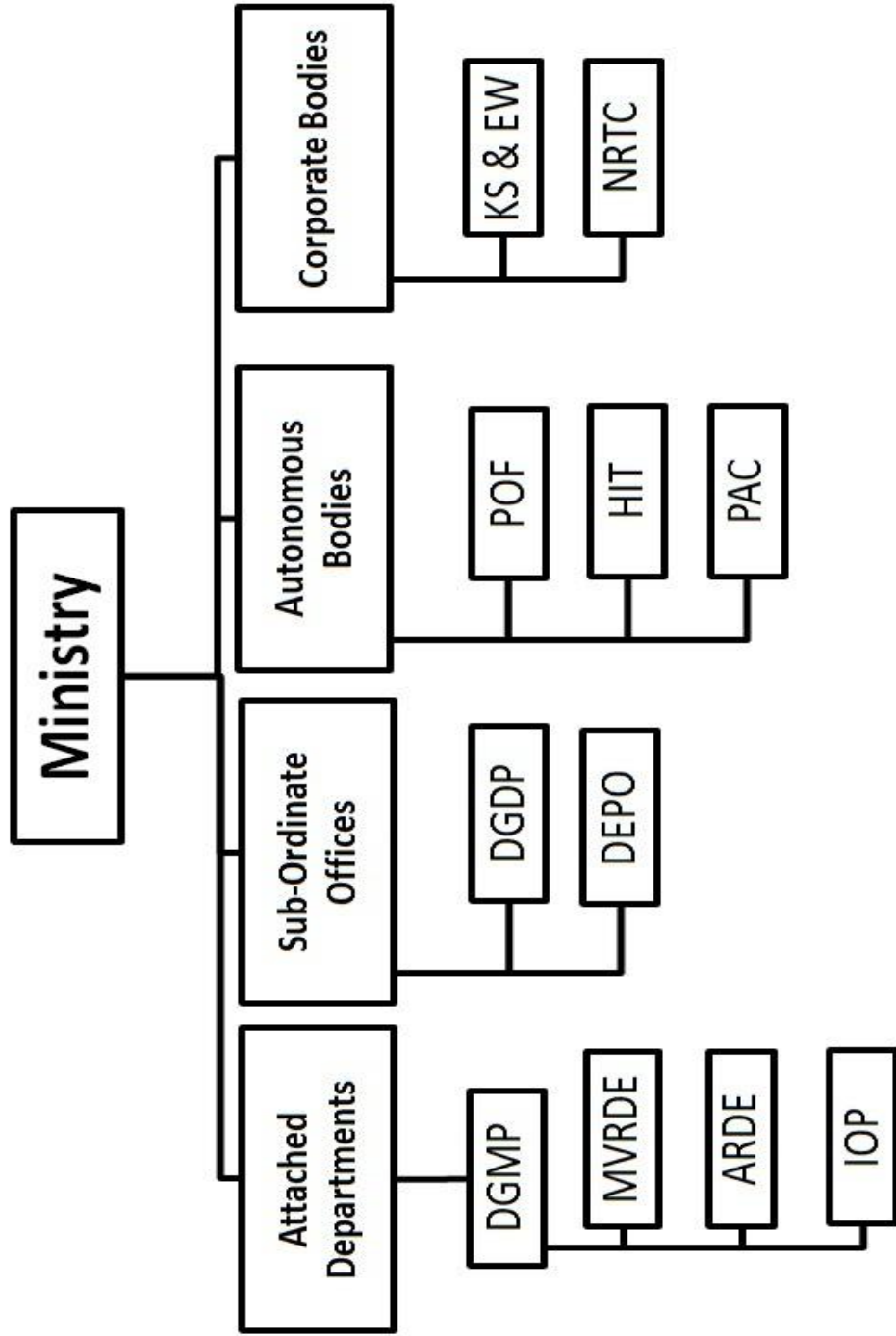


## **PART – II**

### **ATTACHED DEPARTMENTS, AUTONOMOUS BODIES AND CORPORATIONS OF MODP**

## MINISTRY AND ITS ORGANIZATIONS





***Directorate General Munitions  
Production  
(DGMP)***

## **DIRECTORATE GENERAL MUNITIONS PRODUCTION**



The importance of self-reliance through indigenization cannot be over underscored. Phenomenon of indigenization is a function of numerable factors and considerations outside the control of developing countries like ours. In 1965, the embargo placed on Pakistan made the Government realize that there was a necessity of achieving self-reliance in production of essential defence hardware items. This led to the establishment of Directorate General Munitions Production and Procurement (DGMP&P) in 1967. It was bifurcated in 1970 into DGDP & DGMP. The former catering to defence procurement and the later for indigenous production of defence equipment through ToT, co-production and joint ventures keeping in view the local potential to absorb the requisite know how. DGMP is organized on a tri-services basis and has three Directorates dealing with Army, Navy and PAF projects respectively.

### **Mandate of DGMP**

1. To maximize indigenous production of defence stores in public and private sector with the ultimate aim of attaining self-sufficiency.
2. To assist Ministry of Defence Production in formulating plans for giving a defence based future industrial planning.
3. Acquisition of technical know-how, rights of manufacturer and enter into collaboration arrangements whenever sizeable import of an item is made.
4. Utilization of available research facilities within the country to maximize indigenous defence capability.

### **Functions of DGMP:**

- a. Keeping close and constant liaison with the Services Headquarters and DGDG to identify requirements for indigenous production of defence stores and equipment.
- b. Development of prototype of major end items and their subsequent production in local industries.
- c. Collaboration with foreign countries and manufacturers in joint development and production of defence stores.
- d. Carrying out periodic survey of industries, their registration and profiling, to assess the potential available and to publish/publicize survey reports for information of all concerned agencies.
- e. Provide Secretariat Service to Defence Production R&D Board and Inter Services Armament and Explosives Committee.
- f. Issuance of NOC for import of Defence stores, which cannot be developed or are at a stage of development.
- g. Recommend modification of Defence Procurement procedures where necessary, to support indigenous production.
- h. Administer funds allocated for development of defence equipment.

### **Major Activities:**

Major activities and project signed by DGMP during 2015-16 are at Annex-B.

### **RESEARCH AND DEVELOPMENT ESTABLISHMENTS (R&DEs) OF DGMP**

#### **Military Vehicles Research And Development Establishment (MVRDE):**

Created in 1972, MVRDE mirrors the national resolve to enhance our technological potential. MVRDE is committed to mobilize, orientate and facilitate efforts for technology diffusion to meet the general and specialist equipment needs of our defence forces. The organizational focus is on a progressive, responsible and cost effective regime for self-reliance through collaborative efforts of both the private and the public industrial sector. This is a multi-disciplinary organization capable of conducting research and development pertaining of military vehicles, engineer

equipment and defence related mechanical system. MVRDE focuses on furnishing feasibility, design and technical details that present a solution to customer's stipulated problem or challenge. A large spectrum of equipment has been developed indigenously. Major activities like project signed by MVRDE during 2015-16 and projects during 2015-16 are at Annex-C

- a) Tracked Vehicle
- b) Wheeled Vehicles
- c) Training Equipment
- d) Bridging Equipment
- e) Ground Support Equipment
- f) Simulators

### **Major Activities**

Projects likely to be completed during (2016-17) of MVRDE are as under:-

- a) Rapid Infantry Bridge (RIB)
- b) Shifting/mtg of Scissor Type AVLB on Tks
- c) Lifter Drum
- d) Fabrication of Water Bowzer
- e) Conveyor Belt for POL Depot
- f) Fabrication of Avn Fuel Bowzer
- g) Mobile Wksp Ancillary
- h) Light Recovery Vehicle
- i) Upgradation of Launching Assy
- j) Hydraulic Launching Assy
- k) Simulator Style Sniper Rifle
- l) ATGM / BSWS Universal Sml
- m) Lower Carriage for 47mm Twin Barrel gun
- n) Mobile Porta Cabin
- o) Truck Mounted 5 Ton Crane
- p) Damage Repair Trg Sml (DRTS)
- q) Mobile Elect Wksp

## **Armament Research and Development Establishment (ARDE)**

Due to embargoes in 1965 and 1971 wars, imposed by our traditional sources of conventional munitions, resulted in necessity to achieve self-reliance in conventional munitions by developing and utilizing local industrial potential, ARDE was thus established in 1974 to develop Armament stores for three services. To achieve the goal of indigenous development of armament store, ARDE collaborates with local vendors/industries and in turn creates an infrastructure capable of Defence Production through private sector.

### **Major Activities**

Major activities are as under:-

- a) Development of Elect detonator of All Weather A/L Device.
- b) 25 x modified devices along with det of All Weather Mech A/L device have been developed as per user recommendations.
- c) Modified Explosive Mech and Dispensing Unit of Explosive Grid System have been developed.
- d) Indigenous development of prototypes of EOD Suite.
- e) Prototypes of Mini Electronic Exploder have been developed.
- f) Firing trial for the rounds of 125mm with 1<sup>st</sup> qtr of gun barrel were conducted during Nov 2015. All the rounds hit the target and trial was successful.
- g) Inspection / function firing test of Sub Caliber device for Tank Gun along with accessories has been carried out on 12 Jul 2016.

2. Following projects have been completed by ARDE during 2015-16:-

1. Indigenous Development of Alligator Switch (Mutli Purpose)
2. Indigenous Development of All Weather Electronic Anti Lifting Device

### **Institute of Optronics:**

A "Night Vision Devices" Laboratory was established in 1983 in DESTO that led to the establishment of the Institute of Optronics (IOP). Initially IOP was placed under the direct control of Secretary, Ministry of Defence Production and subsequently it was declared as subordinate department of DGMP and still working under its command

since 1994. IOP is an electro optics institute providing services in various commercial, academic and research fields.

### **Major Activities**

Major achievements are as under:-

- a) IOP is engaged in sale of Night Vision Equipment (NVE) to Law Enforcement Agencies (LEAs). IOP has secured various orders/contracts from LEAs for supply of Night Vision Equipment.
- b) During the period, local sale / commercial achievement of IOP are as under:-
  - (1) Total No. of equipment order - 1109
  - (2) Value ordered - Rs 685.523 Mn
  - (3) Expected Profit (approx) - Rs 54.850 Mn
- c) Successful completion of NS-685C Project and achieved production 7914 out of 8100 and saved (US\$ 13833Mn).
- d) Approx US\$ 120000 (Rs 12 Mn) were saved from potting/de-potting of IITs.
- e) Successful potting/encapsulation of 5 x 25mm IITs for 505 EBW as pilot project.
- f) Repair of Humidity Chamber at cost of Rs 50368 against an OEM estimate of EURO 40000 (Rs 4.6 Mn).
- g) Repair of SNR Test Bench by Staff of IOP against an OEM estimate of Euro 48000 (Rs 5.52 Mn).
- h) Handling of tri-services project of repair & maintenance.

Projects completed by IOP during 2015-16:-

- a) **Commercial Projects**

- (1) 42 x Night Vision Binocular (GP/NVB-5A)
  - (2) 9 x NVG Sheeba equivalent to AN/PVS-7D
  - (3) 2 x Night Vision Binocular (GP/NVB-4A)

- b) **Tri Services**

- (1) 1411 x DNVP



- (2) 7914 x NS-685C
- (3) 20 x Retrieval of Image Intensifier Tube of GHQ Store
- (4) 43 x Repair of Equipment for PAF
- (5) 1 x Repair of Equipment for PN
- (6) 12 x Repair of Equipment for Police

Major activities are as under:-

- a. Demonstrated night vision surveillance system to various customer's in Pakistan.
- b. Carried out R&D on selected projects.
- c. Assembling of Night Vision Systems for the Armed Forces.
- d. Sale of Night Vision Equipment to various LEAs.
- e. Testing of IITs for various defence customers.
- f. Provided repair and maintenance support to PAF, PN, Police and other department.

#### **Targets for Next Year 2016-17**

Following are the targets of DGMP & its R&DEs for next year 2016-17:-

##### **Dte MP (Army)**

- a) Development of PMA Branded Suit Case and Travelling Bags Pre-qualification of firms have been completed and 3 x firms met the evaluation criteria and qualified for the instant proj. Further action will be taken after allotment of proj no by MoDP.
- b) DP-10 for fol 7 x items have been initiated and development proceedings are in process. In order to generate healthy completion efforts are going on for alternative sources of supply within the country for indigenous development / manufacture of HAE:-
  - Down Jacket HA
  - Down Trouser of HA
  - Boot Cold weather
  - Sleeping Bag HA
  - Thermal Vest HA
  - Thermal Drawers HA
  - Oxygen Cyl with Mask

### **Dte MP(Navy)**

- a) Construction of 01 Survey Vessel for PN
- b) Manufacturing of 05 x Fire Tenders
- c) Indigenous design and construction of 01 Midget Submarine

### **Dte MP (Air)**

- a) GRAD
- b) Electronic Card Assy of SPADA Missile System
- c) Development of VHF Radar
- d) Multi War Head Bombs
- e) Anti Soft Avionics Bomb

### **MVRDE**

- a) Indigenous development of Light Armed Vehicle Assault (LAVA)
- b) Mobile Wksp Diesel Lab on 5 Ton Trk
- c) Medical Recovery Vehicle
- d) Light Ptroj with 10 KVA Gen Set
- e) Tow Tractor
- f) Indigenous development of K-Loader for Loading / off loading of missile system
- g) Dual Control Training Vehicle (Truck)
- h) Mob Communication Van
- i) Mobile Communication Van 40 Feet

### **ARDE**

Electronic Influence Fuze for Mine T/Tk

- a) Mine AP Land Defender with Darting Penetrator
- b) Cleaning Kit for G-3 / MG1A3
- c) Cart HE-SD Grenade AR 40 x 46mm
- d) EOD Shoes for EOD Suit for Disposal of Standard Munitions
- e) Bomb Blanket for Demolition
- f) Executive Bullet Proof Brief Case Shield
- g) Ballistic Shield
- h) 40 mm AGL HE/Prac Ammo
- i) Round 125 mm APFSDS/T and Heat with Enhanced Penetration
- j) Fire Proof Bomb Blankets 5'x5' Feet

## **IOP**

- a) Establishment of TI Lab for undertaking project of assembly of TI Sights in future.
- b) Successful conduct of TI & Red Dot demonstration / Trials ex Belarus & Turkey.
- c) 14 x youths have joined the IOP and placed in various departments for training under Prime Minister Youth Internship Program recently designed for unemployed youth of country to get modern skills & exposure in professional environment Stipend @ Rs 12000 per month for 12 months is being paid to the youths.
- d) IOP is public sector organization dealing with the state of the art of Optronics technology. IOP makes an endeavor to enhance industry academia liaison particularly and train scholars from local universities such as NUST, FAST, UET, Bahria, APCOM, HITECH etc.
- e) IOP generally organize training program for young officers (Electrical / Mechanical courses) of college of E&ME. On Job Training programs for junior non-commissioned officers, Optronics Technician (OT) courses and Night Vision Equipment (NVE) training courses of Repair/Maintenance for JCO/Sldrs.
- f) ISO-9001 Certification is under process.
- g) IOP has made efforts through MoDP for joint production, joint sales & joint marketing of T.I Systems with M/s BVPs ex Belarus & M/s Aselsan, Turkey. Efforts are in hand to materialize various projects of mutual interest.



***Directorate General  
Defence Purchase  
(DGDP)***

## **DIRECTORATE GENERAL DEFENCE PURCHASE**

On creation of Pakistan, Directorate General Supply and Development was established under Ministry of Defence. In 1953, it was reorganized as Defence Purchase Directorate. In 1967, it was merged with DGMP and called Directorate General Munitions Production and Procurement, which was assigned the dual responsibility of procurement of defence stores/equipment and their indigenous production in the country. In 1970, the set up was divided into Directorate General Defence Purchase (DGDP) and Directorate General Munitions Production (DGMP) as separate entities. DGDP was made responsible for procurement and disposal of defence supplies, since then it has been functioning under Ministry of Defence Production.

Financial year 2015-16 like previous fiscal year was hectic and rewarding from procurement point of view. Analysis of entire procurement activities has been undertaken and a substantial improvement has been observed in all aspects. The improvement in output is attributed to wholehearted and well-coordinated efforts put in by all agencies and organizations, which certainly deserve appreciation. The salient of the achievements are reflected in succeeding paras. During the preceding financial year procurement to the tune of **Rs. 209,720.985 M** has been made for the Armed Forces.

### **Procurement Activities:**

The summary of procurement activities for financial year 2015-16 in respect of DGDP, DPs and AsDP is as under:-

### **PROCUREMENT ACTIVITIES FY 2015-16**

#### **DGDP**

#### **AGAINST DEVELOPMENT (SADA) PACKAGES**

<b>Indents Received</b>	<b>Cross mandated</b>	<b>Cancelled/Not Concluded</b>	<b>Contracts Concluded</b>
02	-	01	01

**AGAINST SERVICE BUDGET**

Indents Received	Cross mandated	Cancelled/Not Concluded	Contracts Concluded
04	-	01	03

**PROCUREMENT ACTIVITIES FINANCIAL YEAR 2015-16****DIRECTORATES OF PROCUREMENT (DPs)****AGAINST DEVELOPMENT PACKAGES**

S/No	Org	Indents Received	Cross mandated	Cancelled/Not Concluded	Contracts Concluded
1.	DGP (Army)	98	-	23	75
2.	DP (Navy)	-	-	-	-
3.	DP (Air)	-	-	-	-
Total:		98	-	23	75

**AGAINST SERVICE BUDGET**

S/No	Org	Indents Received	Cross mandated	Cancelled/Not Concluded	Contracts Concluded
1.	DGP (Army)	804	08	146	650
2.	DP (Navy)	1003	326	328	349
3.	DP (Air)	619	45	53	521
Total:		2426	379	527	1520

To assists in the procurement of urgently required stores of those items, which are to be purchased from the supplier abroad or which are not available indigenously or when the quoted rates are exorbitant, AsDP abroad are tasked for such proc. For this purpose indents are cross mandated by procurement agencies to AsDP abroad. Detail of indents cross mandated and contract concluded during last financial year is as under:-

**PROCUREMENT ACTIVITIES FY 2015-16:****ATTACHES DEFENCE PROCUREMENT (AsDP)**  
**AGAINST DEVELOPMENT PACKAGES**

No contract has been concluded by AsDP against Development Packages.

### **AGAINST SERVICE BUDGET**

S/No	Organization	Indents Received		Cancelled/ Not Concluded		Contracts Concluded	
		XM	SP	XM	SP	XM	SP
1.	ADP Washington	45	94	03	25	42	69
2.	ADP London	64	99	03	14	70	99
3.	ADP Paris	44	43	16	19	31	26
4.	ADP Beijing	20	37	05	20	15	17
<b>Total:</b>		<b>173</b>	<b>273</b>	<b>27</b>	<b>78</b>	<b>146</b>	<b>195</b>

### **Procurement of Major Defence Equipment**

Major equipment procured during last financial year 2015-16 by DGDP and DPs are as under:-

### **AGAINST DEVELOPMENT PACKAGES**

S/No	Description of Stores	Quantity	Contract Value	
			FE	LC
DGDP				
1.	MI-35 M Heli alongwith Allied Eqpt	04	US \$ 153.00 M	
DGP (Army)				
2.	Cessna 208B X Grand Caravan	02	\$ 5.532	Rs. 576.535 M
3.	Spares for Tk T-80UD	549 x Spares	\$ 50.737	
4.	Lt Wt Cbt Helmet	26674		Rs. 412.647
5.	Plastic Pallet for 125 mm Tk-APFSDS/T (metal Box) PET strap for plastic pallet 125mm Tk APFSDS/T (metal Box)	10453	-	Rs. 113.817
		291		

### **AGAINST SERVICE BUDGET**

S/ No	Description of Stores	Quantity	Contract Value	
			FE	LC
DGDP				
1.	SAR Helicopter	04	US \$ 78.939 M	Rs. 8,257.019 M

2.	RD-93	20	US \$ 83.300 M	Rs. 8,713.180 M
3.	Recovery of 4 <sup>th</sup> AE&W System	01	US \$ 130.390 M	Rs. 13,638.794 M
<b>DGP (Army)</b>				
1.	Shoulder Fired Anti Tank Weapon System (ALCOTAN)	158x vosel (m2) Fire Control Unit for ALCOTAN 100 and 1413x ALCOTAN-AT (M2) Anti Tank Unguided Munitions	US\$ 24.755 M	2577.074 MM
2.	Ecureuil Hel	05	\$ 21.226	Rs. 2213.69 M
3.	LiDAR System with RCD30 Camera	01	\$ 2.920	Rs 304.264 M
4.	Dozer Size II	03	-	Rs. 108.810 M
5.	Tk Spares T-69IIMP	50 x Spares	-	Rs. 139.833 M
6.	Spares of Tk Al-Khalid	08x Spares	-	Rs. 76.58 M
7.	Versatile EFI Engine Dynamometer Test System	02 Nos	-	Rs. 105.300 M
8.	Trk 5 Ton 4x4 Rear Dual and Rear Single Wheel	302	\$ 9.804	Rs. 571.950 M
9.	Trk 1 Ton 4x4 Toyota Hilux Double Cabin with/without 9x LTIs	67	-	Rs. 233.680 M
10.	RDMS Rockets Type BRS-3	1,100	\$ 8.927	-
11.	Detector Cooler IRR/IDDCA 288x CMOS IRFPARM2 7I/02	173	4.128	-
12.	3x Spares for How Med Towed 155 mm M-198	Various	-	50.952
13.	Ecureuil Hel	04	16.396 M	1659.295 M
14.	OH of 6x MI-171/MI-17-1V Hel	6x Hels	12.853 M	1303.39 M
15.	Convoy Jamming Sys CJS-R-6	85	8.098 M	-
16.	Cessna Grand Caravan	02	5.709 M	677.972 M
17.	MDS Ammo	1,785	5.368 M	-
18.	Mine Dispensing Sys	07	4.031 M	409.561 M
<b>DP (Navy)</b>				
1.	Under Water Surveillance System	-	\$ 6,100 MM	-



	(Sonar System) for PN MCMVs			
2.	Developed Naval Combat Management System	-	\$ 2.970 MM	
3.	High Endurance CAM Quadcopter	-	\$ 1.922 MM	-
4	RCIED Jammers	-	\$ 0.169 MM	
5	3x HF Transceiver System 1kW	-	\$ 10.000 MM	
6.	Motorized Hospital Beds	120	\$ 0.154 MM	-
7.	Developed Naval Combat Management System (NCMS) for PN Fleet Tander	-	\$ 1.000 MM	-
8.	Multi Slice Computed Tomography System	-	\$ 0.654 MM	-
9.	Non Destructive Inspection Capability (NDI)	-	\$ 0.274 MM	-
10.	Perimeter Security & Surveillance System	-	-	Rs. 287.990 MM
11.	Smart Navy Card System for PN (Snids)	-	-	Rs. 212.689 MM
12.	Wide band Jammer WB-300	-	-	Rs. 100.000 MM
<b>DP (Air)</b>				
1.	Procurement of Aselpod for JF-17 Aircraft	8	\$ 24.964 MM	
2.	GHE/GSE/GTE for 6 <sup>th</sup> Sqn of JF-17 Aircraft	188	\$16.423 MM	
3	WP-7B IV (A) Engines	12	\$13.803 MM	
4	SD-10A Missile Launchers	39	\$ 11.310 MM	
5	Definitized Components for JF-17 Aircraft	211	\$ 8.813 MM	
6.	Machine Gun MG1A3	240	Rs.71.880 MM	
7.	Monition Maintenance Eqpt alongwith Accessories	30	\$ 8.480 MM	
8.	Tender Fire Crash	5	\$ 3.829 MM	
9	Estab of 'I' Level Facility at Nur Khan for IL-78 ARR	1	\$ 3.000 MM	
10	Drop Tank for JF-17 Fleet	130	\$ 1.960 MM	
11.	Up Gradation of Crew Jammer System	5	\$ 1.695 MM	

12.	Power Generation Units (GPUs) for SPADA	6	\$ 1.550 MM	
13.	F-16 External Fuel Tanks alongwith Pylon	52	\$ 1.476 MM	
14.	ATCR System Spares	46	\$ 1.044 MM	
15.	AME Tester Upgrade for STD for JF-17 A/C	06	\$ 1.036 MM	
16.	Rader Altimeter Sub-System Spares for Avionics D-Level Maint of JF-17 Aircraft	140	\$ 0.913 MM	
17.	GHE/GSE General & Special Tools 'O' & 'I' Level Test Eqpt for MI-171 HELO including req of 4 <sup>th</sup> SAR Sqns	101	\$ 848 MM	
18.	Spares for ZDK-03 AWACS	90	\$ 0.707 MM	
19.	Hardware for indigenous Development of Mirage Rose-III Simulator with Training abroad	08	\$ 0.506 MM	
20.	Procurement of Ammo	1379500	-	Rs. 262.872MM
21.	Bullet Proof Jacket	2900	-	Rs. 146.092 MM
22.	Secure Digital Walkie Talkie System	6286	-	Rs. 127.150 MM
23.	Anti Ballistic Helmets	5175	-	Rs. 97.138 MM
24.	Machine Gun MG1A3	240	-	Rs. 71.880 MM
25.	Spares for TPS-43 Radars	6	-	Rs. 64.093 MM

The economy factor remained the hallmark of the financial year under report. In order to achieve competitive prices, deliberate efforts were made to achieve the desired rates which ultimately resulted in saving millions of rupees to the National Exchequer. The details of saving during financial year 2015-16 against assessed rates, last procurement rates (LPR) and offered rates are as under:-

### **SUMMARY OF TOTAL SAVINGS OF CONTRACTS**

### **CONCLUDED DURING FINANCIAL YEAR 2015-16**

### **AGAINST DEVELOPMENT PACKAGES**

Organization	Saving Against Assessed Rates	Saving Against User Est/LPRs	Saving Against Quoted/ Offered Rates
DGDP	-	-	Rs. 965.122 M

DGP (Army)	Rs. 233.908 M	Rs. 1067.070 M	Rs. 320.912 M
DP (Navy)	-	-	-
DP (Air)	-	-	-
ADP (Washington)	No Contract has been concluded by AsDP against Development Packages.		
ADP (London)			
ADP (Paris)			
ADP (Beijing)			
<b>Total</b>	<b>Rs. 233.908 M</b>	<b>Rs. 1067.070 M</b>	<b>Rs. 1,286.034 M</b>

### **AGAINST SERVICE BUDGET**

<b>Organization</b>	<b>Saving Against Assessed Rates (Rs in M)</b>	<b>Saving Against User Est/LPRs (Rs in M)</b>	<b>Saving Against Quoted/ Offered Rates (Rs in M)</b>
DGDP	-	-	4548.217
DGP (Army)	1322.356	1922.121	715.972
DP (Navy)	-	299.416	54.928
DP (Air)	2073.447	1197.278	644.864
ADP (Washington)	21.443	188.648	0.175
ADP (London)	-	89.106	-
ADP (Paris)	41.208	-	-
ADP (Beijing)	0.453	-	-
<b>Total</b>	<b>3,458.907</b>	<b>3,696.569</b>	<b>5,964.156</b>

### **Contracts Concluded**

The detail of contracts concluded during the financial year 2015-16 are as under:-

### **SUMMARY OF CONTRACTS CONCLUDED DURING FIN YEAR 2015-16**

#### **AGAINST DEV PACKAGES**

<b>Organization</b>	<b>No. of Contracts Concluded</b>		<b>Value of Concluded Contracts-</b>	
	<b>FE</b>	<b>LC</b>	<b>FE</b>	<b>LC</b>
DGDP	01	-	US \$153.000 M	-
DGP (Army)	15	60	US\$ 119.137 M	14232.438 M
DP (Navy)	-	-	-	-

DP (Air)	-	-	-	-
ADP (Washington)	No contract concluded by AsDP during Fin Year 2015-16.			
ADP (London)				
ADP (Paris)				
ADP (Beijing)				
<b>Total</b>	16	60	US \$ 272.137 M	14232.438 M

### **AGAINST SERVICE BUDGET**

Organization	No. of Contracts Concluded		Value of Concluded Contracts	
	FE	LC	FE	LC (Rs in Mn)
DGDP	03	-	US \$ 292.629 M	-
DGP (Army)	65	585	US\$ 310.557 M	43,581.757
DP (Navy)	176	173	US \$ 40.8060 M	5,169.897
DP (Air)	153	368	US\$ 227.97 M	24,293.302
ADP (Washington)	111	-	US \$ 7.325 M	-
ADP (London)	169	-	£ 4.741 M \$ 0.166 M € 0.013 M	-
ADP (Paris)	57	-	€ 11.653 M	-
ADP (Beijing)	32	-	\$11.653 M	-
Total	766	1126	\$ 891.106 M £ 4.741 M € 9.620 M	73,044.956

### **Recovery of Risk & Expense Money**

Details of Risk & Expense cases alongwith recovery made during financial year 2015-16 are as under:-

### **AMOUNT RECOVERED AGAINST RISK & EXPENSE DURING FINANCIAL YEAR 2015-16**

Organization	Total No. of Contracts	Total RE Amount Involved (In Rs. Million)	Total Recovery Carried Out (In Rs. Million)
DGDP	-	-	-
DGP (Army)	931	1744.325	9.473
DP (Navy)	05	2.919	1.174
DP (Air)	104	29.091	-
Total	1040	1776.335	10.647

## **REGISTRATION OF FIRMS**

The results of registration activities during the last financial year are tabulated as under:-

a.	New firms registered	-	76
b.	Renewal of registered	-	179
c.	Additional indexation of firms	-	63
d.	Issuance of IT on Earnest Money	-	-
d.	Total Number of defaulting firms	-	-

Achievement of Shipping Cell (DGDP) FY 2015/2016:-

### **STATE OF FREIGHT/INSURANCE CONTRACTS CONCLUDED FOR TRI SERVICES FY 2015 – 16 (DGDP)**

#### **PNSC**

<b>S/No</b>	<b>Contracting Agency</b>	<b>Freight Charges</b>
a.	Army	140.298 Million
b.	Navy	66.395 Million
c.	Air Force	52.439 Million
G. Total		259.132 Million

#### **PIAC**

<b>S/No</b>	<b>Contracting Agency</b>	<b>Freight Charges</b>
a.	Army	3.322 Million
b.	Navy	13.616 Million
c.	Air Force	26.988 Million
G. Total		43.926 Million

#### **Insurance**

<b>S/No</b>	<b>Contracting Agency</b>	<b>Freight Charges</b>
a.	Army	104.724 Million
b.	Navy	17.336 Million
c.	Air Force	55.380 Million
G. Total		177.44 Million

**DISPOSAL OF AUCTION OF STORES WEF JUL 15 TO JUN 16**

Ser	Services HQ	Year of Auction	Rs in Million
	Army	2015-16	Rs. 6950.417 M
	PAF		
	Navy		
Total			Rs. 6950.417 M



***Defence Export Promotion  
Organization  
(DEPO)***

## **DEFENCE EXPORT PROMOTION ORGANIZATION (DEPO)**

Defence Export Promotion Organisation (DEPO) under MoDP provides a platform for promotion, facilitation and coordination of sustainable defence exports to public and private sectors. It organizes International Defence Exhibition and Seminar (IDEAS), biennially at Expo Centre, Karachi, which is a mega event of International standard in Asian Region. On one hand IDEAS provides a perfect interactive forum for the defence forces to assess the products and technologies suit / fulfil their requirements, on the other hand, it also offers an ideal opportunity to the defence manufacturers for entering into collaboration and joint ventures with other prospective international partners. DEPO also established Display Centre to setting products of Defence Establishments under one roof.

**Mission:** To facilitate and promote export of defence related quality products and coordinate marketing efforts with manufacturing sector in land and abroad.

### **Achievements and Activities**

- **Establishment of Display Halls at DEPO:** Upon shifting of DEPO to its present location in Feb 2009, non-availability of display halls was felt. Accordingly, a gigantic task of constructing display halls to showcase the products of public and private sectors manufacturers under one roof have been completed. It was inaugurated on 06 October 2015 by Mr. Rana Tanveer Hussain, Minister for Defence Production. Although a number of exhibitors have already joined the project, efforts will continue to get more private sector companies on board to make the display center a whole covering display. The display center is visited by foreign delegations, diplomats, faculty and students of defence colleges, universities and other high ranking civil and military officials both local and foreign. Initially following 31 organizations/companies had displayed their products details are at Annex-D. List of Delegations visited DDC is placed at Annex-E. .
- **Seminar-2015:** A two days seminar was held in Marriott Hotel Islamabad on 2-3 December 2015. The theme of the Seminar was “Public Private Partnership in Defence Production and Export: Challenges and way forward”. Mr. Mamnoon Hussain, President Islamic Republic of Pakistan



was the Chief Guest. Foreign speakers, diplomatic missions in Pakistan, senior government, armed forces officials, civilians, academia etc participated. A wide range of issues were highlighted in the seminar and discussed in breakout sessions. A large number of Federal Ministers / Secretaries, Senior Civil and Military Officers and CEOs of national and multinational companies attended the event.

- **Celebration of Africa Day at DEPO:** An Africa Day was celebrated with MoFA, under the auspices of MoDP in DEPO on 29 Feb 16 in which all the ambassadors and Councilor general of African countries present in Pakistan were invited to attend. Ambassadors, representatives of 11 African countries attended the celebrations. The visitors were briefed about DEPO followed by visit of DDC. The audience was enthusiastic for future collaboration with DEPO. In this backdrop DEPO Team will meet delegates of targeted countries during visit of AAD South Africa in collaboration with MoFA.

- **Engagement with Major Chamber of Commerce and Industry:** DEPO undertook initiative to reach to Private Sector and Centers of Economic Potential with the view to invite cooperation in the field of Defence Production and Export. Major Chamber of Commerce and Industries were visited. All visited Chambers were presented with the functioning of DEPO with the view to identify common grounds for cooperation with chambers and optimize Pakistan's potential in defence manufacturing sector. Chambers have also been invited to exhibit in IDEAS 2016 and encouraged to participate in foreign defence exhibitions. Overwhelming positive response received from all Chambers. Following chambers were visited:

- Visited KCC&I, FPCCI and TDAP in Nov 15
- Visited LCC&I in Feb 16
- Visited GCC&I, GTCC&I and SCC&I in May 16
- Visit FCC&I in Aug 16

- Similarly invitations were extended to 23 Chambers of Commerce to visit DEPO Display Centre. At the same time Chambers were invited to attend Seminar 2015 held at Marriot hotel Islamabad and share their Experiences.
- **DEPO Website:** New website “www.depo.gov.pk” has been developed by DEPO and launched on 30 April 2016. Old DEPO Website ([www.depo.org.pk](http://www.depo.org.pk)) has been closed.
- **Display of JF-17 Model in DEPOs Lawn:** A model of JF-17 Thunder, procured from PAC Kamra, has been installed in front of DEPO building. Apart from an impressive display of our air craft manufacturing capability, the model has elevated to the overall look of DEPO.
- **Preparation of IDEAS-2016:** IDEAS 2016 will be held from 22-25 Nov at Karachi with new international trends of exhibition incorporated. Presently 80% Space of Expo Centre has been booked for IDEAS 2016 by different foreign and domestic companies. Following steps are being taken to make this event a complete success:
  - 1) Signing of Media Partnership Agreements for Advertisement of IDEAS-2016 in International Defence Journals. Media partnership agreements with 22 Local / International Defence Journals have been signed so far to publish the Advertisements of IDEAS-2016 as per contract agreements
  - 2) Invitation to Foreign Delegations: 315 x foreign delegations from 98 countries have been invited for IDEAS-2016 by under mentioned counterparts. The response from 39 x delegations have been received. 12 x dignitaries and 9 x representatives will attend, whereas 18 x dignitaries have regretted:
    - Minister of Defence Production
    - Secretary Defence Production
    - Chairman Joint Chiefs of Staff Committee
    - Chief of Army Staff

- Chief of Naval Staff
- Chief of Air Staff
- DG DEPO

- 3) Seminar (IDEAS-2016): Preparations are being made for International Seminar (IDEAS-2016) at Hotel Movenpick Karachi on (Evening) 22 November 2016 which will be attended by Pakistani and foreign dignitaries. Theme of the Seminar is “Stability and the Economics of Regional Peace in South Asia”.
- 4) Sideline Conferences (IDEAS-2016): Preparations of two days Sideline Conferences to be held at Expo Centre, Karachi from 23-24 November 2016 are underway. The Defence Forces and DPEs will participate.
- 5) Software Development – IDEAS: New Comprehensive softwares have been developed to handle following aspects related to local and foreign invitees:
  - Inland Invitation Management: For preparation of guest list of local invitees, issuance of invitation card / security badges and keeping track for their attendance.
  - Delegation Handling:
    - a) Arrival, reception and departure of delegations at the Airport.
    - b) Allocations of Receiving Officers (Ros), Liaison Officers (Los) and transport etc to delegations.
    - c) Rooms allocation / Hotel Management.
    - d) Overall planning data management and coordination through DHC.
  - Meetings / Networking: Necessary details have been worked out between software developer and DEPO for development

of meetings / networking software, which is likely to be ready by end August 2016.

- **Participation in Foreign Defence Exhibitions:** Pakistan Pavilion has established in following exhibitions. Detail of space booked and participating DPEs are as under:-

<b>Name of DPEs</b>	<b>DIMDEX-16, Qatar (29-31 Mar 16)</b>	<b>DSA Malaysia (18-21 Apr 16)</b>	<b>Eurosatory, France (13-17 June 16)</b>
POF	36 Sqm	90 Sqm	90 Sqm
HIT	-	72 Sqm	-
NRTC	-	54 Sqm	36 Sqm
KS & EW	36 Sqm	-	-
PAC	-	72 Sqm	-
Metasco	-	06 Sqm	
Embroidery Export	-	06 Sqm	
DEPO	-	-	09 Sqm
<b>Total</b>	<b>72 Sqm</b>	<b>300 Sqm</b>	<b>135 Sqm</b>

- **Expected Participation in Foreign Defence Exhibitions:** Pakistan Pavilion will be established in following exhibitions. Detail of space booked and participating DPEs are as under:-

<b>Name of DPEs</b>	<b>Army Russia (6-11 Sep 16), Moscow, Russia</b>	<b>AAD (14-18 Sep 16) Tshwani, South Africa</b>	<b>ADEX (27-30 Sep 16), Baku Azerbaijan</b>
PAC	15 Sqm	100 Sqm	496 Sqm
POF	-	200 Sqm	50 Sqm
NRTC	15 Sqm	32 Sqm	-
Pak Business Aviation	-	12 Sqm	-
Liaqat Corp	-	06 Sqm	-
Fighter group	6 Sqm	-	-
METASCO	6 Sqm	-	-
Al Falag	6 Sqm	-	-
Cord & Knots	6 Sqm	-	-
Embroidery Export	6 Sqm	-	10 Sqm
J. Sports	6 Sqm	-	-
DEPO	10 Sqm	20 Sqm	09 Sqm
<b>Total</b>	<b>76 Sqm</b>	<b>370 Sqm</b>	<b>565 Sqm</b>

- **Engagement With Rozobornexports Russia:** Continuous engagement with ROSOBORONEXPORT Russia was carried out. Ice breaking visit by

DEPO during International Military Technologies Forum, Russia in Jun 2015 & Russian Arms Expo Sep 15 paved the way for future collaboration. During visit by ROSOBORNEXPORT Russian delegation to Pakistan Pavilion during Defence Services Asia Apr 2016 at Kuala Lumpur, Malaysia, Russians showed keen interest to participate in IDEAS 2016. In same back drop Russia invited Pakistani companies to participate in Russian exhibition ARMY 2016 at Moscow offering gratis space and stall building. DEPO will establish a Pakistan Pavilion comprising 9 x Public/Private exhibitors on gratis basis ie PAC, NRTC, METASCO Pvt Ltd, Embroidery Export Private Limited, Fighter Tactical Gear Private Ltd, J Sports, Al Falak Sports and Cords n Knots.

- ROSOBORNEXPORT (Russia) has also finally confirmed its participation in IDEAS 2016 by establishing Russian Pavilion. To consolidate the gains DEPO has offered 120 sqm free space to Russian companies in IDEAS to enhance their participation.

- **Documentary Movie and Catalogue/ Brochures ‘Defence Industry of Pakistan’.** 43 x DVDs and 78 x Catalogue/Brochures have been shared with the Defence Wings / Ambassadors of Pakistan in following countries, to provide an insight into the defence manufacturing capability of Pakistan to host Country’s officials:

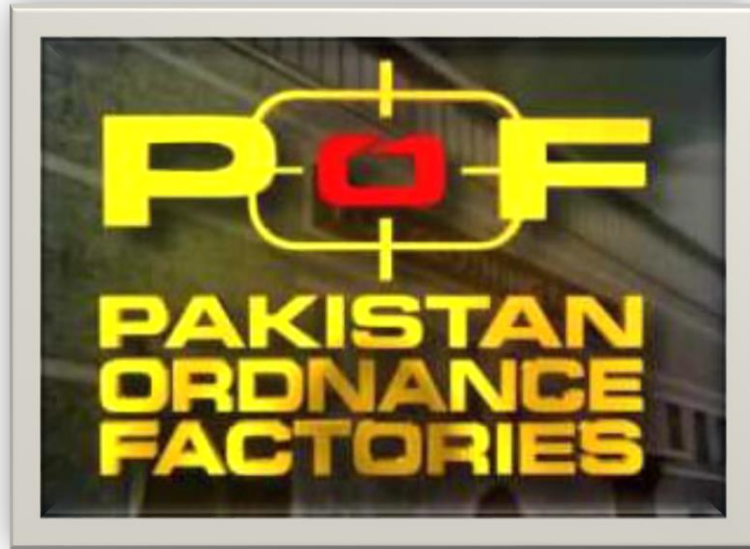
Ser	Country	CD/DVD	Catalogue/Brochures	Standee
(1)	Afghanistan	01	10	01
(2)	Azerbaijan	01	10	01
(3)	Bahrain	-	15	
(4)	Bangladesh	01	10	01
(5)	Japan	03	05	
(6)	Jordan	06	32	01
(7)	Kenya	11	20	01
(8)	Libya	06	13	01
(9)	Nigeria	11	14	01
(10)	Qatar	-	02	

(11)	South Africa	01	16	01
(12)	Sri Lanka	01	10	01
(13)	Turkey	-	06	
(14)	Ukraine	01	10	01
(15)	Dir JW, JS HQ	10	20	
<b>Total</b>		<b>53</b>	<b>193</b>	<b>10</b>

**Targets:** Diplomatic efforts have been geared up to promote and publicize IDEAS-2016 in an effective way. The target is to invite maximum delegations and encourage exhibitors to attend forthcoming IDEAS-2016, scheduled on 22-25 November 2016.

**Conclusion:** DEPO is committed towards successful conduct of IDEAS-2016 and also to assist in promoting the products of defence industries of Pakistan through participation in International Defence Exhibitions, conducting visits of foreign / local delegations to DEPO and addressing all defence exports related inquires forwarded by Defence Attaches or foreign Defence Attaches at Islamabad.

\* \* \* \* \*



***Pakistan  
Ordnance Factories Works  
(POFs)***

## PAKISTAN ORDNANCE FACTORIES BOARD WAH



Established in 1951 Pakistan Ordnance Factories (POF) represents a major defence industrial Complex of Pakistan. POF has grown into an expensive set up of 14 mainstream factories and various commercial subsidiaries, involved in production of conventional and automatic weapons, ammunition and explosives. As a Joint-Venture the subsidiary units of POF includes are the following:

- Wah Noble
- Wah Industries Limited
- Hi-Tech Plastics
- Brass Mills
- Attock Chemicals

Besides various industrial and commercial ventures POF has a huge Welfare Organization involved in the wellbeing of its employees. The industrial setup and commercial units are run by POF Board, whose main function is to manage and administer the affairs of factories and meet the needs of the defence forces of Pakistan. The Factories include:

- Medium Artillery Ammunition
- Heavy Artillery Ammunition
- Tank/Anti-Tank Ammunition
- Bombs & Grenades
- Small Arms Ammunition
- Small Arms
- Machine Gun
- Explosives
- Propellant and Fuze
- Tungsten Alloys
- Brass Mills
- Wah Clothing
- Filling
- Carbide



## Range of Products

A total of 73 products are developed and produced by POF, which include:-

### ➤ Weapons

- Rifle G3A3/G3P4 (7.62 mm x 51 Calibre)
- Machine Gun MG3 (7.62 mm x 51 Calibre)
- Sub Machine Gun MP5A2/P3 (9 mm x 19 Calibre)
- SMG PK & PK1 (9x19mm Calibre)
- 12.7mm AA Anti Aircraft Gun
- POF Eye
- SMG PK (7.62X51mm)
- Designated Marks Man Rifle (DMR) (7.62x51mm)
- Pistol POF 4/5
- Pistol PK – 9



### ➤ Small Arms Ammunition

- 7.62 mm x 51 Carton Packed
- 7.62 mm x 51 Link Belted
- 7.62 mm Blank
- 9 mm x 19 (1Z & 2Z)
- 7.62 mm x 39mm- SMG
- 7.62 mm x 39mm- SMG Blank
- 7.62x51mm HMG
- 7.62x54mm (Ball & Tracer)
- .308 WIN 150/165/175 Grain

### ➤ Artillery Ammunition

- 25 Pdr HE & Blank
- 105 mm (HOW), HE Smoke and Blank
- 122 mm HE HOW and 122 mm D30 Ammo
- 122 mm HOW Training
- 130mm HE Gun Ammo RC & FC
- 155 mm HOW HE M107



- 155mm HOW Training

### ➤ **Mortar Bombs**

- 60 mm HE & Smoke WP, Illu, Signal (Red & Green)
- 60mm Mor Inert
- 81 mm HE & Smoke WP, Illu
- 81mm Mort Inert
- 120 mm HE & Smoke WP
- 120mm Mor Inert



### ➤ **Aircraft Bombs, Aircraft & Anti Aircraft Munitions**

- 500 Lbs – Mk 82 Aircraft Bomb
- 6 Kg Practice Bombs
- 25 Lbs Practice Bombs
- 23 mm Ball & HEI
- 30mm HEI, API, Ball
- 37 mm Anti Aircraft
- 12.7 mm x 108 API & APIT

### ➤ **Tank & Anti Tank Ammunition**

- 125 mm APFSDS
- 125 mm HE TK
- 105 mm APFSDS
- 105 mm HE
- 106mm RR Training Rds



### ➤ **Rockets**

- Rocket Propelled Grenade 40 mm HEAT (RPG-7P)
- 73 mm Recoilless at Grenade (SPG-9P) HEAT
- 73mm SPG-9 HE

### ➤ **Grenades, Pyrotechniques & Mines**

- Hand Grenade Arges 84
- Grenade Target Indication, White, Red, Yellow, Green Orange, Blue
- Grenade Hand/Discharger WP P3 Mk-1
- Remote Control Fragmentation Device
- Flare Trip Wire



### ➤ **Military Explosives & Propellants**

- Black Powder
  - TNT, RDX, Compo B, Tetryl, Nitroguanidine, PETN
  - Single, Double and Triple Base Propellants
  - Ignition Charges
- **Commercial Explosives (Wah Nobel)**
- Emulsion Explosives, Dynamites
  - Powder Explosives
  - Blasting Accessories, Safety Fuze Cords
  - Detonating Cords
  - Detonators (Plain & Electrical)
  - Leher Ignition System
- **Commercial Products**
- Brass items i.e Rods, Pipes, Plates, Sheets & Extrusions
  - Gilding Metal Clad Steel Strips
  - Tungsten Carbide Tool Tips, Nibs & dies
  - Chemicals (Polymers)
- **Sporting Ammo** 12 Bore Cartridges (4,6,8,7 Skeet, 9 Trap, BB, SG, LG and 4,6, & Super)
- **Garments**
- Personal Load Carrying Equipment (PLCE)
  - Camouflage Combat Dress (CCD) & Stitching Uniforms of LEAs/CAF
  - Bullet Proof Jackets
  - Mosquito Nets
  - Industrial working dress
  - Gowns etc

### **SWOT Analysis**

- **Strength:**
- Skilled manpower.
  - Strong internal control system.
  - Diversified products range.
  - International certification through QMS (ISO 9001:2008), EMS (ISO 14001:2004), and OHSAS (ISO 18001:2007).
  - Commercialization initiatives.
- **Weaknesses:**
- Lack of robust technology.
  - Inadequate budget allocation.
  - Manual Material Control and Financial accounting system.

- Lack of modern costing systems.
- Lack of professional costing and financial management staff.

➤ **Opportunities:**

- Improved productivity, cost effectiveness and revenue generation through automation, restructuring and quality control.
- Better marketing can result in improved access to international markets.
- Spare capacity for commercial / export.
- Exposition of products in international market.

➤ **Threats:**

- Sanctions/restrictions on raw materials, machines, spares and replacement plants.
- Reluctance of International OEMs to share latest technology.
- Non commercial marketing.
- High cost of products overheads.
- Higher Security risk.

**Wah Brass Mills (Private) Limited (WBM)**

Brass products are used in production process of Arms & Ammunition and range of equipments in use of Pakistan Army. POF Brass Mill was unable to meet the requirements of brass products. Therefore, in overall restrictions and expansion plan was made and WBM was registered with Security and Exchange Commission of Pakistan (SECP) in 2012 with enhanced capacity from 7000 to 24000 m.ton per annum. The salient features of the WBM are:-

<b>Description</b>	<b>Before up-gradation</b>	<b>After up-gradation</b>
<b>Capacity</b>	7,000 M.T Annum	24,000 M.T Per Annum
<b>Coil Specifications</b>	Strips/Coils 300 KG (Max)	1.5 M.T to 2.5 M.T
<b>Products</b>	Brass, Copper, Gilding metal and GMCS Strips in open tolerances and Brass Discs	Brass, Copper, Gilding metal and GMCS Strips in close tolerances and Brass Discs
<b>Commercial Framework</b>	Public sector unit relying entirely on GOP funding	Separate legal entity commercially oriented with financial autonomy, market driven commercial operations



## Supply Chain Management

There are 220,000 items registered with Separate Stock Code numbers in POF, including Ferrous, Non-ferrous, Chemicals, Tool Steel, Iron Mongery, Textile, Wood, Spares, Electronic, Electrical items etc. During 2015-16 cost effective procurements were made, as a result savings of Rs. **168.890 M** were achieved without compromising on quality.

## Research & Development Dte.

For the purpose of increasing scope and potential of Defence production Research & Development is considered as a backbone of any industry. During 2015-16 following achievements were made:-

### ➤ **Development of Lead –Analyzer:**

Lead Analyzer uses the principle of electrolysis for determining percentage of Lead in brass strips. Lead brass strips are analyzed for determining percentage of Lead. Performance of newly developed Lead analyzer is at par with imported quality.

### ➤ **Anti-Tank Mines for Mine Dispensing System:**

Mine Dispensing System (MDS) lay mines automatically over a distance of 100-150 meters. R&D has successfully developed an indigenous circuit to detect the tank. This was tested in HIT with tank Al-Khalid and results were satisfactory.

### ➤ **Development of 12.7x108mm HMGP16**

The weapon was offered for trials to HIT (gun to be mounted on Al-Khalid tank). The trials went successful and contract for manufacturing was awarded to POF. A sum of US \$ 13.0 M 38ulfill were saved.

### ➤ **Development of Modular Charge System for 155mm HOW**

POF undertook the development of Modular Charge for 155mm HOW Artillery System **to replace the textile bag with combustible cartage Case** of charge 3, 5 & 7. The project was assigned to POF by W&E Dte which is now in final stage of development.

### ➤ **POF Services Group:**

Services Group is responsible for provision of following centralized services:

- Generation and Distribution of Electricity
- Generation and Distribution of Steam
- Telecommunications, Instrument & Electronics Services.
- Transport Services
- Fire Fighting Services
- Reconditioning Services
- Fabrication & Water Supply
- Timely repair /maintenance of machinery.

### **Energy Conservation**

Since 2008-09, POF took initiatives for Energy Conservation. As a result, it manage to minimize utilization of Electricity through apt management system.

### **Power House**

During accounting year total savings worth of Rs. 221 M were achieved through own generation of 86,338,725 KWH of year 2015-16.

### **Miscellaneous Services**

Through POF's own internal telecom networking savings of Rs.88.800/- per month were achieved on exemption of 14 % withholding tax from PTCL. POF has been able to rehabilitate its Primary Telephone Network by Laying 700 meter underground cable (600 pairs) from Main Exchange. Besides, POF ensures supplies of all utilities to its employees at very nominal rates. In 2015-16 total water supplied was 7148.464 M gallons through Water Distribution Network spread over an area of 140 kms.

## Exports

Due to the changing global scenario the atmosphere for export of defence products, has not been encouraging. However, all possible efforts were exerted not only to sustain but to substantially increase the volume of exports. During the FY 2015-16, the volume of exports remained at reasonable level. The breakdown of exports are as under against target of US \$ 100 M.

- Total Value of Contracts = US \$ 93.68 Million
- Despatches Made = US \$ 60.40 Million
- Orders under Production = US \$ 33.28 Million

POF participated in 03 international defence exhibitions i.e DSA, Malaysia, EUROSATORY, France and DIMDEX Qatar.

POF displayed its complete range of products in these exhibitions which were appreciated especially the new products like Personal Load Carrying Equipment (PLCE), G3S (short version of G3A3 Rifle) and G3-M etc. POF Participation remained fruitful establishing new contacts, revival of existing ones which ultimately yielded into number of new inquiries/confirmed orders.

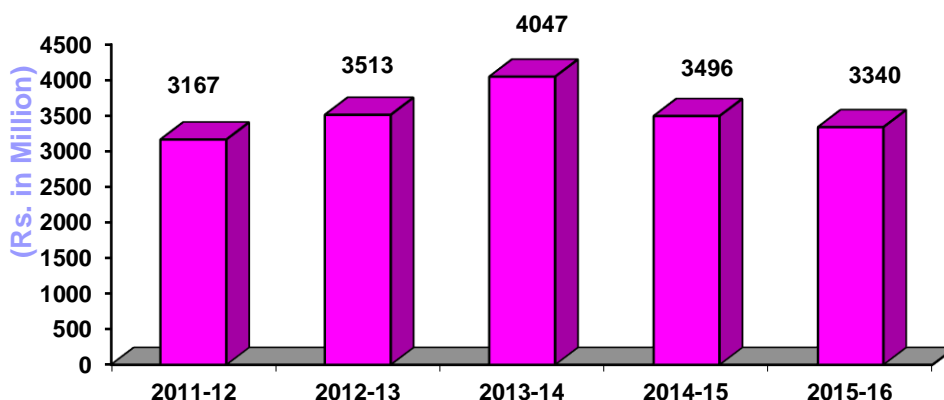
### **Commercial Production**

- **M/s Wah Industries Ltd., (WIL).** The overall performance remained satisfactory during the financial year 2015-16 and achieved over all sales worth of **5.01%** higher than the previous year. Comparisons of the sales are:-

Item	2015-16 (Un-audited)	2014-15 (Actual)	%age Inc/Dec
Civil Product	171.467	193.855	(11.5)
Project	21.709	70.061	(69.01)
Chemicals	392.145	562.821	(30.3)
Arms & Ammo	1038.813	665.778	+56.03
Ammo Container	522.798	392.165	+33.31
12 Bore Ctgs	695.551	757.625	(8.19)
Disposal	272.994	324.510	(15.88)
Overall Sales	<b>3115.477</b>	<b>2966.815</b>	<b>+ 5.01</b>

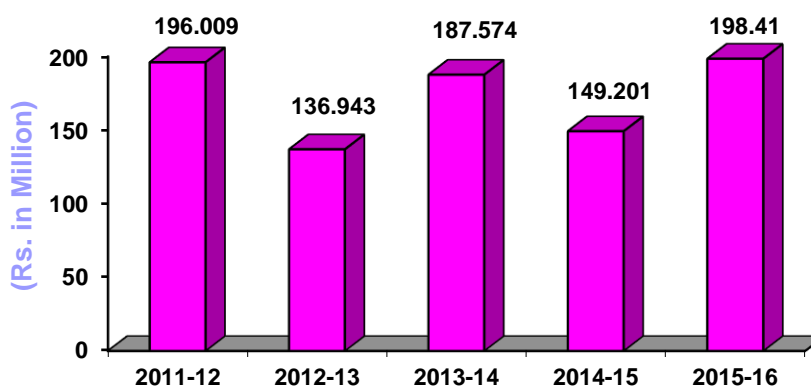


- **M/S Wah Nobel (Pvt) Ltd.** Wah Nobel is a Pvt Limited Company having shares of 41ulfill 51.75% by M/s WIL. The sales during 2015-16 were **Rs. 3,340 M** thus **4.46 % lower than 2014-15** due to depressed market conditions and energy crisis in the country.



Despite decreased sales, Wah Nobel profitability increased by 30.31 %.

- **M/S HI-Tech Plastics (Pvt) Ltd.** **Manufactures various packaging, Containers, Carriers for Ammo and plastic parts of ammos. It has injection, blow moulding and extrusion facility. Its annual sales during year 2015-16 is higher as compared to the previous years. The details are:-**



**Annual Sales 2015-16**

### **Quality Assurance Dte (QA).**

In years to come POF aim to revive the structure of QA Dte by taking over all control from procurement of raw materials to finished product. In this regard QA Dte work shoulder to shoulder with production units of Arms & Ammo to complete targets including local and foreign as per contract. A team of devoted QA officials completed design and development of POF 1<sup>st</sup> **Light Sniper Rifle. (bolt action**

**rifle)** with an accuracy of > 0.5 MOA, effective upto 800-1000 meters. QA Officials completed another task of unification of 9x19 mm ammo as per international standards compatible with both MP5 and Pistols respectively. Besides as per international standards, various in-house trials have been successfully conducted of **9X19 mm Ammo (1Z)**. Certain hitches of **jamming and stocking of bullet** were successfully addressed in production process.

### **POF Institute of Technology (POFIT)**

The POFIT imparts training to Officers, Staff and employees of POF on regular basis. In addition, different courses of varying duration are also run for general public and other departments. The details are as:

<b>Sr.#</b>	<b>Training Programme</b>	<b>No. of beneficiaries</b>
a.	In service short courses (POF Candidate)	85
b.	Short Courses for Private candidate	103
c.	Artisans Training	123
d.	Internship of University Students	490
e.	DAE Students	1584
f.	Services to WEC Students	1962
g.	Coaching for & Evaluation of Officers, staff, and Workers for Departmental Promotion Examination. <div style="margin-left: 40px;"> i) Technical = 94  ii) Auxiliary = 44 </div>	Tech. - 94 Admin - 44
<b>Total:</b>		<b>4485</b>

## Welfare Activities

POF undertakes a number of Welfare measures for its employees and spend huge amounts in addition to their normal entitlement of pension, Group Insurance Benevolent Fund & P.M Assistance Package. In 2015-16 following activities were carried out:-

<b>Nomenclature</b>	<b>No of beneficiaries</b>	<b>Amount per year</b>
Wards Marriage Grant	494	12.35 Million
Merit Scholarships	649	4.32
Death Grants (Self and Family Members)	68	1.03
Financial Aid on Medical treatment	10	1.83
Awarded 75% fee concession to POF employees sons/daughters of POF employees through WEC	30	1.35
Awarded 50% fee concession to POF employees sons/daughters of POF employees through COMSATS	128	3.20
Paid House Building Advances	74	52.68
Paid Car Advances	09	1.97
Paid Motor Cycle Advances	46	1.89
Paid Bicycle Advances	09	5.35

## Medical Cover

POFs Hospital was established in 1962 with an initial capacity of 103 beds. Hospital capacity increased 200, 400 and 500 beds in 1963, 1969 and 1987 respectively. Existing bed strength is 676 due to introduction of new departments over successive years. It is now a modern tertiary care hospital providing teaching facilities to Wah Medical College. The hospital is recognized for house job and postgraduate training (FCPS) in various disciplines. The hospital is responsible to provide healthcare facilities to serving/retired POF's employees & families/parents of the employees, army personnel posted to POFs (including

their families/parents) and employees of Allied Departments (CMA, IDA etc). The hospital also extends diagnostic and treatment facilities to general public residing in the area on nominal payment. POF Hospital workload statistics for the year 2015-16 is as follows:

#### **Work Load Statistics:**

<b>Sr. #</b>	<b>Activity</b>	<b>Details</b>
a.	Outpatients	161,522
b.	Hospital Admissions	62,749
c.	Dental Treatments	27,251
d.	Pathology Laboratory	703,653
e.	Radiology	35,996
f.	Ultrasonography	12,943
g.	ETT	613
h.	Echocardiography	3,350
i.	Hemodialysis	3,953
j.	Surgical Operations	15,291
k.	<b>Workload of patients 2015-16</b>	<b>1,027,321</b>

#### **Sports**

POF Wah is a rich culture of games and sports owing to the outstanding infrastructure available for almost all sports events. POF has produced a number of players who represented Pakistan at International level in the past. International sports events such as Kabbadi, Squash, Tennis and Volleyball were held at Sport facilities of POF, which speaks of the confidence of various National Sports Organizations in POF Sports Control Board (SCB) management skills and expertise. POF contributes in attracting youth in all sports, for which POF SCB has organized various International/ National & Local sports events.

### ➤ **Local Tournaments**

- 2<sup>nd</sup> Chairman POF Board Floodlit Cricket Tournament.
- POF Inter Factory/Group competitions.
- Arranged Hiking Trip (Thandiani to Nathiagali)

### ➤ **National/International Events**

- 3<sup>rd</sup> Asia Kabaddi (Circle Style) Championship.
- Chairman POF Board Wah Open Marathon.
- 1<sup>st</sup> All Pakistan Chairman POF Board indoor Basket Ball Tournament.
- Coaching/Training Camp for 35<sup>th</sup> National Junior Hockey Championship at Wah.
- POF Hockey Team participated in 35<sup>th</sup> National Junior Hockey Championship – 2016 at Lahore.
- Arranged the Pakistan Kabaddi team Coaching/Training camp for 3<sup>rd</sup> Asian Kabaddi Championship.
- POF Football Team participated in Hafiz Adeel Khan Memorial All Pakistan Football Tournament at Abbotabad.
- POF Volleyball Team participated in National Senior Men's Volleyball Championship-2016 at Islamabad.



### **Welfare Trust**

POF Welfare Trust administratively and financially manages the affairs of its 13x operational projects and 4 x autonomous projects as under:-

### **Operational Projects**

- Welfare Transport Service
- Izzat Ali Shah (Female) Hosp
- Welfare Filling Station
- Welfare Computer Centre
- Welfare Club-II (Marriage Hall)
- Welfare Medical Store
- POF Montessori School
- Wah Poly Technique College
- Welfare Shops
- CNG Station (GASCO 2000)
- IAS(F) Hospital Medical Store
- Welfare Industrial Home
- Welfare Charity Fund

### **Autonomous Projects**

- University of Wah
- Wah Medical College
- Wah Engineering College
- Mashal Degree College

To make the Welfare Trust a vibrant, credible and financially independent organization, the objectives and mission was re-analyzed in year 2010 under the guidance and patronage of Chairman POF Board. To fulfill above mission, the team geared up to formulate & explore new welfare opportunities & existing profit earning projects financially viable to support non-welfare or charity projects.

Major achievements / gained in various projects are highlighted as under:-

#### **Izzat Ali Shah (F) Hospital:**

The existing setup of Izzat Ali Shah (F) Hospital was insufficient to cater increasing turnover of patients. Thus with the patronage of Chairman POF Board, a new block in the hospital has been added with state of the art facilities costing Rs 55.00 M for the welfare of poor residents. Major purchases include Laproscopic & Ultrasound machine, Lab machines & equipment. Recently a new block ward of Neonatal Intensive Care Unit has been established. Paediatric Department & Diagnostic laboratory are also established. A separate & dedicated Medical Store had been constructed during April 2011 in the vicinity of IAS(F) Hospital to cater indoor patients and general public requirements.

#### **Transport:**

Transport fleet had almost exhausted its life and more than 30% of buses were off road due to non availability of funds and spare parts. To

overcome the problem, new transport fleet consisting with small and medium seats capacity have been added. Further, exiting off-road buses have also been made road-worthy to provide instant commute services. Recently 03 x large Hino buses valuing Rs. 24.00 M and 03 x Toyota Hiaces valuing Rs. 6.50 M have been included in the fleet.

**Medical Store:**

The existing Medical Store was short in space to cater increasing number of daily customers. The Store has been extended in space and up-graded in view of the POF Hospital and general public requirements with total cost of Rs 1.800 M. Further, computer systems, inventory management software, sales-force & stock of medicines have also been increased with further investment of Rs 10.00 M.

**Montessori School:**

Montessori School has now been shifted to Old DD-II (Central Park) building after renovation. Strength of the students has been increased from 265 to 425. The project is profitable and meeting its expenses from its own revenue generation. To accommodate increasing strength, 02 x additional class rooms have also been constructed worth of Rs 7.000 M.

**Welfare Computer Centre:**

A computer lab consisting 25 x computers has been added in WCC (Welfare Computer Centre) from its own funds. Additionally 10 new courses have also been introduced for providing welfare to the POF & retired employees and their wards through concessional fee charges.

## Installation of Accounting Software:

Accounts of the WT and its projects have been computerized through installation of accounting software named “Quick Book”. Accounting system of projects has also been switched over to computer system from manual accounting.



## Financial Aid to Serving/Retired Employees:

Following is the summary of welfare / financial assistance provided to the POF serving / retired employees and their wards during the period mentioned against each:-

Sr. #	Organization	Wei/Fin Assistance
a.	POF Welfare Trust	Rs. 25.919 Million
b.	Wah Med College	Rs. 14.310 Million
c.	University of Wah	Rs. 08.100 Million
d.	Wah Engineering College	Rs. 03.873 Million

## Welfare Industrial Home

The Project re-engineered in January 2013 to manufacture & provide stitched items at subsidized rates as a welfare measure to general public. Further, needy / poor women have also been employed to make them as earning hand for their family members. Besides, wards of POF employees have also been supplied uniform items at various institutions on concessional rates.



## Wah Poly Technical College

The College is imparting technical education in different fields to the wards of POF serving / retired employees at discounted fees. Three years diploma in Mechanical, Electrical & Tele-communication field is running successfully. Further, short courses in refrigeration & air conditioning, plumbing & sanitary fittings and electrical subjects are also being offered on comparatively low fee charges. Recently, new Lab/Workshop is added in college with state of the art mechanical facilities for students.

### POF Central Library

POF Central Library was established in 1984, which is a great source of education and research for POF employees as well as general public. The purpose of its establishment was to promote Educational & Cultural activities and to update the standard of the literary and social communities. This library has over 50,000 books on all subjects.

#### ➤ **Book Fair (24<sup>th</sup> to 26<sup>th</sup> May 2016)**

In order to promote book reading culture, POF Management had arranged 03 days Book Fair from 24<sup>th</sup> May to 26<sup>th</sup> May 2016 at POF Central Library. The aim of this book fair was to persuade the public, especially students, towards book reading. Renowned Publishers/

Booksellers from Rawalpindi / Islamabad / Lahore and Wah Cantt had set up their stalls in which more than 70,000 books were displayed.



#### ➤ **Establishment of Internet Section**

POF's Management is always trying its best to facilitate the readers of POF Central Library in order to meet the challenges of the 21<sup>st</sup> century. Establishment of Internet Section was the dire need of POF's Central Library. At present state of the art PCs have been placed in Internet Section to facilitate the Researchers, Scholars and Educationists.

➤ **Online Public Access**

A plan is in the offing to up-grade the library gradually to compete with the latest libraries of Pakistan and to connect it with the international libraries. POF Central Library is carrying out computerization of Library data and designing website in order to give Online Public Access (OPAC). As the Integrated Library System (ILS) software is essential in order to give Online Access to the general public. We are also in the process to procure the kindle devices for E-Readers.



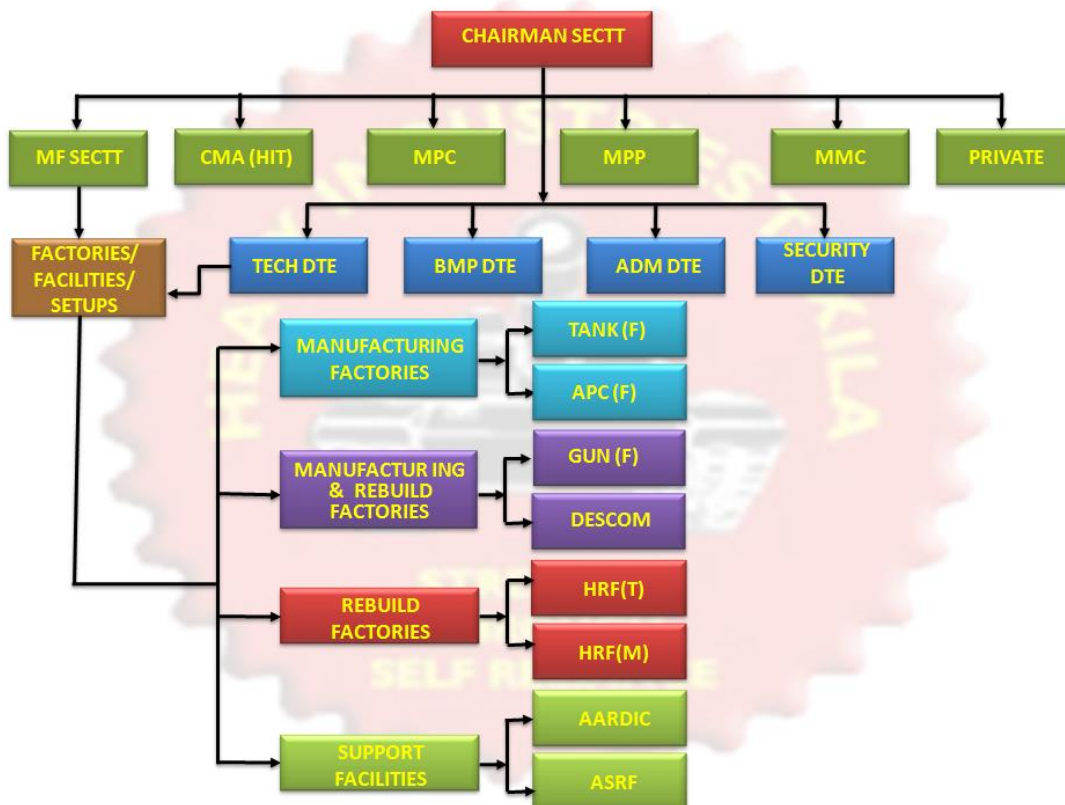
# ***Heavy Industries Taxila***

## ***(HIT)***

## HEAVY INDUSTRIES BOARD TAXILA



### ORGANOGRAM:



## **DEFENCE ACHIEVEMENTS**

HIT, by the grace of Almighty Allah achieved the assigned tasks to a large extent and also assisted Army in R&D for development of Tank Al Khalid-2 and upgradation of Al Zarrar tank. In addition, surplus capacity where available was utilized for commercial activities which included manufacturing of international standard Security Vehicles and equipment for LEAs of Pakistan. The production progress during financial year 2015-16 is as under:-

<b><u>➤ Rebuild / Upgradation Projects</u></b>		<b><u>Quantity</u></b>
• Rebuild of Tanks T-85IIAP	-	40
• Rebuild of additional Tank Engines	-	75
• Rebuild of APCs (M113 AI/ A2/P)	-	16
• Rebuild / Upgrd of 125mm tank gun T-85IIAP	-	32
• Rebuild EDA Stock / Fmn APCs	-	80
<b><u>➤ Manufacturing Projects</u></b>		
• Tank Al-Khalid-1	-	09
• Tank Al Khalid	-	03
• 125mm Tank gun for AK-1	-	04
• Under carriage Al Khalid for AVLBs	-	04
<b><u>➤ Tank Sustenance by HIT to Field Formations of Army.</u></b>		Repair work
carried out by SRTs (Site Repair Teams) on required basis in Army field units is as under:-		
• Tank Al-Khalid	-	135
• Tank Al-Zarrar	-	57
• Tank T-80UD	-	85
• Tank T-85	-	11
• Tank T-59	-	03
• ARV	-	02
• Components/sub-assemblies repaired on Deposit Repair Work Order (DRWOs)	-	2217

## **INDIGENIZATION**

All HIT projects are subjected to time based deletion plan through indigenization. This includes manufacture of in-house items and development of parts and components through downstream industry. The achievements for year 2015-16 are as under:-

Sr. No	Products	No of Varieties of Parts Manufactured	
		In house Manufacturing	Through downstream Industries
a	Tank Al-Khalid/Al Khalid-I	104	19
b	Tank Al Zarrar	06	-
c	Tank T -85IIAP	419	17
d	T-80UD/6TD-1/6TD-2 (Engines)	12	15
e	APC M113 AI/A2/P	386	1185
f	ARV W653/653A	-	02
g	Light Armoured Vehicle Mohafiz	464	387
h	APCs and Tank engines less 6TD-1 and 6TD-2	40	08
i	125 mm tank Guns	08	08

### **COMMERCIAL ACTIVITIES**

HIT is pursuing commercial activities utilizing its surplus capacity for manufacturing of marketable products for export and domestic sales under HIT board Act. Some of the commercial products manufactured in year 2015-16 are as under:-

<b><u>Ser</u></b>	<b><u>Products</u></b>	<b><u>Factory</u></b>	<b><u>Quantity</u></b>
a.	Light Armoured Vehicle Mohafiz	APCF	07
b.	Armoured Security Vehicle Dragoon	APCF	10
c.	Armoured Security Vehicle Protector	APCF	10
d.	Bullet Proof Jackets (BPJ)	DESCOM	17914
e.	Bullet Proof Vests	-do-	3000
f.	Bullet Proof Helmets	-do-	5872
g.	Pelvis Protection of Bullet Proof Jackets	-do-	1500
h.	Armoured Guard Post (Bunkers)	APCF	25
i.	Track APCs (M113P)	-do-	06
j.	Cash Carry Vans	-do-	01

- |    |                      |      |    |
|----|----------------------|------|----|
| k. | EOD Vehicle          | -do- | 02 |
| l. | Bullet Proof Rostrum | -do- | 02 |

#### 4. **Commercial Products**

##### ➤ **Security Vehicles**

- **Mohafiz – II**. The main features are as under:-

- (a) Platform – Land Rover Defender (122 HP).
- (b) Torque – 360 NM.
- (c) Manufactured with Ballistic steel or Aluminum – steel combination with rotating turret.
- (d) Protection level - B6
- (e) Seating capacity - 8
- (f) Firing ports - 6
- (g) Run flat tyres.
- (h) Additional features include Jammer for GSM.



- **Armoured Security Vehicle “Protector”**. The main features are:-

- (a) Engine type - (200 HP), at 3400 rpm
- (b) Drive System - Full time 4-wheel drive (4x4)
- (c) Brake System - Hydraulic power assisted brakes
- (d) Seating Capacity - 8 (2 +6)
- (e) Suspension - Heavy duty (Upgrade)
- (f) Body Protection - Provide protection to meet N.I.J. Standard Level IV
- (g) Doors - 3 (2 front, 1 rear)

- **Armoured Security Vehicle “Draagoon”**. The main features are:-

- (a) Driver Night Vision periscope - 45°
- (b) Fire Suppression System – Semi automatic
- (c) Protection Level - B-7





- 6V53T,
- (d) Engine - Caterpillar Engine (300 HP)/ Detroit Diesel  
224 kw at 2800 (300 HP)
  - (e) Suspension System - Solid Axle System
  - (f) Brake System - Hydro pneumatic
  - (g) Transmission - Caterpillar/Alison PF MT 653
  - (h) Crew Capacity - 11 including Driver
  - (i) Doors - 2 (1 x side & 1 x rear)

• **Discrete Armoured Vehicles.** The main features are:-

- (a) Protection B5 / B6 / B6 + level.
- (b) Blast protection upto DM51 standard and above.
- (c) Bullet proof front, rear and door glasses.
- (d) Improved brake system.
- (e) Improved suspension system.
- (f) Run flat tyres.

➤ **Bullet Proof Jacket (Hifazat).** The main features are:-

- (a) Weight - 6 Kg
- (b) Size - Available in all sizes
- (c) Colour - As per user requirement
- (d) Protection - NIJ level III & IV
- (e) Protected area - Front and back, collars shoulder
- (f) Material - Fire retardant, floatable, chemically inert





➤ **Armoured Guard Post (Bunker).** The main features are:-

- (a) Pentagonal shaped Armoured Guard Post (Bunker).
- (b) Provide immunity against 9mm, 38 Bore, 7.62mm NATO BALL and AP round (B-6 & B-7 level) at 10 m distance.
- (c) Ballistic Protection B-6 & B-7 level.
- (d) Full protection against hand grenade.
- (e) 9 x view windows with bullet proof glass all around.
- (f) Seating capacity of 2 x seats without turret and 1 x seat with turret for 1 man bunker, whereas for 2 men bunker 4 x seats without turret and 2 x seats with turret.
- (g) Firer can fire in both sitting and standing positions.

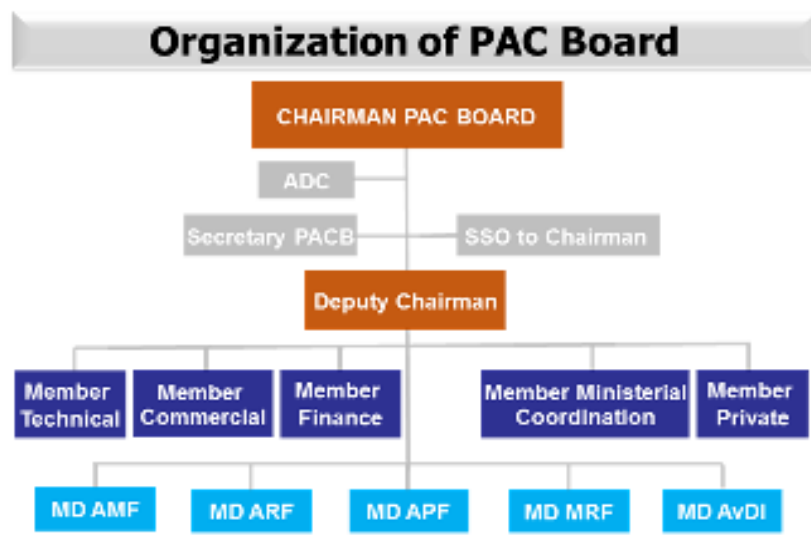
**Benefits of Commercial Activities.** HIT has significantly contributed in government treasury through exports and domestic sale of APCs, Security equipment/ vehicles and discrete armouring of vehicle. Salient are as under:-

a.	Total sales in FY 2015/16	:	Rs.	2109	Million
b.	Profit earned for Government	:	Rs.	590	Million
c.	Proportionate cost remitted to as per	:	Rs.	410	Million Government rules



***Pakistan Aeronautical  
Complex Kamra  
(PAC)***

## PAKISTAN AERONAUTICAL COMPLEX KAMRA



Pakistan Aeronautical Complex (PAC) was established in 1972. The idea was conceived to develop indigenous facility for overhauling Chinese origin fighter aircraft. Realizing the benefits, it was soon ascertained that a huge amount of National exchequer could be saved if such facility could also be established for other weapon systems like the newly inducted PAF Mirages. The conceived idea leads to the establishment of Mirage Rebuild Factory. In order to meet the requirements of Light military trainer aircraft for Pakistan Armed Forces, another facility named Aircraft Manufacturing Factory was established in 1975.

Manufacturing of Super Mushshak aircraft for Pakistan Armed Forces as well as the international customers was undertaken by this factory. Subsequently a facility for in-country overhaul of ground based radars and airborne avionics was also established, which has gradually transformed into a modern avionics design development and manufacturing facility. Pakistan Aeronautical Complex, while continuing its role as Maintenance Repair Overhaul (MRO) organization for technical operational support of PAF, took a giant leap forward towards manufacturing of JF-17 fighter aircraft. At present, PAC Kamra consists of a wide-ranging complex comprising four factories, and an Aviation Design Institute (AvDI) namely:

- Aircraft Rebuild Factory (ARF)
- Mirage Rebuild Factory (MRF)
- Aircraft Manufacturing Factory (AMF)
- Avionics Production Factory (APF)
- Aviation Design Institute (AvDI)

## **Aircraft Rebuild Factory (ARF):**

ARF was established in 1972. During FY 2015-16, ARF successfully completed the General Overhaul (GOH) of assigned aircraft along with the associated tasks to ensure extended and sustained support for PAF operations. Numerous important tasks were accomplished during the specified span of time.

➤ **Indigenization/Development Projects:** Significant number of indigenization / developmental tasks were accomplished at ARF. Tasks being carried out at ARF during specified span includes:-

- Development of aircraft Battery leads and blanks
- Development of Fuel Booster blanks, Bullet Shell Collecting Trolley, Sleeve Wrench and Screw Threaded Wrench for fighter aircraft
- 
- Development of aviation grade Springs, Washers, Ring, Nuts, Plastic Washers, Connector Pipes, Screws & Split Pins for aircraft
- Development of various consumable parts for Fighter aircraft

➤ **Specialist Facilities**

- “Center of Excellence” for manufacturing of Canopy / Windshield of all fighters aircraft
- 
- Fighter aircraft Drop Tanks Manufacturing
- Heat & Surface Treatment of aircraft Parts
- Aircraft Modification for various weapons
- Rewiring of Aircraft and Cobra Helicopters
- Manufacturing of Bullet Loading Machine
- Modification of Pylons for Mirage Pressurization Refueling (MPR)
- Manufacturing of parts for Boeing
- Technical Assistance to Nigerian Air Force (NAF)

## **Mirage Rebuild Factory (MRF)**

MRF was established in 1974 to support the Mirage Fleet of PAF. During the year 2015 – 16 overall production of the Factory was well beyond its established capacity.

➤ **Indigenization / Development Projects.** The aircraft group of MRF carries out overhauling of Mirage III and V aircraft and their components. Engine overhaul group of MRF undertakes overhaul of following engines:-

- ATAR 09C of Mirage aircraft
- F-100 of F-16 aircraft
- T-56 of C-130 aircraft
- J-69 of T-37 aircraft
- TFE-731 of K-8 aircraft

➤ **Specialist Facilities**

- Specialist Welding
- Plasma Spray
- CNC Pipe Bending
- Aircraft structural repair capability

## Aircraft Manufacturing Factory (AMF)



AMF was established in 1975. This Factory is manufacturing JF-17, Mushshak and Super Mushshak aircraft in addition to producing few sub-assemblies for K-8 Jet Trainer aircraft and drones for aerial target practice. Super Mushshak is an ideal aircraft for elementary flight screening and primary flying training.

The following achievements were made by AMF during the period under review:-

### ➤ **Co-Production Projects.**

- JF-17 airframe co-production project at AMF transitioned into the next phase with production and delivery of aircraft.
- Production activities at AMF are progressing very high. All efforts are being made to plan, organize and monitor production work in the most efficient manner.
- AMF continued with Quality Standards for composite parts and sub-assembly manufacturing of Falco UAV.

### ➤ **Repair & Spare Support:** AMF continued with support to Armed Forces for SMK, UAV and JF-17 aircraft. Moreover, technical and spare supports were also provided to their mentioned customers of Super Mushshak.

### ➤ **Specialist Facilities.**

- State of the art machining
- CNC machining

- Machine center – 4 axis auto tool change
- Sheet metal forming
- Heat and Surface treatment
- Shot Peening & surface Enhancement

## **Avionics Production Factory (APF)**

APF was established in 1986 as “Kamra Avionics and Radar Factory” (KARF), which was subsequently renamed as Avionics Production Factory in 2011. APF initially undertook overhauling of ground based radars and co-production of selected Avionics systems and later on ventured into design, development and manufacturing of different Avionics systems. The Life cycle maintenance of the avionics systems is also undertaken at this factory. This factory also has a unique capability of avionics system integration on aircraft.

### **➤ Indigenization & Development Projects.**

- Co-production of JF-17 Avionics Systems, their testing and qualification.
- Integration or solutions of various avionics systems of PAF aircrafts to meet the operational requirements.
- Conduct of variety of avionics integration and manufacturing specific courses.
- Up-gradations were made for better performance of PAF aviation fleet.
- Life cycle maintenance of aircraft avionics system
- Overhaul of ground radars
- Design, development and manufacturing of selected avionics systems, and sub systems.
- Design, development and manufacturing of simulators and training systems.
- Avionics systems integration on various aircraft

### **➤ Specialist Facilities.**

- Avionics system integration
- Automated PCB stuffing
- Automated Fault tracing system
- ECS (Environment Stress Screening)



- Anechoic (EMI / EMC) testing
- Calibration & repair of PME

### **Major Achievements in Year 2015-16.**

<b>S No</b>	<b>Type of Production</b>	<b>Achieved</b>
1	Co-production of JF-17 Aircraft	<b>16</b>
2	On-site Recovery of Aircraft	<b>80</b>
3	Overhaul of Aircraft	<b>46</b>
4	Overhaul of ICR components	<b>61025</b>
5	Overhaul of Aircraft Engines	<b>111</b>
6	Overhaul of Engines Modules & Accessories	<b>9459</b>
7	Rewiring of aircraft / Helicopters	<b>04</b>
8	Overhaul of ground defence radars	<b>05</b>
9	Life cycle maintenance support of Airborne Avionics of various aircraft	<b>1309</b>
10	Co-production / Design & Development of Avionics systems	<b>218</b>
11	PME Calibration / Testing	<b>2829</b>

### **Aviation Design Institute (AvDI):**

In the light of latest global trends, PAC realized that design and development is mandatory to be competitive and for achieving self reliance. Presently, PAC is fully involved in MRO, avionics systems development and aircraft production; while design and development of new aviation products is the missing link. In this regard, an Aviation Design

Institute (AvDI) at PAC is formed, to spearhead design and development activity. The AvDI's working model hinges on leveraging existing National Human Resource and facilities, which is the emerging global trend for national progress. It is envisaged that with formation of AvDI, PAC will have its own product line and aims to embark on state of the art next generation aerospace vehicles, thereby making PAC a complete aviations solution provider in Pakistan.

## Certifications



All PAC factories are ISO 9001 : 2000 and Aerospace Standard 9100 Revision 'C' certified. We have also been awarded Boeing quality management system status. Additionally, our precision measuring equipment labs are accredited for ISO 17025 standards and heat treatment and surface enhancements are accredited by NADCAP PRI USA. PAC is qualified on European / Italian quality standards.

## Commercial Activities

Over the years PAC Kamra has grown into an international aviation standard industry. It has state-of-the-art equipment, machinery and expertise which are as competent as any aviation industry has in the world.

Due to the standards and certifications that PAC has acquired, commercialization in the following areas is being offered by PAC:-

- Aircraft Sales
  - JF-17 aircraft
  - Mushshak & Super Mushshak
  - K-8 aircraft
- Aircraft MRO for Mirage & selected Chinese Origin aircraft
- MRO of selected aircraft engines
- Life Cycle Support & Maintenance for Air Defence systems including radars
- Printed Circuit Board (PCB) stuffing
- Aircraft Painting
- Precision Measuring Equipment (PME) calibration
- Environmental Stress Screening (ESS)
- Generic Engineering design & manufacturing

Acquisition of Civil Aviation Certification by PAC has given a further boost to sale of Super Mushshak by making it viable and acceptable option to many more customers including Flying Clubs, both in local and international market. As a result of special efforts in Super Mushshak aircraft marketing at international level, contract for sale of 10 Super Mushshak aircraft to Nigerian Air Force and 08 Super Mushshak aircraft to Qatar Armed Forces with 05 years support have been finalized during current year. Furthermore, sale of 52 Super Mushshak aircraft to Turkish Air Force is likely to be finalized shortly. The recent deal further strengthens PAC's status as a world class aviation industry producing the supersonic JF-17 Thunder and Super Mushshak trainer Aircraft.

PAC is devoted to provide the highest quality services primarily to PAF and its sister organizations, and extend these services commercially to friendly countries.

In this context of services provision, PAC has earned a considerable amount of foreign exchange and is continuing to extend its services on commercial footings. Saudi Arabia, UAE, Qatar, Turkey, Oman, Sri Lanka, USA and many others are some big names of countries included in the customers list of PAC.



***National Radio  
Telecommunication Corporation  
(NRTC)***

## NATIONAL RADIO TELECOMMUNICATION CORPORATION



National Radio and Telecommunication Corporation (NRTC) is engaged in design, development and manufacture of telecommunication equipment in Pakistan. NRTC is the pioneer in Telecommunication Equipment and leader in the field of communication in Pakistan for the last five decades. NRTC is manufacturing high quality products for Defense services, Law Enforcement Agencies, Paramilitary forces and other civil / military Organizations since 1965-66.

By virtue of long experience in the field of telecommunication, NRTC has attained excellent technical backed-up knowledge and support with a modern infrastructure and standard expertise required to produce telecommunication equipment to the entire satisfaction of the users. List of products manufactured by NRTC are at Annex-F.



NRTC are ISO 9001-2008, ISO 14001:2008, ISO 18001-18002, IPC and MIL STD 810 certified as well.

**LOCATION:**

It is situated in T&T Complex Haripur (NWFP) Pakistan, which is 80 Km North West of Islamabad.

**QUALITY POLICY:**

➤ **Our Prime Objective**

To design, manufacture provide and install high quality and cost effective telecommunication products and services as per customers' requirements/ specifications and to their entire satisfaction

➤ **Our Aim**

Commitment to quality , reliability, durability and continuous improvement of our products, services , processes and systems to be responsive to customers' expectations

➤ **Our Pride**

Timely supply and provision of full time support on products maintenance and services

➤ **Our Priority**

Strive to 100% customer retention and satisfaction by meeting their requirements first time and every time

➤ **Our Employees**

Our goal is to constantly enhancing not only our products but also the quality of life and work of our valued employees through updating their skills /capabilities and providing healthy and safe environment

## **TECHNICAL PERFORMANCE / CAPABILITIES**

NRTC has the following technical facilities/capabilities for the Manufacture, Assembly, Testing and Measuring of following equipment/tasks:-

- HF and VHF Military Version Radios.
- VHF and UHF Commercial Mobile Radios.
- VHF and UHF Single/Dual/Multi Channel Extend Radios.
- Military Version Switches/EPABXs 16 lines, 20 lines, 40 lines and 96 lines.
- Commercial Version Switches/EPABXs 50 lines to 1024 lines.
- Digital Field Telephone and Ruggedized Auto Field Telephone.
- Linear, Regulated Power Supplies.
- Printed Circuit Boards for all type of Telecommunication equipment.
- VHF/UHF Antennae for Military/Commercial Radios including Extend Radios.
- Environmental Test facilities as per MIL-STD-810E
- Mechanical and Surface treatment workshops
- PCB stuffing upto 16-layers
- Digital Investigation Suit

NRTC has the state of the art electrical /manufacturing machines equipment and has large potential to manufacture various telecommunication equipment

### **Automatic Inventory**

Inventory Control and automatic management of components is essential and critical for any electronic manufacturing setup. Setup for storage with control environment for sensitive devices and integrated devices is a big challenge. In order to make sure that devices are stored in correct position and environment and easy to track, automatic storage system is essential for any advance electronic manufacturing setup. NRTC has state of the art inventory control system .



## **Power House**

Power house equipped with 1.2 MW of generating capacity has been established to meet the power requirement of the factory during loadshedding.

## **Manufacturing of mechanical parts**

NRTC has state of the art mechanical/manufacturing facility, that includes CNC machines of different category including CNC turning, wirecut, 3 axis turning, nibbling and punching machines

## **Electronic manufacturing floors**

### **SMT line**

NRTC has established state of the art PCB stuffing and manufacturing facility of international standard, to meet the future requirements of NRTC products

#### **Reflow Oven**



#### **Wave Soldering Plant**

### **PCB Cleaning**

PCB cleaning is important element in manufacturing of electronic assembly. It cleans the PCBs with de-ionized water to have fault free PCBs. M/s NRTC has recently established state of the art PCB cleaning facility

## **Environmental test Facility:**



This facility is required to test the equipment operational conditions in environment ie, temperature test +70 -40°C, sand & dust conditions, salt spray test, water immersion test, vibration & bounce test, drop test etc.

Qualification of equipment in these test means equipment complies Military standard enforced for acceptance of the equipment. NRTC has the state of the art environment test facility.

## **Automatic test and alignment facility**

NRTC has state of the art automatic testing facility with General purpose test equipment along with special interface customized as per user requirement to test specific equipment.

## ***MAJOR PROJECTS 2006-2016***

- Following are major projects for the last nine years:-
- Local Manufacturing of VHF Frequency Hopping Radios (9600 Series)
- Up-graded PRC-77 Radios
- Automag 4+12 lines
- Digital Electronic Field Telephone Exchange PFX-6416
- Digital Electronic Field Telephone Exchange PFX-3208
- Field Auto Telephone Exchange PFX-1604
- Electronic Field Telephone (EFT-101 ) with and without Keypad Dialer
- Ruggedized Auto Field Telephone (RAFT-786)
- Cross-Connection Cabinets

- Power Supplies
- Walkie Talkies
- Dual Battery Charger
- Antenna RC-292
- Land Mobile Radios (SK-2 System)
- Software Defined Radios (SDR)
- Solar Solutions
- RCIED Jammers
- Home Land Security System
- COMMNET, Communication & Networking
- Intelligence Equipment – Digital Investigation Suite
- Security and Surveillance System



***Karachi Shipyard and  
Engineering Works  
(KS&EW)***

## **KARACHI SHIPYARD & ENGINEERING WORKS LIMITED**



### **INTRODUCTION**

Karachi Shipyard & Engineering Works Limited (KSEW) was established in mid-fifties as a project of Pakistan Industrial Development Corporation (PIDC) and incorporated as a public limited company in 1957. KS&EW is entirely owned by Government of Pakistan/Pakistan Navy and working as an autonomous commercial organization under Ministry of Defence Production. It is managed by a Board of Directors with Managing Director as the Chief Executive.

KS&EW is situated at west wharf Karachi and spread over an area of 71 acres. It has a large shipbuilding hall, two block fabrication areas, three shipbuilding berths, two dry docks, a well-equipped machine shop and a large grit blasting and painting facility with modern machinery for paint application under controlled environment as per international standards. A ship lift and transfer system with a lifting capacity of 7781 tons and 13 in number parking stations is being installed.

### **VISION**

To make Pakistan a leading shipbuilding country of the region in line with its true potential and ideal location, thus contributing towards our economic development and poverty alleviation.

## **MISSION**

KSEW is committed to deliver quality products built to agreed specifications on scheduled dates and at competitive prices.

## **MAIN FUNCTIONS**

### ➤ **PAKISTAN NAVY'S REQUIREMENT:**

As per Government's mandate KSEW caters for Pakistan Navy's requirements.

Additionally, KSEW undertakes commercial activities mainly shipbuilding, Ship repair and General Engineering.

### ➤ **SHIPBUILDING**

#### • **Commercial Activities**

KSEW is equipped to build all types of Marine crafts, cargo vessels, containerships, oil tanker, bulk carrier up to 26000 TDW, Harbour tugs, pilot boats, Hopper barges, Dredgers and Launcher etc.

#### • **Defence Related Activities**

KSEW has the capability of indigenous construction of Naval vessels such as Fast attack craft, Patrol boats, Gun boats Missile craft, Submarine, Frigate F22P and Fleet Tanker.

#### • **Infrastructure**

- To carryout the shipbuilding activities, KSEW has three shipbuilding berths with following sizes and capabilities.

Berth No.	Size	Max TDW
1	169 x 23 M	15000
2	118 x 23 M	6000
3	213 x 31 M	26000

- It has well equipped machine shop and has a large grit blasting and painting facility with modern machinery for paint application under control environment as per international standard.
- In order to undertake construction of F22P Frigate for Pakistan Navy, KS&EW has undergone extensive up-gradation during 2008-09. This has enhanced its capacity to compete with international contender shipbuilding industry.

## **MAJOR DEFENCE PRODUCTS MANUFACTURED BY KSEW**

### **➤ FAST ATTACK CRAFT (MISSILE)**

Multipurpose Auxiliary Craft (MPAC) is fitted with the most modern missile system. The craft has designed speed of 32 knots and maximum displacement of 250 tons. Fitted with C802 surface to surface Missile, the boat makes a lethal platform at sea.



### **➤ FAST PATROL BOAT**

A-180 tons Fast patrol boat which has been indigenously designed and built for Pakistan Navy. The craft has capable of doing max speed of 23 Knots. Its main functions are salvage, shallow water operation as well as self defence, search & Rescue operation.

➤ **F22P FRIGATE**

A multi mission conventionally powered Frigate having displacement of 2800 tons and designed for maximum speed of 29 knots. Its main roles include Air defence of force at sea, interdiction of hostile surface combats, patrolling protection of EEZ, radiate combat power in the area of interest and undertake heliborn operation.



➤ **FLOATING DOCKS**

State of Art Floating Docks were indigenously constructed at KSEW for Pak Navy. Built in various sizes ranging from 1000-4000 tons lifting capacity, these docks provide extremely sophisticated mini dockyard facilities at point of choice. This facility is extremely useful for ports having no dry docks, it can be towed & parked at small ports for use as required.



## **ACHIEVEMENTS / PROGRESS DURING THE YEAR 2015-2016**

### **ORDERS COMPLETED DURING 2015-2016**

#### **➤ 15 x BOATS BRIDGE ERECTION FOR MVRDE**

- 07 x Boats completed and delivered to client on 15 Oct 15
- 08 x Boats are ready for delivery to the client.



Oct 2015 – Rana Tanveer Hussain Federal Minister for Defence Production addressing the distinguish guests on the occasion of Handing Over of Bridge Erections Boats to Pakistan Army.

➤ **NON PRESSURE HULL CONSTRUCTION AND OUTFITTING FSTLP-II FOR MTC**

- Barge completed and delivered to client on 18 Feb 16

➤ **LANDING CRAFT MECHANIZED (LCM) FOR PAK NAVY**

- LCM built by KS&EW are suitable for following operation:
  - To transport heavy, bulky stores within harbor premises
  - To transport vehicles and ammunition
  - To transport personnel within harbor premises
- LCM No. 1 was delivered on 26 Mar 16 and LCM No. 2 was delivered to client 15 April 16.



## **NEW ORDERS RECEIVED DURING 2015-2016**

### ➤ **01 x Multipurpose Barge for PN**

- Multipurpose barge is suitable for following operations
  - To collect compensated water from submarine fuel tanks and remove fuel contents to avoid pollution in harbor.
  - Diesel storage and supply.
- Barge is to be completed within a period of 10 months time from contract effective date which is 01 Jul 16.

### ➤ **02 x 32 TBP Tugs for PN**

- Tugs are suitable for the following operation:
  - To assist berthing / un berthing towing maneuvering etc of ships, docks and other vessels.
- Both tugs are to be completed within a period of 19 months and 22 months respectively from contract effective date.



- **Fendering Arrangement for South Pier at JNB Ormara**

The work is to be completed within a period of 12 months time from the date of signing of contract i.e upto 06 Mar 17.

- **4 x New Generation Submarines**

MoDP/PN has awarded contract for construction of 4 x AIP Submarines to Karachi Shipyard. M/s China Shipbuilding and Offshore Company will provide TDP, KoM and Technical Assistance for these Submarines under ToT arrangement. Extensive upgradation of yard and training will be imparted to KS&EW personnel. Steel cutting of first submarine will be held on 26 Oct 2020.

## **PROGRESS OF ONGOING ORDERS**

- 01 x Fleet Tanker for : Pak (Navy)
  - Hull work completed outfitting work is in progress
  - Vessel launched on 19 Aug 16, 02 months ahead of contractual timeline
  - Scheduled delivery of vessel is April 17.
  
- 01 x Azmat Class Fast Attack Craft Missile for Pak (Navy) – FAC(M) – 3
  - Hull work at berth is near completion and outfitting is in progress
  - Vessel was launched on 17 Sep 16.



- **01 x FAST ATTACK CRAFT FAC (M) NO. 4**

Contract for 01 x Fast Attack Craft (Missile) for PN signed on 13 Jun 14. The vessel will be delivered within 45 months from contract effective date which is 02 Oct 14. Indigenous design work in MTC is in progress. Material is in procurement process. Delivery date of craft is 01 Jul 18.



May 2016 – Prof Ahsan Iqbal, Federal Minister for Planning, Development & Reform (witnessing the signing of Milestone Certificate on the occasion of Steel Cutting Ceremony of 600 Tons MPV for Pakistan Maritime Security Agency)

- **CONSTRUCTION OF 01 x 600 TONS MPV AND 01 x 1500 TONS MPV FOR PMSA**

- Steel cutting of 600 tons MPV and block fabrication is in progress. Keel laying was held on 17 Sep 16.
- Steel cutting of 1500 tons MPV started on 24 Aug 16. Work is in progress.



- **FENDERING ARRANGEMENT FOR SOUTH PIER AT JNB ORMARA FOR MES**

Work is in progress at site. The work is to be completed within a period of 12 months from signing of contract i.e. upto 06 Mar 17.

## **PROJECTS IN PIPE LINE**

- Construction of 1 No. survey vessel for PN.
- Construction of Submarine Rescue & Salvage Vessel for Pak Navy.
- Construction of corvettes for Pak Navy.
- Construction of floating pantones for Gawadar Port.
- Construction of 04 Hopper Barges for KPT.
- Construction of Survey vessel for KPT.
- Construction of 02 Research survey vessels for Maritime Fisheries Department.
- Construction of Floating Dock for KPT.
- Construction of 2 Nos – 75 Bollard Pull Tug for KPT.
- Construction of 2 Nos - LNG compatible tugs (2 x 75 tons; for PQA).
- Construction of 01 No Pilot Boat for PQA

## **SHIP REPAIRS**

Ship Repair Division is one of the important Main Business Units of KS&EW which undertakes most hectic activities at the yard. Until now, KSEW has repaired over 5000 Ships with an average about 22-25 vessels per year. Pakistan Navy, Port Authorities (KPT & PQA), Maritime Security Agency and many renowned Navies of the world and shipping lines are KSEW's regular customers. Both dry docks remain occupied throughout the year. In fact a number of ships remain in queue for docking.



Modern and well-planned facilities exist in KSEW for undertaking above water & under water repairs of ships and off shore drilling rigs. The ancillary facilities include shore

electricity supply of 110/220 V DC 220/380/400 V AC cycles, compressed air, oxygen, acetylene gas and natural gas in pipelines and cylinders as well as fresh and salt water firefighting equipment. A well equipped machine shop is in attendance besides other facilities. For under water repairs, KSEW has two dry docks with the following specifications.

<u>Dry</u>	<u>Length x Width</u>	<u>Crane</u>	<u>Maximum TDW</u>
1.	189 x 26m	30 & 10 tons	26,000
2.	171 x 24m	15 & 10 tons	18,000

For above water repairs, quay walls of 500 meter on the northern side and 165 meter on the southern side are available. Above water repairs for vessel of any size and dead weight can be undertaken not only at KSEW premises but also in Karachi harbor and even at the outer anchorage, KSEW carried out emergency repairs on a 250,000 TDW vessel at outer anchorage, as the vessel because of the size could not enter Karachi Harbor. Similarly any alternation / conversion on hull / super structure can be undertaken. For boilers, insulation, lagging, flooring & brick work can be carried out at the yard.

Facilities exist for repairs to steam and motor vessels both main and auxiliary machinery and all types of marine and stationary boilers.

### **QUALITY OF WORKMANSHIP**

KSEW is integrated management system certified (i.e ISO 9001 2008, ISO 14001 2004 and OHSAS 18001 2007) and maintains comprehensive policies and procedures designed to ensure high quality results every time on every project. Further repair work is carried out upto entire satisfaction of 3<sup>rd</sup> party inspection i.e Lloyds, BV etc surveyors.



### **SHPREPAIR DIVISION CAPABILITIES**

Ship repair division is capable to undertake following ship repair works as per international marine standards:

- Overhauling & repair of all types of engines, generators, hydraulic equipment, ship auxiliaries, pumps, valves, compressors, etc.
- Shafting work which includes repairing of rudders, propellers, VSP system bow thruster system and Z pillar system etc.
- Installation, servicing & repairing all type of piping system.
- Installation & repairing of AC & refrigeration system.
- Grit (Abrasive) blasting hydro blasting
- Airless & conventional spray painting.
- Ship hull & deck repair.
- Construction of tanks, stairs foundation trunkings.
- Repair / renewal of ships fenders.
- Installation of Zinc Anodes.



## **SHIP REPAIR WORK SHOPS**

Ship Repair Division is facilitated with well-equipped machine shop, light fabrication shop, fitting shop, pipe shop, electric shop and carpentry shop.

## **REPAIRING OF FOREIGN VESSELS (DURING LAST 8 YEARS)**

KSEW has successfully repaired a number of foreign vessels of various countries and some of them are listed below:

a.	FAIR JULY	(UAE)
b.	HANGJUN 1007	Peoples Republic of China
c.	HANGJUN 1006	Peoples Republic of China
d.	MV ZARA	Panama
e.	MV NYZDAN	Korea
f.	MT AYFERKA	Turkey
g.	MV MUSTAFA BAY	Turkey
h.	MV CAPTAIN MARKUS	Turkey
i.	ZHONG GUO SHUI DIAN	Peoples Republic of China
j.	LST BILQUIS	Yemen
k.	TUG SMIT LOIRE	Holland
l.	CHINESE DREDGER J06	Peoples Republic of China
m.	KARINA DANICA	Holland
n.	CHINESE DREDGER J05	Peoples Republic of China
o.	MV SHARIEF VERVE	UAE
p.	MV BATANG ANAI	Peoples Republic of China
q.	ANCHOR BOAT	Peoples Republic of China
r.	MV SHRIEF PILOT	UAE
s.	DONG HAIJUN 7001	Peoples Republic of China
t.	CSD J09	Peoples Republic of China
u.	DONG HAIJUN 7001	Peoples Republic of China
v.	LAMNALCO ADEN	Singapore

## **REPAIR OF SHIPS OF PAK NAVY, PMSA, PQA, KPT & GPA (DURING 2015-16)**

<b>S.No</b>	<b>Name of Vessel</b>	<b>Client</b>
<b>1</b>	TSHD ABUL	KPT
<b>2</b>	MT SHEHZORE	KPT
<b>3</b>	DT MAZDOOR	KPT
<b>4</b>	SHB SEHWAN	KPT
<b>5</b>	PNS TARIQ	PN
<b>6</b>	PNS ALAMGIR	PN
<b>7</b>	PNS ZULFIQAR	PN
<b>8</b>	PNS SAIF	PN
<b>9</b>	PMSS BARKAT	PMSA
<b>10</b>	PMSS NUSRAT	PMSA
<b>11</b>	DREDGER J09	CHINA
<b>12</b>	TUG BOAT T02	CHINA
<b>13</b>	MT LAMNALCO	YEMEN
<b>14</b>	ENGRO POLYMERIZE (BIN QASIM)	ON SITE JOB

### **General Engineering Division**

KSEW's General Engineering Division has made a significant role in the industrialization process of the country. The division undertakes the construction of Gates for Barrages & Dams, complete Sugar Plants and their machinery & equipment, Cement Mill machinery & equipment, Water Tube & Package type Fire Tube Boilers, Electric Overhead Cranes, Luffing Cranes & Gantry Cranes, LPG Storage Tanks, Drilling Rigs, Mobile & Skid Mounted Caravans (living houses & offices) HT & LT Transmission Towers, Flood Light Towers, Overhead Pedestrian Bridges, Sewage Treatment Plants, Steel Structural work for Power Plants, Cast Iron, Steel & non ferrous Castings.

To overcome the increased load of Shipbuilding division of KSEW, G.E. Division has also put its share towards shipbuilding as well by constructing structural parts of various submarines & other ships & vessels of Pakistan Navy.

### **Orders Completed During (FY) 2015-2016**

- Manufacture & Supply of Kiln Shell for Attock Cement Co.
- Fabrication & Supply of 02 in Nos. Towed Target Platform for Maritime Technology Complex (MTC).
- Bending of Ballast Furnace Shell Plates (40 mm thick) for Pakistan Steel Mill.
- Manufacture & Supply of 06 Nos. C.S. Mill Pinion for Chambar Sugar Mills.
- Manufacture & Supply of 22 in Nos. C.I. Alloy Roller Shells for various Sugar Mills.
- Manufacture & Supply of Super Heater Coils for Al-Abbas Sugar Mills.
- Supply, Ultrasonic Testing and machining of Mill Roller Shaft for Habib Sugar Mills.
- Stress Relieving and Machining of Hino IMV Frame Assembly for Aftab Engineering Services (Pvt) Ltd.
- Stress Relieving of 3 Nos. Shafts for Hudabiya Engineering Services.
- Repair of Mast Rotary Drilling Rig for IVCC Engineering (Pvt) Ltd.
- Skimming/Machining work of MEP Armature of PNS/M Hashmat.
- Repair of Cracked Shaft for Larr Sugar Mills
- Removal of Existing Shaft from Beater Roller and fitting of new shaft for Pakistan Security Papers Ltd.
- Machining and Bending of Steel Plate for GM (SMM) PN Dockyard.
- Shifting of Luffing Crane No. 5 (15 Tons Capacity) from outside of Dry Dock to between Dry Dock 1 & 2.
- Fabrication of M.S Scaffolding Planks 500 with Clamps for SBD. Div.

### **Orders in Hand**

- Fabrication of Outer Hull Structure (Ballast Panels), Aluminium Casing and Sail Assembly of PNS/M. Hurmat for Pakistan Navy.
- Manufacture, Supply and Transportation of Mud Suction Tank for Pakistan Oil Fields Ltd. Rawalpindi.
- 2 x 40/5 Ton E.O.H Cranes for Loco Shop Pakistan Railway Lahore.
- 1 x 30/5 Ton E.O.H Crane for Loco Shop Pakistan Railway Lahore.
- 1 x 20/5 Ton E.O.H Crane for Diesel Shed Pakistan Railway Lahore.
- 1 x 5 Ton E.O.H Crane for Diesel Shed Pakistan Railway Lahore.
- 2 x 5 Ton Electrical Hoist for Diesel Shed Pakistan Railway Lahore
- Re-Shelling of 25 Nos. Sugar Mill Rollers for Various Sugar Mills.
- Shafts for Sugar Rollers for Naudero, Faran & Habib Sugar Mills.
- Refurbishment/Shifting of 30 tons Luffing Crane No. 03 for SRD.

- Manufacturing, Installation and Commissioning of 1 x 05 tons capacity Electric Over Head Crane for SB Hall of SB Div.
- Manufacturing, Installation and Commissioning of 2 x 10 Tons capacity double Girder Electric Over Head Cranes for SWCD and Pre-Fabrication Shop of SB Div.
- Manufacturing, Installation and Commissioning of 25/5 Tons capacity double Girder Electric Over Head Crane for Machine Shop/ Foundry.
- Fabrication of M.S Scaffolding Planks 200 with Clamps for SB Div.
- Casting of Sinker Weights.

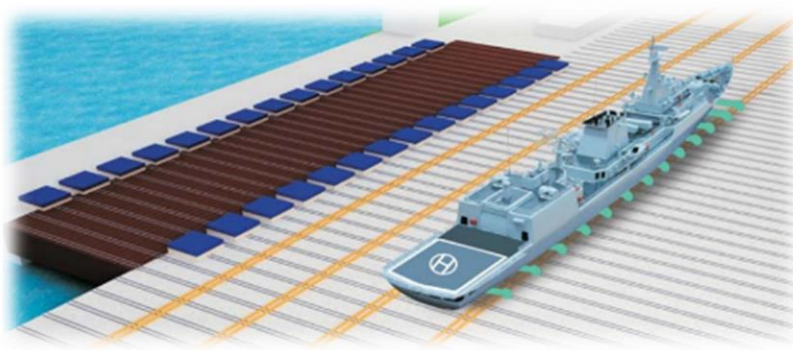
### **8.3 Future Projects**

- Manufacture, Supply, Erection & Commissioning of 2 x 55/10 Ton capacity Electric Over Head Cranes for Project Director 800 HCW Pakistan Railway Lahore.
- Manufacture, Supply, Erection & Commissioning of 2 x 40/5 Ton capacity Electric Over Head Cranes for Project Director 800 HCW Pakistan Railway Lahore.
- Manufacture, Supply, Erection & Commissioning of 2 x 40/5 Ton capacity Electric Over Head Cranes for Pakistan Railway Rawalpindi.
- Manufacture, Supply, Erection & Commissioning of 1 x 10/3 Ton capacity Electric Over Head Cranes for Loco Shop Pakistan Railway Lahore.
- Manufacture & Installation of the components, associated fitting & Fixture of Ship Lift & Ship Transfer System at KSEW.
- Construction, Loading & Unloading of 8,800 Ton Dead Weight for Load Testing of Ship Lift & Ship Transfer System.
- Water Treatment Plant for Ship Lift & Transfer System.
- Fabrication of Fire Fighting Training Mockup for CNBC School, Karsaz.
- Refurbishment of 40 Ton Capacity at Karachi Port Trust West Wharf.
- Manufacture & Supply of Sugar Machinery Items for Various Sugar Mills.
- Manufacture & Supply of C.I. Alloy Roller Shells for Various Sugar Mills.
- Fabrication of Ammunition Lockers of PNS/M Hashmat for PN Dockyard.
- Fabrication of Hull, Aluminium Casing and complete Sail Assembly of PNS HUMZA for PN Dockyard.

## **SHIP LIFT AND TRANSFER SYSTEM**

The project envisages enhancement and upgrade over existing Ship Building and Ship Repair capacities of Karachi Shipyard and Engineering Works, by introducing new technologies and state of the art machineries and systems. The new Ship Lift system's 125 meters long rigid steel platform, connected with 30 winches will have capacity to lift any vessel up to 8,000 tonnes out of sea and place them on one of the 13 custom built repair stations on land side, through an elaborately rail-linked Transfer System.

Ship Lift and Transfer system will increase business capacity and efficiency of ship turnover by three times. Transfer of Technology has been integral part of project concept and maintenance of the system will be ensured indigenously through well trained organic teams. Overall the installation of the system has been determined as a paradigm shift for KS&EW as new level of efficiencies would enable generation of higher revenue at lower cost, while also supporting all present and future national maritime and defense objectives within shipyard's capacity range. The work generated by enhancing the ship building and repair capacity will out flow to the public and private industrial sectors, thereby providing stimulus to local industry and increase GDP as well as bringing new employment opportunities.



Submarines construction and launching will also be possible for the first time in the country after completion of the project. Accommodating demands of foreign commercial ships and warships will now be possible due to expanded ship repair capacity at Karachi Shipyard. This will become a source of earning of significant amount of foreign exchange.

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