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 THIRTEENTH 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:

CONTENTION NO. 8:

RESPONSE:

1. (a) Linear feet.

(b) Approximately five feet.

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Docketing & Service
Branch

CONTENTION NO. 10:

RESPONSE:

1. Two air receivers. The receivers are recharged from two compressors.

2. See PSAR § 9.5.6.

3. GM-EMD-20-645-E4.

4. A diesel engine of this type has been installed in plants awaiting an operating license.

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5. See NEDO 10905-3, which is available for inspection and copying at Applicant's Energy Development Complex.

6. Changes include, but are not limited to,

(a) Air start system.

(b) Periodic blowdown requirements on the air receivers.

(c) Periodic testing.

(d) Reliability testing.

(e) Preventative maintenance.

(f) Redundant fuel oil system.

(g) Status monitoring.

7. Yes.

(a) Factory testing shows high reliability.

8. Applicant did not receive Interrogatory No. 12-10-01.

9.&10.

(a) Yes. See No. 6, above.

(b) Yes. See No. 6, above.

(c) Yes. The lube oil system has duplex filters and delta P monitoring to indicate restricted flow.

(d) Yes. Heat exchangers are designed to ASME Section III requirements.

(e) Yes. Both electrical and mechanical governors are used.

(f) Yes. No sequencing of load, status monitoring and more reliable components. See, also, PSAR §§ 8 and 9.

11. A description is presented in NEDO-10905-3, which is available for inspection and copying at Applicant's Energy Development Complex.

12. No warmup time is required.

13. Yes. See the answers to No. 6 and No. 9, above.

14. 1972.

15. During the selection process, design specifications are sent to various vendors for bids. Bids are evaluated based on:

(a) Compliance and designer requirements.

(b) Acceptability of vendor's QA programs.

(c) Vendor's past history.

(d) Cost.

16. The size of the HPCS diesel generator for ACNGS is firm.

17. Either receiver is capable of performing five start sequences. If only one receiver is used, a successful start is less than ten seconds. If both receivers are used, start is achieved in slightly less time than with one.

18. (a) Applicant has reviewed the alleged problem and will guarantee a design such that the probability of cumulative bearing damage leading to turbo-charger failure poses no substantial safety hazard.

(b) The pertinent vendor has committed to rectify the problem by design, fabrication, and operating procedure.

19. See answer to Interrogatory No. 18, above.

20. The answer is contained in NEDO 10905-3, which is available for inspection and copying at Applicant's Energy Development Complex.

21. Loads are delineated in § 8.3 of the PSAR. Margin is addressed in NEDO 10905-3, which is available for inspection and copying at Applicant's Energy Development Complex.

22. LOCA calculations assume a single failure. This failure could be the loss of the diesel generator. PSAR § 6.3 contains assumptions used for LOCA calculations.

CONTENTION No. 13:

RESPONSE:

1. The weight of "thermal shielding" in the drywell has not been calculated.

2. The weight of insulation within the drywell has not been calculated.

3. The weight of "thermal shielding" within the containment building has not been calculated.

4. The weight of insulation within the containment building has not been calculated.

5. Applicant objects to this interrogatory on the ground of vagueness. The term "drywell drain cover" is not identified or explained and Applicant has no knowledge of such an item.

6. See the answer to Interrogatory No. 5, above.

7. No.

(a) All high-energy lines in the drywell will be analyzed for this effect. The force will vary with the break. Analyses are not yet complete.

(b) Not applicable.

(c) Not applicable.

(d) Not applicable.

8. See response to No. 7, above.

9.&10. Reflective stainless steel insulation will be used in the drywell.

11.&12. Insulation materials used in the containment building include: anti-sweat stainless steel jacketed glass fiber, mineral wool fiber or foam plastic; thermal stainless steel reflective or stainless steel jacketed fiberglass blanket.

13. Applicant has not made calculations of the type inquired about.

14. Applicant objects to this interrogatory on the ground of vagueness. The terms "main drywell drain" or "single largest drywell drain" are not identified or otherwise explained, and Applicant has no knowledge of any such items.

15. See the response to No. 14, above.

16. See the response to No. 14, above.

17. There are a total of four pumps in the drywell sumps.

18. See the response to No. 14, above.

19. The drywell floor does not slope.

20. No. Regulatory Guide 1.82 applies only to pressurized water reactors.

21. See response to No. 20, above.

22. Owens Corning or other Corning Corporation insulation may be used in the containment. A supplier has not yet been chosen.

CONTENTION NO. 14:

RESPONSE:

1. Severity refers to the magnitude of computed offsite doses using 10 C.F.R. Part 100 limits as a reference.

(a) Applicant does not measure severity in numbers of failed fuel rods.

2. The MSLRM system is preset for an alarm when the radioactive gas released from the failed fuel rods exceeds the set point equivalent to 1.5 times the N-16 background.

(a) There is no difference in principle between the ACNGS and the Dresden III MSLRM systems.

(b) Not applicable.

3.&4. The ACNGS MSLRM system is set to detect fuel failure in terms of the noble gas activity released, not the number of rods that have perforated or failed.

CONTENTION NO. 17:

RESPONSE:

1. G.E. has not proposed to add any logic to prevent multiple safety relief valve actuations.

2. There is no plan to prevent any SRV from reopening.

(a) Not applicable.

(b) Not applicable.

3. No.

4. Yes.

(a) Crosby valves of the type to be used at ACNGS have been installed in one operating foreign plant for approximately 14 months; another operating

foreign plant for approximately three months; and two valves have been installed in one operating domestic plant for approximately three months.

5. Four.

(a) See PSAR § 7.3.1.1.10.

6. It is conceivable, but highly unlikely, that some valve (unidentified) could indicate close when it is in fact partially open.

7. Yes.

(a) &.

(b) The addition of two redundant recircular pump trip circuit breakers dedicated to ATWS mitigation.

8. If the reliability of the pilot solenoid valves becomes an issue in contention in this proceeding, Applicants may rely on NEDO-23978.

9. No.

10. Applicant has no knowledge of the facts and circumstances surrounding the incident inquired about.

11. At this time, the ACNGS model for determining SRV loadings is identical to the GESSAR model and is expected to remain so.

12. Applicant researched all relevant documents in previously answering Interrogatory No.

10-2 in John F. Doherty's tenth set of interrogatories. The response given there is true and accurate. Calvert Cliffs-2 is a Pressurized Water Reactor, and the valve which allegedly failed there is not of the design to be used in ACNGS.

13. See the answer to Interrogatory No. 4, above.

14. Yes.

15. Yes.

16. Applicant objects to this interrogatory on the ground that it is not related to any admitted contention. The cost of design changes is not an issue in this proceeding.

17. Yes.

(a) 0 and 8.

(b) Yes.

18. G.E. has proposed all solid-state electronic trip units designed to provide stable and accurate monitoring of process parameters. This sense trip system will reduce the sensor drift, speed up the calibration time, simplify the calibration procedure and improve the plant availability.

19. For both postulated ATWS cases, there is no water-steam mixture through the SRV when the

SRV opens to relieve pressure. The maximum discharge velocity is the sonic velocity.

20. (1) This parameter was not included in the specification for the valves.

(2) 78.5 in.^{2}.

(3) 10 in.

(4) This parameter was not included in the specification for the valves.

(5) This parameter was not included in the specifications for the valves.

CONTENTION NO. 20:

RESPONSE:

1. Yes. However, the 45,000 MWd/MTU value corresponds to the maximum peak pellet exposure.

2. Although GEGAP-III was developed to be a best estimate predictor of fuel thermal performance (i.e., no intentional biases were introduced in the model formulation), the qualification shows that a conservative bias is present. The comparison to equiaxed grain growth inferred fuel temperatures is only a confirmatory overcheck on the integral model performance as key GEGAP component models (fission gas release, irradiation swelling, and fuel

relocation) have been individually calibrated or qualified to data up to and extending beyond 45,000 MWd/MTU.

2. The Zr-2 clad melting temperature is independent of exposure as all irradiation effects are annealed out at the elevated temperatures required for melting.

3. The reduction in fuel melting temperature with exposure is taken at 32°C/10000 MWd/MTU. The fuel melting temperature reduction rate was derived from experimental observations.

4. The fission gas release model in the GEGAP-III fuel thermal performance model has not been revised since 11/75. The GE response to NUREG 75/077 was the submittal of the GESTR fuel performance model to the NRC. The GESTR component fission gas release model differs from the GEGAP fission gas release model by inclusion of an explicit exposure enhancement factor in addition to an altered temperature dependence.

5. The maximum rod average exposure for a given fuel rod design is a complex function of primarily the 1) core and fuel assembly geometry, 2) enrichment and nuclear poison distributions, 3) core management and operational conditions, and 4) system environment. All of the preceding factors can be different for GE BWR and Westinghouse PWR fuel designs. Since General Electric does not possess the

intimate knowledge of the values of these factors, and the sensitivity of fuel exposure to these factors, for the Westinghouse design, no quantitative nor qualitative comparison can be made between the two fuel designs.

6. See Response to No. 5, above.

7. The transition from the 7X7 to the 8X8 fuel assembly design resulted in a GEGAP calculated reduction in the best estimate fission gas release by a factor of approximately 40 for the maximum power/exposure fuel rod.

8. In-reactor and out-of-reactor experimental results confirm that fuel densification for stable fuel typical of GE production is primarily an early-life phenomena. This early-life phenomena is calculated to have only a minor effect on fission gas release at high exposures. The scenario proposed by the stated reference may be valid for highly unstable fuel atypical of current GE production.

9. Yes. The rod drop accident has an LHGR greater than 21 KW/ft for much less than one second. In addition, certain ATWS events triggered by an increase in power, such as the main steam isolation value closure, may exceed 21 KW/ft for several seconds.

10. Applicant has made no such estimate.

11. At this time, no alterations are anticipated in the fuel assembly design described in the Allen's Creek

PSAR. Applicant may, however, take advantage of improved fuel designs offered by GE before fuel is fabricated for ACNGS.

12. Applicant has not investigated or analyzed the subject matter inquired about.

13. General Electric has no experimental evidence that would conclusively identify that fuel pellet fission gas release is a function of parameters other than temperature and those considered by Dutt-Baker.

14. It is assumed that this question is referring to cladding creepdown that will reduce fuel temperature. Field experience has shown that for the relatively thick clad BWR fuel design, cladding creepdown is very small. Therefore, cladding creepdown is conservatively neglected for calculations such as LOCA evaluations where cladding creepdown is a benefit.

15. The Allen's Creek fuel rod design is within the limits of the parameters identified in Table 2-1 of NEDO-23785.

CONTENTION NO. 25:

RESPONSE:

1. As clearly stated in NUREG 0401, referenced in this interrogatory, the xenon tagging system has been developed in the LMFBR development program, and is not

practical for a light water reactor such as ACNGS.

2. Applicant has not analyzed the feasibility of implementing such a system.

3. LPM has not been purchased.

4. Yes.

5. By bolts or studs.

6. No.

7. Yes.

8. Ten sensors.

9. No. ACNGS will comply with the requirements of Regulatory Guide 1.133.

10. Page No. 26 of APED-5706 describes Local Power Range Monitors (LPRMs), not the LPM system.

11. Continuing analysis.

12. Neither system is required to meet position C of Regulatory Guide 1.97.

CONTENTION NO. 26:

RESPONSE:

1.&2. See PSAR § 5.2.4.

3. Yes.

4. SA540, grade B23 or B24.

5. The number of studs for BWR 238 vessel is arrived at by considering ASME Code requirements, other

applicable Code requirements, practical and geometrical restrictions.

6. Bolts are designed in accordance with NRC and ASME Section III requirements.

7. The studs will be placed under tension by a stud tensioning device when they are installed.

8.&9. The stud bolts and nuts will be used for the forty-year design life. They will be replaced only if damaged during handling.

10. Stud bolts will be Parkerized.

11. No.

12. Yes.

13. See PSAR § 5.2. This statements refers to the fact that the calculated nil ductility transition (NDT) temperature must be less than 200 degrees F., and reactor startup is allowed only if the reactor coolant is above NDT temperature.

CONTENTION NO. 30:

RESPONSE:

1. Applicant provides approximately 100 MWe to ARMCO steel for the operation of 5 furnaces. Applicant has no knowledge as to how many operators or how many actions are involved in the operation of these furnaces.

2. No.

3. Applicant has not considered burying any transmission lines at the crossing of the East Bernard-Peters transmission line. As noted in PSAR § 8.2.2.2, HL&P has experienced a very high degree of reliability in the operation of its 345 KV transmission lines.

4. As of December 31, 1977, Applicant operated 526 miles of 345 KV transmission lines.

5. Applicant expects the average duration of outages on the 345 KV transmission system to be lower than indicated by historical data due to increased experience by HL&P and the utility industry in the construction and operation of these systems. Improvements in materials are also expected to contribute to a systemwide reduction of average outage time.

6. Applicant has not addressed this hypothetical possibility.

7. With two offsite power sources out, Standard Technical Specifications call for one source to be restored in 24 hours and the other source to be restored in 72 hours. Otherwise, reactor shutdown must be initialed.

8. The National Fire Protection Association Standard (NFPA-78), "Lightening Protection Code", was used as general guidance for providing appropriate lightening protection for the WA Parrish units.

CONTENTION NO. 31:

RESPONSE:

1. None.

2. The spacers are locked in position vertically by the water rod.

3. Each fuel rod is held in position by three contact points in the spacer grid.

4. Yes. Argon.

5. General Electric.

6. Stainless steel.

CONTENTION NO. 32:

RESPONSE:

1. The BWR 6 core spray nozzles have different spray angles, all of which aim angularly downward toward the vessel center.

2. Yes.

CONTENTION NO. 40:

RESPONSE:

1. Yes.

(a) See PSAR Table 6.2-12.

(b) Relevant documents pertaining to ATWS doses have already been made available for inspection and copying at Applicant's Energy Development Complex.

(c) Yes.

2. No.

(a)-(e) Not applicable.

3. There will be no additives or enhancers in the containment spray system.

4. (a) Air ejector waste gas is the same as he condenser "Air Ejector" exhaust.

(b) Mechanical vacuum pump is not the same as the Turbine seal condenser exhaust.

(c) (1) Since clean (non-radioactive) steam from an auxiliary boiler will be used to seal the turbine glands, there will not be any release of radioiodine from this source. Consequently, the turbine gland seal has been omitted as a potential source, thereby reducing the number of sources to six.

(2) See Item C.1, above.

(3) The emissions from the main condenser vacuum pump are listed under "Mechanical Vacuum Pump."

(4) The condenser air ejector exhaust is listed under "Air Ejector."

CONTENTION NO. 41:

RESPONSE:

1. Differences exist in the solid-state transmitter and trip unit packages.

2. Rosemont Engineering Company.

3. Rosemont Engineering Company.

4. Plus or minus 1/4 percent.

5. Requested information will be available for inspection and copying at Applicant's Energy Development Complex.

6. See PSAR §§ 7.6, 7.3 and 7.7.

7. The master trip unit receives and conditions a 4-20 mA signal which it receives from the remote transmitter. The signal is conditioned through a 250 Hz filter.

CONTENTION NO. 43:

RESPONSE:

1. No. See answers to Nos. 2 and 10.

2. See PSAR Appendix C, p. C1.54-1.

3. Yes.

4. Yes.

5. Yes.

6. Yes.

7. No.

(a) Not applicable.

8. There are no plans for such at this time.

9. Applicant does not intend on using any nonqualified coating materials in the containment.

10. General Electric's alternate proposal to Regulatory guide 1.54 is given in the attachment to the letter from I. F. Steward to D. J. Skovnolt, July 13, 1976. This attachment will be available for inspection and copying at Applicant's Energy Development Complex.

11. Yes. The names of all cleaners have not been identified.

CONTENTION NO. 44:

RESPONSE:

1. (1) ECCS Injection.

(2) Residual Heat Removal Sytems have water leg pumps which prevent injection lines from being partially empty.

(3) Component Cooling Water is a PWR system.

(4) Service Water System is also a PWR system.

2. The RHR Service Water System has been designed to accommodate water hammer loads.

SUPPLEMENTAL INTERROGATORIES

RESPONSE:

15. The recirculation pump is constant speed. A flow control valve is used.

16. The manufacturer is Hammel-Dahl. The valve is a 24" ball type.

23. November, 1977.

3. Yes.

21. The design for position indication of SRVs has not been finalized.

T-01. There is no reason to remove the switch. Referring to Figure 7.7-1 of the PSAR, it is obvious that the capability to functionally check the level sensors exist.

23. Applicant does not have any information on the operating history of pilot solenoids manufactured by Crosby Valve Corp.

24. Yes.

T-01. The manufacturer of these valves has not been determined. To the best of Applicant's knowledge, valves of this type have never failed.

T-02. (a) Not having a water spray system is justified because it is not required by any regulation, is not exclusively recommended in the applicable Regulatory Guide, and more efficient and rapid alternate means of ignition prevention and fire control are provided.

(b) No.

T-03. Regulatory Guide 1.52 does not apply to the offgas system.

T-04. See PSAR elementary diagrams in Chapter 7.

To date, no expert witnesses have been identified to testify on the subject matter contained in these interrogatories. Applicant will be engaged in further research on the subject matters inquired about as part of its preparation of testimony and other parts of its affirmative case. All documents requested which are in Applicant's possession will be available at the Energy Development Complex, or objections will be interposed, within the time limits set forth in 10 C.F.R. § 2.741.

Respectfully submitted,

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STATE OF TEXAS §
§
COUNTY OF HARRIS §

BEFORE ME, the undersigned authority, on this day personally appeared L. R. Jacobi, who upon his oath stated that he has answered the foregoing Applicant's Response to John F. Doherty's Thirteenth Set of Interrogatories to Houston Lighting & Power Company in his capacity as Supervising Engineer for Houston Lighting & Power Company, and that all statements contained therein are true and correct to the best of his knowledge and belief.

L. R. Jacobi

L. R. Jacobi

11th SUBSCRIBED AND SWORN TO BEFORE ME on this the day of March, 1980.

Cheryl A. Southworth

Cheryl A. Southworth
NOTARY PUBLIC IN AND FOR
HARRIS COUNTY, T E X A S

My Commission Expires 8/19/81.

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)	§	

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing Applicant's Response to John F. Doherty's Thirteenth 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 11th day of March, 1980.

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