THE STORY OF ELECTRICAL SERVICE IN BEAUMONT

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GULF STATES UTILITIES COMPANY

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Undoubtedly there are errors in this story, and many interesting sidelights have been omitted - sometimes intentionally for brevity and sometimes simply because I did not know about them. Kindly advise and I will correct any error.

J. B. Coltharp

September 16, 1934

THE STORY OF ELECTRICAL SERVICE

IN BEAUMONT

In 1888, less than a generation after the close of the Civil War, the Beaumont Ice, Light and Refrigerating Company was organized. Beaumont was a town of about 3,000 people, or just about the size of a moderately sized county seat. Ice was being shipped in and sold for one dollar per hundred pounds. Gas lights had been tried but were unsatisfactory.

Even though Beaumont was only a small town and the principal businesses were lumber and cattle, the citizens traveled far and wide to spend their money and to make more money by finding purchasers for their lumber and cattle. They even kept a man in Old Mexico to sell their lumber.

The electrical stage setting up to 1888 was something like this: By 1877 the electric arc, or street light, was used in some of the larger cities, but it was 1882 before the Edison direct current parallel circuit system was installed in New York City to light the houses and offices of the public. The alternating current parallel system was first used in 1886, in Great Barrington, Massachusetts.

Beaumont comes onto the stage of our drama like this: Mr. W. S. Davidson, who came here from Galveston, Texas, acting in the capacity of a promoter, raised the capital from the following wealthy citizens to finance the Beaumont Ice, Light and Refrigerating Company - V. Weiss, capitalist, private bank operator, real

estate dealer, etcetera; W. A. Fletcher, lumberman, business man of the Texas Tram and Lumber Company, expert millwright, and father of Emmet A. Fletcher, who was Mayor of Beaumont in 1933; Thomas H. Langham, sheriff, politician, real estate operator, and owner of downtown buildings; J. F. Keith, of the Keith Lumber Company; and L. P. Ogden.

As the organization of the Company progressed it was determined to locate the plant where the Crystal Ice Plant is now located on Cypress Street (1934). Certainly a better location could not have been selected, as on one side were the Southern Pacific Railroad tracks where cars could be iced and freight received and delivered. On the other side, making the location still more desirable, was the adjoining property of the Texas Tram and Lumber Company, which signed a contract for fuel. The fuel, consisting of sawdust and slabs, was delivered by means of a conveyor to the boilers of the Beaumont Ice, Light and Refrigerating Company.

So, in 1889, with a Fort Wayne Jenny series arc generator, a 1100 volt, 133 cycle, single phase generator, a switchboard made of shellaced tongue and grooved wood, a voltmeter, an ammeter, and open fuse links - with all this equipment mounted alongside the ice machinery - the Company was ready to light up the Queen of the Neches. Not only did the Company furnish lights, power and ice, but at one time or another in the next few years, it made and sold ice cream, stored meats, and ran a meat market. It also ran the

water supply system and received, stored and chilled all the beer shipped into Beaumont. Yea, verily, here was a public service organization.

One W. B. Hubbell was the man that came to Beaumont to install and operate this electrical equipment.

Beaumont being a city of lumber, when poles were selected they naturally turned to the material at hand and set pine poles or beams of about these dimensions - 12 inches square at the bottom, tapering to 4 inches square at the top. The crossarm was a 4 pin, 6 foot arm.

At one time all the poles on Pearl Street were cypress, painted white to within about five feet of the ground; them black from that point to the ground. Since the cypress was not all heart and the paint would not permit the poles to dry out readily, they rotted out in a very few years. These poles were painted by Mr. L. E. Lockhart (later part owner of the Thompson-Lockhart Electric Company) in the afternoons after he, by the aid of a horse and gig, had made the daily round of trimming all the carbon arc lights.

When a lineman climbed one of these poles, he carried no safety belt. As he got to the top or the position where he was going to work, he used an ordinary piece of rope to tie himself up. He had to decide which kind of hook he would use, that is, a Western hook or Eastern hook. The Western pole climbing hook is the one used today. The Eastern hook was developed primarily to climb

trees, but it was used for a while to climb poles. On the Eastern hook the steel part came down the outside of the leg, bending and making a hook for the foot, then turning down to a point to pierce the tree or pole to be climbed. A ring slipped over the hook, then a strap fastened to the ring was buckled across the top of the foot to the steel part on the side of the leg.

The transformers were small, on the order of 1/2, 1 or 2 kva. They were not rated by kva. but instead by the number of lights that they could carry, i.e., 5, 10, 20, 30, 40 lamp transformers. The primary voltage was 1100 volts, and the secondary 52 volts. The service wires running to the buildings were as small as #14 and the primaries and secondaries running along the streets as late as 1903 were as small as #8 in numerous cases. Little wonder that storms and lightning sometimes played havoc with the system.

For wire in the buildings, in the residence or business district, white slow burning #14 copper wire supported on wood cleats was used. The fuse blocks were made of red cedar, and brass clips were used to fasten down the wire and the fuse. Both sides of the circuit were fused and the fuse was simply an open link of wire. The only thing to keep it from throwing fire when it blew was the mica-lined, red cedar cover that formed the top of the fuse block. As high as 25 to 30 lights were fed from each fused circuit. When the wires and clips got hot, the cedar block

would char; out would come the wires; the wires would get together, and then for your nice mess. The lights being used were 16 c.p. carbon lamps that retailed for 75¢ apiece.

Now if a sawmill, planing mill, saloon, or big store wanted a real light, the series arc circuit from the Fort Wayne Jenny machine was pulled right into the building, if necessary. The Long Manufacturing Company located on the present site of the International Cresote and Construction Plant had an arc light 60 feet above the ground on a spliced pole. It was stepped with big spikes as all arc lights had to be trimmed every day in 1889 and even later. Big spikes were the pole steps in those days. No major fire or accident was caused by this part of the Company's equipment, but to an engineer of today this act of blithely pulling a high voltage street lighting circuit into a building was simply courting trouble.

The metering problem was quite simple at first, as there were no meters used. The customer was billed according to the connected load, the sawmills being the biggest commercial lighting customers. Meters came in gradually, and by 1901 most inside lights were metered.

The Company gave all-night service, but not all-day service. On foggy days the lights would be left on until 10 or 11 o'clock in the morning. In the afternoon they would be turned on only on real dark days as early as 2 or 3 o'clock. Sawmill and planing

mill demand for motor service finally brought about 24-hour service.

In 1889 and the early 90's some 133 cycle fans and motors were sold, but these were noisy, expensive and unsatisfactory. So about 1894 a 110 D.C. generator was installed to supply fans and motors, as the D.C. motor was satisfactory even at this ea[redacted] Most of the old 133 cycle equipment was bought by the Company from the customer at a depreciated price, depending on how old it was and the replacement D.C. equipment sold to the customer at cost. A big part of the old 133 cycle equipment was sold down in Louisiana by the salesmen of the D.C. equipment. However, as late as 1910 there were still some 133 cycle fans in use which the Company had to replace at its expense when the change was made to 60 cycle. In a saloon or big store where several fans were to be put in, one motor was installed to pull them all by means of line shaft and pulleys, and about a 2-inch belt was run to each fan. The Company maintained this system completely - fans, pulleys, motors and belts.

Back in those days when street lighting service was first sold to the City, they seriously considered burning the lights only when the moon did not shine. National manufacturers of electric lighting equipment brought out calendars to show just what nights the moon shone so that companies could draw up street lighting contracts accordingly. This sounds comical, but as an Old Timer

remarked, "Many towns, Beaumont included, would have been glad to have street lights in 1932 and 1933 if just on nights when the moon did not shine."

While the electrical distribution system was being built up here in Beaumont, it is interesting to note that ice was the biggest business at first. Ice was shipped to Houston, Lake Charles, Jeanerette, Abbeville, Opelousas, Wharton, Eagle Lake in carload lots before 1900. In addition to this carload ice business, from 50 to 60 sacks and as high as 200 sacks of ice were shipped out per day. Sacked ice was a hundred pound block packed with sawdust in a sack.

The employees had no trouble in getting train switching crews to switch them a car when needed, for the simple reason that all the keg beer that was shipped into Beaumont came here cold and all of it went to the cold storage vaults of the Beaumont Ice, Light and Refrigerating Company. The Company handled the beer by contract from the brewers and retailed it out to the saloons. By occasionally letting a keg of cool beer disappear, . . and an occasional chunk of ice walk off, the switching crews would just naturally give you the car you wanted when you wanted it.

From 1890, or about the time the Company started operating, to 1900, Beaumont grew spectacularly; i.e., by 1900 the Federal census showed 9,427 people. But the tripling of

population in a decade was soon forgotten as Captain Lucas, by his discovery of oil at Spindletop in January, 1901, ended a quest which had been carried on spasmodically in this territory for over a generation.

By May of 1901 Beaumont was really a boom town. The hotels put cots in the lobbies; the saloons never closed; the parlors of residences were rented out to be used as bed rooms. No business, not even the railroads, the postoffice, the stores, had sufficient facilities to cope with the Spindletop-born prosperity. The Beaumont Ice, Light, and Refrigerating Company was no exception so far as the boom was concerned; it was offered more business than it could accept. Imagine the owner of a store or office building coming down and asking to have his lights connected and the manager telling him that he could only have about one half as much as he asked for; it may be hard to imagine but it happened here in Beaumont in 1901 and 1902. The lighting facilities for offices and stores were rationed out but no residences were refused lights.

Those in control of the Company, however, did not let any grass grow under their feet. As the boom boomed in 1901, they moved the office farther up town to a location on the north side of Tevis Street near Pine Street in the downstairs of a building owned by Mr. V. Weiss. Mr. Weiss, one of the principal stockholders, lived upstairs while the office of the Company was downstairs. This building is still standing (1934). To take care

of the business offered, a $150,000 issue of bonds was made to build the Tevis Street Plant. These bonds were never offered to the public, but looked so good to the stockholders that they bought them up. There undoubtedly was plenty of money in Beaumont in 1901. The Tevis Street Plant came on the line in 1902 and stores, machine shops, saloons, sawmills, planing mills and residences were offered all the lights that they would accept.

As sawdust and slabs on a conveyor solved the fuel problem in 1899, an oil pipe line solved it in 1902. The Company built an oil pipe line approximately four inches in diameter from Spindletop to an underground oil tank, thirty feet in diameter and eighteen feet deep, located at the foot of Cypress Street. The pumping force for this line was supplied by a steam engine on Highland Avenue extension which, at present, is the location of the Magnolia Pumping Plant.

As the tumult and excitement died away and the oil wells kept producing, it was evident that Beaumont was going to be an oil center, as well as a cattle and lumber concentration and shipping point. The transaction of all this business required offices and by 1907 there were the following large buildings: Alexander, Keith, Weiss, Gilbert, Perlstein, Kyle Opera House, Temperance and Crosby House. Incidentally, all these buildings used D.C. elevators.

Since things were comparatively stable by 1906-07-08, let

us take a cross section view of the situation through the eyes of O. C. Brandt, an employee of the Company at this time. His duties at different times were "grunting" i.e., assisting the linemen, switchboard tender, and outside trouble inspector.

"Bill Allison was the chief at Tevis Street Plant.

"W. Ruthenborg came here from Milwaukee to install two 220 hp. diesel engines in the Tevis Street Plant.

"The 800 hp. Hardie-Lines steam engine generally pulled the load during the day, and the 1000 hp. Bates-Corliss would also be used during the night peak.

"The D.C. was used primarily for fan-motor service, but occasionally lights would be served from the D.C. where the A.C. lines did not serve that particular locality.

"The D.C. conductors did not give much trouble in a storm, as they were big. The A.C. conductors were smaller, #8 and #14 in some instances. If the A.C. conductors could not be repaired after a reasonable effort when they 'went down' at night, the circuit in trouble was switched off at the power plant and left off until morning.

"Rubber gloves were used; at least, they were available.

"The biggest power customer was the Oil Well Supply Company on Hickory Street between Travis and Main Streets.

"The sawmills in 1907 did just as they do today in many instances, generated their own power by burning sawdust and slabs,

and in some cases made their own lights with a small generator.

"The Company ran advertisements in the newspapers informing their customers that they would get more light for their money if they would keep their lighting fixtures clean. In the same advertisement customers were informed that it was not necessary to wait for their lights to burn out, but if they would just bring the lights in as they acquired that "black look" the Company would gladly replace them free. This practice of free lamp replacement was discontinued about 1910.

"The salaries of linemen, switchboard tenders, and the like, were about $70.00 per month. Any employee received his lights and about 25 pounds of ice per day free.

"Rent on a five-room cottage was about $20.00 per month.

"White cedar poles were used in 1907.

" 'Bad Eye' Ackerman was Line and Service Foreman. He had Harvey Wier and two other linemen working for him. Harry Darrell and O. C. Brandt were 'grunts'.

"The following circuits comprised the Beaumont Distribution System:

One north-end street light circuit
One south-end street light circuit
Three D.C. circuits
Five A.C. circuits

"The arc lights used for street lights were largely the Adams, Bognall and Western Electric.

"Around 1907 the Beaumont Traction Company's generating equipment burned out. They brought their troubles to the Company and Fred Legge, chief engineer, met the emergency by tying two 125/250-volt D.C. generators in series and pulling the street cars as well as the regular load on these generators. This was quite a feat then, and it was written up in the national trade journals. Legge after about two weeks, became nervous. He was afraid the generators might burn out; so the Traction Company hustled up two 600-volt generators, which the Beaumont Ice, Light and Refrigerating Company pulled for about six months or until the traction company could get its own plant going." So much for the picture of 1906-07-08, drawn by O. C. Brandt.

By 1907 Will Carroll, brother of the manager, had acquired his B. S. in Electrical Engineering from Cornell University, and returned to Beaumont to devote his full time to the development of the electrical end of the Company. He had worked around the Company during his summer vacations.

By this time it was evident that the 1100 volt, 133 cycle distribution system was not adapted to a wide distribution of power, and particularly, it was not suitable for the operation of a medium-price, moderate-speed electric motor. It was also clear that it was not practical to expand the D.C. system to take on more power load, since feeding out power any great distance required the conductor size to be too large. The management of the Company was

naturally anxious to connect the power load at Spindletop, and the operators there wanted reliable, flexible, electric power which could greatly reduce the fire hazard. Under the weight of all these facts, two 500 kva., 60 cycle, 2300 volt, 3 phase, Westinghouse turbine units were ordered, and by 1910 they were humming in the Tevis Street Plant. Thus the historical change from single phase, 1100 volt, 133 cycle to 3 phase, 2300 volts, 60 cycle was made. The Company was now ready to go out after local business in a big way.

A lighting service line had been extended to Spindletop in 1901, but this extension of a power line into an oil field in 1910 and 1911, knowingly, or otherwise, was a momentous step. Power business in oil fields was to be one of the main aids in carrying the lines of the Company from High Island on the Gulf of Mexico south, to the hills of Tyler County north, to Bremond in the neighborhood of Waco northwest, and practically to the Mississippi on the east.

The Company, as previously mentioned, owned and operated a pipe line into Spindletop. The Company also at times owned oil wells there, as late as 1915 - three or four producing wells on the Bonnie Moore Lease. It was on these wells that the General Electric Company and the Company collaborated in the development of the two-speed electric motor, later to be used wherever electric power was applied to oil fields.

By 1910, the Federal census showed the City of Beaumont to have 20,640 inhabitants. The population had doubled from 1900 to 1910.

In March of 1911 Beaumont got beyond the wishing stage about the ocean port business. The City voted bonds to deepen the Neches so that ships from the high seas could take on and discharge cargo right here within the City limits. The same year C. W. Kellogg was sent here by Stone & Webster to look the Beaumont Ice, Light and Refrigerating Company over. It looked so good to him that by November 15, 1911, Stone & Webster bought it.

When the Company was purchased from local owners, the new management realized it would be advantageous to move the main office from the Weiss Building on Pearl Street to a place where more room was available. As they cast about for a large centrally located building they saw "Captain" Kidd of the firm of Kidd and Dickinson operating the Opera House Bar. This firm stocked $5,000 worth of choice liquors, was the jobber for Sam Jones whiskey and was the exclusive wholesale agents for Mount Vernon Rye. The building was just what the new management needed so the saloon and liquor stocks moved out and the new Beaumont Electric Light and Power Company moved in.

After the installation of the 60 cycle, 3 phase system, the load grew rapidly as a wide application of the electric motor was soon made in sash and door plants, machine shops of all sizes,

bottling works, etcetera. The growth was so rapid that it was perfectly evident that more capacity would be demanded. By 1914 the A. C. power available from the Tevis Street Plant was doubled by the installation of a 2,000 kva., 3 phase, 60 cycle, 2300 volt Westinghouse turbine generator.

As the organization settled down after the excitement of getting this 2000 kw. turbo alternator on the line, the World War broke out during August of 1914. Many people can remember how we were afraid nothing could be sold due to submarine blockade, but the demand for goods for the warring countries spread and spread until it finally reached Beaumont. This demand of Beaumont goods and services for carrying on the World War was well personified by an Italian who came to Beaumont about 1916 and built three or four ocean-going boats for the Italian Government. These boats were built on the extreme neck of the present Beaumont wharf property. As a matter of course, this war demand for goods increased the demand for power.

So, in April, 1917 when the United States entered the holocaust, many of us remember how they contracted to buy almost anything that looked like a boat. So, soon Beaumont blossomed out with the following shipbuilding firms on the banks of the Neches River:

McBride and Law, at the foot of College Street. This firm received the first government contract in Beaumont for wooden ships.

Tarver Shipbuilding Company, located at Buford and Wallace

Streets.

McCameron Shipbuilding Company at the foot of Hickory Street.

Lone Star Shipyards across the Neches from the present Beaumont wharf warehouses.

Beaumont Shipbuilding and Drydock Company located on the present site of the Pennsylvania Shipyards.

Thus was Beaumont catapulted into the shipbuilding business.

This building of ships required power and lots of it. A special 2300 volt feeder was run to the Beaumont Shipbuilding and Drydock Company. A 13 kv. feeder was built to serve the Lone Star Shipyards. This 13 kv. line was carried across the Neches by means of an underground cable. When this line was completed, there were no 13 kv. lightning arresters available to protect the pothead and cable, so a string of 2300 volt lightning arresters were tied in series, the power turned on, and the new line burnt down as the string of lightning arresters arced to ground.

Beaumont Iron Works were getting their share of the business so they installed the second electric iron furnace in the South. To serve this large block of power, a 13 kv. feeder of No. 4 weatherproof was extended from Tevis.

It took no genius to see that the 3000 kw. plant at Tevis and Travis Streets could not serve this beehive of activity, so the 33 kv. line, No. 1 was built between Beaumont and Port Arthur along the

interurban right-of-way. In this way, the Company was forced by the war into the intercity transmission of power.

It was originally planned to extend the 33 kv. line all the way from Lakeside Plant in Port Arthur to Tevis in Beaumont, but the City officials of Beaumont frowned and a compromise was made. A 13 kv. was used from Yankee Doodle Substation on Church and Ector Streets to Tevis Street. This stretch of 13 kv. line was changed to 33 kv. in 1924.

In the spring of 1917, the set-up in what we now call the Transmission and Distribution Departments was something like this: W. I. Sturtevant was operating manager; Knox Lee was meter and service foreman. Men assisting him were one combination meter tester and installer, Bob Ramey, who later worked on maintenance of electric motors at Magnolia Plant; one meter reader, one combination trouble shooter and street light man; one trouble shooter, W. E. Herrin, and J. O. Potts, line foreman, who had two crews - one for light and power and one for the street railway. Both crews used wagons and mules for conveyance. The wagon and mules for the railway crew were not replaced by a truck until 1926, as the streets where some of the street railway ran got very muddy.

The first truck for the light and power crew was bought in 1921. In 1916 and 1917 during the daytime until 5 o'clock the meter installer would use an old Hupp car, formerly used by a previous

manager, Mr. Emerson. At 5 o'clock, the trouble shooter would take the Hupp and use it, but a horse and buggy were kept available, as at this date cars were not so reliable. Sometimes when the operating manager wanted a car, he would come down and take this meter installer's Hupp and make his trip, as the Company did not furnish him a car. Later in 1917, two Ford Roadsters were bought, one for the meter installer and one for the trouble shooter. These were the first cars the Company bought strictly for business.

As many can well remember, the war played havoc with the smoothest functioning personnel. The Company's employees one by one went into the Army or more often took jobs in the local shipyards where in many cases the wages were double what they were previously making. There were but four men in the Distribution Department who worked for the Company throughout the war. They were Joe Potts, Wiley Garrett, Harvey Wier and Bob Ramey. Occasionally "boomers", or transients, and even boys would be hired, but none would stay long. Naturally under the conditions little could be accomplished. When a line burnt down, or anything happened, the four above-mentioned, experienced men would have to gang up and do the job as best they could.

As the war ended November 11, 1918, so did the shipbuilding boom. The ships were burned, junked, sunk, sold or left to rot. As the men left the shipyards and as the Army and Navy began

to return men to civilian life, enough old employees were rehired and new employees added to fully man the organization.

It was generally supposed that, as we had denied ourselves many things to successfully execute the war, business would be good for a number of years. At first, it was, due to the making of goods for the anticipated buying. But as 1920 and 1921 came along the famous "Buyers Strike" was a grim reality; and prices, debts, unemployment, bankruptcies went through what some people call "a normal adjustment".

During this "normal adjustment", the Company had to rest on its oars and let the demand for power grow until it had caught up with the power plant capacity made available by tying together the Port Arthur Plant and the Tevis Street Plant. Business was so bad, relatively speaking, that no large undertaking was made by the Company from 1917, when the first high line was completed, to seven years later in 1924, when No. 2 high line was built down the highway to Port Arthur. This second high line was the answer to the operating man's prayer - and curses.

The Tevis Street Plant could not supply all of Beaumont with power except late at night. Even then it was the practice to bank the fires in Beaumont and let the load be carried by Port Arthur after the night peak load had passed. But in case of lightning or trouble, the generator in Tevis Street Station would be put on the line.

If this high line to Port Arthur "kicked out" at a time during the day when the Tevis Street Plant could not carry the load, the Beaumont operators did the best they could and that was not very much. As the line went out the operator would look at his load-indicating instruments and see how much load he had to pull off to keep from burning up his generators. Then he would switch off lights and power circuits that feed various parts of town until the load was decreased to what the Tevis Street Plant could safely carry. If the high line was going to be off for several hours, it was not the policy to leave certain sections of town continually without lights and power, (all sections were treated alike) as certain sections would be given lights for thirty or forty minutes, their lights switched off, and the lights turned on in another area. Imagine the pandemonium of taking care of customer trouble calls under a situation like this, and think how our reliability of service was increased as #2 high line was built to Port Arthur in 1924.

By 1923 and 1924 the spectacular post-war rise of the automobile had definitely pulled business out of its mud hole; and as there were large refineries in Beaumont and Port Arthur, the Sabine district rode the crest of the automobile's prosperity wave. Gone were the days when gasoline was a nuisance at the Magnolia Refinery and had to be stored until the Neches spring rise when it would be dumped into the river by the train load to be carried out to the Gulf.

As the refineries grew, the towns of Port Arthur and Beaumont grew, and the Company's load grew. By 1923 and 1924, as the load kept growing, talk of a new power station, or more often, talk of increasing the size of existing power stations, bobbed up. The background for the necessity of additional capacity was something like this: Since 1910 the annual load growth had been ten to fifteen per cent, and the peak load exceeded the combined Port Arthur and Beaumont plant capacity with the largest unit "out". The Stark's interest in Orange was threatening the territory by selling power to the Humble Company right across the Neches River from the Company's customer - the Atlantic Pipe Line Company at the mouth of the Neches - and by quoting rates on a large irrigation pumping load near Voth. The pipe line and oil load at Sour Lake, Saratoga and Batson was looming up. It was rumored that the Stark interest was going to put in still larger plant in Orange. So, under the weight of all these facts, the Company got busy, made a study of the situation and decided to install additional capacity in the Lakeside Plant at Port Arthur. This appeared at that time to be the logical place as it was believed that a large part of the Gulf and Texas Refineries of thirty or forty thousands kw. load would some day be connected to the Company's lines.

So the matter stood until E. S. Fitz arrived on the scene. Evidently Fitz pondered these things - the eventual system would

extend from central Texas to Baton Rouge, taxes would be higher if a large plant were built in Port Arthur, and little room would be available for future extensions. Thus he conceived the idea of the Neches Station, and in September of 1926 the 21,000 kva. turbo generator unit began to sing its song.

As the station was completed, line #6 from Beaumont to Sour Lake, which had been operated 33 kv. out of Yankee Doodle, was energized at 66 kv. In 1926 the Neches-Sabine high line #5 was completed, tying Louisiana and Texas together in a transmission system.

In the language of the street, things around Beaumont were "popping, and how they popped". There were new high lines, the second discovery of oil in Spindletop, the building of the Neches Station, the acquisition of the Orange property, the announcement of the plans to more than double the capacity of the Neches Station, the construction of the Goodhue Building, the LaSalle and Edson Hotels, the American National Bank Building, the Jefferson Theatre, a new City Hall, and extensive street paving. Yes, things were moving. Then October of 1929 came along, and things agained "popped" - but not the same way.

Industrial expansion ceased or rapidly slowed down its rate of increase. The office boys in the United States found out it would be several years before they would be Vice Presidents of their respective companies. In other words, the retrenchment began.

It does not take a "Pollyana" to see that the slackening demand of industry for power was a mixed blessing. The question naturally arose that if industry would not buy all the power the Company had made available, why couldn't the home and commercial establishments be shown the advantages of lighting up and doing it electrically.

The background for the electrical home and commercial establishments in the Sabine District up to 1929 was something like this: In 1920 one electric range was installed on Wall Street. About the same time an electric hot water heater, attached to the water faucet, was sold in an apartment on College Street. In 1925 the Lutcher Memorial Church in Orange installed an electric refrigeration cooling system with thermostatic control. In 1927 the Jefferson Theatre was cooled by electric refrigeration. In 1926 you could hardly tell the roster of the Country Club from the list of electric refrigerator owners. But all this was changed by 1929 when the Company's Commercial Department worked out the full use rate, that is, a rate that made electric cooking and refrigeration really competitive. Then in 1933 a competitive water heating rate was developed.

The following tabulation speaks for itself and points out the local development of electric service:

TOTAL CUMULATIVE NUMBER OF ELECTRICAL APPARATUS

INSTALLED IN BEAUMONT AND VICINITY

Date	Range	Refrig-erator	Water Heater	Air Conditioning	Dishwashers Domestic
1927				Jefferson Theatre	
8-31-30	99	886	15	"	"
8-31-31	204	1513	33	"	"
8-31-32	315	1859	41	"	"
8-31-33	356	2282	40	Carroll Residence on Calder Ave.	
8-31-34	469	3061	59	Black Cat Cafe	2
8-31-34				Worth's Women's Store	

Thus we trace the trail of electric service in Beaumont that started as a side line with a company whose major business was ice manufacturing in a town of 3,000 population in 1829. By 1900, 10,000 people called Beaumont their home. 1901 came along and the Company still grew. In 1910, with the installation of the 3 phase, 60 cycle, 2300 volt equipment, a wide industrial application was made feasible. The World War demand for lumber, ships, rice and oil had by 1920 developed a town of 40,000 population for the Company to serve. Another result of the war was the Company's transmission line to Port Arthur. In 1923, 1924 and 1925 the motor car manufacturers had convinced most of us that we ought to buy cars on the installment plan. As more people bought cars more gasoline

was required and Beaumont and Port Arthur grew again, and the Company grew with these towns, which were operating refineries, oil fields, pipelines, etcetera. So by 1930, the Company was serving Beaumont, a town of 57,000. At this time the fuel used for power generation was natural gas, pumped over 200 miles, instead of sawdust and slabs. Elapsed time - about 45 years.

ADDENDUM - 1955

There is no end to this story of electric service in Beaumont. The history of this service is being traced day by day across the landscape of our growing city in ever expanding lines and loops - with some of them even running under our streets and buildings - that story still remains to be brought up to date.

Since Mr. Coltharp's compilation in 1934, however, several significant changes have occurred in the Gulf States corporate structure. These changes are pertinent to this historical sketch since Beaumont is the home office of the now "grown-up" company whose inception and growth were controlled to a large degree by Beaumont men.

In 1938 the Baton Rouge (Louisiana) Electric Company was merged with Gulf States. This Louisiana company, in addition to being an electric system, also operated a gas system and a process steam plant in connection with its power generating station. Its electric transmission and distribution system covered an area

from the Atchalafaya River east to Holden and from Sorrento on the south to the Mississippi state line on the north. This company, like Gulf States, was a subsidiary of Engineers Public Service Company.

Engineers, as the parent company was called, was created in 1930 by Stone & Webster to assume direct management of a number of Stone & Webster operating companies. In 1937, however, Engineers became disassociated from Stone & Webster and became the sole "parent" company of Gulf States as well as a number of other operating companies.

Then under provisions of the Holding Company Act of 1935, Gulf States in turn was disassociated from Engineers, becoming thereby an independent company in 1947.

Gulf States is still today an independent operating company, neither owned nor controlled by any other company. Its owners are some 14,000 individual and institutional investors living in all 48 states. It is a Texas Corporation with headquarters offices in Beaumont, managed by officers and directors who live within the Company's service area, with a number in fact being residents of Beaumont.

Through the processes of integration and expansion, Gulf States now serves an area formerly served in part by more than 60 smaller companies. This area encompasses over 28,000 square miles in Central East Texas, Southeast Texas, Southwest and South

Central Louisiana. There are 37 counties and parishes with 291 cities, towns and communities served in this area. The population served is over 775,000. Beaumont, with its more than 104,000 inhabitants, is the second largest city in the Gulf States territory.

A single, integrated electric system of more than 10,000 miles of transmission and distribution lines adequately covers every section of the service area. These lines are fed by four interconnected power plants which can produce 17,400,000 kilowatt hours daily. Another 111,000 kilowatt generating unit will be going "on the line" at the Sabine area's Neches Station in March, 1956 to increase the capability still more. The new unit at Neches will bring this one station to a capability of 375,000 kilowatts - quite an increase over the Fort Wayne Jenny series arc, single phase generator in the Cypress Street "Neches Station".

As of May 31, 1955 the Company serves a system-wide total of 245,527 electric customers. In Beaumont there are 29,693 residential, 4,512 commercial, and 60 industrial customers, making a total of 34,265 for the city.

Overall GSU has 2,478 employees, including some 80-90 in the gas department at Baton Rouge. With Beaumont being general headquarters as well as division and district offices, a greater proportion of employees work here and altogether, 830 men and women work in or out of Beaumont offices. During 1954 the some

2,400 employees were paid more than $11,000,000 in salaries and wages.

In 1934 when the preceeding history was written, the total plant investment in Gulf States was $35,100,000. A good indication of the growth of the Company in the intervening years is shown by the May 31, 1955 plant investment total of more than $246,500,000.

The men now guiding the corporate affairs of this public service institution are:

Directors - Munger T. Ball, Port Arthur; William R. Bell, Beaumont; Thomas J. Hanlon, Jr., Prairieville, Louisiana; Harold C. Leonard, Baton Rouge; Roy S. Nelson, Beaumont; Will E. Orgain, Beaumont; C. Vernon Porter, Baton Rouge; Edward H. Taussig, Lake Charles.

Officers - Roy S. Nelson, President; William R. Bell, Vice President, Beaumont; Harold C. Leonard, Vice President, Baton Rouge; Ralph E. Cargill, Vice President; Henry V. Faber, Vice President & Treasurer, Beaumont; George R. Fulton, Vice President, Lake Charles; William H. Gieseke, Vice President & Secretary; John J. Morrison, Vice President; Louis F. Riegel, Vice President; E. L. Robinson, Vice President, Beaumont; and L. V. Smith, Vice President, Baton Rouge.

Truly we in the fabulous Gulf Coast area have seen great progress since the old Beaumont Ice, Light, and Refrigerating Company emerged in 1889 to bring electric lights to the 3,000

inhabitants of Beaumont. And today, as in the beginning, Gulf States aims for even greater fulfillment of the heritage the genius of Thomas Edison passed down to us with his incandescant lamp and the other electrical inventions he perfected to implement its operation.

J.M.S.
June, 1955

NAME CHRONOLOGY

1888 - Beaumont Ice, Light and Refrigerating Company organized - $50,000 capital.

1911 - November 15th, bought by Stone & Webster and name changed to Beaumont Electric Light and Power Company.

1918 - July 8th. As Texas law forbids a power and light company to engage in other business, but did allow a traction company to sell power and light to people that lived along its tracks, the Jefferson County Traction Company,* which owned the interurban between Beaumont and Port Arthur, changed its name to the Eastern Texas Electric Company and took over the power and light business in Beaumont and Port Arthur.

1925 - In August the Western Public Service Company was bought.#

1925 - In September the Gulf States Utilities Company was incorporated to buy and own:

Orange Ice, Light & Water Company,

Port Arthur Ice Company, (December)

Silsbee Light, Water & Ice Company
(March, 1926)

Hull and Daisetta Light Company
(April, 1926)

*Organized August 2, 1912.
#All WPS Co. property remaining after this purchase acquired in April. 1929.

1927 - August, the Charter of the Gulf States Utilities Company was amended so that it could spread out and the Louisiana properties [Ø] were officially taken in, although they had been previously purchased.

[Ø] and the light and power properties of E. T. E. Co.

OFFICE LOCATIONS OF

LIGHT AND POWER INDUSTRY IN BEAUMONT

1. 1869, present Crystal Ice Plant on Cypress Street, i.e., 1934.

2. Small building directly across street from present Crystal Ice Plant, where mule barn is now located on Cypress Street, 1934.

3. 1900 or 1901 to V. Wiess property on Tevis Street, next door to feed store on Pine and Tevis, and on North side of Tevis.

4. A few years later to V. Wiess building at Pearl and Liberty where Ryder Furniture Company is nowlocated (1934). A partition separated the Texas National Bank and the Beaumont Ice, Light, and Refrigerating Company. The bank occupied the corner.

5. After 1911, when Stone & Webster bought the property, offices were moved to present location on Liberty on the north side of Liberty Street about half way between Pearl and Orleans Streets (1934).

PRESIDENTS OR MANAGERS

1893-1902 - John C. Ward, Manager, came here from Corpus Christi where he ran an ice plant. He always lived within a block or so of the plant and could be obtained on short notice. Moved out of city.

1902-1911 - Or until Stone & Webster took over - Joe E. Carroll, Manager.

1911-1916 - Emerson - died 1916.

1916 - Ray Carroll, auditor for short time - 3 or 4 months. Ray Carroll was not related to J. E. Carroll.

1916-1924 - Townsend. Left to become Manager at Fort Worth.

1924-1929 - J. G. Holtzclaw - left to become President of Virginia Company at Richmond.

1929- 1942- Tom P. Walker - Left to become the first chairman of the council of Electric Operating Companies with offices in Washington, D.C.

1942 - Roy S. Nelson

SEQUENCE OF MEN IN CONTACT WITH ELECTRICAL DISTRIBUTION & TRANSMISSION

1889-95 - G. W. Tuggle quit and put in a shop of his own. John Parker, engineer in plant, hard-knock man.

1901 - Lomax worked around the system. Fred Legge came from Eagle Pass. Later went with Brush in Galveston, got in with John Seely and is now president of Magnolia Gas Company.

1906 - Bill Allison was plant chief. "Bad Eye" Ackerman was Line Foreman and Service Foreman.

1907-11 - Will Carroll, Supintendent of Electrical Department, brother of manager, E. S. in E. E. from Cornell, who worked around the plant during vacations had complete charge of all electrical equipment to 1911, now manufactures electrolyte in Dallas and owns Army Goods Store.

1916-20 - W. I. Sturtevant was head of all light and power operations. Now he is general engineer at Pawtucket (1934).

J. O. Potts went to work for railway in 1913, became Line Foreman in 1916 of railway and light and power.

1916 - Set up - Sturtevant's aids:

1 - mule team for light and power wagon.
1 - mule team for street railway crew.
11 men made up both crews

Knox Lee was Service and Meter Foreman.

1 - night trouble man - W. E. Herrin, who is the present service foreman (1934).
1 - meter tester - Harvey Wier, who is maintenance man of motors for the Magnolia Petroleum Company.
1 - meter reader - Ivy Barrow, who is deceased.
1 - street light man that also shot trouble - J. W. Brady.
1 - meter installer - Bob Ramey, who now owns gin in Beaumont.

1920 - H. E. Braunig became head of transmission and distribution in Beaumont when Sturtevant left.

1923 - Position of operating manager created and filled by Joe Bowes, who was up until then manager at Port Arthur.

1924 - E. S. Fitz - succeeded Joe Bowes as operating manager.

1925 - Mike Merriam, first superintendent of distribution in Beaumont.

1926 - W. V. Holik succeeded Merriam as superintendent of distribution, Beaumont.

1926 - Edgar Granau, first superintendent of transmission.

1926 - Wendell Brown became the head of the Engineering Department.

1927 - A. E. Beattie succeeded Edgar Granau.

1929 - C. F. Terrell succeeded E. S. Fitz as operating manager.

1929 - E. C. Adams succeeded Wendell Brown as head of the Engineering Department

1935 - R. E. Cargill succeeded W. V. Holik as superintendent of distribution.

1940 - H. E. Braunig succeeded C. F. Terrell insofar as transmission and distribution operations were concerned.

1942 - R. E. Cargill succeeded H. E. Braunig with a title of system operating superintendent.

1946 - R. E. Cargill was named system operations manager, a newly created position.

1946 - C. M. Scott was named operating superintendent for the Beaumont division, a newly created position.

1950 - A. E. Beattie succeeded E. C. Adams as head of the Engineering Department with a title of engineering manager.

1954 - J. B. Coltharp succeeded C. M. Scott as Beaumont division operating superintendent.

1954 - R. E. Cargill was named operations and engineering manager in December, 1954, assuming the managership of the engineering department, in addition to other duties, upon the death of A. E. Beattie. Cargill was named vice president in May, 1955.

ELECTRICAL CHRONOLOGY

1862 - First commercial electric light, an arc lamp in Dungeness Lighthouse in England. Probably consumed about 19 amperes at 45 volts and probably required one and one-half horsepower to drive it. Generator designed by a Belgian named Nollet.

1876-77 - Jablochoff lighted the boulevards of Paris, France with an electric candle, i.e., a series A.C. arc light system. A.C. was used because D.C. consumed the two carbon sticks unevenly.

1877 - Electric arc light systems were available in the United States and Europe and the necessity of a smaller electric light than the arc was apparent.

1879 - Edison made his parallel circuit fed by a D.C. dynamo practical and had developed a suitable carbon lamp.

1880 - The steamship Columbia of the Oregon Railway and Navigation Company was equipped with two D.C. dynamos that fed parallel circuits. Each dynamo had a capacity for about sixty lamps or was about a 6 kw. generator. The plant was started May 2, 1880. This plant operated successfully for fifteen years. This was the first commercial installation of the parallel D.C. circuit.

1881-82 - In the following two years over 150 installations of this D.C. system, totalling over 30,000 lamps, were made in everything from machine shops to residences.

1886 - First commercial installation of the A.C. parallel system was made in Great Barrington, Massachusetts, where it was first used to light stores. The system was 1100 volts primary, 50 secondary, 133 cycles.

1889 - By this time there were about 100 A.C. plants in the United States. Beaumont Ice, Light and Refrigerating Company fired up in 1889 with a 133 cycle, 110 volt, single phase, Slattery induction generator and a Fort Wayne Jennv Arc Series generator. Transformers were 1100/V/52 V secondary. Steam was generated from sawdust and slabs from the Texas Tram and Lumber Company.

1894 (about) - A D.C. generator was installed to pull fans and motors as the 133 cycle A.C. motors were noisy and expensive. Sawmills and planing mills were anxious for good motors.

1901 - In January oil was discovered but the boom did not become great until May of 1901. The Company was offered more business than it could accept. Office lights were rationed out. No residences, however,

were refused service.

Tevis Street Plant was started as a direct result of the Spindletop boom. $150,000 bonds were authorized when this Tevis Street Plant was completed. in 1902. Everyone was offered all the service they would accept.

1901-10 - An 800 hp. cross compound Hardie-Tines-Corliss engine and a 1000 hp. Bates-Corliss engine drove a line shaft by means of a rope belt from their fly wheels to the shaft. The shaft was in two segments and could be divided by means of a clutch. This 800 hp. Hardie-Tines engine generally pulled the load during the day and about night the 1000 hp. Bates would be put on the line. It was pulled off about 10 o'clock as the load dropped off.

The following electrical equipment was belt-driven from this main steam driven line shaft:

1 - 100 kw., 1100 volt, 133 cycle, Warren alternator.

2 - 400 kw., 1100 volt, 133 cycle, Westinghouse alternators.

2 - 150 kw., 125 volt, Triumph D.C. generators.

2 - 100 kw., 125 volt, Westinghouse D.C. generators.

The four D.C. generators were still in service in the Tevis Street Plant in 1934.

The 2 - 400 kw. alternators were sold for junk in 1912. Ike Tevis helped the junk dealer to dismantle them to get the copper out of them.

The Hardie-Tines engine was sold for junk in 1912.

The Bates-Corliss engine was sold to an unknown saw-mill or lumber company in 1912.

In 1906 W. Ruthenborg came here to install two 220 hp. diesel engines that were direct connected to a 300 kw., 115-230 volt Edison D.C. generator. O. C. Brandt was Ruthenborg's helper. This set was bought complete with balancing set, switchboard and air compressor for starting. The air was compressed to 1100 pounds by a 75 hp. diesel. The idea in installing these diesels was to take the D.C. loads off the steam driven line shaft. These diesel engines, however, were never quite satisfactory. In attempts to make them satisfactory, complete new cylinder heads for them were cast here in Beaumont. In 1916 one of these engines was sold to someone near Sugarland to drive an irrigation pump. The other engine and D.C. generator were sold to someone in North Texas to be used in a small town electric plant.

1910 - Two 600 kva., 60 cycle, 3 phase, 2300 volt Westinghouse steam turbine generator units with a 450 hp. Westinghouse synchronous motor were ordered in 1909. This motor was to drive the two Triumph D.C. generators. All this equipment is still in the Tevis Street Plant. (1934). By the purchase of these two turbine generators the historical change from 1100 volt, 133 cycle to 2300 volt, 60 cycles, was made one day at noon.

1913 - One G. E. 1200 volt, 300 kw., D.C. generator and 435 hp. synchronous motor was bought to supply power to the interurban line of the Jefferson County Traction Company. This equipment was in the Tevis Street Plant in 1934.

A G. E. 600 volt, 300 kw. motor generator set was purchased to supply power for street car operation. This machine was bought second hand from Waxahachie, Texas, when Stone & Webster bought the Beaumont Traction Company which was in the hands of the Receiver. It was in service at the Tevis Street Plant in 1934.

1914 - One 2000 kw., 3 phase, 2300 volt, 60 cycle Westinghouse generator unit and one G.E. 500 kw., 600 volts.

D.C. railway motor generator set were purchased.

1915 - One 500 volt, 300 kw., D.C. generator direct connected, 450 hp. Hamilton-Corliss engine was purchased from the Beaumont Traction Company. This unit was installed where the old Hardie-Tines engine was. After a very short period of operation the generator burned up and the engine was sold for junk.

1917 - Number one high line that runs along the old interurban line from Port Arthur to Tevis Street Plant was put into service. It was planned to make this line 33 kv. all the way but the City officials of Beaumont frowned and the line was made 13 kv. from Yankee Doodle to Tevis Street Plant - thus the advent into transmission was made. As Port Arthur had larger and more efficient equipment, after 9 or 10 o'clock at night the fires under the Beaumont boilers were banked for emergency and all the Beaumont load was carried by the Port Arthur Plant. A 13 kv. line was built to serve the furnace and power load at the Beaumont Iron Works.

A 13 kv. line was built to serve the Lone Star Shipyards which was located at that time across the Neches River from the present Cotton Compress (1934).

The river crossing was made by means of a 13 kv. cable. This line was built under wartime emergency and as no 13 kv. lightning arresters were available, some 23 kv. lightning arresters were connected in series to protect the cable. As soon as this line was made hot it was burned down by the lightning arresters "going to ground".

1921 - One 500 kw., 600 volt, D.C. General Electric motor generator set similar to the set purchased in 1914 with the 2000 kw. turbine was purchased.

1924 - Number two 33 kv. high line was built along the Beaumont-Port Arthur highway.

1925 - Neches-Dayton 66 kv. line was built - Line #6. This line was operated as 33 kv. line out of Spindletop until Neches Station was built.

1926 - On a 63 acre tract of land on the Neches River one mile below the Magnolia Refinery, in September, 1925, a 13,200 volt, 60 cycle, 21,000 kw. Westinghouse turbine generator unit was put on the line - thus Neches Station enters the picture.

1926 - Neches-Sabine line number five was built from the Neches Station to Orange.

1923 - In May, 1928, the second unit, a Westinghouse

13,200 volt, 60 cycle, 36,500 kw. turbine generator was completed at the Neches Station.

1930 - Line number 66, a 66 kv., H Frame was completed from Neches to Dayton.

ADDENDUM

1938 - In May, the third unit, a Westinghouse 13,200 volt, 60 cycle, 27,500 kw turbine generator was put into commercial service at Neches Station bringing the station's rated capacity to 85,000 kw.

1946 - Downtown services began being prepared for eventual connection to an underground electric system.

1949 - World War II occurred during the years since Unit No. 3 was added to Neches Station. However, as soon as the War was over, work was begun on the fourth addition and in April, 1949, a Westinghouse 13,800 volt, 60 cycle, 40,000 kw turbine generator was put "on the line". The name plate rating of the station is now 125,000 kw.

1949 - During the first week of July, a 138 kv, H-Frame "backbone" transmission line extending from Baton Rouge's Louisiana Station was cut into service at Neches Station. This big line interconnects the Company's major generating stations at Baton

Rouge, Lake Charles and Beaumont, having a combined capacity of 268,000 kilowatts. The length of the line at this time is 186 miles.

On July 17 another 53.5 mile section of this 138 kv line was put into operation between Neches Station and Dayton.

1949 - During July, GSU's residential customers' average annual consumption passed the 1400 kilowatt hour mark. Ten years to the month prior to this, the consumption figure passed the 1000 kwh mark.

1950 - On May 11-12-13, 3,700 visitors attended an Open House dedicating GSU's new million dollar Beaumont Division Service Center located on an eight-acre site bounded by Eleventh, Oxford and South Streets. Using wire cutters, Mayor Otho Plummer cut the "ribbon", which, appropriately was a piece of electrical conductor strung between two oil circuit breakers. The Service Center, composed of six buildings, replaces quarters housed in the old power plant and other buildings situated on the four corners of Tevis and Travis Streets. Some 300 men and women will work in or out of this center. Completion of this project was a highlight of the 25th Anniversary of "Gulf States Utilities Company".

1950 - Construction of a main duct system and transformer vaults for a "downtown" underground electric system was begun. The system will be fed from Travis Substation. Eight single vaults with one 500-kva transformer in each and two double vaults with two 500-kva units each are planned. Primary feeders will be 4,160 volts and secondaries will be 120/208 volt 3-phase, 4 wire.

1951 - A Beaumont substation crew began installation of cable and transformers in the "downtown" underground system during the early part of the year.

1951 - During the closing days of March, the fifth unit, a Westinghouse 13,800 volt, 60 cycle, 60,000 kw turbine generator went into operation at Neches Station. This new unit brought an inovation to the GSU system with its outdoor boiler section. The "capability" of the station was increased to 198,000 kw with this unit.

1951 - A 75 mile, 69,000 volt line designed for 138 kv operation was put into service from Beaumont to Woodville during September.

1952 - During the early part of the year the last customer between Main and Orleans on Forsythe and Pearl between Forsythe and Fannin was connected to the

underground system. Overhead lines that had served this "downtown" area for more than half a century were removed.

1952 - The first rate hike in GSU history went into effect in May. Residential rates were increased about 15.8% on the average. Commercial rates went up slightly more. The last step on the residential rate is now 2.35¢ per kwh and 2.90¢ on the commercial rate.

1952 - No. 6 unit at Neches Station was put into operation during May. This, a Westinghouse 13.8 kv. 60 cycle, 66,000 kw capability unit increases the station's capability to 264,000 kw.

1953 - A 3,750 kva mobile substation with taps permitting voltage combinations between 69 and 2.4 kv was put into operation in the Beaumont division. The unit is a semi-trailer weighing 24 tons and contains practically all equipment found in the permanent steel structured substation.

1953 - Beaumont became the first metropolitan city in the GSU system to attain the 2,000 kilowatt hours per home customer mark with an average residential usage or 2,045 kwh in March.

1954 - The 200,000 residential customer was connected to GSU lines during March. Significantly this connection occurred during the electric industry's 75th Anniversary. This brings total customers on GSU lines to 230,100.

1954 - On May 1, a new low step on 1 1/2¢ per kwh became part of GSU residential rates. Customers with high load factors using over 600 kwh a month are eligible for this, the lowest rate ever available for residential users. Other downward adjustments were also made in certain steps of this rate.

1954 - On October 21, ground was broken for a new 111,000 all-outdoor type turbo-generator addition to Neches Station. The first spadeful of dirt was turned by Kenneth Moore, age 6, assisted by President Roy Nelson. Young Moore is the grandson of S. E. Moore, Neches employee, who began his career with the old Beaumont Traction Company in 1910.

1954 - A 69 kv, 3 phase line was completed from Neches Station to Orange. A "high jump" across the Neches River near the plant was a feature of this line. Two 261' high steel towers with 50'-55' crossarms support a 1100' span a minimum of 195' above the water.