NOTICE OF CHANGE

INCH-POUND

MIL-HDBK-273(AS)
NOTICE 1
1 December 1995

MILITARY HANDBOOK

SURVIVABILITY ENHANCEMENT, AIRCRAFT NUCLEAR WEAPON THREAT, DESIGN AND EVALUATION GUIDELINES

TO ALL HOLDERS OF MIL-HDBK-273(AS):

1. THE FOLLOWING PAGES OF MIL-HDBK-273(AS) HAVE BEEN REVISED AND SUPERSEDE THE PAGES LISTED:

NEW PAGE	DATE	SUPERSEDED PAGE	DATE
57	1 December 1995	57	30 December 1983
58	30 December 1983	58	REPRINTED WITHOUT CHANGE

2. RETAIN THIS NOTICE AND INSERT BEFORE TABLE OF CONTENTS.

3. Holders of MIL-HDBK-273(AS) will verify that page changes and additions indicated above have been entered. This notice page will be retained as a check sheet. This issuance, together with appended pages, is a separate publication. Each notice is to be retained by stocking points until the military handbook is completely revised or cancelled.

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pneumatic components that would disintegrate explosively when damaged by the direct or secondary effects of a nuclear detonation. Fragmentation and energy release may cause serious damage to nearby essential subsystems or personnel injury. Use filament wound pressure vessels that will resist explosive shattering when damaged.

7.1.7.2 Routing and location. Route hot or high-pressure pneumatic lines to avoid potential hazard areas, such as fuel systems, oxygen supplies, and ammunition, where interaction from a nuclear blast effect would result in a fire or explosion hazard. Avoid locating hot or high- pressure line connectors where leakage due to weapon effects would also lead to secondary hazard conditions. For example, a hot air line leakage impinging upon the gas charge end of a hydraulic accumulator may result in an overpressure explosion of the unit that would cause more destruction than the hot gas leakage alone. Use flexible lines or hoses in areas where large relative motion of structure may occur from blast effects.

7.1.8 Oxygen subsystem. The routing and location of oxygen subsystem components should be such that structural failures which the aircraft can survive do not cause degradation to or loss of the oxygen system. Loss or degradation of the oxygen subsystem can cause crew incapacitation and subsequent loss of the aircraft. Ignition sources and flammable materials should be kept away from potential oxygen system rupture points. Applicable documents are MIL-D-8683 and MIL-D-19326.

7.1.9 Avionics subsystem. Avionics equipments and associated interconnections should be located in a manner such that a structural failure which the aircraft can survive does not cause avionics subsystem failures. Structural deformation can cause physical damage to avionic subsystem black boxes and the components within the boxes, electrical short circuits, and disconnect of interconnections between boxes if the displacement is severe enough. Electrical arcing and heating due to damaged avionics equipments can provide an ignition source for flammables in the vicinity. Applicable documents are MIL-I-8700 and NAVMATINST 2410.18.

7.1.10 Liquid cooled avionics. Avionics which is liquid cooled usually uses a type of silicate ester. Since this liquid is flammable, the design guides discussed in 7.1.2 and 7.1.3 apply.

7.1.11 Fire extinguishment subsystem. The fire extinguishment subsystem should be designed to have active nodes at the locations which have the highest probability of fire due to structural damage caused by blast. The activation devices should not inadvertently activate the extinguishment subsystem due to the shock associated with blast effects; additionally, fire sensing and warning subsystems should be designed to preclude false alarms because of blast or shock effects. Applicable documents are MIL-C-22284, MIL-E-22285, MIL-D-27729, MIL-F-7872, MIL-F-23447, and MIL-M-12218.

NOTICE: Paragraph 7.1.11 recommends the use of bromotrifluoromethane, CF_3Br, an ozone depleting substance, for this application. Based on the appropriate Technical Representative's assessment, it has been determined that a suitable substitute is not currently available. The use of bromotrifluoromethane, CF_3Br, is permitted pending approval from the Senior Acquisition Official for each acquisition.

7.1.12 Aircrew escape subsystem. Structural design in and around the area of aircrew stations must not cause aircrew escape subsystems, procedures, or avenues to become unusable. Structural deformation which the aircraft can survive should not jam ejection seats, canopies, escape doors, initiation and control circuits, or detonate ejection seat rockets. Additionally, survivable structural damage should not degrade escape systems to an extent which will cause additional aircrew injury after operation of the degraded mode system. Applicable documents are MIL-A-46103, MIL-A-46108, MIL-A-46165, MIL-A-46166, MIL-B-43366, MIL-C-18491, MIL-C-83124, MIL-C-83125, MIL-E-9426, MIL-I-8675, MIL-P-83126, MIL-S-9479, MIL-S-18471, MIL-S-46099, MIL-S-58095, and MIL-STD-1288.

7.1.13 Landing gear subsystem. The landing gear should be designed in a manner which will preclude door wrinkling or damage to adjacent structures from disallowing door opening. Reinforcement of landing gear doors and adjacent structures should be provided to prevent this situation.

7.1.14 Arresting gear. The arresting gear subsystem must be capable of allowing the aircraft to endure an arrested carrier landing after suffering non-catastrophic structural damage. Surviving structural damage is of no benefit if the aircraft is lost upon arrested recovery. Reinforced and redundant load carrying structure and a gravity drop arresting hook are desirable design features. Survivable arresting gear and associated structure are essential, since they are critical to surviving an arrested recovery aboard the carrier.

7.1.15 Catapult launch hook. The catapult hook and its load carrying structure should be designed to withstand at least one catapult launch after the aircraft has suffered survivable structural damage and has been recovered aboard the carrier. This design philosophy will allow a flightworthy aircraft to leave the carrier for a repair depot after routine maintenance, damage assessment, and repair have been performed.

7.1.16 Propulsion subsystem. A nuclear blast wave, including reflections, may affect many parts and functions of the propulsion subsystem. Possibilities to be considered in an exploratory analysis include:

a. Engine stall.
b. Engine overrun and overtemperature.
c. Primary and afterburner flameout.
d. Component and structural failure.

Applicable documents are MIL-E-5007, MIL-E-8593, MIL-I-83294, MIL-L-7808, MIL-L-21058, MIL-L-23699, MIL-P-26366, MIL-T-5579, and MIL-HDBK-XXX-3.

7.1.16.1 Design integration. Propulsion system integration includes design of a suitable inlet duct system. Initial design considers variations in airflow as a function of altitude and Mach number. Transient responses and recovery are usually considered among the initial conditions for inlet design. The inlet duct can be designed for transient recovery,