HANGAR BAY DOOR SAFETY

By Senior Chief Aviation Machinist's Mate Harold Mack
Naval Safety Command

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Hangar doors provide a means to keep a climate-controlled workspace in the interior of the hangar to store, inspect, repair, modify and paint aircraft, while also providing a wall or barrier that can open and close to allow aircraft, vehicles, equipment and personnel to enter and exit, and to serve as a barrier from the elements. These doors are also meant to prevent the entry of varmints, vermin and birds. Similarly, on a ship, ballistic doors are large metal doors athwart ship, having a position across a vessel from side to side at right angles to the keel, which are used to divide the hangar deck into sections or bays. Additionally, this compartmentalization of the hangar deck aids isolation of hangar deck fires, chemical, biological and radioactive contamination, and adverse decibel levels when performing certain types of aircraft maintenance. To be effective, hangar doors must have good sealing qualities on all sides of the door, and they absolutely must be durable and easy to open.

DIFFERENT TYPES OF HANGAR DOORS: PROS AND CONS

There are different types and styles of hangar doors. Some are traditional and time-tested, while other styles use modern hydraulic systems to swing the entire door.

Door type	Pros	Cons
Hydraulic-swinging	Allows for great headspace or lower initial build height.	Basically a huge sail when open, moderate maintenance.
Bi-fold	Convenient, motorized.	Requires a much taller hangar than necessary to clear the aircraft.
Bottom-rolling	Extremely heavy duty, low maintenance.	Extremely heavy, rails must be set in footings, prone to jams on the rails.

Bottom-rolling hangar doors are the most used by the military because they are suited for very diverse applications. Bottom-rolling doors are low maintenance when used and maintained properly. Powered bottom-rolling doors are probably the simplest of powered or assisted units with a large electric motor powering the drive wheel by use of a simple, direct chain drive. The movement of the doors can produce hazardous situations, which cannot be avoided in the design. These hazardous situations include collisions, crushing, shearing and drawing-in points, which is a section where two opposing hangar doors may overlap or fold and pull personnel into it.

Safety devices and risk management procedures should be implemented and used when operating hangar doors to reduce the risk to the lowest level possible. All hands need to be aware of the risks associated with the specific hangar doors that must be operated by unit personnel to help mitigate those risks. Some risks include, but are not limited to:

- A collision of moving doors with people, vehicles, aircraft and equipment.
- Personnel stepping in the path of moving door.
- Entrapment of people as doors pass by each other.
- Entrapment of people as doors reach the hangar end wall.
- Employees using the personnel door to enter or exit the hangar while the main door is moving.
- Entrapment of limbs between doors as they move past each other.

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• Electric shock from electric control panel, degraded or unprotected electric cables and wires or the electric motor.
• Manual operation misuse.

Most mishaps that occur have human-related factors.

• Failure to comply with proper procedures.
• Over familiarity with danger through habit (deviated norms).
• Poor grasp of machine design and controls.
• Underestimating the hazards – ignoring safeguards.
• Lack of training or awareness.
• Inadequate or improper maintenance.

Inoperable hangar doors can cause additional stress to unit operations and maintenance by restricting the movement of aircraft or personnel to and from the hangar. Proper hangar door preventive maintenance and usage are the keys to sustaining safe and reliable hangar doors. Only qualified personnel who have been trained on the specific hangar doors should be authorized to operate them. At a minimum, two personnel should be required to operate hangar doors – a panel operator and safety observer or spotter. Before an operation, an integrity inspection of doors should be performed along the inspection accesses and door trackways for foreign objects, debris, or any obstructions that may damage or derail the hangar door. For electrically operated doors, all electrical components that can be inspected, should be inspected for safety and security. For hydraulically operated doors, all visible hydraulic components should be inspected for leaks, safety and security.

In the case of an electrical power failure, doors can be operated manually. Personnel should be properly trained on how to operate an electrical door manually in the event of a power loss or if the electric control panel or motor is inoperable.

The door should be manually hand-pushed and not pushed with support equipment (SE), such as a tug, tow tractor, forklift, etc. Pushing or pulling a hangar door with SE will result in a misuse and abuse report due to improper use of SE and could also result in severe damage to the hangar door. These large rolling doors typically weigh several tons and could easily kill a person caught in their path or if the doors were to come off the upper track and come crashing to the deck or ground. The door should never be electrically overridden; only qualified personnel, normally specialized Naval Facilities Engineering Systems Command maintenance personnel or contractors should conduct any repairs to hangar doors. Nonspecialized Sailors or Marines who attempt to troubleshoot, repair, override or operate a defective a door could cause serious injury, death or damage to equipment. Each base should have a local standard operating procedure for the inspection and operation of hangar bay doors.

Cover: U.S. Air Force photo by Airman 1st Class Corey Pettis