

ILLINOIS POWER COMPANY



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

December 26, 1985

Docket No. 50-461

Director of Nuclear Reactor Regulation  
Attention: Mr. W. R. Butler, Chief  
Licensing Branch No. 2  
Division of Licensing  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Subject: Clinton Power Station (CPS) Unit 1  
Variance Request for NUREG-0737, Item II.F.1 - Part 3,  
In-Situ Calibration of the Drywell High-Range Gamma Monitors

Dear Mr. Butler:

Illinois Power Company (IP) letter U-600245 was written to request variances from four NUREG-0737, Item II.F.1 requirements concerning Clinton's Accident-Range Effluent Radiation Monitors and Drywell High-Range Radiation Monitors. This letter also identified two possible areas where additional variances might be needed. One of these two areas concerned in-situ calibration of the Drywell High-Range Radiation Monitors which is a requirement specified in NUREG-0737, Item II.F.1 - Part 3.

IP will perform in-situ calibration of the Containment High-Range Radiation Monitors. However, we have determined that in-situ calibration of the Drywell High-Range Radiation Monitors will not be possible.

IP is requesting relief from the NUREG-0737 requirement for in-situ calibration of the Drywell High-Range Radiation Monitors. The justification for not performing the in-situ calibration for the Drywell monitors is provided in the enclosed attachment. The attachment also describes the proposed method of calibrating the Drywell monitors.

Please notify us at your earliest convenience if the enclosed information is adequate for your review and approval of this variance request.

Sincerely yours,

*D. A. Spangenberg*  
F. A. Spangenberg  
Manager - Licensing  
and Safety

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PDR ADOCK 05000461  
A PDR

JBD/ckc

Attachment

*Booi*  
*Ad.*  
EB (LIAW)  
PSB (L. HULMAN)  
EICSB (SRINIVASAN)  
RSB (ACTING)  
FOB (VASSILLO)  
AD - G. LAINAS (Ltr only)

U-600348  
P03-85(12-26)-6  
1A.120

cc: Mr. B. L. Siegel, NRC Clinton Licensing Project Manager  
NRC Resident Office  
Regional Administrator, Region III USNRC  
C. F. Gill, Region III USNRC  
Illinois Department of Nuclear Safety

VARIANCE REQUEST FOR NUREG-0737, ITEM II.F.1 - PART 3,  
IN-SITU CALIBRATION OF THE DRYWELL HIGH-RANGE GAMMA MONITORS

SYSTEM DESCRIPTION

Illinois Power Company (IP) has procured and installed two Drywell and two Containment High-Range Gamma Radiation Monitors to meet the requirements of TMI Action Plan Item II.F.1 - Part 3, "Containment High-Range Radiation Monitors". The high-range gamma radiation monitoring system consists of two redundant divisions which are physically and electrically independent. Each division provides the capability of monitoring and indicating high-range radiation levels in the Drywell and the Containment.

Each radiation monitor consists of a radiation detector and a readout device. The readout devices are located on Main Control Room panels and are provided with indicators with a range of 1 to  $10^7$  R/hr. Each monitor has a high gamma radiation level alarm, an alert gamma radiation level alarm, and a system failure alarm.

The Containment radiation detectors are vertically mounted at elevation 834' (6' above the refueling floor) and are located approximately 180° circumferentially from each other. The Drywell radiation detectors are horizontally mounted inside thin-walled penetration sleeves at approximately elevation 790'. The two Drywell detectors are located about 180° circumferentially from each other.

PROBLEM

TMI Action Plan (NUREG-0737) Item II.F.1, Attachment 3, Table II.F.1 - 3 requires that the radiation detectors be calibrated in-situ with a calibrated radiation source for at least one decade below 10 R/hr. As stated above, the two Drywell detectors are installed in penetration sleeves with a thin-walled window facing the Drywell. The penetration sleeves are located at about elevation 790'. The nearest permanent platform inside the Drywell is approximately 20' below the penetration sleeves. The location of the detectors in the Drywell, and the presence of the sleeve will not permit in-situ calibration of these detectors.

ILLINOIS POWER POSITION

Illinois Power Company proposes to perform the radiation calibration of the Drywell High-Range Gamma Radiation Monitors locally on the Containment side of the penetration sleeve. The detectors will be removed from the sleeves by taking off the 16" diameter sleeve covers. Electrical cables connected to the detectors pass through a slot in the covers. This will enable removal of the covers and detectors without disconnecting any electrical cables. The radiation calibrations will be performed for at least one decade below 10R/hr with the detector in the horizontal position using a Victoreen Model 878-10 High-Range Field Calibrator. This calibrator will also be used to calibrate the Containment High-Range Gamma Radiation Monitors in-situ, thus providing a consistent method of calibrating both sets of detectors. The design of the calibrator allows the calibrations to be performed in a manner which incorporates ALARA principles and which is radiologically safe.

Electronic calibration over the detectors' range will be performed with the detectors in their normal (in sleeve) position. The use of a fixed geometry calibrator allows for the radioactive calibration to be repeated without any significant alteration of the test conditions. The accuracy of the monitor response when it is in its normal (in-situ) position can be determined by combining the results of the electronic calibration, the radioactive calibration and correction factors which were previously determined to take the sleeve effects into account.

Calibration in the manner described will permit consistency in methods. Coupled with the correction factors for the drywell monitors, this method will provide consistency in instrument readout and enable performance of the calibrations in an ALARA manner.