

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
TEXAS UTILITIES GENERATING)	Docket Nos. 50-445
COMPANY, <u>et al.</u>)	50-446
(Comanche Peak Steam Electric)	
Station, Units 1 and 2))	

AFFIDAVIT BY FRANKLIN D. COFFMAN, JR.
ON UNRESOLVED SAFETY ISSUE A-17, "SYSTEMS
INTERACTION IN NUCLEAR POWER PLANTS"

I, Franklin D. Coffman, Jr., being duly sworn, do depose and state:

Q.1. By whom are you employed and what is the nature of the work you perform?

A.1. I am Section Leader of the Systems Interaction Section, Reliability and Risk Assessment Branch, Office of Nuclear Reactor Regulation. A copy of my professional qualifications is attached.

Q.2. What is the nature of the responsibilities you have regarding the Comanche Peak Steam Electric Station, Units 1 and 2 ("CPSES")?

A.2. I am responsible for management of the Staff's program for the resolution of Unresolved Safety Issue A-17 and helped to prepare the discussion of that issue which appears in Safety Evaluation Reports, including that for Comanche Peak.

Q.3. What is the subject of your affidavit?

A.3. I will present the position of the Staff in response to questions raised by Dr. Jordan during a telephone conference call on Thursday, April 7, 1983 (Tr. 32-33) concerning the progress on Unresolved Safety Issue ("USI") A-17, particularly as applied to Comanche Peak. I will also address Dr. Jordan's question concerning whether there have been any attempts at all in the case of Comanche Peak to investigate systems interactions.

Q.4. Mr. Coffman, are you familiar with the testimony given previously by Staff witnesses in the Shoreham proceeding on the subject of USI A-17 and systems interactions?

A.4. Yes.

Q.5. Are you familiar with the February 9, 1983 affidavit of James H. Conran (Board Notification 83-17), one of the Staff's witnesses in the Shoreham proceeding on the subject of USI A-17 and systems interactions?

A.5. Yes.

Q.6. Mr. Coffman, are you also familiar with the NRC Staff Supplemental testimony on Contention 7B in the Shoreham proceeding, which was contained in Board Notification 83-44?

A.6. Yes. I was a member of the panel of Staff witnesses presenting that testimony, along with Roger J. Mattson, Richard H. Vollmer, Charles E. Rossi, and Ashok C. Thadani.

Q.7. What was the purpose of that Supplemental Testimony?

A.7. The purpose of that testimony was to present the Staff's position in response to the February 9, 1983 affidavit of Mr. Conran. That supplemental testimony noted that, as part of its program on A-17, the Staff has considered several alternatives in applying available candidate methods for systems interaction analyses. The testimony further noted that consideration was given to using the activities which include 1) the Power Authority of the State of New York (PASNY) study of Indian Point Unit 3, 2) the Pacific Gas and Electric Co. study of Diablo Canyon and 3) the Consumers Power Co. program on Midland 2. At the present time, the preferred alternative is to apply the Staff's candidate methodologies (digraph matrix analysis and fault tree interactive failure modes and effects analysis) to Indian Point Unit 3 to provide a comparison with the PASNY method of analysis. PASNY has indicated its willingness to cooperate in these demonstrations and a plan for the demonstration analysis at Indian Point Unit 3 is now being proposed. The Staff expects to complete its review of various systems interaction studies, assess the efficiency of the methodologies used in the studies, and make a decision on the need for any general requirement for plant-specific systems interaction analysis by October 1984.

Q.8. Has the Staff requested that a special study be performed on the Comanche Peak Station?

A.8. No, the Staff has not requested a special systems interaction analysis from the Comanche Peak Applicants, and the Staff does not consider such an analysis necessary at this time.

Q.9. Has the Staff's position on systems interaction contained in Appendix C to the Comanche Peak SER, NUREG-0797, dated July 1981, changed as a result of Mr. Conran's affidavit (contained in Board Notification 83-17) or the testimony contained in Board Notification 83-44 or for any other reason?

A.9. No, it has not changed.

Q.10. Please explain.

A.10. The position of the Staff (which included Mr. James Conran) as set forth in initial testimony of the Staff witnesses in Shoreham on the subject of USI A-17 and systems interactions was as follows: 1) the Staff's current licensing requirements provide reasonable assurance of no undue risk to public health and safety from potential adverse systems interactions; 2) Unresolved Safety Issue A-17 is confirmatory in nature; 3) the Staff's program on A-17 is progressing toward resolution; 4) Shoreham may be licensed for operation despite the pendency of Unresolved Safety issue A-17; and 5) no plant-specific systems interaction analyses (other than those now required by the regulation or Staff practice) are or should be required until completion of the Staff's program determines whether they are necessary and justified.

Mr. Conran's views on A-17 have now changed for the reasons set forth in his affidavit (Board Notification 83-17). As stated in the Staff's Supplemental Testimony (Board Notification 83-44), the Staff does not find in Mr. Conran's affidavit a sufficient basis for any change in the Staff's position as expressed in the previous paragraph and in the Staff's previous testimony in Shoreham. The Staff reaffirmed its position in the Supplemental Testimony.

As in the case of Shoreham, the staff concludes that the above statement of its conclusions on Shoreham is also applicable to the Comanche Peak Station. I reaffirm that position here.

Q.11. What is the Staff's basis for the above conclusion?

A.11. The Comanche Peak application was evaluated against licensing requirements that were founded on the principle of defense-in-depth. The Comanche Peak design was reviewed against the "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants" (originally issued as NUREG-75/087 in December 1977, and reissued as NUREG-0800 in July 1981 with the addition of the TMI-2 accident requirements), which requires interdisciplinary reviews of equipment and addresses different types of potential systems interactions. Use of the Standard Review Plan in the review process results in safety requirements such as physical separation and independence of redundant safety systems, and protection against hazards such as high-energy line ruptures (Section 3.6.1 of the Standard Review Plan), missiles (Section 3.5.1 & 3.5.2), high winds (Section 3.3), flooding (Sections 3.4 & 3.6), and seismic events

(Section 3.2.1, 3.4 & 3.9.2). Thus, the existing requirements and licensing review procedures currently provide for an adequate degree of plant safety against potential adverse systems interactions.

The Staff's program on Unresolved Safety Issue A-17 was initiated to confirm that present review procedures and safety criteria provide an acceptable level of independence for systems required for safety by evaluating the potential for the more important undesirable interactions between and among systems. Progress in this program to date has provided no indication that present review procedures and criteria do not provide reasonable assurance that the effects of potential systems interactions on plant safety will be within the effects on plant safety previously evaluated (i.e., within the design-basis envelope).

On this basis it is concluded that additional plant-specific systems interaction studies are not necessary to provide reasonable assurance of public health and safety as a predicate to licensing Comanche Peak.

In summary, the Staff continues to believe that reasonable progress towards a timely resolution of USI A-17 is being made as described in Board Notification 83-44, and that, pending completion of that effort, the design, construction and operational practices used for the Comanche Peak facility provide reasonable assurance that the plant can be operated without endangering public health and safety.

Q.12. Please summarize the Staff's position relative to the Unresolved Safety Issue A-17 as it relates to Comanche Peak.

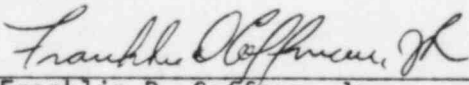
A.12. With respect to the USI A-17 systems interaction aspects of the Comanche Peak review, the Staff's position can be summarized as follows:

1) The review of Comanche Peak against existing requirements provides reasonable assurance, pending the resolution of USI A-17, that the plant can be operated without undue risk to the health and safety of the public from potential adverse systems interactions.

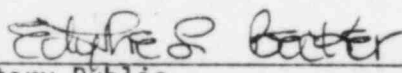
2) The Staff's program on A-17 is confirmatory in nature, and the Staff continues to believe that reasonable progress toward a timely resolution of the USI is being made.

3) Additional plant-specific systems interaction studies are not necessary as a predicate to licensing Comanche Peak.

The above statements and opinions are true and correct to the best of my knowledge and belief.


Franklin D. Coffman, Jr.

Subscribed and sworn to before me this 5th day of May, 1983


Notary Public

My Commission expires: 7/1/86

Statement of Professional Qualifications

FRANKLIN D. COFFMAN, JR.

I serve as the Section Leader of the Systems Interaction Section, Reliability and Risk Assessment Branch, Division of Safety Technology in the Office of Nuclear Reactor Regulation of the U.S.N.R.C. I provide both technical and organizational supervision for nuclear-systems engineers regarding systems interaction analyses, probabilistic risk assessments, and reliability engineering programs. I have served in that capacity since April 1981.

Prior to the Office reorganization in April 1981, I served for one year as a Section Leader in the Systems Interaction Branch, Division of Systems Integration. There my responsibilities were focused upon systems interaction analyses including the evaluation of selected operating reactor experience.

From April 1976 until April 1980, I served as a Section Leader in the Reactor Safety Branch, Division of Operating Reactors, working on regulatory actions affecting nuclear steam supply systems at operating plants. I joined the NRC in May 1973, and for three years I evaluated mostly the mechanical and metallurgical behavior of fuel-assembly designs during both normal operations and postulated accidents.

From July 1971 to May 1973, I worked for Nuclear Fuels Services, Inc., as the Lead Metallurgical Engineer. There I was responsible for the fuel assembly metallurgy within the Nuclear Engineering Department and for metallurgical support to both the Manufacturing and the Reprocessing Divisions.

From October 1968 until June 1971, I worked for the General Electric Company, Nuclear Power Equipment Division, in both the Nuclear Fuels and Reprocessing Department and the Breeder Reactor Development Operation.

I received my formal education at the Colorado School of Mines (Metallurgical Engineering, Met E, 1961), the Carnegie Institute of Technology (32 graduate units in Metallurgical Engineering, 1962), and the University of Santa Clara (Quantitative Methods, M.B.A., 1971).

I have held a Professional Engineer license (CA, MT 1636) since 1973, and I have been a technical member of the American Society for Testing and Materials since 1972.