Henderson Substation.—Extensive alterations and extensions to this substation are involved as a result of the decision to supply it at 110 kV. from two new lines from Penrose. The new equipment will include one 10,000 kVA. bank of 110/50 kV. transformers, terminal switchgear for 110 kV. lines from Penrose, and 110 kV. and 50 kV. switchgear for the transformer bank, together with all necessary steelwork for switchgear and accessories. The outgoing lines to Takapuna and North Auckland respectively will continue to be supplied at 50 kV. from this substation, but provision is being made for extending the 110 kV. lines to North Auckland at a later date. Preliminary layout drawings were prepared for the extended station, and drawings and specifications for the new 110 kV. switchgear and steelwork for tendering purposes.

Preliminary drawings were prepared for the 110/50 kV. transformers, and for a new transformer house for handling them. Foundation drawings were prepared for two new 3,000 kVA. banks of 50/11 kV. transformers and controlling 50 kV. switchgear and steelwork. The new transformers are fitted with automatic on-load tap-changing equipment.

Huntly Substation.—Drawings were prepared for tendering purposes for additional 50 kV. switchgear and steelwork for a second 2,250 kVA. 50/11 kV. transformer bank.

Kaikohe Substation.—Drawings of proposed 50 kV. switchgear and steelwork and a preliminary layout drawing of switchgear and equipment on site were prepared. The initial equipment will include 50 kV. switchgear for incoming line from Maungatapere, outgoing line to Kaitaia, and for 750 kVA. bank of 50/11 kV. transformers.

Kaitaia Substation.—Drawings of proposed 50 kV. switchgear and steelwork and a preliminary layout drawing of switchgear and equipment on site were prepared. The initial equipment will include a 750 kVA. bank of transformers and terminal switchgear for the line from Kaikohe.

Ongarue Substation.—Drawings were prepared showing arrangement of equipment, details of transformer foundations, and terminal structures for lines. The initial equipment includes a 2,250 kVA. 110/11 kV. transformer bank with on-load tap-changing equipment.

Mount Roskill Substation.—A preliminary layout drawing of buildings and outdoor equipment on site was prepared. The initial equipment will include one 30,000 kVA. bank of 110/22 kV. transformers.

Penrose Substation.—Drawings were prepared for tendering purposes for additional 110 kV. switchgear and steelwork to control two 110 kV. lines to Henderson and three additional 110 kV. lines from Arapuni. Layout, foundation, and detail drawings were prepared for the 20,000 kVA. synchronous condenser and associated equipment. A traverser truck was designed for handling the 20,000 kVA. 22/11 kV. transformer bank for the condenser.

Tahekeroa Substation.—Foundation drawings were prepared for a 2,250 kVA. bank of 50/11 kV. transformers.

Takapuna Substation.—Drawings and specifications were prepared for tendering purposes for new 50 kV. switchgear and steelwork to control the two 50 kV. lines from Henderson, two outgoing lines to Belmont, and two 50/11 kV. transformer banks. The existing switchgear and steelwork, which was designed for a terminal station, will be used for Belmont Substation.

General.—Arrangement and foundation drawings were prepared for the boosting transformers and their switchgear cubicles which are being installed at Edgecumbe, Kerepeehi, Mareretu, Matamata, Maugatapere, Ngongotaha, Tahekeroa, Takapuna, Waihou, and Waiotahi. These boosting transformers are fitted with automatic on-load voltage-regulating equipment.

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Mangahao Power-station.—As the load on the Horowhenua feeders is approaching the limit of the capacity of the existing induction voltage regulators these are to be replaced by boosting transformers with automatic on-load voltage-regulating equipment, each of which will have a through capacity of 3,000 kVA. A preliminary layout drawing was prepared for the boosting transformers and associated switchgear.

Waikaremoana Main Development.—In connection with the installation of the third main generating-unit, layout, foundation, and detail drawings were prepared for the generating-unit, machine auxiliaries, 11/110 kV. step-up transformer bank, 11 kV. and 110 kV. switchgear, control panels and cables. Drawings and specifications were prepared for tendering purposes for new 11 kV., 50 kV., and 110 kV. switchgear to provide for 11 kV. and 110 kV. lines to Lower Development and a 110/50 kV. transformer bank with provision for adding switchgear for future lines and generating-units at a later date. No. 3 generating-unit has a rated capacity of 20,000 kW. at 0·9 power factor.

Waikaremoana Lower Development.—This power-station, which will contain two generating-units each rated 20,000 kW. at 0·9 power factor, is being arranged for supervisory control from the Main Development. To simplify the control arrangements each main unit will have its own auxiliary generating unit which will supply power for operating essential auxiliaries and also excitation for the main unit. Each unit will have its own bank of 11/110 kV. transformers and its own 110 kV. transmission-line to the Main Development, where it will be synchronized manually with the general system. Power for the staff village, lighting, and station services other than essential machine auxiliaries will be supplied by a service transformer from an 11 kV. line from the main development. Drawings and specifications for tendering purposes were prepared for main and auxiliary generating-units, switchgear and supervisory control equipment, main transformers, 110 kV. switchgear, water rheostat, control gear and switchgear, 80-ton crane, steel windows, and motor-operated roller-shutter doors, and oil-handling equipment and storage-tanks. The major part of the detail design work for the power-station building other than machine foundations was carried out.

Bunnythorpe Substation.—A drawing was prepared for tendering purposes for two 7,500 kVA. banks of 110/11 kV. transformers with on-load voltage-regulating equipment to replace the present 4,500 kVA. banks.