

Chapter-IV: Spares Management

4.0 Introduction

The review on Working of Army Base Workshops, carried out by the C&AG (Report No. 14 of 1992) highlighted the issue on non-exploitation of full capacity of ABWs due to non-availability of repairable and poor backup of spares.

In the Action Taken Note, Ministry stated (August 2000) that various steps had been taken to forecast realistic targets and achieve them by way of Equipment Management Policy (Maintenance Philosophy and Intervention Norms) before induction of equipment. Ministry also suggested holding of annual, half yearly and quarterly meetings to review the spares availability.

Further, comment regarding non-achievement of targets by ABWs, was made in the C&AG report No. 6 of 2005 (Para 3.1). In the Action Taken Note, Ministry accepted (November 2006) that non-availability of spares was the major reason for non-achievement of targets. To overcome the problem of non-availability of spares, various actions such as holding of periodical meetings amongst stake holders, discussions during target fixation meeting and mid-term review meetings, limited local purchases to meet the emergent requirements, wherever engineering standards are met *etc.* were taken by Ministry.

Despite the corrective steps taken by the Ministry through ATNs, non-availability of spares continued which remained a major hindrance in achievement of the overhaul targets. We analyzed the implementation of the spares management measures including provisioning. Our examination of records at DGEME, HQBWG, ABWs and feeding Ordnance Depots revealed the following points:

4.1 Provisioning of spares

The annual review meeting on fixation and revision of targets chaired by MGO decides targets for overhaul by ABWs. Accordingly, DGOS issues Special Provision Review Directive (SPRD) indicating total population of vehicles for maintenance and overhaul in the Army. As per the directives, advance provisioning of spares and materials required for overhaul is the responsibility of feeding depots i.e. CAFVD and CODs. Based on the SPRD, the concerned feeding depots are required to initiate action for provision of spares. This process has to commence five years in advance of the ABWs production year. The feeding depots obtain the required spares from Ordnance factories, PSUs and through trade.

Each Workshop is provided with an Ordnance Store Section (OSS) specifically to coordinate and facilitate the timely availability of spares. OSS is responsible for placing demand for spares as per overhaul programme on the feeding depot, in June of each year, i.e. nine months in advance of the production year.

4.1.1 Failure of Ordnance Depots in supply of spares

Our examination of the OSS records at ABWs, during the review period, revealed that the spares demanded were not provided by the Depots to the Workshops in required range¹⁶ and depth.¹⁷ The details of non-availability are summarized in Table 25 below:

Table 25: Non availability of items during the year

Year	512 ABW@			505 ABW#			510 ABW*		
	Types of Items demanded	Types of Items received	Non availability percentage	Types of Items demanded	Types of Items received	Non availability percentage	Types of Items demanded	Types of Items received	Non availability percentage
2010-11	1580	996	37	4894	2757	44	12612	3514	72
2011-12	2565	1942	24	5702	2758	43	9497	3169	67
2012-13	2267	1501	34	3386	1664	50	9380	2649	72
2013-14	2490	2008	19	4541	2080	54	6260	1656	74
2014-15	2741	2060	25	4274	2426	43	9684	3041	69
2015-16	3520	2640	25	8320	4242	49	6992	2701	61

@ Items demanded from CAFVD Kirkee for BMP

Items demanded from CAFVD Kirkee for Tank T-72

*Total items demanded from all CODs

At 512 ABW it can be seen that the percentage non-availability of spares in respect of the total items of BMPs was in the range of 19 to 37 *per cent*. Similarly at 505 ABW and 510 ABW, non-availability percentage ranged between 43 and 54 *per cent* and 61 and 74 *per cent* respectively.

We further observed at 512 ABW that some of the production hold up items like crank shaft assembly (as per the overhaul scale, four to be replaced with new for every ten engines overhauled), required for overhaul of UTD 20 Engine remained unavailable since 2012-13 onwards. Non-availability of spares for overhaul of UTD 20 Engines in required range and depth necessitated calling in additional repairable engines by 512 ABW from feeding depots for facilitating rollover. This resulted in accumulation of 100 engines as of March 2016 for overhaul at 512ABW. UTD 20 Engine required for overhaul of BMP vehicles (overhaul scale is 40 engines per 100) were also not received. Thus the workshop had to utilize the overhauled engines instead of new engines.

¹⁶ Range of spares- Total type of spares required for overhaul

¹⁷ Depth of spares- Quantity of particular spares required.

Similarly, some of the production hold up items at 505 ABW like ERA Box¹⁸, Track Assembly, AS-34 internal communication device, Night sights (TKN-3 and TPN 1-49-23) remained unavailable since 2012-13 onwards in full depth. ERA Box is to protect the Tank from anti-Tank ammunition, Track assembly is the part on which Tank moves whereas night sights provides night vision. Due to continued non-availability of these items, overhaul of the Tanks was carried out with deviation sanctions, affecting the operational efficiency of the Tanks.

Our examination of the records at 509 ABW during the review period revealed that the spares demanded by the workshop were not supplied by COD Agra in complete range and depth. The percentage of non-compliance of spares during the period 2010-11 to 2015-16 in respect of important equipment like Radar, Radio, Line and Optoelectronic equipment was 36 to 52, 61 to 76, 71 to 94 and 64 to 93 respectively. The delay in supply included 72 types of spares which were pending for more than five years.

In reply, MGO stated (May 2016) that low availability of spares was the primary reason for Production holdups and non- delivery of spares by Ordnance Factories/ DPSUs was the main reason for slippages of targets and under performance by the ABWs.

Low compliance of spares on the part of feeding depots due to delay/non supply of spares by OFs/ DPSUs affected the targets of overhauls, leading to huge backlog in overhaul and consequently affecting the availability of equipment to the field Army, thereby reducing operational readiness.

4.1.2 Delay in placement of demands for spares by CAFVD, Kirkee

As per Army HQrs instructions, Demand/ Supply Orders should be placed by Ordnance Depots within two months from the date of provisioning review. In order to examine the provisioning done by the Depots during the review period, 23 critical spares of Tank T-72 and BMPs were examined for sample check.

We observed that in seven cases indents were forwarded to IHQ of MoD for procurement as they were not within the financial powers of the Commandant, CAFVD. In these cases, there was either delay in sanction by the CFA or sanction was not accorded and even in cases of delayed sanction, supply orders were not placed by the CAFVD. In respect of the remaining 16 cases, procurement of the spares was sanctioned by the Commandant, CAFVD and supply orders were placed on private vendors. All these supply orders were cancelled during September 2011 to February 2012 mainly due to failure of the firms to supply the stores. Subsequently, indents for supply of all the 23 items were placed on Ordnance Factories in March 2012. Incidentally, these supply orders were not required to be placed with the private vendors in the first place as MoD guidelines (March 2002)

¹⁸ ERA box are provided for protection against anti-tank ammunition, Repaired old track assembly were being fitted post overhaul against new, Non-availability of AS-34 leads to no internal communication and No night vision capability present with the affected Tanks due to absence of Night sights (TKN-3 and TPN 1-49-23)

clearly stipulate that procurement of all the spares in respect of T-72 and BMP were to be met from OEM *i.e.* Ordnance Factories.

In respect of all the selected 23 cases, there were abnormal delays ranging between 725 days and 2551 days in the placement of orders with the OEM.

In reply MGO stated (July 2016) that delay had occurred due to single source of supply/ reduction in scales, procedural delays in obtaining CFA sanction, DGQA inspection issues, cancellation of TPC indents and items not in factory Bill of Material.

The reply is indicative of the fact that the internal delays in the organization are affecting the procurement process. Thus, the very purpose of advance planning of five years to procure spares required for overhaul in order to issue to ABWs at the beginning of production year for overhaul was defeated.

4.1.3 Non-materialization of indents placed on Ordnance Factories

Ordnance Factories (OFs) are the designated supplier of spares being OEM for Tank T-72 and BMP. CAFVD, Kirkee places indents on the respective OFs for the spares of these combat vehicles. The annual targets for supply of spares for the factories are fixed by the MGO after due consultation with all stake holders, including representation from the OFB. We observed that, though the Interim Period¹⁹ (IP) of Ordnance Factories for supply of spares was 36 months, the factories could not supply the spares in adequate range and depth.

Our examination revealed that as of September 2015, 15240 indents placed by CAFVD up to March 2013 were overdue for delivery against nine factories responsible for supply of spares for Class "A" vehicles. As far as supply of spares for BMP, Tank T-72 and the engines for both these vehicles are concerned, supplies against 10499, 1122 and 2749 indents were awaited from HVF Avadi, EF Avadi and OF Medak respectively. These include indents outstanding against EF Avadi since 2002-03 and on HVF since 2003-04.

4.1.4 Non-materialization of indents placed on PSUs

i. Tatra vehicles which are Class B *i.e.* non combat vehicles used in Indian Army for transportation of Tanks and also as missile launcher, gun-towing tractor, ammunition carrier, medium recovery vehicles, etc. Overhaul of Tatra vehicles are carried out by the ABWs at Meerut and Allahabad. COD, Dehuroad is the feeding depot and M/s BEML, Bengaluru is the designated for supply of all spares and aggregate of Tatra vehicle.

Our examination at COD, Dehu Road revealed that 142 supply orders (997 items) of the period 2008 -14 placed on BEML for supply of spares for Tatra vehicle/engine did not materialize.

¹⁹ Interim Period- It is the period in which the suppliers have to supply the stores.

Further, our examination of records at BEML Bengaluru revealed that 100 *per cent* supply was pending against 795 items and part supplies were made against 25 items. The reasons for non-supply of spares was attributed to non-supply of spares by OEM, non-indigenization of most items of spares ordered for non-euro version of Tatra vehicles and extraneous situation of import embargo on BEML post June 2012.

The above situation was despite the fact that M/s BEML had agreement with the OEM (M/s OMNIPOL) way back in 1986 for indigenous manufacturing of Tatra Vehicles and its spares. Issue of inordinate delay in indigenisation of spares by BEML was highlighted in our earlier report (Para 2.1 of CAG report No. 35 of 2014 Union Government, Defence Services). As stated in the report the indigenisation of the spares did not commence till 2007 and as a result only 4,423 items of spares out of total 10,878 items i.e. 40.66 *per cent* had been indigenised by 2013. Further there was short fall in supply of 1758 items of spares worth ₹ 39.51 crore out of 4078 indigenised items for which orders were placed by COD Dehuroad during 2008-14.

ii. During the period 2010-16, of the total 1152 supply orders valuing ₹ 475.78 crore, placed by COD Agra on M/s BEL for supply of electronic items for equipment like Radar Fly catcher, Radar TC reporter etc., 689 orders (60%) valuing ₹ 323.21 crore were pending on M/s BEL as indicated in Table 26 below:

Table-26: Supply orders pending on M/s BEL

Year	SOs Placed	SOs Pending		Value of Pending SOs (₹ in crore)
		Nos.	% of non-material-ization	
2010-11	188	107	57	8.44
2011-12	294	119	40	31.28
2012-13	109	45	41	20.90
2013-14	53	28	53	39.96
2014-15	188	105	56	57.21
2015-16	320	285	89	165.42
Total	1152	689	60	323.21

We observed that these pending orders included 72 production hold up items. Non-availability of these production hold up spares therefore affected the overhaul of Radar Flycatcher, BFSR and TC Reporter.

4.2 Non-availability of critical spares leading to deviation sanctions

As per Technical Instruction No. 2 issued (November 2004) by HQ BWG, Deviation sanctions may be initiated by concerned ABW in case of non-availability of components or modification kits, provided these do not adversely affect the operational reliability and performance of the equipment as a whole and do not cause any risk to the life of crew or operator. The issue of deviation sanctions should not be a matter of routine but an exception.

Quality Control Engineers (QCEs) attached to the workshops, who directly function under HQ Base Workshop Group in their remarks would give detailed justification and reasoning, both technical and logistic, while recommending or otherwise, a deviation. Commandants of ABWs are personally responsible for the efficient operation of equipment in respect of which deviation sanctions have been granted. In this regard the following points were noticed at the selected workshops.

505 ABW

The items for which deviations were accorded by MGO, while issuing Tanks T-72 to the Depot/Units due to non-availability of critical spares and assemblies are indicated in Table 27 below:

Table-27: Deviations sanctions accorded at 505 ABW for want of spares

Year	Output of T-72	Items for which deviation accorded						
		Gunner NVD TPN 1-49, NVD TKN-3	ERA Box	AS-34	AS-37	Road Wheel	Track Assy	Gasoline Engine
2010-11	35	35	-	-	-	-	-	-
2011-12	10	09	-	01	-	-	01	-
2012-13	50	06	40	22			43	09
2013-14	30	-	30	15	18	22	06	04
2014-15	40	-	40	-	15	38	13	12
2015-16	40	-	10	-	-	10	10	05

It can be seen that the Tanks were issued to units for use without replacement of vital items like ERA Box, Track Assembly, AS-34, Night vision devices for which deviation was accorded. These were yet to be received in the field which would affect the performance of the Tanks. Given the significance of these important components *i.e.* ERA Box- which protects Tanks from explosive attack; Track Assembly- used for movement of the Tank; AS-34- Communication device and Night vision devices in the overall functioning of the Tank, their issue to the units for operational purpose was fraught with the risk of loss of life and equipment.

512 ABW

We observed from the compiled data of the Deviation sanctions proposed by 512 ABW and accorded by MGO, that all the 398 overhauled BMPs issued to CAFVD during the period (2010-16) under review were sanctioned with deviations. Contrary to the provisions in technical instructions, we observed that deviation sanctions were accorded as a matter of routine and 139 BMPs were issued against recommendation of Quality Control Engineer (QCE), which included 19 BMPs overhauled in 2010-11 and 77 BMPs overhauled in 2013-14 that were declared by QCE as ‘not battle worthy’ due to non-availability of night vision devices, but were cleared by the MGO despite the recommendations of the QCE.

In reply 512 ABW stated (August 2015) that in absence of spares, the workshop did not have any option but to ask for deviation and hand over the overhaul equipment. It is evident from the reply that operational reliability of the equipment was not being ensured as these vehicles would suffer from night blindness in a war scenario.

In reply to audit observation, MGO stated (May 2016) that deviation sanctions are strictly asked for spares/ assemblies which do not affect the operational reliability of the equipment under any circumstances. It was further stated that in case the deviation sanction affects the operational requirement, the deviation sanction is issued in consultation with Line Directorate and MGOs Branch to utilize that particular equipment till receipt of necessary spares from source of supply.

The reply is not tenable as DGEME with reference to indigenization of assemblies/ sub-assemblies had conveyed (May 2015) their concerns to Directorate of Indigenisation that due to non-availability of spares, the deviation sanctions were invoked to circumvent the problem in the short run and the equipment remained incomplete and the deficient items never got issued to the equipment. Hence it is evident that such equipment, though issued to the units are not fully fit for the operations.

4.3 Non-replacement of defective stores by Ordnance Factories

The feeding depots receive spares from Ordnance Factories under self-certification by QA of the Ordnance Factories which are subjected to inspection by Quality Control (QC) section of ABWs. The QC initiates 'Defect Report' for defective spares and the defects are investigated by CQAs being Authority Holding Sealed Particulars (AHSP). After completion of defect investigation, the CQAs recommend back loading of defective stores to Ordnance Factories/DPSUs for replacement/rectification. We observed that most of the defective stores were replaced by the supplier i.e. M/s BEL. However, the response of the Ordnance Factories in replacing the defective stores was very poor.

- **512 ABW**

CAFVD had back-loaded defective stores worth ₹3.19 crore during the review period to OF Medak for replacement but no replacements were received even after periods ranging from one to five years (October 2015). OF Medak in November 2015 confirmed that no cost adjustment was made for the defective stores and the rejected items would be rectified/ repaired by them.

- **510 ABW**

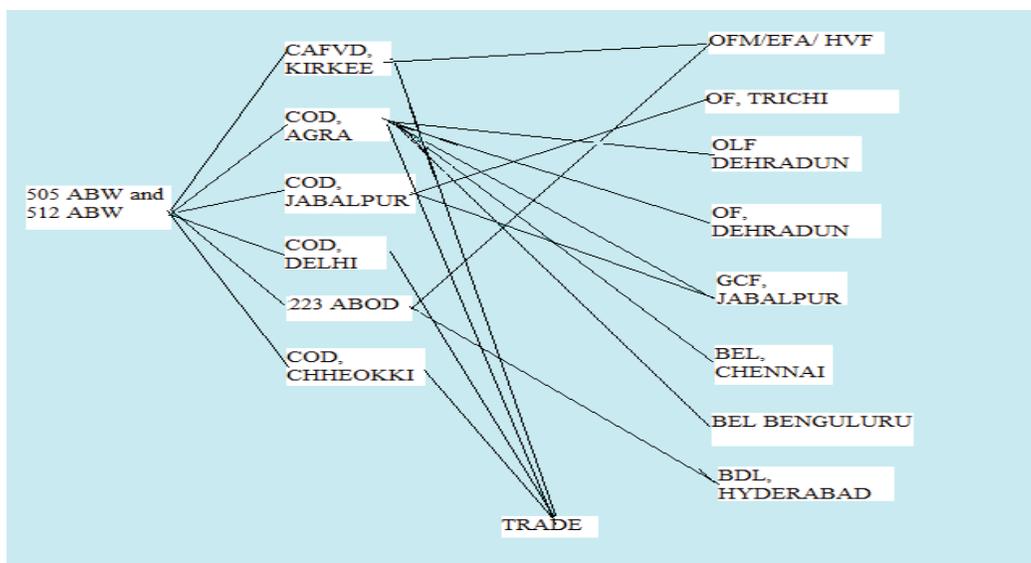
Similarly, 510 ABW raised 173 defect reports during the review period. The defective store was lying at OSS 510 ABW. The defective store was yet to be back loaded to the concerned depots.

Thus, the slow pace of Ordnance Factories in replacing defective stores and delay on the part of 510 ABW to backload the defective stores is a matter of concern as it affects the overhaul activities at ABWs.

4.4 Delay in Implementation of ‘System Based Central Depots’

The two major workshops *i.e.* 505 and 512 ABW responsible for overhaul of Class “A” vehicles are dependent on six Central Ordnance Depots for obtaining the spares for the overhaul of respective equipment. Present model for spares supply in existence at the ABWs is shown in Chart-2 below:

Chart- 2: Model for supply of spares.



The dependency on multiple depots for spares support of equipment was a major area of dissatisfaction for the ABWs, as they had to raise multiple demands and correspond with various feeding depots. In order to improve user satisfaction and ensure better equipment management, MGO decided in July 2013 to redistribute the entire ordnance inventory in a phased manner and workout the modalities for implementing ‘System Based Central Depots’.

As a pilot project, CAFVD, Kirkee was to be established as a system depot for Tank T-72 and T-90. For this, all central depots were to identify the exclusive inventory pertaining to T-72 and T-90 Tanks and transfer the same to CAFVD by December 2013. We, however, observed that the transfer of inventory from COD Agra to CAFVD was completed only in September 2015. Further, CAFVD was yet to place supply order for these spares (March 2016).

In reply DGOS (July 2016) while reiterating that CAFVD must continue to act as the single window for spares management of Tanks T-72 and T-90 did not give specific comment on the delay in implementation of pilot project.

4.5 Lack of coordination between supply and overhaul agency resulting in procurement of unwarranted spares

DGOS is responsible for provisioning of spares and DGEME is responsible for overhaul and maintenance of fleet of Army vehicles. Both these agencies under MGO, are required to work in close co-ordination on spares procurement and management to achieve the goal of timely and satisfactory overhaul. We however observed that lack of co-ordination between these two agencies had resulted in procurement of unwarranted spares as discussed below:

352 ARV WZT-3 were procured by Army in phases between the year 1999 and 2004 and these were being exploited regularly. Over a period of 15 years, wastage pattern of spares has been established.

We observed that for concluding a contract agreement (October 2011) with M/s BEML for supply of 204 ARV WZT-3 at a cost of ₹ 1400.85 crore, the Ordnance Branch was not consulted by EME Branch before finalizing the list of spares to be included in contract under MRLS (Manufacturers recommended list of Spares) in spite of the established wastage pattern. As a result 765 spares where wastage pattern is established were not included in MRLS and 83 items for which no wastage had been established were included. Had the list of MRLS been finalized in consultation with Ordnance Branch, these spares would have been received as a part of contract.

In reply, MGO stated (May 2016) that though the wastage pattern of spares was established, M/s BEML could not supply the spares, hence MRLS was included in the contract.

The reply is not tenable as the stocking agency (DGOS) should have been consulted by DGEME prior to inclusion of MRLS in the contract so that only such stores with established wastage pattern were procured.

Conclusion:

In the Action Taken Note to C&AG report of 2005, Ministry had 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. However, the problem of timely availability of spares continued. Non availability of spares in adequate range and depth and in time was the main reason for delay in overhaul and consequent, backlog of equipment for overhaul. The demands for spares were also not placed in time by feeding depots on supply agencies. OEMs though nominated as primary suppliers of spares and single window for particular equipment, also failed as they did not have adequate capacities to meet this obligation.

In the absence of critical spares, the overhauled equipment were issued to units and formations with deviation sanctions. These deficiencies could also not be addressed in the field, thus, affecting the performance of the equipment.

ABWs had complex model of spares supply where spares for equipment were demanded from multiple feeding depots, located at different places. Though, to overcome the problem,

concept of system base central depot was conceived, however the pilot project for creating CAFVD as a single window for spare management for Tank T-72 and T-90 is yet to be implemented.

Recommendations:

1. An integrated IT based spares management system needs to be put in place for timely provisioning, procurement and availability of spares.
2. The System based depots concept introduced by Army need to be implemented on priority.
3. For augmenting availability of spares, constraints in the availability of spare need to be identified and process of making available spares through manufacturing or procurement from trade/OFs need to be streamlined. Reasons for delays in execution of Work Orders at 515 ABW need to be diagnosed and addressed.

New Delhi
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(PARAG PRAKASH)
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Countersigned

New Delhi
Dated: 26 December 2016


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