

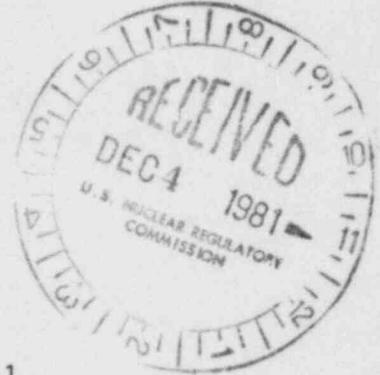
ILLINOIS POWER COMPANY



U-0355  
L30-81 (12-01)-6  
500 SOUTH 27TH STREET, DECATUR, ILLINOIS 62525

December 1, 1981

Mr. James R. Miller, Chief  
Standardization & Special Projects Branch  
Division of Licensing  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555



Dear Mr. Miller:

Clinton Power Station Unit 1  
Docket No. 50-461

The attached material represents responses to issues which were discussed with Messrs Ernie Rossi and Rick Kendall during a meeting on November 30, 1981. Illinois Power Company considers these to be adequate responses to the following issues:

IE Bulletin 79-27  
IE Bulletin 80-06  
Control System Failures

Sincerely,

J.D. Geier  
Manager, Nuclear Station Engineering

Attachments

cc: J.H. Williams, NRC Clinton Project Manager  
H.H. Livermore, NRC Resident Inspector  
R. Kendall, NRC ICSB

*Booi  
S/i  
Add: Ernie Rossi  
Rick Kendall*

Issue Title:

Response to IE Bulletin 79-27

Issue:

The Bulletin asks for a review of Class 1E and non-Class 1E buses to assure that ability to achieve cold shutdown is not impaired. To perform this review, we suggest the following:

Identify all control (non-safety grade systems) which are used to achieve cold shutdown. These systems include any alarms/indications which are used for shutdown.

Examine points where these systems are common (i.e., breakers, power sources, inverters, etc.) with other systems as defined in Part a.

Postulate worst failure and anticipated operator actions. Is the normal path to cold shutdown still available?

If not, are alternate paths to achieve cold shutdown available?

The information requirements of NRC review are as follows:

Identify control systems used to achieve cold shutdown.

Bus information for the systems defined in Part a.

Identify common points (i.e., breakers, power sources or inverters, etc.) and resultant status of these systems given the worst common point failure.

Response:

In response to this concern, Illinois Power has initiated a detailed review and analysis of the Clinton power sources. Tables are being developed listing instruments and control devices on each power source, alarm indications and the effects from loss of the power source. Illinois Power will commit to provide the results of this review 4 months prior to fuel load and to implement design modifications if any effect is found which has an adverse impact on safety. Illinois Power will implement any design changes found necessary as a result of this review prior to startup after the first refueling outage.

Issue Title:

IE Bulletin 80-06, Engineered Safety Feature  
(ESF Reset Controls).

Issue:

Automatic reset of safety systems logic following the return to normal of the initiating signal must be reviewed in accordance with IE Bulletin 80-06.

Response:

A review of system schematic level drawings of Engineered Safeguard Feature (ESF) functions (ECCS, RHR, NS4, RCIC) was performed to determine their compliance to IE bulletin 80-06.

The conclusions of this review are as follows:

1. BWR's do not have an "emergency mode" per se. For clarification purposes an "emergency mode" is considered to be an abnormal plant condition in this review.
2. No initiating logic will automatically reset upon the return of the initiating signal to normal. A "seal" is provided on all initiating logic.
3. A manually operated system level reset cannot occur unless the cause of the initiation has been cleared. A deliberate operator action is required to accomplish manual system level reset.
4. Upon a deliberate operator initiated system level manual reset, each system status is as follows:
  - a) HPCS  
All actuated equipments remain in their abnormal condition (e.g., HPCS pump running, injection valve open). A manual operator action at the component level is required to change state of the actuated equipments.

Response:

a . HPCS Diesel Generator

A system level reset of the ESF actuation signal will not shut down the diesel generator. A manual operator action is required to shut the engine off.

However a system level reset does restore all of the protective trips provided for diesel generator protection (i.e., high jacket water temp, low lube oil press. reverse power, loss of excitation, overcurrent) which are blocked during an abnormal condition. If any of these protective trips are present at the time of system level reset, the diesel generator will trip and a lockout will occur.

b. LPCS

All actuated equipment remain in their abnormal condition. A component level operator action is required to change state of actuated equipments.

c. ADS

All actuated valves (air operated) return to their normal condition hence changing state. All ADS solenoids de-energize in its own division, closing the ADS valves (see Note 1.)

d. SRV

All actuated equipment remain in their abnormal condition.

e. RHR

All actuated equipment remain in their abnormal condition (e.g. pumps, injection valves, etc.) They have to manually signalled closed at the component level.

f. RCIC

All actuated equipment remain in their abnormal condition. The inboard/outboard isolation valves and the pump suction valve from the suppression pool are exceptions to this.

g. MSIV

All MSIV remain in their abnormal condition (i.e., closed). A manual operator action is required for each valve to change its state.

A review of BOP safety-related system schematic level drawings will be performed to determine their compliance to IE Bulletin 80-06. Illinois Power Company will commit to provide the results of this review 4 months prior to fuel load and to implement design modifications if any effect is found which has an adverse impact on safety.

Illinois Power Company will implement any design changes found necessary as a result of these reviews prior to startup after the first refueling outage.

Issue Title:

Control System Failures

Issue:

IE Information Notice 79-22

This notice is concerned with the effect on plant safety analysis given control grade systems are exposed to environments caused by rupture of high energy lines. To respond to this concern, the following is proposed:

Trace all high energy piping systems and identify the rooms/areas in which the systems identified in Attachment 2 are located.

Limit the breaks to areas where more than one of the systems are in the same vicinity.

Postulate resultant state of the reactor as a result of failing those systems.

Are Chapter 15 events bounding? If yes, analysis is complete.

If no, perform analysis to identify any increase in the consequences (peak clad temperature, peak containment pressure, peak suppression pool temperature, and radiological release) of any SAR event.

Common Power Source/Sensor Failures

This request asks that a review be conducted to demonstrate that any single electrical failure (such as loss of power supply, short circuit, open circuit, or sensor failure) in control systems will not result in multiple electrical failures of control systems. If multiple failures can exist, assurances must be made that a transient or accident resulting from this failure is not more severe than those in the plant safety analyses (Chapter 15). To respond to this request, the following is suggested:

Create a list of all control systems and indicate those whose failure may impact reactor pressure, reactor water level, or critical power ratio.

Identify any common power sources (two or more systems) and common sensors from this list of systems whose failures might impact the reactor.

Postulate the failure of each case in b and define an event scenario.

Evaluate each scenario and determine if the existing Chapter 15 events are either identical or bound the postulated failures in c.

The information requirements for NRC review are as follows:

IE Information Notice 79-22

Identify credible breaks as defined in work scope.

Determine resultant states of systems as a result of these failures.

Common Power Source/Sensor Failure

A copy of the GE elementaries for the GE systems on the attached list, marked up with the AE bus information.

Bus tree information from the elementaries back to the top level one line drawing. This information could be in the form of sketches or lists.

Determine resultant states of the BOP systems given the worst single failure.

Response:

In response to this concern, Illinois Power has initiated a review to determine whether high energy line breaks or single electrical failures could have an effect on any control system and to investigate the impact of failure of the applicable system on the Chapter 15 safety analyses.

Illinois Power will provide the results of this review 4 months prior to fuel load and implement design modifications if any effect is found which has an adverse impact on safety. Illinois Power will implement any design changes found necessary as a result of this review prior to startup after first refueling outage.