

A flashover on the 11 Kv. bus was caused by the failure of an 11 Kv. insulator on 24th October, 1936, and a flashover on the 5 Kv. bus was caused by a bird on 3rd December, 1936.

Penrose Diesels: A D.C. auxiliary oil pump was installed in May to enable the Diesels to be started up in times of emergency without outside assistance for auxiliary power.

The plant was given a short run each week to charge up the air bottles, &c.

(B) SUBSTATIONS.

Penrose.—One 110 Kv. O.C.B. bushing which caused radio interference was replaced, all choke coils were removed from the 50 Kv. lines, and No. 3 (22 Kv.) O.C.B. was modified to make it suitable for the new 30,000 Kv.a. bank.

Bombay.—Three old 110 Kv. O.C.B.'s were dismantled to enable the tanks to be utilized for storing oil at the new North Auckland substations.

Hamilton.—An additional 11 Kv. feeder was installed by the Hamilton Borough Council, and was connected up on 19th April, 1936. The two existing borough cables were paralleled, and the panel thus made available was used for the new and larger feeder.

An additional 11 Kv. feeder for the Central Waikato Electric-power Board was connected up on 13th September, 1936.

Henderson.—A broken 11 Kv. bushing and a number of defective 50 Kv. strain insulators were replaced. An outage was caused by a flashover in a Power Board 11 Kv. feeder O.C.B. on 28th January, 1937.

Takapuna.—The 1,000 Kv.a., 3-phase transformer was transferred to Tahekeroa in November.

Tahekeroa.—A burn-out of the temporary 11 Kv. local service transformer occurred on 29th March, 1936.

Mareretu.—No trouble has been experienced at this substation since it was put into service with temporary 11 Kv. switch-gear on 18th December, 1936.

Kerepeeki.—A current transformer on a Power Board 11 Kv. feeder O.C.B. broke down on 20th August, 1936.

Waikino.—A Tirrill Regulator from the old Grand Junction steam plant was installed on the synchronous condenser in place of the original contact-making voltmeter and motor-operated rheostat.

Waihou.—Sixteen 50 Kv. post insulator units were found to be cracked.

Matamata.—The operator's cottage was renovated and connected up to the local service supply.

Huntly.—After the installation of the new 2,250 Kv.a. transformer bank on 18th October, 1936, the four 500 Kv.a. transformers were transferred to Hangatiki.

Te Awamutu.—An interruption to substation supply was caused by the breakdown of a current transformer on one of the 11 Kv. incoming feeders on 21st October, 1936, and another was caused by lightning on 8th November, 1936.

Hangatiki.—The .0225 square inch 11 Kv. incoming cable was replaced by a .04 square inch cable when the 750 Kv.a. transformer bank was replaced by a 1,500 Kv.a. bank in March, 1937.

Mamaku.—The tank of the 11 Kv. O.C.B. was punctured in several places during a thunder-storm on 8th November, 1936, and evidence of a flashover was found on an 11 Kv. bushing on the 50/11 Kv. transformer. The flashover was probably caused by a rat which was found nearby.

Ngongotaha.—The pig-tail connections of the 50 Kv. A.B.S.'s were renewed on account of deterioration.

Edgecumbe.—Depressions in the tops of the oil-storage tanks were filled with a bitumen mixuret to prevent water from accumulating and causing rusting.

A person committed suicide by climbing the structure and touching a live 50 Kv. conductor on 11th January, 1937.

Waiotahi.—A number of coils in the 11 Kv. earthing transformer were damaged by burning on 16th January, 1937, when a Power Board 11 Kv. O.C.B. failed to clear a feeder fault.

11 Kv. Substations.—Regular inspections were made and routine testing was carried out at each substation.

(C) TRANSMISSION-LINES.

(i) 110 Kv.

Arapuni-Penrose Tower-line.—The only interruption to Penrose supply during the year was due to the incorrect operation of the distance relays at Hamilton No. 2 for a fault on the 110 Kv. wood-pole line on 15th December, 1936.

Arapuni-Penrose Wood-pole Line.—After the trouble caused by flashovers due to salt spray in February, 1936, arrangements were made for the removal of the earth wire and earth strips from all poles on this line. This work has been carried out as opportunity permitted, and at the end of the year the earth wire had been removed from approximately 660 poles. Owing to the difficulty in arranging a shut-down of this line at present, the work probably will not be completed until next summer.

Four faults occurred during the year, one being due to lightning, one to a hay stacker, and two to scrub fires.

Arapuni-Stratford.—An inspection of the legs of a number of towers showed that a certain amount of rusting had occurred at and below the ground-level, due apparently to the galvanizing being damaged by iron-shod rammers during construction. The rusty portions were cleaned and were painted with bitumen.

Three outages were caused by lightning.

(ii) 50 Kv.

Horahora-Arapuni, Horahora-Hamilton-Huntly, Horahora-Paeroa, Waikino-Aoangatele, Bombay-Kerepeeki.—No trouble was experienced on these lines.

Penrose-Takapuna.—The 7/13 galvanized iron earth wire on the steel-tower portion of the line is being replaced by 7/14 copper on account of corrosion, and by the end of the year the new earth wire had been fitted to approximately 190 towers. Owing to the necessity of keeping one circuit