

Chapter I: Introduction

1.0 Mandate of Army Base Workshops

Army Base Workshops (ABWs) were established during Second World War to carry out repairs and overhaul of weapons, vehicles and equipment to keep the Indian Army operationally ready. In order to ensure battle worthiness of the Indian Army at all times, Overhaul¹ of weapons and equipment has to be a well-planned and comprehensively executed activity, to neutralize effects of age, usage and restoration of the weapon system/equipment to Zero Hour, Zero Kilometer² operational condition. There are eight Army Base Workshops, of which seven are responsible for repair and overhaul of equipment/weapons, and one workshop *i.e.* 515 ABW has been tasked with the responsibility of indigenization and manufacture of spares. Table 1 shows the location and mandate of the eight ABWs.

Table 1: Location and Mandate of eight Army Base Workshops

Workshop	Location	Mandate
505 ABW	Delhi	Undertakes depot level repair of Tank T-72 including engines, Scania vehicles including engines, AM-50 bridging system.
506 ABW	Jabalpur (Madhya Pradesh)	Repair of small arms and mortars.
507 ABW	Kankinara (West Bengal)	Repair of Scania vehicles/Kraz vehicles.
508 ABW	Allahabad (Uttar Pradesh)	Repair of Tatra and Scania vehicles.
509 ABW	Agra (Uttar Pradesh)	Repair and overhaul of communication systems, radars, optical including various sights and other electronic equipment and power equipment (Generators).
510 ABW	Meerut (Uttar Pradesh)	Repair and overhaul of Air Defence Weapons Systems, Soldier weapon systems, Gun & specialist vehicles & Engineering Equipments.
512 ABW	Kirkee, Pune (Maharashtra)	Repair and overhaul of ICV BMP II & their variants, Armoured Recovery Vehicles and all AFV engines.
515 ABW	Bengaluru (Karnataka)	Manufacture of spares (Indigenization), manufacture of simulators for field army and overhaul of aviation rotables.

1.1 Organizational Structure

Master General of Ordnance (MGO) functioning under Chief of Army Staff is responsible for ensuring high state availability of weapons, ammunition, equipment, vehicles and stores to the Indian Army during war and peace. MGO is assisted by Director General of Electronics and Mechanical Engineering (DGEME), Director General of Ordnance Services (DGOS), Additional Director General Equipment Management (ADG EM) and Additional Director General Procurement (ADG Proc). Base Workshop Group (BWG) assists DGEME and exercises overall control over the Army Base Workshops (ABW). BWG is responsible for preparation of Long Range Perspective Plan, utilization of resources available with ABWs,

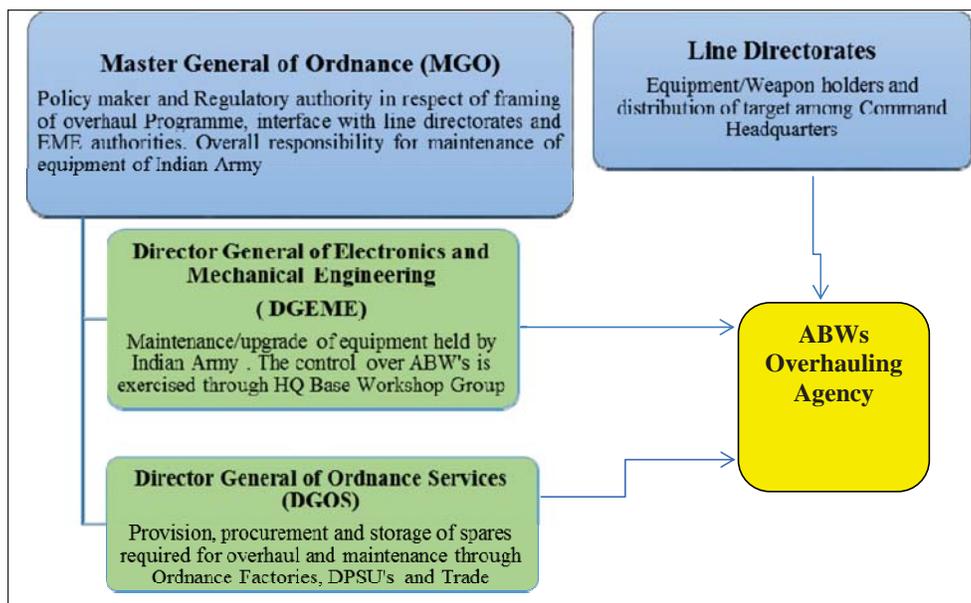
¹ **Overhaul** – Is a critical activity to restore the equipment readiness and neutralize effects of age, usage. This is carried out by stripping the complete equipment and reassembling it by changing the worn out/damaged parts, repairing, and replacing assemblies which out lived their life.

² **Zero Hour, Zero Kilometer**- Restoration of weapon system in as near to new condition by overhaul process.

quality checks of overhauled equipments and allocation /redistribution of manpower within the ABWs.

MGO functions through integrated functioning of multiple internal agencies viz. DGEME- for capacities of workshops for loading targets, DGOS- for availability of spares, DG Mechanized Forces and other user Directorates- for availability of repairable³ and external agencies viz. Ordnance Factory Board, Defence PSUs and other PSUs- for ensuring spares supply for completion of targets set for overhaul and maintenance of fleet of equipment and weapons of Indian Army. Agencies involved in overhaul and their responsibilities are detailed in Chart 1.

Chart-1: Agencies involved in overhaul of Army Equipment and Weapons



1.2 Previous Audit Reports and Ministry's response

Review of Army Base Workshop was commented in Report No. 14 of 1992. The important issues highlighted in the report included determination of workshop capacities with reference to manpower alone despite progressive up-gradation of repair techniques as well as automation in the ABWs and non-exploitation of available capacities due to non-availability of repairable and poor backup of spares.

Ministry in its Action Taken Note (August 2000) stated that as the workshops deal with indigenous and imported equipment and spares availability in respect of indigenous equipment was better, as such utilization of manpower and equipment in ABWs which deal

³ **Repairable-** The equipment due for overhaul activity at ABW, which commences only after receipt of equipment due for overhaul from the feeding depots.

with Indigenous equipment is high. Regarding working out of workshop capacities on the basis of standard man-hours, it was brought out that it was the standard practice.

Working of ABWs was again reviewed and commented under Para No. 3.1 of Audit Report No. 6 of 2005. The report pointed out significant under performance in achievement of overhaul targets, overstatement of capacity utilization, non-availability of spares, delays in overhaul, idling of manpower and delay in creation of overhaul facility. In the Action Taken Note, Ministry stated (November 2006) that for spares management, various steps such as holding of quarterly spares review meeting, target fixation and mid-term review meeting, creation of special task force for monitoring overhaul commitments and regular interaction with Ordnance Branch would be taken up.

1.3 Audit Objectives

Performance Audit of “Working of Army Base Workshops” was taken up to assess the effectiveness of the workshops with regard to timeliness of overhaul, adequacy of infrastructure, timely availability of spares and quality of the repair. The Performance Audit also looked in to the status of assurances given in the Action Taken Notes on earlier reviews. In particular, the audit reviewed;

- Whether the ABWs were able to fulfill their role economically, efficiently and effectively?
- Whether infrastructure available at the ABWs was adequate and modernized timely?
- Whether the spares required for the overhaul were timely provisioned by the Depots and received in time from the supply agencies?
- Whether equipment overhauled met the laid down quality standards?

1.4 Audit Criteria

The audit criteria for the performance evaluation were derived from:

- Army Base Workshop Procedure.
- Five Year Repair Programme framed by MGOs Branch at Army Headquarters.
- Induction Pattern and Overhaul Cycle of the equipment inducted in Army.
- Instructions, Standard Operating Procedures (SOPs), letters issued by DG EME, DGOS, HQ BWG.
- Action Taken Note on Report No 14 of 1992 and Para 3.1 of Audit report No 6 of 2005.
- Special Provision Review Directives, Technical Instructions, and Issue Procedure framed by DGOS for provisioning of spares.
- Overhaul scales for spares framed by DGEME for overhaul of the equipment.

1.5 Scope of Audit

The Performance Audit covered a period of six years from 2010-11 to 2015-16. The audit was carried out at MGO, DGEME and DGOS at New Delhi, HQ BWG at Meerut. Five out of eight Army Base Workshops viz. 505 ABW New Delhi, 509 ABW Agra, 510 ABW

Meerut, 512 ABW Kirkee based on the criticality of the equipment to the Indian Army and 515 ABW Bengaluru being the only spares manufacturing workshop were selected for audit. The audit was also carried out at feeding Ordnance Depots (ODs) viz. CAFVD Kirkee, COD Delhi, Agra and Dehuroad which are responsible for supply of repairables & spares to respective ABWs & collection of overhauled equipment from ABWs and issue the same to units as per release orders of DGOS. Audit visited three⁴ regiments of Infantry Combat Vehicle (ICV) BMP and two⁵ Brigades of Tank T-72 for user feedback on overhauled equipment.

1.6 Audit Methodology

An Entry Conference was held with the Ministry of Defence on 14 July 2015. The objective, scope, and methodology of audit were discussed and criteria agreed upon. Detailed audit scrutiny was conducted during July 2015 to January 2016 at the selected ABWs and Ordnance Depots in order to evaluate the performance against the audit criteria. Field audit included examination of records, collection of information through issue of audit observations, replies thereto and Questionnaire. Exit Conference chaired by MGO was held on 11 November 2016 wherein important aspects brought out in the Report were discussed.

Replies to the audit observations furnished by the MGO were considered while preparing the report. Reply of the Ministry was awaited (November 2016).

1.7 Audit Findings

The audit findings have been categorized in three chapters viz (i) Effectiveness of Army Base Workshops (ii) Infrastructure and Modernization and (iii) Spares Management.

1.8 Acknowledgement

We gratefully acknowledge the co-operation of officers and staff of the MGO, DGEME, DGOS, HQ BWG, Army Base Workshops, Central Ordnance Depots and user units under DGMF.

⁴ **Mechanized Infantry Regiments-** (i) 11 Mech. Inf. Regiment, (ii) 20 Mech. Inf. Regiment and (iii) 6 Guards

⁵ **Armoured Regiments** – (i) 16 (Independent) Armoured Brigade and (ii) 3 (Independent) Brigade