

(B) SUBSTATIONS.

Penrose.—Three new 1,667 Kv.a. transformers for a second 22/50 Kv. bank have been dried out, but are not yet in service. Concrete pads were installed for three new 10,000 Kv.a. transformers to form a fourth 110/22 Kv. bank.

A new store and workshop was built for line equipment.

Bombay.—Three new 1,667 Kv.a. transformers for a second 110/50 Kv. bank have been dried out, but are not yet in service. Work is in progress on the concreting of transformer pads, and on the erection of additional switch-gear and steelwork.

Hamilton.—Impedance-distance relays on the 110 Kv. line O.C.B.'s were tested out under actual fault conditions, and were put into service.

Henderson.—Two 50 Kv. O.C.B.'s for the Penrose line, and 50 Kv. P.T.'s and directional relays were put into service.

Excavations were made for the extensions of the 50 Kv. steel structure for the take-off of the North Auckland 50 Kv. line.

Takapuna.—Three new 750 Kv.a. transformers to form a second 50/11 Kv. bank were dried out, but are not yet in service.

Tahekeroa.—The 1,000 Kv.a., 50/11 Kv. substation was put into service with temporary 11 Kv. equipment on 18th December, 1936, as a third supply point for the Waitemata Electric-power Board.

At the end of March the construction of the substation building, garage, and three cottages, and the installation of the new 11 Kv. switch-gear was almost completed. The 50 Kv. O.C.B.'s have yet to be installed.

Mareretu.—The 2,250 Kv.a., 50/11 Kv. substation was put into service with temporary 11 Kv. equipment on 19th December, 1936, as the first supply point for the North Auckland Electric-power Board. Work is proceeding on the construction of the substation building, garage, and three cottages, and on the installation of the new 11 Kv. switch-gear. The 50 Kv. O.C.B.'s are not yet installed.

Maungatapere.—A start was made in January, 1937, on the construction of the 2,250 Kv.a., 50/11 Kv. substation as a second supply point for the North Auckland Electric-power Board. The gantry and the 50 Kv. steel structure and fittings have been erected, and the concrete pads for the transformers and O.C.B. have been installed.

Huntly.—The 1,500 Kv.a., 50/11 Kv. bank was replaced by a new 2,250 Kv.a. bank on 18th October, 1936.

Hangatiki.—The 750 Kv.a., 50/11 Kv. bank was replaced by the 1,500 Kv.a. bank from Huntly on 31st March, 1936. The old transformers were made ready for transfer to Ngongotaha.

Rotiti.—A two-pole substation structure was erected adjacent to the 50 Kv. line, and a 100 Kv.a., 3 ph., 47.5/6.6 Kv. transformer and the necessary switching-equipment were connected up, and were put into service on 31st January, 1937, as an additional supply point to allow the Tourist Department, Rotorua, to give supply to lakeside cottages and sawmills.

Edgcombe.—The building of a fourth cottage was completed.

(C) TRANSMISSION-LINES.

North Auckland 50 Kv. Line.—Construction proceeded throughout the year, up to eighty men being engaged on this work. The Henderson-Tahekeroa section was livened at 11 Kv. in September as a Waitemata Power Board feeder from Henderson, and was put into service at 50 Kv. on 18th December, 1936. The Tahekeroa-Mareretu section was put into service at 50 Kv. on the following day. The construction of the Mareretu-Maungatapere section is well advanced, and the line will be ready for service some time before it is required.

A start was made on the investigation of a route for a 50 Kv. line from Maungatapere to Kaitiaki.

(2) OPERATION AND MAINTENANCE.

Uninterrupted supply was given by Arapuni throughout the year, with the assistance of Horahora for three load shifts daily until November, when it was found possible to reduce the Horahora running-time to twelve load shifts a week. For normal operation the two stations were run continuously in parallel with Mangahao and Waikaremoana without any difficulties. No assistance was required from the stand-by stations during the year.

(A) POWER-STATIONS.

Arapuni.—Generating-units: After the restoration of No. 1 unit to service in March, 1936, No. 2 unit was dismantled for general overhaul. The machine was reassembled with the new spare runner installed in the turbine, and was restored to service at the end of April.

A large amount of work was done on the building-up of eroded areas on the spare turbine runners by welding with stainless steel electrodes and grinding to a smooth finish.

Other maintenance work included the fitting of a new main-distributor valve to No. 1 governor, the replacement of a badly worn brass collar on No. 2 rotating regulating valve, and the fitting of piston-rings to No. 3 pilot governor servomotor.

Outdoor Station: The work of replacing the original 110 Kv. pillar insulators by new all-porcelain pin-type insulators was completed early in the year.

The site of the 11 Kv. substation at the dam was altered and a new 11 Kv. line was erected to enable the old line to be dismantled for work in connection with the outdoor station extensions.

11 Kv. Bus Faults: Two 11 Kv. bus faults were caused by rats, one on 23rd June, which tripped out No. 1 generator, and the other on 24th June, which tripped out No. 3 generator, but there was no interruption to station supply.

Horahora.—Generating-units: No. 6 unit was shut down in April, No. 3 unit in August, and No. 1 unit in March for the replacement of worn turbine parts.

Relays: New overcurrent relays were put into service on Nos. 7 and 8 generators in September, and on Nos. 1 to 6 generators in January.