

NINTH REPORT
STANDING COMMITTEE ON DEFENCE
(2014-2015)

(SIXTEENTH LOK SABHA)

MINISTRY OF DEFENCE

DEMANDS FOR GRANTS
(2015-2016)

ORDNANCE FACTORIES
AND
DEFENCE RESEARCH AND DEVELOPMENT ORGANISATION
(DEMAND NO. 26 & 27)

*Presented to Lok Sabha on 27.04.2015
Laid in Rajya Sabha on 27.04.2015*



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COMPOSITION OF THE STANDING COMMITTEE
ON DEFENCE (2014-15)

Maj Gen B C Khanduri, AVSM (Retd) – *Chairperson*

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- §23. Smt. Pratyusha Rajeshwari Singh

* Sad Demise on 05.09.2014.

** Ceased to be Member of the Committee on 09.11.2014.

§ Nominated w.e.f. 22.12.2014.

(iv)

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3. Shri Rahul Singh — *Under Secretary*
4. Shri Rajesh Kumar — *Executive Assistant*

Nominated *w.e.f.* 08.10.2014.

© Ceased to be Member of the Committee on 08.10.2014.

INTRODUCTION

1, the Chairperson of the Standing Committee on Defence (2014-15), having been authorised by the Committee to submit the Report on their behalf, present this Ninth Report on 'Demands for Grants of the Ministry of Defence for the year 2015-16 on Ordnance Factories and Defence Research and Development Organisation (Demand No. 26 & 27)'.

2. The Defence Services Estimates were laid on 13 March 2015 in Lok Sabha. The Committee took evidence of the representatives of the Ministry of Defence on 24 and 25 March 2015. The Committee contemplated over the views expressed by the representatives of the Ministry of Defence for inclusion in reports on Demands for Grants at their sitting held on 06 April 2015. The Draft Report was considered and adopted by the Committee at their sitting held on 24 April, 2015.

3. The Committee wish to express their thanks to the officers of the Ministry of Defence and representatives of the three Services for appearing before the Committee and furnishing the material and information which the Committee desired in connection with examination of the Demands for Grants.

4. For facility of reference and convenience, the recommendations/ observations of the Committee have been printed in bold letters in Part-II of the report.

NEW DELHI;
24 April, 2015
04 Vaisakha, 1937 (Saka)

MAJ GEN B C KHANDURI, AVSM (RETD),
Chairperson,
Standing Committee on Defence.

CHAPTER I

ORDNANCE FACTORIES

(Demand No. 26)

Ordnance Factories are an integrated base for indigenous production of Defence equipment and ammunition and form the backbone of the country's Defence production. Defence production is a highly specialized sector, full of complexities and challenges, where products have to be safe, reliable, consistent and capable of operating under varying terrains as well as climates and in extreme conditions. Accordingly, the technologies applied, which cover a wide spectrum of engineering, metallurgy, chemical, textile, leather, optical technologies etc. have to ensure high quality and productivity, apart from meeting the primary objective of self-reliance. Ordnance Factories also fulfil certain requirements of Paramilitary and Police Forces for arms, ammunition, clothing and equipment. Ordnance Factories endeavour to enhance their capacity utilization not only by securing orders from the Defence forces but also through sustained efforts in diversification to non-defence customers and exports. However, priority of the Ordnance Factories is indigenous production of Defence products only.

1.2 They produce a wide range of arms and ammunitions for the Infantry, Armoured Corps, Artillery, Air Defence Artillery and Engineer Corps of the Army. Ordnance Factories produce ammunition for Navy and Air Force and have taken up indigenous development of Naval armaments. The factories produce military transport vehicles, infantry combat vehicles, armoured vehicles, optical and opto-electronic instruments, summer and winter uniforms, parachutes, miscellaneous leather goods and general stores.

1.3 The Ordnance Factories Organization is a blend of old and state-of-the-art factories, with the first Ordnance Factory established in 1801 at Cossipore, near Kolkata, and two new ordnance factories are coming up at Nalanda in Bihar and Korwa in UP. At present Ordnance Factories manage 41 manufacturing units and 32 other establishments. Ordnance Factories have been continuously upgrading their infrastructure, with induction of state-of-art technologies to meet futuristic requirements of users.

41 Ordnance Factories are divided into 5 operating divisions, based on the main products/technologies employed:—

- (i) Ammunition & Explosives - 11 Factories.
- (ii) Weapons vehicles & Equipments - 11 Factories.
- (iii) Armoured vehicles - 6 Factories.
- (iv) Ordnance equipment - 5 Factories.
- (v) Materials & components - 8 Factories.

Budget and Expenditure

1.4 In a presentation before the Committee, a representative of the Ordnance Factory Board, submitted the following Budget utilization statement:—

Year	Capital Expenditure			Revenue Expenditure		
	BE	RE	Actual	BE	RE	Actual
2010-11	769	456	454	11875	11704	10903
2011-12	400	300	278	11640	12470	12141
2012-13	400	400	349	13015	12114	11936
2013-14	436	466	465	13856	13124	12834
2014-15	1207	660	765 expected	14317	14237	13617 expected

1.5 When asked by the Committee about the utilization of Budget in 2014-15 by Ordnance Factories, wherein Capital Expenditure amount was reduced from Rs. 1207 crore to Rs. 660 crore at RE stage, a representative of the Ministry apprised the Committee:—

“Starting from this year and into next year, there is a jump and this jump is essentially coming because we are providing certain money for the projects going to fructify in future”.

1.6 Further the representative of Ministry of Defence stated:—

“In the next year’s Budget, against a demand which was raised by the OFB, there was a cut of Rs. 1,321 crore; because of this cut, the value of production is likely to be affected to the extent of Rs. 2,271 crore. That is the calculation as far as the target that has been given to OFB. In the next three years, they are supposed to increase the production to 20,000 or even almost double it. In order to achieve this, the Budget should be adequate. That is my request.”

1.7 On the issue of current status of enhancement of capacity of Ordnance Factories and kind of support being provided by Ministry of Defence by way of budget outlay, the Ministry has furnished the following figures:—

Budget allocation during 2014-15 & 2015-16

Head	2014-15				2015-16			
	RR (code head 813)	NC (P&M) (Code head 922)	Capital CW (Code head 920)	Total	RR (code head 813)	NC (P&M) (Code head 922)	Capital CW (Code head 920)	Total
BE projected by OFB	500.00	1307.00	595.00	2402.00	425.00	1634.13	571.00	2630.13
BE approved by MOD	500.00	262.70	220.00	982.70	425.00	424.68	294.00	1143.68
RE projected by OFB	500.00	707.71	452.00	1659.71				
RE approved by MOD	500.00	435.15	220.00	1155.15				
Minimum inescapable requirement projected by OFB	500.00	489.00	313.00	1302.00				

RR — Renewal & Replacement
NC (P&M) — New Capital (Plant & Machinery)
Capital CW — Capital Civil Works

Delays in Projects

1.8 The Committee have always been concerned about delay in projects. In this regard, the Ministry was asked to give details of the delayed projects, their status till date, and the projects running behind the schedule. The Ministry supplied the information as under:—

'The detailed status of the various projects undertaken by OFB are as under:

Project	Annual Capacity		Cum. Expenditure planned till 2014-15 (Rs. in crore)	Likely month of completion
	Existing	Proposed		
1	2	3	4	5
T-72 Variants Sanctioned month— August 2010 Sanctioned cost— Rs. 279.63 crore Original completion month—March 2013 (Import Substitute)	0	50 nos.	203	Sept. 2015

1	2	3	4	5
750 AV Engines Sanctioned month– Aug 2010 Sanctioned cost– Rs. 350.56 crore Original completion month–March 2013 (Import Substitute)	353 nos.	750 nos.	65.89	Dec. 2016
Spares for T-72 & T-90 Tanks Sanctioned month– Oct. 2010 Sanctioned cost– Rs. 367.52 crore Original completion month–Dec. 2013 (Import Substitute)	T72-72 sets T90-nil	T72-120 sets T90-50 sets	185.50	Dec. 2015
T-90 Tanks (100 to 140 nos. per annum) Sanctioned month– Sept. 2011 Sanctioned cost– Rs. 971.36 crore Original completion month–March 2014	100 nos.	140 nos.	143.57	The scope of project was restricted to investment of Rs. 186.46 crore due to limited fund availability as well as the absence of commensurate load from Army. However, now Army has desired for more numbers of T-90 tanks; which may make the project viable.
Akash Booster & Sustainer Sanction month– Dec. 2011 Sanctioned cost– Rs. 105.78 crore Original completion month–March 2014 (Capacity Augmentation)	150 nos.	500 nos.	38.5	March 2017

1	2	3	4	5
Large Caliber Weapons Sanctioned month— March 2012 Sanctioned cost— Rs. 376.5 crore Original completion month—March 2015 (Capacity Augmentation)	300 nos.	500 nos.	103	Dec. 2016
HMX Plant Sanctioned month— March 2012 Sanctioned cost— Rs. 48.26 crore Original completion month—Feb. 2016 (Import substitute)	nil	45 MT	29	Feb. 2016
PINAKA Rockets (1000 to 5000 nos. per annum) Sanctioned month— April 2013 Sanctioned cost— Rs. 1388.89 crore Original completion month—Oct. 2015 (Capacity Augmentation)	1000 nos.	5000 nos.	172	Oct. 2016
Ordnance Factory Nalanda (Propellant) Sanctioned month— Nov. 2001 Sanctioned cost— Rs. 2088.32 crore (Capacity Creation)	nil	8 Lakh BMCS	840	March 2017
Ordnance Factory Korwa (Small Arms) Sanctioned month— Oct. 2007 Sanctioned cost— Rs. 408 crore (Capacity Creation)	nil	45000 Nos.	240	March 2017'

1.9 On being asked about the reasons for delay of projects, the Ministry in its written reply has identified the following individual and/or collective reasons for delays:—

1. 'Problems were encountered at different stages in procurement of plant & machinery; which is a multi-tier process with long lead time. The details are as under:

(A) Tendering Stage:

- (i) Limited vendor base since majority of machine requirement is for customized Special Purpose Machines (SPMs)/tooled up machines. Accordingly very few offers are received and tender opening date is to be extended.
- (ii) Non-availability of plant & machinery like Forging Plant, Chemical Plants, Metallurgical Plants indigenously for defence specific use. In such cases Global participation is required.
- (iii) Explosive plants have very limited Global sources.
- (iv) Re-tendering of number of cases to avoid Resultant Single Tender (RST) situation.
- (v) Because of the recent financial crisis in Europe (which is still going on), some of the European suppliers failed to respond to tender enquiries leading to re-tendering the cases.
- (vi) The P&M Procurement Manual prior to 2013 had no provision for advance payment. Hence many suppliers of such machines, which were cost intensive, did not participate in tender enquiries.

(B) Supply stage:

- (i) Since SPMs/tooled up machines, by their definition are customized, delay occurred on the part of P&M supplier in design, manufacture & supply of the machine.
 - (ii) Because of financial crisis, during this period some of the suppliers in Europe failed to execute the supply timely.
2. OFs depend on Military Engineering Services (MES) for execution of civil works related to projects. Time for completion of civil works from the date of projection of work to MES is approximately 3 years.
 3. There is no online system for project monitoring.'

1.10 The Committee desired to know whether any responsibility has been fixed for the delays, the Ministry stated as under:—

‘Regular monitoring and review is done at factory and Board level and corrective actions are taken including replacement of Unit Heads wherever necessary to ensure that the inputs are positioned in time and targets are met. In addition to above the performance of OFB is monitored at the Ministry level also at regular intervals and necessary assistance is rendered to facilitate OFB in meeting the targets.’

Modernisation

1.11 Modernization of infrastructure is a continuous process in Ordnance Factories with a view to update the plants and machineries matching both qualitative and quantitative requirement of the products projected in the perspective plan.

The Committee enquired about the details of the outlay provided and spent by all Ordnance Factories along with complete details of each project/programme proposed, planned and implemented during the last five years on modernization, the Ministry of Defence stated as under:—

‘During last five years (2009-2014), total outlay (Budget Estimate/ BE) provided and the actual expenditure were Rs. 4706.48 crore and Rs. 3874.88 crore respectively; details are given below:

Expenditure on Modernisation during last five years

(Rs. in crore)

Head	RR (Code head 813)		NC (P&M) (Code head 922)		Capital CW (Code head 920)		Total	
	Outlay Provided (BE)	Actual Spent	Outlay Provided (BE)	Actual Spent	Outlay Provided (BE)	Actual Spent	Outlay Provided (BE)	Actual Spent
	2009-10	300.00	228.24	445.13	107.08	203.64	157.29	948.77
2010-11	325.00	207.82	556.30	327.24	226.97	167.63	1108.27	702.69
2011-12	325.00	310.25	187.26	162.83	203.49	267.11	715.75	740.19
2012-13	500.00	415.85	173.24	102.41	232.53	265.22	905.77	783.48
2013-14	600.00	697.01	203.09	238.98	224.83	219.92	1027.92	1155.91
Sub total for 2009-10 to 2013-14	2050.00	1859.17	1565.02	938.54	1091.46	1077.17	4706.48	3874.88

RR-Renewal & Replacement
NC (P&M)-New Capital (Plant & Machinery)
Capital CW-Capital Civil Works’

1.12 On the issue of expenditure incurred on modernization, the Ministry has stated as under:—

‘The manufacturing infrastructure is being modernized. In the 11th Plan an expenditure of Rs. 2,927 crore was incurred on modernization while in the first 2 years of the 12th Plan (2012-14), already an expenditure of Rs. 1,934 crore has been incurred on the same.’

1.13 When asked whether the Government has taken any steps to provide requisite funds and cooperation to Ordnance Factories for manufacturing arms and ammunition with indigenous technology and manufacturing export-oriented products for modernization, the Ministry of Defence has stated as under:—

‘Government is providing requisite funds for undertaking modernization to build a world class infrastructure in Ordnance Factories for manufacturing arms and ammunition. In addition to above, Ministry is delegating powers to OFB from time to time for providing operational freedom and facilitating there working to meet user requirements.

In order to enable long-term planning, Army is sharing their perspective plan with OFB. Simultaneously Army has started placing roll-on-indent for five years period, instead of an annual indent, for ammunition items beginning from 2009. In respect of other major items also Army is providing roll-on-plan with certain minimum commitments.

Ordnance Factories are primarily meant to cater for Army’s requirement. They seek to export their products only if surplus capacity is available for meeting export and civil trade requirements.’

1.14 During the oral evidence, on the productivity improvement, the Secretary, Defence Production stated as under:—

“In the area of productivity improvement we have initiated a study by the National Productivity Council to see that the man hours are standardized. There has been a tremendous amount of mechanization and modernization in the recent past and the total efficiency of the man power will have to be commensurated with the mechanization and modernization that has been introduced. So we need to study to find out the gaps. Efficiency studies will have to be made and we propose to make these efficiency studies.”

Research and Development Activities

1.15 The Committee enquired about the in-house Research and Development conducted in Ordnance Factories for development of new products and the percentage of expenditure in Research and Development to the overall allocations during each of the last five years, the Ministry in its written reply submitted:—

‘Research & Development at OFB aims towards development of new products/processes, upgrades of existing products/processes by absorption of ToT, collaboration with Indian partners/foreign partners, re-engineering and innovation to meet implicit/explicit demands of service and civil market. It also includes joint working on some of the large projects with DRDO from the inception stage and to render manufacturing assistance wherever required by DRDO.

The expenditure incurred in Research and Development to the overall allocations during each of the last five years is as under:—

Year	2009-10	2010-11	2011-12	2012-13	2013-14
R&D Expenditure (Rs. in crore)	32.07	39.94	35.68	48.02	42.72
Turnover (Rs. in crore)	8715	11215	12391	11974	11234
Percentage	0.37	0.36	0.29	0.4	0.38’

1.16 On the issue of new products/projects being formulated, launched and outsourcing of Research and Development work done by OFB, the Ministry in its written reply has stated:—

‘List of new products/projects being formulated launched are:

- (i) 14.5/20 mm NTW Anti Material Rifle
- (ii) Under Barrel Grenade Launcher 40 mm (UBGL)
- (iii) Multi Grenade Launcher (MGL)
- (iv) NBCRV (Nuclear Biological & Chemical Reconnaissance Vehicle)
- (v) 12 Bore Pump Action Shot Gun
- (vi) A-7 Ammunition for AK-47
- (vii) Kavach MOD-II
- (viii) RGB-60 HE Rocket
- (ix) 140 mm Rocket
- (x) IR Flare for Navy (Chukar).’

1.17 When the Committee asked about the OFB's projection for Twelfth Plan in respect of Research and Development, the Ministry, in its written note, has stated as below:—

‘OFB's projection for Twelfth Plan in respect of Research and Development is as under:

(Rs. in crore)					
Year	2012-13 (Actual)	2013-14 (Actual)	2014-15	2015-16	2016-17
R&D Projection	48.04	42.75	56.36	75.00	110

1.18 The Ministry was asked to furnish details about the original research & development done by each of the OFs and research & development carried out under licensed production, under Transfer of Technology (ToT) during the last five years, the Ministry replied as under:—

‘Manufacturing is the core activity in OFB. However R&D is also being emphasized and activities under it started in a structured way in 2006. Accordingly 11 Ordnance Development Centers (ODCs) with indentified core technologies have been created. In these centres OFB has taken up product development and product improvement in core product areas. The major achievements during the last 5 years are given as under:

- (a) The indigenously developed and manufactured 155 mmX45 caliber artillery gun “Dhanush” has successfully undergone various trials and met all the parameters as per trial directive fulfilling User's aspirations. The gun is undergoing DGQA and Maintainability Evaluation Trial for Bulk Production Clearance (BPC).
- (b) Ordnance Factory Trichy has developed 38 mm Multi Shell Launcher (MSL) for crowd control purpose. After exhaustive trials, MHA New Delhi has accepted the weapon for induction in Central and State Police forces as a new non-lethal weapon.
- (c) The first indigenous lot of Fuze YDB-60 (refurbished), KAVACH Medium Range Chaff Rocket (MRCR) and Anti Sub-Marine Rocket RGB-60 (HE) have been successfully produced and supplied by Ammunition Factory Khadki (AFK) to the Indian Navy in association with Naval Armament Inspection under DGNAI.
- (d) O.F. Trichy has developed 40 mm Multi Grenade Launcher for low velocity family of grenades. This is an ideal weapon for counter insurgency and low intensity conflict operations. Army

has accorded Bulk Production Clearance in December 2014 for this weapon after conducting a series of trials.

- (e) Rifle Factory Ichapur has developed 7.62 mm Assault Rifle “GHATAK” for Internal Security Forces. This weapon has an effective range of 300 mts with a rate of fire of 600 rounds per minute and is in the class of AK-47 series of weapons. The weapon is undergoing field trials with CAPFs.
- (f) OFB has developed decoy system KAVACH MOD-II to counter the threat of various anti-ship missiles by using Chaff decoys.
- (g) Production of indigenously developed Rocket 57 mm S-5KP (practice) was successfully established at OF Chanda through re-engineering in close association with Indian Air Force.’

1.19 On providing the details on the contribution of services towards the Research & Development of high Technology Military Projects, in terms of budget and providing inputs for their operational requirement, the Ministry stated as under:

‘There is a structured mechanism in the form of Armament Development Monitoring Committee to discuss on all matters related to development stores in the area of Armament & Ammunition which have been undertaken by DRDO. The objective is to improve interaction and create synergy between the production agencies and DRDO labs together with the Services. The Services provides the necessary inputs on the weapon system and Ammunition to be developed while the requisite budget support is provided by the Government.’

1.20 The major projects wherein Services have been involved with Ordnance Factories are as under:—

- ‘(i) The indigenously developed and manufactured 155 mmX45 caliber artillery gun “Dhanush”.
- (ii) Production of indigenously developed Rocket 57 mm S-5KP (practice) for Air Force.
- (iii) A project management team with representatives from Army is working on indigenous development of 125 mm FSAPDS Ammunition.’

Indigenization of defence products

1.21 On the effective steps taken by Ministry to quantify the level of indigenization in defence equipment in Ordnance Factories, the Ministry stated as under:

‘Indigenization of Defence Stores is a major thrust area of the Ministry. Indigenization of defence equipment being manufactured

in Ordnance Factories through Transfer of Technology (ToT) from foreign OEM/DRDO is being regularly monitored at the level of the Ministry and Ordnance Factory Board. The indigenization targets in respect of certain important products is fixed in Results Framework Document.

The importation *vis-a-vis* the Value of Issue during last three years is given as under:—

(Rs. in crore)			
Financial year	Value of Issue	Import content	Percentage(%)
2011-2012	12391	1744	14.07
2012-2013	11975	1462	12.20
2013-2014	11123	1685	15.15

Quality Control in Ordnance Factories

1.22 The facilities and quality systems in Ordnance Factories are comparable to the best in the Indian Industry.

Quality assurance as a line function is the responsibility vested in the Directorate General of Quality Assurance (DGQA), DGAQA/DGNAI for products meant for Army, Air Force and Navy respectively. These agencies assess the capacity and register the vendors for supply of inputs, inspect input materials, function as Authority Holding Sealed Particulars, and ensure conformance of products with laid down specification before supply is affected.

Maintenance of quality of the defence items is an important aspect to avoid defective ammunition reaches in the hands of Army. In this regard, on being asked by the Committee, the Ministry have furnished a detailed note as under:

‘Products developed by Ordnance Factories are 100% inspected by factory. Sample checking is done by DGQA. On an average 21 Lab tests are conducted by factory and DGQA and 4% rounds are fired by DGQA before acceptance and issue of Ammunition to Indian Army.’

1.23 On being asked about the Probable reasons for detecting defects in the hands of Army, the Ministry in its written reply has identified the following reasons:

- (i) Manufacturing deficiencies;

- (ii) Reliability of design;
- (iii) Deficiency in maintenance of weapon system;
- (iv) Deficiency in handling and storage in ammunition depots.

1.24 On the new initiatives taken by the Ordnance Factories to deliver the products more effectively and quality products with long-term contract, the representative of Ordnance Factories during the oral evidence stated as under:—

“Sir, these are some of the new initiatives we are trying to take in order to make the Ordnance Factories Board deliver more effectively. The OFB will have to increasingly play the role of an integrator rather than a producer so that their production base increases substantially by leveraging on the industrial capability available within the country. Previously we had also mentioned this in respect of the DPSUs, it is also true of OFB. Some action has been initiated to see that the vendor development is done in a healthy manner.

We have taken steps to revise the Procurement Manual of the OFB keeping in view the Make in India concept to facilitate long-term procurement. Long-term procurement will be possible only if the suppliers are enabled to supply quality products with a long-term contract. The present manual does not allow any contract longer than three years. I am happy to say that we are now taking this initiative to see that these increase to five years and more, so that they can have long-term contracts with the suppliers leading to long-term partnerships and effective manufacturing base.”

1.25 On the issue of attaining zero defect in production system to establish the accountability system, the Secretary, Defence Production has stated as under:—

“There is certain rejection on account of rectification. Here, first I would like to say that it is nearly impossible to achieve a zero defect scenario.”

1.26 He further stated in this regard:—

“One of the major objectives that we are attaining to have is zero defect in production system. The quality of the product manufacturer is of paramount importance and we have had certain percentage of defects being reported every time. So now we would

like to see that defects are brought down to zero. Therefore, we are now initiating thorough quality audit of 8 factories selected from 39 factories based on which a complete in-process quality control will be put in place. This will also enable the Ordnance Factories Board to see that their own in-process quality control systems are of high order and the role of DGQA will be that of an auditor in the sense that they have to audit the systems and find out what are the defects and faults and rectify the same through their intervention. Then it is also necessary to establish the accountability system because the system which they are following is Government accounting system. It is necessary that this accounting system is also drawn to commercial system so that real efficiency of production are revealed otherwise it can hide a lot of facts. So, it is necessary for us to move into a dual accounting system both Government and commercial so that real efficiencies are known to everyone.”

1.27 When enquired about the 429 types of defence equipments worth Rs. 449 crore have been sent back to Ordnance Factories in past 3 years due to quality issues, a representative of the Ministry of Defence stated:

“.....There is certain rejection on account of rectification. Here, first I would like to say that it is nearly impossible to achieve a zero defect scenario.”

On the initiatives taken for 100% efficiency, he further stated:

“Each product that we are making will have almost 200 dimension. Then tolerance will be there. So, even if we operate at six sigma level, that all adds up. So, certain quantity becomes liable for rectification in the process. This is that quantity and this is spread over a period of 3 years.”

Shortage of Manpower

1.28 As regard to the authorized and existing strength of all Ordnance Factories both technical and non-technical, for the last five years, the Ministry in a written note furnished to the Committee stated as under:

‘The Technical posts in the Ordnance Factories Organization are that of Industrial Employees, Junior Works Manager (Tech), Chageman (Tech) and Para-Medical Staff. The sanctioned versus

existing strength in these categories is mentioned in the table below:

TECHNICAL

YEAR	Sanctioned Strength	Existing Strength				
		Apr-11	Apr-12	Apr-13	Apr-14	Jan-15
Industrial Employee	106486	65306	63572	63902	62350	61245
Chargeman (Technical)	10320	6494	7083	7186	7249	6961
Junior Works Manager (T)	6911	5049	5505	5561	5424	4880
Para-Medical	1409	-	-	-	1250	1278
TOTAL (TECH)	125126	76849	76160	76649	76273	74364

The Non-technical posts in the Ordnance Factories Organization are that of Non-Industrial Employees, Junior Works Manager (Non-Tech), Chargeman (Non-Tech) and Hindi Officers. The sanctioned versus existing strength in these categories is mentioned in the table below:

NON-TECHNICAL

YEAR	Sanctioned Strength	Existing Strength				
		Apr-11	Apr-12	Apr-13	Apr-14	Jan-15
Non Industrial Employee	20354	15521	16034	15442	15161	13583
Chargeman (Non-Technical)	1765	1789	1717	1644	1633	1590
Sr. PA & PS	273	102	124	116	134	242
Junior Works Manager (NT)	783	645	711	727	696	648
HINDI OFFICER	39	19	24	21	21	18
TOTAL (NT)	23214	18076	18610	17950	17645	16081

In addition, there are **1630 Officers** belonging to Indian Ordnance Factories Service (IOFS) and Indian Ordnance Factories Health Service (IOFHS) against a sanctioned strength of 2000.'

1.29 The Committee further asked the Ministry to give specific reasons of shortage of manpower. The Ministry explained as under:—

‘Manpower is being sanctioned in both Technical as well as Non-Technical categories based on requirement projected by different units under the OF Organization.’

Re-structuring of Ordnance Factories

1.30 When the Committee asked about the impact of report of Kelkar Committee regarding re-structuring of ordnance factories a representative of the Ministry stated during oral evidence as under:

“..... Actually, what is necessary is to give the ordnance factories some autonomy of function so that they do not have to refer matters to the Government every time. They should have adequate financial powers, they should have other powers available with them so that they can function effectively. We are actually taking steps. I mentioned earlier we are trying to convert accounting system into commercial accounting. This is the first step. Thereafter, the other issues relating to the quality and outsourcing and vendor development are all the things which we are addressing. One of the areas we are going to give them sufficient powers is from the Government approvals are now getting ready for long time procurement. In OFB Manual we are making changes so that they can enter into long term contracts so that supply chain can become effective. Initially, we will take some steps to see that autonomy is properly provided to them. Thereafter, depending on the circumstances, we will move forward.”

1.31 On being asked by the Committee regarding re-structuring of Ordnance Factories and whether budget for restructuring is being provided for Ministry of Defence or it is arranged from internal resources, the Ministry has stated as under:—

‘At present, there is no proposal for restructuring of Ordnance Factories; however steps are taken at regular intervals to delegate power to OFB for bringing in operational efficiency and aligning their working with industrial best practices.’

CHAPTER II

DEFENCE RESEARCH AND DEVELOPMENT ORGANISATION

Defence Research and Development Organization has come a long way since its modest beginning in 1958. Starting with only 10 laboratories, DRDO has grown multi-dimensionally and has evolved to be a core research organization with a vast network of 52 laboratories and establishments spread across the country. With a vision to empower India with cutting-edge technologies and equip our Services with internationally competitive systems, DRDO has proven its competence to produce state-of-the-art strategic and tactical military hardware and related technologies in diverse disciplines such as Aeronautics, Armaments, Combat Vehicles, Combat Engineering, Electronics, Missiles, Life Sciences, Materials and Naval Systems. At the core of this technological strength of DRDO is its expertise in system design, system integration, testing and evaluation and project management built over the last five decades, which has enabled it in developing indigenous capabilities in weapons and their delivery systems.

DRDO plays significant roles, like providing scientific and technological advice to the Ministry of Defence in support of defence policy; as evaluator of defence equipment for the military operational requirements; and generating new technological knowledge to be transferred for development of state-of-the-art weapon systems by the defence industries. The Organization also advises the Government to make technical assessments of international security threats and the military capabilities of both current and potential adversaries.

Budgetary provisions

2.2 Defence Research and Development Budget for the last five years and the current year including projections, allocations and expenditure incurred is given below:—

(Rs. in crore)

Year	Projection	Allocation	Expenditure	
			(Actual)	(%age)
1	2	3	4	5
2010-11	11754.41	10210.33	10148.92	99.40
2011-12	14848.87	10014.31	9893.84	98.80

1	2	3	4	5
2012-13	14463.66	9884.94	9794.80	99.09
2013-14	16483.28	10930.17	10859.04	99.31
2014-15(RE)	18495.46	13447.19	10976.16*	81.62
2015-16(BE)	19641.56	14358.49	-	-

*Upto 7 February, 2015.

Share of R&D vs Defence Expenditure

2.3 In connection with the examination of Demands for Grants (2015-16), the Committee were supplied the following information in regard to the expenditure made for R&D activities:—

(Rs. in crore)

Year	Defence Expenditure	R&D Expenditure	%age of Defence Expenditure
2010-11	1,54,117.00	10,148.92	6.59
2011-12	1,70,913.00	9,893.84	5.79
2012-13	1,81,776.00	9,794.80	5.39
2013-14	2,03,499.00	10,859.04	5.34
2014-15(RE)	2,22,370.00	13,447.19	6.05
2015-16(BE)	2,46,727.00	14,358.49	5.82

2.4 In regard to the percentage of expenditure in relation to GDP during the last three years is as under:

Total GDP vs Defence R&D Expenditure (Rs. in cr)

Year	Total GDP*	Defence R&D Expenditure	Defence R&D Expenditure (as % of Total GDP)
2009-10	64,57,352.00	8,475.00	0.13
2010-11	76,74,148.00	10,149.00	0.13
2011-12	88,32,012.00	9,894.00	0.11
2012-13	92,80,803.00	9,794.80	0.10
2013-14	99,21,106.00	10,859.04	0.11
2014-15(BE)	1,06,56,925.00	13,447.19	0.12

*(Based on Economy Survey 2014-15)

No authentic information is available on expenditure on Defence R&D as a percentage of GDP in respect of Developed Countries’.

2.5 On the funds allocated by DRDO for strategic products and for mission mode, the representative of Ministry of Defence stated as under:—

‘Approximately 46 per cent funds have been allocated for strategic products and for mission mode, it is approximately 41 per cent.’

Defence Secretary further stated as under:

“I would like to submit here that what is projected before you as 41 per cent expenditure for strategic systems, unfortunately I do not have permission to talk about it right here. But this is one of the major areas of success for the DRDO in terms of Agni series and if I may add, in terms of nuclear submarines which are all coming on the ground and it has been working well. So, I can safely say that 46 per cent of the expenditure is where the DRDO has delivered a very substantive results which are already on the ground.”

Further, Ministry of Defence in its written replies stated as under:

‘Every year budget requirement is projected by DRDO based on the ongoing projects/programmes and futuristic requirements. Nearly, 80% of total budget is being utilised on Mission Mode (MM) Projects with deliverables for Armed Forces. Shortfalls in budget affect Technology Development (TD), Science and Technology (S&T), Development of Infrastructure and Facilities (IF), and projects related to Product Support (PS). Due to shortage of funds, projects and other ongoing activities are re-prioritized. Government is making all possible efforts to meet the budgetary requirement of DRDO, within the available resources, so that its flagship programmes do not suffer due to lack of funds.’

2.6 The Committee desired to know about the details of projection for Twelfth Plan in respect of Research and Development, the Ministry in its written replies submitted the following:

‘Overall XII Plan outlay, the planned cash outgo and carry forward

to XIII Five Year Plan under different technology disciplines are given in Table below:

Discipline	New Projects (Rs. in cr.)		Ongoing Projects (Rs. in cr.)		Carry Forward to XIII FYP (Rs. in cr.)
	Plan Outlay	Cash Outgo	Plan Outlay	Cash Outgo	
Aeronautics	28647	19573	5299	4906	9467
Armaments	2774	2762	382	354	40
Combat Vehicles & Engineering	3254	3080	661	612	223
Electronics and Communication Systems	8003	7658	1068	989	424
Microelectronic Devices and Computational Systems	7303	6939	194	180	378
Life Sciences	1165	1147	324	300	42
Advance Materials	246	203	210	194	59
Missiles	51489	50832	10539	9758	1438
Naval Systems	2048	1690	269	249	378
Aeronautical Development Agency (ADA)	15000	8400	—	—	6600'

(Above data does not include strategic systems)

Manpower

2.7 As regard to the authorised and existing strength of Scientists in DRDO, the Ministry in a written note furnished to the Committee:—

‘The authorized and existing strength of scientists in DRDO is 7878 and 7864, respectively. (This includes Service Officers also).’

2.8 The Committee also desired to know about the number of scientists who have left DRDO during the last five years with reasons,

the Ministry in its written replies stated as under:

‘Number of scientists who resigned from DRDO during the last five years is given below:

Year	No of Scientists Resigned
2010	63
2011	86
2012	67
2013	57
2014	33
Total	306’

2.9 The Committee further asked the Ministry to give specific reasons of brain drain, the Ministry explained as under:—

‘Scientists, who have resigned, have indicated their personal/ domestic grounds as the reasons for leaving DRDO.’

2.10 On the steps being taken by DRDO to put a check on the ever-increasing brain drain from DRDO and to make a career for scientists in DRDO an attractive option, the Ministry through a written note submitted as under:

“The trend of resignations of scientists from Defence Research and Development Organisation (DRDO) has declined considerably after the implementation of recommendations of Sixth Central Pay Commission. The number of resignations have now come down to less than 0.5% of the total strength of scientists in DRDO. Government has introduced a comprehensive ‘Incentive Scheme for DRDO Scientists’, details are given in the succeeding paragraphs. This has also helped in checking the brain drain of scientists from DRDO.

Financial Incentives

- (i) **Additional Increments:** Two additional increments are given to Scientists (Recruitees/Promotees) in the Pay Band-3 (Rs.15600-39100) with Grade Pay of Rs. 6600 and Rs. 7600 and to those in the Pay Band-4 (Rs. 37400- 67000) with Grade Pay of Rs. 8700 and Rs. 8900.
- (ii) Professional Update Allowance. Scientist ‘B’, ‘C’ & ‘D’ are granted Rs. 12,500 p.a., Scientists ‘E’ & ‘F’ Rs. 25,000 p.a. and Scientists ‘G’ & above Rs. 37,500 p.a. as Professional Update Allowance.

- (iii) Variable Increments. Up to maximum of six increments are granted to deserving Scientists at the time of promotion.

Growth related Incentives

To give better growth and promotional avenues to the Scientists in DRDO, Merit based Flexible Complementing Scheme (FCS) is in place, where promotions are based on assessment and not on available vacancies. Under the FCS, Scientist recruited at the level of Scientist 'B' in Pay Band-3 with grade pay of Rs. 5400, can move up to the level of Scientist 'H' in HAG scale (Rs. 67000-79000). Thereafter, the level of Distinguished Scientist in the HAG+scale (Rs. 75500-80000) is achievable on personal upgradation basis.

Qualification/Skill Improvement

Scientists in DRDO are being sponsored for M.E./M.Tech. programmes at IITs, IISc. and other reputed institutes under the Research and Training Scheme at Government expense so that they can upgrade their knowledge and skills. Further, scientists are also encouraged to complete Ph.D. in their respective field, for which necessary assistance is provided.

Recognition of Contributions

The contributions made by DRDO Scientists are recognized by the Government through various types of Awards being given to these Scientists at the Organization as well as National level. They are nominated to represent the country in Seminars/Conferences Internationally. Scientists are also nominated for Fellowship of various Professional bodies.

Improvement of Working Environment

Mentoring and guiding is a constant interactive process for maintaining a constant level of research standards. Infrastructure and state-of-the-art lab/equipment test facilities, etc. are provided to them."

2.11 The Committee further asked the Ministry to give reasons for not recruiting more scientists to make Organisation younger to carry out research and development in all spheres of warfare, the Ministry explained as under:—

“The Organisation has been recruiting scientists against vacancies caused by retirements, etc. only as its authorization of scientists has remained unchanged since 2001. During the last 05 years, the

Organisation could recruit only 50-60 young scientists per year through campus selections for its 46 technology cluster labs which is a meager 01 scientist per lab/year that too against vacancies caused by retirement, etc. It is pertinent to mention that the authorization sanctioned in 2001 was to cater for IX & X Plan projects. The required enhancement in the manpower for the projects sanctioned for XI & XII Plans has not yet been sanctioned. As already mentioned above, the Organization has taken up a Cabinet proposal for sanction of 2776 additional posts of scientists to enhance the scientific pool for all spheres of research & development. The augmentation will enable the Organisation to recruit adequate number of scientists for important projects and will also lower the average age profile thereby bringing new enthusiasm in the projects. The proposal is presently under consideration of Ministry of Finance.”

2.12 The Committee desired to know about the DRDOs future plan to attract young scientists right from schools and colleges to take up the Defence R&D career, the Ministry in its written replies stated as under:—

“DRDO has been making conscious efforts to generate interest in defence technologies among school and college students with the aim of encouraging them to take up Defence R&D as career. Some of the steps that have been taken in this direction are:

- (i) DRDO has been participating in tech fests organized by IITs, NITs and other leading engineering institutions displaying products, technologies, activities and achievements of DRDO. Such events are attended by very large number of students from the organizing institutions, other engineering institutions as well as school students from the city.
- (ii) Lectures by senior DRDO scientists are organized; such lectures cover various aspects of national security, role of technology in national security, technological advances made in the country by DRDO, career prospects in Defence R&D besides specific technologies depending upon the occasion.
- (iii) DRDO participates every year in the Indian Science Congress displaying a wide spectrum of products and technologies. Special outreach sessions are held as part of Indian Science Congress.
- (iv) DRDO also participates in other similar events such as Indian Engineering Congress, Indian Technology Congress and exhibitions organized on specific themes by various organisations.

- (v) Visits of students to DRDO laboratories are encouraged. In one such event, a group of students who had participated in International Science and Engineering Fair held at Los Angeles, USA, were given a reception at RCI and interaction with top DRDO missile scientists were organised. Student visits are also organised on regular basis at the permanent DRDO exhibition at RAC, Delhi.
- (vi) Permanent DRDO galleries are in the process of being set up at Tamil Nadu Science and Technology Centre, Chennai and National Military Memorial, Bengaluru, where hundreds of students visit every day.”

Indigenization of Research and Development Activities

2.13 During oral evidence, Defence Secretary expressed his views on research work:—

“If I have to achieve ‘Make in India’ it is DRDO and other scientific organisations in the country, the private sector and even a humble jawan or JCO has to contribute to the research work. So, I am speaking in terms of whether DRDO is the only one who will do the research, no, more than DRDO we are looking at the entire spectrum of research capability which are available in the country”.

2.14 The Committee wanted to know about the indigenous production of defence equipment designed and developed by the DRDO. In this connection, the Ministry in written reply intimated as under:—

“India’s defence requirements in terms of indigenous systems are being taken care of by the Defence Research and Development Organisation (DRDO) which works in providing cutting-edge technologies and systems for the Armed Forces. DRDO has given the country a vast range of products and systems, ranging from the strategic Agni class of missiles, a family of radars and sonars for virtually every platform/application, Electronic Warfare (EW) systems, Main Battle Tank (MBT), combat aircraft and so on.

Technologically advanced countries do not part with their critical technologies to developing countries. These countries offer only “Buy” category of systems to countries, like India. Therefore, we have to develop each system, sub-system, component *ab-initio* including infrastructure and testing facilities. DRDO has made enormous efforts to bring out high level of self reliance in defence technologies.

Over the past five decades DRDO has developed a number of systems/products/technologies, a large number of which have been productionised. The value of systems/products/technologies developed by DRDO and inducted into the Services or in the process of induction stands at over Rs. 1.748 lakh cr. This figure does not include Strategic Systems.

Products/Systems/Technologies Developed by DRDO Inducted/ Under Induction into Services as on 01 March, 2015 (Rs. in cr.)

Systems	R&D Cost	Inducted	Under Induction
Missile Systems	4150.19	23863.25	41725.73
Electronics and Radar Systems	1504.07	10642.70	22826.18
Advanced Materials and Composites	126.53	3504.96	138.84
Armament Systems	108.80	8362.38	4259.44
Aeronautical Systems	12433.68	598.76	18872.04
Combat Vehicles & Engg. Systems	776.02	13692.59	17882.67
Life Sciences Systems	12.51	246.91	286.29
Naval Systems	327.20	1038.76	802.13
MED & Computational Systems	195.46	1450.64	4649.41
Total	19634.46	63400.95	111442.72

Grand Total (Inducted + Under Induction) Rs. 174843.67 crore

Besides above, DRDO is developing advanced versions of many systems, like MBT-Mark-II, Rustom-II, LCA Mark-II, Long Range Missiles, etc. Trials of such systems are already going on. Some other major projects are nearing completion. After induction of these systems, our dependency on import will be further reduced. As far as costs of imported systems equivalent to indigenously developed systems are concerned, their costs are considerably higher as compared to indigenous systems.”

2.15 In regard to the contribution of services towards the Research and Development of high Technology Military Projects, in terms of budget and providing inputs for their operational requirement, the following information was given by the Ministry:—

‘Services have provided document on Long Term Integrated Perspective Plan (LTIPP), which has given inputs about the requirements of Services. Considering the LTIPP, DRDO has prepared

a document on Long Term Technology Perspective Plan (LTTPP), which highlights the expected new technology developments in various areas. It is aligned with LTIPP of the Services. The technology development plan covers the 12th, 13th and 14th Five Year Plans (FYP) (2012-2027). The document also covers the new technologies which are not mentioned in LTIPP but will be of interest to Services and covers the period beyond 2027.

Services have provided Qualitative Requirements and valuable inputs to DRDO through following mechanisms of reviews and interactions:

- (i) Quarterly Interaction Meetings (QIM)
- (ii) Project Monitoring & Review Committee (PMRC)
- (iii) Executive Board Meeting (EBM)
- (iv) User Assisted Technical Trails (UATT)
- (v) User Trials

In major Mission Mode (MM) Projects, especially all Strategic programme projects Users *i.e.* Service Personnel are involved right from the execution. It ensures on job training, immediate modifications as per requirements and state-of-the-art product.

For naval projects, DRDO depends upon Indian Navy to provide platforms such as ships, helicopters and submarines and other logistic support for installation and final sea trials. Navy is also part of different levels system acceptance, like Factory Acceptance Test (FATs), Harbor Acceptance Trials (HATs) and Sea Acceptance Trials (SATs), etc. Similarly, Army and Indian Air Force also provide platforms for trials and actively involve in development trials and training activities.

Major Mission Mode Projects are being funded by Services and costs are shared between DRDO and Services.'

Delay in Defence Projects

2.16 During oral evidence, Defence Secretary expressed his views regarding delivery of products on time as under:—

“I would like to submit at this point itself is that I know this is a common charge against DRDO that you have not delivered on time. There may be a fair amount of substance in that but there is also another narration which must be brought to the attention of the

hon. Committee that unless and until the DRDO, the Services concerned and the production agency work completely in tandem to deliver results, DRDO as a stand alone agency cannot deliver results.”

2.17 He further stated as under:—

“Timeline is still a problem because trials get delayed. Thirdly, delays takes place because productionisation gets delayed. I am not saying that DRDO in its research work itself does not get delayed; they definitely get delayed. It is where the specific responsibility of the DRDO to hasten the research. The proposal I have put before the hon. Committee is this, that DRDO, the production agency, and the user agency has to work together. This is the group which should set the timelines in future. All of us are aware, I would not like to repeat the time delays which have taken place in LCA or MBT, etc. The limited point I am submitting for consideration is that yes, DRDO is also responsible for delay or substantially responsible for delay but there were other contributing factors also to that delay which we intend to address.”

2.18 During the oral evidence, a representative of Ministry of Defence stated that lot of delays take place stated as under:—

“One is on the trials – if you notice a lot of delays do take place because I miss the winter season, therefore, I have to go to the next winter season for trials; I miss the summer season, I have to go to the next summer season for trials. That is one areas of troubled. Second area of trouble is, for example, if I need a ship to test a missile being launched on the ship. Availability of ship becomes a problem. This is just one or two examples. In trials, DRDO is facing a major time crunch which delays the projects and which is something we intend to address by taking the Services on board. Therefore, there would be a commitment on their part to make trial platforms available for the purposes of DRDO.”

2.19 On the question raised by the Committee about DRDO’s very long gestation period and the reasons, the therefore Ministry in its written replies stated as under:—

“The following are some of the reasons for the long gestation period in the DRDO projects:—

- Ab-initio development of the state-of-the-art technologies.
- Non-availability of trained/skilled manpower in respect of ab-initio development projects.

- Non-availability of infrastructure/test facilities in the country.
- Technical/technological complexities.
- Non-availability of critical components/equipment/materials and denial of technologies by the technologically advanced countries.
- Enhanced User's requirements or change in specifications during development.
- Increase in the scope of work.
- Extended/long-drawn user trials.
- Failure of some of the components during testing/trials.”

2.20 The Ministry was asked to give the details of DRDO's about 93 ongoing projects including mission mode some of these include Agni V, Agni IV, Nirbhay cruise missile, K-15, Nag, Astra, AWACS, Arjun main battle tank, Tejas LCA, etc. The Ministry supplied the information as per given below:—

“Details of major ongoing projects (Cost above Rs. 100 cr.) of DRDO with name of project, developing agency/laboratory, date of sanction, original estimated cost of the project, likely date of completion, revised cost of the project and revised date of completion are given at Annexure 'A'.”

2.21 The Ministry was asked to furnish details about the projects selected during 10th, 11th Plan and 12th Plan, their present status of these projects and how much money has been spent on them, the Ministry supplied the following information in this regard:—

“Details of major projects (cost more than Rs. 50 cr.) sanctioned during 10th, 11th and 12th Plan (from 01 April 2002 to 01 March 2015) with date of sanction, sanctioned cost and present status are given at Annexure 'B'.”

2.22 The Ministry was again asked to give reasons for the cost and time overruns in the DRDO projects and remedial measures taken to check the cost and time overruns. The Ministry replied as under:—

‘The following are some of the reasons for the cost & time overruns in the DRDO projects:—

- (i) Ab-initio development of the state-of-the-art technologies.
- (ii) Non-availability of trained/skilled manpower in respect of ab-initio development projects.
- (iii) Non-availability of infrastructure/test facilities in the country.

- (iv) Technical/technological complexities.
- (v) Non-availability of critical components/equipment/materials and denial of technologies by the technologically advanced countries.
- (vi) Enhanced User's requirements or change in specifications during development.
- (vii) Increase in the scope of work.
- (viii) Extended/long-drawn user trials.
- (ix) Failure of some of the components during testing/trials.'

2.23 On the issue to bring accountability in the delayed projects, the Ministry submitted the following:—

“DRDO has observed that there have been delay in development, trials and production of DRDO developed systems due to various reasons. After implementation of recommendations of Rama Rao Committee, seven Technology Clusters have been created. Concerned Director General of Technology Cluster has been delegated adequate financial and administrative powers to carry out research and development as per mandate of DRDO. All CCS projects are being monitored by the Cabinet Secretariat through Monthly Report submitted before 10th of every month on status and progress of each CCS Project. ‘DRDO Management Council (DMC)’, chaired by the Secretary, Defence R&D, reviews the progress of ongoing projects periodically in which all Director Generals, Additional Financial Advisor, Integrated Financial Advisor are the members of DMC. Problems faced by Project Directors are sorted out then and there to complete projects as per schedule. Online monitoring of projects is being carried out at DRDO HQrs. level as well as DG Cluster level to complete ongoing projects on time.”

Kaveri Engine

2.24 During the oral evidence, the Ministry was asked to give details about the status of Development of Kaveri Engine for Light Combat Aircraft(LCA), a representative of the Ministry of Defence stated as under:—

“The current status of Kaveri engine is that it has been built and tested in the test facility in Russia where we have flown it for about 73 hours. On achieving some success level, we have taken a flying test and flown it for 53 hours. During this testing we found some problems and these are technology problems. These are under investigation and solutions are being evolved. With the support of some experts within the country and also from outside, solutions are being found. Now we have requested for some additional money

to make complete technology available in this engine which can eventually fit into LCA. Today this engine is not ready to fit. We have gone out to buy from abroad. We have recently taken a review by Secretary (Defence Production) where it has been mentioned that this engine needs to mature so that in future planes can be flown with Kaveri engine. Every aircraft requires three engines. So we have a potential to mature this engine and prove its reliability and then we can eventually induct into LCA. The day on which the certification has been obtained, I can integrate Kaveri engine into the LCA.”

2.25 On the issue of money spent and what kind of technical difficulties faced, Defence Secretary further added as under:—

“On Kaveri engine, we have spent about Rs. 2,100 crore till date. We have a functional engine with technological difficulties. We intend to use this engine both for LCA as well as for a UAV programme. DRDO is confident that this can be done. I would also like to inform you that China has been trying to develop Aerospace engine for 12 years and they have spent millions of dollars, but still they do not have a capable engine. Here, a very large percentage of expenditure by DRDO has been made in actually making production facilities and testing facilities which are not there in the country. So a lot of expenditure has gone towards that. I will not treat it as expenditure for development of engine per se, but for the development of the ecosystem to develop this engine. We have to send this engine to Russia for testing in an actual plane. DRDO would actually like that they are able to make an LCA themselves and put their own engine on test. Till today the testing infrastructure is not complete. On aerospace engine from the smallest of the UAVs to the largest transport planes, testing is required and I would say that Rs. 2,100 crore is not a major expenditure considering the results shown by DRDO.

On public sector efficiency as well as on issues regarding the private sector, this brings me back to what I had submitted to the hon. Committee earlier that unless and until the user, the research agency and the production agency work together with a clear definition of an order, I cannot blame DRDO and this is the change that I had submitted before the hon. Committee that we intend to bring about. If the private sector knows that they are going to get orders, they will tailor their production plans accordingly. This has to be put in actual practice. Incidentally, so far as our revenue procurements are concerned, we have already put in position where the orders for spare parts, whether to Government sector or private sector or imports, are being given for five years. So we have implemented what we are thinking. This is an area where we need to implement it because we realize that a production agency cannot sustain itself unless and until it gets a definite order. Another thing

is, we intend to make a procedural change very shortly where the private sector would be given 80 per cent of the funding for development of a specific product. We hope that it would address the systemic problems that exist now.”

Collaboration with Universities/Academic Institutions

2.26 The Ministry submitted that details of seven centres of excellence at various institutions/universities sponsored by DRDO during 11th and 12th Plan as well as benefit accrued to DRDO as under:

‘Basic objectives of the above Schemes/Boards are:—

- (i) To foster knowledge-based growth of defence related subjects in the country, strengthening and integrating national resources of knowledge, know how, experience, facilities and infrastructure.
- (ii) To catalyze the much needed cross-fertilization of ideas and experiences between DRDO and outside experts in scientific and technical fields that contribute to defence technology.
- (iii) To launch and coordinate research in specified areas of defence in academic institutions.
- (iv) To create conditions suitable for attracting talent through research collaborations and other academic exchanges and adopt synergic approach towards National needs and priorities in the field of defence technology.
- (v) To lead the Technological Innovations useful for Combat Multiplier both for the near and long term.

Details of the number of projects sanctioned under each Scheme/ Board, amount sanctioned to various research agencies including academic institutions during 11th and 12th Plan (1 March, 2015) are given in the following tables:—

Sl.No.	Name of Scheme/Board	No. of Projects Sanctioned	Total Cost of Sanctioned Projects (Rs. in Cr.)
1.	Extramural Research (ER)	613	353.46
2.	Aeronautical Research & Development Board (AR & DB)	26	24.52
3.	Life Sciences Research Board (LSRB)	156	37.83
4.	Naval Research Board (NRB)	216	70.89
5.	Armament Research Board (ARMREB)	77	17.93

Agencies involved in carrying out sponsored research are mostly doing basic/fundamental research. Therefore, outputs of these projects are taken as inputs in/futuristic projects. Products are developed by the developing agencies and finally produced by the designated manufacturing agencies.'

2.27 DRDO has established the following 7 Centres of Excellence:

Centres of Excellence

1. DRDO Bhartiya University (DRDO BU) Centre of Excellence, Coimbatore
2. Advanced Centre for Research in High Energy Materials (ACRHEM), University of Hyderabad
3. Centre of Excellence in Cryptology, ISI Kolkata
4. Centre of Millimeter Wave Semiconductor Devices and Systems, University of Calcutta, Kolkata
5. Advanced Centre of Excellence on Composite Materials, NAL Bengaluru
6. Research and Innovation Centre (RIC), Chennai
7. Centre of Excellence for Aerospace Systems Design and Engineering, IIT Bombay, Mumbai

Agencies involved in carrying out sponsored research are mostly doing basic/fundamental research. Therefore, outputs of these projects are taken as inputs in/futuristic projects. Products are developed by the developing agencies and finally produced by the designated manufacturing agencies.

2.28 In this connection it was further asked to state the budgetary provision given to the Universities, their actual allocation and system of monitoring thereon. The Ministry informed as under:

'The budgetary provision given to the Universities (under Extramural Research), their actual allocations and release of grants since 2007-08 to 2014-15 are given below:

Year	Allotment (Rs. in cr.)	Released Grant (Rs. in cr.)
1	2	3
2007-08	31.00	30.9873
2008-09	30.00	27.5541

1	2	3
2009-10	30.00	22.1616
2010-11	36.50	33.7783
2011-12	46.00	43.0471
2012-13	50.00	46.9628
2013-14	60.00	57.5998
2014-15	40.63	38.9100

System of monitoring:

- (i) Projects costing less than Rs. one crore are being monitored by Project Review Committee meetings held yearly.
- (ii) Projects costing more than Rs. one crore are being monitored by Project Advisory Committee meetings held yearly and Research Programme Implementation Group meetings held half yearly.'

2.29 As per Para VII of Annual Report of the Ministry (2014-15) – Annexure-III at Page 207, DRDO gave Grants in Aid to IITs, Universities, etc. without proper monitoring and money was utilized against the provisions of the scheme. In this connection Ministry was asked to what is the reaction of Ministry of Defence on the above findings of C&AG, the Ministry in its written reply stated:

‘Defence Research and Development Organisation (DRDO) has partially agreed to the findings of C&AG published in Audit Para (AP-7) in Report of Union Government (Defence Services) – Army and Ordnance Factories for the year ended March, 2013 on utilization of Defence Grants-in-Aid against the provisions of the Scheme and there were critical shortfalls in the management and monitoring of the Scheme in awarding the project without attaining the viable & specific research objectives and qualitative targets. Though DRDO has utilized the Defence Grants-in-Aid for creation of basic infrastructure for motivating indigenously available research talent and facilities in IITs, Universities, Higher Technological Institutes, etc., the following corrective measures have also been taken to mitigate all the observations pointed in the C&AG Report:—

- All the Research Boards (RBs) and Extramural Research & Intellectual Property Rights (ER & IPR) have been brought under the aegis of Chief Controller R&D (Technology Management) and instructed to follow the same guidelines for sanctioning Grants-in-Aid projects in consonance with the GFR Rule.

- New SOP for Grants-in-Aid Scheme for ER & IPR and RBs has been made and is awaiting the approval of higher competent authority.
- Better and stringent review and monitoring system has been introduced and outcome is being published as compendium for circulation to all DRDO labs/estts.
- Grantee Institute has been asked to maintain proper account for the project.
- Provision is in place for retention of equipment as per GFR'.

Dropped/abandoned Projects

2.30 The Ministry was asked to give the details of major projects which were undertaken by DRDO and dropped/abandoned alongwith the reasons and cost involved. The Ministry replied as under:

'The details of major projects which were undertaken by DRDO and later on dropped/abandoned, along with the reasons and cost involved, are given below:-

- (i) **Development of Airborne Surveillance Platform:** It was sanctioned in May 1997 at a cost of Rs. 10 crore with a Probable Duration of Completion (PDC) of 30 months as a concept demonstrator. Following the fatal accident of the AVRO aircraft on 11 Jan 1999 at Arrakkonam, the project was short closed in Nov 1999. The cost incurred at closure of the Project was Rs. 2.145 crore.
- (ii) **Development of Cargo Ammunition:** The project was sanctioned in January 1998 at a cost of Rs. 16.35 crore. During the initial stages of development, it was felt that bomblet developed for Prithvi missile with certain modification can be adopted for Cargo system. However, this was not possible as design of bomblet and its fuze required total redesign and posted certain technological constraints. All the technological constraints were overcome and the design of 130 mm Cargo Shell, bomblet, bomblet fuze with SD element, packing system and ejection system were worked out. The project was short closed at the stage since PDC extension was not approved and expenditure of Rs. 2.78 crore was made.
- (iii) **Development of GPS Based System as an Alternative to Fire Direction Radar:** The Technology Development

Programme was sanctioned in Aug 1999 at a cost of Rs. 12.20 crore. Two parallel methods, AGAPS and GPS, were worked out for Pinaka system, out of which AGAPS was found more suitable. Hence the project of developing GPS based system was short closed and Rs. 46.70 lakh was spent till that date.

- (iv) **Development of 30 mm Fair Weather Towed AD Gun System:** The project was sanctioned in Sept 2000 at a cost of Rs. 17.70 crore. VCOAS in Jan 2001 said that the existing fleet of AD guns *i.e.* 40 mm L/70 and 23mm ZU guns in the service are still in good condition with a residual life of 10-15 years and that during 9th & 10th Plan these guns are proposed to be upgraded and after up gradation the characteristic of these guns will be superior than that specified in GSQR No. 767. It was, therefore, decided that the QR for future AD Gun should be reviewed as de-induction of the existing guns will start only in 2015. Accordingly, in May 2001 a new draft GSQR was issued, which was entirely different from that issued earlier. In view of the change in GSQR, the project was short closed after spending Rs. 14.50 lakh.
- (v) **Development of 30 mm Light Towed AD Gun System:** The project was sanctioned in Aug 1997 at a cost of Rs. 9.85 crore. Since the scope of development work was entirely different as compared to what was planned, it necessitated additional funds and extension of PDC to design/develop the system to meet the new QR. In view of the change in QR, decision was taken to close this project and Rs. 51.18 lakh was spent till the closure of the project.'

2.31 As per Para 5.3 of V of Annual Report of the Ministry (2014-15)—Annexure-III at page 203, DRDO procured a critical component required in anticipation of an order from Army resulting in blocking of Government money to the tune of Rs. 34.70 crore. In this connection Ministry was asked to What is the reaction of Ministry of Defence on the above findings of C&AG, the Ministry in its written reply stated:

'Defence Research and Development Organisation (DRDO) has agreed to the C&AG conclusion reflected in Audit Para (AP-5.3) in its Report of Union Government (Defence Services) – Army and Ordnance Factories for the year ended March 2012. DRDO procured a highly complex critical component required for the production of 'Nag Missile' at a cost of Rs. 52.58 crore in anticipation of an order from Army. The decision of anticipatory procurement of this

strategic component, which resulted in blocking of Government money amounting to Rs. 34.70 crore, was done in the National Interest for its stockpiling. The other important conditions responsible for this anticipatory procurement are as follows:—

- Original Equipment Manufacturer (OEM) wanted to shut down the production line.
- Adequate expertise to realize the item is not available in the country.
- Long lead time of procurement of 12-18 months.
- Based on recommendations of Director General Mechanised Forces (DGMF), quantity was reduced from 400 to 200 numbers.
- This is a deliberate and considered decision by DRDO and Services taken at the highest level’.

2.32 As per Para 5.3 of VI of Annual Report of the Ministry (2014-15)—Annexure-III at page 207, DRDO closed two staff projects at CVRDE and nine at VRDE and only one project underwent productionisation. Projects were initiated without GSQR. In this connection Ministry was asked to What is the reaction of Ministry of Defence on the above findings of C&AG, the Ministry in its written reply stated:

‘Defence Research and Development Organisation (DRDO) closed two Staff and Technology Demonstrator (TD) R&D projects undertaken by Combat Vehicles Research & Development Establishment (CVRDE) at Avadi, Chennai and nine projects of Vehicle Research & Development Establishment (VRDE) at Ahmednagar, Maharashtra during the period from April 1998 to March 2013 as published in Audit Para (AP-6) of the C&AG Report of Union Government (Defence Services) – Army and Ordnance Factories for the year ended March 2013. The main reasons for failure of these projects are initiation of projects without stable General Staff Qualitative Requirement (GSQR) and planning to meet the desired User requirements. The details of the above closed staff projects are as under:—

CVRDE One project was undergoing Transfer of Technology (ToT) but not productionised, whereas the other though accepted by the User could not be productionised due to imposition of ban on the foreign vendor.

VRDE Out of nine closed projects, one underwent productionisation and other, though completed successfully and accepted by the User for induction into Service, could not be productionised while third partly achieved the project requirement but the remaining six projects could not achieve success in terms of acceptance by the Users.’

Private Sector Participation

2.33 During deliberations, the Committee asked whether about DRDO could follow the DARPA model of the USA and have active involvement of private sector, Universities, IITs and IISC for resurgence of DRDO. Defence Secretary apprised the Committee as under:

“DARPA model that you have referred to is something which has been accepted in principle and it is going to be introduced. That is first. But I would like to take time at this point itself to indicate to the Committee the directions in which we are thinking of changing the way DRDO and the Ministry as a whole work. That is the most important thing to build up ammunitions and the weapons as the country needs. There is a deficiency. It is an admitted fact. We have nothing to say on that except that we are working on that.

If I may come back to DRDO, I would mention the broad approach that the Ministry is presently proposing to take. On this, we are hoping that by around May or June, we would have formal Government instructions in position. The first thing we have decided was that we would go by groups of products and say that this is where we would achieve self-sufficiency in five-year time. For example, I have a strength in our missile development. Akash is one example. Intercontinental Ballistic Missile is another example. But there are a whole lot of other missiles which are being developed. The basic principles are the same for the range of missiles which the country needs for Army, Navy and Air Force, but the requirements differ. Somewhere, I may need a sea-skimming missile, somewhere, I may need air-to-air missile, etc. Because I have the basic capability and basic engineering, it is really up to me to make sure that no imports take place and the DRDO and the production agencies take over fully. We have identified about 6-7 different areas where we propose to promulgate a programme where we will say that in this defined timeframe, under this product category; there would be no imports. This is one major change that we are contemplating. This involves the programmes that we are talking of. I have mentioned missiles as one example.

The second example is electronic warfare where the DRDO has a lot of established strength which we do not adequately talk about

but it is a fact that in electronic warfare, no country is ever going to give me any knowledge. Therefore, I have to attain self-sufficiency here. That is planned to be achieved.

Material is another area where we have very serious difficulties. No country would share with me how the hotpots of aero-engine should be used, what material should be used. Therefore, materials would be another focus among the 6-7 programmes that I have mentioned. So, this way, we are giving a specific target to DRDO in consultation with the Services as users as well as production agency. So, the second decision really is having identified the product, we have decided to set in position, ab initio, a system where the Services, the DRDO and the Private Sector/Public Sector industry would be associated with the development of it.

.....you had referred to the private sector, it is the intention of the Government to involve them in a very big way. As I mentioned already that the production partner be chosen with the inception of the project would either a DPSU or a private vendor. We are also going to define simultaneously that the private vendor whether it is one person or 10 persons it would be defined based on quantum and value of orders and then I will persist with them and ensure that they are profitable in terms of specifically defined targeted quantities of orders which would also be given right at the beginning when the project is conceived. This is another major change which we intend to do in consultation with the Services.”

2.34 With regard to the public sector efficiency as well as issues regarding involvement of private sector. He further stated as under:

“On public sector efficiency as well as on issues regarding the private sector, this brings me back to what I had submitted to the hon. Committee earlier that unless and until the user, the research agency and the production agency work together with a clear definition of an order, I cannot blame DRDO and this is the change that I had submitted before the hon. Committee that we intend to bring about. If the private sector knows that they are going to get orders, they will tailor their production plans accordingly. This has to be put in actual practice. Incidentally, so far as our revenue procurements are concerned, we have already put in position where the orders for spare parts, whether to Government sector or private sector or imports, are being given for five years. So we have implemented what we are thinking. This is an area where we need to implement it because we realize that a production agency cannot sustain itself unless and until it gets a definite order.

Another thing is, we intend to make a procedural change very shortly where the private sector would be given 80 per cent of the funding for development of a specific product. We hope that it would address the systemic problems that exist now.”

Quality Control

2.35 On the quality check is conducted for the products developed by DRDO, the Ministry supplied the following information:

‘Yes, Sir. Quality checks are conducted for the products developed by DRDO. The following Government Quality Assurance (QA) agencies are authorized to conduct quality check on the products so productionised:-

- Indigenous Missile Systems—Missile System Quality Assurance Agency (MSQAA), Hyderabad.
- Products for Indian Army—Directorate General Quality Assurance (DGQA).
- Products for Indian Air Force—Directorate General Aeronautical Quality Assurance (DGAQA).
- Products for Indian Navy:-
 - Armament - Directorate General of Naval Armament Inspection (DGNAI).
 - Others - Directorate of Quality Assurance (Warship Projects) [DQA(WP)].
 - Directorate of Quality Assurance (Naval) [DQA(N)].
- Strategic systems - Strategic Systems Quality Assurance Group (SSQAG).

2.36 During the oral evidence, on the quality control, the Defence Secretary apprised the Committee as under:

“I would like to submit relates to the quality control and productionisation which has also been the bane, which was first referred to by the hon. Member about small weapons, etc. We have two changes in mind. First, the qualitative requirements of trials – because trials are conducted as per trial directives. At present, trial directives are designed and being given by the Services whereas there is a feeling that the designing agency is the right forum to design the trial directives. We need a change on that. Similarly, when I am productionising, this is something which DRDO

is not being doing but what are the specific check points where quality must be tested and certified so that the final product is good. This is something which DRDO is not being doing; this is something which we have now requested the DRDO Services and the production agencies but primarily DRDO to put in position that how do you put in place a quality control system which is absolutely essential for what DRDO is delivering. Frequently, DRDO gets blamed for a product which is probably well designed but it is not delivering because the quality and technology parameters which have been defined by DRDO are not fully adhered to by the production agency.”

PART II

RECOMMENDATIONS/OBSERVATIONS

ORDNANCE FACTORIES

1. Budget Utilization

The Committee note that the Budget Estimates allocation under the Capital Expenditure head for the year 2014-15 was Rs. 1207 crore. However, at the Revised Estimates stage it was drastically reduced to Rs. 660 crore. The Ministry expect the Actual Expenditure to be Rs. 765 crore, which is Rs. 105 crore more than the Revised Estimates. This shows a wide variance in the Budget Estimates, Revised Estimates and the actuals under the Capital Expenditure.

The Committee opine that either the demand under this head has been wrongly estimated or there is something that has been taken out of the system due to which this huge gap has emerged in the figures.

The Committee would like to be apprised of the detailed reasons for the same and would recommend that such wide variations in budgetary allocations should not re-occur in future.

The Committee also note that in the next financial year demand, a cut of Rs. 1321 crore has been made which would ultimately affect the value of production and Ordnance Factories would not be able to reach the target as fixed by the Ministry of Rs. 20,000 crore in the next three years. The Committee are of the view that if such high value goals are to be achieved, then a proper infrastructure as well as adequate financial assistance must also be provided. They, therefore, recommend that in future, budgetary allocations must be planned in such a way that no deductions or minimum changes are made at any stage, except for very valid and justifiable reasons.

Budgetary Provisions

2. In a reply given by Ministry of Defence, it was stated that for augmentation of capacity for manufacturing of T-90 Tanks from 100 to 140 numbers per annum, expenditure was prioritized and restricted to Rs. 186.46 crore due to non-availability of funds as

well as the absence of commensurate load from Army during 2014-15. The Committee express their concern over lack of sufficient funds for such an important project and desire that enough funds be provided for this project especially in the light of the fact that the Army has desired for more number of T-90 Tanks. Accordingly, this Committee may be intimated about the steps taken in this regard.

3. Delays in projects

The Committee note with concern that there has been a huge delay in different projects of the Ordnance Factories resulting in very long gestation periods. Many projects which had started in 2010 such as creation of capacity for manufacturing of T-72 variants @ 50 numbers per annum, augmentation of capacity for manufacturing of armoured vehicles engines from 353 to 750 per annum, augmentation of capacity for manufacturing of spares required in overhauling of T-72 and T-90 tanks are still nowhere near completion. The construction work of OFB, Nalanda has also been carried forward to the 12th plan though it was initiated in 10th plan.

In its reply, Ministry of Defence has given a number of reasons for delay in implementation of its projects. These include delay in tendering stage like limited vendor base, non-availability of plant and machinery, very limited global sources of explosive plants, etc. as also delays in supply stage like lack of online system for monitoring, financial crisis, etc.

The Committee also note that Ordnance Factories depend to a large extent on Military Engineering Service(MES) for execution of civil works related to their projects, which is one of the major causes of delay. The time for completion of civil works from the date of projection of work to MES is approximately 3 years but it seems that in most cases this time limit is not adhered to. The Committee have viewed this very seriously and recommend that norms may be developed to ensure that MES invariably adheres to the time limit of 3 years fixed for the completion of their work.

The Committee feel that with proper planning at the initial stage only in consultation with all the stakeholders, including the Services, by factoring in all these negative factors and then devising a strategy for timely completion of the projects within a realistic time-frame can be achieved by the Ordnance Factories. The

Committee recommend that a proper system may be developed in this regard as suggested by the Committee and the action taken in this regard may be intimated to the Committee.

4. Under spending on Modernization

Indian Ordnance Factories were provided a fund of Rs. 4706.48 crore during the last five years for modernization against which only Rs. 3874.88 crore were spent. Except during the years 2011-12 and 2013-14, where Ordnance Factories Board actually spent more than the outlay provided, the expenditure was nowhere near the BE all these years. Hence, in the five years Rs. 831.60 crore was left unutilized from the budget allocation for modernization. The Committee note with serious concern that this was the case in regard to all the heads viz. Renewal and Replacement (BE-Rs. 2050 crore, Actual Spent-Rs.1859.17 crore), New Capital (Plant and Machinery) (BE-Rs. 1565.02 crore, Actual Spent—Rs. 938.54 crore), Capital (Civil Work) (BE-Rs. 1091.46 crore, Actual Spent—crore, Rs. 1077.17 crore). The Committee observe that around 18% of the amount allocated for modernization remained unutilized during the last five years, although the Ordnance Factory Board manages 41 manufacturing units where the amount may have been utilized. The delays in many important projects like Pinaka Rocket System, T-90 tanks etc. have resulted due to the delay in augmentation of the capacity for manufacturing by the Ordnance Factory Board which has not seriously taken up the modernization process.

The Committee express their anguish and conveys their unhappiness, at the underutilization of funds for modernization by the Ordnance Factory Board, which have denied these surplus funds to be allocated to some other Head where it could have been used fruitfully. The Committee opine that optimum utilization should also be given due importance and desire that steps must be taken to ensure optimum utilization of funds for modernization.

5. Research and Development Activities

The Committee opine that in the present scenario, it will be extremely difficult for the Ordnance Factories to compete with internationally renowned companies to manufacture arms and ammunition unless new strategies towards restructuring and in house R&D work are taken up by the Ordnance Factories. The Committee note that some efforts are being made by the Ordnance Factories to develop new products through in-house R&D efforts. However,

the Committee are dismayed to note that the total allocation towards R&D continues to be on the lower side and in fact they observe that the allocation of R&D has been reduced in 2013-14 as compared to 2012-13, though they understand that the turnover of 2013-14 was lower. However, the Committee feel that the allocation of funds for R&D work should not be linked to the turnover of the Ordnance Factories and should be steadily increased from year to year. The Committee emphasize that instead of always depending on technology from DRDO or by import, Ordnance Factories should become self-reliant by developing new products through in-house R&D.

The Committee also note that 11 Ordnance Development Centres (ODCs) with identified core technologies have been created wherein Ordnance Factories have taken up product development and product improvement in core product area, which is appreciable. The Committee feel that more such Ordnance Development Centres need to be established for R&D related projects to 'Make in India' a reality.

The Committee also note that the Services are making some contribution towards the Research and Development of high technology Military projects which is a welcome step. However, more serious efforts should be made and methods devised to further enhance the involvement of the Services in the R&D Projects of the Ordnance Factories. This, the Committee feel, will lead to better time management as well as improving the cost effectiveness of the projects by detecting the faults, if any, and solving issues in consultation with the Services at the initial stage only.

The Committee recommend that the Ministry should make all efforts to provide sufficient funds to the Ordnance Factories to undertake high quality in-house R&D activities. The Committee also feel that wherever required experts from the private sector as well as from international arena may be involved in the process to benefit from their domain knowledge by the Ordnance Factories.

6. Indigenization of Defence Products

The Committee note with concern that although the Value of Issue has consistently dropped from 2011-12 to 2013-14, the Import Content has not shown a similar drop; in fact it has risen from Rs.1462 crore in 2012-13 which was 12.20% in 2012-13 of the Value of Issue, to Rs.1685 crore which was 15.15% of the total Value of Issue in 2013-14. The Committee recommend that all efforts may

be made by the Ordnance Factories towards indigenization of its Defence products so that the dependency on foreign imports is reduced.

The Committee would like to be apprised of the steps taken in bringing down the import content in the Ordnance Factories products.

7. Quality Assurance

The Committee feel that while adhering to time limits for production by the Ordnance Factories are vital, it is equally important that the products should be of excellent quality too and for that the Ordnance Factories need an efficient and effective Quality Assurance system. During the deliberations, it was revealed that in the last three years, 429 types of defence equipments worth Rs.449 crore have been sent back to Ordnance Factories due to quality issues. The Committee feel that this is an avoidable wastage of public money which can be easily checked by developing a good quality assurance system in the Ordnance Factories. The representatives of the Ministry of Defence cited manufacturing deficiencies, reliability of design, deficiency in maintenance of weapon system, deficiency in handling and storage in ammunition depots as the major factors which mainly lead to quality maintenance issues and the new initiatives being taken up by them. The Committee feel that a system for zero defect in products manufactured by Ordnance Factories should be developed by the Ordnance Factories and every effort be made to ensure that strict quality checks of all the Defence products are carried out at different levels before the products are actually delivered to the Armed Forces. The Ordnance Factories should also pro-actively take steps to provide training to the end-users (the Service personnel) so that no quality related issues arise due to mishandling or faulty storage at their end. The Committee also feel that a proper system needs to be developed to fix accountability in case of any defects found in the products which can surely result in drastic reduction in poor quality related issues.

8. Manpower Shortage in Ordnance Factories

The Committee note that the Ordnance Factories are suffering from acute shortage of manpower. The Committee found that against a sanctioned strength of 1,25,126 Technical Personnel in various Ordnance Factories, the actual strength of these personnel is only 74,634 as in January 2015. This shows that there is a huge gap, of almost 40%, between the sanctioned and actual strength of Technical Personnel. The existing strength of non-technical staff is only 16,081 as against the sanctioned strength of 23,214, which is a significant

shortfall in this category of staff also. Similarly, whereas the sanctioned strength of Group 'A' Officers is 2000, the actual strength is just 1630. Thus, the Committee note with deep concern the shortage of manpower in the Ordnance Factories, particularly, in the Technical Category which has a major impact on manufacturing and improvement of products. The Committee recommend that immediate steps should be taken in this regard to bridge the huge gap between the sanctioned and the actual strength of personnel in various categories in the Ordnance Factories so that the overall efficiency and working of these Factories are not affected to any extent. It may be noted that any lapse in this regard greatly affects the general preparedness of our Armed Forces as they are dependent on these Ordnance Factories for their deliverables.

Re-structuring of Ordnance Factories

9. The Committee note that Ordnance Factory Board (OFB) was constituted long ago, in order to ensure co-hesiveness and co-ordinated approach in the working of Ordnance Factories. In this regard Committee feel that in view of the rapid technological advancement taking place the world over in Defence sector and export potential of the Defence equipment, there is a need to redefine the role of Ordnance Factory Board to enable it to keep pace with the changing requirement to tap the vast export market. There is also a need to restructure OFB by including therein experts with proven records in marketing and internal trade who may give an export orientation to the indigenously manufactured defence products and make effective strategy. The Committee, therefore, recommend that a high level Committee should be constituted to go into the functioning and the organizational structure of Ordnance Factory Board and give its recommendations on re-structuring of Ordnance Factories to make them more professional and dynamic body responsive to the present day needs.

The Committee also recommend that the performance of the Ordnance Factories should be periodically/annually reviewed by the Ordnance Factory Board and the recommendations of Kelkar Committee on restructuring of Ordnance Factories should be implemented at the earliest.

DRDO

Budgetary Provisions for Defence Research and Development

10. The Committee note that the Defence Research and Development Organization (DRDO) projected demand of Rs. 19,541.56 crore in 2015-16. However, it has been allocated an

amount of Rs. 14,358.49 crore only. The Committee also note that out of the total Defence Budget, the share of DRDO was 6.59% in 2010-11, which was reduced to 5.34% in 2013-14. This share has slightly improved to 6.67% in 2014-15, but again it reduced to 5.82% in 2015-16. The share of defence research and development budget to GDP of the Nation is also declining over the years. It has reduced to 0.11% in 2013-14 from 0.13 per cent in 2009-10.

However, this share has slightly improved to 0.12% in 2014-15. The Committee also note that DRDO gives its budgetary projection, based on the ongoing projects/programmes and future requirements and out of which nearly 80% is utilised for Mission Mode Projects with deliverables for Armed Forces, but it has been allocated inadequate amount. The Committee feel that shortfalls in budget affects the pace of technological and infrastructural development since ongoing developmental activities have to be re-prioritized. The need to lay emphasis on indigenization of defence products but it can only be achieved with adequate budgetary support. The Committee, therefore, desire that all possible measures should be taken to meet the budgetary requirements of DRDO.

Manpower in DRDO

11. The Committee are happy to note that in DRDO, the existing strength of 7864 scientists, is almost equal to the sanctioned strength of 7878 and the shortfall in manpower in this regard is minimal. Also, the Committee appreciate the fact that from 2010 to 2014, the rate of exodus of scientists from the DRDO has decreased. This is a welcome step and the Committee feel that positive steps like the Incentive Scheme for DRDO Scientists may be initiated in the organisation to achieve zero per cent attrition of Scientists from the organization.

12. The Committee, however, note with dismay that there has been no review/increase in scientific manpower of DRDO since 2001, though the number of projects as well as technological and tactical defence requirements have increased manifold. The Ministry has intimated in this regard that the proposal is pending with the Ministry of Finance. The Committee recommend that this matter may be taken up with the Ministry of Finance on a top priority so that the manpower requirements of DRDO and India's strategic needs can be taken care of properly.

13. On the requirement of scientists, the Committee note that various steps are being taken by DRDO to generate interest in Defence technologies among school and college students with the aim of

encouraging them to take up Defence R&D as a career. While the Committee appreciate the efforts being made in this direction they feel that concerted efforts are needed to attract genuine young talent to opt for Defence R&D as a career. In this regard, the Committee opine that a detailed research of the best practices being followed by the major countries in the world be undertaken and action plan based on this study taking into consideration. Their viability *vis-a-vis* the local scenario may be worked upon and be shared with the Committee for their consideration and further examination in this regard.

Projects abandoned/closed by DRDO

14. The Committee express their deep concern on the wasteful expenditure incurred by DRDO on closure of major projects like Airborne Surveillance Platform, Cargo Ammunition, GPS based system as an Alternative to Fire Direction Radar, Development of 30mm Fair Weather Towed AD Gun System, Light towed AD Gun system and 30 mm Light Towed AD Gun System after getting these projects sanctioned. The Committee desire that they be informed about the basis on which these projects were chosen and specific reasons which forced the Government to close them. The Committee are not convinced as to why at the initial stage itself, before the project got sanctioned, all the possible constraints and bottlenecks were not foreseen. The Committee feel that the various reasons like Probable Duration of Completion (PDC), extension not being approved, one out of two parallel methods being found more feasible, requirement of additional funds, etc. cited by the Ministry for the closure of various projects could have been tackled at the initial stage itself by better planning and following a concurrent engineering and development approach.

15. The Committee recommend that in future there should be a scientific, technical and concurrent audit of every ongoing project from an independent agency so that such closures are avoided in future. The Committee also strongly feel that the Ministry should re-evaluate the reasons and also seek expert advice before taking a decision towards closing down any project of DRDO in future to avoid waste of public funds as well to help sustain the project which can prove to be extremely beneficial for the country. The Committee also endorse the findings of CAG as mentioned in para 5.3 of V and VI of Annual Report of the Ministry 2014-15 regarding wasteful expenditure.

Delays in Projects

16. There are 93 ongoing major projects in different DRDO labs. These include Agni IV, Agni V, Nirbhay cruise missile, K-15, Nag Astra, AWACS, Arjun Main Battle Tank, Tejas LCA, etc. The Committee are dismayed to note that out of 46 major ongoing projects (more than Rs. 100 crore), there have been cost revisions and time revisions in 10 and 12 projects, respectively. Besides, 10 projects are more than 5 years old, *i.e.* sanctioned before 2009. Seventeen major projects (more than Rs. 100 crore) sanctioned during the 11th Five Year Plan (April 2002 to March 2007), but none has yet been completed. Moreover, two of these have been under closure. The Committee are perturbed to observe that the projects being undertaken are not executed according to their schedule and inordinate delays in execution of, almost all the projects has become a common phenomenon. While deploring this attitude, the Committee desire that some concrete steps should be taken to put in place a mechanism to oversee the project execution so that they are implemented in a stipulated time-frame. Steps, proposed to be taken be intimated to the Committee.

17. During the deliberations, Defence Secretary acknowledged that DRDO is also responsible for delay in its research work itself. The Committee note the problems faced by DRDO in the matter of non-availability of platform for trials. The Committee feel that a better coordination between DRDO and the services could easily solve this bottleneck and also cut short the time frame in the development and testing of weapon system. The Committee, therefore, feel that Ministry should make concerted efforts in this direction so that testing and trial platforms are always available to them for crucial research and development work.

18. The Committee note with immense surprise that although an elaborate mechanism is in place which includes adequate financial and administrative powers to Directors General of Technology clusters to carry out research and development as per the mandate of DRDO, monitoring of all Cabinet Committee on Security (CCS) projects by the Cabinet Secretariat, etc., the projects are being delayed. The Committee feel that there is some lacuna in the implementation of this system. The Committee, therefore, recommend that more effective efforts are required to be made for timely completion of each project.

19. The Committee agree to the suggestions of the Defence Secretary and strongly recommend that a mechanism should be developed so that the DRDO, the production agency and the user

agency should work in tandem right from the conceptualization stage, which it is felt, can result in preventing unnecessary delay in the implementation of various vital projects.

20. The Committee also recommend that keeping in view the huge public money involved in these projects and the fact that these directly affect the Defence preparedness of the country, accountability must invariably be fixed in case of inordinate delay in these projects.

Kaveri Engine

21. During the deliberations, the Committee expressed their apprehension over the perpetual delay in the development of the indigenous Kaveri engine to meet the LCA requirement, which was sanctioned way back in 1989. The Committee was informed by the Defence Secretary that a total amount of Rs. 2100 crore had been spent on this Project till date. The Committee was also apprised by the representatives of DRDO of the current status of the project and the fact that solutions were being evolved with support of some experts within the country as well as outside for the completion of this project.

The Committee desire that infrastructure to test aero-engines should also be created within the country so that flying testing of engine be achieved and time be saved in carrying the engine to foreign country and finding availability of slot testing agency etc.

Indigenisation of Research and Development Activities

22. The Committee appreciate the fact that Defence Research and Development Organisation (DRDO) has a number of achievements to its credit like the development of the strategic Agni class of missiles, Electronic Warfare (EW) systems, Main Battle Tank (MBT), development of combat aircraft, etc. However, the Committee note that it is also a fact that the country is still heavily dependent on imports to meet its Defence requirements. Given the fact that technologically advanced countries are reluctant to part with their critical technologies with developing countries like India, it becomes all the more essential for our labs to develop each system, sub-systems, component *ab-initio* including information, infrastructural and testing facilities. The Committee are also of the view that as original research takes a long time, therefore, DRDO may also think of developing a product through reverse engineering. The Committee recommend that the Ministry of Finance should

provide adequate budgetary support in this regard so that indigenization of R&D activities can be taken up by DRDO on a war footing. The Committee also feel that there is a need for an increase in the budget for R&D activities of DRDO specifically targeted at reducing dependency on other countries in critical and high technology areas, which can lead to the country becoming self-reliant in Defence Production.

Quality Control

23. The Committee feel that one of the important factors for quality management is the extent of knowledge of a user of the product to be produced for a specific project. Also, the extent of his involvement in the conceptualization stage of the project on a permanent basis so that defects, if any, may be rectified during production stage itself and delivery of the product to the user may not get delayed for a long time. In this way, there is a better scope for fixation of accountability, if the user does not suggest corrective measures/improvements and the product is not developed as per GSQR.

24. The Committee desire that instead of making a perfect product, DRDO should develop a product and later keep on improving it as Mark I, II, III, IV or so on, so that the Services have some product to carry their assigned tasks to some extent, at that point of time and does not wait eternally for a perfect product to come. This will need a proper policy directive as also the stages of building up the production systems for the initial and final products.

Public-Private Partnership

25. During the deliberations, the Committee pointed out the gigantic gap in the availability of regular arms, ammunition, equipment ranging from 30 to 70 per cent, which brings the combat ratio against our prime adversaries at an all time low. The Committee stressed on the need for a complete revamp and re-orientation on how the DRDO functions and one of the major initiatives suggested by the Committee was the active involvement of private sector, Universities, Indian Institute of Technologies and Indian Institute of Science, which could play a major role in the resurgence of DRDO.

26. The Committee recommend that an environment may be created where public sector and private sector can work in collaboration, so that the R&D activities can be synergized and better coordination achieved. The Committee also feel that a level playing field may be provided to the Indian Private Industry and they may be allowed to tie up with foreign manufacturers to develop certain equipment based on the requirements of users.

Collaboration with universities/academic institutions

27. The Committee note that the budgetary provision to the Universities (under Extramural Research) have shown a decrease in the range of 30% to 40% in 2014-15 (Allotment—Rs. 40.63 crores, Released Grant—Rs. 38.9100 crores) as compared to the provision in 2013-14 (Allotment—Rs. 60.00 crores, Released Grant—Rs. 57.5998 crores) which has been viewed negatively by the Committee.

28. In their earlier report, the Committee had recommended the opening of additional centres in various parts of the country, besides the seven centres of excellence established by DRDO at various institutions/universities in Bangalore, Chennai, Hyderabad, Coimbatore, Mumbai and Kolkata. The Committee felt that this initiative can foster knowledge-based growth of Defence-related discipline in the country, strengthen National resources of knowledge, know-how, experience, facilities and infrastructure. This will also catalyze the much needed cross-fertilization of ideas and experiences between DRDO and outside experts in scientific and technical fields that contribute to Defence technology.

29. The Committee recommend that the allotment of funds in this regard may be increased substantially for extension of such centers of excellence in various parts of the country as without the inflow of funds these projects will become unsustainable. The Ministry of Defence should accordingly take initiatives in this regard under intimation to this Committee.

30. The Committee also note the findings of CAG as enumerated in Para VII of the Annual Report of the Ministry, wherein it is stated that DRDO gave Grants in Aid to IITs, University, etc. without proper monitoring and the money was utilized against the provisions of the scheme. The Committee are also of the view that proper care should be taken by the personnel involved in DRDO monitoring system so that such instances do not recur.

NEW DELHI;
24 April, 2015

04 Vaisakha, 1937 (Saka)

MAJ GEN B C KHANDURI, AVSM (RETD.),
Chairperson,
Standing Committee on Defence.

Details of major ongoing projects (Cost above Rs. 100 crore) with name of project, developing agency/lab, date of sanction, original estimated cost, likely date of completion, revised cost and revised date of completion of the project

Sl.No.	Project Name	Development Agency/Lab	Date of Sanction	Original Estimated Cost (Rs. in crore)	Revised Cost (Rs. in crore)	Original Likely Date of Completion	Revised Date of Completion
1	2	3	4	5	6	7	8
1.	Medium Range Surface-to-Air Missile (MRS AM)	RCI	Feb. 2009	10075.68	No revision	Aug. 2016	No revision
2.	Light Combat Aircraft (LCA): Phase-II	ADA	Nov. 2001	3301.78	5777.56	Dec. 2008	Dec. 2015
3.	Airborne Warning & Control System (India) AWACS(I): Phase I (In principle sanctioned)	CABS	Feb. 2013	No revision	5113.00	Feb. 2020	No revision
4.	Kaveri Engine	GTRE	Mar. 1989	382.81	2839.00	Dec. 1996	Dec. 2009
5.	Long Range Surface-to-Air Missile (LRSAM)	DRDL	Dec. 2005	2606.02	No revision	May 2012	Dec. 2015
6	Light Combat Aircraft (LCA): Phase-III	ADA	Nov. 2009	2431.55	No revision	Dec. 2018	No revision
7.	Airborne Early Warning & Control (AEW&C) System	CABS	Oct. 2004	1800.00	2520.00	Oct. 2011	Dec. 2015

1	2	3	4	5	6	7	8
8.	Naval Light Combat Aircraft (LCA Navy Phase-II)	ADA	Dec. 2009	1921.11	No revision	Dec. 2018	No revision
9.	Naval Light Combat Aircraft (LCA Navy Phase-I)	ADA	Mar. 2003	948.90	1714.98	Mar. 2010	Dec. 2014 (Under Revision)
10.	Medium Altitude Long Endurance (MALE), Unmanned Aerial Vehicle (UAV) and Development of Aeronautical Test Range (ATR) at Chitradurga	ADE	Feb. 2011	1540.74	No revision	Aug. 2016	No revision
11.	Air-to-Air Missile System 'Astra'	DRDL	Mar. 2004	955.00	No revision	Feb. 2013	Aug. 2016
12.	Nirbhay – Development & Flight Trials	ADE	Dec. 2010	56.93	102.28	May 2013	Dec. 2016
13.	Quick Reaction Surface-to-Air Missile (QR-SAM)	DRDL	July 2014	476.43	No revision	July 2017	No revision
14.	National Open Air Range	DLRL	Aug. 2014	468.00	No revision	Feb. 2018	No revision
15.	Active Electronically Scanned Array Radar	LRDE	Jan. 2012	459.65	No revision	July 2016	No revision
16.	Kautilya	RCI	July 2012	432.80	No revision	July 2017	No revision
17.	Development of 1500 hp Engine	CVRDE	Dec. 2013	398.02	No revision	Dec. 2018	No revision
18.	Solid Fuel Ducted Rocket Ramjet Technology for Air Launched Tactical Missiles (SFDR)	DRDL	Feb. 2013	366.00	No revision	Feb. 2018	No revision
19.	Hypersonic Wind Tunnel (HWT)	DRDL	Oct. 2010	412.00	No revision	Oct. 2019	No revision

1	2	3	4	5	6	7	8
20.	EW Systems for Capital Ships, Aircrafts & Helicopter of Indian Navy 'Samudrika'	DLRL	July 2012	342.29	No revision	July 2017	No revision
21.	New Generation Anti Radiation Missile (NGARM)	DRDL	Dec. 2012	317.20	No revision	Dec. 2017	No revision
22.	Post Development Support of AEW&C System (PDSAS)	CABS	Sep. 2013	314.32	No revision	Sep. 2018	No revision
23.	EW Suite for Fighter Aircraft (EWSFA)	DARE	Sep. 2005	279.62	330.31	Mar. 2013	Under closure
24.	NBC Defence Technologies	DRDE	Mar. 2010	284.96	181.65	Mar. 2015	No revision
25.	Dual Colour Missile Approach Warning System	DARE	Nov. 2008	228.80	273.80	June 2013	June 2015
26.	AIP System on P-75 Submarines and Development of Deliverable LOX system	NMRL	June 2014	270.00	No revision	June 2017	No revision
27.	D-Jag System Internal RWJ System for Jaguar DARIN III Upgrade Aircraft	DARE	Aug. 2012	268.27	No revision	June 2015	No revision
28.	Low Vulnerable High Performance Propellant with Low Temperature Coefficient and Improved Shelf Life of Ammunition	HEMRL	Sep. 2014	267.02	No revision	Mar. 2018	No revision
29.	155 mm/52 Caliber Advanced Towed Artillery Gun System (ATAGS)	ARDE	Sep. 2012	247.90	No revision	Sep. 2015	No revision

1	2	3	4	5	6	7	8
30.	Land Based Prototype for AIP	NMRL	Aug. 2010	216.60	No revision	Mar. 2016	No revision
31.	40 GHz Upgradation of MMIC Facility	SSPL	Feb. 2012	198.72	No revision	Aug. 2015	No revision
32.	Advanced Light Weight Torpedo	NSTL	Feb. 2008	194.53	No revision	Aug. 2013	Dec. 2015
33.	Multi Mission Radar	LRDE	Feb. 2012	193.44	No revision	June 2015	No revision
34.	Flying Test Bed	LRDE	Sep. 2012	173.48	No revision	Sep. 2017	No revision
35.	D-29 System (Internal EW system for MIG-29 Upgrade Aircraft)	DARE	Mar. 2010	168.85	No revision	Dec. 2012	May 2015
36.	Submarine Periscope	IRDE	Mar. 2014	163.77	No revision	Mar. 2019	No revision
37.	DMR-249 Grade Steels, Plates, Bulb Bars and Weld Consumables	DMRL	Dec. 2012	159.30	No revision	Dec. 2016	No revision
38.	Consultancy for AB3 Steel and Establishment of Indigenous Production	DMRL	Jan. 2013	148.50	No revision	Jan. 2016	No revision
39.	Sea keeping and Manoeuvring Basin (SMB)	NSTL	Sep. 2007	84.00	168.58	Sep. 2011	June 2015
40.	Medium Power Radar (MPR)	LRDE	Nov. 2008	134.14	No revision	May 2013	May 2014
41.	Instrumented Airborne Platform for Realtime Snow Cover, Avalanche and Glacier Monitoring	SASE	Sep. 2011	125.94	No revision	Sep. 2016	No revision
42.	Augmentation of Environmental Test Facility for warheads and Electronic System	TBRL	Sep. 2013	121.17	No revision	Oct. 2018	No revision

1	2	3	4	5	6	7	8
43.	Experimental Technology Modules for Directed Energy Laser Systems	CHESS	Feb. 2014	114.86	No revision	July 2017	No revision
44.	Advance Light Towed Array Sonar (ALTAS)	NPOL	Apr. 2012	114.42	No revision	April 2016	No revision
45.	Tech. Dev. for Engine Fuel Control System	GTRE	Oct. 2014	177.72	No revision	April 2021	No revision
46.	Project Pralay	RCI	Mar. 2015	332.88	No revision	Mar. 2018	No revision

ANNEXURE "B"

Details of major projects (Cost more than Rs. 100 crore) sanctioned during 10th FYP (01 April, 2002 to 31 March, 2007) along with date of sanction, sanctioned cost and status of projects

Sl. No.	Project	Date of Sanction	Sanctioned Cost (Rs. in cr.)	Status
1.	Long Range Surface to Air Missile (LR-SAM) System for Indian Navy	Dec. 2005	2606.02	Ongoing
2.	Airborne Early Warning & Control (AEW&C) System	Oct. 2004	2520.00	Ongoing
3.	Naval Light Combat Aircraft (LCA-Navy Phase-I)	Mar. 2003	1714.98	Ongoing
4.	Air-to-Air Missile System 'Astra'	Mar. 2004	955.00	Ongoing
5.	Interception, Monitoring, Direction Finding and Analysis System (IMDFAS) – Divyadrishti	Aug. 2002	757.70	Under Closure
6.	EW Suite for Fighter Aircraft (EWSFA)	Sep. 2005	330.31	Under Closure
7.	Creation of New Composite Propellant (CP) facility at Nasik	May 2005	324.00	Closed
8.	L-Band Solid State Active Array Radar (L-STAR)	Apr. 2003	110.00	Under Closure
9.	Augmentation of Propellant Processing Facility at SFC	Mar. 2007	100.00	Under Closure

Details of major projects (Cost more than Rs. 100 crore) sanctioned during 11th FYP (01 April, 2007–31 March, 2012) along with date of sanction, sanctioned cost and status of projects

Sl. No.	Project	Date of Sanction	Sanctioned Cost (Rs. in cr.)	Status
1	2	3	4	5
1.	Medium Range Surface to Air Missile (MRSAM) System for Indian Air Force	Feb. 2009	10075.68	Ongoing
2.	Light Combat Aircraft (LCA)Development Programme : Phase-III	Nov. 2009	2431.55	Ongoing
3.	Naval Light Combat Aircraft (LCA-Navy Phase-II)	Dec. 2009	1921.11	Ongoing
4.	Medium Altitude Long Endurance (MALE) Unmanned Aerial Vehicle (UAV) code named Rustom and Development of Aeronautical Test Range (ATR) at Chitradurga (Rustom-II)	Feb. 2011	1540.74	Ongoing
5.	Active Electronically Scanned Array Radar	Jan. 2012	459.65	Ongoing
6.	Hypersonic Wind Tunnel (HWT)	Oct. 2010	412.00	Ongoing
7.	NBC Defence Technologies	Mar. 2010	181.65	Under Closure
8.	Dual Colour Missile Approach Warning System for Fighter Aircraft	Nov. 2008	273.80	Ongoing
9.	Land Based Prototype for AIP	Aug. 2010	216.60	Ongoing

1	2	3	4	5
10.	40 GHz Upgradation of MMIC Facility	Feb. 2012	198.72	Ongoing
11.	Advanced Light Weight Torpedo	Feb. 2008	194.53	Ongoing
12.	Multi Mission Radar	Feb. 2012	193.44	Ongoing
13.	D-29 System (Internal EW system for MIG-29 Upgrade Aircraft)	Mar. 2010	168.85	Ongoing
14.	Seakeeping and Manoeuvring Basin (SMB)	Sep. 2007	168.58	Ongoing
15.	Medium Power Radar (MPR) for IAF	Nov. 2008	134.14	Under Closure
16.	Instrumented Airborne Platform for Real-time snow cover, avalanche and glacier monitoring	Sep. 2011	125.94	Ongoing
17.	Nirbhay – Development Flight Trials	Dec. 2010	102.28	Ongoing

Details of major projects (Cost more than Rs. 100 crore) sanctioned during 12th FYP (01 April, 2012–1 March, 2015) along with date of sanction, sanctioned cost and status of projects

Sl. No.	Project	Date of Sanction	Sanctioned Cost (Rs. in cr.)	Status
1	2	3	4	5
1.	National Open Air Range	Aug. 2014	468.00	Ongoing
2.	Quick Reaction Surface to Air Missile (QR-SAM)	July 2014	476.43	Ongoing
3.	Kautilya	July 2012	432.80	Ongoing
4.	Development of 1500 hp Engine	Dec. 2013	398.02	Ongoing
5.	Solid Fuel Ducted Rocket Ramjet Technology for Air Launched Tactical Missiles (SFDR)	Feb. 2013	366.00	Ongoing
6.	EW Systems for Capital Ships, Aircrafts & Helicopter of Indian Navy titled as 'Samudrika'	July 2012	342.29	Ongoing
7.	New Generation Anti Radiation Missile (NGARM)	Dec. 2012	317.20	Ongoing
8.	Post Development Support of AEW&C System	Sep. 2013	314.32	Ongoing
9.	System definition & engineering of DRDO AIP system on P-75 submarines and development of deliverable lox system	Jun. 2014	270.00	Ongoing

1	2	3	4	5
10.	D-Jag System Internal RWJ System for Jaguar DARIN III Upgrade Aircraft	Aug. 2012	268.27	Ongoing
11.	155 mm/52 Caliber Advanced Towed Artillery Gun System (ATAGS)	Sep. 2012	247.90	Ongoing
12.	DRDO – Flying Test Bed	Sep. 2012	173.48	Ongoing
13.	Submarine Periscope	Mar. 2014	163.77	Ongoing
14.	Qualification and Certification of DMR-249 Grade Steels, Plates, Bulb Bars and Weld Consumables	Dec. 2012	159.30	Ongoing
15.	Consultancy for AB3 Steel and Establishment of Indigenous Production	Jan. 2013	148.50	Ongoing
16.	Augmentation of Environmental Test Facility for Warheads and Electronic System	Sep. 2013	121.17	Ongoing
17.	Experimental Technology Modules for Directed Energy Laser Systems	Feb. 2014	114.86	Ongoing
18.	Advance Light Towed Array Sonar –ALTAS	Apr. 2012	114.42	Ongoing
19.	Technology Development of Engine Fuel Control System (EFSC)	Oct. 2014	177.72	Ongoing
20.	Collaborative Development of Low Vulnerable High Performance Propellant with Low Temperature Coefficient and Improved Life of Ammunition	Sep. 2014	267.02	Ongoing
21.	Project Pralay	Mar. 2015	332.88	Ongoing

APPENDIX

MINUTES OF THE THIRTEENTH SITTING OF THE STANDING COMMITTEE ON DEFENCE (2014-15)

The Committee sat on Monday, the 23rd March, 2015 from 1130 hrs. to 1830 hrs. in Main Committee Room, Parliament House Annexe, New Delhi.

PRESENT

Maj Gen B C Khanduri AVSM (Retd)—*Chairperson*

MEMBERS

Lok Sabha

2. Shri Dharambir
3. Shri Thupstan Chhewang
4. Shri H D Devegowda
5. Dr Murlī Manohar Joshi
6. Dr Mriganka Mahato
7. Shri Tapas Paul
8. Smt Mala Rajya Lakshmi Shah
9. Shri A P Jithender Reddy

Rajya Sabha

10. Shri Anand Sharma
11. Shri Rajeev Chandrasekhar
12. Shri A U Singh Deo
13. Shri Vinay Katiyar
14. Shri Madhusudan Mistry
15. Smt Ambika Soni

SECRETARIAT

1. Shri P K Misra — *Additional Secretary*
2. Shri D S Malha — *Director*
3. Shri A K Srivastava — *Additional Director*
4. Shri Rahul Singh — *Under Secretary*

REPRESENTATIVES OF THE MINISTRY OF DEFENCE

Ministry of Defence

1. Shri RK Mathur, Defence Secretary
2. Shri Ravikant, AS (R)
3. Shri Jiwesh Nandan, JS (G/Air)
4. Shri Subir Mallick, JS & AM (LS)
5. Shri Anup Chandra Pandey, AS
6. Shri R N Dubey, JS (Trg) & CAO
7. Smt Surina Rajan, JS (O/N)
8. Shri Anil Bahuguna, JS
9. Shri G Mohan Kumar, Secy DP
10. Shri Prabhu Dayal Meena, Secy (ESW)
11. Shri A K Gupta, Spl Secy (DP)
12. Shri Himanshu Kumar, JS (E)
13. Shri A R Sihag, DG (Acq.)
14. Shri Rabindra Pawar, JS & AM (MS)
15. Shri Rajeev Verma, JS & AM (Air)
16. Shri J Ramakrishna Rao, JS (ES)

Defence Finance

17. Shri Dhanjaya Kumar, FM (MS) & JS
18. Ms Vandana Srivastava, FA (DS)
19. Ms Sobhna Joshi, FA (Acq.) & AS
20. Ms Veena Prasad, Addl FA (VP)
21. Shri Rajesh Kumar, Addl FA (RK)
22. Ms Devika Raghuvanshi, Addl FA (DR)
23. Shri Prem Kumar Kataria, Addl FA (K)

Air Force

24. Air Mshl R K Sharma, VCAS
25. Air Mshl S B P Sinha, DCAS
26. Air Mshl Sukhchain Singh, AOM

27. Air Mshl S Neelakantan, AOP
28. Air Mshl H B Rajaram, AOA
29. Air Mshl Anil Khosla, DG Air (Ops)
30. Air Mshl J S Kler, DG (I&S)
31. AVM Sandeep Singh, ACAS (Plans)
32. AVM Amit Tiwari, ACAS (Trg)
33. AVM A Sengupta, ACAS (AF Works)
34. AVM S M Subhani, ACAS (Fin. P)
35. Air Cmde RS Dagar, PDAS

Navy

36. VAdm Sunil Lanba, VCNS
37. RAdm Dinesh K Tripathi, ACNS (P&P)
38. Cmde Sanjay Vatsayan, PDNP
39. Capt D J Revar, DNP
40. Cdr Abhishek Simlai, JDNP

Integrated Defence Staff

41. Air Mshl P P Reddy, CISC
42. Lt Gen A K Ahuja, DCIDS (PP &FD)
43. Maj Gen S K Dua, ADG Proc
44. AVM D S Rawat, ACIDS (FP)
45. Cmde A K Sharma, DACIDS (Budget)
46. Capt (IN) A Saluja, Dir FP

Army

47. Lt Gen Philip Campose, VCOAS
48. Lt Gen Sanjiv Talwar, DG FP
49. Lt Gen J P S Dalal, DGQA
50. Maj Gen Ranvir Singh, MO
51. Maj Gen I Narayana, ADG WE
52. Maj Gen Sanjay Kumar Jha, ADG PP
53. Maj Gen S S Hasabnis, TM (LS)
54. Maj Gen M N Murlidhar, ADGQA (PP&T)
55. Brig Sanjay Chauhan, DDGQA (PP&T)

56. Maj Gen Shamsheer Singh, ADGQA (A)
57. Maj Gen R P Mund, ADGQA (EE)
58. Brig K J L Dhillon, DDG PP
59. Col D K Patra, Dir PP
60. Col Rajat Upreti, Dir D
61. R Adm A K Dutta, ADGQA (WP)

Sainik School Society

62. Capt (IN) G. Rambabu, Inspecting Officer (Sainik School Society)
63. Col Rajveer Singh, Inspecting Officer (Sainik School Society)

National Cadet Corps

64. Lt Gen A Chakravarty, DG NCC
65. Maj Gen C Prakash, ADG (B)
66. Brig C P Sangra, DDG (Lgs)
67. Shri N K Phukan, DDG (P&F)
68. Cmde P K Banerjee, DDG (P&C)

Defence Research and Development Organisation

69. Lt Gen Anoop Malhotra, CCR&D (R&M and Imp)
70. Shri Sanjay Tandon, Dir, Dte of Material Management
71. Dr J P Singh, Dir, Dte of Parliamentary Affairs

2. At the outset, the Chairperson welcomed the Members of the Committee and informed them about the agenda for the sitting. The Committee then invited representatives of the Ministry of Defence and the Defence Services. The Chairperson welcomed the representatives to the sitting of the Committee and drew their attention to Direction 55(1) of Directions by the Speaker, Lok Sabha.

3. The Chairperson initiated the discussion and requested the representatives of the Ministry of Defence to brief the Committee on various issues included in the agenda for the day.

4. The representatives of the Ministry commenced their briefing through a power point presentation on General Defence Budget. This was followed by detailed deliberations on various issues in the context, which included inadequate budgetary provision to Defence in this year's Budget Estimates.

5. Thereafter, a discussion on procurement policy was made which included queries from Members including those on delayed timelines, indecisiveness and hierarchical hurdles. The Committee were informed that defence procurement policy is undergoing major makeover and it was decided that a separate presentation on procurement policy will be taken once the new framework is in place.

6. Afterwards, a presentation was made on Capital Outlay on Defence Services and pursued with deliberations on the subject. Members posed various queries such as need for adequate budget for modernization of defence forces and dependence on foreign products, etc. The representatives of the Ministry of Defence replied to various queries/observations of members. Nevertheless, members desired that a well drawn out vision for defence production may be furnished to the Committee.

7. The Ministry gave presentation on Army, Directorate General of Quality Assurance (DGQA), National Cadet Corps (NCC) and Sainik Schools in that order. This was followed by detailed discussions on the subjects and Members asked questions on bullet proof jackets for jawans, ammunition, need for efficiency in quality checks, modernisation of Army expansion of NCC by raising more NCC units, increase in number of Sainik Schools and similarity in their infrastructure, etc.

8. Thereafter, a presentation was given on Navy and Joint Staff which was followed by vibrant discussions on depleting fleet strength of Navy, inadequacies in capital budget etc. The representatives of the Ministry of Defence submitted their replies to queries/observations of members.

9. A presentation on Air Force was made by the representatives of the services followed by discussions on squadron strength, urgency for provision of adequate capital budget, pilot-cockpit ratio, etc.

10. The Chairperson directed the representatives of the Ministry of Defence to furnish written replies to all the queries at the earliest.

A copy of verbatim record of the proceedings has been kept.

The Committee, then, adjourned.

STANDING COMMITTEE ON DEFENCE (2014-15)

MINUTES OF THE FOURTEENTH SITTING OF THE STANDING
COMMITTEE ON DEFENCE (2014-15)

The Committee sat on Tuesday, the 24th March, 2015 from 1030 hrs. to 1630 hrs. in Main Committee Room, Parliament House Annexe, New Delhi.

PRESENT

Maj Gen B C Khanduri AVSM (Retd)—*Chairperson*

MEMBERS

Lok Sabha

2. Shri Suresh C Angadi
3. Shri Shirang Appa Barne
4. Shri Dharambir
5. Shri Thupstan Chhewang
6. Col Sonaram Choudhary (Retd)
7. Shri H D Devegowda
8. Shri Sher Singh Ghubaya
9. Km Shobha Karandlaje
10. Dr Mriganka Mahato
11. Shri Tapas Paul
12. Shri Malla Reddy
13. Shri Rajeev Satav
14. Smt Mala Rajya Lakshmi Shah
15. Shri A P Jithender Reddy

Rajya Sabha

16. Shri A U Singh Deo
17. Shri Vinay Katiyar
18. Shri Madhusudan Mistry
19. Smt Ambika Soni

SECRETARIAT

1. Shri P K Misra — *Additional Secretary*
2. Shri D S Malha — *Director*
3. Shri A K Srivastava — *Additional Director*
4. Shri Rahul Singh — *Under Secretary*

WITNESSES

REPRESENTATIVES OF THE MINISTRY OF DEFENCE

1. Shri R K Mathur, Defence Secretary
2. Shri Anup Chandra Pandey, AS (P)
3. Shri Ravikant, AS (R)
4. Smt Surina Rajan, JS (O/N)
5. Shri Sanjeev Ranjan, JS (BR)
6. Shri Deepak Anurag, JS (C&W)
7. Shri Dharendra Verma, Dir (BR-Works)
8. Shri Ritesh Kavadia, Dir (BR - Estt)
9. Shri G P Cherian, SE (Civil)
10. Shri A K Jain, EE (Civil)
11. Shri Surya Prakash, Dir(L&C)
12. Ms Vandana Srivastava, FA (DS)
13. Shri Rajesh Kumar, Addl FA (RK)
14. Ms Devika Raghuvanshi, Addl FA (DR)
15. Shri Prem Kumar Kataria, Addl FA (K)
16. Shri R G Vishwanathan, Addl FA (RV)
17. Air Mshl R K Sharma, VCAS
18. Air Mshl H B Rajaram, AOA
19. Air Mshl B B P Sinha, DG (Wks)
20. Vice Adm Sunil Lanba, VCNS
21. Rear Adm Dinesh K Tripathi
22. Cmde R Malhotra
23. Vice Adm HCS Bisht, DGICG
24. Shri Rajendra Singh, ADG Indian Coast Guard
25. IG VD Chafekar, DDG (P&P)
26. Comdt Kanchan Verma, JD (Plans-II)

27. Dr K Tamilmani, DG (Aero)
28. Dr V G Sekaran, DG (MSS)
29. Dr V Bhujanga Rao, DG (NS&M)
30. Shri S S Sundaram, DG (ECS)
31. Dr K D Nayak, DG (MED & CoS)
32. Dr Manas K Mandal, DG (LS)
33. Shri AM Datar, DG (ACE)
34. Dr Satish Kumar, CCR&D (TM)
35. Dr Sudershan Kumar, CCR&D (PC & SI)
36. Lt Gen Anoop Malhotra, CCR&D (R&M and Imp)
37. Shri G S Malik, CCR&D (HR)
38. Shri Sudhir Kumar Mishra, CCR&D&CEO
39. Shri R G Vishwanathan, JS & Addl FA
40. Dr J P Singh, Dir, Dte of Parl Affairs
41. Shri Vipul Gupta, Joint Dir
42. Lt Gen Philip Campose, VCOAS
43. Capt Ardhendu Kumar, ADC to VCAOS
44. Lt Gen P R Kumar, DGMO
45. Maj Gen Rajiv Narayanan, ADG, MO (B)
46. Brig Yogendra Dimri, DDG MO (C)
47. Col Vignesh Mahanti, Dir MO4
48. Col Sudhir Dube, Dir E-in-C Branch
49. Col A Mathialagan, TS to DG MAP
50. Lt Gen R M Mittal, DGBR
51. Maj Gen Balraj Singh, OSD
52. Brig R K Sharma, Dte GBR
53. Brig V S Kattarya, DDG (TP), Dte GBR
54. Col D Pareira, Dir, DGBR
55. Lt Gen Om Prakash, QMG
56. Lt Gen G S Bisht, DG LWL
57. Maj Gen Michael Mathews, ADG LWL
58. Lt Gen Jatinder Sikand, E-in-C
59. Maj Gen S Kaushik, DG Works
60. Maj Gen Gurdip Singh, DG MAP

61. Maj Gen S K Shrivastava, ADGW
62. Brig K K Repswal, DDGW
63. Col Sudhir Dube, Dir E-in-C Branch
64. Col A Mathialagal, DG MAP
65. Sub Anil Kumar, ADC to E-in-C
66. Shri Ravi Kant Chopra, Dir Gen
67. Shri P Daniel, Addl DG (Adm)
68. Shri K V Nagi Reddy, DDG (C&CRD)
69. Shri Vivek Kumar, Asst DG (Adm)

2. At the outset, the Chairperson welcomed the Members of the Committee and informed them about the agenda for the sitting. The Committee then invited representatives of the Ministry of Defence and the Defence Services. The Chairperson welcomed the representatives to the sitting of the Committee and drew their attention to Direction 55(1) of Directions by the Speaker, Lok Sabha.

3. The Chairperson initiated the discussion and requested the representatives of the Ministry of Defence to brief the Committee on various issues included in the agenda for the day.

4. The representatives of the Ministry commenced their briefing through a power point presentation on Defence Research and Development. This was followed by detailed deliberations on various issues like inadequate budgetary provision to Defence Research, non-availability of testing infrastructure for DRDO, development of Kaveri Engine, accidents of aircraft.

5. Thereafter, a presentation was given on Border Roads Organization which was followed by vibrant discussions on status of Border connectivity, obsolescence of equipment, shortage of manpower, strengthening of GREF, non-lapsable funds for NE/Leh, financial assistance to small contractors, inviting local area M.P. on inauguration of centrally funded project, snow clearance grant to BRO, need for changing of civil/Army composition of BRO etc. The representatives of the Ministry of Defence submitted their replies to queries/observations of members.

6. A presentation was made on Directorate General Defence Estate and pursued with deliberations on the subject. Members posed various queries such as blocking of roads by representative of DGDE, proper use of waste land and encroachment by civilians etc. The representatives

of the Ministry of Defence replied to various queries/observations of members.

7. The Ministry gave presentation on Military Engineer Services and Married Accommodation Project in that order. This was followed by detailed discussions on the subjects and Members asked questions on timely completion of projects, need for efficiency in system etc.

8. Thereafter, a presentation on Coast Guard Organization was held given before the Committee. Subsequent discussions included queries from Members including those of requirement of funds and Coastal Security etc.

9. The Chairperson directed the representatives of the Ministry of Defence to furnish written replies to all the queries at the earliest.

A copy of verbatim record of the proceedings has been kept.

The Committee, then, adjourned.

STANDING COMMITTEE ON DEFENCE (2014-15)

MINUTES OF THE FIFTEENTH SITTING OF THE STANDING COMMITTEE
ON DEFENCE (2014-15)

The Committee sat on Wednesday, the 25th March, 2015 from 1130 hrs. to 1530 hrs. in Main Committee Room, Parliament House Annexe, New Delhi.

PRESENT

Maj Gen B C Khanduri AVSM (Retd)—*Chairperson*

MEMBERS

Lok Sabha

2. Shri Suresh C Angadi
3. Shri Shrirang Appa Barne
4. Shri Dharambir
5. Shri Thupstan Chhewang
6. Col Sonaram Choudhary (Retd)
7. Shri G Hari
8. Shri Sher Singh Ghubaya
9. Km Shobha Karandlaje
10. Dr Mriganka Mahato
11. Shri Tapas Paul
12. Shri Malla Reddy
13. Shri Rajeev Satav
14. Smt Mala Rajya Lakshmi Shah
15. Shri A P Jithender Reddy

Rajya Sabha

16. Shri A U Singh Deo
17. Shri Vinay Katiyar
18. Smt Ambika Soni
19. Shri Tarun Vijay

SECRETARIAT

1. Shri R K Jain

-73 *Joint Secretary*

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|------------------------|---|----------------------------|
| 2. Shri D S Malha | – | <i>Director</i> |
| 3. Shri A K Srivastava | – | <i>Additional Director</i> |
| 4. Shri Rahul Singh | – | <i>Under Secretary</i> |

WITNESSES

REPRESENTATIVES OF THE MINISTRY OF DEFENCE

1. Shri RK Mathur, Defence Secretary
2. Shri Ravikant, AS (R)
3. Shri Rajeev Verma, JS & AM (Air)
4. Shri Subir Mallick, JS & AM (LS)
5. Shri G Mohan Kumar, Secretary (DP)
6. Shri A K Gupta, Special Secretary (DP)
7. Shri S Yamdagni, DGOF/OFB
8. Shri A K Prabhakar, Member, OFB
9. Shri R J Bhattacharya, DDG, OFB
10. Shri D K Mahapatra, Secretary, OFB
11. Mrs Kusum Singh, JS(P&C)
12. Shri Bharat Khera, JS(NS)
13. Shri J R K Rao, JS(ES)
14. Shri K K Pant, JS(AS)
15. Rear Adm NK Mishra (Retd), CMD, HSL
16. Shri P Dwarakanath, CMD, BEML
17. Shri M Narayana Rao, CMD, MDNL
18. Rear Adm A K Verma (Retd), CMD, GRSE
19. Cdr PR Raghunath, CMD, MDL
20. Shri V Udaya Bhaskar, CMD, BDL
21. Rear Adm Shekhar Mital (Retd), CMD, GSL
22. Shri S K Sharma, CMD, BEL
23. Shri T Suvarnaraju, Chairman, HAL
24. Shri Prabhu Dayal Meena, Secy (ESW)
25. Lt Gen Rakesh Nandan, DG (DC&W)
26. Ms K Damayanthi, JS (ESW)
27. Maj Gen Amrik Singh, DG (Res)
28. Maj Gen A P Bam, MD (ECHS)

29. Smt Santosh, Dir (Res-II)
30. Cmdr Rohtas Singh, Secy (KSB)
31. Ms Devika Raghuvanshi, Addl FA (DR)
32. Shri Prem Kumar Kataria, Addl FA(K)
33. Lt Gen Anoop Malhotra, CCR&D (R&M)
34. Shri RG Vishwanathan, JS & Addl FA
35. Dr JP Singh, Dir (Par. Affairs), DRDO

2. At the outset, the Chairperson welcomed the Members of the Committee and informed them about the agenda for the sitting. The Committee then invited representatives of the Ministry of Defence and other organisation. The Chairperson welcomed the representatives to the sitting of the Committee and drew their attention to Direction 55(1) of Directions by the Speaker, Lok Sabha.

3. The Chairperson initiated the discussion and requested the representatives of the Ministry of Defence to brief the Committee on various issues included in the agenda for the day.

4. The representatives of the Ministry commenced their briefing through a power point presentation on Defence Public Sector Undertakings. This was followed by detailed deliberations on various issues in the context which included non-delivery of products, increase in timelines, indigenous production of Sukhoi aircraft, Light Utility Helicopters by HAL, Machines for BRO, manufacturing of electronic equipment by BEL, construction of submarines etc. During deliberation the Committee stressed for indigenization of defence products.

5. Thereafter, a presentation on Ordnance Factories was given before the Committee which was followed by detailed discussion and queries from Members including those on delayed timelines, indecisiveness and poor quality production. The representatives of the Ministry of Defence replied to various queries/observations of members. Nevertheless, members desired that a well drawn out vision for defence production may be furnished to the Committee.

6. Afterwards, a presentation was made on Ex-Servicemen Welfare and Ex-Servicemen Contributory Health Scheme and pursued with deliberations on the subject. Members posed various queries such as status of One Rank One Pension, clearing of pending bill in respect of beneficiaries of ECHS health facilities and re-employability of Ex-servicemen, need to enact a law so it become obligatory to employ ESM, etc. The representatives of the Ministry of Defence replied to various queries/observations of members.

7. The Chairperson directed the representatives of the Ministry of Defence to furnish written replies to all the queries at the earliest.

A copy of verbatim record of the proceedings has been kept.

The Committee then adjourned.

STANDING COMMITTEE ON DEFENCE

MINUTES OF THE SIXTEENTH SITTING OF THE STANDING COMMITTEE
ON DEFENCE (2014-15)

The Committee sat on Monday, the 06 April, 2015 from 1130 hrs. to 1300 hrs. in Main Committee Room, Parliament House Annexe, New Delhi.

PRESENT

Maj Gen B C Khanduri AVSM (Retd)—*Chairperson*

MEMBERS

Lok Sabha

2. Shri Suresh C Angadi
3. Shri Shirang Appa Barne
4. Shri Thupstan Chhewang
5. Col Sonaram Choudhary (Retd)
6. Smt. Pratyusha Rajeshwari Singh
7. Shri H D Devegowda
8. Shri G Hari
9. Shri Ramesh Jigajinagi
10. Shri Vinod Khanna
11. Shri Malla Reddy
12. Shri A P Jithender Reddy

Rajya Sabha

13. Shri Anand Sharma
14. Shri Vinay Katiyar
15. Shri Madhusudan Mistry
16. Smt Ambika Soni

SECRETARIAT

1. Shri P K Misra — *Additional Secretary*
2. Shri D S Malha — *Director*
3. Shri A K Srivastava — *Additional Director*
4. Shri Rahul Singh — *Under Secretary*

2. At the outset, the Chairperson welcomed the Members of the Committee and informed them about the agenda for the sitting. The Committee then discussed the views expressed by the representatives of Ministry of Defence and Defence Services during oral evidence held earlier in respect of examination of Demand for Grants (2015-16) of the Ministry of Defence. The Members of the Committee exchanged ideas and suggested points to be incorporated in the Draft Reports which included making war wastage reserve, making Capital Head a non-lapsable and Roll on Plan for five to ten years, giving highest priority to Operational Preparedness *vis-a-vis* Threat Perception, replacing the term “Retired” with “Veterans”, etc.

3. The Committee, then, authorised the Chairperson to finalise a later date for consideration and adoption of the draft Reports.

The Committee then adjourned.

STANDING COMMITTEE ON DEFENCE

MINUTES OF THE SEVENTEENTH SITTING OF THE STANDING
COMMITTEE ON DEFENCE (2014-15)

The Committee sat on Friday, the 24 April, 2015 from 0930 hrs. to 1040 hrs. in Committee Room 'C', Parliament House Annexe, New Delhi.

PRESENT

Maj Gen B C Khanduri AVSM (Retd)—*Chairperson*

MEMBERS

Lok Sabha

2. Shri Shrirang Appa Barne
3. Shri Dharambir
4. Shri Thupstan Chhewang
5. Col Sonaram Choudhary (Retd)
6. Smt Pratyusha Rajeshwari Singh
7. Shri G Hari
8. Km Shobha Karandlaje
9. Shri Rajeev Satav
10. Smt Mala Rajya Lakshmi Shah

Rajya Sabha

11. Shri K R Arjunan
12. Shri Anand Sharma
13. Shri Rajeev Chandrasekhar
14. Shri A U Singh Deo
15. Shri Harivansh
16. Shri Madhusudan Mistry

SECRETARIAT

- | | | |
|------------------------|---|-----------------------------|
| 1. Shri P K Misra | — | <i>Additional Secretary</i> |
| 2. Shri D S Malha | — | <i>Director</i> |
| 3. Shri A K Srivastava | — | <i>Additional Director</i> |
| 4. Shri Rahul Singh | — | <i>Under Secretary</i> |

2. At the outset, the Chairperson welcomed the Members of the Committee and informed them about the agenda for the sitting. The Committee then took up for consideration and adoption of the following draft Reports on Demand for Grants 2015-16 of the Ministry of Defence:—

- (i) Civil Expenditure of the Ministry of Defence and Capital Outlay on Defence Services (Demand Nos. 21, 22 & 28);
- (ii) Army (Demand No. 23);
- (iii) Navy and Air Force (Demand Nos. 24 & 25); and
- (iv) Ordnance Factories and Defence Research and Development Organisation (Demand Nos. 26 & 27)

3. After deliberations the Committee adopted the above reports with slight modifications in respect of recommendations.

4. The Committee, then, authorized the Chairperson to finalise the above draft Reports and present the same to the House on a date convenient to him.

The Committee, then, adjourned.