June 27, 1979

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
HOUSTON LIGHTING & POWER COMPANY	)	Docket No. 50-466
	)	
(Allens Creek Nuclear Generating Station, Unit 1)	)	

NRC STAFF RESPONSE TO JOHN F. DOHERTY'S ADDITIONAL CONTENTIONS

By its Memorandum and Order of April 11, the Board allowed Intervenor, John F. Doherty to amend his previously submitted Contention No. 4 by giving the bases for the contention with reasonable specificity. Contention No. 4 asserted that Applicant should maintain design flexibility in order to incorporate future generic resolution of the ATWS issue without modifications to the NSSS. By amendment dated May 25, 1979, Intervenor states that the design should include space for a Standby Liquid Control System, which Intervenor believes will be the ATWS resolution, based on his interpretation of NUREG-0460 (V.3).

NUREG-0460 is merely a Staff report and recommendation for rulemaking on which no decision has been made. Further, the Applicant has committed to implementation of future Staff ATWS design solutions. (SER Supp. 2, §15.2 and App. C, p. C-18). Intervenor's amendment assumes that Applicant has progressed to greater design detail at this time than is necessary prior to construction permit. As pointed

out by the Staff report (NUREG-0460), the recommended modifications can reasonably be designed and installed without delaying plant startup. Intervenor's amendment does not clarify Contention 4 by reference to NUREG-0460. The contention should be dismissed.

Contention No. 9

The Intervenor contends that Applicant's safety systems (Seismic Category I or IEEE-279) contain many non-safety grade equipment items and reference is made to an NRR document (dated March 16, 1979) which raises concern that non-safety grade equipment is relied on by applicants in mitigation of anticipated operational occurrences. However, the Board notification document referenced only addresses non-safety grade systems. Therefore, the NRR document is irrelevant to the contention that the Applicant's safety systems contain non-safety grade equipment. The sole basis for this contention is Table 3.10-1 of the PSAR, which lists a variety of Class 1E components to be supplied by the vendor and which is not a list of safety equipment, and does not support the contention.

The Board notification memo notes that the Staff is evaluating the need to increase margins by additional equipment surveillance, modifications or reanalyses of certain anticipated transients. The SER Supp. 2 states that the Applicant has identified certain non-safety grade (non-IEEE-279) systems or components used to reduce the severity of certain postulated transients and that the Applicant will be required during the operating license review to include the equipment in the

plant technical specifications with required availability, set points and surveillance testing (SER Supp. 2, p. 15-2). This is consistent with 10 CFR §50.35(a)(2). Thus, the Intervenor's contention should be dismissed for lack of factual basis.

Contention 10

Intervenor contends that ACNGS safety systems are inadequate because of diesel generator failures experienced in many plants. Intervenor cites NUREG-0660, an NRC consultant's report on diesel failures, and contends that more diesels and more frequent inspections should be required.

The Staff presently has under review the history of diesel failures reported in NUREG-0660 and is evaluating the consultant's recommended corrective actions therein. To the extent that Intervenor raises an issue of diesel generator reliability, the Staff supports this contention.

Contention 11

This contention states that a spent fuel pool LOCA by evaporation could occur if the Allens Creek plant were to be entirely evacuated due to an accident at ACNGS Unit 2; South Texas Project; or Blue Hills Station. Intervenor contends Applicant must store all spent fuel off site as soon as safe removal is possible after off-loading.

The Intervenor has not shown that credible accidents at nearby plants would require total abandonment of ACNGS or that evaporation of water in the SFP would occur so rapidly as to create criticality, or that the cooling system would cease to operate. This contention is based entirely on speculation and improbabilities, including the future existence of Unit 2 of ACNGS. The contention is without any basis in fact and should be rejected.

Contention 12

Intervenor states that the ACNGS Rod Pattern Control System is unreliable and that therefore a reactivity insertion accident during startup is a likely risk. The basis stated for this contention is reports of inoperable systems in operating BWR's.

The reports referenced by the Intervenor are not sufficient to support the contention since ACNGS will utilize the rod pattern control system proposed in GESSAR NSSS (ACNGS SER §7.7).

The GESSAR NSSS systems differ from those in earlier GE design by inclusion of dual rod position information and redundant rod action control, and the Staff has the new GESSAR system design under review in light of system failures in older plants (GESSAR SER §7.7.1). No specific relation of the reported failures to the new system design is shown by Intervenor. The contention should be dismissed as without basis relevant to this plant design.

Contention 13

Sump pump blockage by insulating materials is presently the subject of a task action plan designated as an unresolved safety issue. Therefore, the Staff believes this contention is proper for litigation and recommends its admission.

Contention 14

The Staff supports this contention dealing with inadequacy of the main steam radiation monitor as having sufficient factual basis.

Contention 15

In this contention Intervenor asserts that the Lattice Physics model to be used by ACNGS is not adequate because it was compared to a non-conservative WIGLE code. This is incorrect. The WIGLE code was not used as comparison since WIGLE is a one-dimension space-time code, whereas the Lattice Physics model is a steady state model not used for power excursion calculations. Only a one-dimensional space-time code was compared to the WIGLE code (SER Supp. 2, §4.3.3), and this was only one aspect of the GE analysis. Further, the report referenced by Intervenor (IN-1370, p. 87) does not describe WIGLE as non-conservative. There is no basis for asserting the need for less fuel rod output and fewer fuel rods per assembly. Therefore, this contention should be dismissed because it lacks any factual basis.

Contention 16

Intervenor contends that steam blanketing of fuel rods during a transient which initiates ECCS will cause fuel melt or explosion.

It is entirely unclear as to what sort of transient Intervenor believes would trigger ECCS operation and thus is vague and without specificity. Furthermore, the phenomenon of fuel rod steam blanketing after LOCA is addressed by the Commission's ECCS regulations. 10 CFR §50.46 and §50, Appendix K(D.6). If an assertion is being made that these regulations are not adequate, this is a challenge to the regulations, not permitted pursuant to 10 CFR §2.758. Intervenor has not submitted a litigable contention and it should be dismissed.

Contention 17

Intervenor contends that assymetric loading by common mode failures of SRV's could crack containment. As a basis for this assertion, Intervenor points to several reports concerning SRV failures which indicate valve unreliability. The Staff believes this contention is proper and supports its admission, but opposes Applicant's motion for consolidation of this issue with TEXPIRG's additional Contention 46. The contentions differ substantively and should be considered separately.

Contention 18

Here the Intervenor states that in-core pressure sensors are tested only at refueling and that more reliable sensors and more tests than those now in use should be provided.

The GESSAR 238 (NUREG-0152, §7.2) testing provisions of the reactor trip system consist of six overlapping tests to check operation of the system through the solenoid coils during operation (not only at refueling), including sensor checks. Section 7.6.4 of NUREG-0152 explains the receipt of signals by four recirculation pump trip divisional logics from 2 out of 4 divisional logics of the reactor trip system. The sensors are capable of testing during operation and the system

is subject to complex testing. Therefore, Intervenor's contention has no basis in fact relevant to this proceeding and should be dismissed.

Contention 19

Intervenor asserts that cracked collet retainer tubes will prevent control rod operation during an accident,making shutdown impossible. The basis stated is two reports concerning cracked collet retainer tubes. Intervenor contends Applicant should provide tubes superior to those in use by BWR's. Even though Intervenor states that he expects Applicant to comply with changes recommended by the vendor, he states that the changes will not alter the cracking problem.

This contention is without basis since Intervenor admits changes aimed at correcting the cracking problem will be made, yet provides no information as to his belief that the changes will be inadequate. Under 10 CFR §50.35 the adequacy of the collet retainer tubes can await the operating licensing stage of proceedings on a showing of a basis of a contention then. The contention should be dismissed now.

Contention 20

Intervenor contends that Applicant's fuel performance calculations and the fission gas correction factor for burnups greater than 20,000 MWd/tU are inadequate because they were developed only for the BWR/5 and have not been calculated for the BWR/6.

Intervenor is mistaken in this assertion. By letter dated December 29, 1977, the Staff forwarded an approved correction factor to Applicant for its use in calculating burnup beyond 20,000 MWd/tU. This correction was obtained from the

Dutt and Baker LMFBR correlation in "Siex:A Correlated Code for the Prediction of Liquid Metal Fast Breeder Reactor (LMFBR) Fuel Thermal Performance," Westinghouse Hanford report, HEDL-TME 74-55, June, 1975. This correction factor is applicable to all LWR's and is not limited to the BWR/5. The Applicant has committed to provide the results of a reanalysis of fuel performance using this method of correction. SER Supp. 2, §4.2.1. The maximum temperature without correction has been calculated as 2085°F for ACNGS.SER Supp. 2, §6.3.2. The correction factor equation is not likely to add a significant temperature increase to this number, since for the BWR/5 only an additional 85°F at end of fuel life was calculated. This contention is without factual basis and should be dismissed.

Contention 21

In this contention, the Intervenor stated that resolution of calculations for reactivity due to void collapse during overpressure transients should not be left to the operating license technical specifications because expensive changes will be necessary.

This contention is without factual basis and should be dismissed for the following reasons.

In Section 4.3.2(2) of SER Supp. 2 for ACNGS it is stated that the generic resolution of void collapse calculations can be accommodated in the technical

specifications. There it is noted that the point kinetics model contains additional conservatisms, thus indicating that the resolution will not require significant changes. By definition, reliance on accommodation by technical specifications indicates that no extensive modification to the plant is anticipated. Intervenor has given no reason for his belief that expensive changes will be needed or made. Secondly, even if operating or plant modification were necessary, the Intervenor has no legal basis for asserting economic interest to support this contention since economic interest is not protected by the Atomic Energy Act or NEPA. Kansas Gas and Electric Co., et al. (Wolf Creek Generating Station, Unit 1) ALAB-424, 6 NRC 122, 128 (1977); Detroit Edison Co.(Greenwood Energy Center, Units 2 & 3) ALAB-376, 5 NRC 426, 428 (1977).

Contention 22

Here the Intervenor asserts that the ACNGS control rods may crack because the 8 X 8 assembly requires more neutron absorption than a 7 X 7 assembly, and that the cracking will cause plant shutdown and an adverse effect on Intervenors' economic interest.

This contention is without factual and legal basis. The 8 X 8 assembly control rods will not be subject to greater neutron absorption since the fuel rods are proportionately smaller. In SER Supp. 2, §4.2.1 the uranium weight per assembly

is shown as 416.1 compared to 413 in Table 4.1 of the SER comparison of 7 X 7 and 8 X 8 assemblies. Thus it is shown there is no significant difference in the assemblies. The water-to-fuel ratio is 2.56 compared to 2.52 in the same comparison. As noted in SER Supp. 2, §4.2.1(4), the 8 X 8 design is currently in operation in 19 BWR's and no basis for Intervenors' postulation has been shown. Further, the assertion of economic interest will not support the contention. Wolf Creek, Greenwood, supra.

Contention 23

Intervenor states that a LOCA could be initiated by a pressure surge or coolant flow blockage; that such an event has not been addressed by the design based LOCA; that the ECCS should be designed to mitigate such an accident.

This concern is addressed in SER Supp. 2, §5.2.2 where overpressure protection provisions are documented. These provisions provide for a forced loss-of-coolant through SRV actuation. In the event of a pipe break or loss of coolant through an open SRV, the ECCS would be activated by reactor vessel low water level. Therefore, Intervenor's contention presents no litigable issue since no point of controversy is described. The contention has no merit and should be dismissed. To the extent Intervenor asserts a challenge to the regulations, this is not permitted as stated in 10 CFR §2.758.

Contention 24

Intervenor contends that in the event of a control rod drop accident there is a safety risk of exceeding 280 cal/gm peak energy yield limit. This contention is based on a NEDO document (10,527) which reanalyzes the energy yield based on

a 1.4% rod worth. The Intervenor states that safety requires that the ACNGS must reduce the reactivity worth of each rod to a maximum of 1.4%.

This contention has no factual basis and should be dismissed since Intervenor is misinformed as to the rod worth reactivity in ACNGS. In the SER Supp. 2, §15.3.2, the maximum rod worth is shown as 1%. This is less than the Intervenor asserts is necessary. Therefore, the Intervenor has not presented a litigable issue.

Contention 25

In this contention the Intervenor raises two issues. The first issue asserts that debris blockage of two, rather than one, fuel assembly should be used as "the design based accident," since such an event occurred in the Fermi plant in 1966. There is no "design based accident" regarding blocked assemblies to which Intervenor refers here, and there is no showing of similarity by Intervenor between the Fermi plant and Allens Creek. Therefore, this part of the contention should be dismissed as speculative and too unclear for litigation.

The second issue raised here concerns inadequate fuel failure detection, which issue was raised in NUREG-0401, cited by the Intervenor and which should indicate damage from blocked assemblies as a safeguard to such occurrence. The Staff supports this part of the contention, and recommends that the Board admit Contention 25 only insofar as it raises an issue of the adequacy of fuel failure detection in the Allens Creek plant.

Contention 26

The Intervenor contends safety is compromised by lack of reactor vessel stud bolt inspection, and asserts visual inspection at reloading is necessary to prevent severe accidents at ACNGS.

The Commission's regulations in 10 CFR §50.55a which incorporate ASME Code XI are addressed to inservice inspection requirements of the reactor vessel and its components including stud bolts. This contention appears to challenge the Commission's regulations and is not permitted under 10 CFR §2.758 without a showing of special circumstances wherein the regulation will not serve the purpose intended or that it is inadequate. Intervenor has made no showing that visual inspection is superior to required inspection techniques. The Staff believes this contention is impermissible and should be denied.

Contention 27

In this contention, the Intervenor asserts that a severe accident might so weaken the reactor pedestal concrete that restart of the plant would create a risk to health and safety.

This contention has no valid basis since the Commission does not require that a plant's structures be maintained in a pre-accident condition during and after a design basis accident. Although Intervenor cites a separation of the vessel

from the pedestal in SL-1 following a power excursion, there is no showing of similarity between the design of that small experimental reactor and ACNGS. The contention should be dismissed as speculative and without factual basis.

Contention 28

Intervenor contends a control rod ejection due to containment pressure or pressure in the SCRAM discharge volume tank has not been calculated by Applicant, thereby creating a risk of reactivity insertion accident.

There is no basis for this contention since it is not explained how these pressures could develop so as to affect the control rods in the manner postulated by Intervenor. This contention should be dismissed as unclear and speculative.

Contention 29

Intervenor has submitted two contentions here. The first issue raised is that of inadequate thermal dynamics due to reduced size of the cooling pond. The second question concerns the possibility of blockage of the intake canal. These contentions should be rejected for the following reasons:

First, the Applicant has committed to a design to prevent unacceptable blockage of the intake canal. Several measures to fulfill this commitment are described in SER Supp. 2, §2.5.4(1) including analysis of slope

failures around the intake structure. Intervenor has not provided a basis to show any inadequacy in this commitment which addresses Staff concerns. Second, the cooling pond has been approved by the Staff in its review using criteria in Reg. Guide 1.27, BTP ASB 9.2 as described in SER Supp. 2, §2.43. Intervenor provides no basis to show the inadequacy of the criteria or the review. Third, completed research has not resulted in any change in Staff review criteria. Generic task B-29 directs the Staff to use field data for verification of current models and for development of better guidelines for selecting meteorological conditions.

Contention 30

In this contention the Intervenor raises a safety question based on the lack of interconnection by Applicant with any out-of-state utility, thereby making Applicant's grid vulnerable to severe climatic conditions.

The Staff believes this contention has a valid basis and should be admitted for litigation.

Contention 31

Intervenor contends that coolant flow vibration will degrade Applicant's local power range monitors and that more than 33 LPRM's are required.

Since this contention repeats part of TEXPIRG's admitted Contention 11, the Staff believes this should be joined to that of TEXPIRG. It should be noted that Intervenor is in error in the number of LPRM's to be used by Applicant. The PSAR §7.6.1.6.5.1.1(2) states that 48 strings of LPRM's with 4 fission chambers per string will be provided. Thus, Intervenor's assertion that 33 LPRM's are not sufficient raises no issue.

Contention 32

This contention raises a question of the GE model for ECCS based on results of the two loop test apparatus.

The Staff supports this contention since the TLTA results are presently a subject of Staff review.

Contention 33

Intervenor contends that Applicant's reliance on the Doppler effect to control reactivity and power excursion is a safety concern since GE used metallic fuel for tests rather than uranium oxide and because the Doppler effect is unknown in relation to the 8 X 8 assembly to be used in ACNGS.

The Intervenor has no basis for his contention concerning use of metallic fuel for testing by GE. See: NEDO 20964, where it is stated that uranium dioxide

was used. Intervenor's assertions here are without basis since they rest on misinformation and speculation. This contention should be dismissed as without factual basis.

Contention 34

Intervenor asserts that his economic interest is threatened because the General Electric nuclear division will go out of business due to financial problems and the TMI accident.

This contention is pure speculation and should be dismissed for this reason as well as the reliance on an entirely economic interest which is outside the zone of interests protected by statute. Wolf Creek and Greenwood, supra.

Contention 35

This contention states that unsafe welding will be performed at ACNGS because of welding problems at another Texas plant, a shortage of trained welders, and a low pay scale. The Intervenor asserts that Applicant should be required to train welders and to pay union wages.

There is no valid issue presented here, and the contention should be dismissed. The welding situation at another plant has only speculative applicability to Allens Creek. The Commission's regulations require welding by trained and qualified welders (10 CFR §50, Appendix B) and Intervenor has provided no facts to support his contention that Applicant will violate these regulations. This contention should be rejected.

Contention 36

Intervenor contends that Applicant has not included mass transfer effects in analysis of containment vacuum breaker malfunction. Intervenor postulates that inadvertent operation of containment spray, coupled with blowdown would result in overpressurization of containment, drywell and suppression pool. It is not clear how Intervenor believes this would occur, but this hypothesis seems to rest on the mistaken assumption that decrease in containment pressure will cause a drywell vacuum breaker to open. This is not the case. Decrease in containment pressure opens a containment vacuum breaker, not one in the drywell. ACNGS SER §6.2.1, p. 6-17. Furthermore, the ACNGS SER Supp 2, §6.2.1(2) states the Applicant has committed to consider mass transfer effects in sizing containment vacuum breakers. In the same section, it is shown that the redesigned drywell vacuum relief system is small enough that an open line will not release a significant amount of blowdown steam so as to cause the overpressurization described by Intervenor. Additionally, each line contains a butterfly valve plus a check valve which closes with increases of drywell pressure.

In the event of inadvertent containment spray operation, the Applicant will be required to shut down by the operating license technical specification to inspect the effects of the water on equipment. Therefore, Intervenor has provided no basis for the implication that the SER analysis is incorrect. The Staff recommends denial of this contention for the reasons stated above.

Contention 37

Intervenor contends the ACNGS ECCS does not account for heat in the reactor walls during a LOCA; does not meet GDC 15 and 36; and that the NUREG/CR-0599 recommendation for more research on the phenomenon of hot wall effects indicates an inadequate ECCS.

Intervenor is entirely mistaken in his assertions here. Appendix K requires ECCS models to include heat contained in vessel walls. Applicant has committed to comply with Appendix K (SER Supp. 2, §6.3). GDC 15 addresses normal operational occurrences, not LOCA; GDC 36 pertains to the proper injection of ECCS coolant; and NUREG/CR-0599 describes a problem of hot walls associated solely with PWR design and entirely irrelevant to BWR design. Intervenor has presented no basis for the contention that the ECCS should be of greater capacity and it should be dismissed.

Contention 38

Intervenor contends that Applicant must design a single failure proof RHR system rather than using an alternate system to meet the Commission's 10 CFR §50, Appendix A, GDC 34 single failure criterion because the alternate is "too complex." This assertion is a challenge to the Commission's regulations prohibited

by 10 CFR §2.758 without a showing of special circumstances. Criterion 34 does not require that the RHR alone be single failure proof, but rather, that "suitable redundancy" be provided so that the system safety function can be accomplished "assuming a single failure." As stated in SER Supp. 2, §5.4.5, the Applicant meets the Commission's single failure criterion by the use of an alternate to the RHR. Therefore, this contention should be dismissed because it is an impermissible challenge to the regulations.

Respectfully submitted,

Colleen P. Woodhead

Colleen P. Woodhead
Counsel for NRC Staff

Dated at Bethesda, Maryland,
this 27th day of June, 1979.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF RESPONSE TO JOHN F. DOHERTY'S ADDITIONAL CONTENTIONS" in the above-captioned proceeding have been served on the following by deposit in the United States mail, first class, or, as indicated by an asterisk by deposit in the Nuclear Regulatory Commission internal mail system, this 27th day of June, 1979:

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