There is everything in favour of India and China to de-escalate their military standoff in Ladakh and for this both have to give up the usual bogey of "perceptual differences" on the Line of Actual Control.
NUCLEAR ‘CHINDIA’ RISING OR UNBOUND?  18

Indian armed forces’ warfighting support system and infrastructure must be ready for the worst. Agreeing to “adjustment” of current Chinese positions “as is where is” will hand over critical strategic space to China.

NEW DELHI IS DOING LITTLE  40

What India will actually do, owing to a long habit of slavish thinking and a self-abnegatory mindset, is that it will continue doing what it is doing—trying to please Beijing and Washington.

INDIA’S WEAK BORDER DEFENCE PROVOKES CHINA  24

China is systematically grabbing land in Ladakh by exploiting its topographical features. New Delhi leaving the region under the administrative control of J&K have weakened border defences.

A LIKELY GAMBLE  10

The latest decision to raise the FDI cap in defence is fine but unaccustomed by land and labour reforms, the environment will not be attractive enough to entice foreign and Indian investors.

DEALING WITH CHINA  32

Consistency has never been a virtue for the communist rulers of China in settling their border disputes with neighbours. Using different principles for different countries have led to the bottleneck.

REGIONAL REPORT

PERISCOPE

A Boost for Self-reliance and space  7

PANORAMA

The Rafales are arriving!  8

DEFBIZ

Vivek Lall joins General Atomics  52

Collins: The ejection seat saga  94

FOCUS

Embraer KC-390 Millennium  50

RIGHT ANGLE

Nepal’s cartographic war  62

SPECIAL REPORT

TRACKED METAL BEASTS OF THE INDIAN ARMY  46

With more than 4500 Main Battle Tanks divided into 67 armoured regiments, the Indian Army has one of the largest tank fleets in the world. But modernisation is still a work in progress.

SPECIAL FEATURE

UNIFORMED SAVIORS OF HUMANITY  (14)

The large-scale mobilisation of Indian troops and their exemplary contribution towards handling COVID-19 have made the country proud. The men and women in uniform have proved their mettle.

GLOBAL WATCH

A POST COVID-19 WORLD ORDER  (58)

Globally we are going to see a push towards greater investment in healthcare and a reduction in defence spending. The virtual world will also grow exponentially with rigorous digitalisation.

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EJECTION SEAT SAGA
REDEFINING THE NEW NORMAL OF COMBAT AVIATION

The Collins ACES II’s stable, 9-13 G catapult at ambient temperatures is also important when the pilot is operating aircraft in hot environments. High temperatures affect the acceleration during the catapult phase and when the risks of spinal injuries tremendously increase during 20 G’s, having some buffer will ensure pilot safety, writes DON BORCHELT

The Evolution Of The Ejection Seat

In barely more than a century, the world of aviation safety has progressed incredibly. In the book “Flying”, written by Gaston Hamel and Charles Cyril Turner in 1914, the authors present several treatises on early aircraft safety wherein they debate crash-resistant wicker cockpits and the merits of whether it’s better to use a seat belt, or if it’s better to be thrown free of the cockpit when crash-landing. Later in the book, another aviation pioneer, Henry Farman said about flying “It will be so safe that we shall hear no more of the need to carry parachutes or other safety devices, for the contingency of having to abandon the machine in the air will seem an absurdity to contemplate.”

The world of combat aviation has made tremendous gains in safety and mishap prevention. Accordingly, the ejection seat has continued to evolve as a critical component of modern combat and trainer aircraft. Previously, aircraft manufacturers were responsible to design and install ejection seats into their aircraft. However, after some introspection and incident analyses, authorities came to realize that ejection seats had wildly different performance characteristics. Further, while ejection seats were saving lives, their instability and other basic design characteristics resulted in frequent injuries to the pilot. Survival may seem by some the sole raison d’être of an ejection seat, but for combat aircraft potentially operating in contested areas, hostile environments or remote mountainous locations, the ability to deliver the pilot safely uninjured to the ground is critical. The aircrew must be able to immediately seek shelter, use the radio to call for rescue, and if required by the situation, to be able to escape and evade capture while doing so.

A pilot suffering an ejection-induced back injury will be tremendously disadvantaged and his or her chance for survival immediately jeopardised. Aviation authorities realised this stark reality in the late 1960s and early 1970s where many pilots survived their initial ejection, but were unable to evade subsequent capture due to back or neck injury.

ACES II

Fast forward to 1978 when Collins Aerospace introduced the ACES II ejection seat. The US Air Force (USAF), together with industry partners endeavored to develop a lightweight, high performing ejection seat that could fit into a wide variety of aircraft. Since that day, The ACES II has saved 670 fighter pilots and aircrew worldwide flying a range of aircraft including all variants of the F-15, F-16, B-1, B-2, A-10 and most recently the F-22. As important as saving lives, the ACES II proved itself tops in the industry with verifiable data showing less than a 1 per cent chance of a spinal injury during ejection. These exceptionally low spinal-injury rates are between 5 and 40 times lower than other ejection seats currently fielded. This compelling injury data is clear and irrefutable, appearing in scientific and academic papers such as Survivability and Injuries from Use of Rocket-Assisted Ejection Seats: Analysis of 232 Cases by Matthew Lewis. While developing the ACES II, USAF authorities were careful to establish a robust supply chain. This supply chain ensures competitive sourcing for the hidden expenses of maintaining ejection seats; consumables and spare parts. United Propulsion Company (UPCO), a Collins subsidiary, was set up to make cartridge- and propellant-actuated devices (CAD/PAD). The ability to competitively source for CAD/ PAD is key to keeping sustainment costs affordable over the long-term and UPCO facilitated sourcing of the replacement parts. Whereas some ejection seats use proprietary, sole-source CAD/PAD, ACES II allows customers the flexibility to source for the best deals to maintain their seats.

Further, ACES II CAD/PAD has, on average, over 30-years of service life on the seat. Put together, the ACES II CAD/PAD lasts longer and is less expensive. That means that the ACES II is about 50 per cent less expensive per year to maintain than other seats. In fact, a recent USAF Justification and Authorisation, which announced the service’s intent to award a sole-source procurement contract for the ACES 5° (which will replace the ACES II), highlighted $1.5 billion worth of sustainment savings by selecting the ACES family of systems.

Aside from affordability, some of the most high-profile ejection events of recent combat attest to the essential ability to “hit the ground running” - escape, evade capture and talk on the radio to summon rescue forces. The current USAF Chief of Staff, General David Goldfein, who ejected using ACES II during a combat mission...
the Balkans in 1999, was back home in time for breakfast with his family after his rescue and was again flying combat missions in short order.

Also, in possibly one of the most widely circulated and amazing photographed events in aviation history, Capt. Chris “Elroy” Stricklin ejected from his F-16 “Thunderbird.” The Mountain Home Air Force Base airshow. This event was well outside the technical performance specification of the ACES II, but the proven and reliable features of the seat including the seat pedestal, forward and rearward pointable in the wrong direction because during the catapult phase, they are propelled in the wrong direction because during the catapult phase, they are.

During a series of internally funded stability demonstrations, ACES 5 demonstrated an impressive performance. The passive restraint system tested to date, whether on the canopy of the newest, best-performing ejection seat available today, the GR-7000. The GR-7000 slows the descent of even the heaviest aircrew, up to 245 pounds with a full survival kit (a total of 337 pounds suspended weight), to 245 pounds with a full survival kit (a total of 337 pounds suspended weight).

The ACES 5 is even simpler to install than the ACES II/5, Mission Systems, Collins Aerospace.

Collins Aerospace is dedicated to continuously improving and tackling its customers’ most critical needs. After listening closely to pilots, aircrew, maintainers, and acquisition officials in the early 2000’s, the ejection seat design engineers moved to further improve the ACES II ejection seat that was introduced in 1978.

When developing the F-22, the USAF required a seat that provided pilots with passive arm and leg restraint and a seat structure strengthened to withstand wind forces up to 700 knots. Once added, the F-22 evolution became internally known as the ACES 3. Later, the USAF required a modular seat that could be disassembled in the cockpit and this modularity concept evolved into the ACES 4. Finally, the passive arm and leg restraints, modularity, and Passive Head and Neck Protection were combined into a single ejection seat called ACES 5, the most advanced ejection seat in industry.

Through a series of internally funded stability demonstrations, ACES 5 demonstrated an impressive performance and tested to exceed modified test data. In addition to the internally-funded technology development, the ACES 5 family has also qualified and been delivered to upgrade the B-2A. Over the years, this seat performance has completely fleshed out the pedigree of the ACES 5 and shows reliable performance that meets and exceeds the modern standards and criteria that any nation should expect from now on: MIL-HDBK-516C and its most recent 2016 update.

The ACES 5 is even simpler to install than the ACES II. The modular design means that the canopy and seat will be removed in order to remove the ejection seat. ACES 5 has been demonstrated to be disassembled and removed from the back seat of an F-16 cockpit in 15-20 minutes, which helps reduce the time it takes to reinstall a new seat. The traditional process is to fly a new Aircrew to increase around 20 Gs, having some buffer will ensure pilot safety. In all scenarios tested to date, whether on the bench or a real-world ejection, the CKU-5 delivers a stable, reliable, consistent, and load-compensating push. The load compensation is achieved through a complex mix of physics and chemistry. The shape of the burn chamber is specifically optimised to allow different rates of burn, and the propellant will burn faster when subject to increased pressure. Therefore, when ejecting a lightweight aircrew, the propellant will burn faster (and push harder) as the pressure builds in the burn chamber. Conversely, when ejecting a weightier aircrew, less ‘push’ is needed to achieve the desired performance, and less pressure is encountered while moving a lighter mass and therefore the burn rate slows. Compared to other ejection seats that are black powder based “mustard” style catapults, no switches are required to be set (and potentially forgotten) by the pilot to optimise the seat performance. Finally, the ACES II has never activated on its own and when not commanded to eject. Thus, whether in combat or in peacetime, the ability to walk away from an ejection and fly another day is essential. Nations invest a lot of money to train their aircrew so returning the pilots to active flying status preserves a valuable military resource.

ACES 5® Next Generation Ejection Seats

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