CHAPTER 4

POST-1962 INDIAN DEFENCE PROGRAMME

INTRODUCTION

On 8 September 1962, about 600 Chinese soldiers crossed the McMohan Line along the Thagla Ridge area and came down to the Dhola border post of India. Between 8 September and 20 October, there was intermittent firing from both sides with India then primarily engaged in reinforcing its position in the North Eastern Frontier Province. On 20 October 1962 the invasion proper started with the Chinese striking against Indian positions near Dhola and Khinzemane, following which the Chinese developed a two-pronged attack on Tawang, one from Boomla in the North and other from the West where Chinese troops were pursuing the Indian troops retreating from Nyamkachu (near Dhola post). There was then a lull in the fighting for the next few days. The battle, however, was resumed on 14 November 1962. It had also by then spread to the East in the Walong sector and in the North to Ladakh where Chushul and Rezeng La were invested heavily by the Chinese. By 20 November 1962, the Chinese had overrun practically the entire Kameng Division and virtually destroyed the 4 Infantry Division of India. The Walong sector saw more equal and hence inconclusive battles. In Ladakh no such military hesitation was witnessed as demonstrated in the North-East. There were fierce localized battles, particularly at Rezeng La. On 21 November 1962, Beijing radio announced a cease-fire unilaterally.

"The Sino-Indian border war of 1962 demonstrates two major failures: one of India’s foreign policy particularly towards the People’s Republic of China; and other of the
country’s defence policy. This failure to manage the border conflict properly resulted in a humiliating military reverse”.

The period, 1954-58, was a curious phase; it was of mutual affirmation of ‘indestructible friendship’ between the two countries. This was symbolized by the slogan ‘Hindi-Chini Bhai-Bhai’ (Indian and Chinese are brothers). Notwithstanding the ideological divergence and the known differences on the interpretation of the common border, relations remained harmonious between the two governments with an emphasis on a common approach to international politics. Nehru, with his full faith in post-imperial Asian harmony, was the spokesman for a new China, notably at Bandung (1955). However, even during this period, on the border and in the implementation of the Tibet Agreement, there were already difficulties.

The first crisis occurred in 1959 and Indian public opinion became assertively sympathetic after the Dalai Lama’s dramatic escape. A propagandist defence of this exposed failure was compounded by China bracketing Nehru, by name, with the ‘revolt in Tibet and Nehru’s philosophy’. For the Indian political-military class this ought to have been a signal for the things to come in future on the border issue. At all events Nehru’s India did not foresee the explosive potential of this divergence in the interpretation of a common boundary.

Along with inhibiting a make-believe world, the other striking feature of this post-1959 phase was the aspect of intelligence. Numerous accounts exist, though there is no official history of the period. Even an investigatory report on the conflict prepared by Lt. Gen. Henderson Brooks has not yet been made public.

The brief and limited conflict had exposed many deficiencies in India’s defences:-
The performance of many of the senior Army officers charged with NEFA defences was marked by confusion, uncertainty, and lack of initiative.

Tactics were too conventional, forces tending to be road-bound both in tactical and logistical movement and unable to cope with the unorthodox procedures so skillfully employed by the Chinese.

There was an overall shortage of equipment; much of what was in existence was obsolete. Although the .303 bolt-action rifle was an effective weapon in the hands of a trained soldier, it was incapable of offsetting Chinese automatics, superior artillery support, and a longer-range mortar. The almost total absence of mines and wire in the forward positions precluded any chance of holding positions against 'human sea' tactics. Stocks of supplies in forward areas were inadequate for augmented forces. The absence of a well-thought out logistics plan for Himalayan operations prevented the rapid dispatch of stores and equipment from depot to frontline areas. The communication equipment proved almost completely useless under the conditions to which it was subjected, since certain key components generally failed. The extensive shortage of high-altitude clothing caused hundreds of cases of exposure.

The conflict dispelled any lingering illusions in official Indian circles regarding Chinese inhibitions about employing force against India. It brought into focus a grave threat in a quarter where geography had been regarded as an almost insurmountable barrier to serious attack by land. It confirmed India's dependence upon external help against attack by a major power and the availability of Western military aid in a crisis involving Communist China. It showed that the balance of power thesis did not preclude a limited conflict in which an aggressor could initiate hostilities and terminate action after achieving the desired objectives and then resume his pre-conflict military posture without interference. The result for India was traumatic - militarily, politically, and diplomatically.
This war was obviously a severe setback not for Nehru alone but for India. Internal polity, international prestige and standing, the morale of the military and the economy all suffered. India is still to recover from the psychological consequences of this war. In 1964 China conducted its first nuclear explosion, soon overtaking India in this field as well. Economically it now weighs as the heavier force. From the early fifties, when Indian policy 'helped' an emerging China, to now when the century has ended, a relationship of equals no longer obtains.

DEFENCE FIVE YEAR PLAN (1964-1969)

As it has been mentioned in the earlier Chapter, "military disaster" was required to start "real" domestic weapons production. The defence production programme was set into motion with the introduction of Defence Five Year Plan after the 1962 border war with China.

After the debacle of Sino-Indian conflict in 1962, Dr. S. S. Radhakrishnan, the President of India concluded that military weakness has been a temptation, and a little military strength may be a deterrent. On 6 February 1963, Gulzarilal Nanda, the Union Minister for Planning declared in a broadcast over All-India Radio that, 'we can safeguard peace only when we have the strength to make aggression a costly and profitless adventure. The greater our economic and defence potential, the less will be the danger from across the border...From now on, defence and development must be regarded as integral and related parts of the national economic plan'.

In accordance with its assessment of the altered strategic situation, the Indian government undertook a considerable expansion of the armed forces, the production base, and the operational infrastructure. The blueprint for this was a five-year plan sanctioned in early 1964, which was a revision of a three-year plan hastily drawn up.
shortly after the 1962 border war. The plan had six major objectives for the period April 1964-March 1969:

1. Creation of an 8,25,000-man Army and the modernization of its weapons and equipment.

2. Stabilization of the Air Force at forty-five squadrons, its requirement with modern aircraft, and the provision of suitable ancillary facilities.

3. Maintenance of the Navy at approximately its present strength, replacing obsolete vessels with new foreign or Indian ships.

4. Establishment of production facilities so as to materially reduce dependence on external source of supply.

5. Construction and improvement of communication in the border areas, aimed at creation of an operational infrastructure.

6. Expansion of the research organization.

According to one press source, the Army was expected to constitute the main ‘bastion’ of defence until 1970 or 1975, by which time it was expected that the Air Force will have developed its own production base and be capable of assuming some of the Army’s present deterrent functions.7

The financial burden of this defence plan was expected to total Rs. 5,000 crores, including a foreign exchange component valued at about Rs. 680 crores.8 Projected defence expenditure for the Fourth Plan period (1966-71) was placed by the Planning Commission at Rs. 5,500 crores, involving an outlay that was expected to rise from Rs. 920 crores in 1966-67 to Rs. 1110 crores in 1971-72. Although economies will no doubt be effected wherever practicable, it is understood that the Indian Cabinet agreed in early March 1964 to make available for defence a minimum of Rs. 800 crores a
year over the subsequent decade irrespective of a level of foreign economic and military aid or of the domestic or external situations.

The need for consolidating the indigenous defence production units became imperative in the aftermath of the 1962 war. It was in this context that a separate department, the Department of Defence Production was created in 1962 in the Ministry of Defence with the primary objective of developing an integrated base for production of defence hardware with a view to achieving self sufficiency. The creation and sustenance of such a base requires harnessing of the infrastructure available in the defence sector as well as promoting participation of the non-defence sector. A new Department of Defence Supplies was set up in 1965 for mobilizing the capabilities available in the civil sector to supplement the efforts of the defence production units. (These departments were merged in December 1984 to constitute the present Department of Defence Production and Supplies.)

**ARMY PROGRAMME**

After 1962, 'in view of India's chronic shortage of foreign exchange even for nonmilitary purpose, the government was forced to do a complete about-face on the issue of military aid'. India was relying upon 'friendly' countries to make available the desired foreign exchange funds for the military in the form of outright grant aid or long-term credits on easy terms, while at the same time requesting increased general economic aid on better terms than hitherto and also concessions regarding repayment on previous aid. Aid-seeking missions were dispatched to various countries, but reliance was placed upon the US, Britain and the Commonwealth, and the Soviet Union.
The Army was expanded to a well-equipped force of twenty-one divisions, including four or five formations (independent brigades with smaller establishments) capable of expansion in an emergency. Ten of these divisions were mountain divisions comprised of ten infantry battalions (14,000 personnel) and about 300 vehicles and specially organized, trained and equipped for operations in the Himalayan region. A concerted effort was made to recruit the hill peoples, Nagas and other frontier peoples, and Gurkhas, the strength of the latter group was already increased to at least thirty-four battalions.

A new Directorate of Combat Development was set up in the General Staff Branch to develop new weapons and tactical concepts, and a series of decisions were made to supply the Army with modern weapons, equipment, and stores adequate until the early 1970's. The .303 Lee-Enfield British rifle was replaced by the semi-automatic Ishapore model, and all .303's were converted to the new 7.62 bore, which was adopted as the new standard small-arms bore. The Sten machine carbine was replaced by the more modern Sterling, also of British manufacture. The 4.2 inch mortar was replaced by a lighter type of local design. The French-built Brandt heavy mortar was acquired in quantity and is now being produced under license. A mountain howitzer was developed in Ordnance. New types of communications equipment were acquired both locally and abroad. The armoured formations began receiving medium tanks from the Avadi Heavy Vehicles factory in early 1965, and some seventy light tanks were purchased from the Soviet Union under a loan agreement concluded in September 1964. Light tanks of British design started rolling out from Avadi.

A long-deferred programme to replace the Army's worn vehicle fleet was made operational. As the production schemes underway in the ordnance factories were unable to meet the increased needs of the Army, large orders were placed with local automobile manufacturers for Mercedes-Benz three-ton trucks, Dodge one-ton wagons, and Willy jeeps. A new discard policy for vehicles was introduced. As per the new policy, trucks will be disposed off after 35,000 miles or seven years' service.
whichever is later - and before the required first major overhaul, and jeeps will be discarded after 30,000 miles or five year’s service - whichever is later.

AIR FORCE PROGRAMME

The Air Force was developed into a force of forty-five squadrons, conceived to meet the requirements of air defence, ground attack, communications, and logistics support to the Army, the Border Roads Development Organisation, the NEFA and Nagaland administrations, and engineers constructing airfields in border areas.

Transport Aircraft

The transport capacity of the Air Force was strengthened. After the first Chinese attack the Indian government contracted with an American firm for the augmentation of the standard two Wright R-3350 piston engines on 27 of their fleet of 53 C-119s. The US provided 24 C-119 Packets and two Caribou Is in emergency military aid and Canada gave eight C-47s and five Otters as emergency grant aid, with India purchasing 16 Caribou Is under a loan agreement concluded in July 1963. Thirty more An-12s were acquired from the Soviet Union under a loan agreement signed in July 1963, and the decision was taken to employ this type as the standard heavy transport. An order for 29 Avro-748s was placed. But no decision was made regarding the suitability of this British type as the future standard medium transport. The project was severally criticized in the report of the PAC submitted to the Indian Parliament on 28 February 1966, which referred to ‘grossly unrealistic’ production schedules resulting in the diversion of technical personnel from maintenance duties.
Helicopters

Orders were placed in 1963-64 for about 50 helicopters, but a Soviet offer to establish a plant in India to produce them under license from Aviaexport was declined by New Delhi for the stated reason that the number of Mi-4 helicopters required by the IAF do not justify the establishment of manufacture in India. Although it appeared that French credit terms were not attractive from the Indian viewpoint, a number of Alouette IIIIs were purchased in 1963, and India proposed to meet its future service requirements for helicopters by manufacturing about 150 additional units of this model. The first units were assembled in late 1965, with production beginning in early 1966.

Trainers Aircrafts

India's Krishak Mk 2 was accepted for the air observation post duties formerly performed by the Auster, A.O.P. 9 and 30 units were ordered for late 1965. The sharply increased requirements for training aircraft were alleviated by 36 Harvards provided by Canada as emergency grant aid and a small number of Vampires purchased from Indonesia in November 1962. Efforts were made to acquire more Harvards from other countries but they were ultimately to be replaced by the HJT-16 jet trainer Kiran, a model of which possessed a ground attack capability.

Fighter Aircrafts

The conflict with China caused most of the project's design team to be transferred to priority work on the HF-24 fighter, but major assembly of the prototype Kisan began in November 1963 and the first flight took place on 4 September 1964. The first 24 pre-production models were produced before the end of 1966.
The Vampires and the French Ouragans and Mysters were phased out of front-line service as the HF-24 Mk 1 Marut fighter became available. The first four Mk Is were handed over to IAF at Bangalore on 10 May 1964, and a three-squadron 'batch' of the supersonic Mk 1A version was produced,\(^{13}\) which was powered by the HAL-made Bristol Orpheus 703 Reheat engine. As an apparent interim measure pending the availability of the Mk 1A's in quantity, India acquired additional Hunters from Britain. More Canberra light bombers and reconnaissance aircraft were also obtained from Britain.

**F-104 Project**

The manner in which the fighter arm was to be re-equipped was for some time the subject of apparent indecision by Indian officials and speculation by foreign observers. During the border war, IAF officers reportedly sounded out US authorities on the possibility of obtaining aircraft with a performance roughly comparable to the F-104G.\(^ {14}\) A plan to purchase a "lot" of Mirages was not pursued because the price demanded by France was 'obviously' too much.\(^ {15}\) Indian officials were also reported to be looking for an aircraft suitable for close support work like the McDonnell F-101 Voodoo.\(^ {16}\)

India's major interest was in the supersonic F-104's, however, and the government persisted in its efforts to acquire such aircraft despite Western conviction that India had no immediate need for this high-performance weapon system. From 'an early date', the IAF and Indian Defence Ministry reportedly regarded the joint Indian-Commonwealth- US air exercises held in India in November 1963 "as an opportunity to show that without supersonic fighters the problems of Indian defence against air attack are insoluble".\(^ {17}\) Speculation on the progress of their efforts continued into mid-1964 and included the possibility that India would receive all-weather F-102 interceptors simultaneously with American provision of these aircraft to Pakistan. The
US was believed to be willing to make available three to five squadrons of F-51 Skyray or F-5B Freedom Fighters equipped with Sidewinder missiles. 

Possible direct Indian purchase of some F-104’s or the establishment of an F-104 assembly or production plant in India was also reported. With the apparent concurrence of the US State Department, Lockheed representatives reportedly took the initiative to hold talks with senior officials of the Indian ministries of Defence, Finance, and Defence Production in New Delhi in late February 1964. Lockheed, according to the report, proposed to establish a production unit in India for the F-104 or a comparable aircraft; if that was not acceptable to the Indian government, an alternative was the sale to India of a certain number of F-104’s on a commercial basis. In May 1964, it was reported that India proposed a $200 million American-built plant to manufacture F-104s in India, the project being preferred by ‘some’ Indian ministers to the MiG project. Although the report stated that Washington was unlikely to extend grants for such a project, American authorities ostensibly had under consideration an assembly plant to be financed with a 20-year credit from the Export - Import Bank in the event the MiG project failed.

**MiG Project**

MiG project had made little real headway and there were sufficient grounds for pessimism concerning its future. An American correspondent had reported from New Delhi on 17 December 1963 ‘the impending abandonment’ of the project for the reason that cost estimates had jumped from the initial estimate of $143 million to a ‘current working figure of $336 million’ and that Moscow had to date proved unwilling to make the MiG-21 an all-weather aircraft with an expanded radius of action.

The Indian Defence Ministry issued an immediate denial, claiming that ‘the project is proceeding to plan’, but it was reported in a leading Indian daily that India was not
going to acquire MiG’s because the cost of establishing the complex of factories was prohibitive and American aircraft were preferred by the IAF. The same paper reported on 5 March, however, that Anglo-American reluctance to give India high-performance aircraft had caused even the Air Force to veer around to the view that the MiG project, despite its obvious shortcomings, was the only political and military solution. Defence Minister Chavan included three squadrons of F-104’s in the list of defence requirements he submitted to the US government in May 1964, while India made what would seem to have been final efforts to obtain a favourable arrangement with Moscow to enable the MiG project to proceed. The six MiG-21’s which arrived during the spring of 1964 under a thick cloak of Soviet-inspired secrecy were devoid of such essential equipment as fire-control radar and had meager armament and a severely limited combat radius. Russian technical experts assigned to the project apparently showed indifference to Indian pressure for speed, and New Delhi was unsuccessful in its efforts to persuade the Soviet government to agree to certain modifications in the design.

Sometime during the summer, for reasons known only to senior Soviet leaders but probably related to the virtually irrevocable split with Bjeing, Moscow indicated its willingness to be much more co-operative on the MiG project. When an Indian defence mission visited Moscow in September 1964, an agreement was signed several hours before President Radhakrishnan arrived to begin his state visit. Russia agreed to provide: technical aid and plant to facilitate the establishment of MiG factories by the end of 1965; 38 more MiG-21’s (in addition to the six promised in 1962 but as yet undelivered) incorporating the modifications requested by India; and components for the initial assembly scheme in India which would presumably include some of the 44 planes promised. The Soviet authorities also agreed to keep India informed of subsequent improvements in the design and equipment of the MiG-21. According to one report, a total of 450 MiG-21s were planned for India during that time.

The MiG-21 was conceived as the standard interceptor for the IAF through the 1970s, but production of the economical Gnat was being continued for operational squadrons.
During 60s, financial stringency and priorities limited the naval programme largely to replacement of obsolete vessels.

**Frigate Construction**

After the border conflict, the Indian government indicated an interest in possible Swedish or Japanese collaboration in the construction of frigates at Mazagon Docks, but the 'interest' appeared to have been little more than a bargaining counter designed to stimulate the British government into responding to Indian requests for long term credit to cover the external costs of the desired 'Leander' class frigate project. During his visit to Britain in November 1964, Defence Minister Chavan accepted the British government's offer of a special defence credit totaling $13,160,000 to cover the external cost over the next four years of the construction of three 'Leander' class frigates and to consider further aid for the project. The keel of the first frigate was laid down in mid-1966, and the vessel was completed by 1971.

During his visit, Chavan expressed the hope at least two frigates could be made available immediately. He requested the loan of three Daring class destroyers on the understanding that they would be returned in any emergency affecting Britain. A British counter offer of three 'Weapon' class destroyers from its mothball fleet was declined, the Indian government evidently still hopeful that London would prove more accommodating in future. The US was also unresponsive to an Indian request for three destroyer replacements. In the face of these Anglo-American attitudes, India accepted a Soviet offer of frigates in an agreement signed in 1965.
Submarine

The Indian government accepted the long-standing naval requirement for a submarine arm, to be started by acquiring a training submarine. Although the British government was initially cautious, it later agreed in principle to provide a submarine for training purposes. In November 1964, Britain offered Chavan a World War II model - the only one it had available for immediate transfer - but the Indian Defence Minister declined such an obsolete unit and accepted an alternative offer whereby a Royal Navy submarine would be loaned to India for several months each year. New Delhi considered a British offer of facilities for the construction of an 'Oberon' class type but British terms did not appear to have met with Indian approval. Chavan informed the Lok Sabha on 6 September 1965 that an agreement has been concluded with the Soviet government for the provision of submarines, but he declined to give further details.

Other Programmes

1. The air complement of the carrier Vikrant was augmented by ten more Sea Hawk jet fighter-bombers and by several additional Alouette III helicopters.

2. A naval base at Marmagoa (which includes a naval air station at Dabolim), a major naval base and dockyard at Vizakhapatnam, and a naval establishment at Port Blair in the Andaman Islands were commissioned. Additional naval facilities were developed in the Nicobar Islands, another Indian-owned group about 250 miles South of the Andamans on which there is already an all-weather airstrip.

3. Local construction of seaward patrol boats and minesweepers was started by Indian Navy.
INDIGENOUS DEFENCE PRODUCTION

The border war caused a marked upsurge in the nature and scope of production in the ordnance factories. Contracts for certain items were allocated to civil and private manufacturers for the first time. New lines of production included Ishapore semi-automatic rifles, a three-inch pack howitzer of Indian design, the Brandt heavy mortar from France, 7.62 mm ammunition, ammunition for Brandt mortar and the three-inch pack howitzer, 75 mm. light tank shells and light tank high-explosive shells, 3.5-inch anti-tank rockets, anti-aircraft guns, and improved Sterling carbines. Bulk manufacture of electric fired ammunition began in India for the first time in 1964-65.

A plant for the manufacture of 30 mm. aircraft ammunition was set up with British technical assistance at Khamaria (near Jabalpur) in March 1964, and a clothing factory, first conceived in 1961, was established at Avadi and began the production of parachutes in October 1963. The Chandigarh field cable factory commenced mass production in February 1964. The capacity of Praga Tools at Secunderabad to manufacture small arms was increased, and the cordite factory at Aruvankadu was augmented by a new plant, commissioned in March 1964, to produce semi solvent propellants for rockets. It was also proposed to establish a vehicle factory for the manufacture of one-ton trucks for the Army.

Tanks

Despite rumours of possible French or Russian collaboration in a light tank project at Avadi, an offer by Vickers-Armstrong to design a light tank to Indian specifications was accepted. The prototype of the first medium tank was completed in early 1963, and the first tank rolled off the Avadi heavy-vehicles assembly line on 29 December 1965, christened as Vijayanta.
Tata Committee (Air Force)

India's aircraft production facilities were subjected to the scrutiny of a special committee appointed in March 1963 under the chairmanship of J.R.D. Tata, head of Air India International and a prominent industrialist. The committee surveyed the requirements of aircraft and ancillary electronic equipment required by the armed forces and submitted its recommendations to the government in the April. Details of the report were not made public, but it is believed that it included a proposal to scrap the MiG project and purchase Western supersonic fighters and to replace the Avro project with a production line for the Caribou II turboprop transport. After some consideration of Caribou, the government apparently concluded that it was too deeply committed to the Avro project, since it announced that production facilities were actually to be expanded. The government likewise, was firmly committed to the MiG project, both financially and politically, so it was not possible to terminate it on purely practical grounds. In apparent accord with the committee's recommendations, however, the government amalgamated all the aircraft manufacturing units in India into a single state-owned undertaking, called Hindustan Aeronautics India Limited, designed to streamline production and effect economy in the utilization of men and material.

HF-24 Marut

There was little progress made on HF-24 Mk 2 project because of the lack of a firm decision regarding a power plant. Efforts to produce a suitable engine in India have continued, and after much speculation, a collaboration agreement was signed with the United Arab Republic in Cairo on 2 November 1964 whereby Egypt was to provide the engine and India the air-frame of a Mach 2 fighter. The issue was confused, however, by apparent Indian hope that the Britain and US would provide aid for the HF-24 project. Experts from the US AF research and development center at Dayton,
Ohio, and representatives of Rolls Royce visited India in July 1964 to investigate ways and means of improving the performance and rate of production of the HF-24 but apparently concluded that the project would require some years and considerable Western aid in design, tooling and finance to mature into a supersonic weapon system. With Indo-Soviet agreement on the MiG project in September 1964, the likelihood of Western aid for the HF-24 project virtually ended, given the Western view that two supersonic aircraft projects were greatly beyond poverty-stricken India’s needs and resources.

**Modernization of Ordnance Factories**

India’s future ordnance requirements were assessed by the Directorate of Planning and Co-ordination, with the assistance of the American consulting firm, D. Little, Inc. Modernization of the existing ordnance factories was carried out during 1964-69 period at an estimated cost of Rs. 30 crores, which included a foreign exchange component of Rs. 15 crores.

The first phase of the expansion scheme was intended to establish six new factories as under :-

1. The US provided a complete small arms ammunition plant (the St. Louis Ammunition Factory), which was formally opened at Varangaon, near Bhushawal, on 15 October 1964.

2. The US assisted in the establishment of the Ambajahari Engineering Factory, which is producing heavy artillery shells.
3. Britain provided aid of Rs. 16 crore for Bhandara Filling Factory, which began production in January 1965.

4. The Indian government decided to go ahead with the small arms factory at Tiruchirapalli despite the consequent pressure on the country's chronically weak foreign exchange reserves. The Indian government accepted the advice of American experts that the Panvel and Burla plants were impractical as their 'investment-output' ratio was high and their civilian use in times of general peace was very limited.

**DRDO**

India's defence research organisation was further expanded. New laboratories of Instruments Research and Development Establishment and an Armament Research Laboratory were established.

**ANALYSIS**

The years 1963 and 1964 witnessed a spurt in defence production, organisation and planning, thanks to the Chinese attack.

India's post-1962 defence programme was based upon four main presumptions: the People's Republic of China posed the major threat to Indian security; a Pakistani
threat could materialize at any time; Sino-Pakistan collusion against India was conceivable; and India required a credible military sanction for her diplomacy.

There were 22 factories in 1963 comprising 7 General Engineering, 5 Metallurgical, 5 Clothing and Leather, 2 Chemical, 2 Filling-cum-Engineering, and one Cable. Two more, one General Engineering and one Filling-cum-Engineering, were added the next year. By now the First Five Year Defence Plan had been drawn and principles were laid down in a policy statement for sound defence production base. The following were the guidelines :-

1. The Defence Services must have modern equipment and weapons combat-worthy in expected terrain and conditions of fighting.

2. Manufacturing capacities for these should be indigenously established.

3. Inasmuch as these capacities would not come up to the level of requirements, stockpiling should be undertaken and the civil sector should be tapped.

4. When production has met demands, manufacture of such items be undertaken as to strengthen the country's general economy.

The ordnance factories have since then begun to be modernized at a cost of Rs. 330 million spread over 5 years, half of which involved foreign exchange component. These factories now produce some of the more modern weapons, as also the new kind of equipment needed for mountain warfare. The initial proposal was to set up six new factories for the manufacture of small arms and ammunition and explosive, two with the assistance of the USA and the UK. Subsequently American and British assistance was
not forthcoming, hence only four factories were established during this first phase of reconstruction. The OFs had accelerated their programmes of training technical personnel, and were seeking more and more assistance from the research and development organization of the Government which, lying dormant for years, was now activated. Meanwhile, medium tanks, jeeps, heavy trucks and a variety of heavy engineering equipment are already rolling off the production lines.

The OFs are a closely guarded preserve of the Government. In the early years of Independence they enjoyed monopoly in the production of defence weapons and stores. The question of associating the civil sector with them, though always open, was never settled; official thinking militated against this association. The report of the Estimates Committee of Parliament, 1956-57, in its Sixty-Eighth Report noted this fact and even rebuked the Defence Ministry for not tapping the country's private resources to back the Government effort, pointing out that ordnance factories could never meet the total defence demands.28

But the above mentioned Estimate Committee Report also noted another thing. While the factories were not catering adequately to the Services' requirements, they were turning out goods for the civil market, at one time as much as 30 per cent of the total output. Apparently, there had, grown a surplus capacity in certain fields, or, what is more likely, there was little co-ordination and exchange of information between one field of production and another. The old tradition of keeping civil industry away from the manufacture of arms had something to do with this state of affairs, but there were ideological reasons also. Many at the helm of affairs looked askance at the possibilities of creating "arms kings" in the country. This viewpoint was not materially altered even by the imminence of the threat from China.

For the first time in 1963 the Ministerial reports and statements began to emphasize the importance of the civil sector, but even then attempts to tap it were half-hearted. What with the assistance which some countries offered and the sympathy which appeared to be flowing in, it was thought that the doors of external sources for arms
had been flung wide open. They never were, and in any case were closed with a bang after the war with Pakistan.

Then, in late 1965, a new agency, the Department of Defence Supplies, was set up. Its main function has been to utilize the industrial capacity of the country for research, development and manufacture of arms. Technical Committees have come into being for this purpose. Sample rooms have been opened in principal cities, manned by experts who explain exhibits and offer assistance in preparing drawings and specifications to the prospective manufacturers. Response has been good and the Defence Ministry's reports for 1966, 1967, and 1968 state that a large number of offers have, been received for a variety of weapon components. The manufacture of complete arms and ammunition is however to be undertaken only by the Government.

Apart from the ordnance factories and the civil industry, there is a third sector of indigenous production, embracing the defence public sector undertakings. There are seven of them :-

1. Hindustan Aeronautics Ltd.
2. Bharat Electronics Ltd.
3. Mazagon Dock Ltd.
4. Garden Reach Workshops Ltd.
5. Praga Tools Ltd.
6. Bharat Earth Movers Ltd.
7. Goa Shipyard Ltd.
It can be seen that high priority was accorded for development of systems in critical areas of technologies like tanks and aircraft, which were denied by advance countries and likely to be denied in the future. The timetable for the various parts of India’s defence programme, however, got a set back by the heavy cost of Indo-Pak War of 1965 and the expense of replacing equipment damaged or destroyed during the conflict, by the American suspension of ‘non-lethal’ military aid between September 1965 and March 1966. India’s economic situation was further worsened by severe drought in 1966-67.

How India ultimately attained her ambitious economic and military aspirations, we shall see in next Chapters.
17. Ibid.


19. Ibid.

20. Ibid.

21. Ibid.


24. On 14 September 1964, the Minister for Defence Production, A.M. Thomas, stated in a written reply in the Lok Sabha, that there were more than 31 Ordnance Factories and other production establishments employing 172,000 personnel.

25. The committee, which included senior representatives of the Army, Air Force and Defence Science Establishment, was reportedly set up by the Ministry of Economics and Defence Co-ordination without prior consultation with the Defence Minister and to the latter’s consternation. See Prem Chopra in The Statesman, 7 and 21 July 1963.


28. Ibid.

29. Ibid., p. 251.