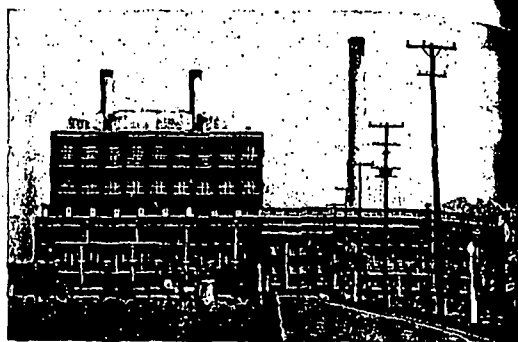


Jacksonville, Florida will use preferred standard turbine-generators with one boiler per turbine arranged on the unit system. Semioutdoor design places 850-psig 900-F boilers, fans outside

By HERBERT McCLAMMY
Mechanical Engineer, associate
of Reynolds, Smith and Hills



TALLEYRAND AVENUE PLANT with five turbine-generating units totaling 81,500 kw installed capacity is the largest municipally owned generating station in South



FLOATING POWER PLANT "INDUCTANCE" with 30,000-kw. capacity was added to Jacksonville system in 1945 to help carry rapidly growing load. Originally leased, it was bought from the federal government in 1946 for price of \$2,500,000

One of South's Largest Municipal Utilities Plans 60,000-Kw Station

FROM A BEGINNING IN 1895, when the City of Jacksonville took possession of a new plant in Waterworks Park, the electrical system of the city has grown to be one of the largest municipally owned utilities in the South. Increasing demand for service rendered the original plant wholly inadequate by 1911. Construction of the Talleyrand Avenue Station was initiated and completed at a cost of about \$635,000. When this plant started operating on Oct. 12, 1912, the Waterworks Park plant was converted to a substation.

The initial Talleyrand Avenue Station consisted of two 1500-kw generating units supplying power at 6.6 kv. Subsequent installations were: two 1500-kw units and one 4000-kw unit No. 4 in 1918; raising station capacity to 10,000 kw. The latter unit, still in place, has sometimes aided in carrying the peak load.

The four 1500-kw sets have been displaced by these units: No. 1, 10,000 kw on Mar 14, 1921; No. 5, 12,500 kw on Sept 24, 1924; No. 6, 25,000 kw on Jan 2, 1928; No. 7, 30,000 kw on Mar 7, 1939, bringing station capacity to its present 81,500 kw. Station voltage was changed from 6.6 to 13.2 kv with the installation of No. 1 unit.

Increasing service demand and wartime construction restrictions accelerated equipment depreciation. Lack of labor was reflected in the serviceability of equipment; in 1945 No. 4 was no

longer considered safe for operation and has not been used since.

Floating Power Plant. It became necessary to lease from the federal government one of the four 30,000-kw floating power plants, the "Inductance," built for just such emergency service. This plant raised system generating capacity available for service to 107,500 kw and the net assured capacity (largest unit out of service) to 77,500 kw. Thus the city avoided the possibility of rationing power to certain industries.

After an appreciable rental had been paid for the floating plant for about a year, the commissioner of utilities, George A. Pierce, instituted negotiations ending in its purchase by Jacksonville in 1946. This resulted in an increase in the city's over-all revenue.

Graph on page 90 shows the system load growth from 1931 to date, and expected future expansion together with proposed capacity additions. The city has long contemplated utility additions to promote further development of Jacksonville and the surrounding territory, page 89, industrially and residentially. In 1947, \$15,000,000 in Electric Revenue Certificates were issued to finance the construction of 60,000-kw additional generating equipment, substations, underground and overhead distribution, and the modernization of existing equipment.

New Generating Plant. In South Jacksonville on the St. John's south

bank, p. 89, the new plant will be designed for base-load service to deliver 60,000 kw at 13.8 kv less losses to an outside substation. Each turbine will be supplied by its own boiler arranged on the unit system. There will be an emergency interconnection between boilers, any feedwater pump of the two units can serve either boiler. The 30,000-kw 85%-pf Westinghouse turbine generators will be built according to the preferred standards promulgated by AIEE and ASME.

Provisions will be made for the future addition of two 30,000-kw units. Should conditions warrant, these units could be 40,000 kw each installed in the same space.

The two oil-fired boilers will have a continuous rating of 300,000 lb per each at 850 psig, 900 F. Each unit will have waterwalls, superheater, air heater, superheat control, steam purifier, soot blowers, combination oil and gas burners and steel casings for outdoor protection.

Fuel Handling. Three 62,000-bbl oil storage tanks will realize savings in fuel cost by bulk purchase of complete tanker loads at one time. Full tanks will supply fuel for over 30 days of normal operation. If plant capacity is eventually doubled only one additional tank need be built.

A concrete slab over a substructure supports each tank. An earthen dyke surrounding each tank will hold its contents in case of leakage. An oil

transfer pump house will be provided at the bulkhead line adjacent to the loading wharves.

A T-shaped wharf will accommodate tankers and barges being unloaded at the eastern end of the plant.

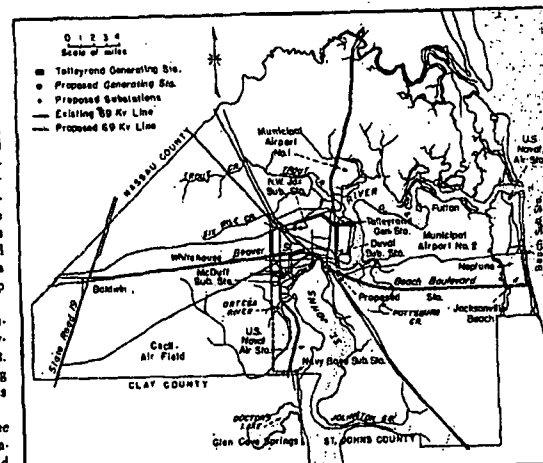
Two motor-driven fuel-oil unloading pumps, 300-gpm 25-psf head each, will take fuel oil from tank cars and discharge it to the storage tanks. Four motor-driven oil pumps, 25-gpm 265-psf head each, will take oil from the storage tanks and force it to the burners through oil heaters. A differential oil pump regulates pressure at the burners and bypasses oil to the fuel-oil pump function.

Two heaters will raise oil temperature from 60 to 280 F, each heater having its own temperature-control unit. Steam and condensate lines supplying tank heating will trace the fuel-oil lines from tank to plant.

Auxiliaries. Four bleed points in the turbine will supply steam for regeneration feedwater heating. Pumps and fans of both units are motor driven to utilize the higher efficiency of the main turbines and eliminate the cost of piping if auxiliaries were steam driven.

Two or more surface wells will supply plant service requirements. Each will be equipped with a motor-driven pump discharging into a reservoir.

Four vertical pumps in the river-water-intake structure will take water



JACKSONVILLE MUNICIPAL SYSTEM supplies electric power to city as well as to surrounding area in Duval County; new facilities will aid industrial development

from the river and discharge into individual cast-iron conduits connecting to the condenser inlets. These pumps will be installed on a concrete intake structure with a gantry frame serving the four pump wells. Each pump well will be completely equipped for normal

operating, cleaning and maintenance purposes with a bar-grill trash rack, sluice gate with frame and operating mechanism, and a traveling screen with backwash pump and jets.

The four cast-iron conduits from pumps to condensers will lie under-