

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

DOCKETED  
USNRC

July 12, 1982

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD July 15 10:35

In the Matter of:

HOUSTON LIGHTING & POWER CO.  
(Allens Creek Nuclear Generating  
Station, Unit 1)

Docket No. 50-466 CP

INTERVENOR DOHERTY'S AMENDED CONTENTION 59

On July 1, 1982 and July 6, 1982, this Intervenor received responses to his Motion to Re-open the Record of June 15, 1982, from Applicant and Staff respectively. On July 6, this Intervenor received in the same filing, a response to his Contention 59, which asserts in its first part that the Applicant is unqualified to receive a license from the Commission because it failed to report number problems with the South Texas Nuclear Project which were reported in the Quadrex Report, a report on the design work for that plant by the Brown & Root Company.

The amendment below applies only to Contention 59, part (a). It is suggested that parties use this Intervenor's June 15, 1982 filing to follow the amendments which largely are intended to state the consequences of each of the findings and their relevance to safety.

AMENDED CONTENTION 59(a)

Intervenor contends Applicant has not demonstrated it is able to comply with NRC regulations, specifically 10 CFR 50.55(e) and hence should not be granted a construction permit for the proposed ACNGS. This contention is based on Applicant's failure to report under this regulation several deficiencies found by the Quadrex Corporation in its report on design work by the Brown & Root Corporation at the South Texas Nuclear Project (STNP) in May 1981. Intervenor asserts that the following deficiencies should have been reported under 10 CFR 50.55(e)(1)(i-iv):

Under 10 CFR 50.55 (e)(1)(i), the following should have been reported:

- (1) Based on Quadrex Report Item 3.1(b)(3), inconsistent review of vendor submitted reports. As pointed out in the Quadrex Report, valves were involved in this. The proper function of valves is significant to shutdown of the plant. Part M-49 of the report indicates butterfly valves, and 30 inch and 18 inch valves were a part of this deficiency. Question M-41 indicates the same problem effected the tank for containing ECCS water, an obvious safety system component which if it failed could effect plant safety.
- (2) Based on Quadrex Report Item 4.3.2.1(e) there was no documentation for defining separation barriers. This could have effected plant safety because various separation barriers could have been used, some of which would not be capable of preventing common mode failure in event of fire. Question H-3 of the Report indicates an unacceptable material was used as a fire barrier.
- (3) Based on the Quadrex Report item 4.3.2.1(j) vendors were allowed to apply NRC requirements instead of architect engineers. Question E-8 of the Report indicates (Quadrex Assessment) that acceptance criteria for the reliability of the essential services features (ESF) sequencer were left to suppliers. This lack could have effected plant safety, because the ESF sequencer signals the diesel generators to commence operation. In event of loss of off-site power combined with a design based accident, the unit would be dependant on the reliability of the ESF to provide a signal for heat removal from the core following scram. Hence, allowing vendor to apply these criteria effected plant safety.
- (4) Based on the Quadrex Report item 3.1(j)(2) the AFW (auxilliary feed-water) pumps may not be qualified for postulated accident environments. Were this deficiency to have been uncorrected, any accident which relies on these pumps for make up water to the pressure vessel would have been less controled, and possibly gone uncontrolled. Therefore the deficiency could have had an effect on safe operation of the plant. An example

of an accident where AFW pumps are required is the large break LOCA.

- (5) Based on the Quadrex Report item 3.1(e) there were no written guidelines for conduct of failure modes and effects analysis. This means that these analysis were done (if at all) by idiosyncratic process of engineering groups or individuals. This means there were no ways applicant could know what the failure effects were for the STNP as so far constructed. With such a large deficiency in knowledge of the effects of LOCA, or any other accident type or design based accident, the failure to report under 10 CFR 50.55(e) was a serious omission.
- (6) Based on the Quadrex Report item 4.4.2.1(d) separation requirements against common mode failures were not identified with regard to HVAC. Question H-6 of the report states this would apply to the effects of high energy line breaks or fire. The common mode failure of filter trains for the containment or the spent fuel building systems for the redundant containment ventilation or, redundant spent fuel ventilation would adversely effect safe operation of the plant because of over heating of each which would cause leakage of any gases in either structure to move outward since the usual negative pressure to the environment would be lost. In an accident situation, the effect would be to aggravate unwanted exit of any radioactivity, going beyond technical specifications and perhaps 10 CFR 50 Appendix I limits.
- 7) Based on Quadrex Report item 4.1.2.1(b) there is no evidence of evaluation of reasonableness of postulated internal missiles and Question C-9 of the Report indicates criteria for protection against missiles were never implemented. Therefore Applicant should have reported this deficiency on discovery under this section of 10 CFR 50.55 because vulnerability to missiles is recognized by the Commission as a possible danger to plant safety; and is a safety research subject of the Commission as well, item A-32, (See: STAFF Exhibit 19, Pg C-7.)

Under 10 CFR 50.55(e)(1)(ii), the following should have been reported:

- (6) Based on Quadrex Report Item 4.3.2.1(b) no top level document (Technical Reference Document (TRD)) existed that specified plant-wide separation requirements for the Mechanical and Instrument & Controls engineering for the STNP after much construction. Hence for all work the plant safety may well have been compromised because if instruments were not properly separated they could simultaneously be damaged by fire or environmental conditions (i.e. post-accident pressure, temperature and radiation) Plant safety systems rely on the instrumentation and controls and these are expected to operate in a planned manner based (in part) on their separation.
- (9) Based on Quadrex Report Item 4.3.2.1(n) there was no design document on circuit application of isolation devices. This lack could have adversely effected plant safety and should have been reported because improper isolation (for example containment isolation) could result in release of radioactive materials in event of an accident such as a small or large break LOCA.
- (10) Based on Quadrex Report item 4.4.2.1(c), there are no calculations for hydrogen mixing and the potential for pocket accumulations in the containment after LOCA despite the fact much of the STNP-I containment building is now constructed. Accumulations of hydrogen in containment buildings should be addressed according to Question H-3 of the Quadrex Report, and represent a serious problem for plant safety because explosions of hydrogen may exceed the ultimate yield strength of the containment permitting radioactive gases to escape and reach members of the public.

- (11) Based on Quadrex Report Item 4.5.2.1(b), loads used as basis for plant design were unverified or not reviewed for certain pipe rupture loadings (Question C-4, 2nd page, and Question M-8 EDS). The failure to verify pipe rupture loads is a serious Plant design deficiency that effects plant safety, because in the event of pipe rupture, pipe whip may damage safety components, and pressure and heat may have similar effects on safety systems. In addition these effects may damage structural steel inside containment further compromising plant safety.
- (12) Based on Quadrex Report Item 4.6.2.1(a) temperature values were not controlled by designers for equipment design. The use of saturation temperatures rather than actual temperatures inside containment is not conservative in all cases (according to Quadrex Report item 4.6.2.1(a)) as there has been no analysis performed to support the implied assumption that equipment will not respond to actual temperatures. Therefore, plant safety may be adversely effected because safety equipment inside containment is not correctly environmentally qualified.
- (13) Based on Quadrex Report Item 4.6.2.1(b) insufficient environmental analysis was done by two contractors at the STNP. In Question N-3 of the Quadrex Report it states "failure to perform these analyses has the potential of causing plant retrofits and compromise of the maintainance and access aspects of the plant design," thus indicating some of these failures to provide analysis must have effected the final design as approved and construction had started before the finding. In particular high energy lines in the mechanical auxilliary building (MAB) would effect plant safety in event of a main steam line break in the MAB, which houses much of the motor driven safety equipment, were not analyzed, a failure regarded as untimely in 4.6.2.1(b) of the Quadrex Report.

- (14) Based on Quadrex Report item 3.1(d)(5) identified support systems and other systems were improperly identified with regard to safety related versus non-safety related classification. Question E-3 indicates misidentification occurred in the instrumentation & controls systems of the plant. Ordered or installed instrumentation and controls would adversely effect plant safety if they were non-safety related where they should have been safety-related and violate General Design Criteria 21.
- (15) Based on Quadrex Report item 4.8.2.2(k), there is no documented basis for locating breathing connections. In event of plant accidents, it may become necessary to send personnel to areas of the plant to assist in mitigating the accident. Without adequate breathing connections, this may be impossible or possible only with delay. Delay or failure to perform certain acts may effect public safety because many accidents can be mitigated with prompt attention. Since STNP-I is more than 40% completed, the optimal placement of breathing lines may now be impossible, or violate Commission criteria on the placement of breathing lines.

Under 10 CFR 50.55(e)(1)(iii) the following should have been reported:

- (16) Based on Quadrex Report item 4.6.2.1(e), Applicant use of the RELAP3 code for annulus pressurization analysis was inappropriate. Question N-2 of the report indicates use of appropriate codes will be untimely. This then will mean major structural changes to at least STNP-I. Failure of the annulus under pressurization effects plant safe operation because of the escape of products in gaseous forms, which are radioactive. Failure cannot be precluded unless the correct code is applied and deficiencies corrected.

- (17) Based on Quadrex Report item 4.1.2.1(c) the turbine building had not been analyzed for safe shutdown earthquake, although by February, 1979 the turbine-generator foundation mat had been completely installed, and installation of the "Condensor and Turbine Generator" had been 10% complete with expected completion by February of 1980, according to NUREG-0030, Vol. 2, No. 1, Feb. 1979, p. 2-74, (STNP, Unit 1 only). Failure to correctly construct against the safe shutdown earthquake has numerous safety implications which effect safety: failure of the turbine building might result in turbine missiles, a turbine rotation block with disabling of the stop valve would clearly cause a fission flux increase which would possibly bring an over-power transient. Hence, this meets the standard of 10 CFR 50.55(e)(1).

Under 10 CFR 50.55(e)(1)(iv) the following should have been reported:

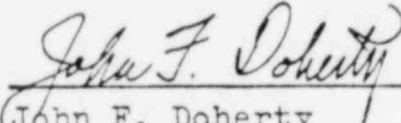
- (18) Based on Quadrex Report item 4.6.2.1(a), temperature values for equipment design have not been properly controlled. Question N-5 of the Report states some of the equipment has been purchased relying on these (uncontrolled) values. The same question shows that the equipment is safety related and to be installed in the IVC or MAB portions of the plant. Safety related equipment in the MAB is used to mitigate accidents, so the item could relate to plant safety adversely.

- (19) Based on Quadrex Report item 4.6.2.2(m), different values of the essential cooling pond(ECP) initial temperature assumptions were used by Nuclear Analysis and Heavy Civil disciplines. This deficiency permits an operating condition in the two unit plant which will exceed the technical specifications for the ECP. Further, Question N-17 of the Quadrex Report states that reanalysis of the problem is "not timely". According to NUREG-0030, Vol.2 No., Feb. 1979, "Reservoir and Makeup Water Facilities" for the STNP were more than 55% completed at that date. Therefore the ECP calculation problem should have been reported under 10 CFR 50.55(e)(1)(ii) at the time of the report's appearance.

(20) Based on Quadrex Report item 4.6.2.1(b), there was a lack of environmental analysis outside containment which could result in either retrofit in the MAB or incorrectly designed equipment in the isolation valve cubicle (IVC). In particular, high energy lines in the MAB would effect plant safety in event of a main steam line break in the MAB, where much of the motor driven safety equipment is located.

Intervenor asserts that failure to report these findings demonstrate inability to comply with NRC regulations on the part of the Applicant and that this inability would endanger the public and this Intervenor were Applicant granted the sought license.

Respectfully,

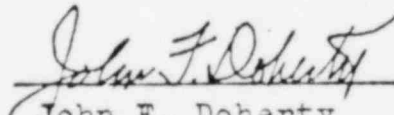
  
John F. Doherty

#### CERTIFICATE OF SERVICE

I certify that copies of "INTERVENOR DOHERTY'S AMENDED CONTENTION 59" were served on the parties below via First Class U. S. Postal Service, this 12<sup>th</sup> of July, 1982, from Houston, Texas.

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