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NOTES ON THE LOCAL PRODUCTION OF ENGINES FOR IMMINENT
WAR REQUIREMENTS.

MATERIALS:

Now that Jet Engines are to be used extensively for military aircraft, and that we in Australia have already established the technique of production for the centrifugal type and have embarked on the axial flow type, our self sufficiency to produce such engines without external assistance depends on the local production of the essential materials.

As yet we have made no effective moves to this end. The essential items are:

- (1) Nimonic Alloys for forgings and for sheet.
- (2) Heat resisting steels for forgings, castings and for sheet.
- (3) Strong alloys in aluminium, forging extrusions and sheets.
- (4) Zirconium-Magnesium castings.

Both (1) and (2) are matters of licensed products and our local resources are concentrated at Commonwealth Steel Company, Newcastle. (2) is already under way in a small experimental way, but nothing practical has yet been done about (1) which is most important of all.

In regard to (3) preliminary action is afoot to provide the essential item of a large forging press to be installed at the Government Forging Annexe at the Australian Aluminium Company.

(4) This Licence has been negotiated and will be executed and brought into effect as soon as it is agreed that it is an acceptable cost against Jet engine production. No further action is required.

- (1) I suggest that the C.A.C. be appointed the instrument to complete all arrangements for the production of special materials for gas turbine manufacture. This implies that the Government will agree to the negotiations of the essential licences and will agree to pay the costs.

ACCESSORIES:

Beyond the matter of materials, there is the Accessory Equipment. Whilst proposals have been made by Messrs. Rotax to set up local manufacture, it appears to me, after many years experience of such matters, that it would be better to have any and all facilities concentrated in a Government Annexe. I suggest, therefore, the following proposal:

- (2) Reposes the Government Workshop at Highett and equip it completely for Accessory Equipment production. It could be given to C.A.C. to manage, or alternatively offered to Rotax Company and the C.A.C. appointed as

the Government's instrument, to deal with the Rotax Company and the development of the Annexe. This workshop is in a favorable location for the recruiting of labour. It is being used at present for a research activity of the C.S.I.R.O. which is of no defence importance and could be moved elsewhere.

RECIPROCATING ENGINES:

It is clearly evident that for the next 10 years there will be a large number of reciprocating engines required for defence purposes.

- (a) Two models of Merlins are required for Lincolns and Mustangs and these must be based on Lidcombe, where full spares manufacture and overhaul facilities must be maintained whilst these two aircraft remain in Service in the R.A.A.F.
 - (b) Centaurus and Griffon Engines must be maintained for the Navy with full overhaul and spares production.
 - (c) Twin Row Wasps now centred on Fishermen's Bend were originally made at Lidcombe. These engines are required for Dakota Transport Aircraft and will continue to be largely used for many years.
 - (d) Single Row Wasps also centred on Fishermen's Bend are still used on Wirraways and will continue to be used until a new trainer is adopted.
 - (e) When war is upon us there will be a great demand for Trainer aircraft which will require reciprocating engines in large numbers.
- (3) My recommendation is, therefore, to concentrate as soon as possible all reciprocating engines into Lidcombe, and accelerate the production set-up for a new trainer engine at Lidcombe. During the War there were 3,000 men at Lidcombe, whereas there are now 1,000.

In addition, I would place the Propeller Annexe under the Lidcombe Management so that it can be fully utilised in conjunction with the production of Undercarriages and Hydraulic Fittings which have recently been absorbed into Lidcombe.

With the whole of the Reciprocating Engines, and Undercarriages for Canberras and Hawkers as well, there will be little capacity for any work on anything else except possibly the sub-contracting of components for C.A.C. at Fishermen's Bend Engine Factory.

GAS TURBINE ENGINES:

If the Engine Division at Fishermen's Bend was freed of all work other than Gas Turbine production it could achieve at least twice the production now possible, with the existing manpower. At present there are 668 employed, whereas during the war there were 2,000. The added facilities now being acquired for "Avon" production will enable still more productive manhours to be worked.

The objective which could be achieved at Fishermen's Bend, if all efforts were directed to produce engines without restrictions, would be 50 "Avons" and "Nenes" per month, using Lidcombe sub-contracting to assist.

I can see the personnel problem as the great difficulty and therefore suggest the following solutions:

- (4) Take action to have the Williamstown vehicular ferry moved to the location directly in front of the G.A.F. and C.A.C. (it must be moved because of new dock construction).

It would then be possible to have direct bus service down Lorimer Street over the river, out into Footscray, Newport and Williamstown. At present we have a difficult service to these suburbs and get few employees from these areas. The direct bus service across the river would solve the problem.

I also think that the Government should acquire 20 of the buses now being produced at C.A.C. and give free transport to the city to employees of the G.A.F. and C.A.C. The vehicles could be run by the C.A.C. and arranged to fit in with all night shifts. The present services are inadequate and serve to deter personnel from working at these factories.

- (5) I also think that the Government should immediately impose some restrictions on the employment of Tool-makers by Civil industry. I suggest that a licence be required to construct new tooling and that licences be refused for non-essential luxuries. It is imperative that 500 Toolmakers be drawn back into aircraft and aero-engine work as soon as possible.

GENERAL:

I do not think we will need anything like as many engines as in the last war because the aircraft themselves are now such difficult tasks by comparison, and the horsepowers are so much greater. I doubt if we could produce more than 12 Canberras and 20 Hawkers per month. We could produce sufficient engines if 10,000 men could be employed on engine production alone. We had little more than half this number during the last war. The creation of facilities to this end should be our immediate objective.
