DATA ITEM DESCRIPTION

Form Approved
OMB No. 0704-0188

1. TITLE	2. IDENTIFICATION NUMBER
STRUCTURAL DESIGN CRITERIA REPORT (HELICOPTERS)	DI-RELI-81498

3. DESCRIPTION / PURPOSE

3.1. The structural design criteria report documents information necessary to delineate and expand into specific structural terms, the system mission requirements. The purpose of this report is to document these specific structural terms and requirements and to provide a basis for presenting the contractor's interpretation of system requirements for the determination of airframe structural loads and subsequent design.

4. APPROVAL DATE (YYMMDD)	5. OFFICE OF PRIMARY RESPONSIBILITY (OPR)	6a. DTIC APPLICABLE	6b. GIDEP APPLICABLE
951030	N/AIR-4.3.3.2	X	

7. APPLICATION / INTERRELATIONSHIP

7.1 This data item description (DID) contains the format and content preparation instructions for the data product generated by the specific and discrete task requirement as delineated in the contract.

7.2 This DID supersedes DI-S-7122.

7.3 Defense Technical Information Center (DTIC), Attn: DTIC-FDAC, Bldg. 5, Cameron Station, Alexandria, VA 22304-6145.

8. APPROVAL LIMITATION	9a. APPLICABLE FORMS	9b. AMSC NUMBER
		N7168

10. PREPARATION INSTRUCTIONS

10.1 Format. The report shall be in contractor's format.

10.2 Content. The report shall contain the following:

10.2.1 A complete list of all deviations requested from the structural design requirements as cited in the contract, and the reason for such requests shall be included as an appendix to the report.

10.2.2 Criteria for service loads design spectra including planned operational usage (mission and ground profiles), dynamic response methods, summary of design and analysis conditions (flight and ground), discussions of design features which affect determination of mission segments contribution on fracture/fatigue damage, and other data pertinent to service loading conditions or design.

(Continued on page 2)

DISTRIBUTION STATEMENT

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

BLOCK 10, PREPARATION INSTRUCTIONS (Continued)

10.2.3 Flight loads design criteria, including three views of the helicopter, vehicle physical characteristics descriptions and surface areas, the maximum and minimum gross weights, a weight breakdown of all variable weight items, center of gravity envelopes, the specific design conditions selected for detail analysis together with basis for their selection and method of analysis to be used for the various maneuver conditions. Discussions of design features which affect determination of critical conditions, sources of aerodynamic data, methods and assumptions to be used in the calculation of aerodynamic loads, design V-n diagrams, rotational velocities and accelerations, temperature criteria, weights with definitions of each, all possible loading configuration, and an altitude-velocity envelope.

10.2.4 Ground loads criteria, shall be presented for the terrestrial landing condition and ship deck landing separately which covers a summary of design gross weights, center of gravity positions, all practicable distributions of variable and removable mass items that will be considered for design; also, range of touchdown speeds, takeoff speeds, sinking speeds, helicopter touchdown attitudes, terrain roughness, CBR's, load factors, external load configurations, the specific design conditions selected for detailed analyses, discussion of design features which affect determination of critical conditions and other parameters pertinent to the ground loads. Whenever necessary, substantiating data, pertinent references, and additional discussion shall be included to indicate that the range of parameters considered comply with applicable design requirements.

10.2.5 Control system loads, including appropriate summaries of loads to be used for design. Components of the control system, their functions, and operation shall be explained in sufficient detail to show clearly their operation and source of loads.

10.2.6 Water loads criteria, presenting the maximum and minimum gross weights, center of gravity envelopes, sea conditions, the specific design conditions selected for analysis and the basis for their selection, the methods employed in the analysis of water loads and pressures and their distributions, weight distributions, design load factors, angular velocities and accelerations, store configurations, and other items pertinent to water loading conditions.

10.2.7 For all cargo/personnel carriers a complete detailed description of structural design criteria utilized for troop and passenger seats, cargo tie downs, litters, cargo aerial delivery, cargo jettison, cargo hooks, rescue hoists, mission equipment, etc.

10.2.8 Repeated loads and fatigue criteria, including spectra used for design and fatigue methodology report(s). Methods of analyzing mission profile, flight time for each mission, mission distribution and ground-air-ground (GAG) cycles shall be presented. Also rotor blade and tail surface fold spectra and landing gear and ground maneuvering/operations fatigue spectra shall also be included.

10.2.9 Miscellaneous flight loads criteria, presenting critical loads encountered during rotor, starting, braking for all rotors, blade trailing edge loads at transonic speeds, limit load factors for design stores, pylons and other support structures.

BLOCK 10, PREPARATION INSTRUCTIONS (Continued)

10.2.10 Miscellaneous ground loads criteria, presenting discussion of design features which affect determination of critical conditions when helicopter on ground such as towing, jacking, hoisting, rebound and securing. Various landing field condition including ship deck.

10.2.11 Wind loads criteria, covering critical rotor speed for ground flapping and impact of gust generated by the ship-structure for ship-based helicopters.

10.2.12 Crash loads criteria, presenting the maximum g-loads along vertical, lateral, and longitudinal directions for crew, passenger, engine, transmission, fuel tank landing gears, and other structural items. Crash energy absorbing consideration for protecting crew during crash shall be discussed.