Induction of C130J Super Hercules into IAF

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On February 5, 2011, the Indian Air Force (IAF) inducted its latest acquisition from the United States of America, the C130J Super Hercules 'tactical airlift' transport aircraft. The package includes six aircraft, three years of initial support, training of aircrew and maintenance technicians, spares, ground support and test equipment, and a team of technical specialists who will be based in India during the three year initial support period.

The Hercules is a four-engine turbo-prop 'tactical airlifter' with a capability of landing on dirt strips and with short take-off and landing (STOL) capability. It can also land on unprepared or semi-prepared landing strips. It is capable of carrying 20 tonnes of load or about 128 combat troops or 92 paratroops. The flexible design of the Super Hercules enables it to be configured for many different missions, allowing for one aircraft to perform the role of many. Also included in the package is India-unique operational equipment designed to increase Special Operations capabilities in all-weather conditions. The special mission equipment is removable, allowing it to quickly switch roles.

The C-130J is slightly longer than the older versions. It is the mission systems upgrade that gives it an edge. These systems reduce the cockpit workload thus enabling better situational awareness for the pilots and consequently better success rates in operations. The dual mission computers manage and automate many of the functions formerly performed by the flight engineer and navigator, allowing the aircraft to be operated by only two pilots and a loadmaster (Flight Gunner).

The new Hercules has a modern flight station (cockpit) with multi-function, liquid crystal displays (LCD) for displaying parameters concerning aircraft flight control, operating and navigation systems. In addition to four displays on the instrument panel, pilots use holographic head-up displays (HUDs). HUDs enable the crew to monitor the required instruments of the aircraft without having to look inside the cockpit. The eyes do not have to shift focus between the near and far. This not only enables the crew to continuously monitor the environment but also reduces the fatigue levels. The aircraft is equipped with an Infrared Detection Set (IDS) making it capable of low level flying and airdropping or air landing personnel and material even in complete darkness. The displays are all compatible with night vision imaging systems, enabling the crew to operate the aircraft in areas where special missions dictate blackout conditions.

The C-130J has a state-of-the-art communication/navigation suite. It takes full advantage of the Global Positioning System and other highly reliable, automated navigation and route planning aides. This allows the cockpit crew to focus on the mission and on flying rather than on managing aircraft systems. The Indian government decided not to sign the Communications Interoperability and Security Memorandum of Agreement (CISMOA), which resulted in the exclusion of high precision GPS and other sensitive equipment. The IAF may add similar equipment to the aircraft after delivery.

A key to the C-130J's increased performance is the new propulsion system. The C-130J is powered by four engines and six-bladed propellers that provide the aircraft with significant power. The engines not only generate 29 percent more thrust than those on older versions, they are also 15 percent more fuel efficient. Engines are precisely controlled by a full authority digital electronic control (FADEC). Besides this, mission computers also provide automatic thrust control, advisory caution and warning system, computerised maintenance recording and the electronic circuit breaker system. Thus, the engine power and life is enhanced, timely warnings are available to the pilots and the maintenance requirements are reduced. Crew is assisted in handling engine related emergencies.

The net effect of these improvements is enhanced performance of the aircraft, and greater reliability of the systems and components. For instance, when compared with older models, the C-130J can provide 40-percent greater range, a 40 percent higher cruising ceiling, a 50 percent decrease in time-to-climb, a 21 percent increase in maximum speed, and a 41 percent decrease in maximum effort takeoff run. Self protection systems and other features are included to ensure aircraft survivability in hostile air defence environments. The C-130J is

ideally suited to India's mission environment, which often involves operating out of austere, high elevation airstrips in hot conditions. The C-130J has been operated for the past several years in the mountainous areas of Afghanistan in conditions similar to India and has performed exceptionally well.

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Adopting 'Kill with Stealth' as their motto, the tactical airlift aircraft will be able to undertake quick deployment of 'Special Forces' in all weather conditions, including airdrops and landings on unprepared or semi-prepared surface even in complete darkness. Capable of undertaking low-level air-to-air refuelling to enhance its range, rapid forward basing of personnel and equipment in emergent situations would be one of its multifaceted roles. The war time employability will include special air operations, airborne operations, air transported operations, air supply operations, air maintenance operations and casualty evacuation among other roles.

The peacetime roles include operations and air maintenance in mountainous terrain in adverse circumstances, UN or multinational missions, humanitarian assistance including disaster relief and evacuation of Indian Diaspora during emergencies and crisis situations.

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