

Reverse power relays have been ordered for the two incoming 110 kv. lines, and should be installed this year. So that proper regulation of voltage and power-factor can be obtained, a 10,000 kv.a. synchronous condenser has been ordered, and a start made on the foundations.

Permanent water-supply from the city mains is being installed at this station.

Tests have been carried out with the high-frequency oscillator set on all insulator units received from the transmission-lines, as well as several insulators sent in for test by local agents.

Bunnythorpe Substation.—Electrically operated oil circuit-breakers were installed on the two 110 kv. outgoing lines to Wanganui and Woodville. The installation of these switches has considerably reduced the interruptions at the power-station and cut out the faulty sections only. As the power required for operating the above switches is 110 volts D.C., a suitable motor generator set, complete with battery and control panel, was installed in the station, the 110 v. battery being housed in a small room especially built for this purpose. The station oil-store was also enlarged, and a new tank installed in place of the one originally placed in the ground.

Wanganui Substation.—Construction work was completed on this station early in April, and on the 23rd April, 1926, power was supplied at 110 kv. to the station, and operated in parallel with the Wanganui-Rangitikei Power Board's steam plant.

Woodville Substation.—Semi-automatically operated oil circuit-breakers were installed on the 110 kv. lines to Mangamaire and Dannevirke Substations. With the installation of these switches it was necessary to erect an oil-store and control-room, which was erected close to the steel structure. The operators' cottages were fitted up with septic tank and water-supply, the well being sunk in the station-yard, and a pump and water-storage tank installed.

Mangamaire Substation.—A semi-automatically operated oil circuit-breaker and by-pass air-break switches were installed on the outgoing 110 kv. line to Masterton Substation, the control panel being installed in the substation. A 1,500 kv.a. synchronous condenser has been ordered for installation in this station, and the present substation building is being extended and foundations built for this machine. The station and cottages are now connected up to a permanent supply of water, a well having been sunk in the station-yard, and pump and storage tanks installed. The cottages have had septic tanks installed.

Dannevirke Substation.—A semi-automatically operated oil circuit-breaker and by-pass air-break switches were installed on the outgoing 110 kv. line to Waipukurau, the control panel for the oil circuit-breaker being installed in the station building. A 1,500 kv.a. synchronous condenser has been ordered for this station, and a contract let for the extension of the building to accommodate this machine. This station has also had a small well sunk for obtaining a permanent water-supply, the necessary tanks and pumps supplied for maintaining water storage, and a septic tank installed.

Waipukurau Substation.—A semi-automatically operated oil circuit-breaker, complete with by-pass air-break switch, has been installed on the 110 kv. outgoing feeder to Napier. The control panel for the oil circuit-breaker has been installed in the station building.

Masterton Substation.—The station oil-store was extended and a new oil-tank installed to replace the one placed in the ground. A septic tank and a permanent water-supply, with pump and storage tanks, have also been provided for the station cottages.

Napier Substation.—The construction and installation of equipment at this substation was completed and the station was put into service at 110 kv. on the 20th March, 1927, and it has since operated satisfactorily.

LOAD.

During the year supply has been given to the Wanganui-Rangitikei Power Board at Wanganui Substation, and to the Railway Department Workshops at Petone. Supply to the Hawke's Bay Power Board was given on the 8th April, 1927.

During the year all the Power Boards have greatly exceeded their guarantees, as the following table shows :—

			Guaranteed		Actual		
			Load.	Revenue.	Mean Quarterly Maximum Load.	Revenue.	
			Kv.a.	£	Kv.a.	£	s. d.
Wellington City Council	..	..	..	45,000	..	49,920	0 0
Hutt Valley Power Board	..	..	720	6,160	1,434.64	11,877	2 0
Horowhenua Power Board	..	..	600	5,200	1,707.15	14,057	4 0
Wanganui-Rangitikei Power Board	..	..	700	6,000	1,366.65	11,306	16 3
Wairarapa Power Board	..	..	235	2,280	470.465	4,178	13 1
Tararua Power Board	..	..	300	2,800	353.67	3,229	7 2
Dannevirke Power Board	..	..	225	2,200	376.84	3,414	14 0
Central Hawke's Bay Power Board	..	..	160	1,600	301.35	2,810	16 5
Manawatu-Oroua Power Board	..	..	1,100	9,200	1,544.00	12,752	0 0

During the year, on account of the third dam not being completed and on account of the power-station being overloaded, it was necessary to call on Wellington City Corporation steam plant, the Wanganui-Rangitikei Power Board's steam plant, and the Palmerston North Borough Council gas plant during periods of low river-flow. These plants were in operation for supplying power to the Mangahao system on account of low river-flow on the following dates: Wellington steam plant—