

3. General.

The total units generated (including supply from Dobson Diesel Station) and purchased were 419,883,195, representing an increase of 13·58 per cent. on those of last year. Of these units, 328,971,478 were sold by Christchurch District and 29,470,875 by Southland District, while 2,907,865 were otherwise accounted for. The balance of 58,532,977 units represents transmission and distribution losses, and amounted to 13·94 per cent. of the units generated.

The maximum system load increased from 76,160 kW. to 84,920 kW., an increase of 11·50 per cent. The average system load factor was 56·44 per cent.

4. Construction, Operation, and Maintenance.

A. CHRISTCHURCH DISTRICT.

(1) CONSTRUCTION.

(a) *Power-stations.*

Lake Coleridge.—Accommodation was erected for a military guard. A 50 kVA. transformer was installed and reticulation rearranged.

Waitaki.—The erection and drying-out of No. 3 unit was completed and, after trials, was finally placed on load in December, 1940, and has supplied 36,375,880 units to the system.

The assembly and erection of No. 4 unit, with its attendant gear, is nearing completion.

Headgate-frames, winches, and screens were assembled and erected for Nos. 3, 4, and 5 units.

The drain-valves of Nos. 3, 4, and 5 suction tubes have been redesigned so that retractable operating spindles can be used.

Soundings and levels were taken on the tail-race side of the dam.

(b) *Substations.*

At Addington the installation of the first 20,000 kVA. 66/11 kV. transformer-bank and the 5,000 kVA. 66/33 kV. bank was completed in May, 1940. The second 20,000 kVA. bank was completed in March, 1941.

At Timaru one double garage, two single garages, and two tool-sheds were erected.

A four-stall garage was erected and sixty insulators on the outdoor structure were replaced at Glenavy.

A four-stall garage and four tool-sheds were erected. One 110 kV. transformer bushing was replaced after failure, the spare transformer was reinstalled and energized after repairs at Oamaru Substation.

At Half-way Bush a clay bank was excavated and area levelled for lawn, and a shelter-belt of pine-trees planted. At Hororata Substation a 1,000 kVA. transformer-bank was installed and put into service in November, 1940.

At Ashburton the 25 kVA. local service transformer was replaced with a 50 kVA.

At Harewood a new 33/11 kV. substation was erected, including building, transformers, and switchgear.

Four cottages and garages were erected at Otira Substation, and good progress was made with the erection of outdoor structure, the O.C.B.s and transformers being assembled and in place.

(c) *Transmission-lines.*

The construction of a new 110 kV. line to replace the Ashburton-Timaru "A" line and the overhaul of Ashburton-Timaru "B" line is progressing satisfactorily, the work being finished between Ashburton and Temuka River.

For construction purposes at Highbank a 6.6 kV. line one mile long was erected to take supply from Ashburton Power Board. Low-tension reticulation and wiring of buildings also carried out.

On the Waitaki Glenavy 110 kV. line tower No. 20 was transferred to a piled foundation on account of erosion of river-bank.

The 90-chain deviation of the Otira-Arahura 66 kV. lines was completed and went into service in April, 1940.

A length of 1 mile 28 chains of 11 kV. line was built for the Kanieri Gold-dredging Co.

The 11 kV. double-circuit line from Otira to the Tunnel Substation was advanced by completion of tunnel-end section.

Two new 11 kV. 0·2 square inch cables were run and connected up between Addington and Milton Street.

Steelworks and Southern 11 kV. feeders were reconstructed.

A new 11 kV. 0·06 square inch cable was run from Addington to Foster Street Substation for supply to Riccarton Borough Council.

At Hanmer the supply was changed over from D.C. to A.C. and is now ready for new transformers and underground reticulation. Wiring in buildings was overhauled.

The reconstruction of Lake Coleridge-Hororata "B" and "C" lines on towers between Sleeman's Road and Hororata, and the reconstruction of the old "C" line as part of the Hororata-Highbank line was completed. The remainder of the Highbank line, with the exception of the Rakaia River crossing was also completed.

The route of the new 110 kV. Ashburton-Timaru line was surveyed and pegged, and the survey of Timaru-Tekapo line was completed.