written Environmental Qualification program to ensure compliance with IEEE 323/344.

It should demonstrate how the status of systems/equipment is to be described and made known during purchase, installation, and testing. That is, complete or partial qualification to harsh or mild environmental requirements should be apparent from the documentation, and tasks remaining to complete the qualification should be identified work items.

(There is a definite need in this area to identify additional work that results when it is learned that the manufacturer failed to qualify the exact assembly that was delivered.)

## 6. There should be a system to evaluate problems or concerns identified by NRC IE Bulletins and Information Notices and SOER's or SER's from INPO.

7. There should be a system to evaluate the engineering or licensing (55(e), part 21) consequences of identified problems.
8. The documentation of the procurement system should include:
  - a. Provision for ensuring that vendors are qualified.
  - b. Transmission of needed requirements to vendors and sub-vendors.
  - c. Provision for procurement of catalog items.
  - d. Provision for procurement of spare parts and replacement parts.
9. There should be a system to ensure that electrical separation criteria are consistent and acceptable from plant licensing (SAR) through design and installation.
10. There should be a system to obtain and evaluate as-installed cable length versus design length.
11. Commitment to include TMI changes.

Required changes to structures, control systems, security systems, computer read-outs, should be factored into existing designs as smoothly as possible.
12. There should be a written program describing the reconciliation of as-installed piping systems with the design and analysis. This program should verify the correctness of the system parameters used in the piping analysis, the load combinations used in the piping analysis, the agreement of the work sketch in the piping analysis with the as-constructed condition, verification that materials used comply with the design, the correctness of assumed loads such as valve weights or other in-line component weights, suitability of pipe supports/restraints, pipe rupture or pipe whip effects, suitability of nozzle loads to vendor criteria and/or equipment support analysis, and certification to code requirements.
13. There should be a program which will demonstrate suitable documentation and qualification of all computer software used in safety related analysis. This should include purchased or service bureau programs as well as those developed in house. This program should be capable of demonstrating qualification of every version/level of each program that has been used, and of identifying computer input and output to the qualified version and level.
14. The Radiation Protection calculations should have a system to account for the following factors:
  - a. The source term data from the NSSS is usually preliminary. The system should ensure that this data is used as conservatively as practical, and that the verified data is obtained and used as soon as possible.
  - b. There should be controlled access drawings prepared and maintained to show radiation levels expected in manned spaces and in access paths to and from spaces that may be occupied.

15. There should be a clear definition of responsibility for as-built condition of NSSS systems or portions of system. This should specifically identify flow diagram/SAR figure information as well as fabrication ISO's and control drawings.
16. There should be a system to resolve differences between vendor wiring diagrams and conditions noted during installation or testing.
17. There should be a system to ensure that supplier operating and maintenance manuals are provided as required, and that they are available at the installation, maintenance, testing, and operational phases.
18. There should be in-plant reviews or system walk-downs to verify that adequate clearance exists to prevent interference between piping (especially hot piping) and other components or structures. This should also verify the adequacy of the design and other measures taken to ensure that the failure of non-safety related systems or equipment will not endanger safety-related systems or equipment.
19. There should be a system to ensure that all needed documentation for ASME III systems is available and in a satisfactory condition. This should include a review of Design specs for completeness and code compliance, a review of Stress Reports, and a system to obtain and review information for data reports.
20. General Industry issues:
  - a. Waterhammer
  - b. Seismic Design criteria
  - c. Station blackout
  - d. Control system safety implications (automatic and manual shutdown initiation will occur as designed).

December 6, 1983

J. D. Geier, P-33

Potential Engineering Action Items

On several occasions we have discussed some of the long range engineering efforts which remain to be completed. Much good work has been done to schedule the remaining effort in a timely manner. The attachment contains several (20) engineering tasks which have been noted at other nuclear construction sites as troublesome.

I request the following action:

- a. Assign each item to the cognizant working level engineer with the task of preparing a point paper describing where the issue stands.
- b. The responsibility should be in NSED because one of the design control system guiding parameters is to set up a formal acceptance of items from other design/engineering agents.
- c. Bring the papers to a meeting; suggested attendants would be J. Spencer, E. Kant, J. Geier and myself.

It is important to gather the working level opinion without adjustment to achieve a meaningful appraisal of the problems some of our engineers may be facing.



J. B. Hall

DPH/psf

attachment

cc J. Spencer, V-920  
E. Kant, P-33  
R. Wyatt, V-275  
R. Wight, T-31  
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SEP 21 1984

Clinton Power Station

Independent Design Review  
Standard Distribution List

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