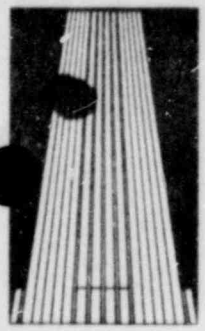

Houston
Lighting
& Power
Company

Electric Tower
P.O. Box 1700
Houston, Texas 77001

February 9, 1979
ST-HL-AE-320

Mr. Harold Denton, Director
Office of Nuclear Reactor Regulation
Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Denton:

SOUTH TEXAS PROJECT
UNITS 1 & 2
DOCKET NOS. STN 50-498, STN 50-499
ENVIRONMENTAL REPORT - OPERATING LICENSE STAGE
AMENDMENT 2

Please find under separate cover forty-one (41) copies of Amendment 2 to the South Texas Project Units 1 & 2 Environmental Report - Operating License Stage. A copy of this transmittal is attached to each amendment copy.

Amendment 2 consists of responses to the NRC July 5, 1978 and October 9, 1978 requests for additional information.

Very truly yours,

E. A. Turner

E. A. Turner
Vice President
Power Plant Construction
and Technical Services

RWL/deb

Enclosures

cc: C. G. Thrash (Baker & Botts)
R. G. Gooch (Baker & Botts)
R. Lowenstein (Lowenstein, Newman, Reis, Axelrad & Toll)
D. G. Barker

Before the

United States Nuclear Regulatory Commission

Docket Nos. STN 50-498, STN 50-499

Houston Lighting & Power Company, et. al.

South Texas Project Units 1 & 2

Amendment 2

Houston Lighting & Power Company, an applicant in the above captioned proceeding, for itself and for the City of San Antonio, Central Power and Light Company and the City of Austin, hereby files Amendment 2 to the Environmental Report - Operating License Stage.

Amendment 2 consists of responses to the NRC July 5, 1978 and October 9, 1978 requests for additional information.

Respectfully submitted,

HOUSTON LIGHTING & POWER COMPANY

E. A. Turner
Vice President
Power Plant Construction
and Technical Services

STATE OF TEXAS

COUNTY OF HARRIS

E. A. TURNER, being first duly sworn, deposes and says: That he is Vice President of HOUSTON LIGHTING & POWER COMPANY, an Applicant herein; that the foregoing amendment to the application has been prepared under his supervision and direction; that he knows the contents thereof; and that to the best of his knowledge and belief said documents and the facts contained therein are true and correct.

DATED. This 14th day of Feb, 1979.

Signed: E. A. Turner
E. A. Turner

Subscribed and sworn to before me
this 14th day of Feb, 1979.

Rita T. Villanueva
Notary Public in and for the County
of Harris, State of Texas

My commission expires 4-30-79

Instructions for incorporating Amendment 2:

In general, amendment pages will replace existing pages that have the same page numbers. In some instances, a different number of pages will be added than are deleted. Affected pages are:

	Remove	Insert
Chapter 2		
	2.1-1, 2.1-2	2.1-1, 2.1-2
Chapter 3		
	3.9-3, 3.9-4	3.9-3, 3.9-4
Chapter 6		
	6-i, 6-ii thru 6-vi, 6-vii	6-i, 6-ii thru 6-v
	6.2-16	6.2-16
	6.2-17	6.2-17
Chapter 8		
	8.1-3	8.1-3
	8.1-4	8.1-4
Chapter 10		
	10.2-1	10.2-1
Chapter 11		
	11.2-1, 11.2-2	11.2-1, 11.2-2
Appendix A		
	A2-25	A2-25

(Continued)

	Remove	Insert
Appendix C		
	C-ii	C-ii
	C-14	C-14 thru C-14e
	C-17	C-17
	C-18	C-18
	C-19	C-19
	C-21	C-21
	C-45	C-45
	C-51	C-51
	C-62	C-62
Appendix D		
	D-ii	D-ii
	D-1	D-1
	D-3	D-3
	D-13	D-13
	D-16	D-16
	D-17	D-17
	D-24	D-24

CHAPTER 2

THE SITE

2.1 SITE LOCATION AND LAYOUT

The South Texas Project (STP) is located in southwest Matagorda County, approximately 12 miles south-southwest of Bay City and 10 miles north of Matagorda Bay. The location of Unit 1 will be 96°02'53" west longitude, 28°47'42" north latitude (3,188,669 m north--788,157 m east; Zone 14R); Unit 2 will be located at 96°03'00" west longitude, 28°47'42" north latitude (3,188,699 m north--787,974 m east; Zone 14R). The site consists nominally of 12,300 acres, of which 7,000 acres make up the cooling reservoir, 65 acres are modified or occupied by the plant and plant facilities, and approximately 1,700 remain as a natural lowland habitat.

Figure 2.1-1 shows the general area within 50 miles of the site. Figure 2.1-2 shows the one- through five- and ten-mile perimeters of the site. An aerial photograph of the STP site and environs before construction is shown on Figure 2.1-3. Superimposed on this photograph is the site boundary (utility owned). Figure 2.1-4 is a diagram of the site layout and surrounding area. The exclusion area and railway spur are also shown on Figure 2.1-4. The abutting and adjacent properties as well as developments near the site are shown on Figure 2.1-6.

The local relief of the area is characterized by fairly flat land, approximately 23 feet above mean sea level. Through the site boundary flows the west branch of the Colorado River as well as several sloughs, one of which feeds Kelly Lake, a 34.4-acre water body in the northeast corner of the site. The site and its immediate environs fall within the Coastal Prairie which extends as a broad band parallel to the Texas Gulf Coast. Of the approximately 50,240 acres within a 5-mile radius of the site, bottomland comprises 19 percent; the remaining 81 percent is upland. The bottomland includes 52 percent cleared land and 48 percent wooded area, most of which, with the exception of two small islands, is classified as agricultural. The upland consists of 91 percent cleared agricultural land, 8 percent woodlands, and 1 percent industrial.

Major road access to the site will be from farm-to-market road (FM) 521. The portion of FM 521 which originally passed through the plant site has been rerouted as shown on Figure 2.1-4. The site development plan, shown on Figure 2.1-7, reflects the major features of plant development. The main element of the plan is the nuclear power plant and its support facilities. The plant was sited to enable functional and safe operation of a nuclear power plant compatible with the natural environment of the surrounding site and community.

Currently no developed public recreation facilities exist along the Colorado River between Bay City and Matagorda. Neither are there any state or federal wildlife reserves along the river, but, since duck and geese are prevalent near the Gulf, some hunting is done along the lower reaches of the river.

Recreational potential in the immediate vicinity of the project site is in the form of a group of vacation homes directly across (to the east of) the Colorado River from the site. The area between the cooling reservoir and the Colorado River contains a wide variety of plant material dominated by mature live oak trees. Wildlife is abundant within the area of riparian influence. With the natural vegetation, water habitat, and lack of development within the area of riparian influence, that area is a natural lowland habitat and will be allowed to remain such. On the project land specific recreational and public use developments, other than the natural habitat, include picnic areas, a visitors' center, and a public boat launch facility on the Colorado River at the end of the heavy haul road.

Since there are no existing public access points in this area of the Colorado River and since a road and docking areas are to be constructed in conjunction with the construction of the facility, the dock facility will be designed to accommodate and serve as a permanent public boat landing and launching facility.

Parking and restrooms will be provided, as well as picnic tables and an interpretive exhibit at the visitors' center to describe the plant's development and operation. The plant and the visitors' center are close enough together so that plant facilities are discernable from the visitors' center. The visitors' center is located on FM 521 near the plant access road (Figure 2.1-5). No swimming or boating will be allowed on Kelly Lake, mainly because of its size; however, Kelly Lake will afford a very fine foreground for a view from the picnic area into the natural habitat.

cardinal, brown thrasher, red-bellied woodpecker, barred owl, and common nighthawk.

3.9.5.4 Endangered Species

Examination of topographic maps and aerial photography of the modified transmission line routes, field observations on and in the vicinity of the routes, and review of documents (References 3.9-1 through 3.9-7) indicate that no Federal or state endangered species are permanent residents in the vicinity of the modified transmission line routes. Migrant or transient species (peregrine falcon and bald eagle) could occur in the vicinity of the routes during migration (spring and fall) periods. No proposed endangered plant species are expected in the vicinity of the modified transmission line routes. Q TE2

3.9.6 RAILROAD RIGHTS-OF-WAY

The modified transmission route from the site to Blessing Substation crosses the Missouri Pacific railroad right-of-way near Blessing Substation. The transmission line route from Danevang Tie Point to Holman Substation intersects Southern Pacific railroad rights-of-way at three locations including one intersection along the modified transmission line route near Glidden. The intersections of transmission line and railroad rights-of-way are summarized in Table 3.9-8.

3.9.7 TRANSMISSION LINE VISIBILITY FROM PUBLIC ROADS

Visibility terms and criteria applicable to the modified routes are unchanged from those discussed in Section 3.9.7 of the Environmental Report--Construction Permit Stage.

3.4.7.5 Degree of Visibility Along Modified Transmission Line Routes

The degrees of visibility in terms of highway miles for public roads crossed or paralleled by the modified transmission line routes are summarized in Table 3.9-9. Transmission line visibility resulting from intersection with or from being parallel to public roads is summarized in Tables 3.9-10, 3.9-11, and 3.9-12 for the site-to-Blessing and Danevang-Tie-Point-to-Holman lines respectively. A total of some 89 miles of highway visibility results from the total of 304.3 miles of transmission line along the overall proposed transmission system.

3.9.8 ELECTRICAL EFFECTS

The electrical effects of high voltage transmission are unchanged from those described in Section 3.9.8 of the Environmental Report--Construction Permit Stage.

3.9.9 SUBSTATIONS ON MODIFIED TRANSMISSION LINE ROUTES

Modified transmission lines will terminate at Blessing and Holman Substations.

Blessing Substation (CPL)

One new 345-kilovolt transmission line from STP will terminate at an addition to the existing Blessing Substation. The addition will be built on property currently owned by CPL and will occupy about 2 acres adjacent to the existing facilities, which occupy about 3 acres. The total CPL substation property consists of about 11.2 acres of flat, grassy terrain and is surrounded by wooded areas that provide for low visibility from the adjacent road (State Highway 35). The unused portions of the property are occasionally leased for grazing. The 345-kilovolt substation addition will be in operation by 1980 with ties into the CPL transmission network. Q TE1

Holman Substation (COA)

One 345-kilovolt transmission line from STP will terminate at the new Holman Substation. The substation will occupy about 8.8 acres of a 38.5-acre tract purchased by the City of Austin. The substation will be located on flat, grassy terrain. The site is adjacent to a farm-to-market road carrying very litt'e traffic and the site was not used for crops or grazing at the time of acquisition. The 345-kilovolt substation will be in operation by 1980 with ties into the transmission networks of the City of Austin and Lower Colorado River Authority. Q TE1

CONTENTS

CHAPTER 6

EFFLUENT AND ENVIRONMENTAL MEASUREMENT
AND MONITORING PROGRAMS

TABLES

CHAPTER 6

TABLES (Continued)

FIGURES

CHAPTER 6

FIGURES (Continued)

TABLE 6.2-1 (Continued)

OPERATIONAL RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway of Sample	Number of Samples and Location[a]	Sampling and Collection Frequency	Type and Frequency of Analysis	
WATERBORNE (Cont'd)				
Ground	1 control sample from well No. 603, upgradient from the reservoir in the upper shallow aquifer.	Quarterly	Gamma isotopic and Tritium (composite)	
	1 sample from well No. 446, downgradient in the upper shallow aquifer.	Quarterly	Gamma isotopic and Tritium (composite)	Q330.7
Drinking (Potential)	1 control sample from well No. 602, upgradient from the reservoir in the lower shallow aquifer.	Quarterly	Gross β, Gamma isotopic and Tritium (composite)	STP ER
	1 sample from well No. 446A, downgradient in the lower shallow aquifer.	Quarterly	Gross β, Gamma isotopic and Tritium (composite)	Q330.7
INGESTION				
Milk	1 sample from milking animals in each of 3 areas where doses are calculated to be greater than 1 mrem per year.	Semi-monthly when animals are on pasture, monthly at other times, if milking animals are present	Gamma isotopic and radioiodine analysis semi-monthly when animals are on pasture; monthly at other times	
	1 sample from milking animals at a control location (10-20 miles distant and in the least prevalent wind direction)			

TABLE 6.2-1 (Continued)

OPERATIONAL RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway of Sample	Number of Samples and Location[a]	Sampling and Collection Frequency	Type and Frequency of Analysis
INGESTION (Cont'd) Fish	1 sample of each of two important species from the Colorado River upstream from the site at the Highway 35 bridge. 1 sample of each of the same two species from the Colorado River to be collected about 2 miles downstream from the reservoir blowdown structure.	Semi-annually or in season	Gamma isotopic on edible portions
	1 sample of each of two species to be collected 2 miles south of the site boundary, in the following 3 streams: a) Little Robbins Slough b) East Fork of Little Robbins Slough c) West Branch of the Colorado River	Semi-annually (if available)	Gamma isotopic on edible portions Sr-89 and Sr-90 on bone
	1 sample of each of two species from the Cooling Reservoir.	Semi-annually (if available)	Gamma isotopic on edible portions Sr-89 and Sr-90 on bone

8.1.2.2 Payrolls and Employment

The operation and maintenance of the STP will require a presently estimated 252 permanent employees. The net present life-of-plant value of wages will amount to $94.6 million. The levelized wage amount is estimated to be $9.1 million annually. For the first full year of operation of both units, the wages are estimated to be $4.045 million (in 1978 dollars).

The STP will cause an increase in employment for the area over and above that of the permanent staff employment. It is estimated that approximately 680 new permanent service jobs will be created in the region of the State of Texas surrounding the plant (Ref. 8.1-1). The net present life-of-plant value of the wages of these jobs amounts to $105.8 million or a levelized annual rate of $10.2 million. Q340.12

8.1.2.3 Value Added in Regional Production

The installation of the STP generating units will make available the power needed by regional manufacturing industry to provide for the production of goods amounting to an estimated $3.3 billion of value added each year. The determination of this value is described in Table 8.1-8.

8.1.2.4 Other Benefits

A visitors' center is being constructed at the site to provide the public with information about the plant. The profile of the plant can be clearly seen from the visitors' center and from relocated FM 521. Picnic areas and a public boat launch on the Colorado River as discussed in Section 2.1 provide recreational opportunities. The lowland habitat between the reservoir and the Colorado River will remain in its present natural state.

REFERENCES

Section 8.1

8.1-1 Texas Department of Water Resources, The Texas Input-Output Model, 1972, Feb. 1978. Q340.12

8.1-2 U. S. Department of Commerce; Annual Survey of Manufacturers 1976; M71 (AS)-1P General Statistics for Industry Groups and Industries M76 (AS)-4P Fuels and Electric Energy Used by Major Industry Groups.

10.2 MAKEUP WATER INTAKE SYSTEM

The makeup water intake system implemented for the STP is the alternative system selected and approved during the Construction Permit review. The selected makeup water intake system consists of a makeup water screen intake structure, a sharp-crested weir, and a pump station with a capacity of 538,800 gallons per minute (1,200 cubic feet per second). The screen intake structure will consist of coarse trash racks and 24 sets of traveling water screens mounted flush with the shoreline. The intake structure will encompass 392 feet of river bank and will rest at an elevation of -10 mean sea level (see Figure 3.4-8). The intake design complies with the best available technology for minimizing environmental impact of cooling water intake structures in that it provides for free fish passage and has a maximum approach velocity to the traveling screens of 0.55 feet per second based on a pumping rate of 1,200 cubic feet per second (see Section 3.4.1.5). A sharp-crested weir, 300 feet long, is located between the screen intake structure and the pumping structure and functions to ensure a better quality of intake water from the upper strata. Two siltation basins, one on each side of the weir, will provide a quiescent zone where settleable sediment conveyed by makeup water can settle out. The pump station will be located 147 feet behind the screen intake structure and will consist of four pumps with a capacity of 107,760 gallons per minute (240 cubic feet per second) and four pumps with a capacity of 26,940 gallons per minute (60 cubic feet per second).

Q340.18

11.2 ECONOMIC BENEFITS

11.2.1 PRIMARY BENEFITS

The capability to supply about 16.3 billion kilowatt-hours of electricity each year for use by the residents of this region will be the primary benefit from the construction of the STP.

The plant will provide an estimated average annual generation of 17.52 billion kilowatt-hours of electricity based on an 80-percent capacity factor. Approximately 1.19 billion kilowatt-hours will be lost in transmission and distribution, leaving 16.33 billion kilowatt-hours available for sale. The distribution of this electrical energy is estimated to be 4.66 billion kilowatt-hours residential, 2.98 billion kilowatt-hours commercial, 7.83 billion kilowatt-hours industrial, and 0.86 billion kilowatt-hours for miscellaneous uses.

The direct benefits are summarized in Chapter 8 including the expected utilization by user category. The income from these various consumers is estimated to be a levelized amount of $914 million per year. No revenue from the sale of steam or other products is anticipated.

Another primary benefit from this project is the opportunity to retire older plants operating less efficiently and at a higher economic and environmental cost.

11.2.2 OTHER SOCIAL AND ECONOMIC BENEFITS

A capital expenditure of this magnitude has many benefits besides the basic one of supplying the energy needs of the region. Some of these benefits, discounted to 1980 present worth, are detailed below:

1. Construction material costs are estimated to be about $646 million.

2. Construction of the STP will produce an estimated 34.5 million man-hours of employment and $334.4 million in income.

3. Staff requirements for the 30 years of operation and maintenance will result in an estimated 15 million hours of employment and $94.6 million in discounted lifetime income.

4. An estimated $1,155 million in discounted lifetime payments will be made to local and state agencies as discussed in Chapter 8. The levelized amount is $111.6 million per year.

5. Additional employment in the local service industries will be generated as a result of the service requirements of the staff personnel at the STP. The income associated with approximately 680 service-oriented jobs over the lifetime of the plant is estimated to be in excess of $105.8 million or a levelized annual rate of $10.2 million. Q340.12

6. Some $3.3 billion of value added by manufacturing industries each year

would be made possible by the energy delivered to them from the STP.

7. Educational opportunities will be available to the approximately 50,000 persons expected to tour the visitors' center each year. Plant monitoring will contribute to the knowledge of the physical and biological aspects of the environment.

8. Picnic areas and a public boat launch will increase the recreational value of the area.

TABLE 3.2-1 (Continued)

OPERATIONAL RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway of Sample	Number of Samples and Location[a]	Sampling and Collection Frequency	Type and Frequency of Analysis	
WATERBORNE (Cont'd)				
Ground	1 control sample from well No. 603, upgradient from the reservoir in the upper shallow aquifer.	Quarterly	Gamma isotopic and Tritium (composite)	
	1 sample from well No. 446, downgradient in the upper shallow aquifer.	Quarterly	Gamma isotopic and Tritium (composite)	Q330.7
Drinking (Potential)	1 control sample from well No. 602, upgradient from the reservoir in the lower shallow aquifer.	Quarterly	Gross β, Gamma isotopic and Tritium (composite)	STP ER
	1 sample from well No. 446A, downgradient in the lower shallow aquifer.	Quarterly	Gross β, Gamma isotopic and Tritium (composite)	Q330.7
INGESTION				
Milk	1 sample from milking animals in each of 3 areas where doses are calculated to be greater than 1 mrem per year.	Semi-monthly when animals are on pasture, monthly at other times, if milking animals are present	Gamma isotopic and radioiodine analysis semi-monthly when animals are on pasture; monthly at other times.	
	1 sample from milking animals at a control location (10-20 miles distant and in the least prevalent wind direction)			

RESPONSES TO NRC
JULY 5, 1978
REQUEST FOR ADDITIONAL INFORMATION

TABLE OF CONTENTS

Question 340.06

On page 8.2-3 of the OL-ER, it is indicated that $556,745 was paid in property taxes to local governments in 1976 and 1977.

a) Discuss if these taxes (plus those contributed by the workers themselves) compensated each local jurisdiction for the funds it expended to provide services to both the workers and the plant.

b) Discuss--in light of the fact that neither the two municipalities of Palacios and Bay City nor four of the five impacted school districts in Matagorda County may tax STP--whether or not cost-revenue inequities are occurring among local communities.

Response

a) During the past several years, the municipalities and special taxing districts surrounding the South Texas Project have increased their provision of many public services. Discussions with local officials indicate that a significant part of this increase has been necessary to meet the needs of inmigrating STP construction workers, their dependents, and the new retail and commercial businesses that have subsequently arisen.

As indicated by any changes in tax rates that have occurred, most municipalities have received sufficient revenue from new or expanded sources to support the budget increases caused by the growth of public services. In some taxing districts, however, the increase in revenue has not been sufficient, and tax rates have been raised. Study of the STP construction labor force showed that the greatest level of inmigration has occurred in Matagorda County, Bay City, and Palacios. Cost-revenue relationships were therefore examined in these locations and in the special taxing districts that also provide services to community residents.

Matagorda County

Increased revenue has nearly balanced the growth in expenditures required to pay for expansion of public services. Many county services have grown recently and local officials report a significant increase in the total county budget and in the budget for certain services -- police services in particular (Refs. 1, 2 and 3). Some of this increase has no doubt resulted from inflation and other causes, but some part of it has been needed to meet the needs of STP construction personnel.

Despite this budget growth, the tax rate has risen very little. In 1976, the rate was increased; however, this has been followed by consecutive decreases in 1977 and 1978. Over this period the total valuation has increased as have court fines and clerk fees (Ref. 2).

Given the minimal increase in the tax rate, these revenue sources, along with the new property taxes received from STP, appear to have adequately compensated the county for its expanded service requirements.

The cost-revenue relationship is not as well balanced in the county's special districts. There are a variety of these districts within Matagorda County that provide services such as health care, water supply and sewage treatment, and education.

Health care in Matagorda County is provided in part by the Matagorda Hospital District. This district, whose boundaries are coterminous with the county's, provides tax revenue that supports a nursing home and two general hospitals. Occupancy rates and emergency room visits at Matagorda General Hospital have fluctuated during recent years and have not shown a clear upward trend (Ref. 4). The hospital's controller, however, reported a series of significant budget increases over the past few years. Despite these increases, the district's tax rate has remained stable (Ref. 5). New revenues have been generated by increases in the tax base. Part of this increase results from property taxes paid by STP workers and from taxes on the plant itself.

Sewer and water service in the county is provided by four special districts: Markham Municipal Utility District, Matagorda County Water Control and Improvement District No. 6 in Van Vleck, Matagorda County WCID No. 5 in Blessing, and Matagorda County WCID District No. 2 in Matagorda. All have experienced increased service demands and rising rates of waste-water flow over the past three years (Ref. 6). In Markham and Van Vleck, the service charge rates have been raised recently (Refs. 7 and 8). As these charges cover only operating expenses, it is assumed that these districts have had an increase in the costs of operation. Capital costs, on the other hand, were paid for with bond issues, which are being retired through ad valorem taxes in each district. The existing physical plants have not required expansion; therefore, no further bond issues have been needed. With its tax base expanding, Markham has been able to lower its tax rate recently, though in the other districts the rate has remained stable (Refs. 7, 8 and 9).

There are three independent school districts within the county: Matagorda ISD, Tidehaven ISD, and Van Vleck ISD. The service and revenue situation within these districts varies considerably. Officials in Van Vleck report little increase in enrollment or budget attributable to STP (Ref. 10). Tidehaven, on the other hand, has had a significant increase in students with substantial associated costs (Ref. 11). Matagorda Elementary has experienced an increase in enrollment but to a lesser degree (Ref. 12). In both districts, either the millage rate or the assessment ratio has been increased during the past few years to raise the revenue needed to cover the expansion in service.

The highway system in the county has received an increase in traffic flow since work began on the STP. Most traffic has occurred on farm-to-market roads and state highways that provide access to the site (Ref. 13). These roads are under the jurisdiction of the State

Department of Highways and Public Transportation, which has been responsible for the road improvements undertaken and the new traffic signals installed (Ref. 14). These highway improvements have been paid for through the state highway fund (Ref. 15), thereby distributing the cost over an area larger than Matagorda County, which helps balance the revenue against costs. The highway fund uses gasoline taxes as a source of revenue and it is likely that some of the increase in highway use has created a corresponding increase in gas taxes.

The STP project participants have also contributed funds to cover part of the transportation expenses. State highway officials stated that, considering all sources, new revenue has closely matched the increase in expenditures.

Bay City

Public services in Bay City have expanded substantially over the past several years and the city budget has grown apace. During this period there has also been a growth in revenues that has closely matched these budget increases. It appears that present costs for expanded services have been balanced by new tax revenues.

Services such as police and governmental administration are paid for through general revenues. Because of inflation, new types of service, and the demands of new residents, many services, particularly police, have expanded. Revenue has been able to keep abreast of these increases without an increase in the tax rate. Two factors account for this situation. First, there has been a major increase in the city's taxbase. Second, additional revenue has been generated by increased fines and clerk fees (Ref. 16).

The city water and sewer system is supported through a combination of bond revenue and service charges. Bond issues are used to cover capital improvements to the system. At present, no major improvements have been undertaken. The treatment plant is now operating at its maximum capacity, and officials report that an expansion is needed (Ref. 17). Operating expenses are covered by service charges, and utility department personnel report that both water and sewer charges have been raised twice since 1975 (Ref. 18).

The city is served by the Bay City Independent School District. This district has had a substantial increase in enrollment and has increased its staff as a result. There have recently been adjustments in both the district's assessment ratio and millage rate, but the net change in taxation has been negligible. Most of the cost for the greater level of services has been met by an accompanying growth in the district tax base (Ref. 19).

Palacios

Palacios is the third jurisdiction that has had significant inmigration as a result of the STP. New tax revenue and increased revenue

from existing sources have apparently compensated the city for the service increases it has made.

The city budget has risen recently due to higher costs for many budget items and also to meet expanded demands for police, refuse collection and other public services. Local officials contacted believe the STP has been a major factor in these increases. Although the city budget has risen in order to meet new service demands, growth in total assessed value, coupled with some increased sales tax revenue, have provided increased revenue without an increased tax rate. The city's millage rate and assessment ratio have remained constant for the past five years (Ref. 20). The charge for sewer service has not been raised since 1975 and the water rate has remained constant for the past five years (Ref. 21).

Palacios is served by the Palacios Independent School District. The school district has experienced a significant increase in enrollment recently (Ref. 22), but it has also received increased property tax revenue due at lease partially to the taxes paid by STP workers and by the plant itself. The school district has lowered its tax rate in both of the previous two years. The South Texas Project will contribute substantial tax revenue to the Palacios ISD over the plant's expected lifetime.

As discussed in part (a) above, at the present time, local communities and most special taxing districts are receiving new revenues to meet increased service demands. Taxes on STP accure to the State of Texas and to local jurisdictions -- Matagorda County, Palacios ISD, the Matagorda Hospital District, and a few other minor special taxing districts. There is, however, a secondary generation of taxes such as sales taxes, property taxes on STP workers' property, and tax generated by new retail and commercial businesses. These secondary taxes tend to occur where the plant workers reside and do their business. Bay City receives significant amounts of new revenue from secondary sources and this situation tends to minimize potential cost-revenue inequalities since Bay City does not receive taxes directly from the plant.

Ad valorem taxes are the primary source of revenue for the area school districts. The additional property taxes resulting from STP personnel and the other indirect taxes do not seem to be compensating some school districts for their service increases, particularly Bay City (Ref. 19). On the other hand, Palacios ISD is presently receiving substantial tax revenue and, when the plant is completed, the tax revenue paid to the district will be larger than the district's total present budget.

References

1. Sanders, J. W., Financial Report of Matagorda County, Texas, 1976-77.

2. Personal communication between J. W. Sanders, Matagorda County Auditor, and Stuart L. Miner, NUS Corp., Nov. 7, 1978.

3. Personal communication between Chief Deputy Sheriff R. L. Schlicting, Matagorda County, and Stuart L. Miner, NUS Corp., Nov. 7, 1978.

4. Correspondence from Administrator F.S. Walters, Jr., Matagorda County Hospital District, Dec. 21, 1978.

5. Personal communication between Remer De Loach, Matagorda General Hospital Controller, and Stuart L. Miner, NUS Corp., Nov. 14, 1978.

6. Personal communication between Mickey Garza, Texas Dept. of Water Resources, and Stuart L. Miner, NUS Corp., Nov. 9, 1978.

7. Personal communications between Dwight Vavra, Markham MUD, and Stuart L. Miner, NUS Corp., Nov. 15 and 28, 1978.

8. Personal communications between Robert Titt, Matagorda County WCID 6, and Stuart L. Miner, NUS Corp., Nov. 15 and 28, 1978.

9. Personal communications between Mike Pierce, Matagorda WCID 5, and Stuart L. Miner, NUS Corp., Nov. 15 and 28, 1978.

10. Personal communication between Supt. Lester Cobb, Van Vleck ISD, and Stuart L. Miner, NUS Corp., Nov. 3, 1978.

11. Personal communication between Supt. Taska, Tidehaven ISD, and Stuart L. Miner, NUS Corp., Nov. 3, 1978.

12. Personal communication between John Bauderback, Matagorda ISD, and Stuart L. Miner, NUS Corp., Nov. 3 1978.

13. An Assessment of Socioeconomic Conditions at STP, NUS Corp., April 1978.

14. Personal communication between George McDonald, Texas Dept. of Highways and Public Transportation, and Stuart L. Miner, NUS Corp., Nov. 7, 1978.

15. Personal communication between Richard Cabot, Texas Dept. of Highways and Public Transportaion, and Stuart L. Miner, NUS Corp., Nov. 7, 1978.

16. Personal communication between Mayor Richard Gusman, Bay City, and Stuart L. Miner, NUS Corp., Nov. 11, 1978.

17. Personal communication between Clark Young and Mildred Nelson, Bay City Utility Dept., and Stuart L. Miner, NUS Corp., Nov. 14, 1978.

18. Personal communication between Pauline Buller, Bay City Utility Dept., and Stuart L. Miner, NUS Corp., Nov. 28, 1978.

19. Personal communication between Supt. John Briggs, Bay City ISD, and Gerald J. Edgley, NUS Corp., Nov. 2, 1978.

20. Personal communication between City Bookkeeper Edna Lee Williams, Palacios, and Stuart L. Miner, NUS Corp., Nov. 20, 1978.

21. Personal communication between City Secretarty Andrea Ellis, Palacios, and Stuart L. Miner, NUS Corp., Nov. 20, 1978.

22. Personal communication between Secretary Shirleen Shelton, Palacios ISD, and Stuart L. Miner NUS Corp., Nov. 3, 1978.

Question 340.08

Discuss the potential for cost-revenue inequities occurring in the nearby local communities during operation of the facility. This discussion should address the abilities of the local communities to tax the facility, and (if possible) be quantified on a per capita basis through a cost-revenue analysis.

Response

The response to question 340.06 noted that during the construction phase of the South Texas Project there have been very minimal cost-revenue imbalances created in the neighboring communities. Any larger imbalance of costs and revenues is not anticipated to occur during operation of the facility. Demands for new services should not be any greater than at present, while tax revenue generated by the plant will reach a peak during operation. Those jurisdictions that receive revenues from the plant will receive a greater amount than at present.

It is also not likely that a rapid outmigration of population will take place, further lessening the possibility of cost-revenue imbalance. A significant portion of the construction work force at STP is expected to remain in the area to seek employment on future large-scale construction projects. Local officials indicate that major projects in the energy and petrochemical industries are planned for the next few years (Refs. 1 and 2). These projects are expected to create substantial construction jobs that will absorb a major share of the construction labor force now employed at the STP.

References

1. Personal communication between Jim Sumpter, Bay City Chamber of Commerce, and Stuart L. Miner, NUS Corp., Nov. 20, 1978.

2. Personal communication between Van Hanken, Port Lavaca Chamber of Commerce, and Stuart L. Miner, NUS Corp., Nov. 20, 1978.

Question 340.09

Since Texas law currently forbids communities to transfer tax revenue among themselves but does permit some sharing of services, discuss if any provisions for the latter have been developed.

Response

Local officials indicate that, at the present time, there is no significant sharing of services between communities (Refs. 1 and 2). Police officials report that some specialized equipment and manpower needs could be borrowed from the state (Refs. 3 and 4). There are no present plans for future sharing of services.

References

1. Personal communication between J. W. Sanders, Matagorda County Auditor, and Stuart L. Miner, NUS Corp., Nov. 7, 1978.

2. Personal communication between Mayor Richard Gusman, Bay City, and Stuart L. Miner, NUS Corp., Nov. 11, 1978.

3. Personal communication between Chief Deputy Sheriff R. L. Schlicting, Matagorda County, and Stuart L. Miner, NUS Corp., Nov. 7, 1978.

4. Personal communication between Police Chief Barney Mason, Bay City, and Stuart L. Miner, NUS Corp., Nov. 11, 1978.

Question 340.10

Provide any information on how the local jurisdictions might put their anticipated tax revenues to use (i.e., lower taxes, improved services, increased services).

Response

Based on present practices, communities in the vicinity of the STP are using new tax revenues either to offset increasing expenditures for public services, or they are lowering the rate of taxation.

Question 340.12

The OL-ER indicates that 160 new permanent service jobs will be created indirectly by STP. Discuss why this figure is applicable to STP in that it is based on a generalized study by the local chamber of commerce. Include information on what will be the income multiplier for the local communities during the operational period of STP. Do data exist from the construction period that support either the employment or income multipliers projected for the operating period?

Response

The estimate of 160 new jobs created by the operation of STP was based on an employment multiplier developed by the United States Chamber of Commerce (Ref. 1). The multiplier is an index of the number of secondary jobs created by one new job in a paticular employment sector. The multiplier related to manufacturing employment, not employment in the electric power generation sector.

Economic studies performed for both the State of Texas (Ref. 2) and for the Houston-Galveston region (Ref. 3) were reviewed in an attempt to determine an appropriate level of secondary employment resulting from the STP. The regional study does not contain any employment multipliers. The state study proposes an employment multiplier of 2.67 for the electrc power generation sector. Since most secondary employment would be expected to occur in the vicinity of the plant, this multiplier is believed to be applicable to the local region.

The Houston-Galveston regional study proposes an income multiplier of 2.3 for the electric utility service sector. This multiplier is probably an accurate estimation of the income effect of operation of the STP, since the plant site is within the report's study area.

There are not any data from the construction period that could further support a particular employment multiplier, because the multiplier used during construction would be for a totally different employment sector: contract construction. This multiplier would in all probability differ substantially from the multiplier for electric utility generation.

References

1. What New Jobs Mean to a Community, U. S. Chamber of Commerce, 1973.

2. The Texas Input-Output Model, 1972, Texas Dept. of Water Resources, Feb. 1978.

3. Stern, Louis H., Houston-Galveston Regional Input-Output Study for 1967, June 1972.

Question 330.6

According to Figure 6.1-6 and other maps, there is a tributary of the West Branch which appears to drain the area in the southeast corner of the cooling reservoir, but does not intercept the West Branch until some distance beyond the site boundary.

a) Will this flow be monitored?

b) Discuss the possibility that some seepage from the reservoir could come to the surface and enter this stream or one of the sloughs at a distance beyond the site boundary.

c) Discuss if transit times could be significant relative to radioactive decay.

d) Provide the results of the tests for the coefficient to transmissibility, that are discussed in Section 6.1.2.2.

Response

a) As can be seen more clearly on Figures 5.3.3-1C and 5.3.A-1D, the drainage course located in the southeast corner inside the reservoir is the former location of the upper reaches of the East Fork of Little Robbins Slough. The passage of West Branch flow through the siphon between the Spillway Disharge Channel is the only conduit for conveying surface flows originating north of the channel to the south.

Monitoring stations for West Branch and East Fork flows are shown on Figure 6.2-1.

b) Although outcrops of the Upper Shallow Aquifer (the sole conduit for seepage flows from the reservoir) have not been identified south of the southern site boundary, seepage would not be of consequence during the design life of the reservoir. For instance (see Section 2.4.13 of the STP-FSAR, Ref. 5.3.A-1), calculated times to peak concentration of radionuclides between the reservoir and the relief wells (a nominal distance of 350 feet) are on the order of 12,00 days, or over 30 years. The distances to sloughs south of the site would be much greater, indicating no effect due to seepage from the reservoir.

In addition, the Upper Shallow Aquifer will be monitored at a closer location (well 446 identified on Fig 6.1-22) more directly downgradient from the reservoir.

Question 330.11

a) There appears to be some discrepancy between the seepage flows from the cooling reservoir stated or alluded to on pages 5.3.A-1 and -2 and those given in Table 2.5-2. The flow in Table 3.3-1 also does not agree with these. Explain these discrepancies, and show on a figure the drainage areas used to estimate the rainfall runoff flows.

b) Discuss the basis for the data on irrigation flows given in Table 2.5-2. Include a description on the irrigation water source used in the calculations. Also, discuss if food pathways to man are involved, and should these be analyzed and/or monitored.

Response

a) The seepage rate indicated on line 25, Table 3.3-1, has been corrected to a value of 3,530 gpm, which is approximately the same as the total seepage of 5,700 AF/YR (Q_S) given in Section 5.3.A.2. The amount of seepage to Little Robbins Slough (1,150 AF/YR) and to the East Fork of Little Robbins Slough (1,480 AF/YR), shown on Table 2.5-2, represents only part of the total seepage from the reservoir--5,700 AF/YR. All seepage flows from the cooling reservoir are identified on Table 5.3.A-2 and Figure 5.3.A-1A.

b) Irrigation flows to the Little Robbins Slough Complex result from pumpage of deep aquifers. The amount of flow estimated in Table 2.5-2 was developed from an analysis of average annual irrigation pumpage to the drainage basin of the Little Robbins Slough Complex. Food pathways of irrigation flows were not considered separately due to the fact the flow is in elevated ditches, all outside the site boundary. Thus, no contamination from reservoir waters can result.

and wind speed to determine the stability class. The stability distribution determined from STP data is based on the measured vertical temperature gradient, and classified in accordance with Regulatory Guide 1.23. Table 4 shows that the Victoria data for the site-concurrent period are representative of long-term conditions. On an annual basis the occurences of all stability classes are similar for each of the three periods.

Based on comparisons of Victoria data and of available STP onsite data, it is concluded that the Victoria data for the period February 14, 1953, to January 1, 1956, are representative of long-term conditions and that Victoria data are representative of the four years of onsite STP data. It is therefore concluded that the three years of Victoria data used by the Cooling Reservoir fog predictor model are representative of long term conditions expected at the STP site.

c) The Cooling Reservoir Fog Predictor (CRFP) model, as described in Section 2.3 of the FSAR, inputs National Weather Service (NWS) observations of wind speed, wind direction, dry bulb temperature, wet bulb temperature, and cloud cover for use in calculations of the dissipation of heat form the thermally loaded reservoir and of the formation of elevated visible plumes and ground-level fog. In addition, solar and longwave radiant energy are calculated for each time period. The solar radiation term is calculated from an algorithm based upon the latitude of the reservoir, day of year, time of day, and cloud cover. The longwave radiant fluxes are calculated from the pond surface temperature and meteorological data including cloud cover.

The onsite meteorological data set contains all parameters necessary for analyses of the Cooling Reservoir except for cloud cover, which would be required in the longwave radiation calculations. However, there are other factors influencing solar radiation received at the ground, such as atmospheric particulates and fog.

References

1. Final Safety Analysis Report - South Texas Project Units 1 & 2, Vol. 2, Docket Nos. STN 50-498, STN 50-499.

2. Turner, D. Bruce, "A Diffusion Model for an Urban Area," J. App. Meteorol., Vol. 3, No. 1 (February 1964). pp. 83-91.

RESPONSES TO NRC
OCTOBER 9, 1978
REQUEST FOR ADDITIONAL INFORMATION

TABLE OF CONTENTS

Terrestrial Ecology Question 1

Please provide construction details and impacts for the Blessing and Holman substations.

Response

Response to this request is provided in revised Section 3.9.9.

Terrestrial Ecology Question 3

What guidelines for construction and maintenance will be followed for modified transmission lines?

Response

The routes for the modified transmission lines described in Section 3.9 were chosen in accordance with guidelines established by the United States Department of the Interior/United States Department of Agriculture in "Environmental Criteria for Electric Transmission Systems" and by the Federal Power Commission in "Electric Power Transmission and the Environment."

The commitments applicable to transmission line construction described in Section 4.5 of the Final Environmental Statement (CP stage, March 1975) will be complied with during the construction of the modified transmission lines.

Maintenance on the modified transmission lines will be performed as described in Section 5.6.

Socioeconomics Question 3

What specific actions have Brown and Root or the utility companies involved in STP taken to date to help local communities understand and mitigate the community impacts of the plant during its construction and operational phases?

Response

In 1973 and 1974, two trips to other nuclear sites were provided by the South Texas Project for local officials and civic leaders. Arrangements were made for those making the trips to have opportunities to observe nuclear plant construction and to meet with local officials and civic leaders at Zion, Illinois, and Brunswick, North Carolina. During the 1973 to 1976 period, a local "Site Coordinator" was provided by CP&L. This person served as an interface between the STP and local citizens and officials. When new project developments occurred, information was made available to the communities through the Site Coordinator as well as through the news media. Since start of construction in late 1975, an average of one annual site tour has been made by Matagorda County officials. In addition, several tours have been made by school and city officials from Bay City, Palacios and El Campo. During these tours, question and answer sessions about all aspects of the project were held.

Although not yet in operation, the Visitors' Center at STP will begin in early 1979 to provide continuous information and communication services.

Socioeconomics Question 6

What percentage of the operating work force will be hired from communities within commuting distance of the STP?

Response

It is estimated that 10 percent of the STP operations staff will be hired from local communities. This portion of the staff would consist mainly of entry-level workers, such as mechanics and grounds maintenance personnel.

Socioeconomics Question 7

Identify any situations arising out of the construction period which may result in adverse impacts on local communities or services during the operating period such as an inability to utilize adequately the housing stock, private retail businesses, or public facilities built to accommodate construction workers or the need to terminate public or private employees originally hired to provide services to STP construction workers.

Response

Although services have been expanded, there has been little major capital expenditure whose cost would be borne by residents over a long-term period. Thus, even if some outmigration takes place, the remaining residents will not be burdened with large debts for facilities they no longer require.

Significant negative impacts are not expected to occur as the activity at the STP shifts from the construction phase to the operation phase. As noted in the response to question 340.08, a number of large-scale construction projects are planned for the area in the near future. Therefore, the need for new services, housing and businesses is expected to continue to exist because it is expected that a significant portion of the STP work force will remain in the area to work on these projects.

Thermal Hydraulics Question 1

Provide the report, data input, and computer code of HYDTID (Reference 6.1-2 in ER-CP).

Response

The report, data input, and computer code are available through the:

General Libraries - ILL
University of Texas at Austin
Austin, Texas 78712
(512) 471-3976