AIRCREW AUTOMATED ESCAPE SYSTEMS, TEST VEHICLES FOR GROUND TRACK PERFORMANCE TESTING, ROCKET AND/OR JET ENGINE PROPELLED; GENERAL SPECIFICATION FOR

This specification has been approved by the Naval Air Systems Command, Department of the Navy.

1. SCOPE

1.1 This specification establishes the requirements for the design, construction and instrumentation of track-type test vehicles used in performance/service release testing, including underwater testing, of aircrew automated escape systems in accordance with the test requirements of MIL-E-9426.

1.2 Safety precautions. To reduce the hazards posed to personnel working on, preparing for test, or using the test vehicle, this specification requires implementation of a safety program conforming to MIL-STD-882 and of a design review program throughout the program to design and fabricate the test vehicle.

1.3 Design safety responsibilities. Sled testing inherently is hazardous work. It is the responsibility of test vehicle designers, fabricators and inspectors to consider carefully the consequences of each design approach and each design detail to ensure that the hazards are eliminated or reduced wherever possible. Further, it is the responsibility of those developing a test vehicle to develop and verify carefully and thoroughly appropriate detail procedures, instructions, and checklists to be used by test crews in preparing and checking out the test vehicle for each system test.

2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of the specification to the extent herein specified.

SPECIFICATIONS

Federal

L-P-383	Plastic Material, Polyester Resin, Glass Fiber Base, Low Pressure Laminated

Federal (Continued)

QQ-M-40	Magnesium Alloy Forgings
QQ-P-416	Plating, Cadmium (Electrodeposited)

Military

MIL-P-514	Plate, Identification, Instruction and Marking, Blank
MIL-D-1000	Drawings, Engineering and Associated Lists
MIL-D-1000/1	Drawing, Engineering and Associated Data
MIL-M-3171	Magnesium Alloy, Processes for Pretreatment and Prevention of Corrosion on
MIL-S-5002	Surface Treatments and Metallic Coatings for Metal Surfaces of Weapons Systems
MIL-T-5021	Test, Aircraft and Missile Welding Operators Qualification
MIL-B-5087	Bonding, Electrical, and Lightning Protection, for Aerospace Systems
MIL-W-5088	Wiring, Aircraft Installation of
MIL-C-5501	Cap and Plug, Protective, Dust and Moisture Seal
MIL-C-5541	Chemical Films and Chemical Film Materials for Aluminum and Aluminum Alloys
MIL-C-6021	Casting, Classification and Inspection of
MIL-H-6088	Heat Treatment, Aluminum Alloys
MIL-M-6857	Magnesium Alloy Castings, Heat Treatment of
MIL-I-6870	Inspection Requirements, Nondestructive, for Aircraft Materials and Parts

MIL-H-6875	Heat Treatment of Steels (Aircraft Practice), Processor
MIL-F-7179	Finishes and Coatings, General Specification for Protection of Aerospace Weapons, Structures
MIL-F-7190	Forgings, Steel, for Aircraft and Special Ordnance Applications
MIL-C-007438	Core Material, Aluminum, for Sandwich Construction
MIL-S-7811	Sandwich Construction; Aluminum Alloy Faces, Aluminum Foil Honeycomb Core
MIL-C-8073	Core Material, Plastic Honeycomb, Laminated Glass Fabric Base, For Aircraft Structural Applications
MIL-S-8516	Sealing Compound, Synthetic Rubber, Electric Connectors and Electric Systems, Accelerator Required
MIL-W-8604	Welding of Aluminum Alloys, Process for
MIL-W-8611	Welding, Metal Arc and Gas, Steels, and Corrosion and Heat Resistant Alloys, Process for
MIL-A-8625	Anodic Coatings, for Aluminum and Aluminum Alloys
MIL-D-8634	Decal, Elastomeric Pigmented Film, for Use on Exterior Surfaces
MIL-A-9067	Adhesive Bonding, Process and Inspection Requirements for
MIL-E-9426	Escape Systems, Requirements Conformance Demonstrations and Performance Tests for; General Specification for
MIL-F-18264	Finishes, Organic, Weapons System, Application and Control of
MIL-S-18471	System, Aircrew Automated Escape Ejection Seat Type; General Specification for

MIL-P-19834	Plate, Identification, Aluminum Foil, Adhesive Backed Modification Applied
MIL-A-21180	Aluminum-Alloy Castings, High Strength
MIL-D-21625	Design and Evaluation of Cartridges for Cartridge Actuated Devices
MIL-A-23121	Aircrew Environmental Escape and Survival Cockpit Capsule System; General Specification for
MIL-P-23460	Pin, Quick Release, Positive Locking
MIL-S-23586	Sealing Compound, Electrical Silicone Rubber, Accelerator Required
MIL-D-23615	Design and Evaluation of Cartridge Actuated Devices
MIL-D-23890	Decalcomanias, Process for Application of
MIL-B-23964	Bolts, Self-Retaining, Positive Locking
MIL-M-24041	Molding and Potting Compound Chemically Cured, Polyurethane (Polyether-Based)
MIL-N-25027	Nut, Self-Locking, 250″ F, 450° F, and 800° F, 125 KSI FTU, 60 KSI FTU, axial 30 KSI FTU
MIL-A-25463	Adhesive, Metallic Structural Sandwich Construction
MIL-M-81203	Manuals, Technical, In-Process Review, Validation and Verification Support of
MIL-H-83282	Hydraulic Fluid, Fire Resistant Synthetic Hydrocarbon Base, Aircraft
MIL-S-83490	Specifications, Types and Forms
AD 42	Naval Air Systems Quality Assurance Procedures, Requirements for Preparation of
WR 43	Preparation of Quality Assurance Provisions (Including Classification of Characteristics)

WR 62	Naval Weapons Requirements Specifications and Standards; Use of

STANDARDS

Federal

FED-STD-406	Plastics: Methods of Testing
FED-STD-595	Colors

Military

MIL-STD-21	Welded Joint Designs
MIL-STD-22	Welded Joint Designs
MIL-STD-130	Identification Marking of U. S. Military Property
MIL-STD-143	Specifications and Standards, Order of Precedence for the Selection of
MIL-STD-401	Sandwich Constructions and Core Materials; General Test Methods
MIL-STD-403	Preparation for and Installation of Rivets and Screws, Rocket and Missile Structure
MIL-STD-410	Qualification of Inspection Personnel (Magnetic Particle and Penetrant)
MIL-STD-490	Specification Practices
MIL-STD-838	Lubrication of Military Equipment
MIL-STD-865	Brush Plating, Electro Disposition
MIL-STD-882	System Safety Program for System and Associated Subsystems and Equipment; Requirements for
MIL-STD-889	Dissimilar Metals
MIL-STD-1472	Human Engineering Design Criteria for Military Systems, Equipment and Facilities

PUBLICATIONS

Department of Defense

MIL-HDBK-5	Metallic Materials and Elements for Aerospace Vehicle Structures
MIL-HDBK-17 (Part 1)	Plastics for Flight Vehicles, Reinforced Plastics
MIL-HDBK-23	Structural Sandwich Composites
H 50	Evaluation of a Contractor's Quality Program
H 51	Evaluation of a Contractor's Inspection System
MIL-HDBK-52	Evaluation of a Contractor's Calibration System
H 53	Guide for Sampling Inspection
H 55	Radiography Nondestructive Testing Series
H 109	Statistical Procedures for Determining Validity of Suppliers Attributes by Inspection
MIL-HDBK-132	Protective Finishes
MIL-HDBK-691	Adhesives
MIL-HDBK-693	Magnesium and Magnesium Alloy
MIL-HDBK-694	Aluminum and Aluminum Alloy
MIL-HDBK-700	Plastic

Air Force - Navy Aeronautical Bulletins

ANA Bulletin	Specifications and Standards of Non-Government organizations Released for Flight Vehicle Construction

Naval Air Systems Command

SD-24	General Specification for Design and Construction of Aircraft Weapons Systems

(When requesting any of the applicable documents, refer to both title and number. All requests should be made via the cognizant Government quality assurance representative. Copies of this specification and other unclassified specifications and drawings" required by contractors in connection with specific procurement functions should be obtained upon application to the Commanding Officer, Naval Publications and Forms Center (Code 1051), 5801 Tabor Avenue, Philadelphia, Pennsylvania 19120. All other documents should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent herein specified. Unless otherwise indicated, the issue in effect on date of invitation forbids or request for proposal shall apply.

National Aerospace Standard

NAS 1091	Streamer Assembly, Warning

(Application for copies should be addressed to the Aerospace Industries Association of America, Inc., 1725 DeSales Street, N. W. , Washington, DC 20036.)

Naval Weapons Center, China Lake

IDP 1055	NWC Supersonic Track HDBK
NWC Systems Development Department Safety Regulations, September 1968	
SK3072-950	Test Vehicles (Rocket Propelled), Aircrew Automated Escape Systems, Naval Weapons Center Ground Test Track Compatible, General Engineering Information for

(Application for copies should be addressed to the Commander, Naval Weapons Center (Attn: Code 57212), China Lake, California 93555, SK3072-950 is a list of drawings and documents applicable to the design of rocket-propelled aircrew automated escape system test vehicles for use at the Naval Weapons Center, China Lake. If the requester desires both the list and the drawings, the request should be phrased specifically for SK3072-950 and the drawings/documents identified therein.)

3. REQUIREMENTS

3.1 Selection of materials and standard Parts. The selection of materials, standard parts, processes, corrosion protection, methods and materials, and design features significant in adequate corrosion behavior shall be in accordance with the requirements of Naval Air Systems Command Design Specification SD-24.

3.1.1 Materials. Materials shall be suitable for the purpose intended, shall conform to applicable specifications and shall be as specified herein, and on applicable drawings. Materials not covered by Government specifications, or not specifically described herein, shall be of the best quality, of the lightest practicable weight, and shall be approved by the Government testing activity. Particular care shall be given to fatigue strength, weldability and (in the case of close fitting parts), the choice of both materials and corrosion-protection practices.

3.1.1.1 Metal parts. AU metal parts shall be of the corrosion-resistant type, or shall be treated in a manner to subsequently render them resistant to corrosion. Unless suitably protected against electrolytic corrosion, dissimilar metals, as defined in MIL-STD-889 shall not be used in contact with each other. General design information governing usage of metals is provided in MIL-HDBK-5. General design information for aluminum and aluminum alloys is provided in MIL-HDBK-694.

3.1.1.1.1 Heat treatment. Heat treatment of aluminum parts and steel parts shall be in accordance with MIL-H-6088 and MIL-H-6875, respectively, Heat treatment, of magnesium alloy castings shall be in accordance with MIL-M-6857.

3.1.1.1.2 Castings. The use of castings in the test-vehicle shall be avoided generally; but, wherever castings are employed, they shall conform to the requirements of MIL-C-6021. In addition, aluminum alloy castings shall conform to the requirements of MIL-A-21180. Both the use and design of all castings shall be approved by the Government testing activity.

3.1.1.1.3 Steel forgings. Steel forgings used in the test vehicle shall conform to the requirements of MIL-F-7190. Critical steel forgings shall meet the requirements of MIL-F-7190 Grade A forgings.

3.1.1.1.4 Magnesium and magnesium alloys. Magnesium and magnesium alloy parts shall not be used without the expressed approval of the Government testing activity. The contractor shall describe the intended application, the protective measures planned, and the composition of parts adjacent to the proposed usage. General design information for magnesium and magnesium alloys is provided in MIL-HDBK-693.

3.1.1.1.4.1 Magnesium alloy forgings. Magnesium alloy forgings shall conform to the requirements of QQ-M-40.

3.1.1.2 Sandwich construction. General design information concerning the design, manufacture and usage of sandwich construction is provided in MIL-HDBK-23. Aluminum and aluminum alloy sandwich construction shall comply with the requirements of MIL-S-7811.

3.1.1.2.1 Core materials. Core material and construction used in sandwich construction shall conform to the requirements of MIL-C-007438 or MIL-C-8073. Use of other core materials shall be subject to the Government testing activity's approval and shall be in consonance with the guidelines furnished in MIL-HDBK-23. Wood cores shall not be used.

3. 1.1.2.2 Bonding agents and methods. Adhesives used to bond aluminum core material to aluminum facings shall conform to the requirements of MIL-S-25463. Bonding agents used to bond non-aluminum (or, non-aluminum alloy) cores to aluminum, aluminum-alloy, or other face materials, shall be in consonance with the guidelines provided in MIL-HDBK-23 and shall be subject to approval by the Government testing activity. The bonding processes employed shall conform to the requirements of MIL-A-9067. General guidance concerning adhesive bonding principles, selection of adhesives, preparation of surfaces to be bonded, application and curing of adhesives, and the inspection and testing of bonds are presented in MIL-HDBK-691.

3. 1.1.2.3 Sealing sandwich construction. Sandwich construction shall be sealed to preclude entrance of moisture into the core material, regardless of the moisture source or the method of exposure of the structure to moisture.

3.1.1.3 Non-metallic components. Non-metallic components shall be designed to minimize deterioration caused by abrasion and/or exposure to sunlight, micro-organisms, moisture, heat, fuel, hydraulic and lubricating oil and grease, electrostatic effect, and water immersion. Protection shall be provided for those non-metallic components, particularly nylon lines, for which strength degradation associated with abrasion or exposure-induced deterioration can endanger the system user, Of particular interest, herein is protection against fire, propulsive blast effects, or corrosion inducing characteristics (such as off-gassing byproducts and their effect on metals).

3.1.1.3.1 Reinforced plastic construction. General design and manufacturing information concerning reinforced plastic construction is furnished in MIL-HDBK-17, Part 1, and MIL-HDBK-700. Fiber-glass materials used shall be in accordance with the requirements of L-P-383 for Type I reinforced plastic construction, and shall be of such character and quality as to be capable of withstanding all service conditions as herein specified, without degrading the performance of the component or system in a manner likely to cause test vehicle failure, between test " rapid turnaround time, or interference with the operation of the escape system installation being tested. Use of plastics/reinforced plastics shall be approved by the Government test activity.

3.1.1.4 Lubrication. The need for lubrication should be mindfully avoided; but, where necessary, lubricants and lubrication practices shall conform to the requirements of MIL-STD-838. Lubricants shall function satisfactorily throughout the temperature range from -20° F to +2250 F and shall be non-flammable,

non-corrosive, non-toxic, and inorganic in nature and shall be approved by the Government testing activity. Choice of lubricants shall (a) reduce hazards to non-metallic system components, (b) reduce damage to finishes adjacent to location of lubricant application, and (c) eliminate the need for frequent relubrication. Graphite, or graphite compound lubricants are specifically forbidden hereunder.

3.1.1.5 Hydraulic fluids. Hydraulic fluids used in test vehicle components shall function satisfactorily throughout the temperature range from -20° F to +2250 F, and shall be non-flammable, non-corrosive, non-toxic, and inorganic in nature, and shall be approved by the Government testing activity prior to their use. Where the hydraulic fluid usage in the test vehicle is in aircraft components, or simulations thereof, the viscosity and compressability of the hydraulic fluids used shall be equivalent to the fluids employed in the actual aircraft application. In addition the hydraulic fluid used shall have a flash point equal to or greater than MIL-H-83282 when atomized in a fine spray.

3.1.1.6 Fungus-proof materials. To the greatest extent practicable, the materials used in the sled test vehicle system shall not be nutrients for fungi, If materials that are nutrients for fungi must be utilized, such materials shall be treated with a fungicidal agent approved by the Government testing activity.

3.1.1.7 Decalcomanias and adhesive-backed metal foil plates. Decalcomanias used on the test vehicle shall conform to the requirements of MIL-D-8634. General guidance for the application of decalcomanias is provided by MIL-D-23890. Adhesive-backed metal foil identification plates shall conform to the requirements of, and shall be affixed in accordance with instructions in MIL-P-19834.

3.1.1.8 Identification, instruction and marking plates. Identifications, instruction and marking plates shall meet the requirements of MIL-P-514, Composition A, Class 2; Composition C or Composition D, as applicable. Unless otherwise directed by the Government testing activity the predominating color of the plates shall be black, FED-STD-595 color number 17038, with white lettering, Attachment of the plates shall be in accordance with MIL-P-514. Marking plates identifying emergency -access and/or shut-down provisions shall be clearly outlined by a one-half inch wide line composed of alternating black and yellow stripes imposed on the bias. “NO step” areas will be clearly stenciled on the applicable surface(s) in readily visible black or red lettering.

3.1.1.9 Potting compounds. Potting compounds employed in the test vehicle shall be selected from those listed on the Qualified Products Lists showing compliance with MIL-S-8516, MIL-S-23586 and MIL-M-24041, and which have completed tests to the Government procuring activity's satisfaction to demonstrate their hydrolytic stability.

3.1.1.10 Fasteners. Unless part of the fittings of the production fuselage (if used), aluminum bolts and nuts shall not be used in the test vehicle. Bolts used in critical applications where their loss could result in the catastrophic failure of the test vehicle, subsystems or components shall be self-retaining, positive-locking devices complying with the requirements of MIL-B-23964. Nuts and nut-plates shall be self-locking complying with MIL-N-25027. When it is necessary to fasten into tapped nonferrous materials members, threaded inserts shall be used. General design information on fasteners shall be selected from MIL-HDBK-5.

3.1.1.11 Welding materials. Parent material, weld rod, cleaning and preparatory material, shall be selected and used in a manner ensuring high strength and sustained integrity of welds. Special, hard to obtain, materials which are difficult to procure by either the contractor or the Government testing activity shall not be incorporated in the sled test vehicle.

3.101.12 Shock mounts. Shock mounts shall be electrically isolated types to ensure that the chassis/baseplate of equipment so mounted is isolated electrically from the test vehicle structure. In event adequate electrically isolated shock mounts are not available, the contractor shall devise and propose to the Government procuring activity for approval an equivalent technique for providing the requisite isolation.

3.1.2 Corrosion protection. Corrosion protective practices employed in the manufacture of the test vehicle and its components shall be in accordance with MIL-F-7179 requirements as specified for exterior surfaces. Magnesium alloy parts shall be treated in accordance with the MIL-M-3171 requirements for Type VII Treatment, including surface sealing.

3.1.2.1 Finishes. Protective coatings and finishes shall minimize cracking, chipping and scaling during normal test program preparation and usage within the herein specified extremes of atmospheric and frequency-of-use conditions. Surface treatments, coatings and finishes shall conform to MIL-S-5002, or other treatments herein specified. General guidance in the application and control of organic finishes is provided in MIL-F-18264 and MIL-HDBK-132.

3.1.2,2 Anodizing. All aluminum and aluminum alloy parts, except those not subject to wear or those which the Government testing activity has given prior approval to remain nontreated, shall be anodized in accordance with MIL-A-8625, Type II anodic coating. Anodic coatings for all aluminum and aluminum alloy parts subject to wear shall conform to MIL-A-8625, Type III.

3. 1.2.2.2 Chemical surface treatment. For aluminum and aluminum alloy parts not subject to wear, abrasion or erosion, chemical conversion surface treatment in accordance with MIL-C-5541 may be used in lieu of anodizing.

3.1.2.3 Plating. Steel parts in contact with aluminum or aluminum alloys shall be electroplated in accordance with QQ-P-416 or where size becomes prohibitive, brush plated in accordance with MIL-STD-865. The deposit shall conform to Type II, Class 1 of QQ-P-416.

3.1.2.4 Bolts. Bolts into and/or through, dissimilar materials shall be wet-mounted.

3.1.2.5 Welds, Weld design shall incorporate good practices and materials to prevent the deterioration of the strength of the weld from corrosion and/or fatigue.

3.1.3 Fabrication practices. The fabrication practices used in the construction of the test vehicle shall be as specified herein and shall be in accordance with the general aircraft and Government testing activity requirements and practices and in consonance with the intended repeated use of the vehicle.

3.1.3.1 Joining practices. Joining practices used in fabricating the test vehicle shall be as specified herein and in the detailed requirements of attendant applicable documents.

3.1.3.1.1 Welding practices. Welded joints shall be selected in accordance with MIL-STD-2l/MIL-STD-22 and shall be designed to minimize the need for post-weld heat treatment. Welding and brazing shall be performed by qualified welders tested and certified in accordance with MIL-STD-41O and/or MIL-T-5021. Welding of aluminum and aluminum alloys shall be in conformance with MIL-W-8604. Welding of steel shall be in conformance with MIL-W-8611.

3.1.3.1.2 Riveting practices. Riveting practices shall be in accordance with the requirements of MIL-STD-403 and in accordance with the detailed specifications applicable to the types of rivets and screws selected, except that hollow rivets shall not be used and blind rivets shall be used only where absolutely necessary. The design of the vehicle shall be such that use of blind rivets in place of regular rivets or screws is minimal,

3.1.3.1.3 Adhesive bounding practices. Adhesive bonding practices shall be as herein specified, in the applicable detail specifications and documents, and in accordance with MIL-HDBK-691.

3.1.3.2 Alignment. AH test vehicle fabrication and structural alignment fixtures shall be maintained within ±0.015 inches of the nominal design criteria/lines unless otherwise approved by the Government testing activity. Major load carrying members, (such as push probe structure) shall be designed to withstand a minimum of 1.00 inch maximum-load application eccentricity without yielding. Shimming to compensate for discrepancies maybe used only if prior approval has

been obtained from the Government testing activity. Major alignment shall be maintained using appropriate fixtures and a rail jig furnished by the Government testing activity.

3. 1.3.3 Rail jig usage. The test vehicle undercarriage shall be fabricated upon a Government furnished rail jig which conforms to Naval Weapons Center drawings listed in SK3072-950, using associated fixturing hardware,

3. 1.3.4 Wiring practices. All points of the data acquisition system and other electrical systems shall be electrically isolated from the sled. AH Transducer/ Transducer-mounts, antennas, battery-terminals, etc., shall be “above ground”. As a check, a Simpson VOM check shall be made between battery terminals individually and any point on the sled itself; no voltage should be observed on the 2.5 VDC range, even when VOM leads are reversed. even when (This is necessary safety precaution to pre vent injury or death during ordnance handling.) All wiring shall have Teflon (or a government testing activity approved substitute high-temperature insulation) covering to minimize potential melting of insulation and subsequent shorting of wiring, Firing (ignition) circuits, Le.,test vehicle propulsion initiation, escape system initiation, etc., shall be composed of twisted, shielded wires, Instrumental ion circuits (both power and signal) shall be segregated from firing circuits. All wires shall be labelled in accordance with MIL-STD-130.

3.1.3.4.1 Wiring. All installed wiring shall be in accordance with MIL-W-5088 unless otherwise specified herein or by the Government procuring and/ or testing activities.

3.1.3.5 Electrical bonding. Electrical bonding, structure to structure, shall be in accordance with the requirements of MIL-B-5087. Bonding shall be provided for current return paths and to provide equal potential between all non-electronic equipments and the basic structure of the test vehicle. Control of current return paths (to prevent stray voltage, floating grounds, etc.) in test vehicles is extremely critical to ensuring the safety of personnel preparing the escape system and test vehicle, particularly in preparing ballistic elements and the propulsion sled, for each test.

3.1.4 Selection of specifications and standards. Specifications and standards for necessary commodities and services not specified herein shall be selected in accordance with MIL-STD-143 and WR 62. A partial listing of approved (MIL-STD-143 Group II) non--government organization specifications and standards is furnished in ANA Bulletin No, 147.

3.1.5 Drawings. Drawing requirements shall be specified by the procuring activity in accordance with MIL-D-1000/1 instructions. AH drawings furnished hereunder will be MIL-D-1000, Form 2 drawings.

3.1.6 Test vehicle component/subsystem specifications. The contractor shall prepare and submit to the government test activity for approval specifications conforming to the requirements of MIL-S-83490 for Form 2 specifications for components/subsystems design, test, manufacture, and quality assurance procedures not adequately defined by military or federal specifications or standards or acceptable non-governmental organization specifications or standards. Guidelines for preparing specifications are furnished in MIL-STD-490.

3.1.7 Plugs. Plastic or elastomer caps or plugs used to prevent the entry of dust and foreign matter into devices or tubing during shipping and/or storage, shall conform to MIL-C-5501.

3.2 General design requirements. The design of the test vehicle shall ensure:

(a) structural strength adequate for conducting escape system performance tests in accordance with the requirements of MIL-E-9426 with minimal between-test repairs and/or replacements, and/or loss of time;

(b) escape system--test vehicle interfaces/interactions/interrelationships are representative of those which will exist between the aircrew automated escape system to be tested and the aircraft (e. g.: geometric relationships between man escape system and aircraft, bulkhead (and floor) escape system reactions, rocket plume effects, airflow characteristics and pressure distributions in region in which the escape system or any of its components emerges);

(c) adequate space for onboard power sources and data acquisition subsystems and components as herein specified:

(d) compatibility with all test and assembly facility(ies) at, or upon, which the test vehicle will be used or worked on, for track or under water escape testing;

(e) ease of escape system installation, connection of the dummy to the test vehicle, instrumentation interfaces, inspection, calibration of subsystems, battery/power source replacement, and final check-out of escape

system/dummy instrumentation while installed in the test vehicle, or disarming in the event of an onboard emergency:

(f) adequate structural lift points, (hoisting lugs) and tie down points for the safe lifting and transporting of the test vehicle, via a single-point crane;

(g) welded, through-beam, dual-axle design which allows simple solution of the shoe reaction loads and provides structural adequacy to withstand the loads induced into and transmitted through the axle;

(h) compatibility with propulsion system, braking system data acquisition system and the escape system during repeated usage;

(i) adequacy of test vehicle and dummy or escape system-borne telemetry radiation patterns to ensure ground station pick-up of signals during period prior to the seat/dummy or escape system fully clearing the aircraft structure;

(j) ease of separating the fully sealed fuselage section from undercarriage (if required by the Government procuring and/or testing activity) and instrumentation from fuselage section to permit fuselage section to be used for under-water testing of the escape system;

(k) safety of personnel preparing the test vehicle and the escape system installation for tests.

Attention shall be directed to the development of test vehicle and component integration, reliability, safety and maintainability, and accessibility to critical components without disturbing the installed escape system being tested.

3.2.1 Human factors general design requirements. Provision shall be made, where feasible without degrading aircraft structure-seat interactions/responses, for external access ports complying with MIL-STD-1472 to:

(a) facilitate escape system and dummy(ies) installation into the test vehicle and the subsequent pre-test inspection and calibration;

(b) facilitate “safetying" test vehicle, the escape system and sled propulsion following a test abort in the breech or during a test run (e.g. data acquisition shut down);

(c) facilitate post abort installation check-out and/or adjustment of major elements of the data acquisition subsystem (i. e. camera reloading, changing of flood-lights, re-calibration of instruments, etc.) without disturbing the installed escape system and its dummy occupant(s), permit ontrack inspection of critical test vehicle structure/components, (NOTE: such provisions will reduce greatly the cost and lost time associated with reining an aborted test.); and,

(d) facilitate post-test and/or post-abort propulsion, test vehicle, escape system, dummies, data acquisition subsystem safe inspection;

AH access-port edges, which a portion of a man’s body might contact during the performance of necessary pre-test/post-test tasks through the access ports, must be rounded or covered so as to protect the man. The acess ports shall be locked shut with Government test activity approved quick release fasteners, and shall be capable of furnishing an adequate pressure seal to withstand the hydrostatic pressure differential without leakage or failure during underwater testing. Provision also shall be made for positively attaching/removing work platforms/ stages to both sides of the test vehicle to (1) facilitate preparation of the test vehicle and escape system for tests and (2) ensure safety of personnel preparing test vehicle for test run, whether in the assigned assembly building or in the track breech or muzzle (different ground plane elevations are involved).

3.2.2 General structure environmental conditions. The test vehicle and associated subsystem and components shall be capable of repeatedly operating at, and withstanding without major structural damage and/or damage requiring major repairs and/or replacements, the aerodynamic pressures, ground effect, and acceleration-induced inertial effects associated with test speeds from zero through at least 120 percent of the escape system envelope maximum airspeed prior to, during and following escape system operation (test speed upper limit for escape system envelopes greater than 600 kts. shall be determined through liaison with the Government testing activity.) The test vehicle also must be capable of operating without sustaining structural damage and/or damage to the onboard data acquisition subsystem, under the accelerations required to achieve and sustain, and the vibration and shock spectrums and energy associated with achieving and sustaining the prescribed different test speeds for the launch, boost and data acquisition period and then stopping the test vehicle. In addition, the test vehicle shall be capable of withstanding (without sustaining damage requiring major

repairs to the structure of the onboard data acquisition subsystem, or precluding test vehicle re-use) the following environmental conditions:

(a) high velocity water spray/immersion or impingement (occurring during water braking);

(b) high velocity sand and particle impact/erosion due to ground interference effects;

(c) blowing sand and dust:

(d) sunlight (including the ultraviolet spectrum) exposure;

(e) rain and fog:

(f) humidity from O to 100 percent relative;

(g) ambient temperature range from -65″ F to +225°F (electronic subsystem: -65°F to +165°F);

(h) handling/transportation shock loads;

(i) condensation;

(j) microwave exposure;

(k} test vehicle propulsion subsystem blast and temperature effects;

(l) escape system propulsion subsystem blast and temperature effects;

3.2.3 Paint scheme. The exterior of the sled shall be painted white, Fiducial marks shall be painted black with sharp edges and square corners. No fiducial or other data mark or stripe shall be less than two inches in minimum dimensions. Fiducial marks and decalcomanias shall be located to enhance photographic coverage during the test. Fiducial marks (lines, crosses, dots) shall be painted on the exterior and interior of the test vehicle for measurement of test iten and sled velocity, egress angles, and boresighting of cameras. The colors and patterns selected shall enhance photographic tracking (panning) and assessment of data. “Decorative" finishes or color schemes are permissible subject to Government test approval. Paint schemes which obscure proper optical/ photographic tracking of the vehicle during a test run shall not be employed.

3.3 Specific design requirements.

3.3.1 Test vehicle subsystem/component design. The test vehicle shall include the following subsystems and/or components, as applicable for the aircraft/escape system installation tested:

(a) Fuselage section:

(1) Actual production cockpit-canopy subsystem;

(2) Escape system mounting and aircraft interfacing provisions;

(3) Representative production-type aircraft cockpit and forward fuselage section;

(4) Fuselage section - undercarriage attachment, adjustment and mounting provisions;

(5) Sled lifting attachment points (if not provided in undercarriage, and if approved by the Government testing activity.

(b) Undercarriage:

(1) Dual rail structure including crossbeams, axles;

(2) Shoes (single and/or tandem-mounted);

(3) Braking subsystem;

(4) External control signal pickup-ups;

(5) Sled lifting attachment points.

(c) Propulsion (pusher) sled interface:

(1) Structural interface;

(2) Control signal interface.

(d) Onboard data acquisition subsystem:

(1) Onboard power source(s) for electronic and optical instrumentation, with external-internal power buss system;

(2) External power, instrumentation and control tie-in provisions (umbilical), suitable for mating with contractor furnished wiring leads;

(3) Cameras, mounting brackets and control systems;

(4) Floodlamps, mounting brackets and control system;

(5) Instrumentation including transmitters control subsystem and/or recorders;

(6) Time event visual markers;

(7) External (600 VDC) signal pick-ups;

(8) Sled-borne test vehicle velocity measuring system (VMS) components (NAVWPNSCEN CHINA LAKE. . .Magnetic);

(9) Sled-borne range-time correlation system;

(10) Sled-borne timing subsystem (for post-launch shut down);

(11) Antennae;

(12) Seat velocity measurement subsystem.

(e) Escape system data acquisition subsystem interface:

(1) Umbilical cord.

(f) Ground support equipment:

(1) Work platforms/stages;

(2) Test vehicle handling/transportation equipment;

(3) Hydraulic/pneumatic support equipment;

(4) Data acquisition subsystem support equipment (GSE/SSE).

3.3.1.1 Fuselage section. The fuselage section shall duplicate the general construction and the fuselage lines of the aircraft forebody surrounding the cockpit and/or escape system interfaces with the aircraft to ensure that escape system-test vehicle interactions and the airflow and pressure field in the region in

which the escape system emerges acceptably duplicate the conditions obtained in the aircraft. The fuselage depth shall be sufficient to preclude significant cockpit floor or seat-frame or canopy sill stiffening resulting from attachment of the fuselage section to the undercarriage except that for cockpit capsule test vehicles the fuselage section depth shall be sufficient to duplicate the voids beneath the capsule to prevent distortion/change in the rocket plume effects and to permit incorporation and replacement of the capsule severance subsystems and the elements which it severs, All structure supporting the escape system mounting provisions shall be identical to that in production aircraft and shall not be stiffened or strengthened further. The fuselage section shall include sufficient volume aft/forward of the cockpit and /or escape system to provide portected compartments, externally accessible, for the onboard data acquisition subsystem and its components. In addition, the fuselage section design shall:

(a) preclude significant stiffening of the floor caused by aerodynamic pressure resulting from ground interference turbulence;

(b) minimize aerodynamic choking, turbulence and shape drag beneath the test vehicle;

(c) prevent track braking system water spray induced damage to, and/or leakage into, the test vehicle;

(d) minimize aerodynamic lift caused by ground effects;

(e) facilitate rapid and safe inspection of the undercarriage/test vehicle for damage;

(f) facilitate use during underwater escape testing.

3.3.1.1.1 Cockpit canopy subsystem. The cockpit canopy subsystem on the test vehicle shall duplicate the actual aircraft cockpit canopy subsystem, except that all manual controls and/or actuation means shall be located, or shall be safely accessible and operable externally to the cockpit while working from the stages provided, Canopy locking and sealing subsystems shall be actual production-type hardware. If practicable, bulkhead and/or panel design(s) shall permit photographic coverage of the canopy subsystem during the escape system tests,

3.3.1.1.2 Escape system mounting and interfacing previsions. The escape system and interface components attached to the test vehicle shall be mounted using production-type mounting bracketry on production-type aircraft bulkhead/floor/fuselage structure, as applicable. Where practicable, external access to the escape mounting provisions shall be provided to simplify test preparations, pre-test inspection (and disarming during abort) of the installation.

3.3.1.1.3 Cockpit capsule escape system separation subsystem. To facilitate rapid turn-around of the test vehicle between tests, cockpit capsule test vehicles may incorporate splice plates in the region likely to be damaged by capsule severance subsystem operation. These splice plates shall duplicate faithfully the aircraft structure to be cut arid may have severance subsystem components pre-installed. The splice plates shall be designed for rapid attachment to both the fuselage section and the cockpit capsule and for rapid removal and replacement subsequent to the test. Spliceable elements also maybe developed and used for wire bundles, control cables, lines, etc., which must be severed, Where practicable, external access parts shall be furnished to facilitate the test preparations and pre-test inspection of the installation.

3.3.1.1.4 Cockpit. The test vehicle cockpit shall contain simulations and/or shells of all equipments, consoles and/or controls adjacent to and/or within the escape envelope/crew envelope to permit analyses of any crew interaction with them during escape system tests. Provisions shall be made within the cockpit for the mounting of flood lamps, cameras and such other data acquisition equipment required to acquire the data specified in MIL-E-9426. The cockpit section shall be capable of being pressurized to the maximum pressure differential that the aircraft being simulated will be capable of achieving.

3.3.1.1.5 Fuselage section - undercarriage mounting provisions. The means used for mounting the fuselage section upon the undercarriage or the undercarriage on a special truck-borne supportive structure, shall permit rapid adjustment of the fuselage attitude to achieve those cockpit-aircraft attitudes specified in MIL-E-9426. In addition, means used for mounting the fuselage section upon the undercarriage shall be able to withstand without failure repeated subjection to the loads associated with accelerating the sled of the test speeds, sustaining the speeds and decelerating the sled from the test speeds. If bolts are utilized to secure the fuselage section to the undercarriage, such bolts shall be self-retaining and positive locking and shall comply with MIL-B-23964. If required by the Government testing activity the fuselage section will be capable of being separated from the undercarriage for independent use during underwater testing.

3.3.1.1.6 Test vehicle lifting attachment points. The test vehicle shall be provided lifting attachment points and associated carry through structure to facilitate, and adequate for, safely lifting the vehicle. If different sets of such points must be used for various vehicle weight ranges, each point shall be clearly labeled with information concerning the weight of the vehicle for which the point may be used.

3.3.1.1.7 Ground interference effects. The test vehicle design shall incorporate measures to reduce the aerodynamic effects of ground interference upon the test vehicle, the escape system, any of its components, and supporting

interface structures. Such ground interference effects, i.e.: turbulence, pressure rise, airflow misdirection, and choking, significantly increased the drag and lift on the test vehicle, and additionally may preclude achieving the desired representation during test.

3.3.1.2 Undercarriage. The undercarriage is the main structural component of the test vehicle. It usually must support and restrain the fuselage section, the braking subsystem and the external control signal pickups. It shall be capable of accepting and transmitting without failure, the loads induced by shoe and propulsion system reactions. It shall be compatible with the track and with the propulsion system. The undercarriage shall be structurally adequate to withstand all the loads induced upon it, The material of the undercarriage shall be selected for the characteristics of high strength, ease of repair and ability to absorb vibration energy. The undercarriage shall be of dual-rail design with provisions for mounting either a probe-type or a momentum-exchange type water brake, but having no provisions for onboard propulsion and shall be integrated by the contractor into the test vehicle fuselage section. The undercarriage shall incorporate means for interfacing with, and accepting loads from the propulsion sled. The undercarriage shall incorporate sufficient transverse and longitudinal members to support the fuselage section and undercarriage under all required test attitudes, including roil and pitch. Unless precluded by the fuselages section structure, the external control signal pick-ups shall be mounted upon the undercarriage.

3.3.1.2.1 Dual-rail structure. The undercarriage shall provide for dual axles and crossbeams compatible with, and upon which, the shoe clevises maybe fitted. The rear pair of shoes may be single or tandem-mounted shoes.

3.3.1.2.2 Shoes. Structural linkage between the test track and the test vehicle shall be by Government testing activity approved and furnished (preferably vibration isolated (Figure 1)) shoes. The shoes shall be capable of sustaining without deformation the shoe reaction loads of the test vehicle. The shoes shall be single pin attached unless otherwise approved by the Government testing activity. Where it has been determined that single shoe linkage is insufficient, the linkage strength shall be increased by using two or more shoes connected in tandem by a shoe beam (Figure 2), The shoe beam shall be capable of withstanding the reaction loads and shall be single pin attached to the undercarriage. Undercarriage/axle shall be structured to make an acceptable final fit with the shoe hanger device (detail design information available in drawings and documents listed in SK3072-950).

3.3.1.2.3 Braking subsystems. The braking subsystem shall be designed to impart sufficient force to stop the sled within the length of track specified by the Government Testing Activity. Unless otherwise approved by the Government testing activity, the test vehicle shall incorporate a braking subsystem and this subsystem

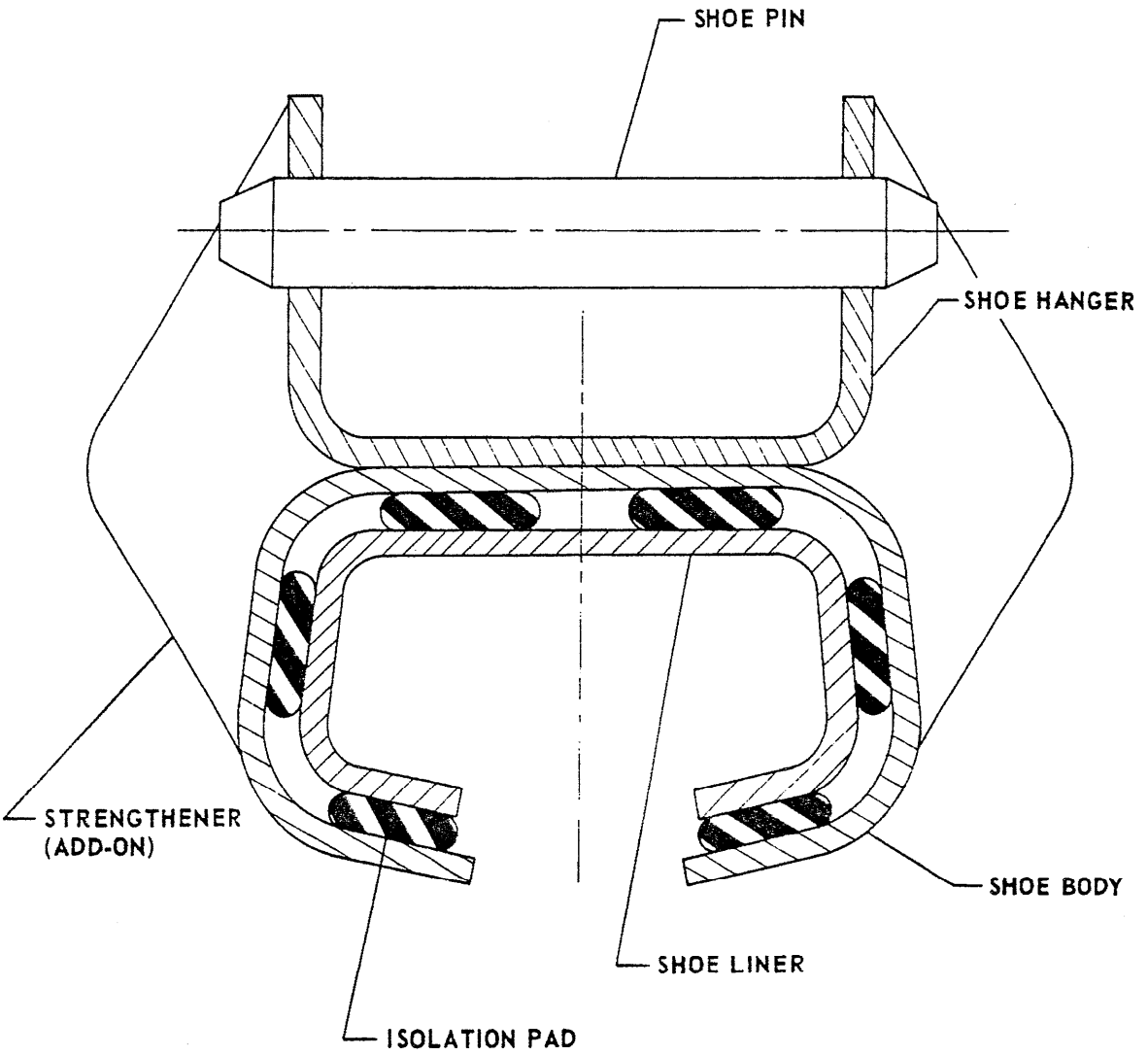

FIGURE 1, VIBRATION ISOLATION SHOE CROSSECTION

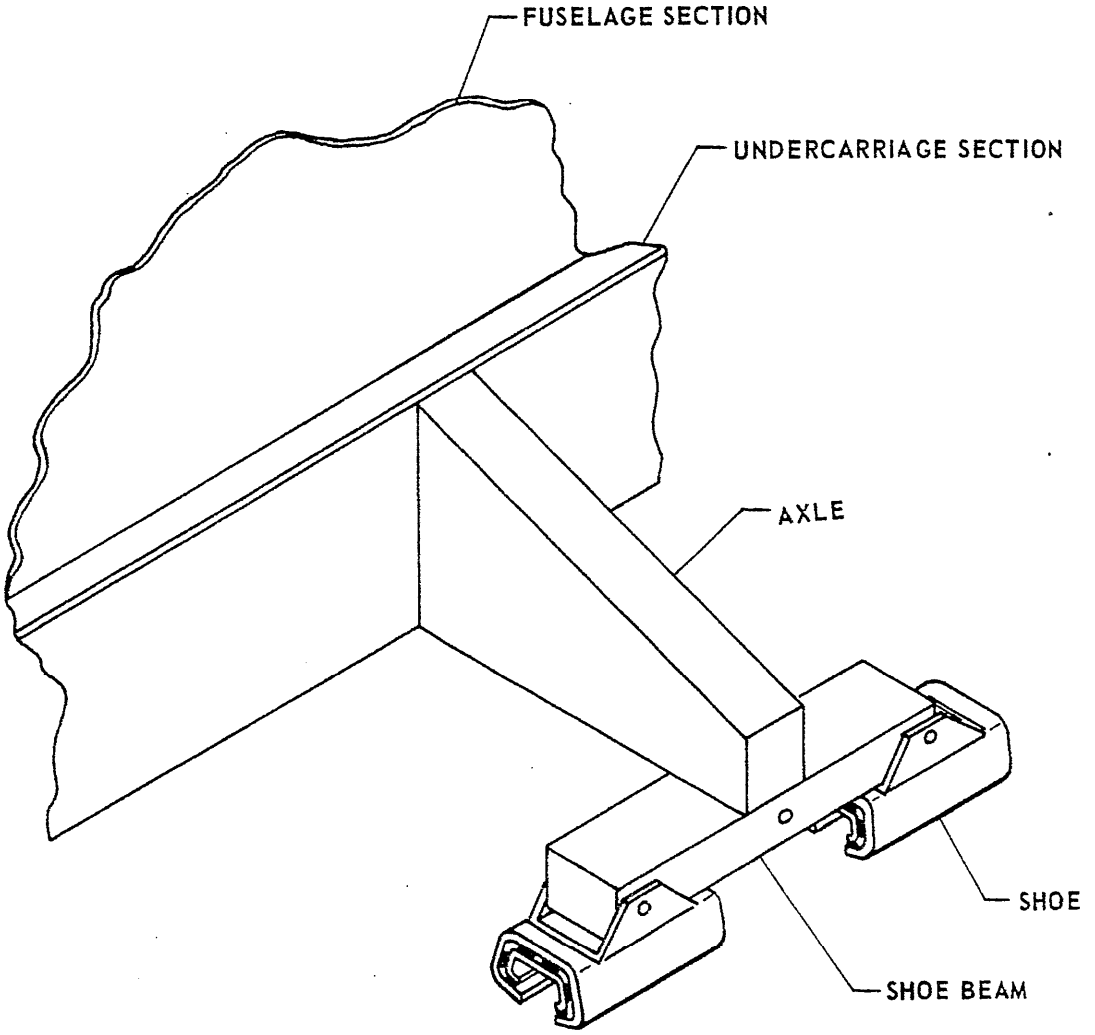

FIGURE 2. TANDEM-MOUNTED SHOES

shall be of the water brake (trough) type. All brakes shall be removable and shall not be a necessary structural component of the test vehicle. The weight of the brake shall be kept to a minimum. Water brake type selection shall be approved by the Government testing activity prior to fabrication.

3.3.1.2.3.1 Probe-type water brake. Unless otherwise approved by the Government testing activity, test vehicles whose maximum design speed is sub-sonic shall incorporate probe type water brake. Design information for this type of water brake may be found in IDP 1055.

3.3.1 .2.3.2 Momentum-type water brake. Unless otherwise approved by the Government testing activity, test vehicles which are especially heavy and/or whose velocity is supersonic the momentum exchange-type water brake shall be used. Design information for this type of brake may be found in IDP 1055. Integral lifting and/or handling equipment shall be provided for the test vehicle. The center of gravity of this type of brake shall be clearly and permanently marked upon the brake.

3.3.1.2.3.3 Water brake location. Location of the water brakes shall be selected to avoid and preclude adverse water spray effects, including water deflection into the open cockpit of the fuselage section during the braking process.

3.3.1.2.4 Control signal pickups. The test vehicle shall be equipped with means for controlling test vehicle propulsion and escape system initiation and sled-borne data acquisition subsystem operation. These means may include knife blades, and/or sled-borne programmerers/timers. AH control signal pickups shall be mounted upon, or in, the test vehicle and shall be compatible with the testing activity facilities.

3.3.1.2.4.3 Knife blades. Knife blades shall conform to the requirements detailed in drawings and documents listed in SK3072-950.

3.3.1.2.4.1.1 Knife blade location. All propulsion knife blades shall be mounted on the port side, and the escape system initiation and sled-borne instrumentation knife blades on the starboard side, of the test vehicle.

3.3.1.2.4.1.2 Knife blade mounting. The knife blades shall be mounted on the test vehicle by means of removable brackets. The mounting means shall ensure contact between the individual blades and only their respective trackside screen boxes. Blade spacing/patterns shall conform to requirements detailed in drawings and documents listed in SK3072-950.

3.3.1.2.4.1.3 Knife blade wiring. Knife blade wiring shall conform to the requirements detailed in drawings and documents listed in SK3072-950. Each knife blade shall be electrically insulated from the sled and undercarriage.

3.3.1.3 Propulsion (pusher) sled interface. All propulsion shall be provided by Government testing activity furnished captive pusher and free pushers. (i. e.: the test vehicle shall bean inert sled.)

3.3.1.3.1 Structural requirements, Dual clevis push probes positively connected by removable bolts to the captive pusher's female push probe shall be incorporated in the test vehicle. The probe locations, and design shall conform to standards set by the Government testing activity (detail design information available in drawings and documents listed in SK3072-950). The structure shall be capable of sustaining without failure the reaction loads encountered.

3.3.1.3.2 Control signal interface. The contractor shall provide an umbilical connection between the propulsion control subsystem in the test vehicle and the pusher sled. The umbilical connection shall be compatible with that mounted upon the pusher sled. (Umbilical connectors in test vehicles to be delivered to the Naval Weapons Center, China Lake, shall be AMP Type 42172-1 "53" series inserts or an equivalent approved by the Naval Weapons Center prior to use.) Since umbilical connectors frequently are damaged by flame impingement, such fittings should be economical and easily replaced.

3.3.1.4 Onboard data acquisition subsystem. The contractor shall provide an onboard data acquisition subsystem which remains in the test vehicle throughout the test cycle; measures, transmits and/or records the performance parameters of the test vehicle and/or the aircrew automated escape system during each test in accordance with the requirements of MIL-E-9426; and conforms to the following requirements,

3.3.1.4.1 Onboard power source(s) for electronic and optical instrumentation. Test sled design considerations shall include provisions for mounting, servicing and operating on-board electrical power sources to supply photo-optical and electronic instrumentation systems power requirements.

3.3.1,4.1.1 Electrical power source environment. The electrical power sources shall be capable of operating reliably under the environmental test conditions specified in MIL-E-9426. Special mounting fixtures and configurations shall be provided where necessary as protection against acceleration, vibration, shock and temperature.

3.3.1 .4.1.2 Electrical power source restoration. Test vehicle power distribution wiring systems shall incorporate circuitry to allow the primary DC electrical power sources to be recharged to reliable operational levels without removal from the test vehicle. Lead acid batteries shall be capable of being removed readily for changing or a ventilation system acceptable to the Government testing activity shall be provided,

3.3.1.4.1.3 Electrical power source isolation. For the safety of operating personnel, all terminals of all electrical power sources shall be fully isolated from the test vehicle metal structure. (i.e.: For single ended systems, power ground and instrumentation ground circuits shall not be common with or connected to the sled structure). In the event, instrumentation system requirements prevent this isolation, safety plugs shall be provided to fully isolate both power source terminals from the sled structure during loading, handling or arming system pyrotechnics, ordnance, and/or propulsion systems.

3.3.1.4.1.4 Electrical power buss switching. The electrical power distribution system shall incorporate switching circuitry to transfer the electronic instrumentation system power buss from sled-borne electrical power sources to external electrical power sources. This power transfer shall be activated by control signals applied through the umbilical cable specified in section 3.3.1.4.2. Photographic instrumentation systems do not require power buss switching, but do require an individual umbilical control function to program the camera operation cycle.

3.3.1.4.1.5 Electrical power source load distribution. Separate electrical power sources shall be provided for photographic instrumentation systems to eliminate possible high, transient circuit load requirements. Power budgets shall be formulated on all systems to insure that electrical power sources are not loaded to levels exceeding 80% of rated power output under all conditions of the environmental range specified in MIL-E-9426.

3.3.1.4.3.6 Power source mounting. To eliminate the possibility of chemical or galvanic corrosion of primary structure, vented constructed batteries should not be mounted directly upon undercarriage or other primary structure.. Vented constructed batteries shall be encased adequately to preclude spillage or outgassing into the test vehicle.

3,3.1.4.2 External power,. instrumentation and control tie-in provisions (umbilical) The design of the test vehicle shall provide for a quick, disconnect/ connect cabling interface system to facilitate sled-borne systems monitoring, check-out, recharging, control, and initiation. Disconnection shall be accomplished by remote control and actuation. (First motion disconnection is not an acceptable means of disconnection). The connectors shall be securely mounted to the vehicle in a readily accessible location clearly visible to fire control. Umbilical cable should meet the general environmental and handling requirements herein specified and the system should be arranged to prevent entanglement on any pusher and main sled structure. The interfacing connector, and cabling configuration shall be compatible with the available control interfacing at the designated test facility. (i,e: NWC/HOLLOMAN)

3.3.1.4.3 Cameras, mounting brackets and control subsystems.

3.3.1.4.3.1 Camera mounting brackets. Mounting brackets shall be provided to secure data recording cameras to the test vehicle to withstand the test environment as herein specified. The brackets shall incorporate features permitting the camera and/or film magazine to be easily and quickly removed and replaced. The bracket design shall not inhibit the connection/disconnection of power/control cabling to the camera on it. Mounting brackets and cameras shall be located to prevent interferences, safeguard cameras and allow a clear escape envelope,

3.3.1.4.3.2 Camera control subsystem. A reliable camera control subsystem shall be provided to allow camera recording systems to be turned On and off in a selectable programmed sequence during the test cycle. The source of the initiation signal may be from an on-board programmer or may be obtained directly through the umbilical cable from the test range control master programmer. Switching action shall be positive and remain in a closed (latched) condition throughout the escape system test under all testing environmental conditions and shall open (unlatch) automatically at the end of the recording sequence.

3.3.1.4.3.3 Camera coverage. The number, type, speed, and field of view of the cameras installed aboard the test vehicle shall be dictated by the data acquisition requirements specified by MIL-E-9426.

3.3.1.4.4 Floodlamps, mounting brackets and control system. Vibration resistant photographic floodlamp systems shall be installed onboard the test vehicle to provide suitable light levels necessary to assure reliable photographic test data records and to minimize the influence of widely varying ambient light levels due to time of day or cockpit configuration (i. e.: Opaque canopy).

3.3.1.4.4.1 Floodlamp mounting brackets. Vibration resistant mounting brackets shall be provided to secure the floodlamps to the test vehicle to withstand the test environment specified herein and associated with the tests required by MIL-E-9426. The brackets w/lamps shall be located to provide the maximum illumination of the test object to be photographically recorded but shall not interfere with the required escape envelope.

3.3.1.4.4.2 Floodlamp control system. A control system shall be provided to power-up the floodlamp system sufficiently prior to the photographic recording cycle to insure operation at maximum illumination levels.

3.3.1.4.4.3 Illumination requirements. To ensure illumination adequate for high-speed (300 PPS or greater) on-board photography, the type, quantity and grouping of photoflood lamps shall ensure that the subject plane illumination is no less than 3, 200 foot-candles as measured by an incident light meter.

3.3.1 .4.4.4 Photoflood lamp operating signal. Provision shall be made for transmitting to fire control a signal indicating the operating status of each group of sled-borne photoflood lamps if such lamps are not directly visible from fire control.

3.3.1.4.5 Instrumentation including transmitters control subsystems and/or recorders. The on-board instrumentation system shall utilize standard formats for multiplexing, transmitting, and recording the data required by, and/or resulting from the test requirements of MIL-E-9426.

3.3.1 .4.5.1 Transmitting formats. Standard formats for the multiplexing of test data shall be the time and frequency multiplexing formats commonly utilized by the national test ranges and shall include:

(a) Proportional and Constant - Bandwidth Frequency Modulation (FM/FM)

(b) Pulse Amplitude Modulation (PAM/FM)

(c} Pulse Duration Modulation (PDM/FM)

3.3.1.4.5.2 Transmitting frequencies. The R.F, frequencies selected for the transmission of test data shall be selected from those channels allocated in L-Band and/or S-Band for telemetry transmission, Proposed requirements R. F. channel usage shall be transmitted to the selected test facility at least days prior to the scheduled start of track testing in order to obtain the required frequency allocations assignment of clearances.

3.3.1.4.5.3 Control subsystem. The instrumentation control subsystem shall have the capability of providing positive power-up/power-down functions to control the operation of on-board transmission and/or recording systems. This positive control system shall include the capability for automatically reverting from the power-up mode to the power-down mode after a pre-selected time interval.

3.3.1.4.6 Time event visual markers. Visual markers shall be provided to indicate the relative time of activation, operation, deployment or ignition of those aircrew automated escape system components whose performance is being recorded by photographic systems. Visual marker devices shall be selected for their ability to survive the test environment, provide a distinguishable illumination level, and exhibit a negligible or known delay between activation and first detectable illumination. The location of time event visual markers shall be selected to minimize the possibility of being obscured by exhaust plumes or debris resulting from the escape sequence.

3.3.1.4.7 External signal pickups. External signal pickups to establish time-position information for the test vehicle initiate test functions, and initiate

instrumentation system functions shall be knife blades conforming to the requirements of 3.3,1.2.4.1, and 3.3.1.2.4.1.1.

3.3.1.4.8 Sled-borne test vehicle velocity measuring system (VMS) comonents. The test vehicle shall be equipped with a velocity measuring system (VMS) compatible with the range VMS used at the test facility at which the aircrew automated escape system tests will be conducted.

3.3.1.4.8.1 VMS - NAVWPNCEN China Lake. The test vehicle mounted components of the VMS system consists of a special magnet, housing and mounting assembly. Information specifying the weight, mounting configuration, and operational space envelope, as well as the magnet assembly, is contained within the drawing/documentation package defined by SK3072-950. Provisions shall be made and verified for mounting these components which will be provided and mounted by the Government testing activity at NAVWPNCEN China Lake,

3.3.1 .4.8.2 VMS - Holloman A. F. B. The test vehicle mounted components of the VMS system consists of an optical sensing assembly, signal processing transmitting and antenna subsystems, Information specifying the weight, mounting configuration, power requirements and operational space envelope, as well as the VMS system and hardware shall be requested from the Commander, Holloman Air Force Base.

3.3.1.4.9 Sled-borne range-time correlation system. Provision shall be made correlating in time all data records, electronic and photographic obtained from both trackside and sled-borne data acquisition systems. Since sled-borne cameras historically have used, in the main, a free-running 1000 PPS oscillator, some means is necessary to establish a common time at which some function or event occurs. Provision shall be made for knife-blade actuated flashbulb(s) or electrical signal(s) to provide either a visual indication within the various camera fields of view or a "light mark" on the edge or frame of the film.

3.3.1.4.10 Sled-borne timing subsystem.

3.3.1.4.10.1 Flashbulbs or electrical signal. Flashbulbs shall be initiated by appropriate track-side devices (screenboxes and power-supply, knife blade, etc.) Photo flashbulbs shall be mounted on vibration resistant mounts. They shall be located in a group(s) visible within the fields of view of all trackside, tracking and sledborne cameras, If electrical signal pickups are used, this signal shall be conditioned and applied to each sled-borne camera and/or recorder.

3.3.1.4.11 Antennae. All sled-mounted antennae shall be electrically isolated from the sled. (Any R.F. connector causing an electrical common with the shield of tile coaxial cable would normally cause the 28 VDC common to be electrically connected with the antenna thereby creating a potential "ground loop" through the ordnance/propulsion ignition leads posing a hazard to personnel preparing the test vehicle for use.)

3.3.1.4.11.1 Antenna location. Sled antenna(s) locations must be chosen and installed with serious consideration given to radiation patterns in relation to track or capsule/sled orientation with ground station facilities. Sled antennas shall not be locate where they would be subject to blast/heat effects of either sled propulsion or escape-system-separation propulsion (if used). Antennas shall not be mounted in a position which interferes with the escape envelope. If the antennas are sharp edged or pointed, they shall be provided with protective caps. The caps shall be tagged and affixed with red streamer(s) as provided in para 3.4.1.1.

3.3.1.4.11.2 Consideration of R.F. propagation. In selecting and locating antennae the contractor shall give consideration to ensuring transmission of all required data throughout all phases of escape, including (if applicable) escape through canopy and/or radiation shield, in a manner ensuring pick-up by ground station or sled-borne recording systems.

3.3.1.4.11.3 Parasitic antennae and reflectors. Consideration of the use of parasitic antennas and/or reflectors should be made where the dummy telemetry transmission link is impared by the geometry of the cockpit area.

3.3.1.4.12 Escape system velocity measurement subsystem. The contractor shall identify the technique to be used (magnet, breakwire, rotating shaft of potentiometer, and pull-wire, etc.) and shall integrate the subsystem into the overall telemetry system (i.e.,either the test vehicle telemetry or the dummy telemetry,) All cabling, power sources, sensor(s) installation, and signal input/output leads shall be integrated into the escape system-test vehicle interface.

3.3.1.5 Escape system data acquisition subsystem interface. Specific details shall be considered in general without calling out unnecessary numbers for specific pieces of hardware, since several different manufacturers provide reliable hardware.

(a) The general requirement is for a dummy/cockpit quick disconnect. Connection and disconnection shall be positive ensuring connection until escape system operation and ensuring clean disconnection during escape system operation. Slide-pins shall not be used since they are subject to disconnection due to vibration.

The cable(s) from the test vehicle pullaway to the test vehicle shall be securely fastened to the test vehicle to prevent connector damage or tire/connector separation. Connector type shall be matched properly to the connector on the dummy. The cable from the dummy telemetry package shall be securely fastened to the appropriate spot on the dummy.

3.3.1.5.1 Umbilical cord. The fixture on the sled will secure the connector normally used (Hollaman and NWC use different connectors, and each could accommodate several different connectors depending on the complexity of the test.) The contractor shall coordinate the selection of the umbilical cord connector to be incorporated in the test vehicle. Should the contractor specify use. of a special connector on the sled, the contractor shall furnish the mating connector for the actual umbilical cord. Agreement with the appropriate test-track activity concerning the connector type shall be made before actual wiring of the test vehicle begins.

3.3.1.6 Ground support equipment. Any specialized pieces of equipment necessary in actual test vehicle and/or data acquisition system operation will be provided. This would normally consist of a "control box(es)" which allows remote control of onboard calibration (voltage substitution or the preferred R-CAL method using a switched-in shunt resistor across one leg of a full strain-gage bridge), internal-power/external power transfer, and onboard battery charging.

3.3.1.6.1 Work storages and boarding equipment. The test vehicle shall be equipped with removable boarding equipment and work stages to facilitate equipment service in the assembly area. and at the track site (which have different relative ground-plane elevations). The equipment shall be so designed to provide non-slip walking surfaces. Hand/guide rails shall be provided on all work stages. Work stages shall be painted with alternate black and yellow stripes and shall contain marking citing maximum allowable load. All boarding equipment and work stages shall be provided with grounding devices conforming to (specification TBD) to provide for current return paths and to provide equal potential between the work stages and boarding equipment and the test vehicle and its equipments.

3.3.1.6.2 Test vehicle handling/transportation equipment.

3.3.1.6.2.1 Test vehicle mobility equipment. The test vehicle shall be desired for detachable, swivel type casters to facilitate mobility within the test assembly area; said casters being furnished by the Government testing activity.

3.3.1.6.2.2 Lifting/suspension equipment. The test vehicle shall be provided with all allied lifting accessories. The accessories shall be detachable, painted yellow, and terminal suspension shall be at a single point. Gross expected weight will be clearly marked on the test vehicle lifting point and each attachment point on the equipment will be marked in accordance with the requirements of the Government testing activity. A design margin of safety of 5.0 will be implemented in design of all suspension-related structures, Suitable fixturing shall be designed and provided, as required, for proof testing lifting slings.

3.3.1.6.4 Electrical/electronic sopport equipment. Any needs for calibration support (pressure, temperature, force, acceleration--centrifuge or shake table--etc,) will be identified so the appropriate test track can adequately plan its workload/schedule. Any requests for contractor usage of test equipment (voltmeters, oscilloscopes, power supplies, etc.) should be identified and specified under this heading. Failure to list any items will mean that the test-track operating personnel will have complete control and responsibility for calibration, trouble-shooting, and repair of all data acquisition systems and subsystems.

3.4 Ground safety provisions.

3.4.1 Safety pins. emovable safety pins shall be provided for those test vehicle elements critical to the safety of personnel and capable of being mechanically safetied. The safety pins shall be single-acting type, quick release pins designed in accordance with MIL-P-23460. AH test vehicle and associated equipmerit safety pins shall be visible and readily accessible when installed. The safetied device(s) shall be so designed such that the safety pins will not lock into place unless the device(s) in which the pins are inserted are safeties. Safety pins shall be designed to maintain a constant diameter which is different from those installed in the escape system and associated aircraft interface components,

3.4.1.1 Steamers. Each safety pin shall have a red fabric/plastic streamer designed in accordance with NAS 1091. Each streamer shall be marked in large white block letters: “REMOVE BEFORE TEST”, followed by its location and a sequential number to provide accountability (thus ensuring all pins have been removed prior to test.

3.4.2 Shut-down subsystems. The test vehicle shall be provided with an automatic “shut-down” subsystem which is actuated by sequencer or by a predetermined track position (i. e. position trip of self-contained timers). The subsystem will provide for manual operation from the exterior of the test vehicle in event of an automatic subsystem failure, The shut-down subsystem will perform but not be limited to the following functions:

(1) turn off all telemetry (radio) transmissions in both dummy and test i tern and vehicle;

(2) turn off all internal test vehicle electrical power;

(3) release line pressure to all gas actuated devices;

(4) release test vehicle cabin pressure, if applicable.

3.4.3 Cartridges and cartridge actuated devices. All cartridges and cartridge actuated devices in the test vehicle, excluding those contained in

the escape system, shall require a Type I release in accordance with MIL-D-21625 and MIL-D-23615, and approval of the government testing activity for compliance with appropriate safety regulations.

3.5 Test vehicle design. In developing the test vehicle design, the contractor shall prepare and submit to the Government testing activity for approval, sufficient analyses, schematic drawings, layout drawings, line drawings, and manufacturing drawings, including but not limited to the below-listed types, to permit independent and objective evaluation of the test vehicle design.

3.5.1 Aerodynamic analyses. The contractor shall develop a synthesis including drag, lift, surface pressure, and blast data for the test vehicle both before and after the escape system has been ejected. In performing the analyses, the contractor should not synthesize the drag data for the test vehicle in the peculiar aerodynamic environment of the track, but as a flight vehicle.

3.5.2 Vibration and mechanics analyses. The contractor shall determine test vehicle, component, and structural natural frequencies, "lambda" factors, and dynamic loading factors for use in conducting vehicle ballistics analysis, stress analysis, operational analysis, selection of materials and components, and other design aspects. The reactions shall be determined for, but not limited to, the following conditions:

(a) propulsion subsystem ignition thrust onset;

(b) propulsion subsystem burnout (maximum thrust and minimum test vehicle weight);

(c) coast phase (no thrust and maximum velocity and drag);

(d) canopy removed by means provided therefor (ballistic charges);

(e) dummy and escape system ejection;

(f) test vehicle braking;

3.5.3 Stress analyses. The contractor shall conduct test vehicle stress analyses using appropriate dynamic loading factors and safety factors. The contractor shall select, and if less than 2.0, shall provide the rationale justifying the selected, dynamic loading factors.The analyses shall include, but not be limited to the following:

(a) material properties (geometric and physical);

(b) margins of safety (at least 1.5 based on yield strength);

(c) structural adequacy based upon yield strengths;

(d) evaluation of joint adequacies (bolted, riveted, bonded, welded, etc.);

(e) fatigue analysis of critical areas;

3.5.4 Weight-and-balance analyses. The contractor shall conduct weight-and-balance analyses for the test vehicle under all test article loading conditions and shall maintain a detailed, continuing, weight-and-balance report,

3.5.5 Test-vehicle borne data acquisition subsystem. The contractor shall prepare and furnish to the government testing activity the following information, concerning the test-vehicle borne data acquisition subsystem and its elements, in sufficient detail to aid in design evaluation, to aid in evaluating interfaces with government furnished equipments and/or facilities, and to assist preparations for supporting the test vehicle:

(a) major components parts list.

(b) performance description:

(1) Transducers:

(a) pressure (type and range)

(b) accelerometers (type and range)

(c) gyros (type and range)

(d) event indicating (type and range)

(2) Transmitters:

(3) Subcarrier oscillators or commutators.

(a) channels per package/commutator channel capacity

(b) high-level/low-level input

(4) Power control scheme:

(5) Transducer-multiplexer interface:

(6) System calibration methods and equipment:

(7) External powersupply requirements:

3.6 Reliability, maintainability, Safety.

3.6.1 Reliability. Throughout the design and construction of the test vehicle and its related instrumentation, the reliability of materials, structures, and electronic systems to perform their intended function, when subjected to the required test environment, will be monitored and analyzed by the Government testing activity.

3.6.2 Maintainability. The maintainability effort will develop the design criteria necessary to maintain the total test vehicle and its related subsystem in optimum operating condition with minimal turnaround time between tests. The criteria will be implemented by previously developed design guidelines, techniques, and procedures. The following are some of the maintainability design guidelines which shall be considered for incorporation into the design:

(a) Reduce the complexity of maintenance by:

(1) Providing adequate accessibility, working space, and work clearance.

(2) Providing for interchangeability y of like components, materials and parts within the system/equipment,

(3) Utilizing standard parts and items,

(4) Limiting the number and variety of tools, accessories and support equipment.

(5) Insuring compatibility among system equipment and facilities.

Reduce the need for (and frequency of) design-dictated maintenance actions by using:

(1) Fail-safe features.

(2) Components which require little or no preventive maintenance.

(3) Adequate corrosion prevention/control features.

(c) Reduce the potential for maintenance error by designing to eliminate:

(1) The possibility of incorrect connection/assembly/ installation.

(2) Dirty, awkward, and tedious job elements.

(3) Ambiguity in maintenance labeling, coding and technical data,

(d) AH maintenance actions, procedures, and check-lists necessary to maintain the test vehicle in optimum operating condition and to prepare it for each required test will be documented and submitted to the Government testing activity for review and approval.

3.6.3 Design safety. The contractor shall conform to the general intent and requirements of MIL-STD-882 when designing the test vehicle, In identifying potential problems/hazards, the contractor shall develop information concerning the probability of the problem/hazard occurring.

3.6.3.1 Safety of personnel

3.6.3.1.1 Mechanical. The design of the test vehicle and its equipment shall be such as to provide maximum. convenience and safety to personnel in installing, operating, and maintaining the equipment. Suitable protection shall be provided to prevent contact by personnel with moving mechanical parts when the equipment is complete and in the operating position. Sharp projections on cabinets, doors, and similar parts shall be avoided.

3.6.3.1.2 Electrical. Satisfactory provision shall be made to prevent personnel from accidentally coming in contact with voltages in excess of 40 volts, including potentials on charged capacitors. When cases and seals are removed for maintenance and repairs by trained personnel, protection shall be provided from voltages in excess of 500 volts,

3.6.3.1.2.1 Ground potential. The design and construction of the test vehicle and its equipment shall ensure that all external parts exclusive of antenna and transmission line terminals and antenna shall be at ground potential at all times. Antenna and transmission line terminals shall be at ground potential except in re-gard to energy to be radiated.

3.6.3.1.2.2 Interlocks. Compartments shall be provided with doors, covers, or plates where access into the compartment is required for adjustment purposes in the normal operation of the equipment. These doors, covers, or plates shall be provided with interlocks which upon being opened will remove all potentials in excess of the maximum "no fire" voltage for the propulsion subsystem or escape system/ aircraft' components, whichever is less, with respect to ground.

3.6.3.1.3 Government testing activity safety regulations. The test vehicle design and preparation/usage procedures shall comply with the Naval Weapons Center, Systems Development Department Safety Regulations or those applicable for the facility at which the tests will be conducted.

3.6.3.1.4 Procedures safety analyses. Prior to Government testing activity acceptance of the test vehicle, the contractor shall demonstrate all procedures to permit evaluation of crew safety. Any procedures deemed unsafe by, and reported as such to the contractor by, the Government procuring activity shall be corrected by revising the procedures, modifying the test vehicle design, or both and then re-demonstrated.

3.7 Manuals. The contractor shall develop and furnish to the Government testing activity, manuals and checklists detailing for the entire test vehicle and its subsystems including GFE (government furnished equipment):

operating procedures manuals

safety procedures manuals

preparation and operation checklists.

The manual and checklists shall be verified during the test vehicle pre-acceptance review (3.9.1.3) in general accordance with the procedures established by MIL-M-81203 and shall be corrected and delivered with the test vehicle, The test vehicle shall be considered to be incomplete and unusable until corrected manuals and checklists acceptable to the Government testing activity have been delivered.

3.7.1 Operating procedures manuals. The operating procedures manuals shall detail the procedures for:

maintaining the test vehicle

preparing the test vehicle

operating the test vehicle

post-test inspection and securing the test vehicle, including marginality of success investigation of ski-borne escape system elements

test site transportation of the test vehicle

cross country transportation of the test vehicle

longterm storage of the test vehicle.

The procedures shall cover the entire test vehicle, including all subsystems. In addition, the contractor shall provide copies of the escape system operation and safety manuals.

3.7.1.1 Instrumentation procedures manuals. As a part of the operating procedures manuals, procedures shall be prepared covering:

pre-test calibration

post-test calibration

performance specifications

maintenance and repair

of the test vehicle instrumentation. The procedures shall identify completely all GFE (government furnished equipments) and consumable equipments,

3.7.2 Safety procedures manuals. The safety procedures manuals shall detail thoroughly the safety procedures necessary for the safe:

preparation of the test vehicle

operation of the test vehicle

conduct of post-test inspection and securing of the test vehicle, including procedures for suspected or known hang-fire/mis-fire conditions.

3.7.3 Operating and safety checklists. The operating and safety checklists shall detail format in proper sequence the detail steps to be followed in preparing the test vehicle, operating the test vehicle, and conducting all post-test functions.

3.8 Test vehicle data requirements. The following data will be furnished to the Government testing activity (one reproducible and one copy of each):

(a) Operations procedure manual of the test vehicles and subsystems. (Refer to 3.7.1)

(b) Drawing set sufficiently detailed to effect on-site repairs or replacement. (Refer to 3.5)

(c) Schematic drawings of all test vehicle subsystems (i. e.) electrical/electronic, hydraulic, pneumatic, and/or pyrotechnic. (Refer to 3.5)

(d) Layout and line drawings. (Refer to 3.5.4)

(e) Aerodynamic analysis of predictable forces. (Refer to 3.5.1)

(f) Stress analysis. (Refer to 3.5.3)

(g) Hazard analysis report. (Refer to 3.6.3)

(h) Vibration and mechanics analysis. (Refer to 3.5.2)

(i) Empty and loaded weights and c. g. (Refer to 3.5.4)

(j) Safety procedures manual conforming to the appropriate Government test site requirements. (Refer to 3.5.6)

(k) Test vehicle preparation and operation oheck list. (Refer to 3.7.3)

(l) Reports or documentation of structural test and inspection reports. (Refer to 4.2.2)

(m) System (equipment) specifications. (Refer to 3.1.6)

(n) Test vehicle-borne data acquisition subsystem major components parts list. (Refer 3.5.5)

(o) Test vehicle-borne data acquisition subsystem performance description. (Refer to 3.5.5)

(p) Quality assurance plans. (Refer to 4. 2)

(q) Cartridge and cartridge actuated device data required for Type I release. (Refer to 3.4. 3)

(r) Escape system operation and safety manuals.

3.9 Quality assurance requirements. The test vehicle shall be inspected in accordance with the requirements of 4.1 and 4.2.

3.9.1 Design reviews. During the design and fabdication of the test vehicle, in' process design/fabrication inspections as described in the following paragraphs, will be conducted by the Government testing activity to ensure that the test vehicle configuration accurately simulates the aircraft, escape system installation and their interfaces, provides capabilities necessary for performing tests required by MIL-E-9426, and complies with the requirements of this specification. The reviews shall be conducted in the sequence listed. In the event that corrections are deemed necessary, the Government testing activity shall present to the contractor an itemized list of the deficiencies. In the event deficiencies are identified, design approval/acceptance of the test vehicle will not be granted until corrections have been completed satisfactorily.

3.9.1.1 Preliminary design review. The contractor shall present to the Government testing activity for review the analyses performed in accordance with 3.5, herein, in support of the test vehicle preliminary design, and the preliminary test vehicle schematics, layout, line, and structural drawings. Additional data presented shall include current layout, line and structural drawings of the aircraft cockpit/crew station section of the fuselage. Final analyses shall be completed and resubmitted for approval by the Government testing activity no later than thirty (30) days following the transmission of the Government testing activity comments to the contractor. In addition, the contractor shall furnish design information concerning GSE/SSE/spares necessary to support the test vehicle throughout its program usage, Preliminary drafts of all manuals and support drawings will be presented.

3.9.1.2 Pre-fabrication design review. The contractor shall present to the Government testing activity for review final, production-version test vehicle layout, line, structural, and fabrication drawings accompanied by current layout, line, structural, and fabrication drawings for the aircraft cockpit/crew station section of the fuselage.

3.9.1.3 Pre-acceptance review. Prior to acceptance/shipment of the test vehicle, it shall be inspected by the Government testing activity to ensure that all design corrections have been incorporated and that the test vehicle is suitable' for its itended program use(s). In addition, the contractor shall demonstrate the suitability of all GSE/SSE, manuals and support drawings for supporting the test vehicle throughout the program.

3.10 GSE/SSE/Spares. The contractor shall furnish sufficient GSE/SSE/spares to support the test vehicle throughout the scheduled track test program. These shall include, but are not limited to, the following, as applicable under the terms and conditions of the governing contract:

(a) Work stages/platforms

(b) Boarding ladders

(c) Lifting sling/whiffletree

(d) Casters/wheels

(e) Test vehicle safety pins and streamers

(f) Antennae protective cap(s) with streamer(s)

(g) Test vehicle safety pin and antennae protective cap accountability board

(h) Data acquisition subsystem calibration equipment

(i) Hydraulic/pneumatic support equipment

(j) Electrical/electronic support equipment

(k) Cartridges

(l) Cartridge actuated devices.

3.11 Identification of product. Identification markings for the Aircrew Escape System test vehicle shall be in accordance with MIL-STD-130. Name plates shall conform to the MIL-P-514 requirements for Composition A, Class, 2 or Composition C identification plates and shall contain the following information:

Test vehicle name (aircraft model)

Escape System Type

Specification MIL-

Mfg Part No.

Mfg Serial No.

Contract or Order No.

Mfg's Name

Date of Mfg.

3.12 Workmanship. Workmanship shall be of the highest quality to assure optimum performance, reliability, service life, and safety.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. The supplier is responsible for the performance of all inspection requirements as herein specified, The supplier may use his own (or any other) facilities suitable for the performance of the inspection requirements herein specified, unless disapproved by the Government. The Government reserves the right to perform any of the inspection set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4,2 Quality assurance procedures, tests and inspections. The contractor shall prepare and submit via the Naval Plant Representative or the local Defense Contract Administrative Services Office to the Government testing activity for concurrence, quality assurance plans specifying the procedures, tests and inspections suitable for ensuring the acceptability of the test vehicle. The procedures shall include non-destructive testing of critical parts and the onboard data acquisition subsystem and structural strength testing of sample critical structure. In addition, the procedures shall include means for evaluating the effectiveness of the electrical bonding in providing current return paths and in providing equal potential between all equipments, the test vehicle basic structure, and work stages and boarding equipment.

4.2.1 Inspection procedures information sources. Information and guidance concerning inspection methods, practices and programs suitable for quality assurance inspection of escape system test vehicles and components/subsystems are contained in, but not limited to, MIL-I-6870, MIL-C-6021, MIL-A-9067, AD 42, WR 43, FED-STD-406, MIL-STD-401, MIL-STD-849, MIL-STD-1166, H 50, H 51, MIL-HDBK-52, H 53, H 55, and H 109. The contractor should utilize such of these documents and others which might be applicable in preparing the inspection procedures and program.

4.2.2 Quality. assurance inspection, structural test and electrical bonding evaluation report. Following completion of the inspections, tests and evaluations required by the quality assurance plans the contractor shall prepare and submit via the Naval Plant Representative or the local Defense Contract Administrative Services Office to the Government testing activity for approval, a report documenting the procedures used, the equipment used, the results obtained and any modifications/changes made, and identifying contractor personnel and Government personnel performing/witnessing the procedures.

4.2.3 Lifting sling proof testing. All lifting slings shall be proof tested to 200 percent of working load, inspected for evidence of damage, and, if undamaged, tagged as to load, date of test, and inspector’s name.

4.3 Test vehicle acceptance criteria. The test vehicle design documentation and analyses required by 3.5 herein, and the documentation required by 3.7, herein, shall have been submitted to; approved by, the government test activity, and the design reviews and quality assurance inspections, tests and evaluation required by 3.6.3.1.4, 3.8.1.1, 3,8.1.2, 3.8.1.3, and 4.2, herein, shall have been completed and the results approved by the Government testing activity before the Government testing activity will grant approval of the test vehicle for test use and approve shipment of the test vehicle and associated support equipments,

5. PREPARATION FOR DELIVERY

5.1 The test vehicle shall be packed/prepared for delivery in a manner compatible with the selected mode of transportation and ensuring its safe delivery to the Government testing activity.

6. NOTES

6.1 Intended use. Test vehicles herein specified are utilized in conducting escape system service release tests to demonstrate the acceptability of the system for service use and to define the system performance.

6.2 Ordering data. Procurement documents should specify the following:

(a) Title, number and date of this specification

(b) Date required (see 6.3)

(c} Name of Test Vehicle (see 3.10)

(d) Preparation for delivery (see 5.1)

6.3 Data. For the information of Contractors and Contracting Officers, data herein specified, except for the data specified in 3.7 which is necessary for the safe, effective use of the test vehicle, applicable documents listed in Section 2.0 of this specification, or in referenced lower-tier documents need not be prepared for the Government and shall not be furnished to the Government. The data to be furnished is listed on DD Form 1423 (Contractor Data Requirements Lists), which is attached to and made a part of the contract.

6.4 Government testing activity responsibilities. For the information of Contractors and Contracting Officers, the Government testing activity shall be designated by the Government procuring activity either within the contract or by separate letter and shall perform the following primary functions as the representative of the Government procuring activity:

monitor/supervise test vehicle design, development and fabrication, and

inspect and accept the test vehicle.

Preparing Activity:
Navy - AS
(Project No. 1680-N372)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

OMB Approval
No. 22-R255

INSTRUCTIONS: The purpose of this form is to solicit beneficial comments which will help achieve procurement of suitable products at reasonable cost and minimum delay, or will otherwise enhance use of the document. DoD contractors, government activities, or manufacturers/vendors who are prospective suppliers of the product are invited to submit comments to the government. Fold on lines on reverse side, staple in corner, and send to preparing activity. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements. Attach any pertinent data which may be of use in improving this document. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity.

DOCUMENT IDENTIFIER AND TITLE

MIL-A-81973(AS) Aircrew Automated Escape Systems Testing, Rocket and/or Jet Engine Propelled Gen Spec for

NAME OF ORGANIZATION AND ADDRESS

CONTRACT NUMBER

MATERIAL PROCURED UNDER A

☐ DIRECT GOVERNMENT CONTRACT ☐ SUBCONTRACT

1. HAS ANY PART OF THE DOCUMENT CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A. GIVE PARAGRAPH NUMBER AND WORDING.

B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES

2. COMMENTS ON ANY DOCUMENT REQUIREMENT CONSIDERED TOO RIGID

3. IS THE DOCUMENT RESTRICTIVE?

☐ YES ☐ NO *(If "Yes", in what way?)*

4. REMARKS

SUBMITTED BY *(Printed or typed name and address - Optional)*

TELEPHONE NO.

DATE

DD FORM 1 JAN 72 1426 REPLACES EDITION OF 1 JAN 66 WHICH MAY BE USED

S/N 0102-014-1802