

Of the prearranged shutdowns, numbering twelve and totalling 7 hours 20 minutes, four, of 4 hours 14 minutes, were required for construction work; three, of 3 hours 1 minute, for substation maintenance; and five, of 5 minutes, for Mangahao and Tuai to parallel after shutdowns on other portions of the line.

A start has been made on the repairs of the earthquake damage to the buildings. The reconditioning of the synchronous condenser will be carried out when the building has been repaired.

Gisborne.—From this substation power is supplied to the Poverty Bay Electric-power Board, and the operation of equipment has been satisfactory during the year.

During the year there were twelve accidental interruptions to supply, totalling 21 minutes.

Of the prearranged shutdowns, numbering six and totalling 24 hours 50 minutes, two, of 16 hours 57 minutes, were required for insulator cleaning; one, of 1 hour, for repairing the isolating-switch at Tiniroto; one, of 4 hours 5 minutes, for replacing a faulty insulator and oil-switch bushing at the substation; and two, of 2 hours 47 minutes for changing transformers.

Trouble was experienced with the water-cooled transformer, due to the deposit of lime in the cooling-coils. This was removed and the transformers are now in good order.

Wairoa.—From this substation power is supplied to the Wairoa Electric-power Board, and there were only two accidental interruptions to supply, totalling 2 minutes, during the year.

The prearranged shutdowns numbered five and totalled 16 hours 17 minutes. Of these, three, of 10 hours 43 minutes, were required for line-maintenance and the remaining two, of 5 hours 35 minutes, were at the request of the Power Board.

A worker's hut was shifted from Tuai and converted into an oil-filtering shed, to enable the oil in the transformers to be filtered in any weather.

All apparatus is in good order.

General.—The main transformers at all substations have been bolted down to their pads, and special clamps fitted in the high-tension leads, to eliminate the risk of damage in the event of earthquakes occurring. Since this work was carried out, a sufficiently severe earthquake occurred at Napier to test the effectiveness of these precautions and the result was quite satisfactory. No apparatus was damaged, and only a short interruption took place.

At most of the substations where the lines are of aluminium, the span between the structure and the first strain pole has been changed from aluminium to copper, to obviate the breaks in the cable from electrolytic action. The joint between copper and aluminium is made in the jumper on the strain pole, so that the harmful effects of electrolysis are reduced to a minimum. This work is being done as a matter of general policy, and is being carried out only when circumstances are favourable—i.e., at times when new switch-gear is being put into service, &c.

Trenches have been dug round transformer and oil circuit-breaker pads and filled with coarse shingle, to minimize the fire risk due to oil-leaks.

Alterations are being made to the transformer connections at the substations, to make them conform to the B.E.S.A. Standard Specification.

Transmission-lines (110 Kv.).

Mangaore-Khandallah Duplicate Line.—During the year two interruptions to supply, totalling 4 minutes, occurred on this line, both of which were due to earth wire falling on the lines.

Mangaore-Bunnythorpe Duplicate Line.—This line gave no trouble during the year.

The overhaul of the telephone-line, and the change-over to cadmium copper, between Mangaore and the Manawatu River, have been completed.

Bunnythorpe-Marton-Wanganui Line.—Two accidental interruptions occurred through trouble on this line, causing Wanganui to be without power for 8 minutes, and Bunnythorpe for 2 minutes. Both interruptions were due to the same cause—a gorse fire under the line near Turakina.

Four prearranged shutdowns were required during the year for the maintenance of this line, the total time of interruption to Wanganui supply being 12 hours 25 minutes. Only two of these shutdowns affected Marton, the total time being 8 hours 20 minutes.

A deviation has been made in the telephone-line near Wanganui substation.

Wanganui-Hawera-Stratford Line.—This line was put into service in November, 1931, and has since given good service.

Streams have been bridged and tracks cut where necessary for patrol purposes.

Bunnythorpe-Woodville-Dannevirke Line.—This line has given good service during the year.

Woodville-Mangamaire-Masterton Line.—A house on fire near the line, at Solway, caused an interruption to supply of 12 minutes at Mangamaire, and one of 2 minutes to supply at Masterton, the Kourarau plant being called on to supply the Wairarapa Electric-power load until the line was repaired.

Line maintenance accounted for six prearranged shutdowns, required for the changing and cleaning of insulators. When this work is done by live line methods, prearranged shutdowns will be considerably reduced.

Dannevirke-Waipukurau-Napier Line.—This line has operated very well during the year, having caused no interruptions to supply at any of the substations, except short prearranged shutdowns to enable Mangahao and Tuai to parallel after insulator cleaning and changing operations.

Tuai-Napier Double Circuit.—This line has operated well during the year.

Owing to the proved reliability of this line, the patrol point at Waikoau was dispensed with, and the linesmen transferred elsewhere.

Transmission-lines (50 Kv.).

Stratford-New Plymouth Line.—This line has given good service since installation. Some trouble has been experienced with the telephone-line, due to breaks in the conductors. The cause of this is being investigated.