June 2, 1981

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
TEXAS UTILITIES GENERATING COMPANY, ET AL.	)	Docket Nos. 50-445 50-446
	)	
(Comanche Peak Stream Electric Station, Units 1 and 2)	)	(Application for Operating License)
	)	

CFUR'S RESPONSE TO APPLICANT'S THIRD SET
OF INTERROGATORIES TO CFUR AND REQUEST TO PRODUCE

COMES NOW CFUR, one of the Intervenors in this proceedings, and files this Response to Applicant's Third Set of Interrogatories to CFUR and Requests to Produce.[1]

To a large extent, complete answers to many of Applicant's Interrogatories are dependent on CFUR receiving proper discovery from the Applicants. Since CFUR has not been able to propound all necessary discovery to the Applicant's and since the Applicants have been largely evasive in the discovery completed, CFUR reserves the right to further supplement its answers as may be required by subsequent developments. Additionally, due to the changes in regulations, changes in the configuration of CPSES and the lack of proposed technical specifications from the Applicants, CFUR may require further modification of its answers.

1 By "CFUR'S Motion for Extension of Time" dated 5/12/81, CFUR requested for an extension until June 2, 1981 to file answers to Applicant's Third Set of Interrogatories To CFUR and Requests To Produce.

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1-3 (a) "Report of CFUR'S Position on Each Contention", April 10, 1980.

(b) Transcript, Prehearing, Docket 50-445/446, April 30, 1980.

(c) "Answers to NRC Staffs' Interrogatories", March 11, 1981 and May 22, 1981.

(d) Answers to Following Interrogatories.

2-3 CFUR has prepared no report at this time other than "CFUR'S Position On Each Contention", May 12, 1980 which was a group effort (Contention 2.B, Enclosure 1).

3-3 No.

4-3 Persons associated with CFUR have met with persons associated with other intervening parties' as well as with persons associated with Applicants and the Staff. While matters touching Contention 3 may have been discussed, none of these meetings (outside the hearing process itself) was for the purpose of discussing Contention 3. Further, since there is no relevancy to this interrogatory, CFUR contends that the overly broad inquiry about these meetings constitutes an impermissible, undue burden on and harassment of CFUR.

5-3 None.

6-3 Yes. The extent of CFUR'S participation is unknown at this time.

7-3 Unknown at this time.

8-3 Unknown at this time.

9-3 See response to 8-3.

10-3 See answer to NRC-Staff Interrogatory C3-23

(a) See answer to NRC-Staff Interrogatory C3-23a

(b) See answer to NRC-Staff Interrogatory C3-23b .

(c) See answer to 10-3(b).

(d) See answer to NRC-Staff Interrogatory C3-23c.

11-3 See answer to NRC Staff Interrogatory C3-1.

Balance of question will be provided later.

12-3 See answer to 11-3.

13-3 The tests required are those necessary to determine if the transient or accident can in any way be affected by any of the TMI-2 parameters. The applicant is responsible and should conduct the tests - the NRC Staff should verify. The tests should be designed to discover which TMI-2 parameters to include for each transient and/or accident and where the parameter should be reflected.

14-3 If a transient and/or accident cannot be affected by any of the TMI-2 parameters (multiple equipment failures, equipment failure of secondary nature, human errors and rate of hydrogen generation) it need not be modified.

15-3 Will be provided at a later date.

16-3 The Applicants.

17-3 See answer to 1-3.

18-3 Modify the codes so that they can accept human error at each germaine location in the plant where humans could possibly commit an error. Modify the codes to predict hydrogen generation at the rates experienced at TMI. Modify the codes to simulate multiple equipment failures as well as equipment failure of the secondary nature.

19-3 N/A at this time. See answer to 15-3.

20-3 List of some relevant parameters: (1) operator error, (2) maintenance error, (3) hydrogen formation and (4) single failure criterion interpretation - PORV plus previous problems, misleading indications and non-condensable gases. A more specific list will be supplied later.

21-3 (a) Operator error-would introduce additional parameters which may initiate the accident (transient) sequence and/or exacerbate it. The errors would occur either at initiation and/or sometime during the accident. (b) Maintenance error- would introduce additional parameters which may initiate the accident sequence and/or exacerbate it. The errors would occur sometime previous to the accident or at initiation.

(c) Hydrogen formation-the capability of realistically predicting amounts of hydrogen produced would have to be incorporated in the codes.

(d) Single failure criterion interpretation-capability for simulation of multiple failures and consequential failures would have to be incorporated in the codes.

22-3 Since the TMI-2 accident, the operating procedures for PWR's have been significantly changed. Therefore, the sequence of events of a serious accident at Comanche Peak can be expected to be quite different from that experienced at TMI-2. However, those parameters which contributed significantly to TMI-2 accident could well be relevant during the Comanche Peak serious accident. (The range of values for the parameters would expected to different due to location and design differences.).

23-3 See answer to 22-3. In addition to the representative initiating events to be analyzed in Section 15 of the FSAR operator and maintenance errors could control at some initiating

events. Additional specific initiating events will be supplied at a later date.

24-3 Yes.

25-3 From 10 CFR §50.34.

(b)..."The final safety analysis report shall include... the design bases and the limits on its operation and presents a safety analysis...of the facility as a whole and shall include...:

(2) A description and analysis of...with emphasis upon performance requirements, the bases, with technical justification... and the evaluations required to show that safety functions will be accomplished....

(4) A final analysis and evaluation...with the objective (of assessing the risk to public health and safety resulting from operation of the facility and including determination of (c) the margins of safety during normal operations and transient conditions anticipated during the life of the facility and (ie) the adequacy of structures, systems, and components provided for the prevention of accidents and the mitigation of the consequences of accidents. 10CFR §50.34(a)(4)) Analysis and evaluation of ECCS cooling performance following postulated loss-of-coolant accidents shall be performed in accordance with the requirements of §50.46 for facilities for which a license to operate may be issued after December 28, 1974."

From 10CFR §50, Appendix K.

"(II) (1.a) A description of each evaluation model...shall be sufficiently complete to permit technical review of the analytical approach including the equations used, their approximations in

difference form, the assumptions made and the values of all parameters or the procedure for their selection...

3. Approximate sensitivity studies shall be performed for each evaluation model...For items to which results are shown to be sensitive, the choices made shall be justified.

4. To the extent practicable, predictions of the evaluation model, or portions thereof, shall be compared with applicable experimental information.

5. Elements of evaluation models reviewed will include technical adequacy of the calculational methods...and a provision of a level of safety and margin of conservatism comparable to other acceptable evaluation models..."

26-3 Examples are:

1) Failure to activate the proper control signal.
2) Failure to properly determine operating conditions.
3) Failure to account for and/or adjust to instrumentation error.
4) Failure to take action in a timely manner.
5) Failure to properly determine level of safety and margin of conservatism.
6) Use of inadequate or incorrect procedures.
7) Failure to properly analyze all accident to transient variations.

27-3 Will be provided at a later date contingent upon adequacy and sufficiency of information supplied and relevancy to Contention 3.

28-3 Examples are:

1) Failure to ensure availabiltity of systems and components provided for prevention and mitigation of accidents.

2) Failure to provide maintenance necessary to ensure design margin of safety during normal operations and transient conditions.

3) Failure to ensure operation of systems and components under expected plant accident/transient conditions.

4) Failure to take proper and sufficient corrective action during an accident sequence.

29-3 See answer to 27-3.

30-3 Zirconium-water reaction produces hydrogen. Hydrogen is contained in the reactor coolant and hydrogen is present in the pressurizer gas space. Both zinc and aluminum produce hydrogen upon corrosion. Radiolysis of core and sump water also produces hydrogen.

The total amount of hydrogen generated at TMI-2 greatly exceeds that assumed for the worst accident at Comanche Peak (Section 6.2.5A of FSAR). The obvious reason is that the TMI-2 emergency core cooling system performance was not the determining factor in the rate of hydrogen production. In all probability, the zircaloy-water reaction was not limited to 1 percent by weight of the total quantity of zirconium in the core and the radiation field intensity in all probability caused the amount of hydrogen produced by radiolysis to exceed the maximum assumed.

31-3 See answer to 27-3.

32-3 Multiple failures and consequential failures need to be considered.

33-3 See answer to 27-3.

34-3 Failure to close; failure to open; fracture of PORV.

35-3 See answer to 27-3.

36-3 Instrumentation which is not able to provide accurate indication of parameter being measured over the full course

of an accident. One proposed solution, majority logic, is less than optimum.

37.3 See answer to 27-3.

38-3 Formation of gas bubbles in reactor coolant leading to cavitation of reactor coolant pumps.

39-3 See answers to 27-3.

40-3 Operator & Maintenance Error - 10 CFR §50.34 (f)(1)(i)(ii)(iii)(v)(vi)(vii)(viii)(x)(xix) and (2)(vii)

Hydrogen Formation - 10CFR §50.34(f)(1)(v) and (2)(ii)
Single Failure Criterion - 10CFR §50.34 (f)(1)(v)
Misleading Indications - 10 CFR §50.34 (f)(1)(xii) and (2)(vi)(vii)
Non-Condensable Gasses - 10 CFR §50.34 (f)(1)(xxxiii) and (2)(ii)
PORV - 10 CFR §50.34 (f)(1)(xxx)(xxxi)(xxxii)(xxxv)

41-3 Derive an analysis technique which accurately accounts for the factors of concern including variances that could be expected. Perform analysis and take those actions which would preclude the possibility of class 3 thru 8 accidents from becoming a class 9 accident with an adequate margin of safety.

42-3 Same as 41-3, independently.

43-4 The computer codes must accurately apply the analysis technique to obtain results which reflect the concerns stated in answer to 41-3. Feasibility is assured if a Monte Carlo technique is utilized.

44-3 (a) NUREG-0600 "Investigation into the March 28, 1979 Three Mile Island Accident by Office of Inspection and Enforcement", USNRC, August, 1979 - (Operator, Mairtenance, Misleading Indications, PORV, Single Failure Criterion).

(b) "Report of Presidents Commission on the Accident at Three Mile Island", October, 1979 (Operator, Maintenance, Misleading Indications, PORV).

(c) "Three Mile Island: A Report to the Commissioner and to the Public", NCR Special Inquiry Group, January, 1980. (Hydrogen Formation, Single Failure Criterion, Operator, Maintenance, Misleading Indications, Non-Condensable Gas and PORV).

(d) IEEE Spectrum, "Special Issue: Three Mile Island and the Future for Nuclear Power", November, 1979.

(e) Lewis Harold, "The Safety of Fission Reactors", Scientific American, March, 1980.

(f) Special NCR Inspection, September, 10-13, 1979, Docket No. 99900404/79-04.

45-3 thru 83-3 CFUR is unable to proceed at this time with responses to Applicant's Interrogatories pertaining to Contention 4.

84-3 (a) "Report of CFUR'S Position on Each Contention", April 10, 1980, Contention 8.

(b) Transcript, Pre-Hearing Contention 8, Docket 50-445/446, April 30, 1980.

(c) "Motion To Add Contention", 10/30/79.

(d) "Answers to NRC Staff's Interrogatories", March 11, 1981 and May 22, 1981.

(e) Answers to Following Interrogatories.

85-3 No.

86-3 No.

87-3 No.

88-3 No.

89-3 Yes; unknown at this time.

90-3 Unknown at this time.

91-3 Unknown at this time.

92-3 See answer to 91-3.

93-3 In part.

(a) Yes.

(b) FSAR 12.4.5 "Estimated Annual Doses at the Exclusion Boundary and to the Population at Large."

"At the minimum exclusion boundary distance the estimated annual exposure to an individual as a result of contained sources is approximately 3.25 x 10-3 mrems. The total exposure to the cumulcative population within 50 miles of the site (for census year 2000) as a result of contained sources is approximately 1.53 x 10-3 man-reim."

This section addresses only contained sources and does not address the requirements of 10 CFR §20.1,

(c) Section 12.4.5 refers to contained sources when estimating annual exposures to individuals (both at the exclusion boundary IC3.25 x 10-3 mrems) and to the cumulcative population within 50 miles of the site (for the census year 2000, 1.53 x 10-3 mrems). This section does not account for leakages from systems nor does it consider possible batch releases when the safety functions of the gaseous waste processing system is compromised. Therefore, CFUR contends that this statement is unfounded and misleading. Further, it fails to comply with the requirements of 10 CFR §20.1 in that it fails to sufficiently outline the mode of implementations and maintenance of ALARA standards.

(d) 10 CFR §20.1(c)

"Persons engaged in activities under licenses issued by the Nuclear Regulatory Commission...in addition to complying with the requirements set forth in this section make every reasonable effort to maintain radiation exposures and releases

of radioactive materials in effluents to unrestricted areas, as low as is reasonably achieveable.

94-3 The effect is a man-rem exposure.

95-3 Xenon, leryton, iodine, sbrontium, cesium, cerium, barium, telliuvium, and ruthenium. See also page 5-37 of Draft Environmental Statement Related to the Operation of Comanche Peak Steam Electric Station Units 1 and 2.

96-3 Not yet determined.

97-3 Avi Immersion, surface exposure, water immersion, inhalation, ingestion.

98-3 Yes.

99-3 Calculate the cumulative man-rem exposure to be expected for gaseous radioactive, releases according to direction of release (compass direction with respect to Comanche Peak).

100-3 Same as answer to 99-3, independently.

101-3 No.

102-3 If accident includes transients and containable accidents, yes.

103-3 Subsequent to one or more transients and/or containable accidents which produce more radioactive gas than anticipated, batch releases would occur during normal operation to reduce the volume in the gas decay tanks so that subsequent transients and/or containable accidents can be contained.

104-3 Will be provided at a later date contingent upon adequacy and sufficiency of information supplied and relevancy.

105-3 N/A.

106-3 Atmosphere, dispersion and deposition including scavenging, avi immersion doses, surface exposure doses, water immersion doses, inhalation doses, concentration in and on

vegetation, concentrations in milk, concentrations in meat, calculation of total body and organ doses.

107-3 See "AIRDOS-EPA: A Computerized Methodology for Estimating Environmental Concentrations and Dose to Man from Airborne Releases of Radionuclides", December, 1979.

108-3 Those cases where growth is population density exceeds reduction in dosage due to plume dispersion and depletion.

109-3 Cities and other areas surrounding Comanche Peak.

110-3 The health effects can be expressed as cumulative man-rem dosage.

111-3 The largest portion of the cumulative man-rem dosage.

112-3 To that distance where any added distance will contribute only a very small percentage increase to the cumulative man-rem dosage for the worst case meteorlogical condition.

113-3 Logic.

114-3 See answer to 99-3. Realistically estimate the maximum number of batch releases feasible at Comanche Peak, the quantities of radionuclides present and determine an operating procedure which would, in all probability, result in a minimum cumulative man-rem exposure.

115-3 Unknown at this time.

116-3 From 10 CFR §20.1(c)

> "In accordance with recommendations of the Federal Radiation Council...persons engaged in activities under licenses issued by the Nuclear Regulatory Commission... should in addition to complying with the requirements set forth in this part, make every reasonable effort to maintain radiation exposure, and releases of radioactive materials in effluents to unrestricted

areas, as low as is reasonably achievable."

117-3 See answer to 84-3.

Respectfully submitted,

Jeffery L. Hart by NM

JEFFERY L. HART

CERTIFICATE

I declare (or certify, verify or state) under penalty of perjury that the preceeding Answers to Applicants' Third Set of Interrogatories and Requests to Produce are true and correct.

EXECUTED on this 2nd day of June, 1981.

Richard L. Fouke

Richard L. Fouke

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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In the Matter of	§	
	§	
TEXAS UTILITIES GENERATING COMPANY, et al	§	Docket Nos. 50-445
	§	50-446
	§	
(Comanche Peak Steam Electric Station, Units 1 and 2)	§	(Application for Operating License)

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing "CFUR'S RESPONSE TO APPLICANTS' THIRD SET OF INTERROGATORIES TO CFUR AND REQUESTS TO PRODUCE" were served upon the following persons by deposit in the United States mail, first class postage prepaid this 2nd day of June, 1981:

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