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India

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NATIONAL INTELLIGENCE SURVEY

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Armed Forces

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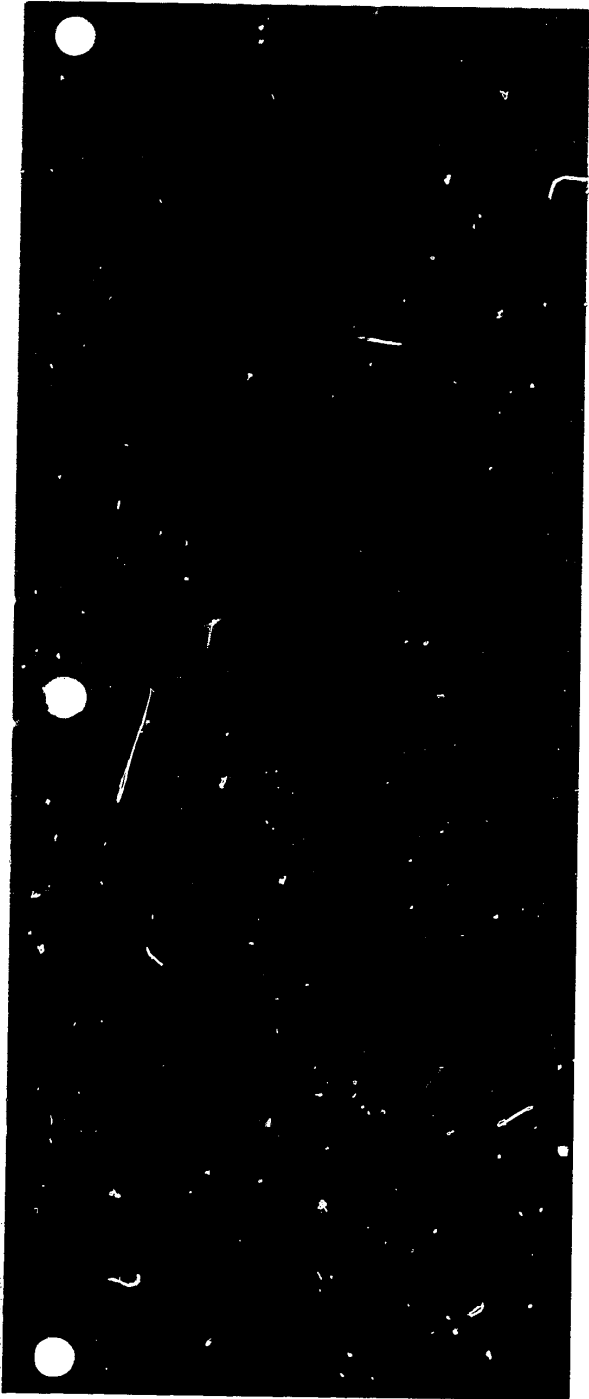
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INDIA

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Armed Forces

A. Defense establishment

The major non-Communist military power in Asia, India has 1,257,000 men in its regular armed forces. Its army is the third largest in the world, with a strength of 1,092,000 (plus 28,000 integrated armed police), which can be augmented by more than 260 battalions of federal and state armed police totaling 347,000 men. Its navy, with 33,000 personnel and 110 ships, is the smallest of the three services, while its air force, with 104,000 men and 1,399 aircraft (745 jets), is the second largest in non-Communist Asia. Overall, the armed forces are effective and have improved markedly during the last decade. (S)

India's ground forces are capable of maintaining internal security, could repeat their past successes against Pakistan, and could probably repel a conventional attack by the People's Republic of China. The navy, although organized for coastal patrol, escort, and antisubmarine warfare, would probably be unable to defend the long Indian coastline and sealanes of communications against a substantial naval force. The air force would be able to provide air defense and tactical and logistical support of the ground forces against either Pakistan or China, but sustained operations of more than a few months would require extensive foreign supply of spare parts and replacement aircraft. (S)

The huge manpower pool—estimated at 77 million men fit for military service—would theoretically permit a great expansion of the armed forces, but illiteracy, limited training facilities, and logistic problems would probably permit mobilization of only a small part of this pool. Although India is committed to a policy of attaining self-sufficiency in the production of major items of military equipment and has made progress in this direction, it will be some years before it will be able to achieve complete

independence of foreign sources of supply and attendant financial and political difficulties. (S)

In keeping with its policy of nonalignment, India has rejected membership in regional military pacts, in contrast to Pakistan which joined both the Central Treaty Organization (CENTO) and the Southeast Asia Treaty Organization (SEATO). India also has shown little interest in cooperative planning and mutual defense of South Asia. However, it has signed similarly worded treaties of "friendship" with the Soviet Union (August 1971) and with Bangladesh (March 1972) that essentially provide for mutual consultations in event of an attack on either signatory by a third power. Furthermore, India by agreement exchanges military information with Nepal and Bhutan and is responsible for the defense of Sikkim. (S)

Many Indians believe that the willingness of both the Soviet Union and some Western nations to supply military hardware confirms the wisdom of the policy of nonalignment. Whatever gratitude the West, especially the United States, earned for the considerable military assistance rendered following the Chinese attack in 1962 was subsequently negated by the cutoff of military assistance during the September 1965 war with Pakistan and the inability of the United States to prevent equipment it had supplied Pakistan from being used against India. Under the terms of the U.S. arms supply policy for South Asia adopted in April 1967, the U.S. Military Assistance Program was discontinued and replaced by a policy of permitting sales of 1) nonlethal end-items, 2) spare parts for previously furnished end-items on a case-by-case basis, and 3) ammunition for previously supplied end-items, also on a case-by-case basis. All military sales were banned at the outbreak of the war between India and Pakistan in December 1971. This ban, however, was lifted in March 1973, at which time the United States reverted to the 1967 policy. (U/OU)

I. Military history

When the Indian subcontinent was partitioned in August 1947 to form the nations of India and Pakistan, the British-controlled military forces of India were divided proportionately between the two countries. This division of personnel, units, materiel, and facilities, coupled with the withdrawal of most of the British officers and the reorganization and relocation of units, reduced the effectiveness of the forces remaining in India. After partition, efforts to reorganize and expand the armed forces were complicated by governmental and civil adjustments necessitated by partition and by the deployment of forces to areas affected by the mass migrations and large-scale communal rioting that followed the formation of the two new countries. (C)

In late 1947 and in 1948 the new Indian Army and Air Force engaged in a small-scale war with Pakistan in the disputed Jammu and Kashmir area, and for the first time Indian officers commanded relatively large forces in battle. Many of the army units involved on both sides had seen service with the British in World Wars I and II and belonged to regiments with long records of fighting against dissident Pathan tribes in what was then British India's North-West Frontier Province. U.N. mediation brought about a cease-fire in Kashmir in 1949, and a U.N. Military Observer Group was set up to watch over the cease-fire line that was established. This group was still functioning in mid-1973. In the decade following the cease-fire in Kashmir in 1949, the Indian Government regarded Pakistan as the primary threat to its security. The major portions of the armed forces of both countries were kept deployed along the common boundaries, and with the Indians the maintenance of military superiority over Pakistan became a key objective of national policy. In 1959, however, a shift in emphasis began when Chinese and Indian troops clashed in Ladakh¹ and at Longju in Arunachal Pradesh (north of Assam). India reacted to this new threat by expanding armed forces programs, improving transportation and communications in the Sino-Indian border area, and increasing domestic defense production. Some progress was achieved in improving the effectiveness of the armed forces during the next 3 years, but a number of serious weaknesses remained. World War II-type materiel constituted the major portion of weapons and equipment on hand, and India continued to depend largely on foreign sources

¹For diacritics on place names see the list of names on the apron of the Summary Map in the Country Profile chapter and the map itself.

for complex items of military equipment. In addition, progress in improving the transportation net in the rugged Himalayan border area, including Bhutan, was difficult and slow. Indian leaders continued, though, to view Pakistan as the primary threat and, therefore, gave lower priority to strengthening the defense capabilities of those forces facing Tibet and Sinkiang. (C)

These weaknesses quickly became apparent when Chinese forces attacked in Ladakh and in Arunachal Pradesh in October 1962. India appealed to the West for modern weapons and equipment, and Indian forces were hurriedly redeployed from the Pakistan border to meet the Chinese threat. However, the forces were committed piecemeal, tactical considerations were subordinated to an unrealistic political policy, leadership proved faulty, and the logistical system proved inadequate. The Chinese readily seized much of the territory that they had been claiming; then, with winter coming on, they drew back and called on the Indians to negotiate. Subsequent decisions by the Indian Government resulted in a major increase in Indian armed strength, and intensive efforts were made to reorganize and reequip the armed forces. (C)

Limited hostilities between India and Pakistan erupted in the spring of 1965 in the desolate Rann of Kutch area over a longstanding border dispute. The Pakistanis came off slightly better in the series of small unit engagements; the Indian Army refrained from engaging the Pakistan Army on a large scale because of the difficult terrain and attendant problems. Although the British Prime Minister arranged a cease-fire and the dispute was submitted to international arbitration, a second and more devastating conflict with Pakistan opened on 1 September 1965, some 3 weeks after Pakistani infiltrators had crossed the Kashmir cease-fire line with a mission to galvanize the Muslims of the Vale of Kashmir into open revolt. Retaliatory Indian attacks across the cease-fire line at three points in northern Kashmir were followed by a large-scale Pakistani advance into the southern part of the state. Its supply lines threatened, India made a three-pronged attack across the international border in the Punjab area. Thereafter, the war became a battle of attrition, with India launching attacks in numerous sectors, thereby greatly extending Pakistan's lines of defense. Pakistani forces were almost totally committed while India was able to maintain simultaneously both the initiative and a sizable reserve, and, in addition, its defenses against China remained essentially intact. Although a continuation of the war might have been costly for India, eventually the Indians could have worn down

Pakistani defenses. Throughout the conflict, the Chinese along India's northern border confined their activities to the adoption of threatening military postures and the issuance of ultimatums. (C)

The United Nations effected a cease fire on 22 September, and a second observer group, United Nations India-Pakistan Observer Mission, was established; its mission was separate and distinct from that of the U.N. Military Observer Group that has watched over the Kashmir cease-fire line since 1949. In December 1965, Pakistan and India accepted a recommendation by the Secretary General of the United Nations that he provide a senior military officer to assist in the withdrawal of military forces from the areas of conflict. The U.N. representative's mission was greatly facilitated by meetings in January 1966 between President Ayub of Pakistan and Indian Prime Minister Shastri at Tashkent in the Soviet Union. Withdrawal was accomplished in February and early March 1966, all forces being returned to locations within their respective international boundaries and on the appropriate sides of the 1949 Kashmir cease-fire line. (C)

Open hostilities again occurred in December 1971. Following Islamabad's suppression of its eastern province's autonomy drive in March 1971, refugees poured into India from East Pakistan and Bengali freedom fighters escaped to India where, with New Delhi's assistance, they established the independent Republic of Bangladesh in Calcutta and set about building a guerrilla force to continue the fight. After 8 months of increasing insurgency, New Delhi's armed forces intervened in the East Pakistani fighting on 21 November in what was termed a "defensive" reaction. Hostilities erupted in the west on 3 December when Pakistani aircraft attacked Indian military airfields under the guise of responding to Pakistani-claimed Indian ground attacks in West Pakistan. New Delhi views this as the beginning of the war, while Islamabad cites the Indian attacks in the east on 21 November as the start. Indian strategy called for a defensive posture on its western border while its forces subdued the Pakistani forces in the east. Three corps-size thrusts, involving at least seven divisions, were launched simultaneously into the eastern province on 4 December. Indian heliborne and parachute assaults circumvented Pakistani strongpoints in East Pakistan. Indian forces surrounded Dacca on 13 December, although Pakistani units continued to resist from isolated cantonments and fortified strongpoints throughout the province. Islamabad's forces surrendered in Dacca on 16 December. Except for naval attacks on Karachi harbor, the war in the west

was unspectacular. Army units blunted Pakistani attacks across the Kashmir cease-fire line and made several significant gains, especially in the Thar Desert. A cease-fire, proposed by India, was accepted by Pakistan on 17 December. China supported Pakistan diplomatically throughout the war but made no threatening military moves along India's northern border. (S)

India has utilized its armed forces as instruments of both internal and international policy. Army and air force elements have been engaged in antiguerrilla operations against dissident Nagas (1951-71) and Mizos (1966-71) in northeastern India, and all three services participated in the brief, successful operation to seize Goa from the Portuguese in December 1961. India furnished limited military medical support to U.N. forces during the Korean war, and after the cease-fire provided army personnel to supervise the prisoner exchange and other aspects of the settlement. Additionally, India has provided military personnel for the International Control Commission in the Indochina area since 1954. An Indian infantry battalion formed part of the U.N. Emergency Force in the Israel-Egypt border area from 1956 until withdrawn in May 1967, just prior to the Arab-Israeli war. From November 1960 to March 1963, India provided an infantry brigade for the U.N. effort in the Congo. In addition, Indian military personnel have provided training assistance in Bangladesh, Bhutan, the United Arab Republic, Ethiopia, Nepal, Iraq, and Nigeria. Spaces are allotted in Indian service schools for military students from other countries, including Egypt, Ethiopia, Nigeria, Iraq, Afghanistan, Burma, Indonesia, Nepal, Bangladesh, and various other Commonwealth countries, and the United States. (C)

Under the constitution, defense policy is a civil rather than a military responsibility, and the armed forces generally avoid involvement in politics, but on occasion have been used to assist civilian agencies during internal disorders. Military service carries prestige, however, and defense expenditures constitute a major item in the national budget. (C)

British tradition and influence in India's armed forces linger on, especially in attitudes and in the fields of staff procedures, organization, and tactical doctrine. Soviet influence may grow, however, in light of the fact that the U.S.S.R. has become the predominant foreign source of heavy and/or sophisticated military equipment since the 1965 hostilities with Pakistan and has strongly supported the development of India's aircraft industry. (C)

2. Command structure (S)

The constitution vests supreme command of the armed forces in the President of the Republic (Figure 1). In actuality, the cabinet, headed by the Prime Minister, exercises this control with the advice and assistance of the Cabinet Committee on Political Affairs (CCPA). This committee is responsible for formulating broad policy pertaining to national defense, and the Prime Minister is its chairman. The CCPA membership includes the Minister of Defense and those other ministers whose offices are concerned with matters related to defense.

The Minister of Defense is responsible for all matters dealing with the defense establishment. He is assisted by the Defense Secretary a civil servant who controls and coordinates the activities of the ministry through a Civil Secretariat. This Secretariat is divided into a number of divisions, each concerned with the matters of either a particular service or of an interservice nature. These divisions are headed by various Joint, Deputy, and Under Secretaries. The Minister of Defense is also assisted by two other elements of the ministry—the Defense Minister's Committee and the Defense Minister's (Production and Supply) Committee. Directed by the Minister of Defense, the former is responsible for the country's defense plan and all important matters concerning the three services. The latter is under the supervision of the

Minister of Defense Production, who is not a cabinet member; it is responsible for all matters pertaining to research and development, defense production and implementation of detailed plans for replacing imports of military equipment with domestically produced equipment.

Decisions of the CCPA and the Defense Ministers' Committees are transmitted for action to the Chiefs of Staffs Committee (CSC) or, if only one service is concerned, to the chief of staff of that service. The CSC, consisting of the heads of the three services, is responsible for preparing strategic estimates and plans and for advising the government on strategy and service matters. In addition, the Chiefs of Staff Committee makes recommendations to the CCPA on all-service matters. Subcommittees of the CSC deal with matters of a joint-service nature: planning, operations, intelligence, training, and other service-wide matters. In addition to his advisory role as a member of the CSC, the chief of staff of each service in his command role is responsible for executing policy decisions.

In addition to these officially constituted defense committees, in time of hostilities or national crisis the government may form *ad hoc* groups or expand existing advisory groups. This was done in the fall of 1962, when a number of leading political, scientific, and industrial figures as well as several senior retired military leaders were invited to join key cabinet

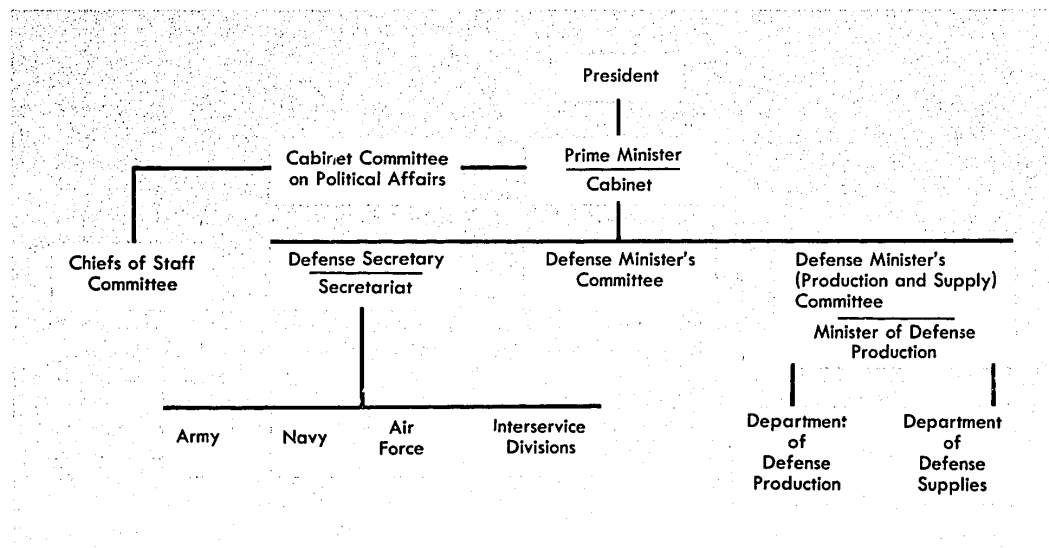


FIGURE 1. Organization of the Ministry of Defense, 1973 (U/OU)

representatives in a National Defense Council. This council was charged with advising the government on all matters relating to defense, especially in fields related to public participation in national defense. In the September 1965 conflict with Pakistan, the Emergency Committee of the cabinet assumed the functions of the CCPA, and in the December 1971 conflict, a committee of senior officials under the chairmanship of the Cabinet Secretary provided a convenient forum for coordination between the military and civilian sectors. Arrangements were also worked out for effective coordination between defense and foreign policies.

B. Joint activities

1. Military manpower (C)

As of 1 July 1973, India had 138,212,000 males in the ages 15 to 49. It is estimated that 78,630,000, or about 57%, were physically fit for military service. The average number of males expected to be reaching military age (17) each year in the period 1973-77 is estimated at 6,214,000. A breakdown by age groups follows:

AGE	TOTAL MALES	MAXIMUM NUMBER FIT FOR MILITARY SERVICE
15-19	29,259,000	18,435,000
20-24	23,639,000	14,110,000
25-29	28,828,000	12,225,000
30-34	19,800,000	11,285,000
35-39	17,228,000	9,335,000
40-44	14,751,000	7,420,000
45-49	12,707,000	5,820,000
Total, 15-49	138,212,000	78,630,000

Service in the armed forces is voluntary, and there is no provision for conscription during wartime. Enlistment is normally for 10 or 15 years. By law, recruitment is open to all, without distinction as to caste, creed, or race, and is governed by competitive merit and physical fitness. In practice, however, certain traditional "martial classes" (Sikhs, Rajputs, Jats, and Marathas) still dominate the officer corps and form the hard core of the enlisted ranks. Efforts are being made to recruit more widely in order to give the services more of an all-India character. This program appears to be progressing slowly, but the bulk of military manpower is still from north India. Women serve in each of the medical branches of the armed forces under the same terms of enlistment as men. The majority are assigned to the army as medical officers, military nurses, and "Lady Health Visitors."

Because of the great manpower surplus available and the general popularity of military service, the armed forces can screen and recruit better-than-average personnel by Indian criteria. The national literacy rate is less than 30%, however, and there is a general lack of technical experience. Consequently, recruits require extensive training, especially for jobs which call for technical skills. Despite the low health standards in India as a whole, the armed forces have maintained a relatively high physical standard through careful selection of recruits and adherence to sound dietary and hygienic programs within the services. As the national educational level improves with the growing enforcement of compulsory schooling for all children, the educational level of recruits will rise.

Armed forces personnel are generally slender and wiry and have outstanding endurance. Recruits respond well to discipline and take readily to military life. Regimental traditions (Figure 2) and the economic security and prestige afforded by military service influence many to remain on active duty until retirement age, and this contributes significantly to the professional competence of the armed forces.

Senior officers are generally capable (as junior officers in World War II many had distinguished combat records). The withdrawal of most of the British officers at the time of partition and the gradual departure of the remaining few during the 1950's



FIGURE 2. The camel-mounted infantrymen of the Ganga Jaisalmer Risala Battalion symbolize longstanding military traditions. The unit is used for patrolling the desert frontier with Pakistan. (U/OU)

resulted in the rapid promotion of Indian officers into positions that in many cases they were unqualified by experience to fill. Limitations on funds and training facilities restricted the scope and number of training exercises which could have provided needed practice in handling larger units. This lack of experience was demonstrated by the general ineptness of several senior commanders in the fighting with the Chinese in 1962. The rapid expansion of Indian military services, particularly the army, in the period between the Chinese and Pakistani border hostilities also caused a shortage of qualified leaders. However, as a result of the shortcomings made evident in these conflicts, the general leveling-off of armed forces expansion, and high-level command and staff experience gained in 1962 and 1965, leadership has improved at all levels.

Morale of the armed forces is good. Pay, allowances, and various fringe benefits give the Indian serviceman a higher standard of living and greater prestige than the average civilian. Morale varies somewhat from unit to unit, however, depending on leadership, equipment, and local conditions, and isolated instances of poor morale have been noted. Army units stationed for long periods at high altitudes in the Himalayas, for example, are prone to discipline and morale problems. However, regular troop rotations usually restore both morale and discipline. Additionally, special allowances have been granted for those stationed in especially undesirable locations.

Morale in the officer corps has been adversely affected from time to time by political decisions which appeared to be inimical to service interests. This was particularly true in the early 1960's under Minister of Defense V. K. Krishna Menon, who disregarded established service practices and traditions and whose policies led to the premature retirement of several of the armed forces' most competent officers. The abrupt dismissal of Menon in 1962 did much to restore officer morale. Moreover, the government's reaction to the hostilities with the Chinese in 1962, the successful operations against the Pakistanis in 1965 and 1971, and the receipt of first Western and then Soviet and Eastern European arms aid, all tended to allay concern over the status of Indian materiel and stimulated morale throughout the armed forces.

The reserves for each of the services vary. The Territorial Army, a civilian part-time reserve force which has undergone considerable reduction and reorganization as a result of its poor showing in the 1965 hostilities with Pakistan, is available for rapid mobilization and would be assigned missions comparable to those of regular units in time of emergency. In peacetime, the Territorial Army can

relieve army units of static duty. Many of its anti-aircraft artillery regiments and infantry battalions saw service in the December 1971 hostilities.

The reserve force of the Indian Navy has an estimated strength of 3,200 men and is divided into three basic elements: the Indian Naval Reserve, comprising professional merchant marine officers; the Indian Naval Volunteer Reserve, made up of other periodically recruited officers keenly interested in yachting; and the Fleet Reserve of Sailors, manned by ex-enlisted men transferred to the reserves on the expiration of their regular service.

The reserves of the Indian Air Force consist of the Regular Reserves, composed of men who have had previous service in the Indian Air Force; the Air Defense Reserves, composed of flying and technical personnel associated with civil aviation; and the Auxiliary Air Force, forming seven squadrons composed of citizens who volunteer to receive air training while following normal vocational pursuits.

In 1963, compulsory military training became mandatory for all male students between the ages of 13 and 26. These trainees were immediately absorbed into the National Cadet Corps (NCC), which had been established in 1948 as a voluntary ROTC-type organization without actual service liability. Intended to provide a reserve of potential officers for all armed services (it has army, navy, and air force wings), the NCC has not been a successful program. It is currently plagued by a shortage of instructors and equipment, particularly in technical units and the air force wing. As of 1 January 1971 the corps was functioning at about 3,000 colleges and 3,500 high schools; the Senior Division had approximately 697,000 trainees, and the Junior Division 673,000, the army wing of each division being much the largest.

Terms of service, both active and reserve, range with level of skill, the most skilled being required to serve on active duty for the longest time. If the individual serves the length of time of his obligatory reserve time by extending his active duty service, he is considered to have fulfilled his reserve obligation.

2. Strength trends (S)

During the period 1948-69 the total number of men in the armed services quintupled; the army increased over fourfold, the navy over fivefold, and the air force nearly eightfold. Since then, there has been a general leveling-off in the personnel strengths for all three services (Figure 3). Emphasis is now being placed upon improving quality rather than quantity.

FIGURE 3. Personnel strengths (S)

YEAR	TOTAL ARMED FORCES	ARMY	AIR FORCE	NAVY
1948.....	275,700	260,000	10,000	5,700
1952.....	421,700	400,000	12,700	9,000
1954.....	455,800	425,000	21,700	9,100
1956.....	413,100	380,000	22,100	11,000
1958.....	443,200	400,000	29,200	14,000
1960.....	459,800	410,000	33,300	16,500
1962.....	562,900	510,000	36,300	16,600
1964.....	926,400	864,000	45,500	16,900
1966.....	1,187,400	1,100,000	68,200	19,200
1969.....	1,228,900	1,120,000	77,000	31,900
1970.....	1,230,000	1,120,000	77,000	33,000
1971.....	1,233,200	1,120,000	78,200	35,000
1972.....	1,241,000	1,120,000	88,000	33,000
1973.....	1,257,000	*1,120,000	104,000	33,000

*Includes 28,000 armed police serving with the army.

3. Training (S)

Little of the training conducted in the armed forces can be considered combined or joint training. Concerted efforts have been made since the 1965 conflict with Pakistan to eliminate deficiencies in air-ground coordination. However, the December 1971 conflict with Pakistan again stressed the need for additional combined arms training.

The National Defense College at New Delhi, the Defense Services Staff College at Wellington (in the far south), the National Defense Academy at Kharakvasla and its feeder institution, the Rashtriya Indian Military College at Dehra Dun (in the far north), are the major triservice academic institutions. Additionally, technical schools such as the Armed Forces Medical College at Pune (formerly Poona) and the Ministry of Defense's School of Foreign Languages at New Delhi serve the defense forces as a whole. Some senior officers have received training in the United States, the United Kingdom, and the Soviet Union. Technical training is obtained from the foreign suppliers of equipment.

4. Military budget (C)

The Ministry of Defense presents the proposed defense budget to the Finance Minister for inclusion in the central government budget, which is then submitted to Parliament for approval. India's military spending had been increasing at a relatively moderate pace before the India-Pakistani war of December 1971. In FY1970/71 (1 April-31 March) defense spending increased by 7% over FY1969/70 and was budgeted to increase an additional 5% in FY1971/72

and reach US\$1.66 billion. The confrontation with Pakistan during April-November 1971 before the war broke out did not substantially increase military appropriations, but the hostilities that erupted in December 1971 resulted in military expenditures for FY1971/72 increasing by about 20%, compared to the planned increase of 5%. A supplementary expenditure of about \$223 million provided for the costs of extra imports of equipment and added salaries and other expenses generated by the war. The further sharp rise of over 10% in defense spending in FY1972/73 reflects the magnitude of the expansion in indigenous defense production and the level of foreign arms procurement. Actual military expenditures for FY1970/71 and FY1971/72, and the approved military budgets for FY1972/73 and FY1973/74 are shown in Figure 4.

5. Logistics

India has a rich reservoir of mineral, forest, and power resources which provide a substantial base for heavy industry. However, the economy is primarily dependent upon agriculture, which accounts for almost one-half of the GNP. The viability of the economy is perennially challenged by a relentless increase in population and shortages of transportation facilities, electric power, industrial raw materials, and managerial skills. (U/OU)

Since the early 1960's India has been committed to the development of a domestic capacity to produce military arms and equipment. India's economic planners consider civil and military technology and production as mutually supporting and believe that domestic defense industries make positive contributions to the country's economic development. They also feel that by becoming self-sufficient in armament production, India will be able to reduce its disbursements of foreign exchange for needed military materiel. India is producing a wide range of army materiel, including all of its infantry weapons, light artillery, and transport vehicles; most of the related ammunition, engineering, and quartermaster items; some types of field communication and radar equipment; and several armored vehicles, including the Vijayanta medium tank. The Soviet Union, Czechoslovakia, Poland, Bulgaria, and the United Kingdom are the major sources for larger caliber artillery, armor, and related ammunition. All major units of the Indian Navy fleet are foreign built. However, domestic shipyards are building frigates, inshore minesweepers, submarine chasers, and auxiliaries. The country has a medium-sized, diversified aircraft industry. It is increasingly self-sufficient in the manufacture and assembly of its own

FIGURE 4. Annual military expenditures/budget (C)
(In equivalent millions of U.S. dollars*)

	EXPENDITURES		BUDGET	
	FY1970/71	FY1971/72	FY1972/73**	FY1973/74
Army.....	1,022	1,253	1,318	1,249.2
Navy.....	126	150	171	114.1
Air Force.....	287	371	390	432.1
Other military***.....	142	109	197	337.9
Total.....	1,577	1,883	2,076	2,133.3
Percent of central government budget.....	20	19	25	21
Percent of GNP.....	3.0	3.4	3.6	3.7

*Converted at the rate of 7.5 rupees to US\$1.

**Approved budget.

***Includes capital expenditures for all three of the services, Ministry of Defense expenses, and pensions.

jet aircraft, but it still must depend heavily on foreign technical assistance for the major programs. Though it has made progress, it is behind what the government plans call for. Native-design aircraft being produced are the HF-24 jet fighter and HJT-16 trainer. The Soviet MiG-21 (FISHBED) jet fighter, the British HS-748 transport, and the French Sud-Aviation Alouette III helicopter all are being produced under license, most components being made in India. India has undertaken to produce under foreign license two guided missiles, the SS-11 antitank guided missile from France and the AA-2 ATOLL air-to-air missile from the Soviet Union. (S)

The Soviet Union and India signed their first arms agreement in 1960. Since late 1965, the Soviet Union has become India's chief foreign supplier of military materiel. Prior to 1965, India had received military assistance principally from the United Kingdom. For the 1960-72 period, military assistance from Communist sources totaled approximately US\$1.7 billion, with the Soviet Union supplying 92% of the total. Free world military assistance for the same period totaled \$639.0 million, with the United Kingdom and the United States supplying 51% and 23% of the total, respectively. (C)

The logistics system is coordinated at the Defense Ministry level either directly by the minister or through one of the various committees assisting him. Logistics requirements, planning, and implementation are coordinated and directed by various agencies and sections of the Ministry of Defense, depending on the specific area of logistics being considered. The Department of Defense Production deals with matters pertaining to the manufacture of equipment and is also responsible for research and development.

Directly responsible to this organization are the Director General of Ordnance Factories, Director General of Inspection, the Defense Research and Development Organization, and the heads of several autonomous undertakings such as Hindustan Aeronautics, Ltd. (HAL), Bharat Electronics, Ltd., and Praga Tools, Ltd. The Department of Defense Supplies is responsible for planning and implementing programs to develop the production in India of types of arms and military equipment that hitherto have had to be imported. This department is interested particularly in the fields of electronics, vehicles, and shipbuilding. Because of many difficulties, progress has been, and will probably continue to be, slow. (S)

6. Uniforms and insignia (U/OU)

Uniforms of the Indian Armed Forces are generally similar in style, manner of wearing, color, and material to those of the British Armed Forces. Since the climate of India is mostly tropical or subtropical, summer uniforms are generally worn by army, navy, and air force personnel the year round. These uniforms have a common styling and are olive drab for the army, white for the navy, and tan for the air force. All servicemen of the Sikh religion, regardless of unit, wear the turban headdress—olive green in the army, navy blue in the navy, and medium blue in the air force. White turbans are worn with dress uniforms.

The insignia system also has general similarities to the British, but with some significant differences, such as the Indian national emblem (Asoka lions) in place of the British crown, and the use of a five-pointed star device (pip) denoting grade of army personnel instead of the eight-pointed used by the British.

GROUND FORCES



FIELD UNIFORM



FIELD MARSHAL



GENERAL



LIEUTENANT GENERAL



MAJOR GENERAL



CAP INSIGNIA
GENERALS



BRIGADIER



COLONEL



LIEUTENANT COLONEL



MAJOR



CAP INSIGNIA
BRIGADIER
AND COLONEL



CAPTAIN



LIEUTENANT



2D LIEUTENANT

NOTE: Branch device is worn
as cap insignia by rank
of LT. COLONEL
and below.

NAVAL FORCES



SERVICE UNIFORM



ADMIRAL



VICE ADMIRAL



REAR ADMIRAL



COMMODORE



CAP INSIGNIA



CAPTAIN



COMMANDER



LIEUTENANT
COMMANDER



LIEUTENANT



SUB-LIEUTENANT



ACTING
SUB-LIEUTENANT

AIR FORCES



FIELD UNIFORM



AIR CHIEF
MARSHAL



AIR MARSHAL



AIR VICE MARSHAL



AIR COMMODORE



CAP INSIGNIA
AIR OFFICERS



GROUP CAPTAIN



WING COMMANDER



SQUADRON LEADER



FLIGHT LIEUTENANT



FLYING OFFICER



PILOT OFFICER



CAP INSIGNIA
OFFICERS

FIGURE 5. Officers' uniforms and insignia (U/OU)

GROUND FORCES

JUNIOR COMMISSIONED OFFICERS



SUBEDAR MAJOR/
RISALDAR MAJOR



SUBEDAR/
RISALDAR



NAIB SUBEDAR

NOTE Branch device is worn
at cap insignia

* In Armored Units

NONCOMMISSIONED OFFICERS



BATTALION
HAVILDAR MAJOR



BATTALION QUARTER-
MASTER HAVILDAR



COMPANY
HAVILDAR MAJOR



COMPANY QUARTER-
MASTER HAVILDAR



HAVILDAR



NAIK



LANCE NAIK



FIELD UNIFORM

NAVAL FORCES



CHIEF PETTY OFFICER



PETTY OFFICER



LEADING SEAMAN



CAP INSIGNIA
CHIEF PETTY OFFICER



CAP INSIGNIA
PETTY OFFICER



CAP INSIGNIA
OTHERS



SERVICE UNIFORM
PETTY OFFICERS



SERVICE UNIFORM
SEAMEN

AIR FORCES



MASTER
WARRANT OFFICER



WARRANT OFFICER



CAP INSIGNIA



FLIGHT SERGEANT



SERGEANT



CORPORAL



LEADING
AIRCRAFTMAN



FIELD UNIFORM

FIGURE 6. Junior commissioned officers', warrant officers', and enlisted men's uniforms and insignia (U/OU)

Peculiar to the Indian Army are the junior commissioned officer (JCO) ranks. These were established as a class by the British Indian Army because its European officers were handicapped by barriers of language and custom and, therefore, could not exercise the necessary degree of control over the ranks and establish close working relations with them. The system was carried over into the Indian Army. JCO's are invested with certain powers and privileges of commissioned officers.

No graphic information is currently available on the new naval ranks of master chief petty officer, class I and class II, created in 1968 and on the new air force rank of master warrant officer.

Summer field and service uniforms are shown in Figures 5 and 6.

a. Uniforms

Army officers are issued three types of uniforms—field, service, and dress. Enlisted men are issued a basic field-service uniform that is worn for all occasions. The field and service uniforms are made of olive drab wool material for winter and olive drab cotton for summer wear. The officers dress uniforms are made of tropical worsted or gabardine material.

The summer field uniform for officers consists of a British-style bush jacket, trousers, service cap or beret, belt, and shoes or combat boots; a field shirt and pull-over sweater may be worn in lieu of the bush jacket. The four-pocket bush jacket is single-breasted, has a rolled collar, shoulderloops, and a belt of the same material. This jacket is frequently worn with sleeves rolled and may also be worn as a component of the service uniform. In hot weather shorts with knee-length socks may be worn in lieu of long trousers. The winter field uniform consists of a jacket, khaki shirt and tie, trousers, leather or web belts, short canvas or wrap leggings, combat boots or shoes, and beret or service cap. The collar of the jacket is worn open. In addition to the beret or service cap, a felt bush hat is issued in some units.

Army enlisted men have summer and winter field uniforms that are similar in design to those of officers, except that the winter jacket is worn with the collar buttoned and without shirt and tie. The bush jacket is not worn. The usual headgear is a beret, but a helmet or felt bush hat is issued in some units.

Army officers wear a service uniform consisting of a coat, matching trousers, khaki shirt and tie, low-quarter shoes, and a service cap or beret. The four-pocket coat is single-breasted, has a rolled collar, shoulderloops, and belt of the same material. A Sam Browne shoulder belt may be worn with the coat. The

service cap has an olive drab crown and visor, and a brown leather chin strap. The summer service uniform is similar to the winter uniform but of light weight material. The coat is not always worn and in hot weather, shorts and knee length socks may be worn in lieu of trousers. The dress uniform for officers is similar in pattern to the service uniform except that it is tailored of tropical worsted or gabardine material. The Sam Browne shoulder belt and service cap is worn with this uniform.

The usual uniform for naval officers is the summer service, which consists of a white bush jacket (similar to that worn by army and air force officers) or an open-necked short-sleeved white shirt with shoulderboards, matching trousers or shorts with white shoes and knee-length stockings. The summer dress, worn on more formal occasions, includes a white standing collar, single-breasted coat and matching trousers. The traditional navy blue double-breasted winter service uniform is worn by naval officers when in cool climates. Petty officer ranks wear summer and winter service uniforms that are basically similar to those worn by officers. They are also worn by leading seamen in the supply, secretariat, and medical branches, and by junior artificers (specialists). These rates are identified by black horn buttons on the uniform coat and red cap insignia. Petty officer ranks and leading seamen are authorized a white summer dress uniform that includes a white standing-collar, single-breasted coat and matching trousers; winter uniforms are similar to those of officers. The service cap with a white cap cover is worn with officers and petty officers uniforms.

Naval enlisted personnel in the lower ranks wear standard white service and dress uniforms. The service uniform includes white shorts, a square-cut, open-necked jumper with a blue border and short sleeves, blue canvas belt, blue knee-length stockings, and black shoes. The dress uniform includes long white trousers and white V-necked jumper with long sleeves and square blue collar. A round, flat-topped hat with ribbon is worn with both uniforms.

Air force personnel wear uniforms that, except for color and minor modifications, are similar in style to those of the army. Summer uniforms are tan colored and winter uniforms a blue-gray, generally identified as "RAF" blue. Headgear is blue service or garrison caps.

b. Insignia

The ranks of army officers and junior commissioned officers are indicated by metallic or embroidered devices displayed on shoulderloops. Embroidered

insignia is worn by company havildar majors and above, on the sleeves midway between the wrist and elbow. All other ranks wear cloth chevrons on both sleeves between the elbow and shoulder.

Naval officers wear insignia of rank either on shoulderboards or sleeves. When displayed on shoulderboards, insignia consists of gold stripes for officers through the rank of commodore. Flag rank officers wear from one to three stars. Rank stripes are worn on the sleeves of the traditional navy blue uniform. Chief petty officers have three gold buttons in a horizontal row along the cuff of both sleeves of the jacket. Petty officers and leading seamen wear rating badges on the left sleeve between the elbow and the shoulder. From one to three blue chevrons (Good Conduct Badges) each representing 4 years of satisfactory service are displayed below the rating badges. Good Conduct Badges are also worn on the left sleeve between the elbow and shoulder by ordinary seamen.

The ranks of air force officers are indicated by varying numbers of blue cloth stripes displayed on shoulderboards of the summer field uniform or on sleeves of the winter service uniform. Warrant officers' rank insignia are embroidered and are displayed in the same manner as those of officers. Other air force personnel wear cloth chevrons on both sleeves between the elbow and the shoulder.

Distinctive cap devices are worn by officers of the army with the rank of general through colonel. All officers below the rank of colonel, the junior commissioned officers, and enlisted personnel wear branch-of-service devices on headgear, except infantry or cavalry personnel—they wear the badge of the regiment to which they belong. The Indian ground forces use both distinctive devices and colored berets to indicate branch of service. Berets are dark green for infantry personnel, black for cavalry and armor, maroon for paratroopers and the President's Bodyguard, and navy blue for all other arms and services. General officers and colonels wear scarlet bands on service caps and turbans and crimson collar tabs.

Naval branch specialty badges are worn by seamen on the right sleeve between the elbow and the shoulder and by petty officers on their coat lapels.

Air force general officers wear a slightly different cap insignia than that worn by other officers. Flying badges are worn over the left breast pocket.

C. Army

The Indian Army is charged with the mission of territorial defense, internal security, and assisting in

civil emergency. It has more than doubled its strength since 1962 as a result of rising tension and of hostilities on the country's borders. State Forces, formerly maintained by the States of Assam and Jammu and Kashmir, and a number of battalions of armed police (normally under control of the various states) are in the regular army establishment on a semipermanent basis. These forces are used for both border security in Jammu and Kashmir and Arunachal Pradesh and for internal security (counterinsurgency in Nagaland, Manipur, Mizoram, and Tripura). (C)

The principal strengths of the Indian Army include a vast reservoir of available manpower, the excellent fighting qualities, discipline, morale, and *esprit de corps* of the individual soldier and a high state of combat readiness. Principal weaknesses include doctrinal rigidity, logistics, and the shortage of junior officers. Although Indian Army units performed well during the December 1971 war with Pakistan, tactical doctrine lacks flexibility. As an example, army schools impart to commanders the guideline that every brigade or higher level attack requires 2 days and 2 nights of reconnaissance. Although foreign aid and military purchases have strengthened the army's fighting capability, the diverse types and origins of equipment still in the army's inventory pose maintenance, technical training, and spare parts procurement problems. India is, however, taking steps to reduce dependence on foreign sources of supply and alleviate logistical difficulties by developing a domestic defense industry. Significant quantities of military equipment made in India are appearing in the hands of army troops. Finally, a lack of young officers dictates the assignment of junior commissioned officers (former noncommissioned officers appointed from the ranks) as platoon leaders. Senior army officers have a general lack of confidence in these leaders. Consequently, no unit smaller than a company is ever deployed away from its parent unit in a position such as a combat outpost or the hostile side of a defended riverbank. (S)

1. Organization (U/OU)

Control of the army is vested in the Chief of Army Staff, who is ex officio a member of the Chiefs of Staff Committee of the Ministry of Defense. The staff organization of the army headquarters in New Delhi includes the General Staff (which includes the Vice Chief of Army Staff and Deputy Chief of Army Staff), the Adjutant General, the Quartermaster General, the Master General of Ordnance, the Engineer-in-Chief, and the Military Secretary (Figure 7). The Vice Chief of Army Staff supervises operational type directorates,

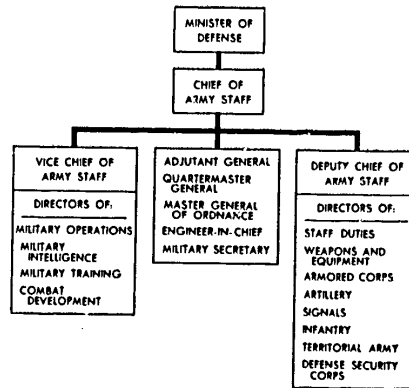


FIGURE 7. Organization of Army Headquarters, 1973 (U/OU)

while the Deputy Chief of Army Staff controls the directorates of the various arms and services.

For army command and administration, India is divided into five territorial commands—Northern, Western, Central, Eastern, and Southern Commands; their headquarters, respectively, are in Udhampur, Simla, Lucknow, Calcutta, and Pune. Each of the territorial commands is headed by a lieutenant general who is responsible for local administration, lines of communication, internal security, and troop units within his area. The territorial commands are subdivided into tactical commands (i.e., corps) and into administrative area and subarea commands; both of these last two constitute headquarters for static units such as ordnance depots and training establishments. The tactical chain of command runs downward from the territorial command to corps, division, brigade, battalion, and smaller units.

The basic units in the army are the infantry battalion, the artillery regiment, and the armored regiment (both of these regiments are of U.S. Army battalion size). A corps normally has an artillery brigade and three infantry-type divisions; it is an administrative as well as a tactical command. The army has three types of divisions—armored, infantry, and mountain. The armored division is composed of an artillery brigade, an armored brigade, and a mechanized infantry brigade. The infantry division sometimes has an organic armored regiment and normally an artillery brigade, as well as three infantry brigades. The mountain division has a similar organization but with three exceptions—it usually lacks the armored regiment, one or more of its artillery

regiments of its artillery brigade are equipped with lightweight mountain howitzers, and its vehicles are smaller, predominantly of 1-ton rather than 3-ton capacity.

2. Strength, composition, and disposition² (S)

The Indian Army is estimated to have a strength of 1,092,000 men. There are 36,000 officers, 44,500 junior commissioned officers, 851,500 enlisted men, and 150,000 recruits. In addition, there are 30 integrated armed police battalions consisting of some 28,000 men. The major combat units of the army are 26 divisions (15 infantry, 10 mountain, and 1 armored) and 36 independent or nondivisional brigades (8 infantry, 5 armored, 14 artillery, 7 air defense, and 2 parachute). There are 7 corps headquarters.

Basic infantry weapons are the 7.62-mm Ishapore (Belgian FN) rifle, the 7.62-mm Bren machinegun, the 3.5-inch rocket launcher, 2-inch, 81-mm, and 120-mm mortars (Figure 8), and the 106-mm recoilless rifle. Armored units are equipped with the Soviet-designed T-54 and T-55 tanks (Figure 9), the British Centurion, or the Indian-built Vijayanta (Vickers) tanks (Figure 10). Mechanized units have either Czechoslovak OT-62 (Topas), Czechoslovak or Polish OT-64 (Skot), or Soviet BTR-60 PB armored personnel carriers. Artillery units have a most diverse inventory of weapons—French 120-mm mortars, Yugoslav 76-mm mountain howitzers (Figure 11), U.K. 25-pounder gun-howitzers, Soviet 100-mm guns, U.K. 105-mm self-propelled guns, Soviet 130-mm guns, U.K. 5.5-inch and 7.2-inch gun-howitzers. In addition, the army is equipped with SS-11 antitank guided missiles (Figure 12).

Until the hostilities with China in 1962, most combat units were stationed in northwestern India

²For regularly updated information, see the *Order of Battle Summary, Foreign Ground Forces*, and the *Military Intelligence Summary*, both published by the Defense Intelligence Agency.



FIGURE 8. 120-mm Tampella mortar, designed and built in India (U/OU)

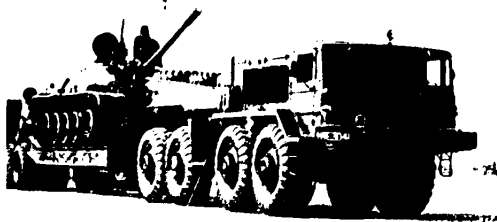


FIGURE 9. T-55 medium tank, carried on a MAZ 537 tractor and low-boy trailer. The 39-ton tank mounts a 100-mm gun, one 7.62-mm machinegun, and one .30 cal machinegun. The addition of a .30 cal machinegun to the turret roof is an Indian modification. The tank has a speed of 30 miles per hour and a cruising range of 310 miles. The MAZ 537 tractor has a towing capacity of 90,000 pounds. (C)

and in the Indian-held portion of Jammu and Kashmir, deployed for defense against Pakistan. The only other significant concentration was in the Assam area, where attention was divided between watching the Chinese border and carrying on pacification operations against the dissident Naga tribes. Because of the brief clash with the Chinese in 1962, Indian strategic military planning was concentrated primarily on the threat from the north. With the Rann of Kutch incident with the Pakistanis in the spring of 1965, however, troops were again concentrated against West Pakistan, and by the conclusion of this clash, the Indians, as well as the Pakistanis, had deployed large tactical formations in the Punjab, along the



FIGURE 10. Vijayanta medium tank, produced under a licensing agreement with Vickers Ltd. (United Kingdom) since December 1965. The 37-ton tank mounts a 105-mm high-velocity gun, two .30 cal machineguns, and one .50 cal machinegun. It has a speed of 35 miles per hour and a cruising range of 420 miles. (S)



FIGURE 11. 76-mm mountain howitzers, designed and built in India (U/OU)

international frontier. Following the September war and the subsequent Tashkent Agreement, troops were withdrawn to central India, where they remained until the eve of the December 1971 war with Pakistan. Although some units have been withdrawn to cantonments in central and southern India, the Indians will doubtless continue to view Pakistan with suspicion. Recognizing that India is still threatened by both Pakistan and China, the army maintains sizable forces with primary missions oriented toward each front. As proven in 1965 and again in 1971, India has the capability to shift division-size units over great distances.

In mid-1973, five divisions were stationed in Jammu and Kashmir to counter the Pakistani threat, and one was stationed at Leh and oriented toward the Chinese troops in Tibet. Six other divisions were stationed in the plains area of the Punjab for employment against Pakistani forces. Although subordinate to the Southern Command, the 11th and 12th divisions, stationed in the States of Gujarat and Rajasthan, were also in position for deployment to the west. To counter the Chinese threat, in addition to the division stationed at Leh guarding the approach to the Vale of Kashmir, two corps of three divisions each were manning



FIGURE 12. French-designed SS.11 wire-guided missile, mounted on a 1/4-ton truck. The missile has a range of from 500 to 3,000 meters. It went into production at Hyderabad in 1971 under license from the French Societe Nationale Industrielle Aerospatiale and 1,040 were assembled in 1972. (C)

positions extending from within Sikkim to the eastern portion of Arunachal Pradesh. The remaining divisions were located in pivotal positions from which they could counterattack on either front or through Nepal and Bhutan.

The reserve Territorial Army (TA), which was reduced and reorganized following its poor performance against the Pakistanis in September 1965, had a strength of about 43,700 men in early 1973. Its company- and battalion-sized units are designed for rapid mobilization in times of emergency and have missions comparable to those of the regular forces. TA units, especially its air defense regiments, reportedly performed well during the December 1971 war with Pakistan.

The army wing of the National Cadet Corps (NCC) is a volunteer, military-type training organization within the Indian school system. Its aim is to develop leadership and character in the better qualified youth and provide a pool of potential officer candidates for the army. No actual service liability is attached. Centrally controlled by the Director General, National Cadet Corps, New Delhi, and trained by regular army personnel, the corps has its own distinctive uniform and consists of Junior (high school level), Senior (university level), and Girls Divisions. Strength of the army wing's Senior Division as of February 1972 was 578,000, and that of its Junior Division, 525,000. Training includes physical conditioning, drill, mapreading, and other basic subjects. NCC units frequently are used to supplement police units in crowd control on special occasions and could readily be used as fillers in regular service units in maximum mobilization.

3. Training (S)

The army's training system has been strongly influenced by British procedures and retains many of the features of the old British Indian Army training program. Overall, training is thorough and conscientiously conducted but lacks originality and flexibility. The infantry continues to use the British regimental system under which each regiment is a repository of tradition. There are 25 infantry regiments, including 7 Gurkha Rifles regiments, which have training and administrative responsibilities but no operational role. The other arms and services of the army have branch or "corps" centers where all officers and enlisted men are trained. In addition, there are a number of specialist schools that teach technical, scientific, and administrative skills. The principal

specialist schools, their locations, and types of training are as follows:

SCHOOL	LOCATION	TYPE OF TRAINING
Combat Schools:		
Armored Corps School	Ahmednagar	Armor training for officers and enlisted instructors
School of Artillery ...	Deolali ...	Technical and tactical training for officers and NCO's
Infantry School ...	Mhow ...	Infantry training for officers and NCO's
Combat Support Schools:		
College of Military Engineering	Roorkee ..	Technical courses for officers, enlisted personnel, and civilians
Electrical and Mechanical Engineering School	Secunderabad	Technical and management courses for officers and enlisted men
Army Intelligence Corps School	Pune	Intelligence courses for officers and enlisted men
Schools of Signals ...	Mhow ...	Basic and advanced technical courses for officers and enlisted men
Combat Service Support Schools:		
Army Education Corps Training College	Pachmarhi	Courses for instructors
School of Mechanical Transport	Faizabad	Driver and maintenance course for officers and enlisted men
Corps of Military Police School	Faizabad	Various courses for officers and NCO's
Army Ordnance Corps School	Jabalpur ..	Basic and advanced courses for officers and enlisted men
Remounts and Veterinary School	Meerut ...	Various courses for officers and enlisted men
Army Service Corps School	Bareilly ..	Technical courses for officers and enlisted instructors
Specialized institutions:		
Army School of Physical Training	Pune	Physical and recreational training courses for officers and enlisted instructors
Army School of Health	Lucknow ..	Health and sanitation courses for officers
Army/Air Transport Support School	Agra	Rigging and delivery courses for officers and NCO's
High Altitude Warfare School	Gulmarg ..	Cold weather and mountaineering instruction for officers and enlisted men
Counterinsurgency and Jungle Warfare School	Dehra Dun	Unconventional warfare training for officers and enlisted men
Institute of Defense Management	Secunderabad	Management courses for officers and civilians

The low educational level of the average recruit makes extended periods of training necessary. Normally 36 weeks are required for basic training, much of which is devoted to literacy classes, basic hygiene, and physical training.

The variety of languages used in India presents another problem in training. The army uses Hindi, the national language, but the objective of having all commands issued in Hindi has not yet been realized. Regional languages must still be employed in many cases; however, troops learn basic commands in Hindi.

Field training stresses operating in difficult terrain and includes night training. Following the fighting with Pakistan in 1965, battle indoctrination training was introduced into the army curriculum to accustom troops to the noises and shocks of the battlefield. All army units undergo simulated battle training. Training concepts are under continual review to meet the changing requirements brought about by new developments and the introduction of new weapons and equipment.

Until the Chinese attack in 1962, training had been extremely limited. This was due to a lack of emphasis on training by the top command echelons and the paucity of funds, instructors, facilities, and equipment. The effect of this exceedingly serious shortcoming was driven home particularly by the ineptness of many senior commanders in handling large units in the field. In 1965 the fighting with Pakistan again revealed serious deficiencies in Indian Army leadership. In the rapid expansion of the army that the 1962 conflict made necessary, the army had to concentrate on training the individual recruit and small units. Moreover, sufficient numbers of higher commanders had not been developed during the 1962-65 period since funds were allocated mainly to raising and equipping new units and not to extended field exercises. The result was that in the field the Indian Army fought the 1965 war with Pakistan as a series of uncoordinated brigade actions rather than as divisional or corps operations, and, even at that, those actions were characterized by lack of coordination between units and lack of confidence between commanders and intelligence officers. Perhaps for the Indian Army the best thing about the 1965 fighting was the good field experience that it afforded.

As a result of these experiences and a general leveling off of the army expansion program in the late 1960's, the army has been concentrating upon streamlining, modernizing, and upgrading its units. In March 1967 it held its largest exercise since 1950. Units fielded included a corps headquarters that had been formed during 1965 hostilities, three infantry

divisions, and an armored division. Since then, joint division and corps training exercises have been held fairly regularly—usually every spring—affording valuable field experience in large-unit operations that paid off well in the skillfully executed invasion of East Pakistan (now Bangladesh) by an army of three corps in December 1971.

The school system for army officers is adequate and includes courses ranging from officer candidate to staff and war college levels. In addition, schools such as the Snow Warfare School, the High Altitude Mountaineering School, and the Jungle Warfare School provide special training in those fields. A few officers are also sent abroad each year for training in advanced or specialized fields, chiefly to the Soviet Union, the United States, and the United Kingdom. Promising senior officers are sent to the Imperial Defense College in the United Kingdom; the highest military school in the United States attended by Indian officers is the Army Command and General Staff College at Fort Leavenworth, Kansas.

The reserve Territorial Army training program is conducted under two systems, one focused on rural areas and the other centered upon urban communities. After completion of basic recruit training, the individual receives 2 months annual training under the rural system. Training under the urban system is provided on weekends and holidays and during annual camp of 8 to 14 days. Some personnel attend courses at army schools. Technical units (such as Railroad Engineers, etc.) attend 30-day training periods annually.

4. Logistics (S)

The Quartermaster General and the Master General of Ordnance have primary responsibility for top-level logistic planning and procurement of materiel for the army. Operational details are handled at Army Headquarters level by various directorates within the quartermaster and ordnance staff branches. These directorates also are responsible for delivery of equipment to the territorial commands. Storage and issue are carried out primarily by the Ordnance Corps; however, the Army Service Corps, Corps of Engineers, and Army Medical Corps also handle certain specialized items of equipment. Responsibility for transportation and related services is divided between the Army Service Corps, which provides and operates all military road transport, and a special branch of the Corps of Engineers that furnishes technical personnel for the construction, maintenance, and operation of roads, railroads, ports, and inland waterways.

In addition to the various combat formations, various headquarters organizations subordinate to the five territorial commands are responsible for the administration of the fixed installations, such as ordnance depots and training centers. These organizations are known as Area Commands or Subarea Commands. For specialized mountain operations in both Jammu and Kashmir and Arunachal Pradesh, Communications Zone Area and Subarea Commands are responsible for the lines of communications throughout this difficult terrain. Their tasks include maintaining roads; maintaining and staffing staging areas, recovery points, and POI points; and the organizing and operating supply convoys.

The logistics system has improved markedly over the last decade and is now capable of supporting the army. The December 1971 invasion of East Pakistan could not have been nearly such a success as it was had not the large-scale logistics planning and operations been of a high order. Staff officers and commanders learned the lessons of the fighting with the Chinese in 1962 and the Pakistanis in 1965. These operations, including the 1,300-mile redeployment of an entire division in 5 days during the 1965 conflict, provided a wide range of valuable experience in supplying units in the field. Considerable improvement has resulted, particularly in maintenance support and in supply flow at advance depot level and forward. However, the still unavoidable need to rely on foreign sources for important materiel, the heterogeneity of equipment, and the inadequacy of the transportation net in the more remote and threatened areas are major burdens that will continue to hamper the effectiveness of the system for years to come.

5. Army aviation (S)

The Indian Army Air Arm is a small force of 44 HAL Krishak MK-2 utility aircraft and 1,200 personnel, including 200 army officer pilots. Although equipment is administratively controlled by the air force, army aviation is operationally controlled by Army Headquarters. Unit organization consists of 11 Air Observation Post (AOP) flights, which are assigned to either divisional infantry brigades, independent artillery brigades, or corps artillery brigades. The mission is to support army units in artillery fire spotting, liaison, and reconnaissance. Even with the handicaps of old and scarce aircraft, the air arm has a good capability for performing its mission. Most of the army aviators have been trained by the air force. They are competent, and their morale and loyalty compare favorably with that of air force personnel. They are rotated between flying assignments and ground

(artillery) assignments. The air force maintains the aircraft. Replacement of the utility aircraft with helicopters is under consideration.

D. Navy

The Indian Navy is a coastal patrol, escort, and antisubmarine warfare (ASW) force. The primary missions are to be prepared to conduct sea warfare in the national defense or as directed by constitutional authority, to defend territorial waters, and to protect coastal shipping. The navy is endeavoring to fulfill these missions and at the same time to assume a greater presence in the Indian Ocean. Because of India's more pressing and immediate need for ground and air defense, the navy has historically been the smallest and most neglected of the three armed services. The acquisition of submarines, escorts, guided missile patrol boats, and other ships and craft from the U.S.S.R. since 1966 have significantly added to its offensive and defensive capabilities; additional acquisitions and construction of destroyer escorts (Figure 13) in Indian shipyards will ensure the continuation of the modernization program. (U/OU)

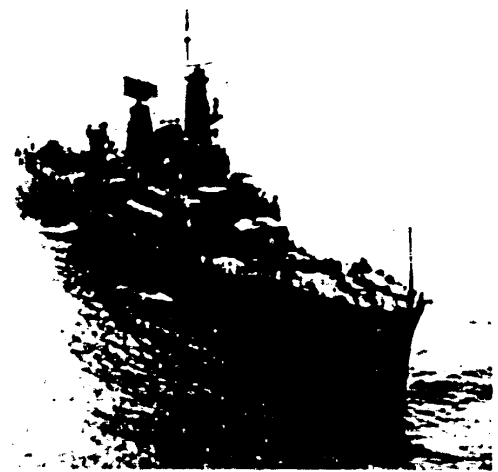


FIGURE 13. INS Nilgiri, a 3,000-ton, 30-knot, helicopter-equipped destroyer escort (DEH), is the lead ship of six planned for indigenous construction by the Indian Navy. The Mazagon Dockyard at Bombay took almost 6 years to complete it, but construction time should be shorter on the other five LEANDER class DEH's. The second keel was laid in November 1968, and all are scheduled to join the fleet by 1978. Nilgiri carries 17 officers and 250 men and is 372 feet in length with a 41-foot beam. It can carry an ASW helicopter aft, two 4.5-inch dual-purpose guns, two 40-mm single mounts, and one LIMBO 3-barrelled DC mortar. (U/OU)

The navy is capable of accomplishing its missions against Pakistan or any other North Indian Ocean navy, but would be unable to defend India's long coastline and sea lines of communication against any major naval power. Although organized primarily as a defensive force, as indicated by its missions, the navy has a modest offensive potential in its one aircraft carrier, four F class submarines, two light cruisers, and its destroyer/destroyer escort force, coupled with its eight Osa class guided missile patrol boats. However, the employment of the ships as an attack carrier force would be hampered by the small number and obsolescence of tactical aircraft. Nevertheless, the Osa's (Figure 14) are unique in the North Indian Ocean and provided a valuable contribution to the Indian Navy's success in the December 1971 conflict with Pakistan. (S)

The ASW capability of the Indian Navy is effective only within confined operating areas. The small number of modern ASW ships and aircraft precludes simultaneous patrol of all coastal waters. The smallness of the minesweeping force is another serious shortcoming in the navy's defensive potential. It is generally conceded that in the face of a determined enemy mining effort the Indian Navy would do well just to keep the port of Bombay open. (S)

The principal strengths of the Indian Navy are: the better-than-average quality of its personnel; its sound organizational concepts that stem out of a long apprenticeship under the British Royal Navy; its ongoing program to upgrade the effectiveness of the fleet with new ships and craft; and the slow but steady expansion of shore facilities. Major weaknesses are: the generally poor material condition of ships and craft; the inadequate number of ships in relation to the long coastline; the absence of modern tactical naval aircraft; shortages of technically trained men in both the operational and maintenance fields; and a logistics system that continues to be severely hampered by having to depend on foreign procurement for most naval ordnance, technical equipment, and spare parts. (C)

The Indian Navy is a well-organized force, patterned after and conditioned by the British Navy, of which it was an adjunct up to 1947. British influence, however, has diminished, particularly since the mid-1960's. Since the Indo-Pakistani conflict of 1965, the Soviet Union has become an increasingly important source of naval equipment and of technical training and has replaced the United Kingdom as the chief supplier. Recent reports indicate that the Indian Government is dissatisfied with some of its Soviet naval equipment, but not enough to stop further

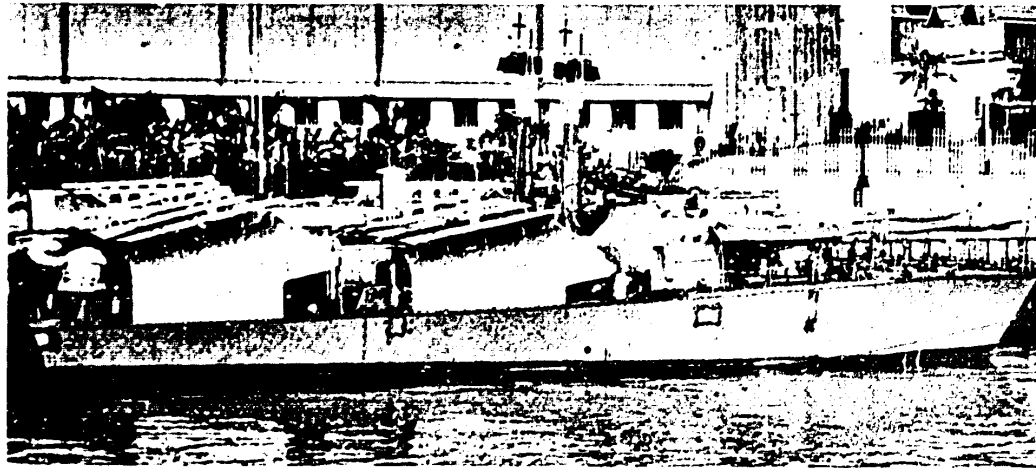


FIGURE 14. Eight of these OSA 1 class large guided patrol boats (PTFG's) have been provided to the Indian Navy by the U.S.S.R. Mounting four STYX surface-to-surface missiles and having a maximum speed of 41 knots, those boats were very effective in the December 1971 conflict. They are 128 feet in length and displace 210 tons. Noticeably absent from these units are the DRUM TILT radars which have not as yet been exported from the Soviet Union. The DRUM TILT would enable the boats to carry out their own target acquisition prior to coming within firing range of the STYX (approximately 25 miles). The Indian Navy presently uses Combat Air Patrol and the radar from its larger units to conduct initial target acquisition. (C)

purchases because the Soviets' financial arrangements with the Indians are very liberal. The Soviets have tried to impose the restriction that the ships it supplies not be used in units which include Western-supplied vessels. This was probably a Soviet attempt to make the Indian Navy more dependent upon the Soviets for training. The Indian Navy has not yielded, however, and since 1966 has been, in fact, mixing the Soviet-built and Western-built ships and craft so that personnel may be cross-trained and learn to operate together effectively. Though increasing dependence on the Soviet Union has not yet materially affected the strongly professional, patriotic, and generally pro-Western orientation of the service, continued association may well develop greater sympathy for Soviet points of view among naval personnel. There are indications that attitudes toward Western countries, and especially the United States, may be cooling as a result of the actions of those countries during the December 1971 Indo-Pakistani conflict. On the other hand, Soviet naval ambitions and growing presence in the Indian Ocean, an area that India tends to look on as its own naval area, may be leading towards rivalry with the Soviet Navy. The overall state of training is considered adequate, despite the fact that there is a shortage of technical instructors and modern training equipment. Morale of officers and enlisted men is good, and pride in their growing fleet is evident. The navy's successful operations against and obvious superiority over the Pakistani Navy in December 1971 heightened both. (C)

1. Organization (U/OU)

The Chief of Naval Staff, an admiral, is commander of the navy; in the chain of command he comes under the Minister of Defense. He is an ex officio member of the Chiefs of Staff Committee of the Ministry of Defense and directs the overall activities of the naval establishment through Naval Headquarters. His principal assistant is the Vice Chief of Naval Staff, a vice admiral. The Naval Secretary functions under the Vice Chief of Naval Staff and has cognizance over matters pertaining to the budget, naval regulations, and shore establishments.

Naval Headquarters, in New Delhi, consists of five branches—staff, personnel, material, logistics, and a composite branch under the Assistant Chief of Naval Staff. The Vice Chief of Naval Staff also serves as Chief of the Staff Branch and in this capacity is responsible for plans, operations, communications, intelligence, and hydrography (Figure 15). In March 1973, a plan to reorganize Naval Headquarters was approved, but details are not yet available.

The Chief of Personnel is responsible for the appointment of officers, for the recruiting of enlisted men, for general service conditions, for training and welfare of personnel, for maintaining discipline, and for legal matters. The Chief of Material is responsible for fleet maintenance, naval engineering, electrical engineering, armament inspection, and heavy naval equipment. He also coordinates scientific research and development in the naval service and manages repair

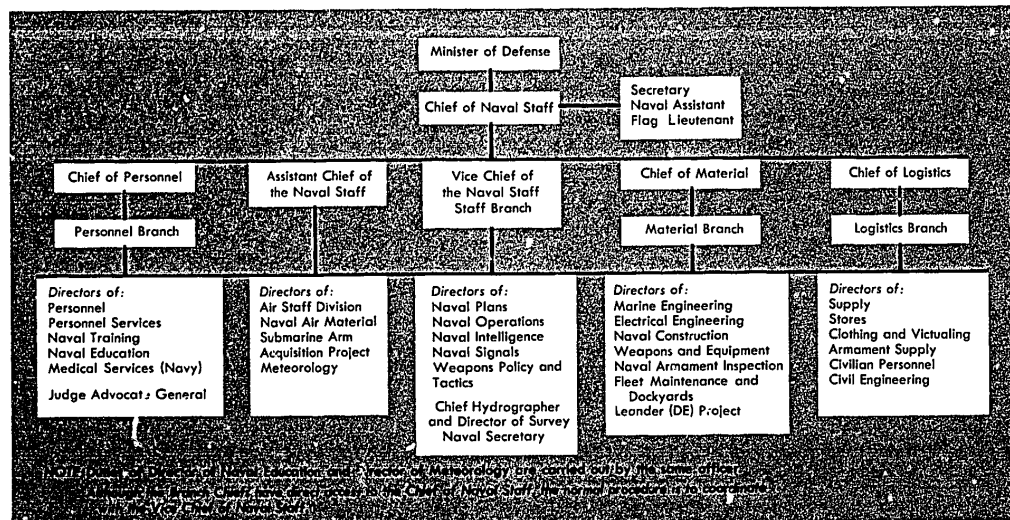


FIGURE 15. Indian Naval Headquarters Organization, 1973 (U/OU)

and dockyard facilities. The Chief of Logistics is responsible for all supply matters, as well as civilian personnel and civil engineering. The Assistant Chief of Naval Staff is responsible for the naval air and submarine arms, including their administration, training, and operations.

The Chief of Naval Staff exercises operational and administrative control over the forces afloat and the shore establishment through three commands—the Western Naval Command, the Eastern Naval Command, and the Southern Naval Command. The Flag Officer Commanding-in-Chief, Western Naval Command (FOCWNC), a vice admiral, controls all shore establishments of the navy situated in and around Bombay, as well as the ships based at Bombay that are not part of the Western Fleet. Subordinate to FOCWNC is the Flag Officer Commanding, Western Fleet (FOCWEF), a rear admiral, who commands about half the principal surface combatants of the Indian Navy in a fleet comparable to a small U.S. Navy task group. The Flag Officer Commanding-in-Chief, Eastern Naval Command (FOCENC), a vice admiral with headquarters at Vishakhapatnam, is responsible for the bases at Calcutta, Madras, and the Andaman Islands, as well as for those naval ships based at Vishakhapatnam and Port Blair but not part of the Eastern Fleet. Subordinate to FOCENC is the Flag Officer Commanding, Eastern Fleet (FOCENF), a rear admiral, who commands the other half of the principal combatants of the Indian Navy. The Flag Officer Commanding-in-Chief, Southern Naval Command (FOCSNC), a rear admiral with his headquarters at Cochin, controls shore establishments and naval air stations at Cochin, Coimbatore, Dabolim, and Marmagao, as well as ships and aircraft at the stations. The Southern Naval Command was formed in late 1970 by upgrading the former Southern Naval Area.

Naval communications are basically controlled by Indian Naval Headquarters, New Delhi. They are the responsibility of the Director of Naval Signals, who is directly under the Chief of the Staff Branch. In general, communications organization and operations follow the procedures that the Royal Navy used in World War II. The Bombay Shore Broadcast is a combined broadcast through which most traffic from Indian Naval Headquarters is relayed. Between Bombay, New Delhi, Cochin, and Vishakhapatnam the navy has direct landline, closed-circuit teletype links. Naval Headquarters maintains a radio circuit with Colombo, Sri Lanka (formerly Ceylon), operational only at night, and also has a communication link with the British Admiralty in

London. Commercial telegraph and telephone lines are used as backup.

2. Strength, composition, and disposition³ (S)

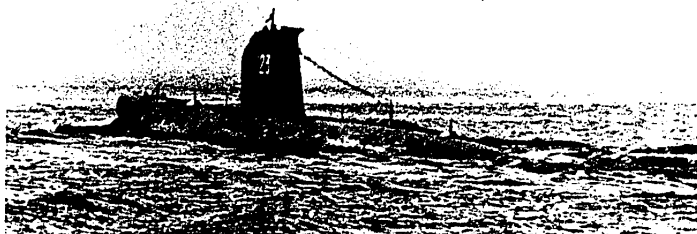
Personnel strength of the navy is about 33,000, about 3,300 of whom are officers. Almost all are in the general service category, the only exceptions being the 1,500 aviation personnel. Some 40% serve afloat; of those serving ashore, an estimated 20% are in a training status. The navy has a small, active reserve program that includes 3,200 men, about 100 of whom are officers. As of April 1972, the Senior Division of the naval wing of the National Cadet Corps, a quasi-ROTC type organization, had a strength of about 11,500 and the Junior Division 47,000. In 1967 an extensive personnel expansion program was begun and strength rose rapidly—from 19,200 in 1966 to almost 33,000 in 1969.

The ship inventory consists of 110 vessels. The Western Fleet has 77 ships, the Eastern Fleet 24, and the Southern Naval Command controls nine vessels. By command, number, and type of vessels, the inventory is as follows:

COMMAND	NUMBER AND TYPE OF VESSEL
FOCWEF (Western Fleet)	1 ASW Support Aircraft Carrier (CVS)
	2 Light Cruisers (CL)
	2 Destroyers (DD)
	8 Destroyer Escorts (7 DE, 1 DEH)
	2 Patrol Craft Escorts (PCE)
	3 Patrol Escorts (PF)
	8 Large Guided Missile Boats (PTFG)
	6 Motor Gunboats (PGM)
	8 Minesweepers (4 MSC, 4 MSI)
	10 Auxiliaries
27 Service	
FOCENF (Eastern Fleet)	1 Destroyer (DD)
	3 Patrol Craft Escorts (PCE)
	6 Motor Gunboats (PGM)
	4 Submarines (SS)
	1 Tank Landing Ship (LST)
FOCSNC (Southern Command)	5 Auxiliaries
	2 Motor Gunboats (PGM)
	2 Medium Landing Ships (LSM)
	3 Patrol Escorts (PF)
	1 Motor Gunboat (PGM)
	1 Auxiliary
	4 Service

³For regularly updated information, refer to the *Military Intelligence Summary*, the *Naval Forces Intelligence Study*, and the *Automated Naval Order of Battle (Ships)*. Naval aviation is treated in the first two publications and also in the *Air Forces Intelligence Study* and the *Free World Air Order of Battle*. All of these references are published by the Defense Intelligence Agency.

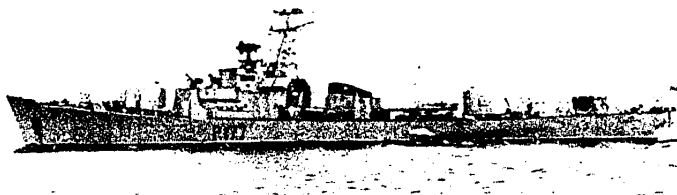
FIGURE 16. INS *Kalvari*, Soviet-built F class submarine (C)



Although no ships are known to be in a reserve status, the oldest of the light cruisers and three of the patrol escorts, which are at Bombay, are assigned to the First Training Squadron and will probably deteriorate to the point where they will no longer be considered operational. By the end of 1973 the fleet is to have added four additional ex-Soviet F class submarines (Figure 16); five more PETYA class coastal escorts, of which two have already been delivered (Figure 17); another submarine rescue vessel; and one more domestically produced ASW helicopter destroyer escort.

The main operating bases and the principal activities of the navy are in the ports of Bombay on the west coast, Cochin in the south, and Vishakhapatnam on the east coast. About two-thirds of the combatants, auxiliaries, and service craft are based at Bombay, where the major operating and repair base is located, as well as headquarters for both the FOCWNC and FOCWEF. About a third of the navy's ships and craft are based at Vishakhapatnam. In addition, nine small craft are based at Cochin. One of the light cruisers is being refitted for duty as a midshipman training ship. The destroyer escorts include the recently constructed helicopter-equipped *Leander* class (DEII). The F class submarines and the *Osa* class large guided-missile patrol boats are Soviet built.

FIGURE 17. INS *Kamorta*, the first PETYA class coastal escort procured from the Soviet Union (U/OU)



3. Training (C)

The navy's training program is adequate in practical subjects and operations but still lacks in theoretical and technical competency because of shortages of funds, equipment, and qualified instructors. Considerable progress has been made toward self-sufficiency in training. Except for the specialized training of a small number of personnel in the United Kingdom, the United States, and the Soviet Union, all officers and enlisted men are trained in India. Small numbers of sailors from several Asian and African Navies are also trained in Indian naval schools.

Shipboard training is strongly emphasized. In most cases technical courses ashore are followed by practical training at sea. As a result, the afloat training program is one of the best in the Indian Ocean area. Ships engage primarily in individual and fleet exercises and, to a limited degree, in larger joint exercises with the army and air force. Summer training exercises are normally held each year in the Arabian Sea, and occasionally naval exercises are held with foreign ships visiting India.

The four principal training establishments are: I.N.S. (Indian Naval Ship)¹ *Venduruthy*, the

¹Following the British tradition, the Indians name their naval shore establishments as if they were ships.

Combined Naval Training Establishment, at Cochin; I.N.S. *Circars*, the Boys' Training Establishment, at Vishakhapatnam; I.N.S. *Shivaji*, the Mechanical Training Establishment, at Lonavale (80 miles southeast of Bombay); and I.N.S. *Valsura*, the Electrical Training Establishment, at Jamnagar (on the Gulf of Kutch).

Boy-entry enlisted men, 17 years of age and under, undergo a 1-year basic training program at I.N.S. *Circars*. The course serves the twofold purpose of raising the educational level of the recruit to a standard that will meet service requirements and of giving him the elements of practical seamanship. Upon completion, he is advanced to the rate of ordinary seaman and proceeds to appropriate schools for specialist training.

Direct-entry enlisted personnel receive 2 months of basic training at I.N.S. *Venduruthy* and then are assigned to one of eight specialty schools at the same establishment. These specialty schools are as follows: 1) Basic and Divisional; 2) Diving; 3) Gunnery; 4) Navigation and Direction; 5) Seamanship; 6) Signal; 7) Tactical; or 8) Torpedo and Antisubmarine. After this training, sailors are assigned to ships of the fleet for practical experience at sea. This training center could train about 5,000 men at one time.

I.N.S. *Shivaji* trains mechanical engineers and artificers, while I.N.S. *Valsura* provides training for enlisted men of the Electrical Engineering Branch. In addition, supply and secretariat personnel are trained at I.N.S. *Hamla*, at Bombay, and petty officers at I.N.S. *Agrani*, at Coimbatore. Enlisted members of the Medical Branch receive their training at I.N.S. *Asvini*, the central naval hospital, at Bombay. Plans to consolidate the scattered naval training facilities located in the Cochin area have not been carried out. Three of the four major training establishments are located away from that city. Until funds become available, these facilities will probably remain in their present locations.

The navy gets most of its officers through the cadet entry training program, but a few are obtained through direct appointment from civilian life or by commissioning from the ranks. Cadet training is conducted at the triservice National Defense Academy at Kharakvasla, where prospective officers undergo a 3-year course of instruction. Upon completion, they receive 6 months training aboard the cadet training ship, I.N.S. *Tir*, followed by an additional year of technical training. Direct-entry officers begin naval training at I.N.S. *Venduruthy* and from there go on to the various technical schools. Advanced courses qualifying naval officers for higher rank and

command are available at the National Defense College and the Defense Services Staff College.

The active officer reserve program is small and fairly new. Under the program, officers on the active list of the Indian Naval Reserve and the Indian Naval Volunteer Reserve are obligated to undergo an initial training period of 2 months immediately on commissioning in the reserve or as soon thereafter as ordered. Subsequently, they are obligated to take at least 1 month of training duty each year. The Indian Naval Reserve is composed of professional officers, while the Indian Naval Volunteer Reserve consists of nonprofessionals who have a knowledge of the sea, such as yachtsmen.

By law, when an enlisted man has served out his full enlistment (10 years) and is discharged, he must join the Fleet Reserve of Sailors. He is required to remain in that reserve for a period of 10 years, during which he must go on active duty 2 months each year. However, this requirement is not much honored in practice. There is little interest in fulfilling the obligation because private industry restricts the leave of employees; jobs are difficult to find in India, and most men ignore the requirement for active duty rather than request leave. Moreover, because enlisted men in the regular navy tend to remain on active duty as long as possible, most are too old to be of much use in the reserve when they leave the regular establishment.

The naval wing of the National Cadet Corps was established in the early 1950's to provide a pool of potential officers and enlisted men for direct entry into the regular navy. In actuality, however, the navy considers the wing more a means of making the country "navy conscious" than of providing a reserve nucleus. The corps is organized into a Senior Division for university and college students and Junior Division for lower school students. Cadets of the Senior Division undergo a 3-year course of training that may be extended 1 year and includes cruises aboard naval ships. Young men selected for commissioning in the naval wing of the corps receive basic and technical training at I.N.S. *Venduruthy*. They must then take a month-long refresher training course every 3 years at this same naval school.

4. Logistics (S)

The basic organization of the supply system is good; however, it is encumbered by extensive paperwork. Operating on the preposting method, 2 or 3 weeks are often required for processing. The navy's procurement system has been vastly improved by utilizing interservice supply and logistics organizations for most common-use items and has reduced its once heavy

dependence upon British sources for such items. Commissary stores, clothing, common-use household items, and maintenance and upkeep materials are obtained from the Department of Defense Production and Directorate General of Ordnance Factories under the Ministry of Defense. Though many ship repair parts are fabricated domestically, the navy must still procure from abroad (the United Kingdom and the Soviet Union) such items as naval ordnance, technical equipment, and those spare parts beyond the capability of India to manufacture.

The navy is dependent upon foreign sources for practically all major combatant ships, weapons systems, fuel, and most of its reserve ammunition. Until 1965 the navy depended almost totally on the United Kingdom for ships, weapons, and equipment, but in 1966 India turned to the Soviet Union for submarines as well as for patrol and amphibious ships and associated parts and ammunition. Stocks of fuel and ammunition on hand are probably sufficient to support a maximum combat effort for about a 2-month period. Assuming that fuel is available, cannibalizing equipment and using domestic industry for fabricating ships parts and producing some electronic and ordnance items, the navy could probably continue to operate at least a small number of its principal warships for an additional 2 to 4 months.

Except for a limited underway refueling capability, the fleet is dependent upon shore bases. All major repair, overhaul, and construction is done at Bombay, the principal repair and logistic support center. Limited capabilities exist at Cochin and at the east coast ports of Vishakhapatnam and Calcutta. The reliance upon a single naval base (Bombay) for major repair and supply is a fundamental weakness of the logistic system.

The Naval Dockyard at Bombay maintains "ready issue" ordnance stores with backup from the nearby

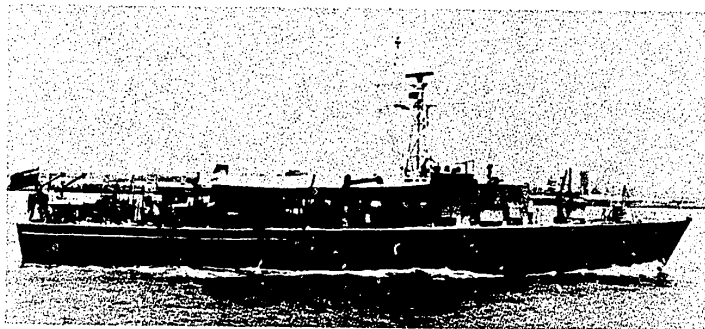
Naval Ordnance Supply Depot. Other naval ordnance depots are at Cochin and Vishakhapatnam. It is the policy to stock each of these depots with ammunition ranging from 6-inch down to small arms. Each depot also stores depth charges and torpedoes.

India is capable of building major combatant ships but requires foreign technical guidance as well as components. Such is the case with the British-supported destroyer escort construction program at Mazagon Dockyard in Bombay. The first of six destroyer escorts was launched in October 1968 (keel laid in fall of 1966) and was commissioned into the fleet in June 1972; only a few of its components were built in India. The next two were fitting out at the end of 1972. The ships' steel plate is being produced in India, and the amount of equipment and technical assistance that is being procured from the United Kingdom is to diminish as a three-phase expansion program at Mazagon Dockyard is completed. Plans call for 80% of the components to be Indian-built by 1978.

The Hindustan Shipyard at Vishakhapatnam and several private yards have built a number of small naval ships, including two inshore minesweepers (MSI) (Figure 18), three submarine chasers (PGM), one survey ship (AGS), and one aviation fuel tanker (YOG).

The government is actively endeavoring to build up local shipbuilding yards and supporting industries. Facilities for carrying out major overhauls and repairs are located at Mazagon Docks, where there is a graving dock capable of accommodating any ship in the navy. These facilities are used almost exclusively for the maintenance and repair of the more important combatant ships. The basing of India's fleet of Soviet-built submarines in Vishakhapatnam stimulated construction of additional support facilities in that port and led to a significant upgrading of maintenance and repair capabilities on the east coast.

FIGURE 18. INS *Bhatkal*, an inshore minesweeper built in India (U/OU)



The main base at Vishakhapatnam is being expanded to include a 1,200-foot quay, a training center, a torpedo storage facility, fuel storage, workshops, and housing and recreational facilities. Soviet technicians are assisting in this project, which began in August 1968. The project was scheduled for completion in 1972, but because of complications caused by continuing expansion of the navy and by finances being drawn off for other purposes, such as the 1971 conflict with Pakistan, completion is not expected before mid-1974. In the Andaman Islands, expansion is taking place primarily at Port Blair, where the Army Corps of Engineers is constructing a 1,100-foot deepwater quay scheduled for completion in late 1976. On the west coast, the need for an intermediate naval base between Bombay and Cochin will be met with the expansion of facilities at Marmagao.

5. Naval air arm (S)

The Indian Naval Air Arm (INAA) is small—about 1,500 men and 87 aircraft (45 jets). Its mission is to protect surface forces against air and submarine attack and to extend the striking power of the fleet. It is a volunteer force and is not known to have a reserve. All aircraft except one helicopter are assigned to operational units.

The air arm maintains two squadrons aboard the ASW support carrier I.N.S. *Vikrant* (Figure 19)—a fighter-bomber strike squadron, equipped with Armstrong Whitworth Sea Hawk jet aircraft, and an ASW squadron, with Breguet 1050 Alize aircraft and HAL HT-2 trainers. In addition, two helicopter squadrons, with Sud Aviation Alouette III and British Westland Sea Kings, are land-based at Goa. One training squadron, with a variety of aircraft assigned, is also based at Goa, and one helicopter training squadron, with Alouette III and Hughes TH-55A, is based at Cochin. The aircraft carrier, with its air group, is homeported at Bombay and is usually assigned to the Flag Officer Commanding, Western

Fleet. The air arm is administered by the Naval Aviation Branch, which is headed by the Assistant Chief of Naval Staff, Naval Headquarters. The aircraft inventory of 87 (U.K., French, U.S., and domestic origin) is as follows:

Attack:	
Jet: Sea Hawk	30
ASW carrier:	
Turboprop: Breguet 1050 Alize	11
ASW helicopter:	
Turbine: Westland Sea King	6
Utility helicopter:	
Turbine: Alouette III	15
Piston: TH-55A	4
Trainer and utility:	
Jet: Vampire T-11	8
HJT-16 Mk II Kiran	7
Prop: HAL HT-2	2
Devon C-1	4

The air arm's effectiveness in the ASW role is good, but capabilities are limited by the operational status of the carrier I.N.S. *Vikrant*, too few aircraft to permit simultaneous patrol of all coastal waters, and the deteriorating condition of the aging Alize aircraft. The Sea Hawk jet attack aircraft provide a modest strike capability. The at-sea capability is hampered by the small number of aircraft that can be based aboard the single carrier.

During the December 1971 war with Pakistan, Indian Naval Air Arm interdiction efforts, using both the Alize and Sea Hawk aircraft in conjunction with the surface blockade, effectively isolated East Pakistan (Bangladesh) from either resupply from, or escape to, the sea. Repeated attacks on the Chittagong and Cox's Bazaar areas caused extensive damage, and similar efforts on the ports of Mangla and Chalna contributed to their abandonment. Khulna naval facilities also experienced heavy air attacks. Naval air is credited with sinking several gunboats and barges and damaging merchant ships. There are reports of the Alize in an ASW role during this conflict, but details

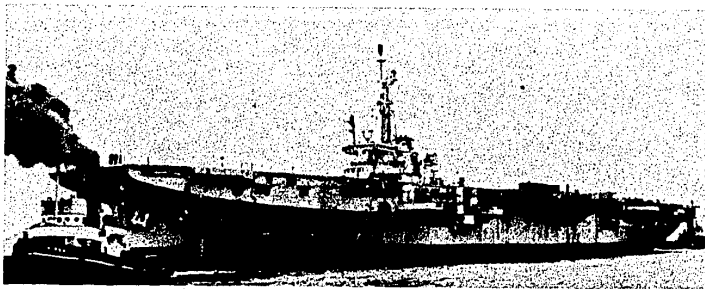


FIGURE 19. The aircraft carrier, INS *Vikrant*. The former HMS *Hercules*, it was acquired in 1957 and commissioned in 1961. It has an angled deck and a steam catapult, and at full load its displacement is about 19,500 tons. Now old, it chronically has boiler trouble. (U/OU)

are still lacking. Land-based Sea King helicopters were deployed in an ASW role off Bombay, but there is no indication as to their effectiveness.

Replacements are being sought for the aging Sea Hawk and Alize aircraft. Among those being considered are the British Hawker-Siddeley Harriers, joint French-British Sepecat Jaguar, and the U.S. Douglas A-4 Sky Hawk and Grumman S-2 Tracker. The navy is also inquiring into a replacement for the aging and casualty-prone *Vikrant*.

Pilot candidates are procured both through the triservice National Defense Academy and by direct appointment from civilian life. Some general service officers of the Indian Navy are selected to become air observers. Enlisted personnel are recruited by the Indian Navy and, upon completion of basic training, are selected for aviation ratings or to become air observers.

Cadet pilots for the naval air arm begin their aviation academic training during their third year at the National Defense Academy. This is followed by basic flight training with the Indian Air Force and several months of conversion training at the naval air stations. Direct-entry candidates undergo a short training period in naval subjects and then go on to join their academy counterparts in basic flight training. After completing a qualifying course, officer observers are awarded their wings and appointed to a squadron for an on-the-job probationary period of 6 months. Enlisted personnel receive their basic training as Indian Navy recruits and then go through technical courses at I.N.S. *Garuda*, Cochin.

Most naval aviation training is conducted at I.N.S. *Garuda*. In addition to pilot training, the air station houses the Observer, Naval Airmen, and Naval Air Technical Schools. Training in jet aircraft is conducted at I.N.S. Hansa. Because of the critical shortages of qualified instructors and equipment, the schools are able to turn out technicians with only minimum qualifications, and as a result these men require supplemental training at air force schools. The navy is striving to upgrade its air training program.

The Naval Aircraft Repair Organization (NARO) at I.N.S. *Garuda*, a manufacturer of some aircraft parts, is responsible for depot-level aircraft maintenance. Maintenance practices, however, are inadequate and must often be supervised by technical teams from Hindustan Aeronautics, Ltd. An average of three Alizes and six Sea Hawks are in overhaul status at all times. Alize aircraft undergo modernization and installation of aircraft service changes at about 1,200 hours, or 3 years of service.

E. Air force (S)

The Indian Air Force (IAF) is the second largest of the non-Communist Asian and Commonwealth air forces. Its mission is to provide air defense and to engage in tactical and strategic operations, as well as to assist in civil emergencies. It can perform all of its assigned missions. The 1965 war with Pakistan showed that, in overall proficiency, the IAF was inferior to the Pakistan Air Force (PAF). Since then, modernization of equipment and improved training and techniques have upgraded the Indian Air Force's capabilities. Although a growing portion of the air force is equipped with Soviet aircraft, the inventory still includes a wide variety of different types, some 35 in all, a continuing detriment to the training, logistics, and maintenance programs. Night operations also remain a problem; pilots do not like to fly at night, and the IAF gives little priority to night training.

The air force is coequal with the army and the navy under the Ministry of Defense. Its personnel remain aloof from politics, are loyal to the constitutional government, and enjoy the respect and support of the population. Presently, there are no known dissident elements in the air force.

Air force morale is excellent, security consciousness is very good, and loyalty to service and country is strong. Pay is good to excellent, depending upon rank, and few officers or enlisted men voluntarily leave the service. Privileges are extended to dependents of deceased members, and other efforts are being made to improve overall conditions in order to make service life more attractive.

Because of India's numerical superiority and the fact that the Pakistani Air Force did not fully commit its assets, it is difficult to assess the performance of either the Indian or the Pakistani Air Force in the December 1971 war. The Indians achieved air superiority over East Pakistan within a week but could have done so more rapidly by extensively cratering the runway at Dacca in the first day of fighting. Despite the Indian Air Force's full alert status, Pakistani air attacks in the west caught the Indians by surprise, and the Indians launched few, if any, defensive reaction sorties. Airfield strikes characterized the initial Indian reaction to the 3 December attacks, closely followed by a massive effort at the Karachi POL facilities and a less intensive effort against Pakistani lines of communication. Air-to-air combat operations were relatively few, and the Indian Air Force's emphasis was on interdiction and close air support operations. The Indians lost 71 aircraft, mostly old British-built Hawker Hunter F-56 and Soviet-built Su-7 (FITTER)

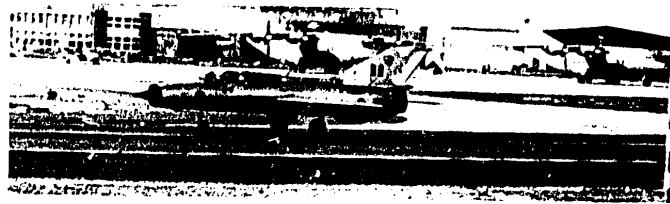


FIGURE 20. MiG-21 (FISHBED) production facilities in India include the HAL Nasik airframe plant, where final assembly takes place, as well as an electronics plant at Hyderabad and an engine plant at Koraput. The MiG-21 FL was originally assembled from components imported from the Soviet Union, but Indian capabilities have advanced and the aircraft is now produced primarily from Indian-manufactured components. Production of a newer variant, the MiG-21M (FISHBED J, export variant) which will offer increased range and payload, is to begin in 1973. (S)

day fighters, compared to 43 aircraft lost by the Pakistanis. Most aircraft lost on both sides were shot down by ground fire.

The air defense system has a good capability against a conventional medium- to high-altitude attack by either China (PRC) or Pakistan. The fighter element comprises 16 squadrons. Eight are equipped with MiG-21 (FISHBED) (Figure 20) aircraft and eight are equipped with Hawker Siddeley Gnat Mk. 1 day fighters. The MiG-21's provide a limited all-weather interceptor capability. About half of these aircraft are equipped with 23-mm guns and most are equipped with Soviet AA-2 ATOLL missiles and are used in either the interceptor or ground support role, depending on priority. In the 1971 fighting they were used mostly in the latter role, but in the former role they were effective against Pakistani Lockheed F-104's. In the east the gun-armed Gnat subsonic day fighters proved to be an effective weapon for low-altitude, air-to-air combat against Pakistani North American F-86's.

The early warning/ground-controlled interception (EW/GCI) system consists of 12 GCI and 22 EW sites equipped with several types of radar, including Soviet Big Bear and U.S. AN FPS 89. Deployment is mostly oriented to the north and northwest. Contiguous coverage is provided along the northern border and along the western border to the Bombay area. Coverage does not exist along the eastern border except for the Madras and Calcutta areas. Against an aircraft flying at 30,000 feet, the estimated radar range is 200 nautical miles. Effectiveness of the system is limited by the number of available radars and the masking effect of the Himalayas. All sites are connected by landlines to the Air Defense Direction Centers at Allahabad, Ambala, and Shillong. Landlines were disrupted during the 1965 and 1971

conflicts by interdiction. An effective backup should be provided by a nationwide microwave network now under construction with Canadian and Hungarian assistance and scheduled for completion in the mid-1970's. Although this network is designed primarily for commercial use, the EW/GCI system should have the capability to tie in during national emergencies. A contract for U.S. tropo/microwave communications equipment was not completed because of the U.S. embargo on shipment of military equipment to India, but negotiations were scheduled to begin in July 1973 on a new contract. Soviet SA-2 (GUIDELINE) surface-to-air missiles (SAM) (Figure 21) are used in defense of significant military/industrial complexes. There are five main complexes (wings), and they are made up of a total of 19 sites (squadrons)—six operational sites are in the New Delhi area, two in the Bombay area, five in the Chandigarh area, four in the Calcutta area, and two in the Agra area. A site normally has six missile launchers, with two missiles per launcher. Soviet EW/GCI radars are collocated with the SAM complexes, and a FAX SOXG fire control radar is at each site. A few sites have the new FAX SOXG F, enhancing



FIGURE 21. GUIDELINE (SA-2) surface-to-air missile on display in New Delhi (U/OU)

the missile system's electronic counter-countermeasure (ECCM) and low-altitude capability. More SAM sites will be required to make the SAM system highly effective against a large-scale conventional attack by the Chinese. The full extent of India's involvement and success with SAM's in the war is unknown, but the Pakistanis have admitted the loss of some Martin B-57 Canberra bombers near Agra to SAM's. In the Delhi area, missiles were deployed as point defenses close to the two military airfields in the vicinity of the city.

The Indian Army also has as many as 240 British Tigercat SAM's, but their disposition by unit and the number of launchers are not known. All antiaircraft artillery (AAA) units are subordinate to the Indian Army. There are seven brigades with a number of subordinate AAA regiments. The regiments are equipped with either L60 or L70 Bofors 40-mm guns. The L70 guns are radar-controlled, and the L60's are manually operated. During the war these weapons proved to be the most effective air defense against low-level air-ground attacks and strikes on airfields.

The air force has a minor strategic bombing capability with its English Electric Canberra B(1) Mk. 58 light bombers. These aircraft have the range and capability to bomb all targets in Pakistan but do not have sufficient range to attack deeper than forward bases in south China. During the 1971 war they were, however, used in a tactical role against Pakistani airfields.

Fifteen fighter-bomber squadrons (equipped with the Soviet-built Su-7 (FITTER), the Indian-built HF-24 Marut (Figure 22), the British-built Hunter F-56, and the French-built Mystere IVA day fighters) and three Canberra B(1) Mk. 58 light bomber squadrons are available for tactical operations. During the 1971 war, the MiG-21, armed with an unknown bomb load, was also used in a ground support role in East Pakistan and the An-12 (CUB) transports, armed with 500-pound bombs, were used in bombing raids on fuel and ammunition dumps in the Chhanga Manga forest area south of Lahore and along the cease-fire line in Kashmir. Armed trainers such as the North American T-6 were also used in a tactical role. The Indian Air

Force flew about 100 sorties per day in direct support of the army and an undetermined number against shallow interdiction targets such as bridges, railroad stations, supply points, assembly areas, etc. It earned the army's praise for its good close support. This effectiveness was largely because of the use of airborne forward air controllers. The Indians also used an airborne tactical communications intelligence warning system to support their ground-attack aircraft, but there was no airborne command post. The Canberra aircraft used on airfield strikes flew at altitudes of 50 to 100 feet, thereby evading radar detection. Other tactical aircraft performed effectively, but the Su-7 fighter/bomber did not fare well against Pakistani fighters during attacks on West Pakistan, proving to be a heavy, fragile aircraft with relatively poor maneuverability and poor capability for absorbing damage.

The reconnaissance capability is modest. It reposes chiefly in two squadrons, one of Canberra PR-57's and the other of modified Lockheed C-121 Constellations. A few of the Hunter F-56's are camera-equipped, giving them a tactical reconnaissance capability.

The transport capability is built around 13 squadrons of medium and light transports. There are several types of aircraft such as the aging Douglas C-47's (Skytrain) and Fairchild C-119G's (Packets), De Havilland Canada DHC-4's (Caribou), An-12's (CUB), and about 80 Mi-4 (HOUND) transport helicopters. Assuming an 80% serviceability, this force is estimated to be capable of lifting one of the army's parachute brigades in one single lift under optimum conditions. Logistic support would be inadequate to sustain operations on this scale. Pilots are well trained and under visual conditions are effective in aerial resupply. The Indians used helicopters and transport aircraft to land troops and supplies during the war, mostly in the eastern sector, but the extent of airlift operations is not known. On several occasions, bridgeheads were secured by heliborne assault, thus speeding the army's advance. Gun-armed helicopters lifted a battalion of troops during the capture of Sylhet, and it was publicly announced that between December 10 and December 13 helicopters had lifted

FIGURE 22. HF-24 Marut, a jet fighter aircraft built in India (U/OU)



over 5,000 troops and 50 tons of supplies in the east. On December 11 the Indians dropped a parachute battalion north of Dacca, using C-119's and AN-12's.

India will continue to strive for a modern "first-rate" air force. Immediate requirements include replacement of aging fighter/bombers and interceptors; acquisition of heavy and medium transports (including helicopters) for use as aerial observation platform; and improvement of the command and control environment. Thirty-three Soviet Mi-8 (Hipp) helicopters were recently acquired, and the first shipment of Soviet MiG-21M's, the export model of the FISHBED J, has arrived. Most of these new MiG's will be given a primary mission of air defense, but some may be used in an air-to-ground role to replace aging Hunters, Mysteres, and De Havilland Vampires, as well as the Su-7's.

1. Organization

The Chief of Air Staff is commander of the air force. In rank he is an air chief marshal, and in the chain of command he comes under the Minister of Defense. He is, ex officio, the air force member of the Chiefs of Staff Committee of the Ministry of Defense. The air force consists of its headquarters in New Delhi, one independent operational group, and five major

commands—three aerial, one training, and one maintenance. Air Force Headquarters is responsible for control and organization of the air force and serves principally as an advisory and coordinating staff for the Chief of the Air Staff. The Chief is assisted by four principal staff officers—Vice Chief, Deputy Chief, Air Officer in Charge of Administration, and Air Officer in Charge of Maintenance. He is responsible for the functions that are implied in the titles shown in Figure 23. Headquarters is also responsible for the operation of the Air Force Station at New Delhi, the Joint Air Warfare School at Hyderabad, the Institute of Aviation Medicine, at Bangalore, and for providing air force representation in joint service activities.

The five commands under Air Headquarters are the Western, Eastern, and Central Air Commands, the Training Command, and the Maintenance Command. The Eastern Air Command located at Shillong, the Western Air Command at New Delhi, and the Central Air Command at Allahabad are responsible for air defense and close air support in their respective areas of responsibility; the precise geographic boundaries of these areas have not been disclosed. In addition, the Central Air Command appears to have functional command for both bombers and transports for all of India. The No. 1 Independent Operational Group has responsibility for air defense and close air

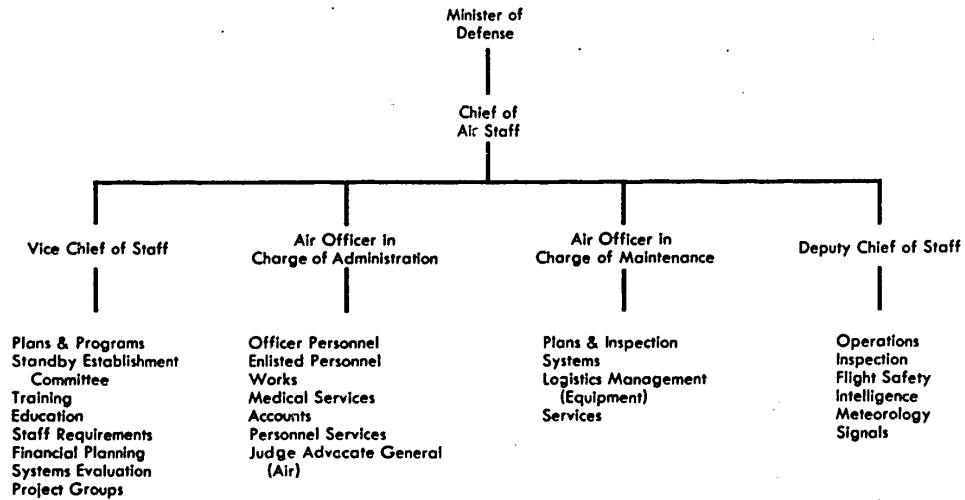


FIGURE 23. Organization of the Indian Air Force Headquarters, 1973 (U/OU)

support in the area roughly encompassing the states of Gujarat and Rajasthan in the western part of the country. The Training Command, at Bangalore, controls most ground and flying training institutions. It is responsible for both the flying and ground training of officers and for the training of airmen in various technical and nontechnical fields as well as for training aviation personnel of both the army and navy. The Maintenance Command at Nagpur controls all units responsible for the repair and storage of aircraft and those concerned with motor transport, signal equipment, armament, ammunition, and explosives.

2. Strength, composition, and disposition⁵

The air force has 104,000 men—7,980 officers (including an estimated 2,600 pilots), 22,200 NCO's, and 73,820 enlisted men. The aircraft inventory is 1,399—755 jet, 370 propeller, 63 turboprop, and 211 helicopter. The breakdown by functional category and type of propulsion is as follows:

Bomber:	
Jet: Canberra B(1) Mk 58	39
Day Fighter:	
Jet: Hunter F-56	65
HAL HF-24 Marut	49
Su-7 (FITTER)	88
MiG-21 (FISHBED)	201
Gnat	176
Attack:	
Jet: Vampire FB-52	20
Reconnaissance:	
Jet: Canberra PR-57	8
Transport:	
Jet: Tu-124 (COCKPOT)	3
Prop: C-119G Packet	54
L 1049 Super Constellation	8
DHC-4 Caribou	14
Il-14 (CRATE)	18
C-47A Skytrain	80
Turboprop: An-12 (CUB)	38
HS (Avro) 748	25
Helicopter:	
Turbine: Mi-8 (HIP)	33
Sikorsky S-62B	1
Alouette III	80
Piston: Mi-4 (HOUND)	82
OH-13H Sioux	10
Sikorsky S-55	5
Trainer and utility:	
Jet	106
Prop	196

⁵For regularly updated information, refer to the *Military Intelligence Summary*, the *Air Forces Intelligence Study*, and the *Free World Air Order of Battle*, all published by the Defense Intelligence Agency. A brief summary of the Indian airfield system and data on 29 selected airfields are provided in this General Survey in the chapter on Transportation and Telecommunications.

Of the total inventory, 1,239 aircraft are distributed among the following 64 operational units:

- 14 fighter/bomber squadrons
- 8 day fighter squadrons
- 9 fighter/interceptor squadrons
- 3 light bomber squadrons
- 1 strategic reconnaissance squadron
- 1 maritime reconnaissance squadron
- 13 transport squadrons
- 14 helicopter units
- 1 air headquarters communications (VIP) squadron

The balance of the aircraft in the inventory are assigned to miscellaneous administrative or support units, including a paratroop training unit and a number of headquarters detachments of the various major commands.

Except for three squadrons at Poona Airfield, most of the air force is concentrated in the northern part of the country. Fighters, bombers, transports, and helicopters are fairly evenly distributed among the various airfields in this region. More than half of the flying units are based in the western portion of the country. Prior to the hostilities with Pakistan in December 1971, there was a wide dispersal of forces, and aircraft were deployed to numerous forward locations facing both the east and the west.

There are three categories of reserve personnel. The first, the Regular Reserve, includes those who have retired or have been released from active duty in the air force. The second is the Air Defense Reserve, which includes individuals with technical or flying backgrounds, e.g., Indian airline mechanics. The third category is the Auxiliary Air Force (seven squadrons) which resembles the organized reserve training units of the U.S. Air Force. Citizens who volunteer for the Auxiliary Air Force get aviation training, while they continue to follow normal vocational pursuits. It is also somewhat analogous to the U.S. Civil Air Patrol. The air wing of the National Cadet Corps (NCC) is an important source of potential air force officer candidates. The NCC Senior Division air wing strength is 9,800; the Junior Division, about 50,600. No aircraft are assigned to the reserve. During the December 1971 war, call-up notices to air force reservists were issued to 9 officers and 235 airmen.

Airfields that are used on a regular basis by the air force, such as Chandigarh, Agra, Ambala, Adampur, and others, are generally capable of supporting operations by Lockheed C-130-type aircraft. The three international airfields, Bombay, Calcutta, and Delhi are capable of supporting Lockheed C-141 operations.

3. Training

The growth in the number of Indian air force personnel since 1965, together with the acquisition of

more sophisticated aircraft and of surface-to-air missiles, has necessitated a parallel acceleration in all phases of training. The training program has become increasingly comprehensive and meets most normal peacetime requirements. Much of the indigenous training is in English; however, all commands are now given in Hindi. Students study the Russian language in preparation for training in the U.S.S.R. The high illiteracy rate and lack of mechanical background of recruits, however, require that air force courses begin at a much more basic level than the comparable U.S. Air Force courses. Facilities are austere, but the training standards are high and discipline strict. Training films from foreign countries are utilized, and other innovations have been introduced. Soviet technical specialists in India provide guidance in specialized fields, and the air force sends students to the Soviet Union for training on Soviet-provided equipment. Typically, after the acquisition of a new type of materiel the number of students sent to the Soviet Union is quite large and then tapers off as the IAF builds up its indigenous training program. Students in the U.S.S.R. probably undergo training on SA-2 missiles and perhaps the An-12's, Su-7's, and MiG-21's. IAF students also attend staff colleges in the United Kingdom and Australia on an exchange basis. In the past, large numbers of Indian Air Force students were trained in the United States under the U.S. Military Assistance Program's (MAP) training program. Recently, however, the Indian Government has turned down all the MAP training offered. Egypt and France have also conducted training programs for Indian Air Force air and ground crews. The IAF itself has trained personnel from Nigeria, Iraq, and Egypt.

Candidates for pilot training come primarily from the National Defense Academy. A few enter from the enlisted ranks and from the National Cadet Corps. Pilot trainees initially receive 40 hours of flying training in the HT-2 at the Elementary Flying School

at Bidar. This is followed by an 85-hour flying course in the HJT-16 Kiran (Figure 24) at the Air Force Academy, Dundigal. Students are then selected for either the Transport Pilot Course conducted at Bangalore/Yelahanka (13°08'N., 77°36'E.) or the Fighter Training Course conducted at Hakimpet. Each of these schools offer a 125-hour flying course. The Fighter Course uses Vampires and the Transport Course uses C-47's. HS (Avro) 748's will be introduced into the Transport Course. Attrition is about 30% in the Elementary Flying School, but virtually negligible in the advanced flying training programs. Pilot trainees receive commission and pilot rating on completion of either the Transport or Fighter Course. The Helicopter Training School at Tambaram provides the IAF with qualified instructor pilots. The IAF provides basic flying training for about 200 students per year, including students from the Indian Navy and Army, and some foreign students. Plans exist for the consolidation of all flying training at the Air Force Academy, including navigation and signals training, which is now conducted at Hyderabad.

About 15,000 nonflying enlisted personnel and officers are trained and retrained annually in courses varying in length from 20 to 72 weeks. The Air Force Technical College at Jalahalli, with a peak enrollment of 450 students, provides training for aeronautical engineering officers, in both electronics and mechanics specialties. Other officers are trained at the Air Force Administrative College. Both of these schools offer advanced courses for senior officers. Advanced professional schooling for officers is also conducted at the Defense Services Staff College at Wellington, the Joint Air Warfare School and the Institute of Defense Management (both at Hyderabad), and the National Defense College in New Delhi.

Airmen enter the air force by direct recruitment. Recruits must have had 11 years of school. Term of enlisted service is 15 years. Basic military and educational training takes between 8 and 12 months,

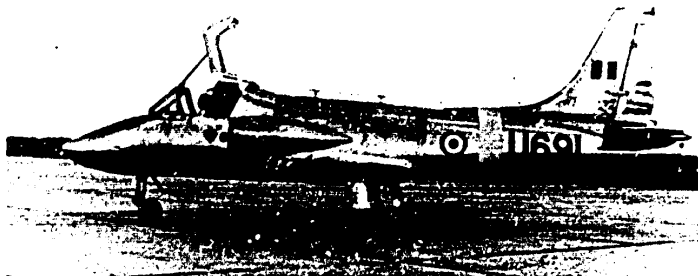


FIGURE 24. HJT-16 Mk. II Kiran jet is produced at the HAL Bangalore airframe plant. HAL had encountered production problems with the Kiran during the early stages of the program but now has solved them and is considering exporting the aircraft. (S)

depending on the specialty for which the individual is trained. Subsequently, the recruit is assigned to a squadron and receives on-the-job training until he becomes fully qualified. This is followed by an additional year of technical training with the Training Command, after which the recruit is rated and again returns to a squadron for 3 or 4 more years of on-the-job training.

Principal training facilities of the Indian Air Force, their locations (as of April 1973), and types of training are as follows:

	LOCATION	TYPE OF TRAINING
FLYING FACILITIES:		
Elementary Flying Training School	Bidar	Basic flight training in HT-2
Air Force Academy	Dundigal	Intermediate flight training in C-47 and T-6
Helicopter Training School	Jodhpur	Training in OH-13H
Flying Instructors School	Tambaram	Training in HT-2 and HJT-16
Fighter Training Wing	Hakimpet	Jet fighter conversion, Vampire
Transport Training Wing	Bangalore/Yelahanka	Training in C-47
Aircrew Examining Board	Hindan	Training in T-6G and C-47A
TECHNICAL FACILITIES:		
Air Force Navigation and Signals School	Hyderabad	HS (Avro) 748
Air Force Technical College	Jalahalli	...
No. 1 Ground Training School—Administration	Sambre	...
No. 2 Ground Training School—Technical	Tambaram	Training in HT-2 and Vampire T-55
Nos. 3, 5, and 6 Ground Training Schools—Signals, Armament, and Radar, respectively	Jalahalli	...
No. 7 Ground Training School—Missiles	Baroda	...
ADMINISTRATION AND MEDICAL FACILITIES:		
Air Force Administrative College	Coimbatore	...
Medical Training Center	Poona	...
Institute of Aviation Medicine	Bangalore	...
Control and Reporting School	Jodhpur	...
Air Force Intelligence School	... do
Joint Air Warfare School	Hyderabad	...
...	Not pertinent.	

4. Logistics

Procurement of major items for the air force is accomplished through the Defense Production Board

of the Ministry of Defense. The Air Force Maintenance Command at Nagpur is responsible for the receipt, storage, and distribution of aircraft, aircraft parts, and POL. Aviation fuels are supplied by the government-owned Indian Oil Company under a policy that calls for the maintenance of a 30- to 45-day supply at each air force base. It is planned to increase this to a 90-day supply. In the event of a national emergency, additional POL from domestic refineries would be made available to the air force. Thus POL products are not a limiting factor on air force operations.

Storage points are classified as depot, base, and bench stock. The stock control level at depots is 9 months; at bases, 2 months; and at bench stock, 1 month. Requisitions are classified as AOG (aircraft on ground), priority, and ordinary. Processing time is about 4 hours for AOG and several weeks for ordinary requests. Although stock balance and consumption data are transmitted to Air Force Headquarters on a daily basis, this information reflects neither true consumption rates nor facilities' direct redistribution of items. In general, the supply system is cumbersome, complicated, and could become hopelessly bogged down in a wartime situation. A major factor contributing to the logistics problems is the large number of types of aircraft in the inventory—Soviet, British, French, U.S., Indian—and a supply system that classifies spares in accordance with the classification of the original supplier. This involves duplicate listings and a variety of complicated cross-reference and coding systems.

Air Force maintenance concepts are similar to the organizational, field, and depot-level maintenance concepts of the U.S. Air Force; however, Hindustan Aeronautics, Ltd. (HAL), performs depot-level maintenance on all fighter aircraft and some trainers. Depot-level maintenance on Soviet-supplied aircraft is performed with Soviet assistance at the airbase at Chandigarh, as well as at the HAL Nasik Airframe Plant at Ozar Airfield (20°06'N., 73°55'E.). About 50 Soviet technicians are assigned to the airframe plant. The maintenance of air force equipment is complicated by lack of trained personnel, shortages of test equipment, insufficient spare parts, and lengthy lead time in the procurement of spares for foreign aircraft. The air force normally has an operationally ready rate of 70%—during the December 1971 war this rate dropped to 60%.

F. Paramilitary forces (S)

India has a number of paramilitary organizations. Some of them—the armed state police battalions, the

Border Security Force and the Central Reserve Police—could function as light infantry units, supplementing the army during hostilities. Others—the Special Frontier Force, the Indo-Tibetan Border Police, and the Special Services Body—while considered paramilitary, should be viewed as an extension of the army because of their unconventional warfare mission and seconded officers. In addition, there are other security forces that are of little value in an armed conflict because of their limited military training and obsolete weapons. Personnel strength trends in the armed state police, Border Security Force, and the Central Reserve Police since 1960 has been as follows:

1960	130,000
1962	130,000
1964	130,000
1966	214,000
1969	297,000
1970	337,000
1971	337,000
1972	347,000

The armed state police battalions of each Indian state have the mission of internal security and border patrol. The battalions are normally used within their own states, but they can be deployed to aid other states or be brought under centralized control during emergencies. Normally they are recruited, paid, and controlled by their respective states. Of their estimated 242,000 men organized into 140 or 150 battalions, 28,000 (30 battalions) are on active duty with the army performing light infantry type duties.

The Central Reserve Police (CRP) is a mobile, armed gendarmerie. It serves as a strategic police force in the Indian police system. Its chief mission is to augment state police forces in their internal security and border patrol missions. Normally it is under the Ministry of Home Affairs, but frequently its units are put under operational control of the army. Strength is about 51,000 men. The CRP is composed of 63 battalions—60 "duty" (infantry) battalions and three signal battalions. Battalion commanders are either senior police officers or military officers seconded from the army. The men are armed with submachine guns, rifles, and light machineguns. Following the attack by the Chinese in 1962, many of these battalions were assigned to the army, and others patrolled border regions. At present, 30 battalions are under army control, deployed along the Indo-Pakistani Cease-Fire Line (CFL) in Kashmir, or in northeastern India.

The Border Security Force (BSF) is a border guard organization and also under the Ministry of Home Affairs. It was formed under the ministry in December

1965 to relieve the states of the responsibility for patrolling the sensitive eastern and western borders with Pakistan—a consequence of the fighting that year between India and Pakistan. Still responsible for patrolling the borders with Bangladesh and Pakistan, the BSF carries out military as well as police functions. In normal times, Indian Army units are stationed within 5 miles of the Pakistani border, this area being left to the Border Security Force. The BSF is armed as light infantry. Its mission is to provide border security along the frontiers, to collect intelligence on these border areas, and to assist the state forces in maintaining law and order. Strength is about 76,000 men. There are 75 to 80 battalions, a small air wing with 4 C-47's (Dakota), and a small naval wing (2 tugs and 3 patrol boats). Force Headquarters are in New Delhi, Western Sector Headquarters at Jullundur, Northern Sector Headquarters at Srinagar, and Eastern Sector Headquarters at Calcutta. About half of the battalions are under the Calcutta headquarters. Units have served under the army combatting insurgencies in Nagaland and in the Mizo Hills. In the 1971 war with Pakistan, the Border Security Force ably supported army operations. In addition to units assigned to the army for particular missions, a battalion or two are put under army control for advanced training every 2 months.

In reaction to the Chinese invasion of 1962, the Indian Government assigned to the Intelligence Bureau, an agency in the Home Ministry, the responsibility for developing an unconventional warfare capability that was to be put to use along the northern borders, if needed. A three-tiered, loosely related structure was established that consists of a Special Frontier Force (SFF), an Indo-Tibetan Border Police force (ITBP), and a Special Services Body (SSB).

The Special Frontier Force is a small, highly trained force for unconventional warfare operations along the Tibetan border and in Tibet. Strength is about 8,000 men, including about 5,500 Tibetan refugees, a 1,200-man force from the Indian Army under a retired army brigadier, and a 900-man battalion of Gurkha mercenaries from Nepal. The force's mission is to be prepared to deploy by companies into forward positions astride border communication lines as a harassing and delaying force and to organize resistance forces in the event of another Chinese invasion. About 1,500 members of the SFF constitute an airborne mobile force for contingency use against the Chinese in Tibet or in sections of India should they be overrun. The SFF units are normally based in border positions in Ladakh, Uttar Pradesh, and Arunachal Pradesh. Some units saw action on the Kashmir cease-fire line in the 1971 war with Pakistan.

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The Indo-Tibetan Border Police is an organization of conventional units composed of Indian-trained and Indian-led martial tribesmen of the Indo-Tibetan border areas. The ITBP commander is an inspector general of police. Strength is on the order of 8,000 men and apparently there are about eight battalions. During peacetime they are deployed with conventional army units to carry out police and counterinsurgency duties. In the event of another Chinese invasion, the ITBP units would delay the advance until their positions became untenable, at which time they would change to a guerrilla role in areas that have been overrun.

The Special Services Body is a civilian/militia group organized to maintain Indian contact and to identify on a village level with individuals in the border areas. During peacetime these personnel help combat subversion, and, in the event of another invasion, they are to provide a core of village resistance and to cooperate with Indo-Tibetan Border Police guerrilla units. At least seven Special Services Body battalions

have been raised and stationed in Assam, Manipur, and Nagaland. These permanent formations impart limited marksmanship training and some political indoctrination to hill tribesmen.

Other security forces can also be used in various roles during national emergencies, thus relieving military and paramilitary units for combat. The Defense Security Corps (DSC), the Central Industrial Security Force (CISF), and the Railroad Protection Force function chiefly as guard agencies, caring respectively for government installations, state-operated industrial facilities, and railroad property. A fourth organization, the Home Guards, composed of about 526,000 citizen volunteers, assists the police at the local level and performs civil defense services during times of national emergency. Some platoon-size units even supplemented Border Security Force units along the western border during the December 1971 war with Pakistan. These units are, for the most part, well trained and contribute significantly to internal security.

SECRET

NO FOREIGN DISSEM

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