Sept. 14, 1979

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

JOHN F. DOHERTY'S AMENDED CONTENTIONS #4, #11, #20, #36

John F. Doherty, of Houston, Texas, files these amendments to the above numbered Contentions pursuant to the Board Order of August 27, 1979, that all contentions be amended by September 14, 1979. The first Contention below, number four was amended previously, in the May 25, 1979 submission. All others are amended versions of contentions filed for the first time on May 25, 1979.

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Contention 4

Intervenor contends Applicant should be required to maintain flexibility of design in ACNGS such that design changes required by resolution of the ATWS generic issue can be incorporated. This should be done to: (1) Avoid costly changes during construction (changeorders), and (2) Assure implementation of the resolution, so that Intervenor's health and safety interests are protected as much as possible (particularly that the calculated radiological doses from postulated single and multiple failure accidents do not exceed 10 CFR 100 guidelines), Applicant should be required to show:

(a) The design can be expected to be able to include additional space and support for an enlarge Standby Liquid Control System (SLCS) tank, test tank, and higher capacity pump;

(b) The design can be expected to accomodate a pathway enlarged to accomodate increased size of the delivery pipe to the reactor for the SLCS;

(c) The design can be expected to accomodate an enlarged penetration for the enlarged pipe or pipes from the SLCS;

(d) The design can be expected to have sufficient space to permit improvements in the scram discharge volume of the BWR hydraulic drive system which are needed to reduce common mode failure potential in this system, as pointed out in NUREG-0460 and in so far as the need to reduce common mode failure, in NUREG/CR-0400.

(e) That design changes in fuel rod cladding which in the event of an ATWS may impede core cooling by distorting the core, can be expected to be accomodate in the design;

(f) That measures to prevent deformation of reactor coolant pressure boundary components can be expected to be incor-

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porated in the design;

(g) That design changes in the safety valve discharge lines and quencher design, leading to and within the pressure suppression pool be designed to avoid destructive vibrations and still be able to be accomodated in the ACNGS final design;

(h) The current design can be expected to accomodate changes necessary to achieve cold shut-down subsequent to any ATWS at full power with no credit for any control rods inserted;

(i) The current design can be expected to accomodate changes necessary to bring the recirulation pump leak pressure flow leak detection system up to IEEE-279-1971 standard.

Contention #11

Intervenor contends dangers of a spent fuel pool loss of water accident (LOWA) are not addressed by Applicant, in terms of the effects on health and environment of such an accident occuring in either the containment building or the fuel handling building. In the event of a LOWA to either fuel pool, the residual heat in the spent fuel is capable of heating the zirconium cladding to above its ignition temperature, such that flames generated at the top of the spent fuel rods will create sufficient heat to cause melting of the zirconium which will flow downward (storage is upright) and plug the small holes in the spent fuel rods which will cause build up of pressure due to gas compression in the fuel rods. This pressure will cause bursting, initiating more damage due to more water being forced from the pool by the explosive impulse described. That spent fuel would experience zirconium ignition in the event of a LOWA has been established by an industry report, "Spent Fuel Heat-Up Following Loss of Water During Storage.", (Sandia Laboratories, by A, S. Benjamin, et al, 1978). Additional heat would be caused by pressure build up in the structures housing the pools, since these are fully enclosed.

The consequences of a LOWA for a spent fuel pool in ACNGS would most likely occur in hthe event of a LOCA with the reactor with subsequent meltdown, resulting in the crew leaving the facility. In that event none of the procedures for maintainance of the spent fuel pools could be carried out. In addition, the spent fuel pool in the containment might be penetrated by pieces of the reactor vessel in the event of head blow-off or vessel breakage due to a high pressure transient, ATWS, LOCA or other accident. Such penetration would lead to a LOWA for the over reactor spent fuel pool.

This Intervenor contends his health interest will be impaired if a LOWA occurs even after an accident which forced evacuation of a large area. This is because the full amount of radioactive material in the spent fuel pools would be dispersed in the event of a LOWA. Unless the accident occured in the first year of ACNGS operation, the amount of this material would exceed that released by meltdown and release by the reactor alone.

The spent fuel pool LOWA may be a Class 9 accident. However, because applicant's design is not operational yet, there is good reason to consider the accident under the Shoreham rule (6 AEC 831, 836). Further pursuasion is offered by the high power core density of the reactor and high minimum critical heat flux, both of which increase the probability of a transient accident leading to spent fuel pool LOWA. The probability of a spent fuel pool LOWA following a meltdown accident has never been estimated. Intervenor contends applicant should be required to:

1. Dispose of spent fuel after pre-liminary cooling in the above reactor fuel pool, and:
2. Not be granted a license to store spent fuel in any other location on the premises but the containment building spent fuel pool.

Contention #20

Intervenor contends fission gas release due to fuel rupture of fuel rods with burn-up of greater than 20,000 megawatt-days per ton of uranium will be greater than applicant's estimate during a LOCA. Applicant's underestimate means fission gas release will be greater than predicted, resulting in lower pellet-cladding gap conductance which results in higher initial stored energy and consequently higher peak cladding temperature for the ECCS to control during a LOCA.

This higher peak cladding temperature will increase the calculated peak cladding temperature to one in excess of 2,200°F. The underprediction is caused by the fact that in the Dutt and Baker correction factor, the only independant variable considered was fuel burn-up. Fuel operating temperature is an independant variable also. Further, much of the data in support of the correction factor was taken from fuel rods fabricated many years before and tested in 1973. These older rods differ from those to be used in ACNGS in several ways, some of which may have increased fission gas release, while others decreased fission gas release. There is no certainty the differences cancel out one another, so that the data are applicable to a cacluation to the ACNGS.

Intervenor contends Applicant should not be permitted to use fuel rods once the threshold for significant Fission Gas Release occurs. This would be at 24,000 MWd/ metric ton for a BWR according to an article in Nuclear Safety, 20(4), pg. 418, 1979.

AMENDED CONTENTION #36

Intervenor contends bypass leakage through drywell penetration for the vacuum breakers in the drywell wall is an unresolved issue suitable for consideration at the construction license hearing; and that the SER (pg. 6-17) " [r]equeste[d] that an acceptable design modification be documented in the ACNGS application in a time scale that will permit us (staff) to report resolution of this issue in a supplement to this SER prior to commencement of the public hearing". This issue is not reported resolved 10 months after the first special pre-hearing conference. Such bypass leakage is of greatest liklihood when there is inadvertant starting of the containment spray system, an accident postulated by the staff. Further staff notes Applicant's analysis of the postulated accident has not included mass transfer effects and considers this important in determining size and other dimensions and characteristics of the vacuum breaker system in the drywell wall. Thus, Applicant should be required to complete the analysis in the manner required by staff so that it can be considered at the construction license hearing, because inclusion of the omitted mass transfer effects during the postulated accident may yield results that require enlargement of the vacuum breaker penetrations. Since staff is hinting strongly enlargement of vacuum breakers will not be satisfactory due to bypass, other solutions are indicated to the vacuum breaker sizing problem which would require construction license hearing scrutiny. Intervenor contends his health and environmental interests are endangered by the danger of bypass in the vacuum breaker system in the drywell during a postulated accident of inadvertant containment spray start.

COPIES OF: "JOHN F. DOHERTY'S AMENDED CONTENTIONS #8, #11, #20 & #36,"and JOHN F. DOHERTY'S CONTENTIONS #43 & #44", were served on the parties listed below via first class mail on September 14th, 1979.

Respectfully,
John F. Doherty
John F. Doherty

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