

Gallery of South Asian Airpower

By John W. R. Taylor and Kenneth Munson

Attack Aircraft

A-5C

Since China extensively redesigned the J-6 (license MiG-19) fighter-bomber into a dedicated attack aircraft (Chinese designation Q-5) in the mid-1960s, several hundred Q-5s have been built for China's PLA Air Force, in various versions [see "Gallery of Far East/Pacific Airpower," November 1995, p. 48] and for export.

The much-improved A-5C was developed to meet a 1981 order from the Pakistan Air Force (which calls them A-5-III's). It has a Martin-Baker zero/zero seat, upgraded avionics, and can carry weapons and drop tanks standard on other PAF aircraft, including Sidewinder air-to-air missiles (AAMs). Of the 52 delivered for Nos. 7, 16, and 26 Squadrons at Peshawar and Masroor, numbers are now down to about 42. Bangladesh still has 12 of the 20 ordered from 1986 to equip No. 8 Squadron at Chittagong and No. 21 at Dhaka. The 24 ordered by Myanmar, delivered from 1993, also equip two attack squadrons, at Meiktila and Myitkyina.

Contractor: Nanchang Aircraft Manufacturing Company, People's Republic of China.

Power Plant: two Liming WP6 turbojets; each 7,165 lb thrust with afterburning.

Dimensions: span 31 ft 10 in, length 51 ft 6 in (excl noseprobe), height 14 ft 9³/₄ in.

Weights: empty 14,105 lb, gross 20,932–26,455 lb.

Performance: max speed (clean) at 36,000 ft Mach 1.12, at S/L 758 mph, ceiling (clean) 52,000 ft, T-O run (clean) 2,460 ft, landing run with brake-chute 3,480 ft, combat radius (max external stores) 248–373 miles, range (with external fuel) 1,240 miles.

Accommodation: pilot only, on zero/zero ejection seat.

Armament: 23-mm Norinco Type 23-2K gun, with 100 rds, in each wingroot. Ten weapon stations (two pairs in tandem under fuselage and three under each wing) for up to 4,410 lb of stores incl bombs, rockets, AAMs or ASMs, other ordnance, electronic countermeasures (ECM) pods, or drop tanks.

A-7E Corsair II

In 1994, the Thai government approved the purchase of 14 former US Navy A-7E Corsair II single-seat light attack aircraft and four two-seat TA-7Cs for operation by the Royal Thai Navy. Deliveries, following refurbishing, began in July 1995 with the first two TA-7Cs and were to continue at the rate of two per month. An additional three A-7 airframes were acquired as a source of spares. Intended for a maritime strike role, the Corsairs equip No. 104 Squadron at U Tapao Naval Air Base, and were, until the more recent arrival of AV-8 Harriers, the Royal Thai Navy's only jet fixed-wing combat aircraft.

Contractor: Vought Corporation, USA.

Power Plant: one Allison TF41-A-2 (Spey) non-afterburning turbofan; 15,000 lb thrust.

Dimensions: span 38 ft 9 in (folded, 23 ft 9 in), length 46 ft 1¹/₂ in, height 16 ft 0³/₄ in.

Weights: empty 19,915 lb, gross 29,000–42,000 lb.

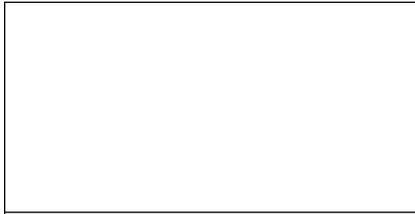
Performance: max speed at S/L (clean) 698 mph, at 5,000 ft with 12 Mk 82 bombs 646 mph, ceiling 42,000 ft, T-O run 5,600 ft, landing distance 4,695 ft, typical combat radius 490–715 miles.

Accommodation: pilot only, on ejection seat.

Armament: one 20-mm M61 multibarrel gun; two pylons under fuselage and three under each wing for more than 15,000 lb of Sidewinder AAMs, TV- and laser-guided ASMs, ARMs, bombs, cluster bombs, rockets, and gun pods.

AU-23A Peacemaker

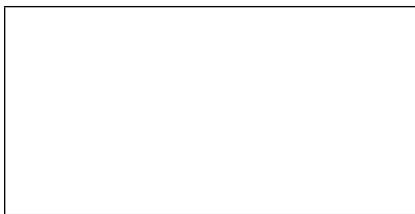
This militarized version of the Swiss Pilatus Turbo-Porter short takeoff and landing (STOL) utility transport is configured for counterinsurgency and border-control duties. Of 15 acquired by USAF for evaluation under the Credible Chase program for South Vietnam, 13 were instead transferred to the Royal Thai Air Force from 1973 under the Pave Coin program. Twenty more were acquired by Thailand from 1975, and about 22 are still in service with No. 202 Squadron at Lop Buri



A-5-III (A-5C), Pakistan Air Force (Denis Hughes)



AU-23A Peacemaker, Royal Thai Air Force (Denis Hughes)



IA 58A Pucar, Sri Lanka Air Force (Denis Hughes)

and No. 531 Squadron at Prachuap Khiri Khan for armed utility and transport missions.

Contractor: Fairchild Industries, USA.

Power Plant: one AlliedSignal TPE331-1-101F turboprop; 650 shp.

Dimensions: span 49 ft 8 in, length 36 ft 10 in, height 12 ft 3 in.

Weight: gross 6,100 lb.

Performance: max speed 175 mph, ceiling 22,800 ft, T-O run 515 ft, landing run 295 ft, range 558 miles.

Accommodation: pilot and provision for up to nine passengers on seats that are quickly removable for equipment or freight carrying. Hatch in floor for dropping supplies or leaflets or for a camera installation.

Armament: up to 2,000 lb of external stores on 500-lb capacity underfuselage station and four underwing hardpoints. One side-firing 20-mm gun in cabin, plus two side-firing or underwing pod-mounted 7.62-mm guns. External weapons (with minimum crew/passenger load) can incl bombs, gun pods, napalm, and unguided rockets; other stores incl flare launchers, smoke dispensers, and camera pods.

AV-8 Harrier

Launched in January 1996 at its El Ferrol shipyard in Spain, Thailand's brand-new aircraft carrier, the 12,500-ton HTMS *Chakri Naruebet*, was officially handed over to the Royal Thai Navy in March of this year and was expected to sail for Thailand in August. On board, in

the markings of the RTN's No. 301 Squadron, will be its first complement of nine aircraft: seven AV-8A(S) single-seat and two TAV-8A(S) tandem-seat trainers. These first-generation Harrier V/STOL combat aircraft have recently been transferred following a long but low-time career with the Spanish Navy's air arm, but are reckoned to have some eight to 10 years of operational life left, and will provide the RTN with a much-needed on-the-spot air presence in the Gulf of Thailand. On arrival in their new country, the Harriers will be joined on board by the six Sikorsky S-70B Seahawks that are due to be delivered to the RTN this year. (Data for standard AV-8A.)

Contractor: British Aerospace Military Aircraft Division, UK.

Power Plant: one Rolls-Royce Pegasus Mk 103 turbofan; 21,500 lb thrust.

Dimensions: span 25 ft 3 in, length 45 ft 7 in, height 11 ft 11 in.

Weights: empty 12,190 lb, gross 17,050 lb (vertical T-O), 22,300 lb (short T-O).

Performance: max speed at S/L 730 mph, ceiling 51,200 ft, T-O run with 5,000-lb payload approx 1,000 ft, range with 4,400-lb payload 230 miles (lo-lo-lo), 414 miles (hi-lo-hi).

Accommodation: pilot only, on zero/zero ejection seat.

Armament: four underwing hardpoints and one on centerline, plus provision to replace twin underfuselage strakes by two 30-mm Aden gun pods; max external stores load 5,300 lb. Typical stores incl bombs of up to 1,000-lb size, pods of 19 68-mm rockets, Sidewinder AAMs (outboard underwing only), a reconnaissance camera pod, or auxiliary fuel tanks.

G-4 Super Galeb

At least six sweptwing Super Galebs were delivered to the air force of Myanmar in 1990–92. They equip a dual-role counterinsurgency/training squadron at Meiktila, alongside a squadron of turboprop Pilatus PC-7 and PC-9 armed trainers.

Contractor: Vazduhoplovna Industrija Soko, Yugoslavia.

Power Plant: one license-built Rolls-Royce Viper Mk 632-46 turbojet; 4,000 lb thrust.

Dimensions: span 32 ft 5 in, length 40 ft 2¹/₄ in, height 14 ft 1¹/₄ in.

Weights: empty 6,993 lb, gross 10,379–13,889 lb.

Performance: (at 10,379 lb gross weight): max speed at 13,120 ft 565 mph, max cruising speed at 19,700 ft 525 mph, ceiling 42,160 ft, T-O run 1,877 ft, landing run 2,674 ft, range with two drop tanks 1,553 miles.

Accommodation: crew of two, on tandem zero/zero ejection seats. Rear seat raised.

Armament: removable centerline gun pod containing 23-mm GSh-23L twin-barrel gun with 200 rds. Two pylons under each wing for up to 2,822 lb of napalm tanks, cluster bombs containing eight 35-lb fragmentation munitions, containers for 40 antipersonnel or 54 antitank bomblets, 16-tube 57-mm rocket packs, triple carriers for 220-lb bombs, 12.7-mm gun pods, or drop fuel tanks.

IA 58A Pucar

An accident to one of the Sri Lanka Air Force's four Pucar close air support aircraft, and spares problems with the others, defeated plans to deploy them as No. 7 Squadron to Vavuniya, closer to the territory claimed by the Tamil separatists. A second Pucar was written off this year, and another is being cannibalized to keep the sole survivor operational. It is attached to the Training Wing at Anuradhapura but is available for counterinsurgency use. Its armored cockpit floor is resistant to .30-caliber ground fire from 500 ft, and its fuel tanks are self-sealing.

Contractor: Fbrica Militar de Aviones, Argentina.

Power Plant: two Turbomeca Astazou XVIG turboprops; each 978 shp.

Dimensions: span 47 ft 6³/₄ in, length 46 ft 9¹/₄ in, height 17 ft 7¹/₄ in.

Weights: empty 8,862 lb, gross 14,991 lb.

Performance: max speed at 10,000 ft 310 mph, ceiling 32,800 ft, T-O run at 12,125 lb weight 985 ft, landing

run 656 ft, combat radius 140–606 miles.

Accommodation: crew of two on tandem zero/zero ejection seats. Rear seat raised.

Armament: two 20-mm Hispano DCA-804 guns, each with 270 rds; four 7.62-mm FN-Browning M2-30 guns, each with 900 rds; one underfuselage and two underwing pylons for up to 3,307 lb of gun and rocket pods, bombs, cluster bombs, napalm, mines, torpedoes, ASMs, camera pods, or drop tanks.

Jaguar International

The first 40 Jaguars, with 8,040 lb thrust Adour Mk 804 turbofans, were supplied to India from the British assembly line in the late 1970s. On March 31, 1982, Hindustan Aeronautics flew the first of 45 more powerful Mk 811-engine Jaguars assembled from European-built component kits. The final 46, the last of which will be delivered late next year, are manufactured almost entirely in India, bringing the overall total to 131 (116 single-seaters and 15 combat-capable tandem two-seaters). The basic strike aircraft, called **Shamsher** ("Assault Sword") by the Indian Air Force, are operated by Nos. 5, 14, 16, and 27 Squadrons.

Eight maritime strike single-seaters serve with Poona-based No. 6 Squadron for antiship duties, with four more to follow by the end of 1998. Equipment includes Thomson-CSF Agave radar in a more pointed nose; a new DARIN (display attack and ranging inertial navigation) nav/attack system that includes SAGEM Uliss 82 inertial navigation system (INS), a GEC-Marconi COMED (combined map and electronic display), and a Smiths Industries head-up display and weapon-aiming computer (HUDWAC). Sea Eagle antiship missiles are the primary armament. (*Data for HAL-built single-seater.*)

Contractor: Hindustan Aeronautics Ltd, India.

Power Plant: two HAL-built Rolls-Royce Turbomeca Adour Mk 811 turbofans; each 8,400 lb thrust with afterburning.

Dimensions: span 28 ft 6 in, length 55 ft 2½ in (incl noseprobe), height 16 ft 0½ in.

Weights: empty 15,432 lb, gross 24,149–34,612 lb.

Performance: max speed above 19,685 ft Mach 1.5, at S/L 745 mph, ceiling 45,000 ft, T-O run 1,855–4,100 ft, landing run with brake-chute 1,540–2,200 ft, typical attack radius with internal fuel and max external stores 334 miles (lo-lo-lo), 530 miles (hi-lo-hi).

Accommodation: pilot only, on zero/zero ejection seat.

Armament: two 30-mm guns in fuselage; two Magic AAMs overwing; centerline pylon and two under each wing; max external load 10,500 lb, incl eight 1,000-lb bombs, BL755 or Belouga cluster bombs, packs of 68-mm rockets, or a reconnaissance camera pack. One or two BAe Sea Eagle antiship missiles in maritime version.

Kfir

The acquisition last year of six former Israel Defense Force/Air Force Kfirs (five single-seat C2s and a TC2 two-seat operational trainer) provided a welcome shot in the arm to Sri Lanka's small and greatly beleaguered combat units in their bitter struggle against the Tamil separatist forces. Assigned to the newly formed No. 10 Squadron at Colombo's Katunayake Airport, they have assumed the major air defense and attack role hitherto undertaken by No. 5 Squadron's less capable Chinese-built F-7Bs, which are now virtually grounded. High utilization of such a small number of aircraft has, however, already had the inevitable result, one Kfir having been lost early this year. (*Data for Kfir C2.*)

Contractor: Israel Aircraft Industries.

Power Plant: one General Electric J79-J1E (modified -GE-17) turbojet; 17,900 lb thrust with afterburning.

Dimensions: span 26 ft 11½ in, length incl noseprobe 51 ft 4¼ in, height 14 ft 11¼ in.

Weights: empty approx 16,060 lb, gross 20,700–35,715 lb.

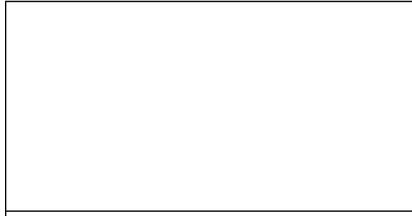
Performance: max sustained speed at altitude (clean) Mach 2.0, at S/L 863 mph, ceiling 58,000 ft, T-O run 4,750 ft, landing run at 25,500 lb gross weight 4,200 ft, ground-attack combat radius (incl 20 min fuel reserves) 477 miles.

Accommodation: pilot only, on zero/zero ejection seat.

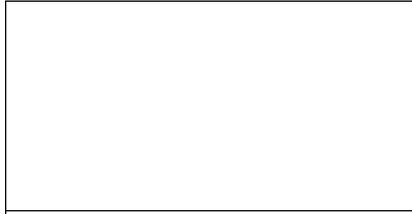
Armament: one 30-mm DEFA 552 gun in lower part of each engine air intake, each with 140 rds; five underfuselage and four underwing stations for a maximum of 12,730 lb of weapons, ECM pods, or drop tanks. Weapons can incl bombs of up to 1,000-lb size, AAMs, ASMs, rocket pods, and napalm.

MiG-23/27 (NATO "Flogger")

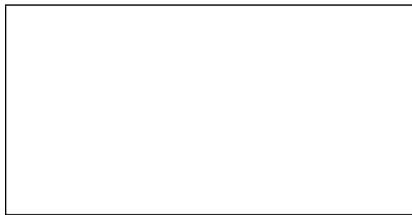
About 75 percent of the single-seat light attack aircraft of the Indian Air Force are variable-geometry Floggers. Nos. 10 (Winged Dagger), 220 (Desert Tigers), and 221 Squadrons have **MiG-23BNs** (Flogger-F), almost identical to MiG-23MF interceptors except for a redesigned forward fuselage. This is tapered in side elevation to house a Sokol-23N nav/attack system. The underbelly 23-mm gun is retained, but the cockpit sides are armored; low-pressure tires



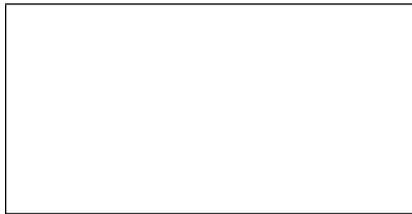
Jaguar Maritime Shamshers, Indian Air Force (Peter Steinemann)



Kfir C2s, Sri Lanka Air Force (Peter Steinemann)



MiG-27M Bahadur, Indian Air Force (Simon Watson)



OV-10C Bronco, Royal Thai Air Force (Aero Mapho)

are fitted for off-runway operation; the fuel tanks are redesigned to fill with neutral gas as the contents are used, to prevent explosion after impact; and active and passive ECM are carried. Around 90 of the 95 aircraft ordered in 1980 remain available, under the Indian name **Vijay**. The Afghan Army Air Force had up to 20 MiG-23BNs at Bagram, north of Kabul, but their current status is uncertain.

Hindustan Aeronautics assembled under license 165 similarly configured but more specialized tactical strike **MiG-27Ms** (Flogger-J) under the Indian name **Bahadur** ("Valiant"). The R-29B-300 turbojet of this version has fixed engine air intakes instead of the variable-geometry type of the MiG-23, and two-position afterburner nozzles. The 27M also has a wider and deeper nose, housing a laser rangefinder and target tracker behind a sloping window, to permit use of laser-guided missiles; a 30-mm six-barrel gun; a PrNK-23M nav/attack system, providing automatic flight control, gun firing, and weapons release, even during maneuvers; provision for new stores, including a three-camera reconnaissance pod; and other refinements. Deliveries were terminated in 1994, and 27Ms now equip Nos. 2, 9 (Wolf Pack), 18, 20, 22, 31 (Ocelots), and 222 (Tigersharks) Squadrons. (*Data for MiG-27M.*)

Design Bureau: Mikoyan OKB, Russia.

Power Plant: one Soyuz/Khachaturov R-29B-300 turbojet; 25,350 lb thrust with afterburning.

Dimensions: span 45 ft 10 in spread, 25 ft 6¼ in swept, length incl noseprobe 56 ft 0¼ in, height 16 ft 5 in.

Weights: empty 26,252 lb, gross 39,685 lb.

Performance: max speed at 26,250 ft Mach 1.7, at S/L Mach 1.1, ceiling 45,900 ft, T-O run 2,625 ft, combat radius at S/L 242 miles, ferry range 1,553 miles.

Accommodation: pilot only, on zero/zero ejection seat.

Armament: one underbelly 30-mm six-barrel GSh-6-30 gun, with 260 rds; seven external hardpoints for 6,615 lb of 500-kg bombs, 57-mm rockets, two Kh-23 ("Kerry") ASMs, four R-60 ("Aphid") AAMs, or other stores.

Mirage 5

Versions of this single-seat ground-attack development of the Mirage III fighter flown by No. 8 Squadron of the Pakistan Air Force, at Masroor, are land-attack **5PA2s** and maritime-attack **5PA3s**. No. 22 Squadron, the Mirage OGU (operational conversion unit), at the same base has **5PAs** and two two-seat **5DPA2s**. Other 5PAs equip the Mirage Squadron of the Combat Commanders' School at Sargodha. Pakistan's 5PA2s have Cyrano IV multimission radar; the 5PA3s are equipped with Agave radar for compatibility with Exocet antiship missiles. About 40 5PAs and 5PA2s, and 10 5PA3s, are currently operational. (*Data generally as for Mirage III.*)

O2-337 Sentry

Little publicity has been given to Summit Aviation's **O2-337** (337H-SP) armed conversion of the Cessna T337 "push and pull" light twin, but 11 are believed to perform patrol/attack duties with No. 103 Squadron of the Royal Thai Navy. Used airframes were rebuilt to zero-time status before delivery, and four standard NATO MALL-4A pylons were mounted underwing on each aircraft to carry weapons and other stores. Until recently, No. 3 Maritime Squadron of the Sri Lanka Air Force had used a basic **Cessna 337F Skymaster** for visual surveillance from Trincomalee (China Bay), but this has now been replaced by a Beechcraft Super King Air 200. (*Data for O2-337.*)

Contractor: Summit Aviation Inc, USA.

Power Plant: two Teledyne Continental TSIO-360 turbocharged piston engines; each 225 hp.

Dimensions: span 38 ft 2 in, length 29 ft 10 in, height 9 ft 2 in.

Weights: empty 3,160 lb, gross 5,200 lb.

Performance: max speed at S/L 188 mph, at 10,000 ft 206 mph, ceiling 28,500 ft, T-O run 538 ft, landing run 449 ft, range 1,100–1,353 miles.

Accommodation: provision for up to six seats.

Armament: Each pylon can carry up to 350 lb, incl 7.62-mm or 12.7-mm gun pods, rocket pods, bombs, containers, markers, flares, and other stores.

OV-10C Bronco

The twin-turboprop, twin-boom OV-10 Bronco was the first aircraft designed from the start for specialized counterinsurgency operations. In 1971–73, the Royal Thai Air Force took delivery of 32 OV-10Cs for light ground-attack and forward air control (FAC) missions. Up to 25 of them still equip No. 411 Squadron of 41 Wing at Chiang Mai. Flying over the local mountains, they form part of the forces combating insurgency and drug trafficking in the notorious Golden Triangle.

Contractor: Rockwell International Corporation, USA.

Power Plant: two AlliedSignal T76-G-416/417 turboprops; each 715 ehp.

Dimensions: span 40 ft 0 in, length 41 ft 7 in, height 15 ft 2 in.

Weights: empty 6,893 lb, gross 9,908–14,444 lb.

Performance: max speed at S/L 281 mph, ceiling 24,000 ft, T-O run (9,908 lb gross weight) 740 ft, landing run 740–1,250 ft, combat radius with 3,600-lb weapon load 228 miles.

Accommodation: crew of two, in tandem.

Armament: two short spools each house two 7.62-mm M60C machine guns, with 500 rds per gun.

Four pylons under spools each have a capacity of 600 lb; a centerline fifth pylon can carry 1,200 lb. Stores can incl bombs, fire bombs, cluster bombs, rocket packs, 7.62-mm Minigun and 20-mm gun pods, flares, smoke canisters, and Sidewinder AAMs.

Sea Harrier

The 23 **Sea Harrier FRS Mk 51s** bought for operation from the Indian Navy's two carriers, **INS Vikrant** (retired in January 1997) and **Viraat**, are similar to the Royal Navy's original FRS Mk 1s. Six were delivered in 1983–84, followed by 17 more in 1989–92; 22 remain in service with Indian Navy Air Squadron 300 (White Tigers). They are based at Dabolim, Goa, when not embarked, together with the remaining two (of four) **Harrier T Mk 60** tandem two-seat trainers of INAS 551, the Navy's jet OCU. The trainers are similar to the nonmaritime Harrier but have Sea Harrier avionics (minus the Blue Fox air-to-air/air-to-surface radar). A

Model of fully developed Su-30MKI for India (Simon Watson)

proposed radar upgrade program for the single-seaters was suspended last year, but additional trainers are being sought, possibly as many as five, from former RAF or USMC stocks. (Data for FRS, Mk 51.)

Contractor: British Aerospace Defence Ltd, UK.

Power Plant: one Rolls-Royce Pegasus Mk 104 vectored-thrust turbofan; 21,500 lb thrust.

Dimensions: span 25 ft 3 in, length 47 ft 7 in, height 11 ft 10 in.

Weights: empty 14,052 lb, gross 26,200 lb.

Performance: max speed at high altitude Mach 1.25, at S/L more than 736 mph EAS, short T-O run (without ski jump) approx 1,000 ft, high-altitude intercept radius 460 miles, strike radius 288 miles.

Accommodation: pilot only, on zero/zero ejection seat.

Armament: one centerline and four underwing hardpoints for up to 8,000 lb of stores (5,000 lb for vertical T-O), incl Sea Eagle ASMs, 1,030-lb free-fall and 1,120-lb parachute-retarded bombs, rockets, and flares. Four Magic 2 AAMs can be carried on outboard pylons. Provision for replacing underfuselage strake fairings with two 30-mm Aden gun pods.

Su-20/22M-4 (NATO "Fitter-C/K")

After years of combat, and with some aircraft in the hands of rebel factions, no reliable estimate of the current status of Afghan air forces is possible. There is reported to be a fighter regiment at Shindand with around 40 single-seat variable-geometry Su-20s (Fitter-C) and Su-22M-4s (Fitter-K) bequeathed to the Air Force when Soviet forces quit Afghanistan. The 22M-4s represent the final and most advanced variant of the Fitter family, with a laser rangefinder in the intake centerbody, Doppler navigation radar inside the bottom of the deepened nose, additional fuel in a deeper spine fairing, and a cooling air intake forward of the dorsal fin. (Data for Su-22M-4.)

Design Bureau: Sukhoi OKB, Russia.

Power Plant: one Saturn/Lyulka AL-21F-3 turbojet; 24,800 lb thrust with afterburning.

Dimensions: span 44 ft 10 in spread, 32 ft 10³/₄ in swept, length incl probes 62 ft 5 in, height 16 ft 10 in.

Weights: empty 23,738 lb, gross 42,770 lb.

Performance: max speed at height Mach 1.74, at S/L Mach 1.1, ceiling 49,865 ft, T-O run 4,922 ft, landing run 3,609 ft, range at high altitude 1,585 miles, at S/L 870 miles.

Accommodation: pilot only, on zero/zero ejection seat.

Armament: two 30-mm NR-30 guns in wingroots, each with 80 rds. Nine pylons under wings and fuselage for up to 8,820 lb of bombs, rocket packs, 23-mm gun pods, two R-60 ("Aphid") AAMs, or ASMs incl Kh-25ML ("Karen"), Kh-27 ("Kegler"), Kh-29 ("Kedge"), and Kh-58 ("Kilter"). When gun pods are fitted, with downward attack capability, the two underbelly pods can be mounted to fire rearward.

Su-30MKI

Until USAF's F-22 enters service, the Su-30MKI (multirole commercial India) will make India's fighter squadrons the best-equipped in the world. The first eight aircraft, already delivered, are tandem two-seat fighters generally similar to the single-seat Su-27 ("Flanker") but with more advanced avionics, the ability to engage two airborne targets simultaneously, compatibility with high precision guided ASMs and ARMs, and an in-flight refueling system for missions of 10 hours or more. They will be followed in 1998 by eight more, upgraded with French Sextant avionics, including a VEH3000 HUD, Totem INS/GPS, and liquid-crystal MFDs. Twelve delivered in 1999 will add canards; the last 12 covered by the current contract will have AL-37FU engines with thrust-vectoring nozzles,

giving exceptional agility of the kind demonstrated by the Su-37. All earlier aircraft will be modified to the same standard, and HAL has a license for follow-on manufacture in India. (Data for initial version.)

Design Bureau: Sukhoi OKB, Russia.

Power Plant: two Saturn/Lyulka AL-31F turbofans; each 27,557 lb thrust with afterburning.

Dimensions: span 48 ft 2³/₄ in, length 71 ft 11¹/₂ in, height 20 ft 10¹/₄ in.

Weights: empty 39,022 lb, gross 56,592-74,957 lb.

Performance: max speed at height Mach 2.35, at S/L Mach 1.14, ceiling 57,415 ft, T-O run 1,805 ft, landing run 2,200 ft, combat range on internal fuel 1,865 miles.

Accommodation: two crew, on zero/zero ejection seats; rear seat raised.

Armament: one 30-mm GSh-301 gun, with 150 rds. Twelve hardpoints for R-27ER/ET (AA-10C/D "Alamo-C/D"), R-73E (AA-11 "Archer") or R-77 (AA-12 "Adder") AAMs; Kh-29L/T (AS-14 "Kedge"), Kh-31A/P (AS-17 "Krypton") or Kh-59M (AS-18 "Kazoo") ASMs; AB-500, KAB-500KR and KAB-1500KR bombs; B-8M-1 (20 x 80-mm) and B-13L (5 x 130-mm) rocket packs; 250-mm S-25 rockets, and other weapons to a total weight of 17,635 lb.

Bombers and Maritime Aircraft

BN-2 Islander/Defender

A substantial number of these small STOL utility transports have been sold as **Defenders** or military **Islanders**, with either 260 hp O-540 or 300 hp IO-540 piston engines (**BN-2A** and **B**) or 320 shp turboprops (**BN-2T**). Maritime Defenders have a "thimble" nose fairing for their search radar. Major operator in south Asia is the Indian Navy, whose seven BN-2A Maritime Defenders have Bendix RDR 1400 radar and are allocated to INAS 318 at Port Blair. INAS 550 at Cochin, which received six standard BN-2As for multiengine training and general observation duties, last year began converting these to BN-2Ts; those of INAS 318 may be converted later. Pakistan's Navy formed a new squadron, No. 93 at Mehran, to operate the two BN-2T Maritime Defenders of the Maritime Security Agency on EEZ (exclusive economic zone) patrol. A former Seychelles police BN-2A is operated by that

country's Coast Guard, also for maritime patrol. (Data for BN-2T Maritime Defender.)

Contractor: Pilatus Britten-Norman, UK.

Power Plant: two Allison 250-B17C turboprops; each 320 shp (flat rated).

Dimensions: span 49 ft 0 in, length 36 ft 3³/₄ in, height 13 ft 8³/₄ in.

Weights: empty 4,040 lb, gross 7,000 lb.

Performance: max cruising speed at 10,000 ft 196 mph, at S/L 177 mph, ceiling over 25,000 ft, T-O run 840 ft, landing run 760 ft, range 679 miles (IFR), 838 miles (VFR).

Accommodation: crew of one or two; mission stations for four observers or seats for up to nine passengers, or six litters and two medical attendants.

Armament: two underwing hardpoints on each side for gun or sensor pods, releasable weapons, or (inboard) auxiliary fuel tanks.

Br 1150 Atlantic 1

Three former French Navy Atlantic 1 maritime patrol aircraft were sold to Pakistan in the mid-1970s; a fourth was acquired later from the Netherlands, although one has since been lost. They are operated by No. 29 Squadron of the Pakistan Navy, co-located with No. 93 Squadron's EEZ Maritime Defenders at Mehran. Three more arrived from France last year but are to be used only to provide spares for the existing trio. Equipment includes a retractable radar, magnetic anomaly detector (MAD) tailboom, and an Arar electronic surveillance measures (ESM) pod on the fintip. Sonobuoys and marker flares are stowed in the rear fuselage. Flight and mission crews occupy the pressurized upper deck. Thomson-CSF of France is to upgrade two of the Atlantics by installing its Ocean Master radar, a maritime situation control system, new sonobuoy signal processing and navigation equipment, and DR 3000A ESM. The third Atlantic may be similarly upgraded later.

Contractor: SECBAT consortium, France, Germany, Italy, Belgium, and the Netherlands.

Power Plant: two Rolls-Royce Tyne RTy20 Mk 21 turboprops; each 6,106 ehp.

Dimensions: span 119 ft 1¹/₄ in, length 104 ft 2 in, height 37 ft 2 in.

Weights: empty 55,115 lb, gross 98,105 lb.

Performance: max speed at height 409 mph, max cruising speed at 19,685 ft 363 mph, ceiling 32,800 ft, T-O to 50 ft 4,430 ft, landing from 50 ft 3,215 ft, range 5,590 miles, max endurance 18 hr.

Accommodation: crew of 12 (two pilots, flight engineer, three observers, radio navigator, ESM/ECM/MAD operator, radar/IFF operator, tactical coordinator, and two acoustic sensor operators), plus a relief crew.

Armament: internal weapons bay accommodates standard bombs, mines, 385-lb depth bombs, four homing or nine acoustic torpedoes, or two Exocet ASMs. Underwing pylons for two more stores.

Dornier 228

This German STOL transport has appeared in several variants, of which the **228-100** series can carry 15 passengers; the **228-200** series (of which the -212 is now the standard model) is 5 ft longer. No. 202 Squadron of 2 Wing, Royal Thai Navy, has three 228-212s for maritime patrol, as has No. 101 Squadron of 1 Wing. These aircraft have corrosion-proofed airframes and are used for surveillance missions, offshore patrol, and search and rescue. Role equipment includes a ventral Bendix/King RDR-1500B maritime search radar, a searchlight pod on one of four underwing hardpoints, and a roller door for air-dropping survival equipment. Smoke markers and flares can be dropped from a chute in the rear of the cabin. The Bhuban Air Arm has a single 228 utility transport.

Although India contracted in 1983 to license-build up to 150 Dornier 228s at HAL's Kanpur Division, by the beginning of this year only a third of that total had been manufactured, including 45 of 110 intended for India's Air Force, Navy, and Coast Guard. First recipient was the Coast Guard (15 delivered of 36 228-101s ordered, with three more due this year). These equip CGAS 744 and 750 for coastal patrol, antipollution, and antimuggling missions. They have a crew of four, 360° scan Marec radar in an underfuselage fairing, an IR/UV linescan for pollution detection, a one-million-candlepower searchlight, loudspeaker, marine markers, a sliding cabin door to air-drop six- or 10-man life rafts, and provisions for underwing antipollution spraypods. Armament of two underwing 7.62-mm gun pods or ASMs is optional.

The Dornier **228-201** utility and logistic support transports for Nos. 41 and 59 Squadrons of the Indian Air Force (25 delivered, of 50 required) have a large rear-fuselage cargo door. The shore-based Indian Navy -201s of INAS 310 at Dabolim are equipped for maritime surveillance and antiship missions with Super Marec radar and antiship missiles. Only five of the planned 24 have yet been delivered; 10 more are due in 1998-99. Earlier this year, Dornier transferred all manufacturing rights in the 228 to the Indian company.

Dornier 228-101, Indian Coast Guard

(Data for German-built 228-212.)

Contractors: Daimler-Benz Aerospace (Fairchild Dornier), Germany, and Hindustan Aeronautics, India.
Power Plant: two AlliedSignal TPE331-5-252D turboprops; each 776 shp.
Dimensions: span 55 ft 8 in, length 54 ft 4 in, height 15 ft 11½ in.
Weights: empty 8,243 lb, gross 14,110–14,550 lb.
Performance: max cruising speed at 10,000 ft 269 mph, ceiling 28,000 ft, T-O run 2,200 ft, landing distance from 50 ft 1,320 ft, range 645–1,519 miles.
Accommodation: crew of one or two; transport, 19 passengers and 728 lb baggage, or 5,159 lb freight; ambulance, six litter patients plus nine sitting casualties/medical attendants.
Armament: see above; none in basic transport role.

F27 Maritime, Friendship, and Troopship

Seventeen variants of the twin-turboprop Fokker F27 Friendship serve with four nations in south Asia. The three **F27 Maritimes** operated by No. 101 Squadron of the Royal Thai Navy took over the ASW duties handled previously by S-2F Trackers, and F27s can be armed with Harpoon ASMs for use against surface vessels. The RTN's No. 202 Squadron operates a pair of **F27 Mk 400M Troopships** for personnel/cargo transport. A single **F27 Mk 200 Friendship** still flies with No. 12 (Transport) Squadron of the Pakistan Air Force. Two Mk 200s, converted and upgraded to F27 Maritime, and two Mk 400s are used by No. 27 Squadron of the Pakistan Navy, and a single **Mk 100**, with lower-rated (1,715 shp) Dart Mk 514 engines, by the Indian Coast Guard. Aircraft operated by the Myanmar Air Force's transport squadron include a **Mk 500**, a Fairchild-built **F-27F**, three Fairchild-built **FH-227Bs**, a stretched version of the Mk 200 with 2,250 shp Dart Mk 532s, and an **FH-227E**. (Data for F27 Maritime, except where indicated.)

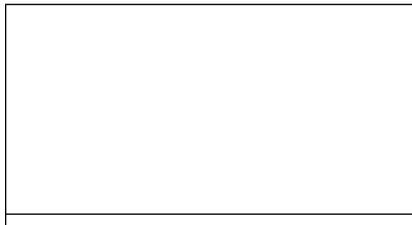
Contractor: Fokker Aircraft BV, the Netherlands.
Power Plant: two Rolls-Royce Dart Mk 552 turboprops; each 2,210 shp.
Dimensions: span 95 ft 1¾ in, length 77 ft 3½ in, height 28 ft 6½ in.
Weights: empty 27,600 lb, gross 45,000–47,500 lb.
Performance: (at 38,000 lb weight): normal cruising speed at 20,000 ft 287 mph, ceiling 29,500 ft, T-O run 3,200 ft, landing run 2,000 ft, max range 3,107 miles.
Accommodation: crew of two or three. Maritime, two to four tactical compartment operators. Troopship, up to 46 paratroops, 24 litters plus nine sitting casualties/medical attendants, or 13,283 lb of cargo.
Armament: (not fitted by Fokker): Maritime can have two stations under fuselage and three under each wing for two or four torpedoes/depth bombs and/or two antiship missiles; provision for drop tank on each center underwing station.

II-38 (NATO "May")

INAS 315 (Winged Stallions squadron) of the Indian Navy has operated five of these intermediate-range, shore-based, antisubmarine/maritime patrol aircraft from Dabolim, Goa, since 1976. They are refurbished former Soviet Navy II-38s, with nav/weather radar in the nose, search radar (NATO "Wet Eye") in an undernose radome, and an MAD tailsting. Weapons and other stores are carried in two internal bays in the fuselage, forward and aft of the wing carry-through structure.
Design Bureau: Ilyushin OKB, Russia.
Power Plant: four ZMKB Progress/Ivchenko AI-20M turboprops; each 4,190 ehp.
Dimensions: span 122 ft 9¼ in, length 131 ft 10 in, height 33 ft 4 in.
Weights: empty 78,263 lb, gross 145,503 lb.
Performance: max speed at 21,000 ft 448 mph, patrol speed at 2,000 ft 248 mph, T-O run 4,265 ft, landing run 2,790 ft, range 4,660 miles, endurance 13 hr.
Accommodation: crew of seven to eight.
Armament: attack weapons and sonobuoys in weapons bays.

N24A Searchmaster/N22B Missionmaster

Thailand is the only south Asian operator of this Australian short/medium-range STOL utility twin, known also as the **Nomad**. No. 202 Squadron of the Royal Thai Navy at Sonkhla has five **N24A Searchmaster** Ls for maritime patrol and surveillance. Their equipment includes a 360° scan Litton APS-504(V)2 search radar with a 40-in flat-plate phased-array antenna in an undernose "lozenge" radome; Doppler, Omega, or inertial long-range navigation; and Barra SSQ-801 sonobuoys. One or more now have a side-looking airborne radar. Primary role is antipiracy patrols in the Gulf of Thailand, with secondary SAR responsibility. At Phitsanulok and Don Muang, respectively, Nos. 461 and 605 Squadrons of the Royal Thai Air Force have between them about 22 shorter-fuselage **N22B Missionmasters** for utility and tactical transport duties (crew of one or two, plus up to 14 passengers). Some of these have been adapted as makeshift gunships. (Data for Searchmaster L.)



TU-142M, Indian Navy

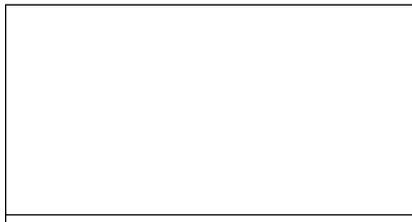
Contractor: Government Aircraft Factories, Australia.
Power Plant: two Allison 250-B17C turboprops; each 420 shp.
Dimensions: span 54 ft 2 in, length 47 ft 1 in, height 18 ft 2 in.
Weights: empty 5,897 lb, gross 9,100 lb.
Performance: normal cruising speed 193 mph, ceiling 20,000 ft, T-O run 970 ft, landing run 780 ft, range 840 miles.
Accommodation: crew of five.
Armament: provision for four underwing hardpoints, each for a 500-lb store, incl gun and rocket pods.

P-3 Orion

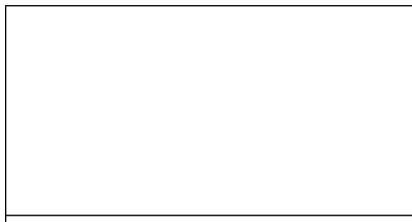
Three former US Navy P-3As, plus two nonflying airframes for spares breakdown, were purchased by the Royal Thai Navy in 1992. The first two, delivered after conversion by the Naval Air Depot at Jacksonville, Fla., arrived in Thailand in February 1995. Allocated to No. 101 Squadron at U Tapao, they are designated as **P-3T** patrol aircraft, with modified tactical navigation suite and AN/AWG-19 Harpoon antiship missile control system. The third aircraft is converted as a **UP-3T** utility/trainer, with some tactical sensor capability, including AN/AAS-36 IR detection, ESM, and TO-441/A tactical computer.

Three **P-3C** Update II.75s (similar to USN's Update III except for the replacement of some systems with export-standard equipment) were built for Pakistan in FY 1989, and crew training had been completed in 1991 before a delivery embargo was imposed and the aircraft were placed in storage at Davis-Monthan AFB, Ariz. The ban was lifted in the fall of 1995, and the P-3Cs were delivered in December 1996 and January 1997. They are thought to have joined the Atlantic 1s of No. 29 Squadron at PNS Mehran. (Data for P-3C Update III.)

Contractor: Lockheed Martin Aeronautical Systems Group, USA.
Power Plant: four Allison T56-A-14 turboprops; each 4,910 ehp.
Dimensions: span 99 ft 8 in, length 116 ft 10 in, height 33 ft 8½ in.
Weights: empty 61,491 lb, max expendable load 20,000 lb, normal gross 135,000 lb.
Performance: econ cruising speed at 110,000 lb gross weight at 25,000 ft 378 mph, patrol speed at



F-5F Tiger II, Royal Thai Air Force (Denis Hughes)



F-6, Pakistan Air Force (Peter Steinemann)

1,500 ft at same weight 237 mph, ceiling 28,300 ft, T-O run 4,240 ft, landing distance 2,770 ft, mission radius (three hr on station at 1,500 ft) 1,550 miles.
Accommodation: normal crew of 10, incl five in tactical compartment in main cabin; up to 11 additional relief crew or passengers.
Armament: one 2,000-lb or three 1,000-lb mines, or up to eight depth bombs or torpedoes, or depth bomb/torpedo combinations, in internal weapons bay. Ten underwing pylons for torpedoes, mines, ASMs, rockets, or other stores, incl two Sidewinder AAMs for self-defense.

Tu-142M (NATO "Bear-F")

India remains the only nation outside states of the former Soviet Union to operate a version of the huge turboprop Bear. It acquired eight Tu-142M long-range maritime patrol aircraft in 1985 for service with Naval Squadron INAS 312 at Arkonam. Equipped to the standard known to NATO as Bear-F Mod 3, their Berkut J-band overwater search-and-surveillance radar ("Wet Eye") is housed in a large radome under the center-fuselage. A fairing that projects rearward from the tip of the tailfin contains MAD gear. Bear-F's basic endurance of around 30 hours can be extended by in-flight refueling.
Design Bureau: Tupolev OKB, Russia.
Power Plant: four Samara Kuznetsov NK-12MV turboprops; each 14,795 ehp.
Dimensions: span 167 ft 8 in, length 174 ft 1¾ in, height 39 ft 9 in.
Weight: gross 407,850 lb.
Performance: max speed at 25,000 ft 575 mph, ceiling 41,000 ft, combat radius (unrefueled) 5,150 miles.
Accommodation: basic crew of 10 (commander, copilot, five weapon system operators, flight engineer, flight signaler, gunner) can be supplemented by relief crew members for long missions.
Armament: depth charges, torpedoes, and sonobuoys in two weapons bays in rear fuselage. Two 23-mm guns in manned tail turret.

Fighters

F-5E Tiger II

An F-5 operator since 1967, the Royal Thai Air Force still has about eight of its original 18 single-seat **F-5As** plus a few **F-5B** combat trainer counterparts, currently equipping No. 231 Squadron at Ubon Ratchathani. Deliveries of the superior **F-5E** (44) and **F-5F** (six) began in 1978, initially for air defense but latterly for surface-attack roles, including antiship missions. Most single-seaters underwent a midlife upgrade in the mid-1980s, receiving Litton LN-39 INS, AN/ALR-46 radar warning receivers, ALE-40 chaff/flare dispensers, and HUDWACs; the RTAF is currently looking at further upgrading those remaining with a new fire-control radar.

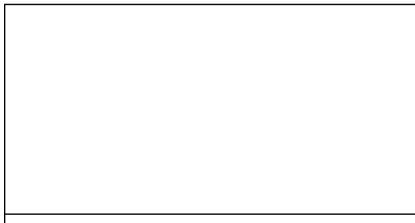
Recent arrival of Thailand's second batch of F-16s has earmarked 231 Squadron's early model F-5As (RTAF designation **B.Kh.18**) for replacement by the **F-5E (B.Kh.18A)**; the other F-5E squadron is No. 211. One 904 Squadron F-5E is the personal aircraft of Crown Prince Maha Vajiralongkorn. (Data for F-5E.)
Contractor: Northrop Corporation, USA.
Power Plant: two General Electric J85-GE-21B turbojets; each 5,000 lb thrust with afterburning.
Dimensions: span 26 ft 8 in (27 ft 11½ in over wingtip AAMs), length (incl noseprobe) 47 ft 4¾ in, height 13 ft 4¼ in.
Weights: empty 9,723 lb, gross 24,722 lb.
Performance: max speed at 36,000 ft Mach 1.64, ceiling 51,800 ft, T-O run 2,000–5,700 ft, landing run with brake-chute 2,500 ft, typical hi-lo-hi combat radius with max internal fuel, two 530-lb bombs, and two Sidewinder AAMs 553 miles.

Accommodation: pilot only, on ejection seat.
Armament: two 20-mm M39A2 guns in nose; AIM-9 Sidewinder AAM at each wingtip; one underfuselage and four underwing stations for up to 7,000 lb of bombs, cluster bombs, gun pods, rocket packs, napalm tanks, missiles, or other stores. Padded 30-mm GPU-5/A gun on centerline station for ground-attack role.

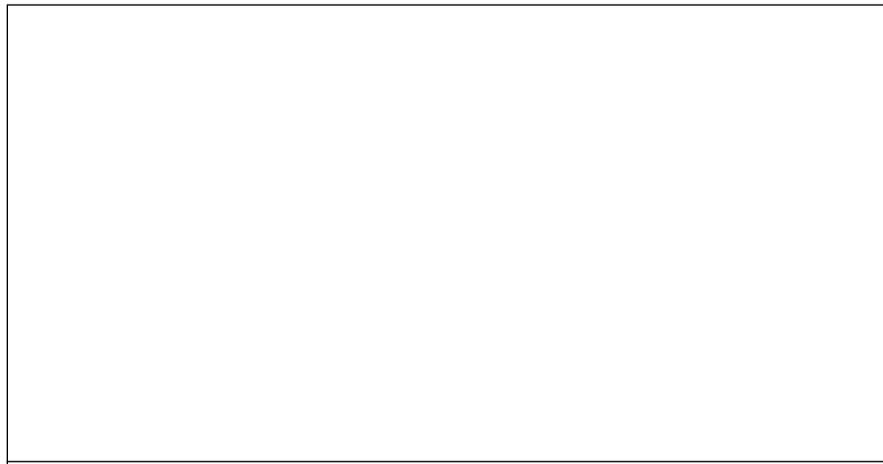
F-6 (NATO "Farmer")

Pakistan's original force of around 200 Chinese-built **F-6** single-seat day fighter-bombers, corresponding to the Soviet MiG-19SF (Farmer-C), has reduced to about 50 aircraft, equipping Nos. 15, 17, and 23 Squadrons and No. 19 Squadron (OCU). Each unit has a few **FT-6** tandem two-seat trainers as well, and the FT-6 also serves as a conversion trainer with each of the PAF's squadrons of A-5Cs. About 40 F-6s were transferred by Pakistan to the Bangladesh Defense

Force Air Wing in 1990, supplementing 24 received directly from China. Many were lost in disastrous floods in 1991, and only No. 25 Squadron (Trendsetters) at Chittagong, the fighter OCU, is now an F-6 unit, with 16 aircraft. *(Data for F-6 day fighter.)*
Contractors: Nanchang Aircraft Manufacturing Company and Shenyang Aircraft Corporation, People's Republic of China.
Power Plant: two Shenyang/Chengdu WP6 turbojets; each 7,165 lb thrust with afterburning.
Dimensions: span 30 ft 2 1/4 in, length incl probe 48 ft 10 1/2 in, height 12 ft 8 3/4 in.
Weights: empty 12,700 lb, gross 22,045 lb.
Performance: max speed at 36,000 ft Mach 1.45, at S/L 832 mph, ceiling 58,725 ft, T-O run 2,953



F-16B Fighting Falcon, Pakistan Air Force



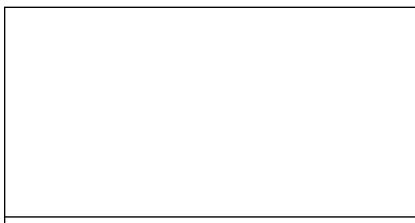
MiG-29 Baaz, Indian Air Force (Peter Steinemann)

ft, landing run with brake-chute 1,970 ft, combat radius with two drop tanks 426 miles, max range on internal fuel 863 miles.

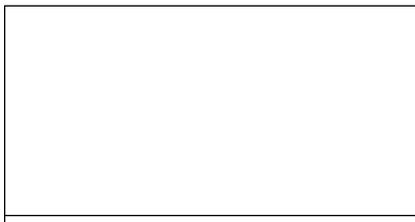
Accommodation: pilot only, on zero/zero ejection seat.
Armament: three 30-mm NR-30 guns, in nose and each wingroot. Two pylons under each wing, inboard of hardpoint for external tank, to carry packs of eight air-to-air rockets, Sidewinder AAMs, two 550-lb bombs, or air-to-surface rockets of up to 212-mm caliber.

F-16 Fighting Falcon

Around 25 single-seat Block 15 **F-16As** and 11 combat-capable two-seat **F-16Bs** equip Nos. 9 (Griffins) and 11 (Arrows) Squadrons of the Pakistan Air Force at Sargodha and No. 14 (Shaheens) Squadron at Kamra. Their equipment includes Thomson-CSF Atllis laser target designation pods.
 Deliveries of 14 F-16As and four F-16Bs to No. 103 Squadron of the Royal Thai Air Force at Korat began in June 1988, followed by 12 F-16As and six F-16Bs, from September 1995, to replace Northrop F-5E/Fs of No. 403 Squadron at Takhli. These are to Block 15 OCU (operational capabilities upgrade) standard, with improved radar, fire-control and stores-management systems, and Westinghouse AN/ALQ-131 jammer pods. *(Data for Block 15 F-16A.)*
Contractor: General Dynamics Corporation, USA (now Lockheed Martin Corporation).
Power Plant: one Pratt & Whitney F100-PW-200 turbofan; 23,450 lb thrust with afterburning.
Dimensions: span 31 ft 0 in, length 49 ft 4 in, height 16 ft 8 1/2 in.
Weights: empty 16,285 lb, gross 37,500 lb.
Performance: max speed at 40,000 ft Mach 2.05, ceiling more than 50,000 ft, T-O run 3,250 ft, landing run (with brake-chute) 2,430 ft, combat radius more than 575 miles, range with drop tanks more than 2,415 miles.
Accommodation: pilot only, on zero/zero ejection seat.
Armament: one M61A1 multibarrel 20-mm gun, with 515 rds, in port-side wing/body fairing. One underfuselage and six underwing stations, plus AAM rail at each wingtip. External stores (load limit 12,000 lb) can incl wide range of single or cluster bombs, rockets, laser-guided and electro-optical weapons and sensors, Pave Penny laser tracker pod, forward-looking infrared or jammer pods, or drop tanks.



F-7M Airguard, Bangladesh Air Force (Peter Steinemann)



MiG-23MF Rakshak, Indian Air Force (Simon Watson)

MiG-21 (NATO "Fishbed") and F-7M Airguard

The little MiG-21 and its Chinese F-7 variants far outnumber any other type of fighter in south Asia. The Indian Air Force has more than 300, mostly license-built by Hindustan Aeronautics. Early **MiG-21FLs** equip two or three squadrons, with improved **MiG-21M/MFs** in three or four squadrons. The remaining 9.5 squadrons fly the improved **MiG-21bis** (Indian name **Vikram**), of which about 250 were produced by HAL from 1980 to 1987. The 40 or so **MiG-21U** combat-capable two-seat trainers that serve alongside them were imported. The MAPO-MiG factory's **MiG-21-93** upgrade will be applied to around 125 of the IAF's MiG-21bis, to offset

delays in developing India's indigenous replacement, the LCA (Light Combat Aircraft). The upgrade includes a lightweight multifunction radar, ring-laser INS, MIL-1553B data bus, radar warning receiver, and cockpit voice recorder, plus the ability to carry R-27 ("Alamo"), R-73 ("Archer"), and R-77 ("Adder") AAMs. A further 70 Indian MiG-21s may be upgraded later. Following the Soviet withdrawal in 1989, Afghanistan received enough ex-Soviet MiG-21s to equip two fighter regiments, but their current serviceability is not known.

Virtually all other MiG-21 variants in the region are **F-7M Airguards**, an export version of the domestic J-7 II developed by Chengdu in China from the license-built MiG-21F-13. About 77 are operated by the Pakistan Air Force's No. 2 Squadron at Masroor, Nos. 18 and 20 at Rafiqui, and a training unit, No. 25 (OCU) Squadron, at Mianwali, under the designation **F-7P**, together with 13 Guizhou-built two-seat **FT-7s** (PAF designation **F-7TP**).

Bangladesh has 16 F-7Ms and four trainers in service with No. 5 Squadron (Supersonics) at Dhaka and No. 35 (Thundercats) at Chittagong. Myanmar has 30 F-7Ms and six FT-7s in three combat squadrons. The four aircraft that (with a single FT-7) equip Sri Lanka's No. 5 Squadron at Katunayake are a hybrid version designated **F-7BS**, with an early-model F-7B fuselage and the four-pylon wings of the F-7M. They were grounded earlier this year, while the Kfir's were being introduced into service. *(Data for F-7M.)*

Contractor: Chengdu Aircraft Industrial Corporation, People's Republic of China.
Power Plant: one Chengdu WP7B(BM) turbojet; 13,448 lb thrust with afterburning.
Dimensions: span 23 ft 5 1/2 in, length excl probe 45 ft 9 in, height 13 ft 5 1/2 in.
Weights: empty 11,629 lb, gross 16,603 lb.
Performance: max speed at height Mach 2.05, ceiling 59,710 ft, T-O run 3,117 ft, landing run with brake-chute 2,953 ft, combat radius on internal fuel (hi-lo-hi) 373 miles, range with three drop tanks 1,081 miles.
Accommodation: pilot only, on zero height/81 mph ejection seat.
Armament: two 30-mm Type 30-1 guns in lower front fuselage. Four underwing hardpoints for two or four PL-2/2A/5B/7 or Magic AAMs, pods of 18 x 57-mm or seven 90-mm rockets, bombs of up to 1,100 lb, or drop tanks (one 211 gallon on centerline and/or two 132 gallon under wings).

MiG-23 (NATO "Flogger")

Bought in 1982, about 35 **MiG-23MF** (NATO Flogger-B) variable-geometry single-seat interceptors are available to No. 224 (Warlords) Squadron of the Indian Air Force, based at Adampur. Known by the Indian name **Rakshak** ("Guardian"), this version has Saffir-23D ("High Lark") radar, with a search range of 43 miles and tracking range of 34 miles, an undernose infrared sensor pod, and radar warning system. Also in service are about 15 **MiG-23UB** (Flogger-C) tandem two-seat trainers, with a 22,045 lb thrust Tumansky R-27F2M-300 turbojet. *(Data for MiG-23MF.)*
Design Bureau: Mikoyan OKB, Russia.
Power Plant: one Soyuz/Khachaturov R-29-300 turbojet; 27,540 lb thrust with afterburning.
Dimensions: span 45 ft 10 in spread, 25 ft 6 1/4 in swept, length (incl noseprobe) 54 ft 10 in, height 15 ft 9 3/4 in.
Weight: gross 34,725-45,570 lb.
Performance: max speed at height Mach 2.35, at S/L Mach 1.1, ceiling 59,000 ft, combat radius 600 miles.
Accommodation: pilot only, on ejection seat.
Armament: one twin-barrel 23-mm GSh-23L gun in belly pack. One pylon under center-fuselage, one under each engine air intake duct, and one under each fixed inboard wing panel, for AAMs, bombs, rocket packs, or other stores. Use of twin launchers under the air intake ducts permits carriage of four R-60T ("Aphid") missiles, in addition to two R-23R ("Apex") on underwing pylons.

MiG-29 (NATO "Fulcrum")

Following delivery of 10 **MiG-29SEs**, the Indian Air Force maintains three full-strength squadrons of Fulcrums. Sixty-five basic **MiG-29** (Fulcrum-A) single-seaters and five **MiG-29UB** (Fulcrum-B) two-seat combat trainers were ordered initially, to equip No. 28 (First Supersonics) and No. 47 (Flying Archers) Squadrons at Poona, and No. 223 (Tridents) at Adampur, under the Indian name **Baaz** ("Eagle"). These aircraft retain all or most of the operational equipment fitted to MiG-29s in service in Russia, including N019 Saffir-29 (NATO "Slot Back") coherent pulse-Doppler look-down/shoot-down radar, an infrared search and track (IRST) sensor, anti-FOD (foreign-object damage) doors in the engine air intakes, 360° radar warning system, laser rangefinder, and flare packs in the "fences" forward of the tailfins. The later MiG-29SEs (Fulcrum-C) have upgraded radar, longer range and ability to carry R-77 (AA-12 "Adder") AAMs. In-service aircraft are to be upgraded with new avionics and R-77 AAMs. *(Data*

for basic MiG-29.)

Design Bureau: MAPO-MiG, Russia.

Power Plant: two Klimov/Sarkisov RD-33 turbofans; each 18,300 lb thrust with afterburning.

Dimensions: span 37 ft 3¼ in, length 56 ft 10 in, height 15 ft 6¼ in.

Weights: empty 24,030 lb, gross 33,600–40,785 lb.

Performance: max speed at height Mach 2.3, at S/L Mach 1.225, ceiling 55,775 ft, T-O run 820 ft, landing run with brake-chute 1,970–2,300 ft, range 932–1,300 miles.

Accommodation: pilot only, on zero/zero ejection seat.

Armament: six close-range R-60T/MK ("Aphid") or four R-60T/MK and two medium-range R-27R-1 ("Alamo-A") AAMs on six underwing pylons; provision for carrying R-73A/E ("Archer") close-range AAMs; able to carry bombs, submunitions dispensers, napalm tanks, and 80-mm, 130-mm, and 240-mm rockets, up to maximum 6,615 lb, in attack role. One 30-mm GSh-301 gun in port wingroot extension, with 150 rds.

Mirage III

The continuing US F-16 embargo, and inability to afford the desired purchase of Mirage 2000-5s, has forced the Pakistan Air Force to substantially augment its fleet of older Mirage IIIs. About 16 of its original 23 (13 **Mirage IIIEP** all-weather low-altitude attack fighters and three **IIIDP** tandem two-seat trainers) still equip the service's No. 5 Squadron at Rafiqui. The fighters' Thomson-CSF Cyrano II fire-control and ground-mapping radar, GEC-Marconi Doppler radar, and navigation/bombing computers will be replaced by a new SAGEM weapon delivery, navigation, and reconnaissance system, known as MAESTRO (modular avionics enhancement system targeted for retrofit operations), to extend their air-to-air performance and provide air-to-ground attack capability. A new FIAR Grifo 7 multimode pulse-Doppler radar will also be installed. The same upgrade will be applied to 17 former Spanish and nine ex-Lebanese Mirage IIIEs acquired recently; additional two-seaters have also been obtained from France (six), Spain (five), and Lebanon (one). In addition, about half of the 42 **Mirage IIIOs** and eight two-seat **DOs** acquired from Australia have been reworked by Pakistan's Mirage Rebuild Factory at Kamra, to equip two further squadrons; the remainder will be cannibalized for spares. (*Data for Mirage IIIEP*)

Contractor: Avions Marcel Dassault-Breguet Aviation, France.

Power Plant: one SNECMA Atar 9C turbojet; 13,670 lb thrust with afterburning.

Dimensions: span 26 ft 11½ in, length 49 ft 3½ in, height 14 ft 9 in.

Weights: empty 15,540 lb, gross 21,165–30,200 lb.

Performance: max speed at 40,000 ft Mach 2.2, at S/L Mach 1.135, ceiling 55,775 ft, T-O run 2,295 ft, landing run with brake-chute 2,295 ft, combat radius (lo-lo-lo) 305 miles.

Accommodation: pilot only, on ejection seat.

Armament: two 30-mm DEFA 552 guns in fuselage; one R.530 AAM under fuselage and two Magic AAMs under wings. Bombs or rocket pods can be carried underwing on attack missions.

Mirage 2000

Between 1985 and 1988, the Indian Air Force received 42 single-seat **Mirage 2000Hs** (now reduced to 38) and seven two-seat **2000THs**. They equip Nos. 1 (Tigers) and 7 (Battle Axe) Squadrons, both based at Maharajpura AFB, Gwalior. These aircraft (Indian name **Vajra**: "Divine Thunder") are thought to be optimized for ground-attack, with Antilope 5 terrain-following radar. Other avionics include Uliss 52 INS, head-up and head-down cockpit displays, ECM jammers and chaff/flare dispenser, Spirale passive countermeasures, and Servat radar warning receivers. Fly-by-wire flight controls are standard. A multirole and night combat upgrade with RDY multimode radar, next-generation avionics, and possibly a Rafael Litening laser designator pod, is planned in the near future. In air-defense configuration, the Mirage 2000 can attain Mach 2.2 at 39,350 ft within 2.5 minutes of leaving the runway.

The US embargo on sales of F-16s to neighboring Pakistan forced that country to reopen negotiations (abandoned on cost grounds in 1992) to buy up to 32 Mirage 2000-5s instead. However, although the French government approved such a purchase in principle in November 1995, no contract has yet been agreed, and Pakistan continues to augment and upgrade its fleet of older Mirage IIIs. (*Data for Mirage 2000H*.)

Contractor: Dassault Aviation, France.

Power Plant: one SNECMA M53-P2 turbofan; 21,385 lb thrust with afterburning.

Dimensions: span 29 ft 11½ in, length 47 ft 1¼ in, height 17 ft 0¾ in.

Weights: empty 16,534 lb, gross 37,480 lb.

Performance: max speed at 39,350 ft Mach 2.2, ceiling 54,000 ft, T-O run approx 1,475 ft, attack radius (hi-lo-hi) 748 miles.

Accommodation: pilot only, on zero/zero ejection seat.

Armament: two 30-mm DEFA 554 guns in fuselage; five hardpoints under fuselage and two under each wing for max external stores load of 13,890 lb. Two Super 530D and two Magic 2 AAMs for air defense. Ground-attack weapons incl 18 x 550-lb retarded bombs or BAP 100 antirunway bombs, 16 Durandal penetration bombs, two 2,200-lb laser-guided bombs, six Belouga cluster bombs, ASMs, and packs of 18 x 68-mm or 100-mm rockets.

Helicopters

AH-1 HueyCobra

Nos. 31 and 32 Squadrons of the Pakistan Army are believed to operate 18 of the 20 AH-1F HueyCobra attack helicopters received in 1984–85, from their base at Multan. The Royal Thai Army Aviation Battalion at Lop Buri operates four AH-1Fs. Standards are comparable with the US Army's full-capability TOW (Tube-launched, Optically tracked, Wire-guided) missile-carrying version, with a Hughes laser range-finder/tracker, Kaiser pilot's HUD, digital fire-control computer, Doppler navigation, hot metal and exhaust plume IR suppressor, IR jammer, IFF, and composites rotor blades. (*Data for AH-1F*.)

Contractor: Bell Helicopter Textron, USA.

Power Plant: one AlliedSignal T53-L-703 turboshaft; 1,800 shp.

Dimensions: rotor diameter 44 ft 0 in, span 10 ft 9 in, fuselage length 44 ft 7 in, height 13 ft 5 in.

Weights: empty 6,598 lb, gross 10,000 lb.

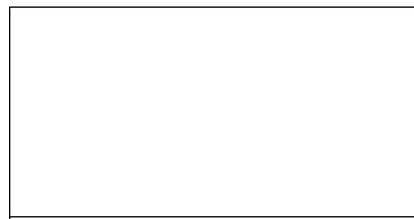
Performance: max speed 141 mph, ceiling 12,200 ft, range 315 miles.

Accommodation: pilot and copilot/gunner in tandem armored cockpits.

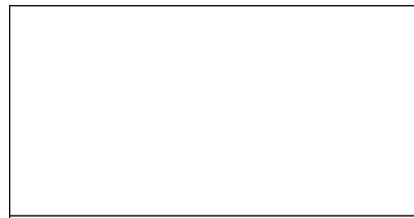
Armament: two weapon stations under each stub-wing; outer stations can each carry four TOW antitank missiles, inboard stations each a launch tube for seven to 19 x 2.75-in rockets. GE undernose turret for 20-mm M197 three-barrel gun with 750 rds.

ALH

In addition to an estimated requirement for 300 for its Army, Navy, Air Force, and Coast Guard, India has high hopes of military and civil orders for its ALH (Advanced Light Helicopter). Developed with German (MBB/Eurocopter) design assistance, the multirole ALH first flew August 20, 1992; a skid-gear Army/Air Force prototype followed in May 1994 and the wheeled-gear Naval prototype in December 1995. The first production contract, announced earlier this year, is for 12 aircraft (Army and Air Force four each, Navy and Coast Guard two each), with deliveries to start next year. Eventual requirements are 110, 150, and 400, respectively, to replace such elderly types as the Cheetah and Chetak (which see). (*Data for Army/Air Force version; Naval version in parentheses*.)



Fourth prototype ALH, Indian Navy



Bell 212, Sri Lanka Air Force (Peter Steinemann)

Contractor: Hindustan Aeronautics Ltd, India.

Power Plant: two Turbomeca TM 333-2B turboshafts (each 1,000 shp); or LHTEC CTS 800s (each 1,300 shp).

Dimensions: rotor diameter 43 ft 3¾ in (both), fuselage length (incl tail rotor) 42 ft 3¾ in (44 ft 0¾ in), height 16 ft 4 in (16 ft 1¼ in).

Weights: empty 5,511 lb (both), gross 9,920 lb (12,125 lb).

Performance: (at 8,818 lb weight, both): max speed 174 mph, max cruising speed 152 mph, ceiling 19,680 ft, range 249 miles with 1,543-lb payload, 497 miles with max fuel and 20 min reserves.

Accommodation: crew of two; 10 troops/passengers standard, or 14 maximum, or two litters and medical team, or cargo, or other personnel and equipment depending on mission.

Armament: Cabin-side pylons for ATGMs, AAMs, or rocket pods; provision for 20-mm gun in underfuselage turret. (Naval version, pylon-mounted torpedoes or depth charges, plus slung load of mines.)

Bell 212 and 412

About 70 of these twin-turbine helicopters are in service with south Asian air arms, more than 60 of these being **Bell 212s** with two-blade main rotors. Twelve serve with No. 1 (utility) Squadron of the Bangladesh Air Force at Chittagong and two with No. 31 (VIP) Squadron at Dhaka. Eight (some converted locally for counterinsurgency missions) fly with No. 7 Squadron of the Sri Lanka Air Force, whose No. 4 Squadron has also reportedly converted its four VIP **Bell 412s** to an armed configuration. The 412, two of which are also operated by the Pakistan Army, has an uprated power plant and four-blade rotor.

Largest regional user is Thailand, whose Army has about two dozen 212s and Navy eight for ASW duties with No. 203 Squadron. The Royal Thai Air Force has two 412s, forming part of the country's Royal Flight; the Border Police operate about a dozen 212s and two 412s. (*Data for Bell 212, with 412 in parentheses*.)

Contractor: Bell Helicopter Textron, USA/Canada.

Power Plant: one Pratt & Whitney Canada PT6T-3B (PT6T-3B-1 Turbo Twin Pac turboshaft; flat rated at 1,290 shp (1,400 shp).

Dimensions: rotor diameter 48 ft 2¼ in (46 ft 0 in), fuselage length (both) 42 ft 4¾ in, height 14 ft 10¼ in (15 ft 0 in).

Weights: empty 5,997 lb (6,495 lb), gross 11,200 lb (11,900 lb).

Performance: max cruising speed at S/L 115 mph (140 mph), ceiling 13,000 ft (16,500 ft), max range 261 miles (408 miles).

Accommodation: pilot and up to 14 passengers or equivalent cargo.

Armament: (both): can incl a 12.7-mm or 0.50-in machine gun in ventral turret, plus provisions for externally mounted antitank or antiship missiles, gun pods, or rocket pods.

CH-47D International Chinook

The main operating center for the aviation element of the Royal Thai Army, at Lop Buri AB in central Thailand, is able to deploy more than 100 fixed-wing aircraft and helicopters in support of troop detachments throughout the country. Bell 212 and UH-1H utility helicopters constitute the backbone of the transport fleet, but a heavy-lift capability is provided by five CH-47Ds. Thailand is the only military Chinook operator in the south Asia region.

Contractor: Boeing Defense and Space Group, Helicopters Division, USA.

Power Plant: two AlliedSignal T55-L-712 turboshafts; each 3,750 shp.

Dimensions: rotor diameter (each) 60 ft 0 in, fuselage length 52 ft 1 in, height 18 ft 11½ in.

Weights: empty 23,523 lb, gross 54,000 lb.

Performance: (at 44,300 lb gross weight): typical cruising speed at S/L 152 mph, ceiling 10,100 ft, range with 14,857-lb max payload 115–161 miles.

Accommodation: crew of two; 44 troops, 24 litters and two medical attendants, or vehicles/cargo.

Armament: none.

Ka-25B (NATO "Hormone-A")

In addition to its newer Ka-28s, No. 333 Squadron of the Indian Navy operates five Ka-25B helicopters that were purchased in 1980 for operation from *Kashin II*-class destroyers. Primary mission is ASW, with secondary surveillance and search-and-rescue (SAR) duties. They are of traditional Kamov design, with contrarotating coaxial three-blade rotors. Equipment includes search radar in a large undernose radome and dipping sonar.

Design Bureau: Kamov OKB, Russia.

Power Plant: two Mars GTD-3M turboshafts; each 986 shp.

Dimensions: rotor diameter (each) 51 ft 7¾ in, fuselage length 32 ft 0 in, height 17 ft 7½ in.

Weights: empty 10,505 lb, gross 15,873 lb.

Performance: max speed 130 mph, ceiling 11,000 ft, range 250–405 miles.

Accommodation: crew of two; main cabin is large enough to contain 12 folding seats.

Armament: one 18-in ASW torpedo and sonobuoys in underfuselage weapons bay.

Ka-28 (NATO "Helix-A")

In 1989, the Indian Navy acquired 15 Ka-28 helicopters for antisubmarine duties from its newer and upgraded *Kashin*-class ships by No. 333 Squadron, based at Dabolim. Each can be stowed in much the same hangar space as a Ka-25 but offers greatly improved performance and combat capability. The general configuration is little changed, with contrarotating coaxial rotors, but the cabin is enlarged and twin fins replace the triple tail unit of "Hormone." Equipment includes an undernose 360° search radar, MAD, dipping sonar, IFF, radar warning receivers, IR jammer, and ESM. The autopilot provides automatic approach and hover on a preselected course, using Doppler radar, enabling use of the dipping sonar at night and in adverse weather. Ka-28s normally operate in pairs, one tracking the hostile submarine, the other dropping depth bombs. They are claimed to be effective against submarines cruising at up to 40 knots, at a depth of 1,650 ft, out to 125 miles from the helicopter's base, by day and night.

Design Bureau: Kamov OKB, Russia.

Power Plant: two Klimov TV3-117V turboshafts; each 2,190 shp.

Dimensions: rotor diameter (each) 52 ft 2 in, fuselage length 37 ft 1 in, height 17 ft 8½ in.

Weight: gross 26,455 lb.

Performance: max speed 155 mph, ceiling 12,000 ft, range 310–745 miles.

Accommodation: crew of three (pilot, tactical coordinator, ASW systems operator).

Armament: two torpedoes or four depth bombs, plus sonobuoys, in ventral weapons bay.

Ka-31

In December 1996, the Indian Ministry of Defense announced its intention to order three Ka-31 radar picket helicopters for operation from ships of its Navy. Based on the airframe and power plant of the Ka-28/29, the Ka-31 carries an E-801E Oko (eye) early warning radar system, with a 64.5 sq ft rotating radar antenna under its fuselage. This stows flat when not in use; when deployed downward, it turns through 90° into a vertical plane and rotates at 6 rpm, with the landing gear retracted to prevent interference. Data on airborne and surface targets are acquired, evaluated, and transmitted automatically to a command center, requiring only two crew in the helicopter. Surveillance radius is 62–93 miles for fighter-sized targets, 155 miles for ships. Up to 20 targets can be tracked simultaneously. Armor, gun, and stores pylons are deleted.

Performance: Loiter speed at up to 11,500 ft 62–75 mph, duration on station 2 hr 30 min.

Lynx

Following its purchase of six surplus Royal Navy Type 21 frigates, the Pakistan Navy acquired three ex-RN Lynx HAS. Mk 3 helicopters in 1994 and 1995. These now equip No. 333 Squadron. Capable of antisubmarine classification and strike, air-to-surface-vessel search and strike, reconnaissance, search and rescue, troop transport, fire support, VERTREP, communications, and fleet liaison, they have a nose-mounted GEC-Marconi Seaspray search-and-tracking radar and can carry Sea Skua antiship missiles. Three more are on option. (Data for HAS. Mk 3.)

Contractor: Westland Helicopters Ltd, UK.

Power Plant: two Rolls-Royce Gem 41-1 turboshafts; each 1,120 shp.

Dimensions: rotor diameter 42 ft 0 in, fuselage length 45 ft 3 in, height 11 ft 5 in.

Weights: empty 7,370 lb, gross 10,500 lb.

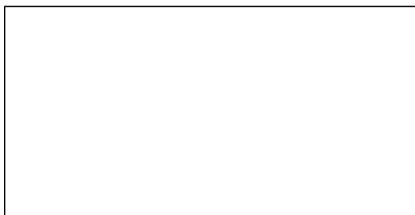
Performance: max cruising speed 144 mph, ceiling 8,450 ft, radius (SAR, with reserves) 111–132 miles, max range 368 miles.

Accommodation: pilot and copilot or observer, plus systems operators, or six litters and a medical attendant, or 2,000 lb of internal equipment or cargo; in SAR configuration, crew of three, nine survivors, and 600-lb capacity external rescue hoist.

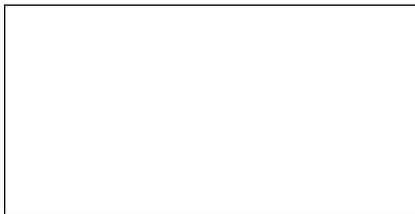
Armament (ASW configuration): two pylon-mounted Mk 44, Mk 46, or Sting Ray homing torpedoes, one each side of fuselage, plus six marine markers; or two Mk 11 depth charges; or up to four BAe Sea Skua semiactive homing antiship missiles.

Mi-8/17/171 (NATO "Hip")

Most widely used family of multirole helicopters in the world, the Mi-8 and Mi-17 are flown by seven of the 10 south Asian nations included in this "Gallery." The basic production version, first flown in 1962, is the Mi-8 with two TV2 turboshaft engines and a starboard-side tail rotor. Since the early 1980s, customers wanting higher performance have been able to buy the Mi-17



Ka-28, Indian Navy (Paul Jackson)



Mi-17, Sri Lanka Air Force (Peter Steinemann)

(Hip-H), with 1,923 shp TV3-117MT engines in shorter nacelles and with the tail rotor on the port side.

The Mi-8T (Hip-C) is the standard assault transport, able to put down troops, equipment, and supplies behind enemy lines within 15–20 minutes of a nuclear or conventional bombardment/air strike. The Mi-8TV (Hip-C) is armed, with a twin stores rack for rocket packs or bombs on each side of the cabin. On the Mi-8TBK (Hip-F), for export, the armament is increased, with a 12.7-mm KV-4 nose machine gun, with 700 rds, and triple stores racks, able to carry 192 rockets in six packs, plus six 9M14M (NATO "Sagger") manual command to line of sight antitank missiles. The Mi-8PS is a VIP transport. Current export versions include the upgraded Mi-171, with optional Igla-V AAMs, 9M114 (NATO "Spiral") ASMs, radar and electro-optics pod. Approximate numbers of Mi-8/17/171s active with south Asian air forces are: Afghanistan 45 Mi-8/17; Bangladesh seven Mi-8, 12 Mi-17; Bhutan two Mi-8; India 80 Mi-8, 50 Mi-17 (Indian names Rama and Pratap, respectively); Myanmar 12 Mi-171; Pakistan Army 10 Mi-8, 12 Mi-17; and Sri Lanka 11 Mi-17. Two of Pakistan's Mi-17s have a VIP interior; the others supplement two Bell 412s and four UH-1Hs available for disaster relief with 6th Aviation Squadron. (Data for military Mi-8TV Hip-C.)

Design Bureau: Mil OKB, Russia.

Power Plant: two Klimov TV2-117A turboshafts; each 1,677 shp.

Dimensions: rotor diameter 69 ft 10¼ in, fuselage length 59 ft 7¼ in, height 18 ft 6½ in.

Weights: empty 16,007 lb, gross 26,455 lb.

Performance: max speed at 3,250 ft 155 mph, ceiling 13,120 ft, range 264 miles as passenger transport.

Accommodation: crew of two or three; 24 troops on tip-up seats along cabin sidewalls, or 12 litter patients and an attendant, or 8,820 lb of freight or vehicles, loaded via rear clamshell doors and hook-on ramps.

Armament: twin rack on each side of cabin, able to carry 64 x 57-mm rockets in four UV-16-57 packs, or other weapons.

Mi-24/25/35 (NATO "Hind")

Versions of Russia's standard attack helicopter are in service in Afghanistan (about 25 Mi-24s), with the Indian Air Force (40 Mi-25s and 35s, Indian name *Abbar*), and since 1995, in Sri Lanka (five of original six Mi-24Vs). Unlike their Western counterparts, each of these helicopters has the added capability of carrying eight combat-equipped troops in its main cabin. The basic version is the Mi-24 in various forms. Its export counterpart, the Mi-25, corresponds to the Mi-24D (Hind-D) gunship, with a 12.7-mm YakB-12.7 four-barrel nose gun, with 1,470 rds, four weapons pylons under its stub-wings, and wingtip launchers for four 9M17P Skorpion ("Swatter") antitank missiles.

The Mi-35 is the export model of the Russian Army's Mi-24V (Hind-E), with up to eight 9M114 ("Spiral") radio-guided, tube-launched, antitank missiles in pairs on its wingtip and underwing stores pylons. It has a HUD for the pilot, replacing the reflector gunsight, and an enlarged undernose automatic missile guidance pod. R-60 ("Aphid") AAMs and the same range of alternative weapons as those of Hind-D can be car-

ried on the underwing pylons. The Mi-35P is similar to the CIS forces' Mi-24P (Hind-F), with a GSh-30-2 twin-barrel 30-mm gun (with 750 rds) mounted on the starboard side of the nose, replacing the usual undernose Gatling. (Data for Mi-35P.)

Design Bureau: Mil OKB, Russia.

Power Plant: two Klimov TV3-117 turboshafts; each 2,190 shp.

Dimensions: rotor diameter 56 ft 9¼ in, fuselage length 57 ft 5¼ in, height 21 ft 4 in.

Weights: empty 18,078 lb, gross 26,455 lb.

Performance: max speed 208 mph, ceiling 14,750 ft, range on internal fuel 310 miles, with auxiliary tanks 620 miles.

Accommodation: crew of two (pilot at rear); flight mechanic and provisions for eight troops or four litter patients in main cabin.

Armament: one GSh-30-2 twin-barrel 30-mm gun; up to eight 9M114 antitank missiles. Alternative loads on four underwing pylons incl 32-rd packs of 57-mm rockets, 20-rd packs of 80-mm rockets, UPK-23-250 pods each containing a GSh-23L twin-barrel 23-mm gun, up to 3,300 lb of bombs, mine dispensers, or other stores. Provisions for firing AKMS guns from cabin windows.

Mi-26 (NATO "Halo")

No. 126 (FeatherWeight) Helicopter Unit of the Indian Air Force, based at Chandigarh, has 10 Mi-26s. Each has a cargo hold and payload very similar in size to those of a C-130H Hercules, loading via clamshell doors and ramp at the rear of the cabin, and all equipment necessary for day and night operation in all weathers. Optional items available on the Mi-26, which is the world's largest production helicopter, include a closed-circuit TV system to observe slung payloads, infrared jammers and suppressors, infrared decoy dispensers, and a color-coded identification flare system.

Design Bureau: Mil OKB, Russia.

Power Plant: two ZMKB Progress D-136 turboshafts; each 10,000 shp.

Dimensions: rotor diameter 105 ft 0 in, fuselage length 110 ft 8 in, height 26 ft 8¾ in.

Weights: empty 62,170 lb, gross 123,450 lb.

Performance: max speed 183 mph, ceiling 15,100 ft, range with standard fuel 497 miles, with auxiliary tanks 1,190 miles.

Accommodation: crew of four; compartment for four additional persons aft of flight deck and about 20 tip-up seats along each sidewall of hold. Max accommodation for 80 combat-ready troops, or 60 litter casualties and four or five attendants. Freight loads incl two airborne infantry combat vehicles or a standard 44,100-lb ISO container.

Armament: none.

S-58T

First flown by Sikorsky in August 1970, the S-58T has an airframe similar to that of the piston-engine H-34 Choctaws once operated by the US Army, reengineered with a coupled turboshaft. Approximately 146 conversions and conversion kits were delivered before the program was sold to California Helicopter in 1981. No. 201 (Spider) Squadron, Royal Thai Air Force, at Kokkathium AB, has 14 S-58Ts for transport and combat search and rescue duties.

Contractor: California Helicopter International, USA.

Power Plant: one Pratt & Whitney Canada PT6T-6 Twin-Pac coupled turboshaft; 1,875 shp.

Dimensions: rotor diameter 56 ft 0 in, fuselage length 47 ft 3 in, height 15 ft 11 in.

Weights: empty 7,577 lb, gross 13,000 lb.

Performance: max speed 138 mph, hovering ceiling OGE 6,500 ft, range with standard fuel 278 miles.

Accommodation: crew of two; 18 troops or eight litter patients.

Armament: normally none.

S-70B Seahawk

To serve alongside the Harrier attack aircraft on its newly acquired aircraft carrier, HTMS *Chakri Naruebet*, the Royal Thai Navy ordered six Sikorsky S-70B-7 Seahawk helicopters in October 1993. It is understood that these will serve mainly in the roles of coastal surveillance, maritime patrol, and search and rescue, although they will retain a capability for the ASW and ASV roles of their US Navy SH-60B counterparts. Equipment will include a 600-lb capacity rescue hoist, mounted on the port side of the cabin. The first Seahawk was handed over in March and the sixth was due to be accepted in June, for service entry before the end of this year. A further order may be placed later. (Data for US Navy SH-60B.)

Contractor: Sikorsky Aircraft, USA.

Power Plant: two General Electric T700-GE-401C turboshafts; each 1,800 shp.

Dimensions: rotor diameter 53 ft 8 in, fuselage length 50 ft 0¾ in (40 ft 11 in folded), height 12 ft 5¾ in (13 ft 3¼ in with tail pylon folded).

Weights: empty 13,648 lb, gross 18,373–21,884 lb.

Performance: max speed at 5,000 ft 145 mph, mission radius with 1-hr loiter 173 miles, with 3-hr loiter 57 miles.

Accommodation: crew of three (pilot, copilot/tacco, and sensor operator).

Armament (ASW): two Mk 46 or Mk 50 torpedoes or Penguin antiship missiles, one pylon-mounted each side of fuselage aft of main cabin door. Provision for one or more pintle-mounted 7.62-mm machine guns in cabin doorways.

S-76N

Since 1979, about 450 civil S-76s, in various models, have been sold, including almost 100 of the **S-76B** variant. The **S-76N**, six of which were ordered by the Royal Thai Navy in 1994, is a navalized S-76B. For shore-based duties that include coastal patrol, ship-to-shore personnel transport, and search and rescue, they were delivered to NAS Sattahip at U Tapao in June and September 1996. Differences from the standard S-76B include self-sealing fuel tanks, uprated transmission, sliding cabin doors, manual blade-folding, reinforced landing gear, larger mainwheel tires, a Honeywell AFCS with programmable SAR patterns, harpoon decklock, pressure refueling, and the ability to refuel while hovering. Equipment options include an emergency flotation system, a 3,300-lb capacity cargo hook, 600-lb capacity rescue hoist, and a cabin speaker and loudhailer.

Contractor: Sikorsky Aircraft, USA.

Power Plant: two Turbomeca Arriel 2S1 turboshafts; each 856 shp.

Dimensions: rotor diameter 44 ft 0 in, fuselage length 43 ft 4 in, height 14 ft 5 3/4 in.

Weights: empty (typical) 6,680 lb, gross 12,800 lb.

Performance (standard S-76B at 11,700 lb gross weight): max speed 178 mph, max cruising speed 166 mph, ceiling 15,000 ft, range at 4,000 ft 322 miles (30 min reserves), 402 miles (no reserves).

Accommodation: crew of two, plus systems operator(s) evacuating to role. Cabin can accommodate 12 evacuees on seats or 16 sitting on floor; medevac version can carry three litter patients (or six prone patients if not on litters) plus two medical attendants.

Armament: provision for pintle-mounted 7.62-mm gun in each cabin doorway; multipurpose pylon system (MPPS) permits external carriage of gun and rocket pods, mines, torpedoes, or Hellfire, TOW, Stinger, or Sea Skua missiles.

SA 315B Lama and Cheetah

Aerospatiale of France developed the **Lama** from its Alouette II to meet an Indian requirement for operations in the Himalayas. Hindustan Aeronautics has license-built more than 240 since 1972, under the Indian name **Cheetah**, but this production has virtually ceased. Twelve equip the Indian Air Force Helicopter Training School at Hakimpet, while about 40 serve with four Indian Army squadrons for observation and liaison duties. In due course, they will be replaced by the new ALH. No. 8 Squadron of the Pakistan Army Aviation Corps has about 15 Lamas, including six from Romanian production. They are employed primarily in the Karakoram Range and around the Siachan glacier. (Data for HAL SA 315B.)

Contractor: Hindustan Aeronautics Ltd, India.

Power Plant: one HAL-built Turbomeca Artouste IIIB turboshaft; derated to 542 shp.

Dimensions: rotor diameter 36 ft 1 3/4 in, fuselage length 33 ft 6 3/4 in, height 10 ft 1 3/4 in.

Weights: empty 2,193 lb, gross 3,858 lb normal, 4,078 lb with slung cargo.

Performance: max cruising speed 119 mph, ceiling 21,000 ft, range (max) 341 miles.

Accommodation: pilot and copilot or passenger, side by side, three passengers to rear; or pilot, two litter patients, and medical attendant. External sling loads up to 2,205 lb.

Armament: none.

SA 316 Alouette III and Chetak

Manufacture of the **SA 316B** continues, though only at a trickle, in India, where more than 330 have been license-built under the name **Chetak**, in addition to early **Alouette III** imports from France. Up to 120, some equipped for an antitank role, equip nine or more units of the Indian Army; smaller quantities serve with the Indian Air Force (about 30), Navy (15, principally with INAS 321 and 331), and Coast Guard (six with CGAS 800). Like the Cheetah, the Chetak is destined for replacement by HAL's new ALH (which see).

The Royal Nepalese Air Force has two Chetaks. Pakistan's Air Force has about 15 Alouettes (two or three each with six squadrons) for SAR and light duties; its Army has about 20 for liaison; and its Navy's No. 333 Squadron has seven (including four ex-Dutch), variously equipped for ASW, surveillance, and SAR. Two Alouette IIIs are operated by the Seychelles People's Air Force for coastal patrol and other duties. (Data for HAL-316B Chetak.)

Contractor: Hindustan Aeronautics Ltd, India.

Power Plant: one HAL-built Turbomeca Artouste IIIB turboshaft; derated to 550 shp.

Dimensions: rotor diameter 36 ft 1 3/4 in, fuselage length (incl tail rotor) 33 ft 4 1/2 in, height 9 ft 9 in.

Weights: empty 2,711 lb, gross 4,850 lb.

Performance: max cruising speed at S/L 115 mph, ceiling 10,675 ft, range (max) 296 miles.

Accommodation: pilot and up to six passengers or equivalent cargo; normally pilot only, or pilot and gunner, in armed versions; pilot plus two litters and two other persons in SAR or medevac configuration.

Armament: range of possible weapons incl a tripod-mounted 7.62-mm machine gun with 1,000 rds aft of pilot's seat, or 20-mm gun with 480 rds, turret-mounted on port side of cabin. Instead of guns, can carry two or four wire-guided antitank missiles on external rails or 68-mm rocket pods. ASW version can carry two torpedoes or depth charges, or one of these weapons plus an MAD bird.

SA 330 Puma and AS 332 Super Puma

Major user in the south Asia region is the Pakistan Army, which has about 25 **SA 330L** Pumas for miscellaneous transport duties with Nos. 21 and 25 Squadrons; a single **SA 330J**, similar to the L, serves as a VIP transport. At Katmandu, the Royal Nepalese Air Force has two earlier Pumas, an **SA 330C** (1,400 shp Turmo IVB engines) and an **SA 330G**, with metal instead of composites rotor blades. Nepal's Royal Flight also operates civil-registered **AS 332L** and **L1 Super Pumas** (one of each) (1,877 shp Makila 1A1 engines, uprated transmission, and airframe improvements). These make commercial and SAR flights in addition to their VIP duties. Thailand's Royal Flight recently received three **AS 332L2 Super Puma Mk IIs**. (Data for SA 330L.)

Contractors: Aerospatiale, France; Westland Helicopters, UK.

Power Plant: two Turbomeca Turmo IVC turboshafts; each 1,575 shp.

Dimensions: rotor diameter 49 ft 2 1/2 in, fuselage length 46 ft 1 1/2 in, height 16 ft 10 1/2 in.

Weights: empty 7,970 lb, gross 16,315 lb.

Performance: max cruising speed at S/L 160 mph,

ceiling 15,750 ft, range 341 miles.

Accommodation: crew of two; 16 fully equipped troops, six litter patients and six seated persons, or 7,055 lb of internal or external freight.

Armament: provisions for side-firing 20-mm gun, two 7.62-mm machine guns, rocket packs, and other weapons.

Sea King

With total orders for 41, India was easily the major export customer for Westland's license-built and greatly modified development of the Sikorsky SH-3 antisubmarine helicopter, beginning with 12 **Mk 42s** in the early 1970s, for Nos. 330 and 336 Naval Air Squadrons. These were followed in 1980 by three **Mk 42As**. Later deliveries, to Advanced Sea King standard with improved "hot and high" engines, uprated gearboxes, all-composites rotor blades, and a strengthened airframe, comprised 20 **Mk 42Bs** and six assault and transport **Mk 42Cs** for Nos. 336 and 339 NAS, respectively. Up to 36 remain in service. Typical equipment on the Mk 42B includes MEL Super Searcher radar, Doppler navigation, GEC-Marconi AQS-902 sonobuoy processor and tactical processing system, Alcatel HS-12 dipping sonar, Chelton 700 sonics homing, GEC-Marconi Hermes ESM, Louis Newmark AFCS (automatic flight-control system), and fittings for Sea Eagle antiship missiles.

The remaining six of seven **Mk 45/45A** Sea Kings operated since 1975 by No. 111 Squadron (Sharks) of the Pakistan Navy, broadly equivalent to India's Mk 42, have a less capable MEL radar, Plessey sonar, lower-rated engines, and are equipped for Exocet instead of Sea Skua missiles. (Data for Mk 42B.)

Contractor: Westland Helicopters Ltd, UK.

Power Plant: two Rolls-Royce Gnome H.1400-1T turboshafts; each 1,660 shp.

Dimensions: rotor diameter 62 ft 0 in, fuselage length 55 ft 9 3/4 in, height 15 ft 11 in.

Weights: empty (ASW) 16,163 lb, gross 21,500 lb.

Performance: cruising speed at S/L 126 mph, ceiling 14,000 ft, radius of action (three torpedoes, two hr on station) 144 miles.

Accommodation: flight crew of two; ASW, two systems operators; SAR, up to 22 survivors; transport, up to 28 troops.

Armament: two Sea Eagle or Exocet missiles, up to four homing torpedoes, four depth charges, Ultra Electronics minisonobuoys, smoke floats, marine markers, and other weapons and equipment; provision for door-mounted machine gun on starboard side.

UH-1 Iroquois/Bell 205

Three nations in south Asia continue to fly military versions of the original single-engine "Huey" family, mostly in light transport, SAR, utility, or training roles. The Royal Thai Army has a total of around 70 **UH-1Hs**. Thailand's Air Force and Navy have 30 and four **UH-1Hs**, respectively, and the Border Police 26 **Bell 205A-1s**. Myanmar's air force still has about 12 **UH-1Hs**; the Pakistan Army operates five each of the **UH-1H** and Italian-built **Agusta-Bell 205A-1**. (Data for **UH-1H**.)

Contractor: Bell Helicopter Textron, USA.

Power Plant: one AlliedSignal T53-L-13 turboshaft; 1,400 shp.

Dimensions: rotor diameter 48 ft 0 in, fuselage length 41 ft 10 3/4 in, height 11 ft 9 3/4 in.

Weights: empty 5,210 lb, gross 9,500 lb.

Performance: max cruising speed 127 mph, ceiling 12,600 ft, range 318 miles.

Accommodation: pilot and 11-14 troops, or six litters and a medical attendant, or 3,880 lb of cargo.

Armament: normally none.

W-3 Sokól

Long-time license production of more than 5,400 Russian Mi-2s gave Poland's Swidnik helicopter company valuable experience which later found expression in a design of its own. The W-3 Sokól ("Falcon"), with Polish-built Russian engines, has a fuselage some 25 percent larger than the Mi-2, more than twice the power, and the ability to carry some 2.5 times the payload. Development since it first flew on November 16, 1979, has been slow by Western standards, but production now exceeds 100, of which some 33 (including 24 military) have been exported. First (and so far largest) foreign customer was the Myanmar Air Force, which received 13. These are used primarily for SAR and observation missions, except for two configured as VIP transports. They equip a mixed squadron (with Mi-2s and UH-1Hs) at Mingaladon.

Contractor: PZL Swidnik, Poland.

Power Plant: two PZL Rzeszów PZL-10W turboshafts; each 900 shp.

Dimensions: rotor diameter 51 ft 6 in, fuselage length 46 ft 7 1/2 in, height 12 ft 5 1/2 in.

Weights: empty 8,002 lb, gross 13,448-14,110 lb.

Performance (at 13,448 lb weight): max cruising speed at 3,280 ft 146 mph, ceiling 16,725 ft, range 444 miles (internal fuel), 761 miles with auxiliary fuel.

Accommodation: crew of two; up to 13 passengers, four litters and a medical attendant, eight survivors plus a two-person rescue crew and doctor, or up to 4,630 lb of internal or external cargo.

Armament (Polish Air Force W-3W): one GSh-23 twin-barrel 23-mm gun on lower starboard side of fuselage; cabin-side attachments for pods of air-to-surface unguided rockets (57-mm or 80-mm), bomblet dispensers, or mine-laying packs; up to six machine guns at cabin windows.

Reconnaissance and Special Mission Aircraft

Astra SPX

In addition to an order for two (as C-38As) for the US National Guard, Israel Aircraft Industries announced last year that six Astra SPXs were to be acquired by the Indian government. Reports differ as to their intended role, one source suggesting electronic intelligence (elint) while another claims maritime reconnaissance and target towing. According to the former report, the Astras would be operated by the Research and Analysis Wing of the Indian Air Force's Air Research Center, with bases at Charbatia and Palam. This trials unit has, since the late 1980s, operated a small mixed fleet of aircraft that include two modified Boeing 707-337Cs, two special-missions Gulfstream SRA-1s, and three Gulfstream IIIs. Pending clarification of the Astras' equipment fit, the following data are those for the standard civil SPX.

Contractor: Israel Aircraft Industries.

Power Plant: two AlliedSignal TFE731-40R-200G turbofans; each 4,250 lb thrust.

Dimensions: span 54 ft 7 in, length 55 ft 7 in, height 18 ft 2 in.

Weights: empty 13,700 lb, gross 24,650 lb.

Performance: max speed up to 25,000 ft 403 mph IAS, cruising speed at 35,000 ft (at 19,000 lb cruise weight) 556 mph, ceiling 45,000 ft, max range 3,481 miles with four passengers and NBAA IFR reserves.

Accommodation: pilot and up to nine passengers.

Armament: None.

IAI-201 Arava

The mix of special-mission aircraft operated from Don Muang by No. 605 Squadron of the Royal Thai Air Force includes three little-publicized Israeli-built IAI-201 Aravas. Delivered in 1981, they are STOL aircraft, carrying specialized avionics by Elta of Israel for elint tasks. The pod-and-boom Arava has a hinged tailcone that opens more than 90° to give unrestricted access to the 450 cu ft cabin.

Contractor: Israel Aircraft Industries.

Power Plant: two Pratt & Whitney Canada PT6A-34 turboprops; each 750 shp.

Dimensions: span 68 ft 9 in, length 42 ft 9 in, height 17 ft 1 in.

Weights: empty 8,816 lb, gross 15,000 lb.

Performance: max cruising speed at 10,000 ft 198 mph, ceiling 25,000 ft, T-O run 960 ft, landing run 820 ft, max range 621 miles.

Accommodation: crew of one or two; up to 24 troops, 16 paratroops with two dispatchers, 10 litters with two medical attendants, small vehicles, or equivalent cargo, in main cabin.

Armament (optional): fuselage-side attachments for two 0.50-in single-gun packs, with pylon below each pack for six-rd rocket pod.

MiG-25R (NATO "Foxbat-B")

The four **MiG-25R** (Foxbat-B) single-seat reconnaissance aircraft and two tandem two-seat **MiG-25RU** (Foxbat-C) trainers flown since 1981 by No. 102 (Trisonics) Squadron of the Indian Air Force, based at Bareilly, are strictly "straight and level" aircraft, with no concessions to agility. Construction is 80 percent welded tempered steel, with eight percent titanium in areas subject to extreme heating, and 11 percent heat-resistant aluminum alloy, by weight. With a 1,400-gallon underbelly tank, the MiG-25R can fly 1,323 miles at cruising speeds up to Mach 2.35 and has a maximum speed of Mach 2.83. Any one of three interchangeable photographic/elint modules, with five camera windows and flush dielectric panels, can be carried in the forward fuselage.

Design Bureau: Mikoyan OKB, Russia.

Power Plant: two Soyuz/Tumansky R-15BD-300 turbojets; each 24,675 lb thrust with afterburning.

Dimensions: span 43 ft 10³/₄ in, length 70 ft 8¹/₂ in, height 21 ft 4 in.

Weights: empty 43,200 lb, gross 81,570–90,830 lb.

Performance: max speed at height Mach 2.83, at S/L Mach 0.98, ceiling 68,900 ft, T-O run 4,100 ft, landing run 2,625 ft, range on internal fuel at supersonic speed 1,015 miles, subsonic 1,491 miles.

Accommodation: pilot only, on zero-height/80–775 mph ejection seat.

Armament: MiG-25Rs are capable of carrying up to 10 1,100-lb bombs.

Mirage III R

Pakistan's first three photoreconnaissance **Mirage III RPs** were delivered in 1969. Ten more were ordered in 1975, and 11 of the 13 continue in service alongside Mirage IIIEPs and DPs with No. 5 Squadron of the Pakistan Air Force at Rafiqi. The III R is basically similar to the III E fighter except for an extended nose containing five Omera Type 31 cameras instead of a Cyrano fire-control radar. These can be mounted in various arrangements to provide day or night photography at low, medium, or high altitude. The two 30-mm guns and air-to-ground weapon capability of the III E are retained. Later upgrades include a dorsal antenna for a radar warning receiver. (Data as for III E except as follows.)

Dimensions: length 50 ft 10¹/₄ in.

Weight: empty 14,550 lb.

RF-5A

Outside of Europe and North Africa, Thailand is the only operator of the photoreconnaissance RF-5A. With F-5As and Bs (see F-5E entry), four RF-5As formed part of a 24-aircraft order which the Royal Thai Air Force began to receive in 1968. These continue in service, currently with No. 231 Squadron at Udorn Thani AFB, and are the RTAF's only dedicated reconnaissance type. Four KS-92A cameras, each with a 100-ft film magazine, are mounted in the nose under a clamshell access cover, with ports under and to each side. (Data for F-5A; RF-5A generally similar.)

Contractor: Northrop Aircraft Corporation, USA.

Power Plant: two General Electric J85-GE-13 turbojets; each 4,080 lb thrust with afterburning.

Dimensions: span over tiptanks 25 ft 10 in, length 47 ft 2 in, height 13 ft 2 in.

Weights: empty 8,085 lb, gross 20,677 lb.

Performance: max speed at 36,000 ft Mach 1.4, ceiling 50,500 ft, T-O run 2,650 ft, landing run 2,300 ft, operational radius (RF-5A, hi-lo-hi) 644 miles.

Accommodation: pilot only, on ejection seat.

Armament: centerline pylon for gun pack or bomb (2,000-lb or larger); four underwing pylons for AAMs, ASMs, bombs, rockets, gun pods, or drop tanks; tiptanks can be replaced by AAMs. Camera nose does not inhibit fighter armament of two nose-mounted 20-mm guns.

Transports

An-12/Y-8 (NATO "Cub")

Powered by four 3,945 ehp ZMKB Progress/Ivchenko AI-20K turboprops, the medium-range An-12 carries 90 troops, 60 paratroops, or 44,090 lb of freight. Loading is via a door under the upswept rear fuselage, but the An-12BP lacks an integral ramp for vehicles. Up to 10 of the 12 that equipped the Afghan Republican Air Force in the early 1990s may still survive, although they may not all remain airworthy.

The **Y-8A** is outwardly similar except for higher-rated, redesigned Chinese turboprops based on the AI-20K, a rear-loading ramp/door, and a more pointed nose. One or two **Y-8Ds** were operated by No. 2 Heavy Transport Squadron of the Sri Lanka Air Force at Ratmalana (Colombo), differing from the standard domestic military Y-8A in having Western avionics by Collins, Honeywell, and Litton. They were modified in Sri Lanka for use as bombers but have since been lost. Two Y-8Ds are flown by the Air Defense Force of Myanmar at Mingaladon. (Data for Y-8A.)



An-32, Sri Lanka Air Force
(Peter Steinemann)

Contractor: Shaanxi Aircraft Company, People's Republic of China.

Power Plant: four SAEC WJ6 turboprops; each 4,250 ehp.

Dimensions: span 124 ft 8 in, length 111 ft 7¹/₂ in, height 36 ft 7¹/₂ in.

Weights: empty 77,382 lb, gross 134,480 lb.

Performance: max speed at 22,965 ft 411 mph, ceiling 34,120 ft, T-O run 4,170 ft, landing run 3,445 ft, range with 44,090-lb max payload 791 miles, with max fuel 3,489 miles.

Accommodation: crew of five and 14 passengers in pressurized forward section of fuselage; unpressurized main cabin for 96 troops, 80 paratroops, or 72 litter patients and 20 seated casualties plus three attendants, or two army trucks or helicopters. Rear loading ramp/door (not on An-12).

Armament: provision for two 23-mm guns in manned tail turret.

An-26 (NATO "Curl")

At one recent stage in its many years of war, Afghanistan was known to have 15 serviceable An-26 freighters, but the number that survive is unknown. Those that do are standard aircraft, with a "beaver-tail" rear fuselage, an auxiliary turbojet in the rear of the starboard engine nacelle, few cabin windows, and Oleg Antonov's unique rear-loading ramp. This forms the underside of the rear fuselage when retracted, in the conventional way, but can be slid forward under the rear of the cabin to facilitate direct loading onto the floor of the hold or when the cargo is to be air-dropped.

Design Bureau: Antonov OKB, Ukraine.

Power Plant: two ZMKB Progress/Ivchenko AI-24VT turboprops; each 2,780 ehp; plus 1,765 lb thrust RU-19A-300 auxiliary turbojet for turboprop starting and to provide additional power for takeoff, climb, and cruising flight, as required.

Dimensions: span 95 ft 9¹/₂ in, length 78 ft 1 in, height 28 ft 1¹/₂ in.

Weights: empty 32,518 lb, gross 50,706–52,911 lb.

Performance: cruising speed at 20,000 ft 270 mph, ceiling 24,600 ft, T-O run 2,855 ft, landing run 2,135 ft, range with max payload 770 miles, with max fuel 1,652 miles.

Accommodation: crew of five, plus station for load supervisor or dispatcher; 12,125-lb payload. Electrically powered mobile hoist, capacity 4,409 lb, and conveyor to facilitate loading and air-dropping. Provision for carrying 40 paratroops on sidewall tip-up seats, or 24 litters and an attendant.

Armament: provision for pylons on the sides of the fuselage for carrying up to 4,409 lb of weapons or supply containers.

An-32 (NATO "Cline")

The prototype An-32 flew for the first time in 1976 as a development of the An-26 to meet an Indian Air Force requirement for operation under "hot and high" conditions. The airframe is basically similar to that of the An-26 but with triple-slotted trailing-edge flaps outboard of the far more powerful engines, automatic leading-edge slats, enlarged ventral fins, and a full-span slotted tailplane. It also embodies improvements to the landing gear retraction mechanism, deicing and air-conditioning systems, electrical system, and engine starting. Together, the changes enable the An-32 to operate from unpaved strips at airfields 14,750 ft above S/L in an ambient temperature of ISA + 25°C.

About 120 An-32s, named **Sutlej** after a Punjabi river, are operated by Nos. 12, 19, 33, 43, 48, and 49 Squadrons of the Indian Air Force, plus training wings. Afghanistan had six. No. 3 Squadron of the Bangladesh Air Force, based at Jessore, has three. After severe losses, No. 201 Squadron of the Sri Lanka Air Force still has four An-32s to transport fuel, weapons, and supplies to forces in combat in the northeast of the country.

Design Bureau: Antonov OKB, Ukraine.

Power Plant: two ZMKB Progress AI-20D Series 5 turboprops; each 5,109 ehp.

Dimensions: span 95 ft 9¹/₂ in, length 77 ft 8¹/₄ in, height 28 ft 8¹/₂ in.

Weights: empty 38,371 lb, gross 59,525 lb.

Performance: max cruising speed 329 mph, ceiling 30,840 ft, T-O run 2,495 ft, landing run 1,542 ft, range with max payload 528 miles, with max fuel 1,242 miles.

Accommodation: crew of three or four; up to 50 passengers, 42 parachutists and a jumpmaster, 24 litter patients and two medical personnel, or 14,770 lb of freight.

Armament: provision for carrying four bombs or other stores on hardpoints on each side of the fuselage, below the wings.

C-130 Hercules

A total of 11 early production **C-130Bs** and **C-130Es**, upgraded by Singapore Aerospace, and a single commercial **L-100** Hercules equip No. 6 Squadron of the Pakistan Air Force, based at Chaklala. Seven later-

standard C-130Hs, with uprated engines and more modern avionics, and five stretched (112 ft 9 in long) C-130H-30s are operated by No. 601 Squadron of the Royal Thai Air Force at Don Muang. (*Data for C-130H.*)

Contractor: Lockheed Martin Aeronautical Systems, USA.

Power Plant: four Allison T56-A-15 turboprops; each 4,508 shp.

Dimensions: span 132 ft 7 in, length 97 ft 9 in, height 38 ft 3 in.

Weights: empty 76,469 lb, gross 155,000–175,000 lb.
Performance: max cruising speed 362 mph, ceiling 26,500 ft, T-O run 4,000 ft, landing run 1,500 ft, range with 40,000-lb payload 2,238 miles.

Accommodation: crew of four, plus loadmaster; up to 92 troops, 64 paratroops, 74 litters and two medical attendants, or 49,818 lb of vehicles, artillery pieces, or cargo in main cabin.

Armament: none.

C-212M Aviocar

Early this year, the Royal Thai Army received the second of two Series 300 Aviocars from CASA, the first having been delivered in February 1996. Ordered in March 1995, they are configured with 22 foldaway troop/paratroop seats and were delivered with alternative cabin fitments of VIP seating and a 12-litter medevac kit. The C-212s supplement the RTA's now-elderly Shorts 330UTTs based at RTAB Bangkok. Avionics include a Honeywell automatic flight-control system with GPS navigation, Bendix/King RDS-82 weather radar, and a Collins TCAS (traffic alert and collision avoidance system).

Unconfirmed reports suggested that the Royal Thai Air Force was negotiating for up to 16 Aviocars in 1996, but no firm order had been announced at the time of writing. (*Data for C-212M Series 300.*)

Contractor: Construcciones Aeronauticas SA (CASA), Spain.

Power Plant: two AlliedSignal TPE331-10R-513C turboprops; each 900 shp (flat rated).

Dimensions: span 66 ft 6½ in, length 52 ft 11¼ in, height 21 ft 7¾ in.

Weights: empty 8,333 lb, gross 17,857 lb.

Performance: max cruising speed at 10,000 ft 220 mph, ceiling 26,000 ft, T-O distance 2,680 ft, landing run 935 ft, range at max cruising speed 519 miles (with max payload), 1,045 miles (with max fuel and 4,674-lb payload).

Accommodation: crew of two; up to 25 troops (or 24 paratroops and jumpmaster), 12 litters and four medical personnel, or up to 6,217 lb of cargo.

Armament: one 551-lb capacity hardpoint on each side of fuselage optional, for machine gun pods, rocket pods, or one of each.

CN-235M

Designed for short-haul operations from either paved runways or unprepared airstrips, the rear-loading CN-235 has attracted a large number of orders from Asian/Pacific Rim customers and elsewhere. The Royal Thai Border Police received a Spanish-built CN-235M-200 in March last year, which is used for border patrol, medevac, parachutist, and antidrug operations as well as more mundane transport duties. Last year also, the Thai Ministry of Agriculture arranged a barter deal with IPTN for two equivalent CN-235M-220s in exchange for Thai rice. These will replace two elderly C-123K Providers in the country's vital rainmaking operations, for fire-fighting, and to combat illegal logging activities. (*Data for CN-235M-200.*)

Contractor: Airtech consortium (CASA, Spain, and IPTN, Indonesia).

Power Plant: two General Electric CT7-9C turboprops; each 1,750 shp (1,870 shp with automatic power reserve).

Dimensions: span 84 ft 8 in, length 70 ft 2½ in, height 26 ft 10 in.

Weights: empty 19,400 lb, gross 35,273 lb.

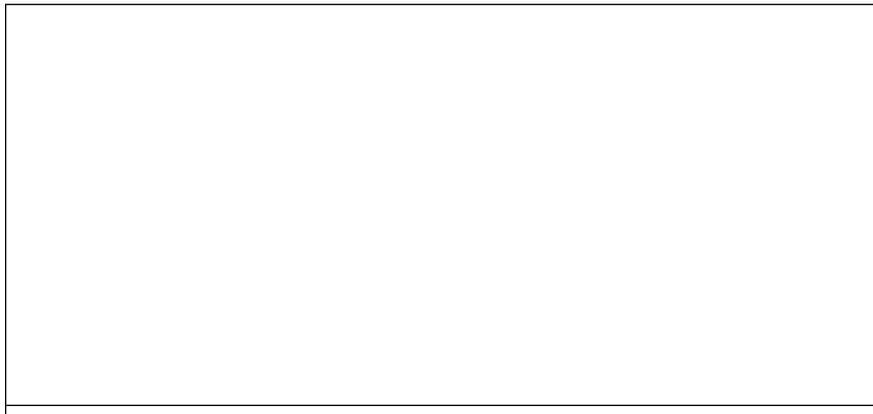
Performance: max cruising speed at 18,000 ft 262 mph, ceiling 22,500 ft, T-O to 50 ft 3,825 ft, landing run with propeller reversal 1,313 ft, range (45 min reserves) 950 miles with max payload, 2,762 miles with 7,826-lb payload.

Accommodation: crew of two or three; up to 48 troops, 46 paratroops, 24 litters and four medical staff; or 13,227-lb max payload of cargo or mission equipment, incl weapons.

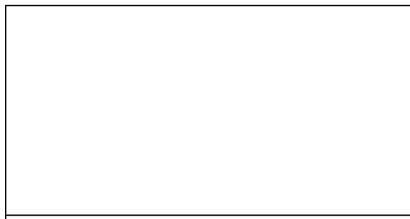
Armament: Up to 7,716 lb of payload, on six underwing stations, can consist of torpedoes, ASMs, or other weapons and equipment.

G222

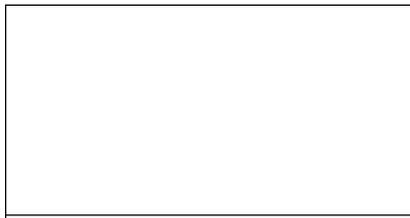
After appearing to have stagnated in the late 1980s, market prospects for the G222 were reawakened in 1990 when USAF ordered 10 as C-27A Spartans. More recently, the Royal Thai Air Force chose the G222 to meet its light tactical transport requirement. Six were ordered in 1993 to replace the last of RTAF's very elderly Fairchild C-123K Providers and C-47



C-130H-30 Hercules, Royal Thai Air Force (Paul Jackson)



G222, Royal Thai Air Force



Y-12 (II), Sri Lanka Air Force (Peter Steinemann)

Skytrains. With their rear-loading ramp, the G222s can rapidly load and unload cargo and/or personnel on short unprepared airstrips, in remote areas, as well as carry out air-drops. Deliveries to No. 603 Squadron at Don Muang began in 1995.

Contractor: Alenia, Italy.

Power Plant: two General Electric T64-GE-P4D turboprops; each 3,400 shp (flat-rated).

Dimensions: span 94 ft 2 in, length 74 ft 5½ in, height 34 ft 8¼ in.

Weights: empty 34,610 lb, gross 61,730 lb.

Performance: max speed at 15,000 ft 303 mph, ceiling 25,700 ft, T-O run 2,250 ft, landing run 2,860 ft, range with max payload 783 miles.

Accommodation: crew of two or three; 46 troops, 40 paratroops, 36 litters and four attendants, or 19,840 lb of freight, vehicles, and heavy guns.

Armament: none.

HS 748

About 50 of the 64 HS 748s that HAL built under license for the Indian Air Force (29 aircrew trainers, 20 HS 748(M) side-loading freighters, three for aerial survey, and 12 VIP transports) continue in service, the freighters with No. 11 (Rhinos) Squadron, the survey aircraft with No. 106 Squadron, and the trainers with the Navigation and Signals School and the Transport Training Wing. One 748 has been used as an AWACS test-bed for a dorsal rotodome, but any production order is expected to involve a more modern platform aircraft, such as the Il-76 or C-130.

British-built 748s serve with the Royal Nepalese Air Force (one VIP); the Royal Thai Air Force (five with No. 603 Squadron); and Sri Lanka (one). (*Data for Series 2A.*)

Contractors: Hawker Siddeley Aviation, UK (now British Aerospace); Hindustan Aeronautics Ltd, India.

Power Plant: two Rolls-Royce Dart Mk 532-2L/S turboprops; each 2,280 ehp.

Dimensions: span 98 ft 6 in, length 67 ft 0 in, height 24 ft 10 in.

Weights: empty 25,453 lb, gross 46,500–51,000 lb.

Performance: max cruising speed 278 mph, ceiling 25,000 ft, T-O run 2,480 ft, landing run 1,140 ft, range with 9,527-lb payload 1,624 miles.

Accommodation: crew of two; up to 58 troops, 48 paratroops and dispatchers, 24 litters and nine sitting patients/medical attendants, or up to 13,047 lb of cargo (17,547 lb at overload max T-O weight).

Armament: none.

Il-76MD (NATO "Candid")

Only one of the 10 air forces that operate Il-76s worldwide is in south Asia. India began taking delivery of 24 Il-76MDs in 1985 for its Nos. 25 and 44 (Mountain Geese) medium/long-range transport Squadrons, under the name Gajarah ("King Elephant"). Compared with the original military Il-76M, the MD has upgraded engines that maintain full power up to ISA +23°C. Gross weight and payload are increased; an additional 22,046 lb of fuel increases range with max fuel by 745 miles.

Rear ramp/doors and advanced mechanical systems facilitate loading, unloading, and positioning containers and other freight inside the 8,310 cu ft hold. Being fully pressurized, the Il-76 can carry troops as an alternative to freight.

Design Bureau: Ilyushin OKB, Russia.

Power Plant: four Aviadvigatel D-30KP-2 turboprops; each 26,455 lb thrust.

Dimensions: span 165 ft 8 in, length 152 ft 10¼ in, height 48 ft 5 in.

Weight: gross 418,875 lb.

Performance: cruising speed at 29,500–39,370 ft 466–497 mph, T-O run 5,580 ft, landing run 2,950–3,280 ft, range with max payload 2,265 miles, with 44,090-lb payload 4,535 miles.

Accommodation: crew of seven, incl two freight handlers; up to 140 troops, 125 paratroops, or 110,230 lb of freight.

Armament: two 23-mm twin-barrel GSh-23L guns in manned tail turret. Provision for packs of 96 50-mm IRCM flares in landing gear fairings and/or on sides of rear fuselage.

Y-12 (II)

The Y-12 (II) is the main production version of this small Chinese STOL transport. One hundred or more have been sold, of which at least a quarter were for military customers. Nine (now reduced to about six) were delivered to the Sri Lanka Air Force between 1986 and 1990. Although nominally belonging to No. 202 Light Transport Squadron of the 2d Transport Wing at Ratmalana, they have also been used for maritime patrol and surveillance, while some have been adapted as makeshift bombers, able to carry a 1,000-lb weapon load in raids against the Tamil separatists.

Contractor: Harbin Aircraft Manufacturing Corporation, People's Republic of China.

Power Plant: Two Pratt & Whitney Canada PT6A-27 turboprops; each 620 shp (flat rated).

Dimensions: span 56 ft 6½ in, length 48 ft 9 in, height 18 ft 3½ in.

Weights: empty 6,261 lb, gross 11,684 lb.

Performance: max cruising speed at 9,840 ft 181 mph, ceiling 22,960 ft, T-O run 1,116 ft, landing run 656 ft, range (max fuel) 832 miles.

Accommodation: crew of two; up to 17 passengers, 15 paratroops, or 3,748 lb of cargo.

Armament: normally none. ■