through a high-pressure closed heater, to the boiler.

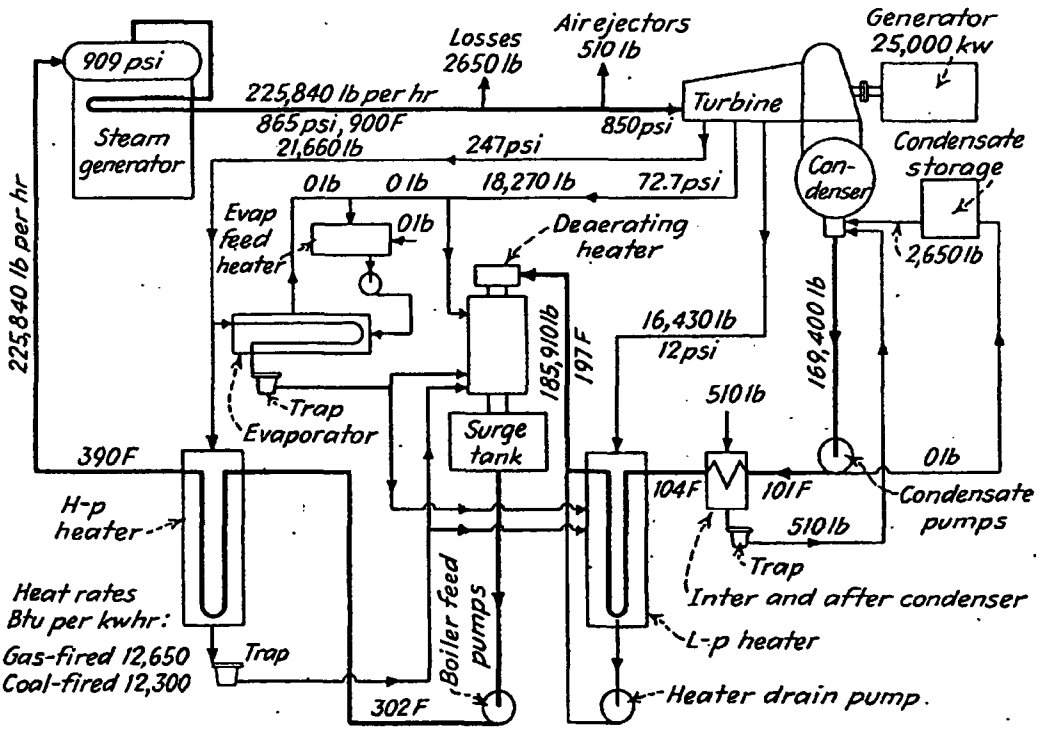
The closed heaters are located in the basement. The four-pass, low-pressure heaters have 765 sq ft of heat-transfer surface. The shell is designed to withstand 50 psi, and the water circuit 250 psi. The two-pass, high-pressure heaters have 880 sq ft of surface with the shell designed for 350 psi and the tubes for 1400 psi. The vertical deaerating heater, mounted on a horizontal tank with 50,000-lb water-storage capacity, is designed for 100 psi and guaranteed to maintain oxygen-free water.

An evaporator, with a rated capacity of 7500 lb per hr of vapor, delivers make-up to the cycle. This unit, with an effective heating surface of 147 sq ft, gets preheated and deaerated water at 215 F from an Elliott evaporator preheater of deaerating type. The evaporator steam circuit is designed for 350 psi and the welded shell for 100 psi.

The two main units have three boiler-feed pumps, one acting as a spare for either unit. Each has a capacity of 550 gpm of 310 F water with a net head of 2490 ft, and is driven by a 450-hp motor at 3600 rpm. Each pump has a by-pass for use during starting; water discharges to the deaerator storage tank. The by-pass control valve normally remains closed after the pump flow reaches a value that keeps the pump cool. The operator can quickly open this manually operated valve, located beside the boiler control board, if pump discharge should be suddenly reduced.

The high-pressure heater drains discharge to the low-pressure heater during starting periods and light loads. When the pressure differential between high-pressure heater and deaerating heater exceeds the static pressure, these drains automatically shift from the low-pressure heater to the deaerator. A pump handles the low-pressure heater drainage, discharging it into the condensate line leaving this unit. In an emergency all heater drains can be discharged manually into the condenser.

The heat-balance reflects the influence of low-cost fuel, using three feedwater heaters.



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