DATA ITEM DESCRIPTION

Title: Explosive Ordnance Disposal Data

Number: DI-SAFT-80931B
Approval Date: 15 May 2003
AMSC Number: N7498
Limitation:
DITC Applicable:
GIDEP Applicable:

Office of Primary Responsibility: N/EODTD-601
Applicable Forms: N/A
Use/Relationship: This source data shall contain essential information that is used by the Naval Explosive Ordnance Disposal Technology Division (NAVEODTECHDIV) to develop, test, validate and publish joint service non-nuclear Explosive Ordnance Disposal (EOD) 60-series technical manuals. EOD technicians shall use this data in support of testing, development and operational evaluation of new or modified weapon systems, ordnance items, unmanned aerial vehicles (UAV), and aircraft systems.

a. This Data Item Description (DID) contains the content and format preparation instructions for EOD source data resulting from the work task described in the contract statement of work/ statement of objective.

b. This DID shall be used by all Department of Defense (DOD) munition acquisition programs when explosive, pyrotechnic items, or other hazardous materials are inherent in a system, subsystem, aircraft or munitions being developed or modified, or procured as Non-Developmental Items (NDI).

Requirements:

1. General. Data requirements are divided into two sections. Paragraph 2 contains data requirements for explosive items. Paragraph 3 contains data requirements for aircraft or UAV subsystems.

2. Required explosive ordnance data.

2.1 Identification. Identification shall include the following:

a. The official designation/nomenclature of the ordnance, any common names and any known foreign designations.

b. A brief general description of the normal application of the ordnance item plus optional applications.

c. All external markings, paintings and colors, which appear on the end item. Typical marking include ordnance designation, loading information, settings, index marks, time scales, manufacturers marks, instructional notes, lot numbers and color code designators.

d. All fittings and features, which will differentiate the item from a similar item within a class or family of ordnance items. Features or fittings should be visible and obvious without touching or disassembling the item.

e. Format. Furnish line art material, color graphics, and computer graphic animations in electronic and paper format. The paper format content shall mirror the electronic format. Specifications for the electronic format for data exchange is as follows:

(1) Size and resolution. Images shall be kept to fit onto a single 8-1/2 X 11 inch sheet of paper when printed. Images shall be no larger than 8 X 10-1/2 inches and no smaller than 3 X 4 inches. Raster images should be provided at a minimum of 300 Dots Per Inch (DPI) for black-and-white line art and 600 DPI for color images.

(2) Text. Text should be legible and clear. SanSerif fonts are preferred. Microsoft Word word-processing computer software shall be used as the primary means of information delivery for reports or proposed EOD technical manual information. Images (e.g., Figure 1, 2, ect.) can be embedded in the Microsoft Word file but must be provided separately on disk in their original file format as described in Table 1 and paragraph 2.1.e(3). At a minimum, the graphics illustrated in the Microsoft Word file shall be provided separately and a file naming convention shall be adhered to in order to easily identify MS Word files and their supporting graphic images. HTML and SGML formats are acceptable as a secondary data format, but not as the primary means of data delivery (e.g., main report in Microsoft Word and a referenced report can be HTML or SGML).

(3) Computer software file formats. Provide the original file in its original format. Table 1 below illustrates acceptable computer file formats based upon the original computer software application by title, file format & extension characters, and version number of software.

Application	File format (File extension)	Version
Adobe Illustrator	Adobe Illustrator (*.ai)	10.0 or lower
Adobe Photoshop	Adobe Photoshop (*.psd)	7.0 or lower
Autocad	Data Exchange Format (*.dxf)	n/a
Adobe Acrobat	Adobe Acrobat (*.pdf)	5.0 or lower
3D Studio Max	3D Studio Max (*.3DS)	5.0 or lower
Corel Mondello	Corel Mondello (*.dwg)	8.0 or lower
Microsoft Word	MS Word (*.doc)	9.0 or lower

Table 1. Computer Graphic Formats

The NAVEODTECHDIV accepts other computer file formats for still imagery and computer animation as follows:

a. Still picture images. The preferred order of precedence is: TIFF (with LZW compression for color and CCITT group 4 for black & white images), JPEG, GIF, and BMP, respectively. JPEG images should be saved with the highest quality and the lowest compression techniques possible.

b. Full motion video and sound: The preferred order of precedence is: AVI, MPEG-2, and MPEG-1, respectively. Maintain the highest possible quality (or resolution) setting in original computer software.

(4) Media. Electronic file shall be provided on standard CD-ROM disk(s); CD-R or CD-RW disks formatted for data or video (CD-R is more compatible with older CD-ROM readers and a preferred medium); or Digital Video Disks (DVD) formatted for write once or re-writeable. Other acceptable mediums as secondary mediums are: ZIP (100 or 250MB), or 3-1/2 inch floppy disks (1.4MB).

(5) General digital photograph and graphic illustration information and views.

a. Photograph against a contrasting background. Successful results have been achieved with gray, medium blue, and white (e.g., if the subject is white or silver, use medium blue). If background material is not available, set item against whatever contrasting background is available. Important- attention to good lighting of the subject and shadow reduction is critical.

b. Views. There is no minimum or maximum number of views per item. Photograph items singularly, and if

possible, photograph fuzes separately from the warhead. Photograph items in a three-quarter, 3-dimensional view for general identification. Photograph on side, top, end, front, and bottom views. Include identifying features, markings, or nomenclature of item or component.

f. Other ordnance used with this item. Fuze data shall state what bombs, dispensers, projectiles, landmines, grenades or rocket warheads they are used with; bomb data shall state what fuzes, rockets, fin assemblies or guidance units may be used; underwater ordnance items such as torpedoes, naval mines, depth charges, sound signals and markers shall include data on what exploders, extenders, clock starters, hydrostatic arming devices or target detection units can be used; dispensers, clusters, launchers and certain projectiles shall include all submunitions which could be loaded. If new fuzing is used in conjunction with a munition item, completed information on the fuze is required in accordance with requirements herein.

2.2. Description. Descriptive data shall include the following:

a. An overall narrative physical description of the item to include the measurements that is available for the subject item. If applicable to the subject item, provide the following measurement information:

(1) Cartridge Case Length
(2) Diameter, Maximum
(3) Diameter, Minimum
(4) Empty Weight
(5) Filler Volume
(6) Filler Weight
(7) Fired Weight
(8) Fuze Exposed Length, Maximum
(9) Fuze Exposed Length, Minimum
(10) Height, Maximum
(11) Height, Minimum
(12) Net Explosive Weight (NEW)
(13) Oxidizer Volume
(14) Oxidizer Weight
(15) Propellant Volume
(16) Propellant Weight
(17) Thickness, Maximum
(18) Thickness, Minimum
(19) Total Length,Max
(20) Total Length,Mini
(21) Total Weight
(22) Width, Maximum
(23) Width, Minimum

b. Describe the appearance and condition of the item in the unarmed, pre-armed and armed conditions.

c. Composition and shell material. Include material specifications and structural dimensions such as type of material (steel, aluminum, bakelite, ect), thickness of material and thread specifications.

d. Description of all major sections, subassemblies, classified materials, and hazardous components or material. Include their

purpose, function, and method of operation. This includes illustrations (Level II engineering drawings of the components with external views and internal cutaways) with appropriate callouts for major sections, subassemblies, hazardous components, power sources; plus arming, safing and firing subcomponents.

e. A description of all toxic or hazardous materials, liquids, explosives, hydraulics, or pneumatic pressure sources and routing. Describe electric voltage sources and circuits, thermal or chemical energy sources, mechanical hazards, fuels and oxidizers. Describe any other item that could present a physical threat to the safety of personnel. Include any known Environmental Protection Agency (EPA) approved disposal information relating to the above items.

f. A description of all explosive main-charges, subassemblies and firing trains. Include type, weight, unique sensitivities and composition, including specific ingredients and their percentages.

g. Electrical power sources for fuzes that contain stored, electrical energy for fuze firing (e.g., Electronic Safe & Arm (ESAF) devices, thermal or wet cell batteries, firing capacitors, ect.) and operation information for arming and firing circuits.

Include time from munition power activation until voltage achieves a "no-fire" level of the munition's most sensitive electrical firing component to initiate an explosive firing train or event. No-fire level is a power level in which the munition cannot fire. The test shall use the same electrical load (circuitry drain) and normal munition or system power, as would a fielded munition. Test data shall also reflect the "all-fire" level of the munition. All-fire is the necessary power in order to function ordnance as designed. Include analytical reports produced from test instrumentation that monitored the voltage throughout the life span of a battery, or firing capacitor, from the time of system activation to the point the battery or firing capacitor decays to a no-fire level. EOD considers the time it takes for a munition to essentially safe itself by waiting a prescribed amount of time based upon tested bleed-down times in worst-case conditions that the munition fuzing system may be found in a dud-fired scenario. Documentation of these values shall be included in a Report of Test that describes the: overall test setup procedures, equipment used to monitor and measure electrical power, test objectives, and test results.

NOTE: Battery bleed-down test and all-fire/no-fire test reports. Tests should be conducted after critical design review and with production configuration items in the system acquisition life cycle. Recommend extending a battery performance test beyond the required munition performance standards to the no-fire level as described above.

h. For influence-actuated ordnance, influence sensitivity or activation levels are required for functioning descriptions of the ordnance.

2.3. Operational sequence. Operational sequence data shall include the step-by-step sequence of events from the initial pre-arming action through arming and functioning. The functional sequence description shall be supported by graphical illustrations with callouts depicting critical components described during the sequence of operation or functional description(s). Electrical block or circuit diagrams shall include all electrically initiated ordnance items and shall include all power sources, firing capacitor switches and bleeder resistors. Computer graphics depicting cutaway illustrations, as appropriate, shall show internal components.

2.4 Safety information. This information shall include:

a. Known or suspected information on sensitivity of weapons to electrical, magnetic, electromagnetic, chemical, explosive, heat, radiological, mechanical or other energy that could activate or function item if armed, unarmed, damaged or undamaged.

b. Blast sensitivity, fragmentation range and size of fragments of the main charge or warhead.

c. Test report or other documents detailing design safety features and operational and safety tests.

d. Safety protection requirements for hazardous and toxic solids, liquids, or gaseous materials likely to be encountered.

e. Visual documentation, e.g., digital or analog videotape of operational tests.

2.5. Disassembly procedures. If disassembly is possible, describe step-by-step the normal disassembly of the item required to separate the explosive and hazardous components from the item body. This would include installation of safing

devices, protective devices, cable disconnections and tools required. Include computer graphics illustrations or drawings as appropriate to help illustrate difficult procedures. Include separate procedures for varying item configuration if possible.

2.6. Recommended EOD procedures. This section shall provide recommended render safe procedures for armed and unarmed conditions of the item and recommended disposal procedures. Safety warnings, cautions and notes shall be incorporated into the procedures. All render safe procedures shall be classified in accordance with OPNAVINST 5513.3b, Enclosure 24. Each page containing render safe procedures shall be stamped: "RECOMMENDED RENDER SAFE PROCEDURES."

a. Recommended render safe procedures.

(1) Unarmed condition.

(a) Appearance. Describe the item so that it can be positively identified as unarmed by the physical condition that can be expected to be encountered.

(b) Procedure. Describe, sequentially, the steps to totally render safe the item. This includes installation of safing or protective devices (or both), disassembly, disconnections, tools required, recovery actions, transportation, handling, ect. Include computer graphics or drawings as appropriate. Also include separate procedures for varying item configuration, if applicable, on each condition listed under appearance. Describe the intended objective of the procedures (or intent) and criteria to ascertain if the procedure was successful.

(2) Armed condition.

(a) Appearance. Describe the item so it can be identified as being armed or unknown, i.e., not positively identified as safe.

(b) Procedure. Same as 2.6a(1)(b) above. Procedures should be developed to be accomplished by remote means, if possible.

b. Disposal procedures. Establish explosive ordnance disposal procedures (normally detonation or burning) for hazardous materials using EPA-approved methods. Include procedures for the complete item as well as all individual hazardous components.

Include computer graphic illustrations or drawings as appropriate. Objectives of disposal procedures are to ensure all energetic materials or classified components are totally consumed by the procedure.

NOTE: Disposal tests focused at destroying a munition warhead in its fired condition often times do not need the entire munition arming & guidance sections. The NAVEODTECHDIV may recommend a particular munition program office only provide the warhead section - this may reduce munition program R&D expenses, when possible.

3. Required aircraft and UAV data.

3.1. Identification. Identification data shall include the following:

a. Type of aircraft and UAV (brief description).

b. All exterior painting and markings.

c. Aircraft and UAV dimensions including front, rear, side and top views (diagrams, photographs, computer graphic illustrations, ect.).

3.2 Aircraft and UAV general information. Include general information on major system including toxic or hazardous materials or liquids to include type, weight and location of those materials. Include information on pneumatic, hydraulic actuated systems, electrical auxiliary power units and hazard zones around ground operating aircraft. In addition, include the following with appropriate computer graphic illustrations contain callouts:

a. Cockpit entry, both normal and emergency.

b. Engine shutdown procedures.

c. Methods to isolate all aircraft electrical power sources, e.g., removal of aircraft batteries.

d. Landing gear system and safing procedures.

e. Any other safing procedures for mechanical hazards.

3.3. Egress systems. Include all explosive components, their location, explosive weight and type. Items shall be described in sufficient detail to provide positive identification. Include a

step-by-step sequential operation of the egress system to include the various initiation methods and functioning times. Include computer graphic illustrations that are compatible with functioning description. Include all callouts of all components covered in the sequence of operations. Include location, type, explosive weights, hazards and safety precautions for each component.

3.4. Survivability life support systems. Identify, describe and provide computer graphic illustrations with callouts of all components that have a potential hazard to personnel (such as pressurized oxygen bottles, flares, or markers).

3.5. Armament systems.

a. Describe weapons release systems to include racks, launchers, pylons and flare (or chaff) dispensers. Include functioning sequence, system location, location of explosive components or actuators, mechanical and electrical safing procedures and explosive component removal procedures. If any component is an already established military item without special modifications, reference to item and location illustrations on aircraft is sufficient, e.g., "MAU-12A ejection racks located at stations 2 and 6."

b. Describe internal gun systems to include access, mechanical and electrical safing procedures, operational sequence and emergency disassembly. Include computer graphic illustrations with callouts to support descriptions. Data on electronic target acquisition system, ect., is only required if necessary for safing or if it presents a hazard(s) to personnel. Include information on any component that presents a hazard(s) to personnel.

c. Include a list of non-nuclear munitions compatible with aircraft.

d. Include step-by-step non-nuclear munitions downloading procedures. Include removal of racks, dispensers, launchers and gun systems. Include computer graphic illustrations with callouts of components referenced in the description(s).

4. End of DI-SAFT-80931B.