

ILLINOIS POWER COMPANY



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

May 5, 1986

Docket No. 50-461

Director of Nuclear Reactor Regulation
Attention: Dr. W. R. Butler, Director
BWR Project Directorate No. 4
Division of BWR Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Clinton Power Station
Post Accident Sampling System Evaluation Report
NUREG-0737, TMI Action Plan Item II.B.3

Dear Dr. Butler:

Attached is a revision to the Clinton Power Station (CPS) "Post Accident Sampling System Evaluation Report." This report was originally transmitted to the Staff, via a letter dated April 19, 1985 to F. A. Spangenberg, Director-Nuclear Licensing and Configuration (IPC) to A. Schwencer, Chief-Licensing Branch No. 2 (NRC). The information contained in this report was acceptable to close out the requirements of CPS SER License Condition #6, "Post Accident Sampling."

The purpose of this revision is to reflect changes in procedures and positions which revised the original Illinois Power approach to post accident sampling. In addition, minor revisions were made to reflect the as-built condition of the system. For your convenience, a summary of the changes made to the original report is provided including an assessment of the impact on our regulatory compliance. Each significant change in the body of the evaluation report is clearly identified by a bar in the right margin.

Illinois Power believes that the revisions made to the original approach to post accident sampling do not affect compliance with the requirements of NUREG-0737, TMI Action Plan Item II.B.3. Please notify us at your earliest convenience if you should have any comments on the enclosed information.

Sincerely yours,

F. A. Spangenberg

F. A. Spangenberg
Manager - Licensing
and Safety

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Attachments

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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

Revision to the PASS Evaluation Report
Summary

CRITERION #1

- Page 4,(a) - Revise 1st paragraph to reflect the loss of the demineralized water during a Loss of Offsite Power (LOOP) Event.
- (b) - Revise 3rd paragraph to reflect that dilution with N_2 is not provided.
- (c) - Revise 5th paragraph to clarify that H_2 and O_2 back-up analysis on a Containment Air sample is not done in the laboratory. H_2/O_2 analysis in the Containment is performed via the two H_2/O_2 analyzers from the Containment Atmosphere Monitoring (CAM) system.
- Page 6,(d) - Revise section on Liquid Nuclides to eliminate reference to the back up counting system at the PASS panel. Illinois Power does have the capability of counting samples inline at the PASS panel, however at this time no procedures are in place to allow for this inline analysis.
- (e) - Liquid Boron; the Boron analysis will be performed via a Tetrafluoroborate Selective Ion Electrode method due to the lack of adequate sensitivity with the previous method (Ion Chromatograph).
- (f) - Liquid Chloride: this analysis will be performed at an offsite facility within 4 days of an accident. Low activities samples may also be analyzed in the site laboratory via an Ion Chromatograph.
- Page 7,(g) - Gaseous Nuclides: See Criterion #1, item d.
- (h) - Clarify last paragraph since not all components of PASS are powered from Div. 1 Diesel Generator.
- (i) - Split the last paragraph into two for clarification purposes.
- Page 5,6,7,(j) - Revise completion times for analyses in the lab and completion of PASS exercises due to increased purge times caused by sampling lines field routing.

Impact on Compliance with Regulatory Requirements

- (a) None. Sample residues within the panel are eliminated by the purge-step which precedes the next sampling exercise. The exposure to operators would increase slightly but will still remain well below regulatory limits.
- (b) None. It is not a requirement to provide dilution with N_2 .
- (c) None. The redundancy of the H_2/O_2 IE analyzers is sufficient to preclude the need for back-up samples analyses; these analyzers are required as part of Item II.F.1.6 of NUREG-0737.
- (d) None. The primary method for counting post accident samples is via the Radiological Chemistry Laboratory counting system. This is not an in-line analysis, thus no back-up is required.
- (e) None. The new Boron analysis can measure down to 0.5 ppm on a direct measurement and up to 6,000 ppm with samples diluted by a factor of 1,000; this range complies with Regulatory Guide 1.97 recommendations.
- (f) None. Offsite arrangements for Chloride analysis are acceptable.
- (g) None. See Criterion 1(d).
- (h) None. Emergency power is available to components of the system; however, it is not supplied from the same source.
- (i) None. This is needed for clarification purposes; the 1st part of the paragraph addresses events during a LOOP while the last portion of it concerns events following a LOCA.
- (j) None. The total time for sampling/analysis is still within the 3-hour limit.

CRITERION #2

- Page 9,(a) - Revise note to reflect revision of the Core Damage Estimate Procedure and submittal to the NRC.
- Page 10,(b) - Revise 3rd paragraph to clarify that H_2 levels in the Containment are determined via the CAM system and not in the lab by analyzing grab samples (See Criterion #1, above)
- (c) - Include sentence stating that due to the redundancy of the H_2/O_2 monitors and their safety grade, a backup analysis is not necessary.

Page 11,(d) - Revise 1st paragraph to clarify that undiluted gaseous samples can be obtained at the CAM system analyzers and not at the Sample Analysis Panel (SAP). However, since there are no procedures or plans to collect undiluted samples, no credit is taken for it.

(e) - Revise 4th paragraph to delete reference to the in-line counting system. See Criterion #1,(d).

Page 12,(f) - Revise 1st paragraph to delete reference to "dilution with nitrogen" being available at the panel.

(g) - Revise 2nd and 3rd paragraph to describe new plans for Boron and Chloride analysis as discussed in Criterion 1.

(h) - Delete definition of "RC Off-Gas" sample.

(i) - Revise 6th paragraph to delete reference to backup Containment Air (CA) analysis in the lab for H₂ and O₂.

Page 13,(j) - Revise 1st paragraph to clarify that the CA grab sample noble gas vial alone is counted in the laboratory.

(k) - Add a sentence describing the PASS inline capabilities.

Impact on Compliance with Regulatory Requirements

(a) None. The change is an update on the licensing status of the Core Damage Estimate Procedure.

(b),(c) None. See Criterion 1(c)

(d) None. Gaseous grab samples are analyzed in the laboratory for Noble Gases concentrations. The diluted sample obtainable at the PASS panel is adequate for Noble Gas analysis, thus there is no need for taking an undiluted sample.

(e) None. See Criterion 1(d)

(f) None. See Criterion 1(b)

(g) None. See Criterion 1(e) and (f)

(h) None. The definition of "RC Off Gas" is provided in the response to Criterion #4.

(i) None. See Criterion 1(c)

(j) None. The Core Damage Estimation Procedure, which uses PASS data for determining the extent of core damage, only utilizes Noble Gases concentrations results from analyses of gaseous samples; thus it is not necessary to count for Iodine and particulates. The Clinton Core Damage Estimation Procedure has been accepted by the Staff.

(k) None. The added sentence is needed for clarification purposes.

CRITERION #3

Page 15 - Last Paragraph; add isolation valves for the Containment Floor drain sump (IPS016, IPS017), Containment Equipment drain sump (IPS022, IPS023), containment atmosphere sampling line (IPS034, IPS035), RHR pump 1A and 1B sampling lines (IPS043A, B and IPS044A, B), Gaseous and Liquid return lines (IPS055, IPS056, IPS069, IPS070) to the list of environmentally qualified valves which are inaccessible after an accident. In addition, this paragraph has been modified to list the values in numerical order.

Impact on Compliance with Regulatory Requirements

None. These valves were inadvertently omitted from the original report. Their qualifications for post-accident environmental conditions have been reviewed and shown to be acceptable.

CRITERION #4

No Changes Required.

CRITERION #5

Page 18 - Revised to reflect current plan for chloride analysis. See Criterion #1, item f.

Impact on Compliance with Regulatory Requirements

None. The offsite analysis option does comply with NRC requirements.

CRITERION #6

Pages 19,20,21(a) - The exposure dose analysis has been revised in order to account for the revised method for Boron and Chloride analyses.

- (b) - In addition, the exposure results from the PASS exercises have changed due to (a) inability to use the full length meter long reach rods for manipulating valves (b) refined average energy value for gamma releases (c) sample line length and size differences from original design due to field routings (d) deletion of plan to use inline counting equipment at this time.

Impact on Compliance with Regulatory Requirements

- (a), (b) None. The total exposure for one operator (i.e. 1.92 Rem for the extremities, 0.61 Rem whole body) is well within regulatory limits.

CRITERION #7

Page 23 - Revise response to reflect current method for Boron analysis.

Impact on Compliance with Regulatory Requirements

None. See Criterion 1(e).

CRITERION #8

Pages 24,25, (a) - Clarify 1st paragraph to delete reference to inline radionuclide analysis for containment air (CA) samples. See Criterion #1, item (d).

(b) - Revise 2nd paragraph to state that backup capability for H₂ analysis in Reactor Coolant via grab samples is not necessary.

(c) - Revise last paragraph to indicate that the undiluted liquid sample alone is analyzed offsite for Dissolved Oxygen and Conductivity.

Page 26 (d) - Containment Air section; revise to state that CA grab samples are not obtained for backup H₂, O₂ and Nuclide analyses.

Impact on Compliance with Regulatory Requirements

(a) None. See Criterion #1(d)

(b) None. The intent of the regulations is met with our current provisions.

(c) None. The additional samples available are too diluted for these analyses.

(d) None. See Criterion 1(c) and 1(d).

CRITERION #9

Page 28,(a) - Revise 1st paragraph to delete reference to collimation for counting post accident samples.

(b) - Deleted reference to inline counting system. See Criterion #1, item (d).

Impact on Compliance with Regulatory Requirements

(a) - None. Post Accident sample counting will be possible by varying distances between the sample and the detector.

(b)- None. See Criterion #1(d).

CRITERION #10

Page 31,(a) - Deleted reference to inline counting system. See Criterion 1(d).

(b) - Section concerning Boron analysis was revised.

Page 32,33,34,(c) - Sections were renumbered to show proper sequence.

Impact on Compliance with Regulatory Requirements

- (a) None. See Criterion #1(d)
- (b) None. In addition to the 0.5 to 6,000 ppm range available with the Fluoroborate Selective Ion Electrode (See Criterion 1(c)), this procedure is recommended for post accident analyses for its accuracy ($\pm 10\%$), small sample size required, lack of chemical interferences, adaptability to routine and accident condition usage and the short analyses time required.
- (c) None. The original report contained two sections labeled as section "C".

CRITERION #11

Page 39 - Last paragraph was revised to indicate the negative pressure of the SAP's plenum at 0.25 and not 0.1 inches of H₂O.

Impact on Compliance with Regulatory Requirements

- (a) None. This item is not covered by Regulatory requirements.

ATTACHMENTS

(a) Table 1 - Sampling and Analysis Times

This table has been revised in order to reflect the new analyses times; also references to inline counting system have been deleted.

(b) Table 5 - Radiation Exposure Predictions

Same as in Criterion #6.

(c) Table 6 - Chemical Analysis Capability

Revised to reflect the methods and range for Boron and Chloride analysis.

(d) Table 7 - Lengths and Sizes of Sample Lines Tubing and Piping

Due to field routings, the information contained in this table was no longer accurate.

(e) Figure 8 - Revised to include latest revision.

(f) Attachment #1- "Person - Motion Study"

Same as Criterion #6.

Impact on Compliance with Regulatory Requirements

- (a) None. The total time is within the 3-hour limit.
- (b) None. The total exposure is within regulatory limits. See Criterion #6.
- (c) None. See Criterion 1(e),(f), 5, 7, 10(b).
- (d) None. The size and length of the sampling lines have been minimized to within allowable limits as set by field condition and adjacent systems.
- (e) None. The revision is necessary to reflect the as-built condition of the system.
- (f) None. See Criterion 6.

In addition to the revision described above, editorial changes, which do not affect the technical content of the report, have been made throughout the text.