

## Chapter III: Infrastructure and Modernization

### 3.0 Necessity for Modernization of Infrastructure and Technology

Over the years, there had been changes in the weapons and equipment profile of Army with entry of new technology and state-of-the-art equipment. The ABWs were required to upgrade skills with modernization of infrastructure and technology to keep pace with the technology transition.

### 3.1 Non-Preparation of Long Range Perspective Plan

As per the ABW Procedure, the HQ BWG, Meerut is required to prepare a Long Range Perspective Plan (PP) covering period of 20 years. The PP forms basis of planning at the ABWs taking into consideration facilities available, manpower, and equipment to be inducted or already inducted in the Army. Further, ABWs are required to prepare modernization plan by incorporating modern technologies and timely replacement of vintage machinery as per PP.

We observed that no PP was prepared by HQ BWG. Absence of long term planning had resulted in slow creation of overhaul facilities leading to backlogs in overhaul of major equipment as discussed in Para 3.2.1 and 3.2.2.

In reply MGO (May 2016) stated that a perspective plan for 15 years was promulgated in October 2010, however, due to changes perceived in the induction and sustenance of the weapon systems, a fresh Perspective Plan for 15 years had been forwarded to MGOs Branch for approval. The reply is contradictory to the response given to audit in October 2015, where in HQ BWG had stated that only repair programme for five years were prepared.

### 3.2 Inordinate delay in creation of Overhaul facilities

We observed lack of synchronization in creation of overhaul facilities and induction of new equipment. In case of ARV WZT-2 the facility was created at the time of phasing out of equipment from the service whereas for ARV VT-72-B creation of facility was delayed to the extent of 20 years from induction. Though MBT Arjun is due for overhaul from 2020-21 and Tank T-90 from 2018-19 onwards, the agency for overhaul is yet to be nominated. Details of such cases are shown in Table 23 below:

**Table-23: Status of overhaul facilities**

Equipment	Year of Introduction	Due for overhaul	Overhaul facility created in	Remarks
ARV WZT-2	1981-1988	1996-97	Created in 2009	Facility created only three years prior to the period of de-induction as per equipment management policy.
ARV VT 72 B	1994-2003	2009-10	Not yet created	Consultancy contract for preparation of DPR for Overhaul facility has been completed and submitted for approval to Ministry
ARV WZT-3	2001-2007	2016-17	Not yet created	
Tank T-90	2002-	2018 -19	Not yet created	-
MBT Arjun	2004	2020 -21	Not yet created.	-

### **3.2.1 Creation of overhaul facility two years prior to completion of de-induction leading to unfruitful expenditure of ₹ 73.43 crore**

Mention was made in Para 3.1.5 of Report No.6 of 2005 regarding lack of repair technology/facility for the ARV WZT-2 (Armoured Recovery Vehicle for Tank T-55) inducted during the period 1981-82 to 1987-88. Ministry, in its Action Taken Note, stated (November 2006) that Transfer of Technology (ToT) for establishing overhaul facility ex-Poland for ARV WZT-2 was under progress since 1998 and overhaul of equipment was scheduled *w.e.f.* 2006-07. Notwithstanding the assurance, we observed that the pilot overhaul of only two ARVs was completed by August 2009 after procurement of required plant, machinery and spares with ToT for the overhaul at a cost of ₹ 73.43 crore.

After completion of pilot overhaul, 512 ABW overhauled only 22 ARV WZT-2 as of March 2016 against the total strength of 222 indicating tardy progress of overhaul. None of the remaining vehicles could be overhauled during its prescribed life as ARV WZT-2 along with Tank T-55 was likely to be de-inducted by 2018.

In reply MGO stated (May 2016) that the case for overhaul was initiated by 512 ABW in 1998 but was sanctioned by MoD in 2007. It was further stated that overhaul of the balance fleet would get completed by the year 2019-20.

Notwithstanding the reply, the fact remains that OH facility for ARV WZT-2 were created only two years prior to due period for de-induction as per the policy. Thus, creation of facility at a cost of ₹ 73.43 crore under the project was ill planned and the expenditure was unfruitful as by the time the contract for creation of overhaul facility was concluded, the equipment had already exhausted its utility.

### **3.2.2 Non creation of overhaul facilities for ARV VT-72 B and WZT-3**

The ARV VT-72 B is a recovery vehicle for Tank T-72. A total of 156 ARVs were procured from M/s Bharat Heavy Electricals Ltd. (BHEL) and inducted into service during the period 1994-2003. As per maintenance philosophy and intervention norms, 129 vehicles inducted up to 2001 were due for overhaul during 2010-15.

We observed that even after 20 years of the induction of the vehicle, no overhaul facility had been created.

Similarly ARV WZT-3 is a recovery vehicle of latest technology available in Indian Army for Tank T-72. During the years 2001-07, 352 ARV WZT-3 were inducted into service through Bharat Earth Movers Limited (BEML). The equipment were due for overhaul from 2016-17 onwards. However, facility for overhaul has not yet been created.

As stated by MGO, owing to geo-political changes in Czechoslovakia (OEM's Country) during 2001-03, neither OEM nor any other company was ready/capable to overhaul ARV VT-72B. In case of ARV WZT-3, though BEML had signed agreement with the OEM i.e. M/s Bumar, Poland for transfer of technology (ToT) in 1999, it did not undertake the ToT

for maintenance and therefore could not establish infrastructure for overhaul. Only when the OEM (Cenzine, a Polish firm) offered to set up overhaul facility for both the ARVs in 2010, Request for Proposal (RFP) for preparation of Detailed Project Report (DPR) for establishment of overhaul facility for ARV WZT-3 at 512 ABW was issued in November 2011. Consequently MoD, in September 2013, concluded a consultancy contract with the OEM for preparing DPR for establishment of overhaul facility at a cost of ₹ 8.36 crore (US \$ 1,356,202). The firm submitted DPR in June 2015, which was under consideration at Army HQ (March 2016).

Thus, even after 20 years of the induction of ARV-VT 72B and 15 years of ARV WZT-3, no overhaul facility could be created. As a result 35 *per cent* of the ARV-VT 72B in the field Army were off road and non-functional for want of critical spares and mission reliability of the remaining fleet was 50 *per cent* only. Further, ARV WZT-3 due for overhaul from 2016-17 onwards would not be overhauled till the facility for the overhaul is created.

### **3.2.3 Delay in creation of infrastructure for Component Level Repair (CLR) for Tank T-90s**

A total of 310 T-90 Tanks were initially imported from Russia through a contract signed with the OEM i.e. M/s Rosoboronexport (ROE) in February 2001 and inducted into service during 2001-05. While finalising the contract, some aspects of maintainability of the equipment could not be formalised. As a result a protocol was signed in September 2000 wherein OEM had confirmed that technical documents for Component Level Repair (CLR) of T-90 would be offered by them through a separate contract, negotiation for which would be conducted in six months after signing the main contract for import of the Tanks. Thus the negotiation for CLR should have commenced in August 2001.

We, however, observed that case for Component Level Repair was initiated only in 2004 and the sanction was accorded by MoD in August 2006 at estimated cost of ₹ 287 crore. Processing of the case was further delayed and the contract was concluded with the OEM in September 2014 at a total cost of ₹ 1896 crore with PDC of October 2017.

We found that the first Medium Repair (MR) of T-90s became due in 2011-12 and 75 Tanks were off-road for want of various assemblies. In reply, MGO stated (May 2016) that contract of 2001 did not stipulate the date by which proposal for CLR was to be submitted by the Russian firm. This had resulted in delay in initiation of CLR project and the cost escalation. As regards unserviceable assemblies held for repairs, it was stated that case for procurement of 310 Medium Repair kits was under progress in MoD. The repair would commence on availability of spares that are scheduled from October 2016.

The reply is not acceptable as the protocol signed in September 2000 had provision for conducting a separate contract for ESP in six months after signing of the main contract. The inordinate delay in finalizing the contract for CLR not only resulted in huge escalation in the cost but also affected the operational preparedness of the Army due to holding of unserviceable equipment.

### **3.2.4 Lack of facilities for repair/overhaul of MBT Arjun**

MBT Arjun was developed by Combat Vehicle Research & Development Establishment (CVRDE) and was manufactured at HVF, Avadi. A total of 124 numbers of Tanks were inducted into the Army from 2004-05 onwards. The Tank is due for overhaul from 2020-21. At the time of induction, 69 *per cent* components were imported. These two agencies (CVRDE and HVF) were responsible for providing the components required to sustain the fleet during its life cycle through indigenization or import. However, owing to the failure of CVRDE in indigenizing the required components, HVF could not supply any spares. In the absence of spare support MBT Arjun was not being operational since 2013. MOD in April 2015 directed that DRDO should make 20 tanks with 90% operationally able by August 2015 and nominated a committee for the same. The committee was also directed to work out an SOP for long term sustenance of Arjun Tank.

Regarding present status on the above, MGO stated (May 2016) that nomination of HVF, Avadi for overhaul had been proposed to MoD in October 2015.

### **3.3 Non- implementation of Project Tulip even after thirteen years of sanction**

MoD in January 2003 sanctioned Project Tulip for establishment of additional facilities at 512 ABW as a nucleus for repairs/overhaul of communication and night vision devices for BMP II/ IIK at a cost of ₹ 22.54 crore. The sanction included procurement of 246 Plant, Machinery and Special Equipment (PMSE) at a cost of ₹ 19.64 crore. Of the sanctioned cost of equipment of ₹ 19.64 Crore, cost of communication and night vision devices was ₹ 2.32 crore and ₹ 8.34 crore respectively.

We noticed that the project was sanctioned without any Probable Date of Completion (PDC). Further, project specific financial powers were not delegated to Commandant, 512 ABW till February 2006 for local purchase and maintenance of PMSE. After delegation of financial powers, Commandant 512 ABW procured 166 PMSE amounting to ₹ 3.85 crore by November 2015. Other PMSE could not be procured due to cost escalation. Audit scrutiny revealed that to keep the procurement within the sanctioned cost of the Project, DGEME in July 2015 approved the deletion of 48 PMSEs sanctioned originally and procurement of 32 PMSE with cost escalation of ₹ 5.99 crore. The deleted PMSEs (originally sanctioned cost ₹ 9.08 crore) also included collimators that are required for the overhaul of vision devices.

In reply, HQ BWG stated (September 2015) that the technical specification of the Collimators could not fructify despite the workshop approaching various agencies. Overhaul of vision devices was now being carried out at Opto-Electronics Factory (OLF) Dehradun as they had accepted the responsibility of overhaul of complete requirement of vision devices of BMP. MGO (May 2016) accepted that all the PMSEs required for overhaul have not been procured so far.

### 3.4 Non- utilization of proof firing facility worth ₹6.53 crore and issue of overhauled BMPs to units without proof firing

512 ABW had been overhauling BMP II since 2004. One of the most vital quality check of overhauled Armament as per quality assurance agency (DGQA) is adjustment firing which is to be carried out by firing 30mm Canon gun and 7.62 mm Co-axial machine gun. As the ABW did not have this facility, a special work for proof firing was proposed in 2008.

Though, the site selected for the facility of proof firing was in the remote area and did not have MES services for electricity and water, administrative approval for the same did not cater for these essential services. Resultantly, the facility created in November 2013 at a cost of ₹ 6.53 crore, did not have electric and water connection and hence could not be taken over by the ABW (March 2016). Now a separate proposal for catering these services had been initiated (July 2015) and was under process.

Thus overhauled BMP-II/IJKs continued to be issued to the units and formations without test firing. As a result defects/failures in Barrel spring assemblies of 30 MM Gun were reported by the units /formations. In defect investigation, DGQA found (February 2014) defects in 20 cases of guns overhauled by 512 ABW. It was further stated that no such case was noticed in the guns overhauled by Ordnance Factory where this test was being carried out.

In reply MGO accepted (May 2016) that though the proof firing facility was handed over to 512 ABW in April 2014, the same could not be put to use for want of electric and water supply. It was further stated that the collegiate conducted to address issue of failure of barrel spring had not attributed it to lack of proof firing.

### 3.5 Delays in Modernization of ABWs

As per the 11<sup>th</sup> Army Plan (2007-2012), all eight ABWs were to be modernized. Necessity for modernization of the ABWs was felt as a large portion of technical and administrative infrastructure including plant and machinery was of old vintage and nearing the end of their useful life and technologically inadequate and primitive to sustain newly inducted state-of-the-art weapon systems and equipment. The cost of modernization proposals of five selected ABWs was ₹ 1781.44 crore as indicated in Table 24 below:

**Table 24: Cost of Modernisation Proposals**

Name of the ABW	Value of Proposal (₹ in crore)
505 ABW	200.00
509 ABW	458.34
510 ABW	381.01
512 ABW	636.65
515 ABW	105.44
<b>Total</b>	<b>1781.44</b>

The proposals of the ABWs were accepted by MGO and consultancy contracts for preparation of DPR in respect of these five ABWs was concluded by IHQ of MoD (Army) between March 2010 and December 2012 at a cost of ₹ 6.51 crore. However, DPR in

respect of 505 and 510 ABW could be completed only in June 2014 and for 512 in June 2015. The DPRs for the remaining two ABWs were submitted by the consultants only in September 2016.

In reply MGO stated (May 2016) that much needed modernization had gained momentum and was likely to be completed by 2021-22.

### **3.6 Ineffective execution of procurement of PMSEs included in approved Priority Procurement Plan (PPP)**

The ABWs initiate proposals for procurement of PMSEs for the repair/overhaul activities, considering necessity arising out of new equipment profile and replacement of vintage machinery. The PMSEs projected by the ABWs are included in Priority Procurement Plan (PPP). We found that during the year 2012-13 to 2014-15, total 226 PMSEs valuing ₹196.09 crore were approved by MGO for inclusion in the PPP. However, the total allotment under Capital and Revenue Heads during the period 2012-15 was only ₹ 6.20 crore. This indicated that the allotment of funds to procure PMSEs was not commensurate with the value of PMSEs included in the approved PPP. We further observed that out of allotted funds only ₹ 2.35 crore i.e. 38 *per cent* were utilized. Out of 226 PMSEs, 192 were pertaining to five ABWs selected in audit, against which only 31 PMSEs were procured.

While agreeing to audit observation on non-procurement of PMSE, DGEME stated (August 2015) that non-procurement of the PMSEs would have a bearing on the efficiency of the ABWs as overhauling was being carried out with vintage PMSEs whose replacement are sought in the PPPs. MGO further stated (May 2016) that allotment of fund was adequate and done as per cases in progress. Actual allotment is sought when cases reach financial concurrence stage. It was also stated that all the cases which were listed in PPP would be procured during the current financial year.

#### **3.6.1 Non-replacement of Effluent Treatment Plant (ETP)**

512 ABW initiated a proposal (April 2012) for procurement of new ETP for replacement of the existing one that outlived its useful life. The ABW is handling hazardous effluents and chemicals which keep accumulating during the process and need to be neutralized before discharging it into drains, to avoid environmental pollution. We noticed that though replacement of ETP was included in the Priority Procurement Plan (PPP) of the year 2009-10, the same was yet to be procured (March 2016). It was further noticed that the effluent treatment was being carried out manually, which is highly unsafe and an inefficient practice. This industrial waste was being discharged in to the drainage.

In reply, MGO stated (May 2016) that the ETP could not be procured as specifications and budgetary quotes of vendors were different and could not be finalized. It was further stated that after promulgation of new delegation of financial powers the same was included in revenue procurement plan of 2016-17 and would be procured in 2016-17. It is evident from the reply that despite inclusion of the procurement proposal in PPP 2009-10, the specifications of ETP were yet to be finalised.

**Conclusion:**

No Long Range Perspective Plan for creation of infrastructure for the newly inducted equipment or modernization of the workshops was in place. Failure to plan the setting up of infrastructure at the time of induction of the equipment had resulted in a situation where the facilities were created inordinately late, thus, not only impacting the operational readiness due to delayed overhaul but also leaving the expenditure unfruitful.

Present plant and machinery at ABWs was technologically inadequate and primitive to sustain newly inducted state of the art weapon system and equipment. Proposals to modernize infrastructure at ABWs to achieve up-gradation were pending and in few cases, where it was approved, procurement was not effected either due to lack of funds or non-utilization of funds.

**Recommendations:**

1. Preparation of Long Range Perspective Plan should be ensured in order to facilitate planning and modernization activities at the nominated ABWs so that the overhaul facilities are ready by the time equipment are due for overhaul.
2. Creation of repair/overhaul facilities should be planned and contracted at the time of induction of the equipment itself so that benefits accrue timely and can be exploited during the entire life cycle of the equipment.
3. Overhaul of vision devices is now being carried out at Opto-Electronics Factory (OLF), Dehradun as they had accepted the responsibility of overhaul of complete requirement of vision devices of BMP. In view of this development, MoD may review the scope and implementation of Project Tulip for establishment of additional facilities at 512 ABW.
4. AHQ should lay out a time bound action plan for modernization of ABWs to overcome the problems due to vintage PMSEs currently in use and also to sustain new generation weapon systems.
5. Ministry should expedite the Component Level Repair (CLR) project for supporting Tank T-90 with repair facilities.
6. As MBT Arjun Tank are due for overhaul from 2020-21, Ministry should explore and expedite indigenous development of components of MBT Arjun and creation of repair and overhaul facilities.
7. Army HQ should expedite operationalisation of shooting gallery at 512 ABW and necessary authorization of ammunition for test firing of overhauled guns.