

25 pounder AP and 17 pounder APC shot ANNEX

From: Review of War-time Activities. D. O. Morris

In January 1941 the Ministry of Munitions requested the Broken Hill Pty. Co. Ltd. to undertake the manufacture of 25 pounder armour piercing shot at its Newcastle Works. An annex capable of producing 7,000 shot per week was called for and the basis of the venture was that the Ministry of Munitions would supply all of the equipment for machining the shot, the Company would provide additional specialised equipment and a suitable building and would operate the annex. It was also necessary in this instance for the Company to evolve a manufacturing procedure as no details were available in this country of methods of manufacturing 25 pounder AP shot.

A site was chosen adjacent to the newly erected 25 pounder shell annex, but before a building could be erected a process of manufacture had to be decided upon and this involved a good deal of time and planning. It was soon found that the manufacture of **AP** shot required a number of different operations involving forging, annealing, machining, and hardening, and also the use of a special alloy steel.

Details of the method of manufacturing armour piercing bombs which were available at Maribyrnong Ordnance Factory and methods of manufacturing armour piercing naval shells which were in possession of the Commonwealth Steel Co. Ltd., were studied. Such details, however, were not fully applicable to solid armour piercing shot, but were helpful insofar as they provided technical information concerning the heat treatment of the special steel used, and the hardness gradient required in armour piercing projectiles. The production methods used for manufacturing relatively heavy bombs and the AP shells were not applicable to the quantity production of relatively small shot, although some meagre information received from overseas showed that shot were handled in much the same fashion as the heavier bombs.

A method of manufacture was finally decided upon, planned along production lines, and this necessitated a building 450ft long and 75ft wide. Its construction was commenced in June 1941, and completed in September 1941. Quite a good deal of the equipment in the annex comprised forging, annealing, and specialised heat treatment equipment of an original character, which was completely designed, manufactured, and installed by the Company.

Sufficient progress had been made by December 1941, to commence operations in a small way and to experiment in hardening of shot, which is a very particular and important part of the manufacturing procedure. Before the shot could be accepted by the Army, samples had to be submitted to a very rigid proof test and by 13th March 1942, a small parcel of experimental shot was made and submitted for proof. A measure of success was obtained during this first test, which was made at the newly equipped **Stockton Proof Range**. The tests indicated that certain modified hardness characteristics were necessary and a further experimental lot of shot was manufactured and proved on 20th March 1942. This test was very successful and arrangements were then made to commence production and training of operators on a one shift per day basis.