7/25/80

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 No. 1)	§	

APPLICANT'S RESPONSE TO JOHN F. DOHERTY'S SIXTEENTH SET OF INTERROGATORIES TO HOUSTON LIGHTING & POWER COMPANY

In response to the interrogatories propounded by John F. Doherty, Houston Lighting & Power Company (Applicant) answers as follows:

INTERROGATORY NO. 1:

1. Relevant to Contention 12,

A. Does Applicant take the position modification to the Rod Manual Pattern Control System as embodied in the RCIS system completely eliminates the problems stated in the contention?

B. Does Applicant maintain it will be impossible to bypass the RC&IS system for control room personnel?

C. How rapidly may a rod movement timer be replaced, if the timer malfunctions during reactor startup? Does the statement on P 7.7-9 of the PSAR mean start-up will be halted, or merely that only one rod will no longer be withdrawable?

D. Does "downscale" mean off scale on the low side?

ANSWER:

Yes.

B. The ACNGS Control Rods cannot be moved unless the RCIS is operable.

C. (1) The time required to replace a timer would vary. It is expected that, on the average, a timer could be replaced in one hour.

(2) The statement on page 7.7-9 means that a bypassed rod could not be withdrawn.

D. Downscale means that the measurement has reached the downscale alarm point. The measurement has not gone off scale.

INTERROGATORY NO. 2:

2. The following are based on questions and replies to this Interventor's Fourteenth Set of Interrogatories.

A. In your response to this Intervenor's question 5 A, you state the FPCC is "self-sufficient".

(1) What does "self-sufficient" mean?

(2) Where is this term defined in any ANS or ANSI standards?

(3) If there is no such term among the standards, does this system meet any standards? If so, what are they?

B. For how long can applicant's Spent Fuel Fool be left unattended? What is the basis for your answer?

C. In the event of heat up of the Spent Fuel Pool simultaneous with an equal increase in the temperature of the Fuel Handling Pool which pool would be brought back to the normal expected temperature for both pools. (Assume both pools rise to 211?F at their lowest plane and over that entire area.

D. For which Regulatory Guide is Applicant's response to question #10?

E. Does Applicant accept or reject the statement: water reacts chemically with heated zirconium (1,200?F) to produce heat and explosions at standard pressure of one atmosphere.

F. Does Applicant accept or reject the position that under the conditions above, a temperature of 2,350?F. can be obtained?

G. What is the CRT you mentioned in reply to Interogatory Osico numbered "2" on page 8 of your reply?

H. What is the "change" referred to on Page 9 of your reply, line 9?

I. Cite one article or scientific publication where "GE compares operating reactor data with analytical models" where the operating reactor data is taken from transient conditions with an operating BWR of greater than 52 MWe power. (See Applicant's reply P.12, line 21.

J. Were delayed neutron contributions ignored in WIGLE reactor excursion calculations?

K. In your replies on page 13 of the Interrogatories (Questions 1 and 2) was the reactor assumed at 100% of power? If not, what is the assumed power?

L. What is Applicant's definition of cold shutdown at this moment?

M. Describe briefly the "several designs available to meet the objective" in your reply to my question #1 of Contention #42, on P.20 of your Reply.

N. What is the calculated maximum speed of a control rod drop?

O. Is the calculation provided in answer to question # 22 of Cont 46 on p. 27 of the Reply, provided by T. Braudt?

P. If the answer to "O." (above is "no", please indicate by whom?

Q. Is there leakage of cold water through the CRD return line of all BWRs during normal operation and (of course) where the CRDRL is provided?

R. On P. 30 of the Reply, line 4, is the word "pressure" correct?

S. What position does T. Braudt hold at Houston Lighting & Power Co.?

T. What acadmic [sic] degrees does T. Braudt hold, and from what educational institutions? What academic degrees (if any) and at what educational institutions (if any) is T. Braudt currently pursuing?

ANSWER:

A. (1) "Self-sufficient" means that the system is designed to adequately perform its normal operating and safety function.

(2) The term "self-sufficient" is referenced in NUREG 0626, page 1-15, paragraph B.5 (A-2.6).

(3) The mechanical portion of the FPCCS is designed in accordance with ANSI 210 - 1976. The FPCSS is also designed in accordance with Regulatory Guide 1.13.

B. The FPCCS is designed to be operated from the Control Room, and the habitability of the Control Room permits operator attention at all times. The FPCCS pump will continue operating as long as power is available.

C. Refer to response to item 8, Doherty's Fourteenth Set of Interrogatories. Both pools, i.e., SFP and FHP will be cooled to the same temperature since there is free communication between the two pools by virtue of the partial weir wall.

D. Regulatory Guide 1.13.

E. Applicant rejects the statement.

F. Applicant rejects the statement.

G. CRT means Cathode Ray Tube (Television Screen).

H. The change referred to will delineate the use of pressure transmitters instead of float switches.

I. "KKM Turbine Trip Simulation with a One Dimensional Transient Model" by S. P. Congdon, R. B. Linford, ANS Transaction Volume 32, P. 452, June, 1979.

J. To the best of Applicant's knowledge, they were not. General Electric does not use the WIGLE code.

K. The reactor was assumed to be at full power.

L. See response to your fifth interrogatory on Contention 38(b) in your Fourteenth Set of Interrogatories to Applicant.

M. Direct valve position stem indication.
Differential pressure monitoring.
Acoustic monitoring.

N. Five feet per second.

O. Yes.

P. Not applicable.

Q. Plants that have a CRDRL have that line valved out (no leakage).

R. The word "pressure" in the referenced response should read "presence".

S. Mr. T. Braudt is an Engineer in the Nuclear Safety and Licensing Division assigned as Team Leader for Allens Creek Project Licensing.

T. Mr. Braudt has a Bachelor of Science degree in Nuclear Engineering from Texas A&M University and is currently pursuing a Master of Business Administration at the University of Houston at Clear Lake City.

INTERROGATORY NO. 3:

3. Where in the PSAR is any welder training program described? (Doherty 35).

ANSWER:

The Allens Creek Unit 1 Procedure for Qualification of Welders has not yet been written, but it will be prior to the commencement of any welding at the site. Commitments to ASME IX and to maintain qualification records of welder personnel appear in PSAR 3.8.2.7.2.

INTERROGATORY NO. 4:

4. What steps will applicant take with regard to welder [sic] education to prevent a repetition of the cadweld inadequacies at ACNGS discovered at the South Texas Project?

ANSWER:

PSAR Section 3.8A describes qualification procedures for cadwelding in paragraphs 3 and 4. Also, the practices for qualification testing of cadweld splicing crews are presented in the PSAR position on Regulatory Guide 1.10.

INTERROGATORY NO. 4:

4. Does Applicant take the position no other source than the PSAR is required to show welders will be adequately trained, so as to avoid problems such as those at South Texas project? If "no", what sources show welder training adequacy?

ANSWER:

The requirement for welder qualification for the ASME B&PV Code, Section IX as stated in the PSAR is transcribed into Ebasco specifications and becomes part of the purchase order contract. In addition, the Ebasco Quality Assurance Manual requires a working file to be established at the site to document welder qualification records (see page 17.1-43 of the PSAR).

INTERROGATORY NO. 5:

5. Does Applicant take the position that turbine halt by a disc piecs [sic] jamming the spindle mechanism and causing an abrupt halt is no worse than a turbine trip?

ANSWER:

Applicant objects to this interrogatory on the grounds of vagueness. Intervenor does not identify the parameters by which either event could be judged as "worse"; e.g., plant safety versus equipment damage.

INTERROGATORY NO. 6:

6. What is the definition of "scram reactivity function" Applicant uses?

ANSWER:

Scram Reactivity Function represents transient reactivity components associated with control state changes when the control rods are inserted for a scram.

INTERROGATORY NO. 7:

7. What is the definition of "scram reactivity coefficient" Applicant uses?

ANSWER:

The scram reactivity coefficient is a GE value which is used to allow comparison of various scram reactivity functions.

INTERROGATORY NO. 8:

8. What does Applicant believe the correlation between scram reactivity function and design safety limit of the fuel rods is for its system? (This question was asked by Applicant at the 6/16/80 deposition)

ANSWER:

The scram reactivity function has no correlation with the determination of the design safety limit of the fuel rods.

INTERROGATORY NO. 9:

9. What are the numbers (just the numbers) of the issues in the Reed Report which General Electric or General Electric and Applicant have agreed to make available to this Intervenor.

ANSWER:

Mr. Doherty has already inspected the information from the Reed Report.

INTERROGATORY NO. 10:

10. What factors about the SPERT reactor project reported in IN-1370 will Applicant argue make application of that report's results inappropriate for the ACNGS system?

ANSWER:

a. The SPERT reactor mentioned in IN-1370 does not in any way resemble a typical BWR or even a mock-up BWR. It is really a test assembly, which bears no correlation to a BWR/6 core.

b. The experiment mentioned in IN-1370 dealt only with pulsed neutrons. The test assembly did not even have control rods.

c. Because of the vast differences between the test assembly and a BWR, it is impossible to make predictions of BWR scram reactivity based on the SPERT data.

INTERROGATORY NO. 11:

11. In your Reply (P. 29) to this Intervenor's 14th set of Interrogatories you state "Subsequent confirmatory testing at operating plants showed no reduction of rod notch speeds". In what publications other than those of General Electric is this shown to be as represented? If there are no publication but G.E. literature, has the literature been review and approved by the NRC?

ANSWER:

The NRC has reviewed and approved GE's submissions on this and other matters relating to the removal of the CRD hydraulic return line for all plants except BWR/6-238 plants. The NRC is now reviewing and is expected to approve the removal for these plants in the near future.

INTERROGATORY NO. 12:

12. Does Applicant maintain that from what it knows of the Browns Ferry fire of 1975, the CRD return line was not needed? (This position appeared to have been taken at this Intervenors 6/16/80 deposition).

ANSWER:

Applicant objects to this interrogatory on the grounds of vagueness. Intervenor does not define the term "needed". To the best of Applicant's knowledge, the CRD hydraulic system was used to inject water into the core after the Browns Ferry incident, but Applicant cannot conjecture on whether the return line was "needed" without some objective basis for making that judgment.

INTERROGATORY NO. 13:

13. Does Applicant maintain it has one more high pressure path for water to the core, than:

(a) Browns Ferry, Unit II?

(b) Oyster Creek?

(c) Dresden, Unit II?

ANSWER:

The Allens Creek high pressure water systems are identified in the Allens Creek PSAR. Applicant has not made a comparison with the units listed.

INTERROGATORY NO. 14:

14. What paths and systems which take their driving force from reactor pressure will ACNGS have other than the Control Rod Drive Return line?

ANSWER:

The CRD system takes its driving force from the CRD pumps. The RCIC and feedwater systems have turbine driven pumps which operate from reactor steam.

INTERROGATORY NO. 15:

15. On P. 7.7-8 of the PSAR it states, "When the low power set point (LPSP) is reached, no further restrictions on rod movement are imposed. This set point is determined to be the point at which rod drop accident can no longer occur and is determined at 20% power level." Does this mean (a) It's impossible for a rod to be dropped, or (b) another meaning? If (b), please explain.

ANSWER:

The statement means that above 20% power level there is no rod drop event that can yield 280 cal/gm specific fuel enthalpy. Accordingly, there is no need for restrictions on control rod movement above 20% power.

INTERROGATORY NO. 16:

16. Relevant to Doherty #11, on page 9.1-4 of PSAR, it states, "An abnormal condition may result from accidental dropping of equiptment [sic] without first disengaging the fuel from the hoisting equiptment." [sic] What is the probability perssonnel [sic] would have to leave the area if the described event occured [sic]?

ANSWER:

One.

INTERROGATORY NO. 17:

17. Does Applicant consider recirculation system pumps as non-safety grade even if the CRD return line high pressure water source is removed?

ANSWER:

Yes, there are still non-safety grade. Removal of the CRDRL could not conceivably impact this classification as there is no relationship between the two items.

INTERROGATORY NO. 18:

18. If ACNGS is contemplated to be operated at higher fuel enrichment than current BWRs, how does Applicant justify using a current BWR design when the PSAR states (4.3-7) that, "The magnitude of the Doppler coefficient is inherent in the fuel design and does not vary significantly among various BWR designs having low fuel enrichment?"

ANSWER:

There are no plans at this time to have fuel enrichments at ACNGS higher than current BWRs.

INTERROGATORY NO. 19:

19. Will Applicants plant uses an "analog Transmitter Trip Unit System" (ATTUS)? (Relevant to Doherty #27).

ANSWER:

Yes.

INTERROGATORY NO. 20:

20. Relevant toDoherty #42, I would like to know the number of thermometer stations in the suppression pool which canb [sic] be read from the control room. Please give location depth in the pool water from its surface. (It appears to Intervenor these parameter of those listed in NUREG 0626 on Page A-69, may be the best indicator of valve position.)

ANSWER:

There will be 20 dual element thermocouple assemblies providing main control room readouts. These 20 units will be located at five locations around the Suppression Pool pheriphery (specifical, at azimuthes 0°, 72°, 153°, 207°, and 288°). Each of the four thermocouples, in a group, will have a separate unique electrical divisional assignment (1E, S1, S2, S3, or S4). The immersion depth of the thermocouple element will be no more than 12 inches and no less than three inches below the minimum water levels as specified in the technical specification.

INTERROGATORY NO. 21:

21. Will any fuel for ACNGS be fabricated by Exxon Nuclear CompanY [sic]?

ANSWER:

There are no plans at this time to purchase fuel fabricated by Exxon Nuclear for ACNGS.

INTERROGATORY NO. 22:

22. How does the SAFE computer program evaluate the internal system pressure gradients which result from liquid flashing within the core for the ECCS analysis? (45)

ANSWER:

The SAFE computer program is briefly described in NEDO 20566, and the analytical treatment of all pertinent variables is given in NEDO 10329 Appendix B.

INTERROGATORY NO. 23:

23. Is the on-off behavior of the Automatic Depressurization System (ADS) an automated process? How many cycles can the ADS accomodate [sic]? (42)

ANSWER:

The ADS actuation ("on") is an automatic function. The ADS air supply is non-interruptible; therefore, the number of cycles is not pertinent.

INTERROGATORY NO. 24:

24. What is the name of the "steady-state three dimensional coupled nuclear-thermal hydraulics computer program" mentioned in 15.1.11.2.1 of the PSAR? When was it created? When was it accepted for this analysis by the NRC?

ANSWER:

The computer program's name is PANACEA. Its development and analytical description is given in NEDO 20953, which was approved by the NRC in a letter from the NRC to GE dated January 17, 1978.

INTERROGATORY NO. 25:

25. What is the estimate [sic] rod diametrical swelling that a G.E. 8 x 8 fuel assembly can tollerate [sic] (that is, what is the maximum before there is any blockage of coolant to the extent that alteration in the maximum thermal output must be made, assuming operation at 100% of power?

A. After answering fully, please give a PSAR reference showing this.

ANSWER:

Even assuming that "diametrical swelling" is related to cladding strain, the question does not provide sufficient information for a response because the results are function of the initial assumptions made with regard to the postulated swelling. The effects of postulated flow blockage have been investigaged and reported in NEDO 10174, Rev. 1 dated October, 1977.

INTERROGATORY NO. 26:

26. What is the justification for setting a 0.060-inch fuel rod deflection in the Gessar-238 Nuclear Steam Supply System? (See: Page 4-5 of NUREG-0152, Gessar SER, and answer here fully please)

ANSWER:

See NEDO 20948 and NEDO 20948, Amendment 1.

INTERROGATORY NO. 26:

26. Fig 4.3-2 of PSAR has two baseline units side by side. These units are gm/cc and percentage. The result is confusing.

A. Does the graph say the Control Rod Worth (CRW) is 0.075% at 20% core power?

B. When is the CRW ever 0.025, at 0% power?

C. When the reactor coolant is hot ("hot stand-by") with all control rods inserted fully, and coolant of density 0.88 g/cm3 would the control rod worth be quite close to 0.028 Δk if a single error by operator?

ANSWER:

A. No.

B. The maximum control rod worth at 0% power on the figure is just under 0.6% Δk/k.

C. No. The figure indicates that the maximum rod worth approaches 1% Δk/k.

INTERROGATORY NO. 27:

27. Referring to the same figure as Interrogatory 26, why is there a slight reactivity increase in CRW with "no errors" when average moderator density decreases.

ANSWER:

The control rod worth increase as indicated on Fig. 4.3-2 corresponds to the maximum rod worth after 50% of the control rods have been withdrawn in accordance with the RPCS hard-wired procedure. The spike occurs when you are out of the checkerboard pattern that occurs with 50% control rod withdrawal.

INTERROGATORY NO. 28:

28. To the best of Applicant's knowledge do the curves in PSAR figure 4.3-2 remain the same regardless of Xenon conditions?

A. If "no" to the above, fully indicate in your reply what changes there are.

ANSWER:

If Xenon is present in the core, the curves in Figure 4.3-2 will essentially shift to the right.

INTERROGATORY NO. 28:

28. On what data or facts does Applicant take the position the RCIS has such improvement in reliability over the system which performed its functins [sic] in older BWRs that no accident possibilities need be considered? Give statistical data in addition to verbal in your reply please.

ANSWER:

Applicant maintains the system is more reliable than the ones referred to in the original contention because: (a) the present system consists of two channels which provide the capability of having a data compare function; (b) the old RWM could be easily bypassed; and (c) the present system automatically performs a continuous self test. Statistical data on reliability is not required and has not been generated.

INTERROGATORY NO. 29:

29. What improvements and changes will be incorporated in control rod guide tubes in ACNGS which are not incorporated in other BWRs control systems which will minimize the probability a control rod will stick on uncoupling?

ANSWER:

There is no evidence that control rods need improving to avoid uncoupling or sticking.

INTERROGATORY NO. 30:

30. What improvements and changes will be incorporated in control rod guide tubes in ACNGS which are not incorporated in other BWR control systems which will minimize the probability a control rod will fall having stuck in the guide tube on uncoupling?

ANSWER:

See answer to Interrogatory No. 29.

INTERROGATORY NO. 31:

31. Referring to Applicants reply to the Interrogatory numbered "16[a]" on Page 5 of your 6/30/80 Response on page 5, on what experimental results (as opposed to theory, or computer simulations) does G.E. base its models for predicting power excursion transients? (The Response is to this Intervenor's Interrogatory set #15.)

ANSWER:

See NEDO-10802.

INTERROGATORY NO. 32:

32. In arriving at its reply to the question labled "16[b]" of this Intervenor's Interrogatory Set #15, (Page 6 of Applicant's Response) what steps did Applicant take to obtain information on the availability of trained welders?

ANSWER:

Applicant relied upon its general knowledge of the labor market in the greater Houston area and on the ability of large architect-engineering firms to draw on this and other sources of trained personnel.

INTERROGATORY NO. 33:

33. What is the larges [sic] increase in outside diameter of a fuel rod Applicant maintains can occur as a result of an abnormal operating transient in the BWR 6 design? Please give the source of the numerical answer.

ANSWER:

The BWR 6 as used in ACNGS is designed and operated to limit cladding strain to 1% for normal operations and accident conditions. See also Chapter 4 of the PSAR and NEDO-20948.

INTERROGATORY NO. 34:

34. What aspects of the Three Mile Island II fuel rods which differ from the proposed ACNGS fuel rods impressed Applicant at the time it responded to this Intervenor's Contention #39? Include anything that inpressed [sic] Applicant at that time.

ANSWER:

Applicant responded to Doherty Contention 39, in part, by noting that "Mr. Doherty does not identify nor describe any similarities in core design...shared by TMI-2 and ACNGS." Applicant knows of no significant similarities and still maintains that it is incumbent on Intervenor, not Applicant, to demonstrate that there are any.

INTERROGATORY NO. 35:

35. What is the basis for the statement in Applicant's Response to this Intervenor's Interrogatory 27 B of Set #15, that, "This (referring to transverse testing) is more conservative than testing the longitudinally oriented specimen?"

ANSWER:

The transverse speciman is weaker. This is a result of the grain alignment after rolling operations.

INTERROGATORY NO. 36:

36. Has NRC agreed to the omission of this less conservative specimen?

ANSWER:

No "less conservative specimen" has been omitted.

INTERROGATORY NO. 37:

37. Has Applicant reached any decision with regard to the problems which prevented reply to this Intervenor's Request for Documents 15-11, served Feb. 19, 1980?

ANSWER:

See letter dated March 25, 1980 from Applicant's counsel, C. Thomas Biddle, Jr., to John F. Doherty.

INTERROGATORY NO. 38:

38. In APED 5756, on P. 5-4, it states a Control Rod drop is limited to 3 ft/second by the system. Since this is an old document, provide the speed limit for a dropped rod on the ACNGS.

ANSWER:

See answer to Interrogatory No. 2(N).

INTERROGATORY NO. 39:

39. Do all calculations of rod drop fall use the figure of 5 ft/sec for ACNGS.

ANSWER:

Yes.

INTERROGATORY NO. 40:

40. In Section 4.2.1.3.3.1 of the PSAR, Applicant states it will use fuel to 45,000 MWd/tonne burn-up. On pages 9 of the General Accounting Office Report EMD 79-89 of 7/10/79 Comments on the Administration's White Paper: The Clinch River Breeder Reactor Project -- An End to Impasse, it states: "[t]here will be a need to use more highly enriched fuel", for these increased burn-up fuels. If ACNGS is to be operated using higher enrichment fuels than current BWRs how does Applicant conclude it can safely operate the ACNGS, when the PSAR states on Page 4.3-7, that "The magnitude of the Doppler coefficient is inherent in the fuel design and does not vary significantly among various BWR designs having low fuel enrichment? (Note the quote from the GAO report refers to the DOE program for more efficient fuels for LWRs not the LMFBR)

ANSWER:

See answer to Interrogatory No. 18.

INTERROGATORY NO. 41:

41. What is the reactor period for the ACNGS (sometimes called "e")?

ANSWER:

Reactor Period (T) is defined as the generation time (t_o) divided by the excess reactivity (Δk)

The reactor period represents the time interval required for the neutron flux to change by the factor e, where e = 2.71828182845904523536 . . .

INTERROGATORY NO. 42:

42. In NEDO 20,953A, on page viii, it mentions "in the bypass collant region at the corners of four fuel bundles". Is that location within a single fuel channel?

ANSWER:

No.

INTERROGATORY NO. 43:

43. How does the SAFE computer program evaluate the internal system pressure gradients which result from liquid flashing within the core and steam condensation due to ECC injection?

ANSWER:

See answer to Interrogatory No. 22.

INTERROGATORY NO. 44:

44. In APED 5756, on page 5-5, it states GE. analyzed the rod drop accident has been analyzed in detail for three different initial reactor conditions, namely, cold, hot standby, and 40% of rated power. Are any of these conditions analyzed for an ACNGS core with high xenon concentrations? Where in the PSAR are these calculations?

ANSWER:

GE does not analyze rod drop accidents with high xenon concentrations, because xenon reduces the effective rod worths of the control rods and the rod drop accidents with high Xenon concentrations are much less serious than rod drop accidents without high xenon concentrations.

INTERROGATORY NO. 45:

45. If page 16.3/16.4-19, paragraph F of the PSAR has not been amended state the exact page where the information designated by a star in brackets is located. If the page has not been amended state why Applicant at the June 6, 1980 deposition of this Intervenor has asked if this Intervenor has any reason to believe the ACNGS cannot be bought to cold shutdown in 24 hours. (to clarify: the Interrogatory refers exclusively to paragraph F)

ANSWER:

Section 16 of the PSAR is the draft technical specifications. The plant technical specifications will not be generated until the FSAR stage. Since information

is available in the PSAR in certain sections (15.1.27 for example) which discuss bringing the plant down in time frames less than 24 hours, Applicant was interested in any basis that Intervenor had for stating the plant could not be shut down in 24 hours.

INTERROGATORY NO. 46:

46. Refrring [sic] to the Adler, Hinman and Nordheim (sic) paper cited in your Response on page 13 (Response to Doherty Interrogatory Set #15) from the 2nd United Nations International Proceedings at Geneva, in 1958, does G.E. still rely on the estimates of Chernick and Vernon in line 12 in Table 5 on page 157?

ANSWER:

Intervenor's question 31B asked for a definition of intermediate resonance integral and the paper generated by Adler, Hinman and Nordheim was referenced as source material. The methods Applicant uses to generate Doppler Reactivity Feedback are thoroughly discussed in NEDO-20964.

INTERROGATORY NO. 47:

47. If the answer to "46" is in the negative, what is the new source of information for the surface integrals in the table?

ANSWER:

See answer to Interrogatory No. 46.

INTERROGATORY NO. 48:

48. Applicant's reply to my 3rd question on Contention 38 on page 13 of the Response to the 14th set seems to imply there are no other pumps to replace the the RHR system in any event where they might be needed. Is it true there are no other pumps to remove decay heat from the core in the event of a DB-LOCA, if A) one pump is out of service?, B) two pumps are out of service, C) three pumpts are out of service? If any answer to these three is "no" supply the name of the pump.

ANSWER:

1. LPCS pump

2. HPCS pump

INTERROGATORY NO. 49:

49. What is a CRT? See P.8, line 18, of Applicant's Response to my Set #14.

ANSWER:

See answer to Interrogatory No. 2(G).

INTERROGATORY NO. 50:

50. Name all of the "available several designs to meet the objective", as taken in your response on line 9-10 on Page 20 of your Response to this Intervenor's Interrogatory set #14.

ANSWER:

See answer to Interrogatory No. 2(M).

INTERROGATORY NO. 51:

51. Who is the manufacturer of the ACNGS turbine?

ANSWER:

General Electric.

INTERROGATORY NO. 52:

52. What is the radius of the largest and smallest disc of Applicant's turbine?

ANSWER:

Low Pressure Turbine:

1. the last stage blade is 38 inches long

2. the overall diameter of the LP turbine (tip to tip of LSB) is 13 feet, 9 3/4 inches

3. the diameter of the hub at the blade roots is 52 inches

Respectfully submitted,

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STATE OF TEXAS §
§
COUNTY OF HARRIS §

BEFORE ME, THE UNDERSIGNED AUTHORITY, on this day personally appeared L. D. Richards, who upon his oath stated that he has answered the foregoing Houston Lighting & Power Company's Response to Doherty's Sixteenth Set of Interrogatories to Houston Lighting & Power Company in his capacity as Lead Engineer for Houston Lighting & Power Company, and all statements contained therein are true and correct to the best of his knowledge and belief.

Lonnie D. Richards
L. D. Richards

SUBSCRIBED AND SWORN TO BEFORE ME by the said L. D. Richards, on this 24th day of July, 1980.

Jeanne Bleckman
Notary Public in and for
Harris County, Texas

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)	§	

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing Applicant's Response to John F. Doherty's Sixteenth Set of Interrogatories to Houston Lighting & Power Company in the above-captioned proceeding were served on the following by deposit in the United States mail, postage prepaid, or by hand-delivery this 25th day of July, 1980.

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