UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	:	
	:	
HOUSTON LIGHTING & POWER COMPANY, PUBLIC SERVICE BOARD OF SAN ANTONIO, CITY OF AUSTIN, CENTRAL POWER AND LIGHT COMPANY (South Texas Project, Unit Nos. 1 and 2)	:	NRC Docket Nos. 50-498A 50-499A
TEXAS UTILITIES GENERATING COMPANY, et al. (Comanche Peak Steam Electric Station, Units 1 and 2)	:	NRC Docket Nos. 50-445A 50-446A

SUPPLEMENTAL ANSWER OF TEXAS UTILITIES COMPANY AND ITS SUBSIDIARIES TO THE NRC STAFF'S INITIAL INTERROGATORIES

COME NOW TEXAS UTILITIES COMPANY ("TU"), TEXAS UTILITIES GENERATING COMPANY ("TUGCO"), DALLAS POWER & LIGHT COMPANY ("DPL"), TEXAS ELECTRIC SERVICE COMPANY ("TESCO"), and TEXAS POWER & LIGHT COMPANY ("TPL"), all collectively referred to as "TU Companies," in compliance with Sections 2.740b and 2.741 of the Rules of Practice of the Nuclear Regulatory Commission ("NRC") and in accordance with the order of the Board, dated April 18, 1979, and make the following supplemental answers to the NRC Staff's Initial Interrogatories numbered 1(d), 1(e), 2, 3(e), 4(a), 6, 7(c), 8(d), 9(d), 15(b)-(d), 20(a)-(b), 27, 31(b), 33(c), 36-38, 40-41(a), 41(e), 42-44, 47-49 and 50(c). These answers supplement and are not in lieu of answers previously filed in response to the NRC Staff's Interrogatories, and the TU Companies reserve the right to further supplement the answers as the need therefor arises.

Attached hereto is a list of documents, identified by Interrogatory number. To the extent additional responsive documents are discovered, such documents will be produced and similarly identified.

SUPPLEMENTAL ANSWER

1(d)-(e). All documents sought have been produced.

SUPPLEMENTAL ANSWER

4(a). The voting percentages for each of the TU Companies as provided in the ERCOT Agreement are as follows:

DPL	8%
TESCO	12%
TPL	14%

Each company controls its own voting power.

Each member of TIS has one vote. DPL, TESCO and TPL each controls its own vote. However, if voting was done "in block," which it is not, the combined vote would be 3/12 or 25 %.

SUPPLEMENTAL ANSWER

5. Brownsville was admitted to TIS in April 1979.

SUPPLEMENTAL ANSWER

6(a). Prior to the recent difficulties of the CSW system with the Securities and Exchange Commission, TU was not aware of any consideration be given by any member system of TIS or ERCOT or any wholesale customer of the TU Companies to commencing interstate operation. To the knowledge of TU, all considerations by the CSW companies with respect to interstate operation are documented in the following proceedings:

1. Securities and Exchange Commission
   Administrative Procedure File No. 3-4951

2. Federal Energy Regulatory Commission (formerly FPC)

   a. Docket No. E-9558
   b. Docket No. E-9593
   c. Docket No. E-9578
   d. Docket No. E-9476
   e. Docket No. EL 79-8

3. Public Utility Commission of Texas
   Docket No. 14

4. "West Texas Utilities Company, et al v. Texas Electric Service Company, et al
   No. CA-3-76-0633-F
   In the U. S. District Court for the Northern
   District of Texas, Dallas Division

See also the TU Companies' original answer to Interrogatory 6(c) and as supplemented below. See also the petition to intervene filed herein by Tex-La Cooperative, Inc. and petitions to intervene by various parties in FERC Docket EL 79-8. Documents in connection with any of the above proceedings will be made available for inspection and copying at the Staff's convenience.

6(b). Reference is made to TU's answer to Department of Justice Interrogatories Nos. 1 and 16 relating to wholesale customers of TU.

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6(c).	B. B. Hulsey, Jr.	TU
	W. G. Marquardt	TESCO
	E. D. Scarth	TESCO
	Wes Taylor	TESCO
	R. R. Parks	TUSI
	M. H. Tanner	DPL
	John Robuck	TPL (Retired)
	G. R. Coffman	TPL (Retired)
	Gerson Berman	TPL
	T. L. Hatcher	TPL
	Louis Howard	TPL
	Hal Hughes	TPL
	George Beams	TPL (Retired)
	Si Holt	TPL (Austin, Texas)

6(d). The TU Companies have participated in the various legal proceedings identified in Interrogatory No. 6(a) above in an effort to protect their interests. Reference is also made to the TU Companies' answers to Department of Justice Interrogatories Nos. 3 and 4, together with the documents therein identified.

SUPPLEMENTAL ANSWER

8(d). Additional documents responsive to this Interrogatory are attached or have been previously delivered to the Staff. See also the documents identified in response to Interrogatory No. 27.

SUPPLEMENTAL ANSWER

15. The last sentence in the TU Companies' original answer to Interrogatory No. 15(a)-(c) is amended to read as follows: "The TU Companies have not declined to provide third party wheeling for any utility. To the extent that CSW's Mode 4 seeks to wheel power through the TU system, it has so declined. For a detailed explanation regarding the TU Companies' relationship with CSW, see answers and supplemental answers to Department of Justice Interrogatories Nos. 3(a) and 4, together with the documents therein identified.

SUPPLEMENTAL ANSWER

20(a). John B. Robuck, then Assistant Chief Engineer, TPL, now retired, who now resides at 1519 Matagorda, Dallas, Texas 75232, telephone 214/371-2034. Mr. Robuck had responsibility for working with HLP and GSU in this study and preparing the TPL portion of the study.

Ted L. Hatcher, Manager of System Engineering, TPL; business address: TPL, P. O. Box 6331, Dallas, Texas 75222, telephone 214/748-5411, Ext. 400; home address: 2316 Oldbridge, Dallas, Texas 75228, telephone 214/327-9127. Mr. Hatcher had responsibility for reviewing a draft of the report.

SUPPLEMENTAL ANSWER

27. The supporting technical studies for TU's long-range transmission plan are identified below. Copies of this material have been previously delivered to the Staff:

1. Transmission Planning Map, TUCS, dated 8/2/78
2. Bulk Power Transmission Additions, 1978-1988, dated 8/1/78
3. TUCS Capability, Demand and Reserve, 1979-1986, dated 4/19/79
4. Texas Utilities 345 Kv Voltage Study, dated 5/3/78
5. Norwood Auto Study, 1979 Summer Peak
6. 1978 Load Flow Cases, March and April 1977
7. 1979 and 1980 Load Flow Cases, March 1977
8. 1982 Load Flow Cases, April 1977
9. Study of 345 Kv Support of West Texas
10. Martin Lake Stability Study, dated May 1974
11. Monticello Stability Study, dated February 1974
12. Addendum to Monticello Stability Study, dated 1976
13. TIS Load Flow Study Report, dated March 1978
14. TIS Load Flow Study Report, dated April 1979
15. Comanche Peak Stability Study (See Interrogatory No. 40)
16. Allis-Chalmers Switching Studies of 345 Kv System, 01-8027-61076, Cases 87-163, October 1976
17. Switching Studies on the 345 Kv System, Allis-Chalmers, PST V511-028A, December 19, 1975
18. Switching Studies on the 345 Kv System, Case Data Packs, Volume 2, December 19, 1975
19. Study of a 345/138 Kv Station in 1982 in Northern Ft. Worth, 3/16/78
20. Combined Study of 1980 Service to Hilldale (345 Kv vs. 138 Kv) and 1982 345/138 Kv Autotransformer at Saginaw or Sherry
21. 1984 Bulk Power Transmission System Study, 9/14/73
22. TUCS 1984 Transmission Plan, 6/27/75
23. TESCO - Studies of Transmission System Expansion, 1980-1989
24. TESCO - Studies of Transmission System Expansion, 1979-1988
25. TESCO - Transmission System Expansion Study - Odessa Division, 1978-1987, June 1977
26. TESCO - Transmission System Expansion Study - Big Spring Division, 1978-1987 - June 1977
27. TESCO - Study of Transmission System Expansion - Eastland Division, 1978-1987, May 1977
28. TESCO - Study of Ft. Worth Area Transmission Requirements, 1978-1987 - June 1977
29. TESCO - Studies of Transmission System Expansion, 1977-1986
30. Comparison of 345 Kv Autotransformer Addition Alternatives - Felix Padilla - 1983 - DPL
31. Comparison of 345 Kv Autotransformer Addition Alternatives - 9/29/73
32. Texas Utilities - Higher Transmission Voltage — Engineering Study - February 1961

33. Norwood Tie Study - 2/6/74
34. Norwood Study - Effect of Construction Delays - 1974 Summer Peak
35. Rebuilding Transmission Lines from Mt. Creek to Norwood -2/4/74
36. Norwood Switching Station - 1974 Peak Load - October 1971
37. Preliminary Report on Suitability of Norwood as an Autotransformer Site - 1980 Conditions
38. Transmission Study - Norwood and Vicinity - 3/17/75
39. Norwood Auto Study - 1979 Summer Peak - 3/22/78
40. 1990 Summer Peak Loading - Autotransformers
41. Cedar Hill - Mt. Creek - Norwood Transmission Study - 6/4/74
42. Parker - S. Eagle - NW Carrollton - 345 Kv Circuit Study - 8/24/78
43. Transmission Requirements - 1500 MW Coal Plant - W. Texas 3/2/74
44. Renner Studies - 6/27/74; 6/22/73; 11/12/73; 6/25/75; 2/2/76
45. Transient Stability - Monticello and Martin Lake - 3/7/77
46. Study of Sandow Transmission with Budget Item 60 dated 10/27/78
47. Study of Seagoville Autotransformer with BI 29, dated 10/28/77
48. Forest Grove Transmission - BI 43, dated 10/28/74
49. Twin Oak Transmission - dated 7/27/74
50. Big Brown - Jewett Circuit #2 Studies
51. "New Autos at Hackberry & Norwood" and related studies
52. TPL Proposed 6-Year Construction - 10/19/78
53. Venus 345/138 Kv Autotransformer, with BI 620, dated 10/27/78
54. Shamburger 345/138 Kv Autotransformer, with BI 560, dated 10/27/78
55. Mt. Enterprise - S.E. Nacogdoches 345 Kv Line - BI 630, dated 10/27/78
56. 1980 Lufkin - Nacogdoches area - 5/10/79
57. 1980 Sherman - Denison Area - 5/15/79
58. TIS Transient Stability Study - 4/17/79

Other technical studies and related documents have been run in the past but have been discarded because of their bulk or as new plans are developed.

SUPPLEMENTAL ANSWER

31(b). Additional documents responsive to this Interrogatory have been previously delivered to the Staff.

SUPPLEMENTAL ANSWER

36(a)-(g). Documents responsive to this Interrogatory have been previously delivered to the Staff.

36(h)-(j). For cost of transmission plant by functional accounts at year end, refer to FPC Form I, pages 401-403 and EEI Uniform Statistical Report, Schedules VIII and IX, previously provided.

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36(k). Prior to the construction of any transmission line or the interconnection of such line with another, a detailed analysis is made to determine whether the installation of such transmission line or interconnection will or may have an adverse impact on any other electric utility, including those directly interconnected by the interconnecting line, and extreme care is used by engineering personnel prior to the installation of any transmission line or interconnection line to avoid any adverse impact. Such documents constitute a part of the technical studies identified in Interrogatory No. 27.

36(l). TU is not aware of any such instances. See answer to Interrogatory No. 15.

36(m)-(n). The cost of TIS and ERCOT studies are shared as agreed. The cost of studies made by individual systems was borne by those systems as agreed. Except to the extent provided in answer to Interrogatory No. 27, no such documents exist. Studies done in connection with prior long-range plans are discarded as new plans are developed.

36(o). There are no known instances of existing interconnections being opened because of an overload condition.

36(p). Other than the action taken by the TU Companies in response to the "midnight wiring" on May 4, 1976, the TU Companies know of no such instances. Interconnections have been opened from time to time automatically as a result of line interruptions from such causes as lightning, windstorm, tornados and other similar reasons, and the interconnection has remained open until the affected lines were repaired. Interconnections have been manually opened from time to time for planned outages to perform construction or maintenance. Daily dispatchers' logs record in detail operation of the system, and dispatchers' logs are available for inspection and copying at the Staff's convenience.

SUPPLEMENTAL ANSWER

37(a). Transmission maps of all transmission lines of 110 Kv or greater which TU plans to have by 1985 have been provided. To the extent that an X-Y coordinate system may be available, reference is made to the grid system in the margin of Map TE-9500. No other maps responsive to this Interrogatory are available.

37(b)-(c), (e)-(g). In an effort to cooperate with the Staff, the TU Companies have designated the X-Y coordinates on FPC Form 12, Schedule 18B for each line of 110 Kv or above which the TU Companies plan to have by 1985, which has been previously delivered to the Staff.

37(d). Dates that transmission lines were first committed are not recorded and thus are not available. Information with respect to the dates that each such line was energized is reflected on FPC Form 12F attached.

37(h). See the answer to Interrogatory No. 36(a) above.

37(i). Daily dispatchers' logs record in detail operation of the system.

Dispatchers' logs are available for inspection and copying at the Staff's convenience. See the answer to Interrogatory No. 36(p) above.

SUPPLEMENTAL ANSWER

38. See the documents provided in response hereto.

SUPPLEMENTAL ANSWER

40. See the documents identified in answer to Interrogatory No. 27. Other load flow and stability studies have been run in the past but because of their bulk were discarded. To the extent that the case number, date, title, description and summary are known, such information is shown on the face of the documents supplied. The stability studies available and supplied do not include any unstable cases.

SUPPLEMENTAL ANSWER

41(a). In addition to those persons previously named:

DPL

Roy R. Parks, Planning Engineer, now with TUSI
Lloyd O. Heizer, Planning Engineer
J. P. Barron, Manager of Engineering, now retired
R. J. Gary, Vice President - Engineering, now Executive Vice President of TUGCO

TESCO

M. J. Pickett, Manager of Planning, now retired
C. W. McElree, Planning Engineer, now with TUFCO
H. L. Manning, Planning Engineer
L. F. Fikar, Manager of Engineering, now with TUSI
E. D. Scarth (then) Vice President- Engineering
W. M. Taylor (now) Vice President- Engineering

TPL

Joe Jurling, Planning Engineer
John B. Robuck (then) Vice President - Engineering, now retired
G. R. Coffman (later) Vice President - Engineering, now retired

TMPA

Kam Wong, in charge of Transmission Planning at the time; present affiliation unknown.

41(b). "Third party studies" are studies performed on computer facilities of an outside computing firm. These were paid for on the basis of ownership in the plant,

which at the time was one-third by each TU operating company. TMPA became an owner of a portion of the plant after the studies were completed after the transmission configuration had been established. Consequently, TMPA did not participate in the transmission configuration. In addition, each of the three TU operating companies ran some studies on its own in-house computer facilities. The cost for these studies was paid for by the company running such studies.

41(e). Load flow studies have been performed from time to time on "in-house" computer facilities and on computers at Utility Consulting Services (formerly University Computing Company). No known record exists specifying what type of computer was used to run which specific programs on any particular date.

SUPPLEMENTAL ANSWER

42. The latest load flow study (for the year 1983) was submitted in accordance with the Staff's request. This study is the first year when the "Comanche Peak Units" will first be in commercial operation. Input data is submitted herewith, with X-Y coordinates to indicate location on Map TE-9500 submitted with Interrogatory No. 37. In addition, the R-2 map was provided in response to Interrogatory No. 37. A legible copy of the latest preliminary load flow study has been previously delivered to the Staff.

SUPPLEMENTAL ANSWER

43(a)-(b). The planning of an interconnected transmission grid is an important factor in achieving system reliability. The addition of generating units by member systems of the interconnected grid is carefully coordinated through various technical committees of TIS/ERCOT. The TU system constantly tests the adequacy of its transmission capability in light of generation additions, not only by its system but by other members of the interconnected grid. Comanche Peak is simply one of many generation additions which has been taken into consideration in transmission design. The TU Companies and, they believe, every other member system of TIS/ERCOT never plan a transmission system which would be knowingly and adversely affected by the addition of generating units, including the addition of Comanche Peak, either on the underlying voltage or in any other respect. Since transmission planning is done on a long-term basis, normally 10 years, based upon anticipated load growth in the service territories of the respective members of the interconnected grid, adequate transmission interconnections are "built in" to the planning process. Transmission systems as planned for the systems in light of expected additions to generation are continually tested for reliability. Therefore, there is not and should not be any documents requested by this Interrogatory other than the studies and analyses supplied in answer to Interrogatory No. 27.

Auxiliary power for Comanche Peak is to be supplied by the TU Companies' de Cordova Substation and two 138 Kv lines were constructed to insure its availability: one between the de Cordova Generating Station to the de Cordova Substation with switching equipment at both locations and one from the de Cordova Substation to Comanche Peak.

SUPPLEMENTAL ANSWER

44. Allocation of the costs inquired about in this Interrogatory will be made

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in proportion to ownership in the plant: DPL, 23.3%, TPL, 33.3%, TESCO, 33.3%, TMPA, 6.2% and BEPC, 3.8% (if BEPC becomes an owner as is presently anticipated.) Other than transmission facilities directly attributable to Comanche Peak, that is, facilities for the transmission of power generated by Comanche Peak to be interconnected with facilities existing at the time Comanche Peak commences operation, no such estimates have been prepared. See the answer to Interrogatories 43(a)-(b) above. Owners of Comanche Peak as indicated will share the cost of transmission necessary to interconnect Comanche Peak with the TU system in proportion to their ownership. The reason for the TU Companies' answers is that the transmission system of TIS/ERCOT has been planned in anticipation of the expected loads and the generation therefor projected by their respective members. ERCOT/TIS was not planned and has not been planned for the purpose proposed by CSW; that is, to be used for massive wheeling of power from the northern portion of the CSW system to the southern portion. Documents responsive to this Interrogatory have been previously delivered to the Staff.

SUPPLEMENTAL ANSWER

47. See the answer to Interrogatories 43(a)-(b) above. Transmission additions never have an adverse effect on any electric utility company unless the installation of such transmission introduces either a new load on the interconnected grid or additional generation must flow over or through the transmission facilities, whether added or existing. As stated in Interrogatories 43(a)-(b) above, TU has planned and built its transmission facilities within the planning concept of ERCOT/TIS. While TU has made and participated in numerous studies to evaluate numerous transmission configurations, no transmission configuration has been as economical or reliable as the present intrastate mode of operation. Therefore, none of the transmission additions with which TU is knowledgeable has imposed an adverse impact as would occur from:

(a) Massive wheeling through other systems;

(b) Operating synchronously with much larger systems;

(c) Rendering ineffective service reliability equipment such as underfrequency load shedding relays; or

(d) Drastically changing system operating procedures, normal and emergency power flows, accounting for energy exchanges, frequency control and time correction procedures.

Consequently, TU is not knowledgeable with instances in which any electric utility has paid compensation to another electric utility due to the impact of transmission additions. However, TU believes no utility should have its system impacted or utilized by another utility without compensation. This philosophy is provided for in the recent energy bill.

SUPPLEMENTAL ANSWER

48. In addition to the TIS operating guide previously produced, the DPL

tabulation of Transmission Line Capacity, dated 7/26/78, which contains various line ratings and which is used by the system operators, is provided. There are no other operating guides.

SUPPLEMENTAL ANSWER

49(a). Yes.

49(b). Various other factors employed by TU's transmission designers which are in addition to TIS design criteria include, but are not limited to, the following:

1. maximum wind loading for design of transmission structures
2. maximum ice loading for transmission design
3. shield angle of transmission structures
4. maximum pulling tension as a percent of conductor tensile strength
5. initial and final sags over open country, buildings, roadways
6. depth, strength, size of transmission structure foundations
7. type of foundations
8. type of transmission structures and whether for vertical, horizontal, or delta circuit configuration
9. spacing between structures
10. maximum ground impedance at transmission structures
11. insulation level for transmission circuits
12. spacing between subconductor spacers for 345 Kv circuits

These considerations vary from system to system, from company to company, from line to line and from structure to structure.

SUPPLEMENTAL ANSWER

50(c). TU believes the initial answer is complete.

Respectfully submitted,

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By _____

ATTORNEYS FOR TEXAS UTILITIES COMPANY,
TEXAS UTILITIES GENERATING COMPANY,
DALLAS POWER & LIGHT COMPANY,
TEXAS ELECTRIC SERVICE COMPANY AND
TEXAS POWER & LIGHT COMPANY

THE STATE OF TEXAS)
:
COUNTY OF TARRANT)

BEFORE ME, the undersigned authority, a Notary Public in and for Tarrant County, Texas, on this day personally appeared E. D. SCARTH, well known to me to be a credible person, who after being by me first duly sworn, did depose and say that he is duly authorized to respond to the NRC Staff's Initial Interrogatories Propounded to Texas Utilities Generating Company on behalf of the TU Companies, has read the above and foregoing Supplemental Answers of the TU Companies to said Interrogatories from the NRC Staff, and the same are true and correct, to the best of his knowledge and belief.

E. D. SCARTH

SUBSCRIBED AND SWORN TO before me this 25th day of May, 1979, to certify which witness by hand and seal of office.

Paula Hewatt

PAULA HEWATT, Notary Public
in and for Tarrant County, Texas

My Commission Expires:

December 27, 1980

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	:	
	:	
HOUSTON LIGHTING & POWER COMPANY, PUBLIC SERVICE BOARD OF SAN ANTONIO, CITY OF AUSTIN, CENTRAL POWER AND LIGHT COMPANY (South Texas Project, Unit Nos. 1 and 2)	:	NRC Docket Nos. 50-498A 50-499A
TEXAS UTILITIES GENERATING COMPANY, et al. (Comanche Peak Steam Electric Station, Units 1 and 2)	:	NRC Docket Nos. 50-445A 50-446A

CERTIFICATE OF SERVICE

I hereby certify that service of the foregoing SUPPLEMENTAL ANSWER OF TEXAS UTILITIES COMPANY AND ITS SUBSIDIARIES TO THE NRC STAFF'S INITIAL INTERROGATORIES has been made on the following parties listed hereto this 30th day of May, 1979, by depositing copies thereof in the United States mail, first class, postage prepaid:

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Fredrick K. Shubert

APPENDIX A

INTERROGATORIES 3(e), 4(f) and 9(d)

Federal Court Case

Plaintiff's Exhibits

69; 127; 136-138; 168-169; 182; 187; 742

TESCO Exhibits

58; 148; 155; 205; 216; 239; 251; 262

Document Production Nos.

1229-1237; 4992-4999; 5052-5078; 5402-5411; 6095-6107; 6147-6157; 6236-6244; 7045-7049; 7096-7117; 9384-9393; 9395; 9397-9401; 9403-9407; 9419-9433; 9435-9441; 9456; 9472; 9517; 9531-9540; 10272-10277; 10637-10640; 10656-10658; 10662-10664; 10668-10747; 10749-10756; 11732; 11797-11807; 12080-12095; 12097-12107; 12162-12163; 12168-12170

INTERROGATORY 6(e)

Document Production Nos.

540-551; 571-1127; 1382-1390; 1410-1698; 2061-2420; 5450-5459; 8097-8284; 8301-8375; 8914-9051; 11024-11157

INTERROGATORY 7(c)

Federal Court Case

Plaintiffs' Exhibits

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TESCO Exhibits

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APPENDIX B

Citations to Transcript in Federal Court Case

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