

Memorandum:

18th August, 1942.

NOTES ON THE "BOOMERANG" INTERCEPTOR.

The "Boomerang" Interceptor is an attempt to produce a Fighter or Pursuit type Aircraft, as a follow-on to be manufactured in a plant which had hitherto concentrated entirely on the production of the "Wirraway", a development of the North American Combat Trainer.

Full use was, therefore, made of the established technique which had been introduced from North American Aviation, as many as possible of the parts which were in production for the "Wirraway" being used in this new Fighter.

Primarily, the main unit to be used was the Centre Section of the main plane, together with its Retractable Undercarriage and Fuel Tanks, which, owing to the gross weight being approximately the same for both the "Wirraway" and the "Boomerang", could be utilised together with Wheels and Brakes, without any change whatsoever.

In a similar way Flap Operating Gear, many components of the Flying Control system, many units of the Engine Control system, the Fin and Rudder, Tail Plane and Elevators with minor modifications only, the Tail Wheel unit as a whole, and innumerable small fittings which were in full production were utilised without change, or with very slight changes only.

In this way fully 50% of the aircraft has been built up by utilising established production. The aerodynamic requirements of the Wings were achieved by designing entirely new outer Wing extensions, together with the armament installed therein, which included two 20-mm. Cannon and four .303 Machine Guns.

As the Factory had also reached the production stage in the installation of the Twin Row Pratt & Whitney Engine in the CA.4 Bomber and for the Beaufort Bomber being produced elsewhere in Australia, it was possible to use Engine Cowling, Cooling Gill units and Exhaust Pipes which were in production, thus utilising a large tooling and drop-hammer die investment which was already in existence.

Although it was necessary to design an entirely new Fuselage, it was decided to adhere to the welded steel tube frame with a fairing shell of plywood on built-up spruce frames,

It was also decided to introduce a large self-sealing Fuel Tank in the Fuselage, to hold 70-gallons, and to install armour for the Pilot, weighing some 200-lbs.

The nett effect is a small, well-proportioned Fighter, with 1,200 h.p., and weighing 7,000-lbs. all up, with a range of 1,000 miles. This gross weight is approximately 1,000-lbs. less than other American Fighters of similar power, in spite of the fact that both armament and armour are greater in the "Boomerang".

On trials the Aircraft has been found to be capable of mastering both the Kittyhawk and the Airacobra in combat, and this is almost entirely due to the very excellent climb and manoeuvrability which the lighter weight and smaller over-all dimensions have made possible.

A ceiling of 35,000-ft. has been attained, while the rate of climb at sea level exceeds 3,000-ft per minute, and even at 25,000-ft the climb exceeds 1,000-ft. per minute. Time to climb to 20,000-ft. is 9½ minutes.

It is now proposed to continue the development of the type by the installation of an exhaust-driven Supercharger which will raise the top speed to approximately 350 m.p.h. at 25,000-ft., while the ceiling will rise to 40,000-ft.

• Still another development, although requiring rather extensive alterations, will be the installation of the 1,700 h.p. Wright Engine, the idea being that the version with the Wright Engine will have maximum performance from sea level up to 20,000-ft., whereas the exhaust-driven Supercharger version with Pratt & Whitney Engine will have maximum performance between 20,000 and 40,000-ft.

Melbourne.  
LJW/F.