

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 1) §  
 §

APPLICANT'S RESPONSE TO INTERROGATORIES AND  
 REQUESTS FOR PRODUCTION OF DOCUMENTS FROM  
 J. MORGAN BISHOP AND MARGARET BISHOP DATED JULY 6, 1980

In response to the interrogatories and requests for production of documents propounded by J. Morgan Bishop and Margaret Bishop, Houston Lighting & Power Company (Applicant) answers as follows:

INTERROGATORY NC. 1: Relevant to Bishop combined Contention 1:

a. Is the population projection data shown on Table S2.2-6 of the ACNGS-ER Supplement the most recent population projection data available to or made by Applicant? If not, please provide the most recent data in the same format as the foregoing Table S2,2-6 and give appropriate references as to source of the data.

b. Does the Applicant believe the data shown on Table S2.2-6 of the ACNGS-ER Supplement to be accurate? Explain in detail the reasons for your answer to the first part of this question.

c. Does the Applicant believe it desirable and/or necessary to make updated population projections for the 50 mile radial area around the site? If so, why? If not, why not? Explain in detail please.

d. Does the Applicant intend to update the population projections shown in Table S2.2-6 of the ACNGS-ER Supplement before the forthcoming hearing? If so, why? If not, why not? Explain in detail please. What sources of data will the Applicant use if the population projections are to be updated?

e. On page 2.1-5 of the ACNGS-PSAR the Applicant states that population projections were made quote "by assigning each sector the percentage of the total census division population that it had in 1970. This method of apportionment channels most of the projected growth into the sectors already developed." unquote. Please explain in detail the rationale, and the logic for using this methodology for projecting population distribution. Please list the references you used to support your methodology and the applicable page numbers.

f. Does the Applicant believe the methodology (as noted in (e) above) used to be the most accurate available? If so, why? If not, why not? Will the Applicant use the same methodology in making updated or revised population projections. If so, why? If not, what methodology will be used and why?

g. Please explain in detail what the Applicant looks for from a population point of view in a site for a nuclear generating plant.

h. Why does the Applicant believe it proper and in the best interest of the public to site a nuclear generating plant so close to the city of Houston?

i. List Applicant's internal documents that discuss the relative merits from a population projection standpoint of siting ACNGS at the various alternative sites.

j. Bay City is a potential alternative site for the ACNGS. Please supply equivalent population data for the Bay City plant as shown on Table S2.2-6 of the ACNGS-ER Supplement.

k. Under what circumstances would the Applicant recommend siting a nuclear generating plant within the city limits of Houston?

l. Does the Applicant believe it has grossly underestimated the population projected to be within 30 miles of the plant in the year 1985? If so, why? If not, why not?

m. Please supply the population distribution (in the format of the aforementioned Table S2.2-6) that the Applicant believes would represent the maximum allowable and still site the plant at the proposed ACNGS site.

n.. Does the Applicant believe it should be required to prepare and submit an environmental impact statement on the effects of a class 9 accident at ACNGS on the area and people surrounding the plant? If not, why not? If so, why?

o. Would the Applicant support and voluntarily prepare an ER statement like the one mentioned in (n) above? If so, why? If not, why not?

p. Does the Applicant believe that it (as a good corporate citizen) has a duty to the citizens it serves to assess the impact on the area and the populace of a Class 9 accident at ACNGS? If so, why? If not, why not?

q. Has the Applicant assessed the impact of a Class 9 at ACNGS on the area surrounding the plant? If so, cite specific documents showing the assessment. If not, is the Applicant planning to make such an assessment? If not, why not? If so, why?

ANSWER:

a. Applicant is aware of the more recent data available in the Rice Center studies and those studies are being analyzed to determine what, if any, changes need to be made in Table S2.2-6 in light of this recent data.

b. As explained in answer to 1(a) above, we are in the process of reevaluating the prior projections in light of recent data to determine if any changes are necessary.

c. See answer to Interrogatory No. 1(a).

d. Any updated projections which are developed as a result of the efforts described in Interrogatory No. 1(a) will be completed prior to Applicant's presentation of testimony on this contention.

e. The amended PSAR reflected the population projections provided by the Texas Water Development Board, thereby revising the population projections based on the HGAC census

division population from 1970. As stated in the PSAR, the primary purpose in presenting TWDB projections was to reflect a more recent and what appeared to be more rational level of population than the larger numbers presented by HGAC. The total projections within 50 miles were considered most important. To proportion this population into sectors, a simple procedure was used to accommodate the fact that TWDB projections were made only at the county level. Therefore, data had to be interpolated to census tract and sector components. This resulted in a vertical rather than lateral growth pattern by assigning each sector the percentage of the total census division population that it had in 1970.

f. In light of the question that has been raised in this contention, Applicant is reexamining the reasonableness of this methodology, with particular reference to the more recent data in the Rice Center studies for HGAC.

g. Applicant looks for growth patterns and projections of ultimate total populations within different annuli and localized near-site populations with respect to siting a nuclear power plant. Specifically, population considerations must comply with the NRC regulations and guidelines.

h. Applicant objects to this interrogatory on the grounds it is argumentative in nature and not designed to elicit information that can lead to admissible evidence.

i. Each of the following siting studies discussed population as a factor in considering various alternative sites:

1. Allens Creek Nuclear Generating Station, Units 1 and 2 Environmental Report.
2. Allens Creek Nuclear Generating Station, Unit 1 Environmental Report Supplement.
3. Nuclear Power Plant Siting Study, Teknekron Energy Resource Analysts, December 1975.
4. 1967 Site Selection Study for Houston Lighting & Power Company, Ebasco Services Inc., January 1970.

5. Coastal Sites Study for Houston Lighting & Power Company, Ebasco Services Inc., January 1973.
6. Preliminary Evaluation of the W. A. Parish Site, the Lower Mill Creek Site, the Scanlan Site, the Allens Creek Site for Installation of Nuclear Fueled Generating Capacity for Houston Lighting & Power Company, Ebasco Services Inc., March 1972.
7. Preliminary Evaluation of the W. A. Parish, Lower Mill Creek and Scanlan Sites for the Installation of Nuclear Fueled Generating Capacity, Dames & Moore, December 1971.
8. Report Preliminary Site Evaluations of Lower Mill Creek, Allens Creek, Scanlan Proposed Nuclear Generating Station for Houston Lighting & Power Company, Dames & Moore, September 1972.
9. Nuclear Plant Site Comparison for Ranking Purposes for Houston Lighting & Power Company, Ebasco Services Inc., July 1972.
10. Site Evaluation Site AU-1 Allens Creek, Teknekron Energy Resource Analysts, April 1979.
11. Site Evaluation Site BZ-1 Follets Island, Teknekron Energy Resource Analysts, January 1979.

These documents are available for inspection and copying at the Applicant's Energy Development Complex, 12301 Kurland, Houston, Texas.

j. Population projections for the South Texas Project are presented in the Environmental Report-Operating License Stage. This document is available for inspection and copying at the Applicant's Energy Development Complex, 12301 Kurland, Houston, Texas.

k. As provided in 10 CFR §100.11 (3) political boundaries are not controlling in the application of the NRC's site evaluation factors.

1. As explained in answer to Interrogatory No. 1(a), Applicant is in the process of reevaluating its prior projections in light of the more recent Rice Center data for HGAC.

m. Applicant has not calculated such maximum allowable numbers.

n. No. See the Commission's Statement of Interim Policy 45 FR 40,101; June 13, 1980.

o. It is Applicant's position that it will comply with all rules, regulations, guidelines, and statements of policy issued by the NRC.

p. See answers to Interrogatory Nos. 1.n. and 1.o.

q. See answers to Interrogatory Nos. 1.n. and 1.o.

INTERROGATORY NO. 2: Relevant to Bishop Contentions 4 and 5:

a. What information does the Applicant have pertaining to the movement of the Brazos River toward the proposed pipeline route since 1970? List, describe and otherwise detail your sources of information.

b. How far (in feet) has the Brazos River moved toward the proposed pipeline route since 1930? Since 1940? Since 1950? Since 1960? Since 1970? List sources of information with appropriate page numbers.

ANSWER:

a. Channel alignment changes in the Brazos River near the Allens Creek site are shown in PSAR Fig. 2.4-5A and 5B.

b. See answer to Interrogatory No. 2(a).

INTERROGATORY NO. 3: Relevant to Bishop Contention 6:

a. What is the maximum peak overpressure that each of the plant's critical structures are designed to withstand? List references with appropriate page numbers?

b. Please supply the equivalent data (i.e. peak overpressure, etc.) as on Table 2.2, page 2.2 A-20 of the ACNGS-PSAR assuming the distance from the center of detonation was zero feet. Show method of calculation and references.

c. What internal (inside the plant) monitoring devices does the plant have to detect LPG in the air? Where are they located? What is their sensitivity?

ANSWER:

a. The maximum peak overpressure that the plant's critical structures can withstand is conservatively estimated to be 1.0 psi. (See PSAR 2.2.A-15).

b. The methodology employed to compute peak overpressures, etc., reported on Table 2.2, page 2.2A-20 of the ACNGS-PSAR relies on equating the detonation of a dispersed flammable (detonable) gaseous cloud to that of a concentrated, point-like source of TNT. This methodology is only applicable at a distance far enough away from the detonating source, that the representation of the source as a point is realistic. It is not applicable for points inside the source of detonation, i.e., for zero feet distance from the center of the detonation. For this distance one must resort to the Chapman Jouguet Theory to predict the maximum possible overpressure resulting from the detonation of the gaseous source. That theory predicts both the maximum stable detonation overpressure and the maximum pressure spike which occurs preceding the stable detonation, the so-called Von Neumann spike. For propane, the maximum stable Chapman Jouguet overpressure can be computed to be 17.8 times the atmospheric pressure, while the Von Neumann spike pressure is 28 times the atmospheric pressure. In case of deflagration the peak overpressure at distance zero from center of the deflagration would still be near atmospheric since the cloud is unconfined.

c. The level of LPG is not monitored inside the plant.

INTERROGATORY NO. 4: Relevant to Bishop Contention 7:

a. Had the Applicant prior to the prehearing conference, analysed [sic] the impact of a gas detonation on the cooling lake dam? If not, why not? If so, please list and supply documents showing the calculated impact.

ANSWER:

a. There is no impact for a detonation of an escaping jet of natural gas computed for the dam. Impact of gas detonation on cooling lake dam was only analyzed in order to assess where the natural gas line should be relocated with respect of the dam. No other calculations or assessments have been performed since the dam is not safety-related. This analysis was completed prior to the prehearing conference.

INTERROGATORY NO. 5: Relevant to Bishop Contention 9:

a. What internal (inside the plant) monitoring devices does the plant have to detect natural gas in the air? What is their sensitivity? Give details of their operating efficiency ratings. Where are they located?

b. Same question as 5(a) for external (outside the plant) monitoring devices.

ANSWER:

a. None.

b. None.

INTERROGATORY NO. 6: Relevant to Bishop Contention 10:

a. Had the Applicant, prior to the prehearing conference, analyzed the impact on the plant of potential hazardous materials being spilled upstream into the Brazos River? If not, why not? If so, supply documents showing the calculated impact.

b. What internal (inside the plant) and external (outside the plant) monitoring devices does the plant have to detect hazardous chemicals such as crude oil, hydrogen sulphide and LPG in the river; in the cooling lake water; and within the plant? What is their sensitivity? Where are they located?

c. List 3 chemicals and the amounts of each which if in the cooling lake could cause harm to the plant. Explain why and how these chemicals can cause harm to the plant.

ANSWER:

- a. No.
- b. None.
- c. Nearby industrial, transportation and military facilities are discussed in PSAR 2.2. A list of pipelines passing through the site vicinity appears on PSAR p. 2.2-2. Appendix 2.2-A evaluates the impact of a pipeline break.

As indicated above, there are no known pipelines which will have an adverse effect on the plant, so it is not possible to list three chemicals that will present any realistic threat to the plant.

INTERROGATORY NO. 7: Relevant to Bishop Contention 12:

- a. What data does the Applicant have to prove that the wells drilled by Applicant into the ground underneath the cooling lake have been plugged so that water cannot drain down the holes into the subsurface formations? Please give a detailed well-by-well review showing casing, drilling and cementing records.
- b. List and discuss the data the Applicant has to support the Applicant's statement that water moves through the Evangeline Aquifer at 50-100 feet per year.
- c. Has the Applicant conducted any pulse tests in the Evangeline Acquirer in the area of the plant? If so, give details, list documents and references.
- d. Does the Applicant believe that radioactive material will become more concentrated on the shore and/or in the lake bottom than it is in the lake water during the plant's operating lifetime? If so, why? If not, why not? Give references and estimates of the rate of build-up of radioactivity per year with bases for your estimates.
- e. A long trench was dug by Applicant in an effort to determine if surface faulting was present at the site. The trench was abandoned before completion due to "inconclusive evidence" according to Applicant. Please explain why the evidence was considered inconclusive.

ANSWER:

a. No "wells" per se were drilled in the cooling lake. The Applicant utilized standard procedures for grouting all exploratory borings drilled for soils investigations (pg. 2.5-78a, Sec. 2.5.6.1 of the ACNGS PSAR). This was accomplished once the boring was completed, or once water level data had been obtained. Some borings were drilled for purposes of permanent piezometers, which still remain open for use to monitor water levels. The well logs are available for inspection at the offices of Dames & Moore upon proper notice to counsel for Applicant.

b. There is no such reference in the ER or PSAR that Applicant has been able to find.

c. Applicant has not conducted any tests known as "pulse tests" at the ACNGS site. In-situ permeability tests were performed wherein water was injected into formations and the rate of acceptance measured to calculate permeability values.

d. As described in Section 5.2 of the ER Supplement radiation doses to biota were calculated using the techniques in Regulatory Guides 1.109 and 1.113. These Regulatory Guides specify the procedure for taking into account radionuclide concentrations in sediments in the lake bottom and shoreline.

e. It is patently incorrect to state that the trench, excavated to evaluate the surface faulting in the area of the plant, was abandoned before completion due to "inconclusive evidence." As stated on page 2.5-B6 (Am 8 4/26/74) Sec. B3.4.1 of the PSAR, the nature of the soil encountered precluded conclusive findings from this particular technique only. The test pit was conducted as planned; and no evidence of surface faulting could be detected in the near surface in the plant area. Other methods conclusively proved no surface faulting was present in the site area.

INTERROGATORY NO. 8: Relevant to Bishop Contention 17:

a. What chemicals, materials, etc. that could be released as a result of a train wreck have been analyzed relative to their potential impact on the plant other than chlorine and TNT? Give references, documents, etc. showing your analysis.

b. Is the plant (as now designed) protected by monitoring devices from any air-borne chemical other than chlorine? If so, what chemicals? Give type and location of the monitoring devices.

c. Cite, list, etc. the hazardous chemicals and the quantities of same carried on the railroad in the past year (or other time interval if appropriate). Give source of information and pertinent documents.

ANSWER:

a. This analysis is most appropriately done at the FSAR stage of licensing.

b. No.

c. See answer to Interrogatory No. 8(a).

INTERROGATORY NO. 9: Relevant to Bishop Contention 21:

a. At what rate will radioactive nuclides or material build up in the lake bottom sediment? What will be the composition of the radioactive build-up? What will be the concentration of the radioactive build-up?

b. Describe the mechanism by which the radioactive material will build-up in the lake bottom. Describe the factors that influence the rate of build-up.

c. Please give your estimate of the rate of build-up in the radioactive material in the fish in the lake using as your basis a 2 pound fish that lives in the lake 10 years. Please estimate the radioactivity of this fish from year zero to year ten. Give bases for your calculations and discuss what factors might make your calculations either high or low as regards radioactivity.

d. How would your answer to part c above vary if the design basis fish lived the entire 10 years 1 foot below the surface of the water or the entire 10 years in the bottom mud? Give reasons for the variance and discuss the factors that impact the magnitude of the variance. Cite references used in your analysis with page numbers.

e. Relative to body weight which fish processes the most water on a daily basis, a 1 pound fish or a 10 pound fish? Provide references supporting your answer.

f. How much food, expressed as a percent of body weight, would an average one pound Texas catfish be expected to eat in a day; how much would a ten pound Texas catfish eat? Give references and page numbers for your answers.

ANSWER:

- a. See answer to Interrogatory No. 7(d).
- b. See answer to Interrogatory No. 7(d).
- c. Applicant followed the criteria specified in Regulatory Guides 1.109 and 1.113, which do not include the parameters specified in this question.
- d. Applicant has never heard of a design basis fish and has not done the calculation of the type requested.
- e. Applicant has made this calculation.
- f. Applicant has not made this calculation.

INTERROGATORY NO. 10: Relevant to Bishop Contention 12:

a. Does the Applicant now state that no surface faulting exists between the surface and the Evangeline Aquifer in the cooling lake area. Upon what evidence and citing references does the Applicant make his judgment?

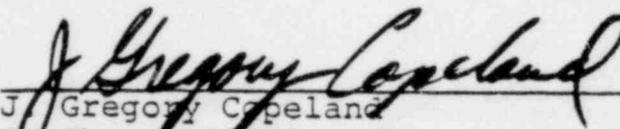
ANSWER:

a. Yes. See PSAR Chapter 2.5, and Section 2.5.3 of the Safety Evaluation Report prepared by the NRC Staff in November, 1974.

Respectfully submitted,

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ATTORNEYS FOR APPLICANT  
HOUSTON LIGHTING & POWER COMPANY



STATE OF TEXAS       §  
                                  §  
COUNTY OF HARRIS   §

BEFORE ME, THE UNDERSIGNED AUTHORITY, on this day personally appeared Robert W. Lawhn, who upon his oath stated that he has answered Interrogatory Nos. 1, 2, 7, 9 and 10 of Houston Lighting & Power Company's Response to Interrogatories and Requests for Production of Documents from J. Morgan Bishop and Margaret Bishop Dated July 6, 1980 in his capacity as Supervising Engineer for Houston Lighting & Power Company, and all statements contained therein are true and correct to the best of his knowledge and belief.

Robert W. Lawhn  
Robert W. Lawhn

SUBSCRIBED AND SWORN TO BEFORE ME by the said Robert W. Lawhn on this 25th day of July, 1980.

Janne Blechman  
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 §  
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CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing Applicant's Response to Interrogatories and Requests for Production of Documents from J. Morgan Bishop and Margaret Bishop dated July 6, 1980 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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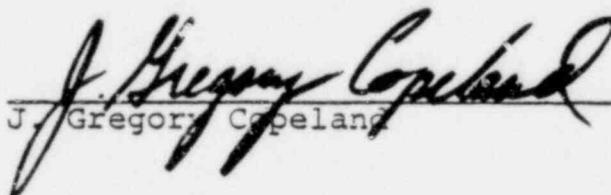
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