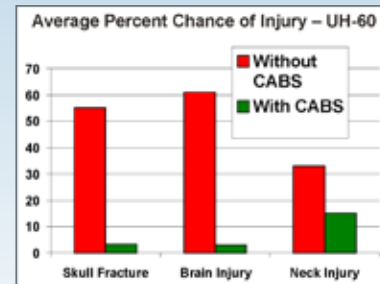


OCCUPANT AIR BAG SYSTEMS AND ARMOR PROTECTION

COCKPIT AIR BAG SYSTEM (CABS)

- Protects by cushioning the head and torso and preventing strikes against the cockpit interior
- May be tailored for any aircraft installation (requires development of integration kit for CH-47 applications)
- More than 50 percent of fatalities in what are categorized as "survivable" accidents are caused by head strikes¹
- CABS will mitigate most of these preventable head and neck injuries
- Unlike an automotive air bag, CABS stays inflated for at least three seconds to protect against multiple impacts
- 30 to 40 percent fewer major injuries on average
- Similar systems consist of two forward and two lateral air bag modules plus the Electronic Crash Sensor Unit (ECSU)



1. "Injury in US Army Helicopter Crashes October 1979-September 1985"; COL Shanahan, MD; The Journal of Trauma, 1989

TRANSPARENT ARMOR

BAE Systems has developed, patented and is producing a new liquid-castable transparent polyurethane, Cleargard®, which provides superior ballistic performance with optimal clarity. Cleargard's advantages are characterized by:

- Unmatched monolithic performance
- Lower density than acrylic or polycarbonate
- High-impact resistance
- Excellent optical clarity
- High ductility
- High thermal and chemical resistance
- Compatible with a variety of dye packages and coatings
- Castable to complex shapes or sheet form



C-130 Look Down Window

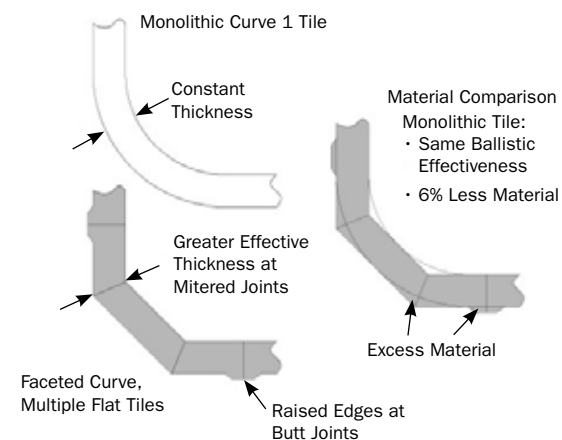
Cleargard® is a registered trademark of BAE Systems

MONOLITHIC ARMOR

Our monolithic ceramic technology allows for:

- Minimum amounts of material for reduced weight
- Elimination of raised edges and joints
- Minimized parts counts and costs
- Retained multi-hit performance

The monolithic advantage is clear:



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12.11.CH47US

CH-47 Upgrade Solutions

Since the introduction of the first successful military crashworthy crew seat in the UH-60 Black Hawk in 1977, we have earned the reputation as a pioneer in aerospace crash safety and combat survivability. Building upon our legacy brand, Simula, the BAE Systems team is dedicated to providing innovative, life-saving products to the rotocraft market.

The BAE Systems team develops crashworthy cockpit, crew and troop seating systems, airframe and occupant armor and air bag systems to protect aircraft occupants. Our full range of lightweight composite, ceramic-composite and transparent armor solutions is unparalleled in the industry.

ARMORED COCKPIT SEAT FOR THE CH-47

GREATER BALLISTIC PROTECTION

- Monolithic ceramic armored bucket is lighter weight and increased in comfort versus current seat
- Ballistic performance: 7.62 AP M2, $V_{50} = 2,500$ ft/sec (762 m/sec)
- Seat-mounted armored wing panel

INCREASED COMFORT

- New adjustable inflatable lumbar and thigh cushion supports (durable and replaceable) integral to cushions
- Adjustable recline, adding 10 degrees to back angle
- Vertical adjustment range fits 5th-percentile female to 95th-percentile male
- Greater horizontal adjustment range with improved clearance at aft stick condition

LIGHTWEIGHT

- Maximum seat weight including the integrated armored seat bucket is 95 lb (43 kg)
- Optional wing panel adds 16 lb (7.3 kg)

IMPROVEMENTS IN SAFETY

- Variable-Load Energy Absorber (VLEA) for 5th-percentile female to 95th-percentile male

EASY INSTALLATION AND USE

- Fielded and in use since 2005
- Seat requires minimal floor modifications

LOW OWNERSHIP COSTS

- Parts commonality with other large fleets enables quick turnaround and lower costs on spares
- Lower parts count



Shown with optional armored wing panel

BAE SYSTEMS

TROOP SEAT UPGRADES

CREW SEAT UPGRADES

TROOP SEAT UPGRADES FOR THE CH-47

UTILITY SEAT FOR ROTORCRAFT

- Energy-absorbing
 - Individual energy-absorbing stroke for each occupant
- Standard four-point restraint
- Lightweight
 - Maximum seat weight of 15.25 lb (6.92 kg)
- Forward-, aft- and side-facing positions
 - Bulkhead- or frame-mounted
 - Adaptable to a multitude of

- airframes and configurations
 - Small envelope allows seat to be used in high-density configurations
 - CH-47 integration leaves full width of aircraft available for standard cargo pallet installation
- Crashworthy
 - Dynamically tested to FAA requirements (TSO-C127a)
 - Combined vertical: 30 G, 30 ft/sec (9.1 m/sec)
 - Combined horizontal: 18.4 G, 42 ft/sec (12.8 m/sec)
- Integration kit available for CH-47 applications



WALL STYLE TROOP SEAT

- Drop-in replacement for current troop seats – no airframe modifications necessary
- Improved safety
 - Successfully tested in FAA fixed-wing dynamic crash test conditions
 - Combined vertical: 14 G, 35 ft/sec (10.7 m/sec)
 - Combined horizontal: 16 G, 44 ft/sec (13.4 m/sec)
- All fabric meets FAR25.853 vertical burn test requirements

- Lightweight
 - Single seat 6.25 lb (2.83 kg)
 - Triple seat 15.40 lb (6.99 kg)
- Durable
 - Fabric and structure are designed to be more rugged than existing in-service bench type seats
- Occupant comfort
 - Seat comfort increased to ensure occupant's maximum clearance of seat structure
 - Seat back and pan material provide a continuous surface to help eliminate snagging of equipment



Triple seat

CABIN CREW SEATS

CABIN CREW SEATS

- Energy absorbing
 - Each seat is equipped with energy-absorbers
 - Available stroke of 9 in (23 cm) (anti-rebound protection is integral)
- Four-point restraint standard
 - Gunners restraint optional
- Quick-releasing seat for installation and removal
 - Aft-facing seat is mounted by means of quick-release pins to facilitate easy seat installation and removal
 - Seat pan folds quickly and stows using a hook-and-loop strap for positive retention
- Frames for STA 120 integration currently available
 - Rotating frame for easy access/repositioning
 - Frame pivots on hinges allowing frame to swing rearward/inboard with seat attached
- Fielded and in use since 2001
- Integration kit qualified and available



Cabin Crew Seat

Common to the STA 120 seats, this seat can be adapted for other cabin locations.

Seat Weight: 15.85 lb (7.2 kg)



STA 120 Left Hand Side Crew Seat

Seat Weight: 15.85 lb (7.2 kg)
Frame and Fittings: 16.35 lb (7.4 kg)



STA 120 Right Hand Side Crew Seat

Seat Weight: 15.85 lb (7.2 kg)
Frame and Fittings: 23.75 lb (10.8 kg)