

## B. OPERATION AND MAINTENANCE

## 1. POWER-STATIONS

*Kings' Wharf.*—The continued poor hydraulic conditions placed a heavy demand on this station. No. 14 turbine was overhauled and a number of replacement parts ordered. This is the first overhaul since installation in 1931 and the machine was found to be generally in good order. No. 11 turbo-alternator experienced bearing trouble, necessitating special attention. No. 10 turbine shed a number of rotor blades, necessitating the removal of the blades and reducing the number of effective wheels by one. The turbine was serviced and has run satisfactorily since. No. 7 generator was prepared for service. A new air-cooler was installed under No. 12 generator. All boilers were inspected and passed by the Marine Department. A number of worn concrete ash-hoppers were shrouded with steel plate. Dr. V. Armstrong, Fuel Technologist, Department of Scientific and Industrial Research, carried out tests on the large boilers, analysed gases, graded the grit content, and made fuel-economy recommendations. Coal consumed was 51,331 tons, deliveries amounting to 49,895 tons, and 164 tons were sold under orders from the Mining Controller. Of the coal received, 25,268 tons came from the South Island and 24,627 tons from the North Island. The stock in hand at 31st March, 1947, was 1,369 tons.

*Arapuni and Horahora.*—The running-times of the Arapuni and Horahora generators, together with particulars of outages and shutdowns, were as follows:—

| Generator No.          |    |    | Time on Load. |             | Time Idle. |             | Time under Repair.     |                    | Percentage Availability for Service. |
|------------------------|----|----|---------------|-------------|------------|-------------|------------------------|--------------------|--------------------------------------|
|                        |    |    | Hours.        | Percentage. | Hours.     | Percentage. | Not in Demand (Hours). | In demand (Hours). |                                      |
| Arapuni Power-station  |    |    |               |             |            |             |                        |                    |                                      |
| 1                      | .. | .. | 7,952         | 90·78       | 808        | 9·22        | ..                     | ..                 | 100                                  |
| 2                      | .. | .. | 7,983         | 91·13       | 770        | 8·79        | ..                     | 7 (a)              | 99·92                                |
| 3                      | .. | .. | 8,108         | 92·56       | 652        | 7·44        | ..                     | ..                 | 100                                  |
| 4                      | .. | .. | 6,215         | 70·95       | 522        | 5·96        | 1,834 (b)              | 189 (c)            | 76·91                                |
| 5 (d)                  | .. | .. | 3,545         | 85·77       | 382        | 9·24        | 206 (e)                | ..                 | 95·01                                |
| 6                      | .. | .. | 7,639         | 87·20       | 878        | 10·02       | 243 (f)                | ..                 | 97·22                                |
| 7                      | .. | .. | 7,640         | 87·21       | 1,053      | 12·02       | 67 (g)                 | ..                 | 99·23                                |
| 8                      | .. | .. | 7,877         | 89·92       | 883        | 10·08       | ..                     | ..                 | 100                                  |
| Horahora Power-station |    |    |               |             |            |             |                        |                    |                                      |
| 1                      | .. | .. | 7,695         | 87·84       | 1,065      | 12·16       | ..                     | ..                 | 100                                  |
| 2                      | .. | .. | 8,104         | 92·51       | 656        | 7·49        | ..                     | ..                 | 100                                  |
| 3                      | .. | .. | 8,099         | 92·45       | 649        | 7·41        | 12 (h)                 | ..                 | 99·86                                |
| 4                      | .. | .. | 8,198         | 93·58       | 562        | 6·42        | ..                     | ..                 | 100                                  |
| 5                      | .. | .. | 8,254         | 94·22       | 506        | 5·78        | ..                     | ..                 | 100                                  |
| 6                      | .. | .. | 8,254         | 94·22       | 504        | 5·76        | 2 (i)                  | ..                 | 99·98                                |
| 7                      | .. | .. | 8,645         | 98·69       | 115        | 1·31        | ..                     | ..                 | 100                                  |
| 8                      | .. | .. | 8,618         | 98·38       | 142        | 1·62        | ..                     | ..                 | 100                                  |

NOTES.—(a) Shutdown on 11th April, 1946, as water entered the lubricating-oil system due to blocked ejectors. (b) Shutdown on 14th January, 1947, to fit a new stator winding and change the turbine runner; work still in progress at end of year. (c) Breakdown of stator winding on 4th March, 1946; repairs completed on 8th April, 1946. (d) In service from 10th October, 1946, only. (e) Shutdown 16th to 24th October to change a faulty half coil. (f) Shutdown 30th October to 9th November to install the governor. (g) Shutdown 6th to 11th December to install permanent group C.T.s. (h) Shutdown on 7th April, 1946, for governor adjustments. (i) Shutdown on 3rd April, 1946, for belt repairs.

Horahora continued to run on maximum output until 4th April, 1947, when it was permanently shutdown. A considerable quantity of equipment was salvaged before the station was submerged by the newly formed Karapiro Lake. The 110 kV. O.C.B.s at Arapuni were modernized by fitting new double-break contacts, &c.

*Huntly Steam Plant.*—This standby station was run over the evening peak-load period five days a week from 25th June to 11th November.