

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

In the Matter of)
ILLINOIS POWER COMPANY, et al.) Docket No. 50-461
(Clinton Power Station, Unit 1))

NRC STAFF'S INFORMAL ANSWERS TO STATE OF ILLINOIS'
SECOND SET OF INTERROGATORIES TO NRC STAFF

On November 16, 1981, the State of Illinois, proceeding under 10 C.F.R. §2.715(c) as an interested state in the above-captioned proceeding, propounded its second set of interrogatories to the Nuclear Regulatory Commission Staff. On November 18, 1981, the State of Illinois moved the presiding officer of the Atomic Safety and Licensing Board to require the NRC Staff to answer the above interrogatories, upon a finding that answers to such interrogatories were necessary to a proper decision in the proceeding and were not reasonably obtainable from any other source, pursuant to §2.720(h)(2)(ii) of the NRC Rules of Practice. In a spirit of cooperation, the NRC Staff is providing the information sought by the State of Illinois' Second Round of Interrogatories absent either any showing of necessity by Illinois or a mandate to respond issued by the Atomic Safety and Licensing Board. In so doing, the Staff does not waive any rights it may possess to contest discovery under the NRC's Rules of Practice, and its actions in this matter should not be considered as having any precedential significance. NRC Staff's answers to each of the propounded interrogatories follow.

DESIGNATED ORIGINAL

Certified By

[Signature]
2507

RESPONSES

1-2. The information contained in each of the following interrogatory responses was furnished by an appropriate member of the NRC Staff, and the responses are identified by number corresponding to the paragraph of the State of Illinois' second set of interrogatories to the Staff to which each answer is addressed. Relevant documents are identified in the responses.

3. This Interrogatory is opposed, as the information sought is most readily available from Applicant.

4-14. The Clinton Power Station quality assurance program for construction was evaluated at the construction permit stage of this proceeding, and reported in the "Safety Evaluation of the Clinton Power Station (Units 1 and 2)", NUREG 75/013. The Inspection and Enforcement Region III office of the NRC has a continuing responsibility to assure that construction at Clinton Station meets all applicable NRC regulatory requirements. The quality assurance program for operation of Clinton Power Station is currently being evaluated by the NRC Staff, and will be reported upon in the Safety Evaluation Report for Unit 1, which is scheduled for publication in January, 1982. This response was prepared by Julian H. Williams, NRC Staff Licensing Project Manager for Clinton Station. Further response to interrogatories 4-14 will be provided at a later time,^{*/} although it should be noted that any formal complaints

^{*/} Pursuant to discussions between Mr. Philip L. Willman, Assistant Attorney General of the State of Illinois, and Mr. Richard J. Goddard, OELD, the subject matter of Contention 2 will be discussed in a meeting scheduled for January, 1982. It is the intention of Staff counsel to make available personnel from the NRC's Region III Office of Inspection and Enforcement to meet with the State's counsel at a mutually agreeable time and place.

which may have been lodged against Applicant Illinois Power Company are otherwise available to the State of Illinois, having been investigated, docketed and filed in the Public Document Room in Washington, D.C., and in the local public document room maintained in Clinton, Illinois by the NRC for Clinton Station. Further, identities of complainants (if any exist) are irrelevant within the scope of the licensing process.

Houston Lighting and Power Company (South Texas Project, Units 1 and 2), ALAB-639, 13 NRC 469 1981.

15. Applicant will test the pressure differential and flow rate of the low pressure core spray (LPCS) system as part of their preoperational testing program. An abstract for that test (14.2.12.1.11-low pressure core spray system preoperational test) is included in the Clinton FSAR, chapter 14, pages 14.2-38 & 39. This testing is to be performed in accordance with Regulatory Guide 1.68, Appendix A, §1.h.

Applicant will test the pressure differential and flow rate of the high pressure core spray (HPCS) system as part of their preoperational testing program. An abstract for that test (14.2.12.1.12-high pressure core spray system preoperational test) is included in the Clinton FSAR, chapter 14, pages 14.2-40 and 41. This testing will also be performed in accordance with the above-cited regulatory guide. See also the NRC Staff's previous answer to contention 5, question 20, State of Illinois' First Round of Interrogatories to NRC Staff, regarding the testing of the

core spray systems. The response to this interrogatory was prepared by Messrs. Walter J. Apley and Brad Hardin, DNRR.

16. Testing of the ECCS Core Spray Sparger to determine nozzle angles and individual bundle flows is described by Applicant in their LPCS preoperational test, cited in response to Interrogatory 15 above. Also, in response to NRC question 640.16 item 3, Applicant has committed to photograph core spray pattern coverage. See also the NRC Staff's previous answer to first round interrogatories, Contention 5, question 20 regarding testing of core spray systems, cited in response to Interrogatory 15 above. The response to this interrogatory was provided by Messrs. Walter J. Apley and Brad Hardin, DNRR.

17-18. The LOCA analysis referred to in Contention 10, Interrogatories 17 and 18 was performed using NRC-approved analysis models, except that low pressure coolant injection flow was diverted from core cooling to containment cooling at ten minutes. In compliance with the NRC's requirements for ECCS performance analysis, as stated in 10 C.F.R. 50.46, the Applicant's analysis included an evaluation of possible break locations, sizes and worst single failure combinations to yield the highest peak cladding temperature. The NRC reviewed the Applicant's documentation of the above analysis contained in §6.3.3.7.8 of the FSAR and have concluded that it satisfies NRC requirements. Also, the NRC has reviewed information provided by the Applicant concerning the need for diversion of low pressure coolant injection at ten minutes and conclude that such a need has a very low probability of occurrence. The Clinton emergency operating procedures are based upon guidelines accepted by the

NRC and contain precautions against operator diversion of coolant injection unless adequate core cooling is assured. The only exception is for instances outside the design envelope involving multiple failures where maintenance of containment integrity is required. The Applicant's analyses indicate that calculations with no coolant injection diversion result in lower peak cladding temperatures. The response to this interrogatory was prepared by Mr. Brad Hardin, DNRR.

19. The General Electric strain reduction factors 2.8 and 4.1 were derived in NEDO-20566, "General Electric Company Analytical Model for Loss of Coolant Analysis in Accordance with 10 C.F.R. 50 Appendix K", Volume 1. Recent NRC sponsored experiments (See ORNL references listed in NUREG-0630, pages 96-98) imply that the GE strain reduction factors may be too large and that a more realistic value would be about 2.2 (bundle average). The 2.2 factor can be derived by following the procedure that is described in NUREG 0630, pages 24-29. In NUREG-0630, NRC chose not to segregate fuel bundle interior rods from peripheral rods and merely calculated an average strain reduction factor applicable to planar-whole-bundle-analysis. The NRC has not performed audit calculations to assess the effects of using strain reduction factors that are less than the GE values of 2.8 and 4.1. However, our preliminary opinion of the GE sensitivity studies is that the BWR is relatively insensitive to burst strain. For Clinton Station (as discussed in NRC's October response to Contention 10, question 19) the calculated LOCA peak cladding temperature is 2062°F; consequently, we are confident that ample margin exists to compensate for this uncertainty in the GE strain

reduction factors. This response was prepared by Mr. Dale A. Powers, DNRR.

20. In response to items II.K.3.30 and II.K.3.31 of NUREG-0737, Applicant has committed to provide plant specific LOCA analysis in compliance with these items. The NRC has not determined what changes will be required for the GE ECCS evaluation model. NUREG-0737 requires that all required analyses be provided by January 1, 1983, or one year after Staff approval of the model changes. This response was prepared by Mr. Brad Hardin, DNRR.

21. This response is contained in a letter from Applicant (Buchholz) to NRC (Rubenstein) dated May 15, 1981:

[Since our generic review of the General Electric swelling and rupture models is incomplete, we are at this time unable to describe what, if any, revisions NRC may ultimately require to the burst strain and rupture temperature models in the GE ECCS EM. We can state, however, that GE has committed to submit a revised rupture temperature model. As discussed in our October response to Contention 10, part 19, we believe that this "adjusted model" is an acceptable model that represents an improvement over both the GE and NUREG-0630 models.

With regard to the effect of this model change, GE has reported (as discussed in our October response to Contention 10, Part 19) that the maximum impact of using the "adjusted model" is 10°F increment in LOCA peak cladding temperature for the Clinton type of 8x8 two-water rod fuel design.]

This response was prepared by Mr. Dale A. Powers, DNRR.

22. In compliance with the NRC's requirements, ECCS performance is demonstrated by a combination of analysis, using approved evaluation models and assumptions, and testing to confirm that assumptions made in the analysis regarding plant operability and minimum performance levels are appropriate. The NRC has reviewed the ECCS performance analysis submitted by the Applicant, and has concluded that the analysis satisfies

the requirements of 10_C.F.R. 50.46, and is therefore acceptable. We have also reviewed information submitted by the Applicant in the FSAR regarding testing of the ECCS. Based on our review of the information, we have concluded that operability of the ECCS will be acceptably demonstrated by preoperational and periodic testing in compliance with Regulatory Guide 1.68 and General Design Criteria 37. This response was prepared by Mr. Brad Hardin, DNRR.

23. The NRC has not yet determined specific long term plant changes regarding ATWS, but has determined certain interim measures with which Clinton Station is in compliance. See also the NRC Staff answers to contention 5, interrogatories 10-14, State of Illinois' First Round Interrogatories to NRC Staff. This response was prepared by Mr. Brad Hardin, DNRR.

24. Answer to parts A - C is yes. The ADS is safety grade, is classified as important to safety, and all ADS components are safety grade at Clinton Station, in compliance with NRC requirements. This response was prepared by Mr. Brad Hardin, DNRR.

25-26. There is no personal correspondence or communication between the NRC Staff and the Applicant or between the NRC Staff and General Electric, regarding the GE ECCS model, with the exception of docketed matter. This response was prepared by Mr. Julian H. Williams, after discussions with appropriate members of the NRC Staff.

27-29. It is the NRC position, consistent with the recommendations of Regulatory Guide 8.8, Section C.2.a, that Applicant has performed an appropriate estimate of the dose rate at the operator's location, in accessible areas of the dry-well, in the vicinity of the refueling pool

bellow, and outside the shielding surrounding the spent fuel transfer tube.

This conclusion is based on Applicant's use of conservative source terms for the spent fuel assembly (Table 12.2-2 of Clinton FSAR) and their use of standard calculating techniques employing well-known computer codes (Table 12.3-1 of Clinton FSAR).

Applicant is required by 10 C.F.R. 20.201(b) to perform actual dose rate measurements to verify that actual dose rates during fuel transfer are in accordance with design dose rates. Applicant has committed to make, as appropriate, shielding or procedural modifications to ensure that occupational doses are ALARA. This response was prepared by Mr. Michael Lamastra, DNRR.

30-31. NRC does not have any specific required procedures to be implemented upon occurrence of the stated conditions. However, the Staff's requirements would be that Applicant's actions would maintain the public health and safety and occupational health and safety within the applicable federal requirements. This response was prepared by Mr. N. Fioravante, DNRR.

Respectfully submitted,



Richard J. Goddard
Counsel for NRC Staff

Dated at Bethesda, Maryland
this 15 day of *December* 1981.