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C.P.U. NO. 888

COMMITTEE ON PUBLIC UNDERTAKINGS

(2004 – 2005)

(FOURTEENTH LOK SABHA)

**THIRD
STUDY TOUR REPORT
ON
BHARAT ELECTRONICS LIMITED**

Laid in the Lok Sabha on **22.12.2004**

Laid in the Rajya Sabha on **22.12.2004**

LOK SABHA SECRETARIAT

NEW DELHI

December 2004 / Agrahayana 1926 (S)

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COMPOSITION OF COMMITTEE ON PUBLIC UNDERTAKINGS
(2004 – 2005)

CHAIRMAN

Shri Rupchand Pal

MEMBERS, LOK SABHA

2. Shri Manoranjan Bhakta
3. Shri Gurudas Dasgupta
4. Shri P. S. Gadhavi
5. Shri Suresh Kalmadi
6. Dr. Vallabhabhai Kathiria
7. Smt. Preneet Kaur
8. Shri Sushil Kumar Modi
9. Shri Kashiram Rana
10. Shri Mohan Rawale
11. Shri Rajiv Ranjan Singh
12. Shri Bagun Sumbrui
13. Shri Rajesh Verma
14. Shri Parasnath Yadav
15. Shri Ram Kripal Yadav

**MEMBERS, RAJYA
SABHA**

16. Prof. Ram Deo Bhandary
17. Shri Ajay Maroo
18. Shri Pyarimohan Mohapatra
19. Shri Jibon Roy
20. Shri Shahid Siddiqui
21. Smt. Ambika Soni
22. Shri Dinesh Trivedi

SECRETARIAT

1. Shri John Joseph	Additional Secretary
2. Shri S Bal Shekar,	Director
3. Shri Raj Kumar,	Under Secretary

INTRODUCTION

In pursuance of the procedure adopted under Rule 281 of the Rules of Procedure and Conduct of Business for laying the Study Tour Reports on the Tables of both the Houses of Parliament, I, Chairman, Committee on Public Undertakings having been authorised by the Committee to lay the Study Tour Report on their behalf, lay this Third Study Tour Report of the Committee on their discussions with the officials of Bharat Electronics Limited.

2. The Committee held discussions with the officials at Bangalore on October 15, 2004. A copy of the tour programme is annexed (Annexure-I).
3. The Committee considered and approved the Report at their sitting held on 20th December, 2004.
4. The Committee wish to express their thanks to Bharat Electronics Limited for providing facilities during the visit of the Committee and for supplying necessary material and information required in connection with the Study Tour.
5. They would also like to place on record their sense of appreciation for the invaluable assistance rendered to them by the officials of the Lok Sabha Secretariat attached to the Committee.

New Delhi
20 December, 2004
29 Agrahayana 1926 (S)

RUPCHAND PAL
CHAIRMAN
COMMITTEE ON PUBLIC UNDERTAKINGS

(v)

STUDY TOUR NOTES OF THE COMMITTEE ON PUBLIC UNDERTAKINGS'

DISCUSSION WITH THE REPRESENTATIVES OF BHARAT ELECTRONICS LIMITED AT BANGALORE ON 15TH OCTOBER, 2004

At the outset, the Chairman, Committee on Public Undertakings(COPU) made opening remarks and requested the Chairman-and-Managing Director, Bharat Electronics Limited (BEL) to introduce himself and his colleagues to the Committee. The Chairman, COPU also requested him to give a brief account of the working of the Company.

2. Following the introduction of officials of the Company, it has been informed to the Committee that Bharat Electronics Limited was established at Bangalore by the Government of India in the year 1954. Initially with the technical collaboration from M/s. CSF, France, BEL manufactured Transreceivers, used by the Indian Army for radio communication. Since then, to cater to the growing needs of the Defence Services in the area of Electronics, the company has progressed to manufacture high-tech products like Radars, Sonars, Communication equipment, Electronic Warfare equipment, Opto electronics, Tank Electronics, Components etc. BEL pioneered the growth of the Electronic 'Components' industry in the country by setting up the manufacture of Transmitting Tubes, Microwaves Tubes, X-ray Tubes, Vacuum Interrupters, Semiconductor Devices, Integrated Circuits, Hybrid Micro Circuits, Liquid Crystal Displays, Solar Cells & Systems etc.

3. The Committee have also been informed that BEL has played a significant role in the Civilian 'Professional Electronics' sector of the country, particularly for the Ministry of Information and Broadcasting, by supplying bulk of its infrastructure requirements for Radio and TV Broadcasting, like Studio Equipment, Transmitters,

Satellite Uplinks, OB Vans etc. In the field of Telecommunications too, BEL had an important role to play, particularly in the area of transmission and switching equipment. BEL contributed in the modernization of the Airports through supply of Primary/Secondary Surveillance Radars to Airports Authority of India. Some of the recent additions to BEL's product-mix in the Civil Sector include Electronic Voting Machines (EVMs), Simputers & Set Top Boxes. BEL has totally supplied around 5 lakh EVMs to Election Commission and a record number of 2.31 lakh EVMs were supplied during 2003-2004, which enabled Election Commission to conduct the recent polls through use of EVMs throughout the country.

4. The Committee have further been informed that the Company has 9 operating units and 31 manufacturing divisions. The major products manufactured in the operating units are given below:-

Sl.	Unit	Products
1.	Bangalore	Military Communication & Electronic Warfare Systems, Radars, Naval Systems and Sonars, Sound & Vision Broadcast Equipment, Electronic Voting Machines, Simputers and Components
2.	Ghaziabad	Radars & Micro Wave Communication Equipment, Antenna
3.	Pune	Batteries, X-ray Tubes, Electro Optics, Laser Range Finders & Target Designators
4.	Machilipatnam	Night Vision Devices, Thermal Imager and Surgical Microscopes
5.	Panchkula	Military Communication Equipment
6.	Kotdwara	Defence Communication Equipment and Telecom Products for Civil & Defence
7.	Navi Mumbai	Hydraulics for Stabilizers, Shelters, Mast, Flycatcher Antenna System
8.	Chennai	Tank Electronics, Stabilizer Drives, ALNS, Integrated Fire Control Systems, Gun Upgrades
9.	Hyderabad	Electronic Warfare Equipment

The largest Unit, the Bangalore Complex, has been divided into six Strategic Business Units (SBUs) of which the Military Communication & Electronic Warfare Equipment, Military Radars & the Naval Systems Divisions focus respectively on Communication equipment to Army, Radar Systems to Army & Naval Systems to Navy. Other SBUs cater to Telecom & Broadcasting System, Components and Export Manufacturing.

5. It was pointed out by the Committee that the Company don't have factories in most of Northern India. When asked whether there is any proposal to open a new manufacturing unit in the Northern India, the Chairman and Managing Director of the Company replied in the negative.

6. The Committee have been informed that the customer profile is broadly classified into two groups viz., Defence & Non-Defence [Civil]. While the Army, Navy & Air Force constitute the Defence Services, other customers like Defence Public Sector Undertakings, - Bharat Dynamics Limited, the three Ship Building Companies viz., Mazagon Dock Limited, Garden Reach Shipbuilding and Engineers, Goa shipyard Limited and Ordnance Factories viz, HVF, Avadi, Medak, etc. procure items from BEL for incorporation in the systems viz., Tanks/Ships manufactured by them for eventual supply to Defence Services. Apart from this, Paramilitary Forces like Border Security Force, Assam Rifles, Central Industrial Security Force etc., also procure items from BEL. The products supplied to Defence customers are given in Annexure-I.

The Non-Defence (Civil) customers include All India Radio & Doordarshan and Bharat Sanchar Nigam Limited (BSNL), Airports Authority of India, Indian Space Research Organisation, Railways, Election Commission of India, State Police Department etc. Manufacturers of Switch Gears and Consumer electronic goods like Radio, TV & other products constitute the customer profile for components. The products supplied to Non-Defence (civil) customers are given in Annexure-II.

7. The following table shows the targets and actuals in respect of Sales and Profit (after tax) of the Company for the last 5 years from 1999-2000 to 2003-2004:-

Year	Particulars				(Rs. In lakh)	
	Sales		Profit After Tax			
	Target (RE)	Actuals	Target (RE)	Actuals		
1990-2000	146857.09	149414.58	8018.53	10793.18		
2000-2001	162500.00	171532.72	11963.92	15521.45		
2001-2002	180000.00	194198.65	14668.15	19968.54		
2002-2003	225000.00	250801.50	21203.83	26061.23		
2003-2004	275000.00	279859.43	27749.07	31609.82		

The sales of the Company has increased from Rs. 1494 crore in 1999-2000 to Rs. 2799 crore in 2003-2004. The profit (after tax) has increased from Rs. 108 crore to Rs. 316 crore.

8. The information furnished to the Committee regarding the break-up of Defence and Civil Sales and its percentage to the total sales during the years from 1999-2000 to 2003-2004, is as under:-

Year	Total Sales	Defence		Civil		Rs. In Crore
		SALES	%	SALES	%	
1999-2000	1494	1091	73%	403	27%	
2000-2001	1715	1226	71%	489	29%	
2001-2002	1942	1398	72%	544	28%	
2002-2003	2508	2007	80%	501	20%	
2003-2004	2799	2157	77%	642	23%	

9. On the question of Export of the BEL's products, it has been informed to the Committee that the Company is focusing on export as a major thrust area for growth. Market development activities are being rigorously pursued in SAARC countries, African continent and South East Asia region, apart from work share arrangements with collaborators in Israel & Europe. Defence equipment and spares to Egypt, Switzerland, Israel & Indonesia, Non-Defence Products to Malaysia, Azerbaijan and MgMnO₂ Batteries to USA were the major export orders executed during 2003-2004. BEL achieved export sales of US\$ 9.08 Million for the year 2003-04.

The Company has also taken several steps to develop exports through –

- (i) Inter – governmental Co-operations for Defence Exports.
- (ii) Extending credit line through Government / Exim Bank, seeking Government Subsidies
- (iii) Tie-ups with local Government Companies in target countries
- (iv) Offsets arrangements while negotiating ToT agreements
- (v) Counter trade with the help of STC
- (vi) Closer liaisoning with Indian Missions abroad
- (vii) Potential business to be pursued more pro-actively through
 - (a) Product demos / participation in exhibitions
 - (b) Write-ups / advertisements in select export oriented journals / directories
 - (c) Follow-up visits
- (viii) Appointing effective agents in target countries.

10. The Committee have also been informed that BEL has set up 'State-of-the-art' manufacturing, testing & quality assurance facilities in all its Units and has been continuously updating / modernizing them. Computerization of on-line Materials Management, back-up support from Standardization, Technical Information and Documentation, Computer Aided Design and Manufacture have enabled BEL to be a modern professional electronic Company.

11. R&D expenditure of BEL for the last five years is given below:

Year	Value (Rs. In crore)
1999-2000	77.00
2000-2001	89.27
2001-2002	89.56
2002-2003	108.69
2003-2004	130.61

The Company is spending about 5% of its turnover on R&D. About 65% of the Company's turnover is with indigenous technology developed in-house and provided by DRDO laboratories. Also, the expertise gained by BEL due to its operations in the Defence Sector has resulted in the emergence of spin-off technologies.

12. The Company has set up in-house Research & Development groups in all the Units in the respective product areas. In addition to the Research & Development groups in all the Units, the Company has set up two Central Research Laboratories (CRL) at Bangalore and Ghaziabad for undertaking research in futuristic areas with a view to identify and realize latest technologies relevant to the company's products. The intention is to make Bharat Electronics a fountainhead of Electronics technology, thus improving its leadership position within the Indian electronics industry and making it an international electronics company.

13. On the question of diversification, the Committee have been informed that the Company is continuously upgrading its technologies and introducing new products, every year, in its efforts to be the leader in professional electronics. Some of the major areas of diversification are as under:

- (i) Telecommunication – Switching Equipment, Access Products, Point-to-Multipoint Radios, Mobile Satcom
- (ii) Modernisation of Airports – ASR/MSSR Radars, Display Systems
- (iii) Satellite communication for Doordarshan, BSNL, Corporate Houses, Distance Education and Pay Loads for ISRO
- (iv) Products for Ministry of Home Affairs – Secure Message Terminals, Transreceivers, Night Vision Devices, SECTEL, SECFAK etc.
- (v) Compact Vacuum Interrupter Tubes
- (vi) Telemedicine System
- (vii) Vehicle Tracking & Monitoring System
- (viii) Solar Power Plant & Solar Products

14. Regarding Distance Education, it has been explained to the Committee that the Distance Education Market, in Government Sector has received a boost with the launching of EDUSAT. ISRO plans to facilitate the availability of ground segment at a fast pace for effective utilization of the Twelve Transponders allocated exclusively for Distance Education Services. The objective is to position about 40 Mini-Network with one minimum configuration Hub and 100-200 VSATs. Each Mini-network is aimed to provide Service to one State. IGNOU and MHRD are key members of the EDUSAT Committee. IGNOU is providing the content and MHRD the direction to

the Education Programme targeted at, Primary and Secondary Schools. The VSAT portion of the Network is estimated to cost about Rs. 100 to 120 crore.

BEL has earlier, experience in the APNET project which involves running an Education Network on a day-to-day basis. The size of the Network is 1800 nodes costing about Rs. 40 crore and provides Education and Training Services for the Government of Andhra Pradesh. Government Engineering and Polytechnic Colleges. The Network has the capability to broadcast 5 channels concurrently. BEL is expecting an order from the Andhra Pradesh Government/ISRO for the expansion of the APNET to provide more value added Services. On the National front, ISRO is planning to Tender the requirement for the EDUSAT ground Network. BEL is closely working with ISRO to offer the most cost effective solution for EDUSAT.

15. When enquired about the Vehicle Tracking and Monitoring System, it has been informed to the Committee that BEL entered the Vehicle Tracking business by developing and supplying a Fleet Management System to Bangalore Metropolitan Transport Corporation (BMTC) for 200 Buses at a cost of Rs. 20 Lakh. This was an Off-line System, involving down loading of the Bus Data on daily basis. BEL, subsequently developed systems for integration with GSM Network and VHF / UHF Radios through appropriate Modems. For all India coverage, BEL developed a Satellite based product called Reporting Terminal by integrating GPS with one way Data Messaging terminal. 105 numbers of this product have been supplied to the Meteorological Department through a Private Company. Defence forces, particularly

Navy is in the process of tendering their requirements of Reporting Terminals. BEL is actively pursuing the Vehicle Tracking and Monitoring Market.

16. On the question of Tele-medicine System, it has been intimated to the Committee that BEL was an early entrant into the Tele-medicine facility for Remote Health care. The projects supplied so far are listed below:

Tele-medicine System for ELCOT

- (i) BEL provided Turnkey system including supply of Tele-medicine system
- (ii) Implemented Tele-medicine system between Government Hospital, Chennai and Wallajah Rural Hospital through ISDN line.
- (iii) The project cost is Rs. 80 lakh and has been executed during August-September, 2000.

Tele-medicine System for ISRO

Implemented Tele-medicine systems for ISRO for the following sites through VSAT.

- Sri Ramachandra Medical College, Chennai to GB Pant Hospital, Port Blair.
- All India Institute of Medical Sciences, New Delhi to SNM Hospital, Ladakh.
- Amrita Hospital, Kochi to Government Hospital, Kavaratti (Lakshadweep).
- Government Hospital Guwahati to Government Hospital, Car Nicobar (Andaman Nicobar Islands)

(ii) Total project cost is Rs. 40 lakh, which has been executed during April-October 2002.

It has also been informed that the approximate business realized by BEL so far is Rs. 120 lakh. BEL is also participating in large tenders for Tele-medicine Networks being issued by ISRO. BEL is also addressing an important tender in Maharashtra for Hospital information and Management System (HMIS) for Hospitals, which has Tele-medicine as one of the applications. The Army / Air Force requirement of HMIS is currently under planning and BEL is one of the short-listed vendors to address this requirement.

17. When enquired about the Solar Power Systems and Products, the Committee have been apprised that BEL was successful in realizing significant business in Solar Powered Traffic Lights both from Bangalore City Police and for other Cities such as Hyderabad and New Delhi. The Solar Power Lanterns and Street-light were products aimed at the Rural markets. A combined market of Rs. 635 lakh was realized through these products in 2003-04 and Rs. 242 lakh during current year, so far. Potential orders values at Rs. 17.3 crore are in various tender evaluation stages by customers. Various Electricity Boards and Ministries of Renewable Energy, Commissions under State Governments, Ministry of Non-conventional Energy (MNES) under Central Government have large requirements of Solar Power Plants. BEL has realized orders for Rs. 908 lakh in this segment. BEL has invested in setting up a plant for manufacture of multi-crystalline Solar Power Cells and would offer higher value addition in future supplies of Solar Power Plants and other Solar products.

18. When asked about the future plans of the Company in order to meet the requirements of the customer / market, the Committee have been informed that the Company has adopted a multipronged strategy to address the future business plans of the company based on the futuristic requirements of the customer / market. To meet this challenging task, BEL is developing and coming out with newer products by the following approach:

- (i) Development of new products through in-house R&D.
- (ii) Development of variants / upgrades of existing products.
- (iii) Tying up with Indian Research Organisations for development of new products.
- (iv) Tying up with collaboration / partners identified by customers for technology transfer.
- (v) Providing turnkey system solutions.

With a view to increase business, some of the areas on which BEL is closely working are :-

- (i) Futuristic Radars for Army, Navy and Air Force.
- (ii) Hand Held Frequency Hopping and Armoured Fighting Vehicle (AFV) radios
- (iii) Electronic Warfare (EW) System for Defence & Para-military Force.
- (iv) Tank Upgrade Programme
- (v) Gun Upgrade Programme for the Army
- (vi) Battle Field Management System
- (vii) Cellular Antenna, Thermal Imaging and Night Vision products

- (viii) Laser Based products
- (ix) System oriented projects like APNet, POLNET
- (x) Increasing volume of export business
- (xi) Civilian Products like Set Top Box for DTH & Cable TV, Simputer, Solar Power Plant & Solar Products, Smart Cards.

19. When enquired about the Smart Card System, the Committee have informed that BEL has been one of the early entrants in the Smart Card System Business. The first few projects were centered around Attendance Registration, for BEL's own Units and Factories of Ordnance Factory Board. Subsequently, BEL was successful in securing a pilot project for Citizenship Card which was implemented for the State of Tripura. List of realized and potential projects being pursued are given below:

Smart Card System and other related projects – Supply Record

Sl. No.	Customer Name	Item supplied / year of supply	Qty. supplied	No. of Staff	Value
1.	Central Research Laboratory	Attendance & Bio-metric Readers Year 2001	5	150	10.0 L
2	BEL, Panchkula		10	600	20.0 L
3.	BEL, Chennai	Attendance and Bio-metric Readers Year 2001		400	10.0 L
4.	International Advanced Research Centre for Metallurgy and New Materials (ARCI), Hyderabad	Smart Card Readers Year 2002	2	125	10.0 L
5.	Ordnance Factory, Medak, Andhra Pradesh	Attendance and Bio-metric Readers Under Installation	100	3000	1.68 Cr.
6.	Ordnance Factory Board, Kolkata	Attendance and Bio-metric Readers Under Installation	30	7000	69.0 L
7.	Govt. of Assam and Tripura	Multinational Identity Card project (MNIC)	-	-	6.2 Cr.

Project being pursued

Sl. No.	Customer Name	Item supplied / year of supply	Qty. supplied	No. of Staff	Value
1.	MHA	Project under tendering	40000	1 building	6.0 Cr.
2.	MHA	Project under tendering		All buildings	40.0 Cr.
3.	OFB Jabalpur	Project under tendering			50.0L

20. About indigenisation / standardization / cost reduction, the Committee have been informed that indigenisation is a continuing activity in BEL to conserve foreign exchange and also as a measure of self-reliance. Raw materials, components and Sub-assemblies are covered under this activity. In addition, the company also encourages indigenous development and manufacture of capital equipment through its own Projects & Consultancy Group.

The Company has been systematically indigenising the components & sub-assemblies of the Transfer of Technology (ToT) products in a phased manner, in order to avoid over-dependence of the foreign sources on a continuous basis, overcome possible sanction related issues and ensure a base for providing product support to customers during the entire life of the product.

Specific thrust has been given to cost reduction in all areas of activity. Task Forces have been formed in all the Units to address areas like indigenisation, design change, alternate sourcing, alternate components, energy conservation etc. This has helped in significant cost reduction in all the Units of the Company. Because of BEL's continuous cost reduction efforts, it could contain the cost escalations and

could absorb the usual escalations due to inflation, exchange rate variation etc., and offer the products with least or no escalations over the last supply prices.

21. When enquired whether the Company has sought any assistance from the Government for its projects, it has been informed to the Committee that the Company has sought Government funding for the following projects:

- (i) Establishment of Micro & Nano-technology – Design, Fabrication & Testing Facilities at BEL, Bangalore – Rs. 150 crore.
- (ii) Establishment of facilities with ToT for manufacture of Infra-Red (IR) Detectors & Detector Dewar Cooler Assembly (DDCA) for Thermal Imaging Equipment at BEL, Bangalore - Rs. 250 crore.
- (iii) Establishment of facility for manufacture of multijunction Gallium Arsenide based Solar Cells at BEL, Bangalore - Rs. 155 crore.
- (iv) Upgradation of technology at BEL Optronics Limited, Pune to manufacture Super Gen Image Intensifier Tubes and Micro Channel Plates for Night Vision Equipment – Rs. 120 core.

22. As per the information furnished to the Committee, the Board of Directors of the Company consists of Seven(7) Functional Directors including Chairman and Managing Director, six (6) Government Directors and three(3) Non-official Part-Time

Directors. As on 30.9.2004, the staff strength of the Company was 12877. The break-up of the staff strength in various units / offices of the Company is as under:

Factories / offices	Strength (As on 30.9.2004)
Bangalore	6532
Ghaziabad	2626
Pune	315
Machilipatnam	419
Panchkula	636
Kotdwara	632
Navi Mumbai	503
Chennai	248
Hyderabad	423
CO, ROs & CRLs	543
Total	12877

The Committee have been informed that in some of the units / factories namely Ghaziabad, Panchkula, Kotdwara, Chennai and Pune, there is surplus capacity .

23. When asked whether the Company have engaged contract/casual manpower, it has been intimated to the Committee that the Company have not engaged any casual labourers. However, they have engaged contract labourers through the contractors who are holding license from the appropriate authorities. The total strength of contract labourers engaged in BEL is around 1990 in all the nine units. The contract labourers are mainly utilised for cleaning jobs, horticulture, Estate maintenance, Estate Security and other low end jobs.

The Company has been paying minimum wages as notified by the State Government from time to time and ensuring that the same has been paid before the authorized person of the Company every month. As a principal employer, BEL ensures that all contract labourers are covered under the Provident Fund & Other Miscellaneous Provisions Act and the Employees' State Insurance Act as per the statutory provisions. The contract labourers are also provided subsidized canteen and transport facility. They are also granted leave as per their entitlement under the Factories Act.

RECOMMENDATIONS / OBSERVATIONS OF THE COMMITTEE

Recommendation No. 1

NEED TO PLACE ADDITIONAL ORDERS

The Committee note that the Bharat Electronics Ltd. which was set up in 1954 has 9 manufacturing units spread over different parts of the country. The Committee further note that some of the manufacturing units of the Company at Ghaziabad, Panchkula, Kotdwara, Chennai and Pune have surplus capacity as these units are not uniformly loaded for want of orders from the Defence customers. To enable the Company to fully utilize the surplus capacity, the Committee feel that the Government should issue instructions to the Defence forces, defence public sector undertakings and other Government Customers to place additional orders on these manufacturing units.

The Committee are given to understand that the Defence Services are going in for direct import of equipments. The Committee are of the opinion that for better utilization of surplus capacity of indigenous manufacturing units, the Defence Services, when they go in for direct import of equipments should seek simultaneous Transfer of Technology for those products and BEL may be designated as a Production Agency for such products.

They desire that the purchase policy in this regard should be modified so that when defence equipments are imported, these should invariably be through 'Buy-and-Make' mode with Transfer of Technology instead of resorting to the 'Buy-only' mode. They feel that, this not only adds to the product range of company but also helps in providing long-term product support to the customers, besides ensuring self-reliance.

RECOMMENDATION NO. 2**NEED TO PROVIDE FINANCIAL ASSISTANCE FOR PROJECTS**

The Committee are happy to note that Bharat Electronics Limited has played a very significant role in meeting the requirements of Defence Services for electronic communication and radar equipment. The Company has developed indigenously a number of products with the active support of customers and DRDO Laboratories. The Company has also been making continues efforts towards technology upgradation and identifying new technology and new products jointly or in collaboration with Defence / National Laboratories and Institutes. For establishment of new projects as well as for modernization of technology for development and production of new products, the Committee note that Bharat Electronics Limited has sought financial assistance from the Government for the following projects:

- (i) Establishment of Micro & Macro – Technology Design, Fabrication & Testing Facilities at Bangalore – Rs. 150 core.
- (ii) Establishment of facilities with Transfer of Technology (ToT) for manufacture of Infra-Red (IR) Detectors & Detector Dewar Cooler Assembly (DDCA) for Thermal Imaging Equipment at BEL, Bangalore - Rs. 250 crore.

(iii) Establishment of facilities for manufacture of multijunction Gallium Arsenide based Solar Cells at BEL, Bangalore - Rs. 155 crore.

(iv) Upgradation of technology at BEL Optronics Limited, Pune to manufacture Super Gen Image Intensifier Tubes and Micro Channel Plates for Night Vision Equipment – Rs. 120 core.

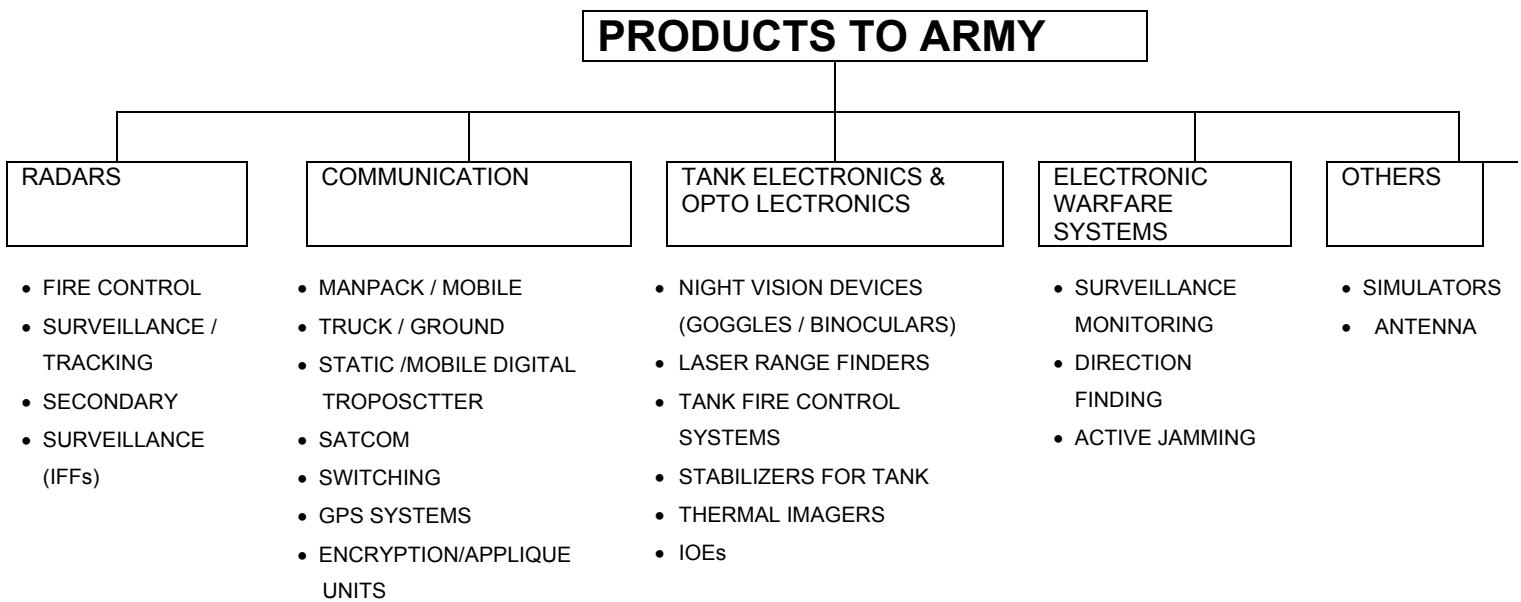
Since limited resources are available with the Company and huge funds are required for meeting the expenditure on these projects, the Committee recommend that Government should provide funds to the Company to enable them to establish new projects which not only extend the product range of the Company's products but also benefit the Defence services.

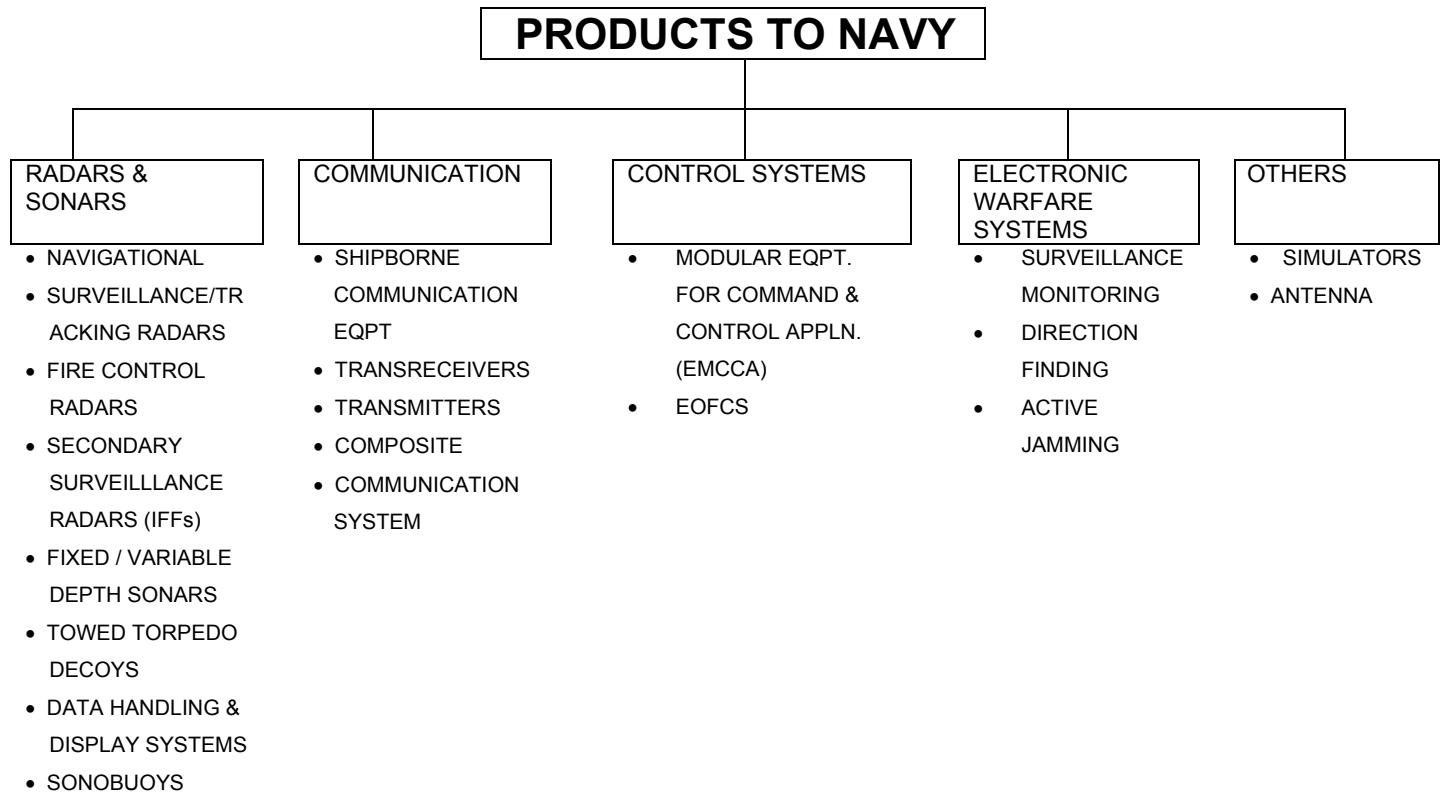
RECOMMENDATION NO. 3**EXPORT CLEARANCE**

The Committee note that Bharat Electronics Ltd. is exporting its products to the developed as well as developing countries. The Company is also getting maintenance contracts from the developed countries. For expanding export growth, market development activities are being rigorously pursued by the Company in SAARC countries, African Continent and South East Asia region, apart from work-share arrangements with collaborators in Israel and Europe. The Committee further note that during 2003-2004, the Company not only exported defence equipments and spares to Egypt, Switzerland and Indonesia but also exported Non-defence products to Malaysia, Azerbaijan and Mg Mn O₂ Batteries to USA. However, the Committee note that due to imposition of restrictions on defence products identified for export, the Company is not getting timely clearance from the Government resulting in delay in supplying products to the foreign customers. They, therefore, recommend that the Government should consider evolving a system by which fast clearance is given for products to be exported to countries where restriction on defence export applies. The Committee also recommend that the Government should make the 'Off-set' Clause more effective, while finalizing the purchases from different vendors/countries. The

Committee further suggest that the Government should consider offering attractive financial support to countries especially in the SAARC Area who are willing to procure defence equipments from our defence PSUs. The Committee recommend that the Government should consider evolving suitable arrangements in Indian embassies abroad through which a common outlet for sale of all the products of our defence PSUs can be found in order to maximize our export earnings and also to put to optimum use our surplus production capacities.

Statement showing the products being supplied to Defence customers.
(Vide para 6 of the Report)





PRODUCTS TO AIR FORCE

RADARS	COMMUNICATION	ELECTRONIC WARFARE SYSTEMS	OTHERS
<ul style="list-style-type: none"> • STATIC/ MOBILE • SURVEILANCE / LOWLEVEL TRACKING • SECONDARY SURVEILLANCE (IFFs) 	<ul style="list-style-type: none"> • TRANSMITTERS • GROUND TO AIR COMMUNICATION • STATIC / MOBILE DIGITAL • TROPOSCATTER • SATCOM 	<ul style="list-style-type: none"> • SURVEILLANCE MONITORING • DIRECTION FINDING • ACTIVE JAMMING 	<ul style="list-style-type: none"> • ANTENNA

ANNEXURE-II

STATEMENT SHOWING THE PRODUCTS BEING SUPPLIED TO NON-DEFENCE(CIVIL) CUSTOMERS.
 (Vide para 6 of the Report)

PRODUCTS TO CIVIL

PRODUCTS TO CIVIL					
RADARS	COMMUNICATION	SOUND & VISION BROADCASTING	OPTO ELECTRONICS	COMPONENTS	OTHERS
<ul style="list-style-type: none"> • AIRPORT SURVEILLANCE • SATELLITE VEHICLE TRACKING 	<ul style="list-style-type: none"> • TRANSRECEIVERS • TRANSMITTERS • EXCHANGES FOR DOT • SATCOM STATIONS (APNET, POLNET) • COMMUNICATION SYSTEM FOR RAILWAYS 	<ul style="list-style-type: none"> • EQUIPMENT TO AIR/DD MW / SW / FM BROADCAST TX • STUDIO EQPT FOR AIR • TV-LOW / HIGH POWER TRANSMITTERS • TVRO-TV-RECEIVE ONLY TERMINAL • SATELLITE UPLINKS • TV STUDIO EQPT • OUTSIDE BROADCAST VANS 	<ul style="list-style-type: none"> • NIGHT VISION DEVICES • OPHTHALMIC LASER 	<ul style="list-style-type: none"> • ICs • HMCs • SILICON SMALL SIGNAL / POWER DEVICES • CRYSTALS & TCXOs • MICROWAVE TUBES • PASSIVE VACUUM DEVICES 	<ul style="list-style-type: none"> • SOLAR PHOTO VOLTAIC SYSTEMS • SIMPUTERS • SET TOP BOX • ELECTRONIC VOTING MACHINE • SURGICAL MICROSCOPE • LCD DISPLAYS FOR AIRPORTS • VEHICLE TRACKING SYSTEMS

ANNEXURE-III

**TOUR PROGRAMME OF THE COMMITTEE ON PUBLIC UNDERTAKINGS TO
BANGALORE, HYDERABAD, CHENNAI AND KOLKATA FROM 14 TO 19 OCTOBER, 2004**
AS ACTUALLY PERFORMED
(MEMBERS ASSEMBLED AT BANGALORE)

DATE AND DAY	TIME	VISIT & DISCUSSION
14.10.2004 (THURSDAY)	1130 hrs	Power Grid Corporation of India Ltd. – Field Visit and Discussion
		(NIGHT HALT AT BANGALORE)
15.10.2004 (FRIDAY)	1100 hrs	Discussion with the officers of Bharat Electronics Ltd.
	1530 hrs	Departure for Hyderabad by IC-915
	1800 hrs	Arrival Hyderabad
		(NIGHT HALT AT HYDERABAD)
16.10.2004 (SATURDAY)	1030 hrs	Discussion with the officers of Hindustan Petroleum Corporation Ltd. On oil exploration projects (domestic & overseas)
	1930 hrs	Departure for Chennai by IC-979
	2345 hrs	Arrival Chennai
		(NIGHT HALT AT CHENNAI)
17.10.2004 (SUNDAY)		HOLIDAY
		(NIGHT HALT AT CHENNAI)
18.10.2004 (MONDAY)	0900 hrs	Discussion with the officers of United India Insurance Co. about Health Insurance
	1130 hrs	Discussion with the officers of Indian Oil Corporation Ltd. On oil exploration projects (domestic & overseas)
	1530 hrs	Departure for Kolkata by IC-766
	1945 hrs	Arrival Kolkata
		(NIGHT HALT AT KOLKATA)
19.10.2004 (TUESDAY)	0900 hrs	Discussion with the officers of National Insurance Co. about Health Insurance
	1115 hrs	Discussion with the officers of Bharat Petroleum Corporation Ltd. On oil exploration projects (domestic & overseas)

DISPERSAL

ANNEXURE – IV

COMPOSITION OF THE COMMITTEE ON PUBLIC UNDERTAKINGS
WHICH VISITED BANGALORE, HYDERABAD, CHENNAI AND KOLKATA
FROM 14 TO 19 OCTOBER, 2004

S. No.	NAME	
<u>LOK SABHA</u>		
1.	Shri Rupchand Pal,	Chairman
2.	Shri Manoranjan Bhakta	
3.	Shri Gurudas Dasgupta	
4.	Shri Sushil Kumar Modi	
5.	Shri Kashiram Rana	
6.	Shri Mohan Rawale	
7.	Shri Rajiv Ranjan Singh	
8.	Shri Bagun Sumbrui	
9.	Shri Ram Kripal Yadav	
<u>RAJYA SABHA</u>		
10.	Prof. Ram Deo Bhandary	
11.	Shri Ajay Maroo	
12.	Shri Jibon Roy	
13.	Shri Dinesh Trivedi	
<u>SECRETARIAT</u>		
1.	Shri S Bal Shekar,	Director
2.	Shri Raj Kumar,	Under Secretary
3.	Shri N. C. Gupta,	Under Secretary
4.	Shri B. L. Hemrajani,	PPS to Chairman, COPU
5.	Shri Ram Prakash,	Committee Officer

ANNEXURE – V**List of officials of the Bharat Electronic Limited who were present during discussion with the Committee on Public Undertakings at Bangalore on 15.10.2004.**

1.	Shri Gopala Rao	Chairman & Managing Director
2.	Shri S.C.Khanna	Director (Commercial & MGMT. Services)
3.	Shri P.R.K.Hara Gopal	Director (Finance)
4.	Shri S.K.Mahta	Director (Research & Development)
5.	Shri Basavarajah	Director (Bangalore Complex)
6.	Shri A. Muralidhar	Director (Other Units)
7.	Shri M.L.Shanmukh	Director (Personnel)