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MILITARY SPECIFICATION

POWER SUPPLY: HIGH VOLTAGE, 24 VOLT DIRECT CURRENT

This specification is approved for use by US Army Tank-Automotive Materiel Readiness Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers one type of vacuum tube power supply for conversion of low voltage direct current (dc) electrical energy into high voltage (dc) electrical energy.

2. APPLICABLE DOCUMENTS

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

SPECIFICATIONS

FEDERAL

| QQ-A-591 | - Aluminum Alloy Die-castings. |
|---|--|
| QQ-S-571 | - Solder: Lead Alloy, Tin Lead Alloy, and |
| ne. | Tin Alloy; Flux Cored Ribbon and Wire, and Solid Form. |
| QQ-Z-325 | - Zinc Coating, Electrodeposited, Requirements for. |
| MILITARY | |
| MIL-E-1 | - Electron Tubes and Crystal Rectifiers. |
| MIL-M-14 | Molding Plastics and Molded Plastic Parts, Thermosetting. |
| MIL-W-76 | - Wire and Cable, Hook-up Electrical, Insulated. |
| MIL-V-95 | - Vibrators, Interrupter and Self-rectifying. |
| MIL-P-514 | - Plates: Identification, Instruction and Marking, Blank. |
| MIL-R-3065 | - Rubber, Fabricated Parts. |
| MIL-M-14 MIL-W-76 MIL-V-95 MIL-P-514 | Molding Plastics and Molded Plastic Parts, Thermosetting. Wire and Cable, Hook-up Electrical, Insulated. Vibrators, Interrupter and Self-rectifying. Plates: Identification, Instruction and Marki Blank. |

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: US Army Tank-Automotive Materiel Readiness Command, ATTN: DRSTA-GSS, Warren, MI 48090, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document, or by letter.

| MIL-R-3080 | - Resistors, Current-regulating (Ballast Tubes). |
|-------------|---|
| MIL-C-3702 | - Cable, Power, Electrical: Ignition, High-tension. |
| MIL-C-12889 | - Capacitors, By-pass, Radio Interference Reduction, Paper Dielectric, AC and DC (Hermetically Sealed in Metallic Cases), General Specification for. |
| MIL-F-13927 | - Fungus Resistance Test: Automotive Components. |
| MIL-C-13993 | - Connector, Plug, Electrical: Connector, Receptacle, Electrical (for Military Vehicles). |
| MIL-G-23827 | - Grease, Aircraft and Instrument, Gear and Actuator Screw. |
| MIL-C-81562 | Coating, Cadmium and Zinc (Mechanically Deposited). |

STANDARDS

FEDERAL

FED-STD-595

| FED-STD-H28/2 | - Screw Thread Standards for Federal Services. |
|---------------|--|
| MILITARY | |
| MIL-STD-15 | - Electrical Wiring Equipment Symbols, for Ships Part 2. |
| MIL-STD-16 | - Electrical and Electronic Reference Designations. |
| MIL-STD-105 | Sampling Procedures and Tables for Inspection by Attributes. |
| MIL-STD-130 | - Identification Marking of US Military Property. |
| MIL-STD-202 | - Test Methods for Electronic and Electrical Component Parts. |
| MIL-STD-454 | - Standard General Requirements for Electrical Equipment. |
| MIL-STD-461 | - Electromagnetic Interference Characteristics Requirements for Equipment. |
| | |

MIL-STD-462 - Electromagnetic Interference Characteristics, Measurement of.

- Colors.

MIL-STD-889 - Dissimilar Metals. MIL-STD-1184

- Electrical Components for Automotive Vehicles; Waterproofness Tests.

DRAWINGS

ARMY

7355743 - Power Pack Assembly.

7419685

- Unit Assembly, High Voltage Power Supply.

8694562 - Unit Assembly, High Voltage Power Supply.

(Copies of specifications, standards, drawings, and publications required by contractors in connection with specific procurement functions 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 specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI-Z35.1 - Accident Prevention Sign, Specification for.

(Application for copies should be addressed to the American National Standards Institute, 1430 Broadway, New York, NY 10018.)

3. REQUIREMENTS

- 3.1 First article. A first article sample power supply shall be subjected to examination and tests prior to the manufacture of units in production quantities. Samples submitted shall be fully representative of units proposed to be furnished under the contract. All examinations and tests shall be conducted by the contractor under Government surveillance (see 6.3).
- 3.2 <u>Materials</u>. The materials used shall be as specified herein, on applicable drawings, specifications and military standards (see 6.4).
- 3.2.1 Aluminum. Aluminum alloy castings shall be in accordance with composition A-13, 218, A-380 or QQ-A591.
- 3.2.2 <u>Steel</u>. All steel parts not to be painted or otherwise protected against corrosion, shall be zinc plated in accordance with QQ-Z-325, type II, or MIL-C-81562, type II.
- 3.2.3 Rubber. Rubber used in the fabrication of sealing rings and gaskets shall conform to grade SC 515A, B, F, of MIL-R-3065.
- 3.2.4 Solder. Solder employed in making electrical connections shall be a rosin core type conforming to QQ-S-571.
- 3.2.4.1 Soldering. Soldering shall meet the requirements of MIL-STD-454, requirement $\overline{\textbf{5}}$.

- 3.3 Design and construction. The power supply shall be designed and constructed to the form and dimensions shown on drawing 7355743, 7419685, or 8694562, as specified by the procuring activity (see 6.2)
- 3.3.1 Use of dissimilar metals. Except where necessary to complete an electrical circuit, contact between dissimilar metals which would foster galvanic action shall be avoided. Where such contact is not necessary to complete an electrical circuit, but is otherwise unavoidable, parts shall be insulated as specified in MIL-STD-889 for type II, class 3 components.
- 3.3.2 Standard parts. Military standard parts shall be incorporated wherever applicable. Commercial standard parts may be used, provided they are interchangeable with military standard parts without modification.
- 3.3.3 Threaded parts. Screw threads of the form, number per inch, and class specified on the applicable drawing or military standard shall be in accordance with FED-STD-H28/2.
- 3.3.4 Locking devices. Lock washers, self-locking nuts, safety wires, or other approved locking devices shall be incorporated where specified, or where required to prevent loosening of components.
- 3.3.5 Voltage. The power supply shall be designed to operate on an input voltage of 22 to 30 volts dc (Vdc).
- 3.3.6 Components and circuits. Unless otherwise specified (see 6.2), components and circuits shall conform to the following:

| | Component | Specification |
|---|-------------------------------|---------------|
| | Capacitors | MIL-C-12889 |
| | Connectors | MIL-C-13993 |
| * | Electron tubes | MIL-E-1 |
| • | Resistors, current regulating | MIL-R-3080 |
| | (ballast tubes) | |
| | Vibrator | MIL-V-95 |

- 3.3.7 Wire and cable. Hookup wire shall conform to MIL-W-76. High tension cable shall conform to MIL-C-3702, type I, class B (size and grade optional). Circuits shall be arranged and insulated as to inhibit arcing. All wire and cable shall be color coded in accordance with the applicable drawings (see 3.3).
- 3.3.8 Safety. The power supply shall meet applicable requirements of MIL-STD-454.
- 3.3.8.1 Safety switch. An interlock safety switch shall be provided that shall automatically open the primary supply circuit and remove all voltage

potential in excess of 70 volts when the power supply cover is removed. Associated capacitor circuits shall also be equipped with devices that automatically remove all potential in excess of 70 volts, Rms or 70 Vdc, unless they discharge to 30 volts within two seconds or less.

- 3.3.8.2 Ground potential. All external parts, surfaces, and shields shall be at ground potential at all times during normal operation.
- 3.3.8.3 Grounding. Ground connections to shields, hinges, and other mechanical parts shall not be made to complete electrical circuits. A point on the electrically conductive chassis or equipment frame shall serve as the common tie point for the static ground, power ground and, when applicable, airborne return leads. The path from the tie point to ground shall:
 - a. Be continuous and permanent.
 - b. Have ample carrying capacity to conduct safely any operating or fault currents that may be imposed upon it.
 - c. Have impedence sufficiently low to limit the potential above ground and to facilitate operation of the overcurrent device in the circuits. Inactive wires installed in long lines (conduit or cables) shall be grounded to allow for stray or static electricity discharge.
 - d. Have sufficient mechanical strength of the material to minimize possibility of ground disconnection.
- 3.3.8.4 Warning markings. All contacts, terminals, and like devices having potentials in excess of 500 volts Rms or 500 Vdc shall be clearly marked "Danger High Voltage (Maximum Voltage Applicable) Volts." The letters on the marking shall be gothic capitals, clearly legible, color white or aluminum with red background conforming to ANSI Z35.1. The voltage numbers may be black on white or aluminum background. The markings shall be as permanent as the normal life expectancy of the equipment on which they are affixed, and shall be placed as closely as possible to the point of danger. This shall be on a unit terminated basis and is not intended to apply to individual tie points within a unit.
- 3.3.9 Potting compound. The power transformer and high voltage components shall be potted in a polyester resin conforming to MIL-M-14.

3.4 Performance requirements.

3.4.1 Output voltage. Output voltage shall not exceed 16 kilovolts, and shall not be less than specified in table I at the input voltage and load resistance specified therein. Means shall be provided for making initial adjustments of output voltage for given conditions of input voltage and load.

TABLE I. Output voltage.

| Input voltage | Load | Output voltage, minimum |
|---------------|---------|-------------------------|
| Volts | Megohms | Kilovolts |
| 22 | 160 | 14.6 |
| 24 | 160 | 15.2 |
| 26 | 160 | 15.2 |
| 28 | 160 | 15.5 |
| 30 | 160 | 15.5 |
| . 22 | 80 | 13.5 |
| 24 | 80 | 13.8 |
| . 26 | 80 | 13.8 |
| 28 | 80 | 14.0 |
| 30 | 80 | 14.0 |

- 3.4.2 Output voltage variation. The peak alternating current (ac) component of output voltage shall not exceed five percent of average dc value of output voltage obtained by computation.
- 3.4.3 <u>Dielectric strength</u>. The power supply shall evidence no spark-over, rupture of insulation, or loss of dielectric strength under an input voltage of 32 volts and output resistive load of 160 megohms.
 - 3.4.4 Resistance to overload. The power supply shall withstand a secondary voltage of 20,000 volts without evidence of insulation breakdown or corona discharge.
 - 3.4.5 Temperature range. The power supply shall operate within an ambient temperature range of minus 65°F to plus 125°F inclusive (minus 54°C to plus 52°C).
- . 3.4.6 Waterproofness. The power supply shall meet the waterproofness requirements specified for type II, class 1 components of MIL-STD-1184.
- 3.4.7 Endurance. The power supply shall withstand 1000 hours of continuous full load operation without any failure except tubes.
 - 3.4.7.1 Tube life. Minimum tube life shall be 250 hours.
- 3.4.8 <u>Vibration resistance</u>. When tested as specified in 4.5.7, components of the power supply shall not be loosened or damaged, nor shall the power supply malfunction when so tested. The unit shall subsequently meet the requirements of 3.4.1.
- 3.4.9 <u>Corrosion resistance</u>. When tested as specified in 4.5.8, the power supply shall evidence no corrosion affecting operation and shall subsequently conform to 3.4.1.

- 3.4.10 Fungus resistance. When tested as specified in 4.5.9, the power supply shall evidence no fungus growth affecting operation and shall subsequently conform to 3.4.1. Legibility of the schematic required by 3.7.1 shall not be affected by the test.
- 3.4.11 <u>Electromagnetic interference suppression</u>. The power supply shall conform to electromagnetic compatability requirements of class III A of MIL-STD-461 for tactical equipment (see 6.5).
- 3.5 Painting. The exterior surfaces of the power supply shall be painted with a white gloss enamel. Color shall conform to color 17875 of FED-STD-595.
- 3.6 <u>Lubrication service</u>. All components requiring lubrication during operation of the power supply shall be lubricated with grease conforming to MIL-G-23827.
- 3.7 Marking. The power supply shall be marked in accordance with MIL-STD-130 and as specified on applicable drawings. When specified on applicable drawings, the nameplate shall be in accordance with MIL-P-514. Nameplate background color shall be red. Marking shall include the following information, in the order shown below;

DANCER, high voltage power pack
Military part number (see 6.2)
National stock number (see 6.2)
Manufacturer's serial number
Manufacturer's name or the trademark
Contract number
US military property

- 3.7.1 Wiring diagram marking. A wiring diagram shall be furnished with each power supply (attached inside cover). A complete parts list, identifying each part by number or code, shall be included on this diagram. Diagram shall conform to MIL-STD-15 and MIL-STD-16.
- 3.8 Workmanship. Workmanship shall be of a quality which will assure a product free of burrs, rust, scratches, chips, sharp edges, loose or defective connectors, cracked insulation, faulty soldering, or other defects which affect serviceability or appearance.

- 4. QUALITY ASSURANCE PROVISIONS
- 4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements specified herein. Except as otherwise specified in the contract, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.
- 4.1.1 Contractor's quality assurance system. The contractor shall provide and maintain an effective inspection and quality assurance system, acceptable to the Government, covering the supplies under the contract. A current written description of the system shall be submitted to the contracting officer prior to initiation of production. The contractor will not be restricted to the inspection station or to the method of inspection listed, provided that an equivalent control is included in the approved quality assurance procedure. The contractor shall notify the Government of and obtain approval for any change to the submitted procedure that might affect the degree of control required by this specification, or other applicable documents referenced herein.
- 4.1.2 Government verification. All quality assurance operations performed by the contractor will be subject to Government verification at unscheduled intervals. Verification will consist of surveillance of the operations to determine that practices, methods, and procedures of the written inspection plan are being properly applied, and Government product inspection to measure quality of product offered for acceptance. Deviation from prescribed or agreed-upon procedures, or instances of poor practices which might have an adverse effect upon the quality of the product, will immediately be called to the attention of the contractor. Failure of the contractor to promptly correct deficiencies shall be cause for suspension of acceptance until corrective action has been made, or until conformance of product to prescribed criteria has been demonstrated.
- 4.2 <u>Classification of inspections</u>. Classification of inspections shall be as follows:
 - a. First article inspection (see 4.3).
 - b. Quality conformance inspection (see 4.4).
- 4.3 <u>First article inspection</u>. First article inspection shall be performed after award of contract and prior to production (see 3.1). Inspection shall be performed on sample units which have been produced with equipment and procedures normally used in production. First article approval is valid only on the contract under which it is granted, unless extended by the Government to other contracts.

- 4.3.1 <u>Inspection procedures</u>. Five power supplies shall be subjected to first article inspection. Inspection shall consist of examination for the defects specified in 4.4.2.2 and testing as specified in table III.
- 4.3.2 <u>Failure</u>. Failure of a first article sample to conform to any of the requirements specified, or any deficiency of a workmanship or material nature found as a result of the test, shall be cause for rejection. Further testing shall not be conducted until evidence has been provided by the contractor that corrective action has been taken to eliminate the deficiency.
 - 4.4 Quality conformance inspection.
 - 4.4.1 Sampling for power supplies.
- 4.4.1.1 Lot formation. A lot shall consist of all power supplies of one type and part number, from an identifiable production period, from one manufacturer, submitted at one time for acceptance.
- 4.4.1.2 Sampling for acceptance examination. Samples for acceptance examination shall be selected in accordance with MIL-STD-105.
 - 4.4.1.3 Sampling for acceptance testing. Samples for acceptance testing shall be selected in accordance with inspection level S3 of MIL-STD-105.
 - 4.4.2 Quality conformance examination.

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4.4.2.1 Acceptable quality level. Power supplies, selected in accordance with 4.4.1.2, shall be examined for conformance to the following acceptable quality levels (AQL's) on the basis of percent defective:

| Ć1 | AQL | | |
|----|-------|-------------|-----|
| • | Major | | 1.0 |
| | Minor | | 2.5 |

4.4.2.2 Classification of defects. For examination purposes, defects shall be classified as specified in table II.

TABLE II. Classification of defects.

| Defect | Characteristic | Examination method |
|--------|--|--------------------|
| Major | | |
| 101 | Dimensions affecting interchangeability not within tolerance (see 3.3) | Visual/SIE |
| 102 | Safety defect (see 3.3.8) | Viosual/SIE |

TABLE II. Classification of defects. - Continued

| Defect | Characteristic | Examination method |
|--------|--|--------------------|
| Minor | | |
| 201 | Incorrect or defective material (see 3.2) | Visual/SIE |
| 202 | Dimensions not affecting interchange- ability not within tolerance (see 3.3) | Visual/SIE |
| 203 | Missing locking devices (see 3.3.4) | Visual |
| 204 | Incorrect voltage (see 3.3.5) | SIE |
| 205 | Components or circuits other than specified (see 3.3.6) | Visual/SIE |
| 206 | Paint incorrect or defective (see 3.5) | Visual |
| 207 | Incorrect or missing marking (see 3.7) | Visual |
| 208 | Workmanship (see 3.8) | Visual |

- 4.4.3 <u>Classification of tests</u>. Classification of tests shall be as follows:
 - a. Acceptance tests (See 4.4.4).
 - b. Control tests (see 4.4.5).
- 4.4.4 Acceptance tests. Samples selected in accordance with 4.4.1.3 shall be subjected to the tests specified in table III in the order listed using an AQL of 6.5 on the basis of percent defective.
- 4.4.5 Control tests. Unless otherwise specified (see 6.2), two of each 500 units produced shall be selected for control testing. Samples shall be examined as specified in 4.4.1.3 and subsequently subjected to the tests specified in table III.
- 4.4.5.1 <u>Failure</u>. Failure of a control test sample to pass any specified examination or test may be cause for the Government to refuse to accept subsequent lots until it has been proven to the satisfaction of the Government that the faults revealed by the examination or test have been corrected.

TABLE III. Classification of tests.

| Description | Require- ment | Test | First article sample | Acceptance test | Control test |
|--------------------------------------|------------------|--------|----------------------|--------------------|--------------|
| Voltage output | 3.4.1 | 4.5.1 | 2,3,4,5 | X | |
| Voltage varia- tion | 3.4.2 | 4.5.2 | 5 | X | |
| Dielectric strength | 3.4.3 | 4.5.3 | 2,3,4,5 | | 1 |
| Overload | 3.4.4 | 4.5.4 | 2,3,4,5 | x : | |
| Temperature range | 3.4.5 | 4.5.5 | 2,5 | _ | 1 |
| Waterproof- ness | 3.4.6 | 4.5.6 | 4 | X | |
| Endurance | 3.4.7 | 4.5.11 | · 5 | : . | 2 |
| Vibration re- sistance | 3.4.8 | 4.5.7 | 2 | , | |
| Corrosion re- | 3.4.9 | 4.5.8 | 3 | • | |
| Fungus resis- tance | 3.4.10 | 4.5.9 | 3 | | |
| Electro- magnetic interference | 3.4.11 | 4.5.10 | 1 | | |

4.5 Conformance verification.

4.5.1 Voltage output test. The power supply shall be connected in a circuit simulating that used in intended service with means for varying the input voltage and accurately measuring the output voltage. The power supply shall be connected with a load resistance of 160 megohms and, with an input voltage of 30 volts; the output voltage shall be adjusted to 16 kilovolts, maximum. The input voltage shall be reduced to 26 volts and output voltage measured to determine conformance to 3.4.1. With the load (160 megohms) and the adjustment remaining constant, the input voltage shall be varied as specified and the corresponding output voltages recorded to determine conformance to table I and 3.4.1. The load shall then be reduced to 80 megohms and (without adjustment change) the input voltages varied and corresponding output voltages recorded to determine conformance to 3.4.1 and table I. When this test is performed subsequent to vibration, corrosion, fungus, or endurance tests, the initial adjustment of the sample prior to testing shall not be changed.

4.5.2 Voltage variation test. The power supply shall be tested as follows: Connect the power supply to a 160 megohm divided load resistor and microammeter. Place the microammeter on the grounded side of the line. Use an oscilloscope to measure voltage across the 50,000 ohm portion of the load

resistance adjacent to the microammeter. Convert the microammeter readings to (average) dc output voltage. Obtain the peak ac voltage readings from the oscilloscope. Then calculate the voltage variation as peak ac voltage divided by (average) dc output voltage to determine conformance to 3.4.2.

- 4.5.3 <u>Dielectric strength test</u>. The power supply, with a load of 160 megohms shall be subjected to an input voltage of 32 volts for a period of one minute to determine conformance to 3.4.3.
- 4.5.4 Overload test. With the regulator tube short circuited through a 15 ohm resistor, input voltage shall be adjusted until a secondary voltage of 20,000 volts is shown in the output circuit. This condition shall be maintained for one minute to determine conformance to 3.4.4.
- 4.5.5 Temperature influence test. The power supply shall be placed in a test chamber maintained at minus $80^{\circ} + 2^{\circ}F$ until thermal stability is reached and then warmed to and operated in an ambient temperature of minus $65^{\circ} + 5^{\circ}F$ for 5 minutes. The specimen shall then be placed in a chamber maintained at a temperature of $160^{\circ} + 2^{\circ}F$ until thermal stability is reached. It shall then be cooled to and operated in an ambient air temperature of $125^{\circ} 0^{\circ} + 2^{\circ}F$, for 5 minutes at a relative humidity of 80 + 2 percent. Operation of the power supply shall be observed to determine conformance to 3.4.5.
- 4.5.6 Waterproofness test. The power supply shall be tested for waterproofness in accordance with procedure 1 of MIL-STD-1184 to determine conformance to 3.4.6.
- 4.5.7 <u>Vibration test</u>. The power supply shall be rigidly mounted on a vibrating machine and subjected to the vibration resistance test specified in method 201 of MIL-STD-202 for 1 hour in the direction of each of the 3 major axes to determine conformance to 3.4.8. After the test, the power supply shall be tested as specified in 4.5.1 to determine conformance to 3.4.1.
- 4.5.8 Corrosion resistance test. The power supply shall be subjected to the salt spray (fog) test in accordance with method 101 of MIL-STD-202 using a solution of 20 percent, except that the duration of the test shall be 200 hours, to determine conformance to 3.4.9. After the test, the power supply shall be tested as specified in 4.5.1 to determine conformance to 3.4.1.
- 4.5.9 Fungus resistance test. The power supply shall be subjected to the fungus resistance test method B, class 2, of MIL-F-13927, to determine conformance to 3.4.10. The test period shall be a continuous 90 days. After the test, the power supply shall be tested as specified in 4.5.1 to determine conformance to 3.4.1.

- 4.5.10 <u>Electromagnetic compatability test</u>. The power supply shall be tested as specified in MIL-STD-462 to determine conformance to 3.4.11. Reports shall be submitted as specified (see 6.2).
- 4.5.11 Endurance test. The power supply shall be subjected to 1000 hours continuous operation under conditions that simulate normal full load operation. For this test the tubes shall be changed as necessary with the operating time of each tube recorded to determine conformance to 3.4.7. Operation may be suspended 10 minutes to accomplish replacement as specified in 4.5.1, to determine conformance to 3.4.7. Input voltage shall be 26 volts dc and load resistance shall be 160 megohms.

4.6 Inspection of packaging.

4.6.1 <u>Materials and processes</u>. All materials and processes involved in packaging shall be inspected to determine conformance to requirements of Section 5. Any evidence of deviation from specified requirements shall be cause for refusal to conduct further inspection until objective evidence has been provided by the contractor that corrective action has been taken.

PACKAGING

5.1 Preservation, packaging, packing, and marking. Preservation, packaging, packing, and marking shall be in accordance with the applicable packaging standard or data sheet for the specified level of protection (see 6.2).

6. NOTES

- 6.1 <u>Intended use</u>. Power supply assemblies covered by this specification are intended for use in tactical military vehicles to supply high voltage electrical energy used in viewing devices.
 - 6.2 Ordering data. Procurement documents should specify the following:
 - a. Title, number, and date of this specification.
 - b. Applicable drawing (see 3.3).
 - c. Applicable components, if other than as specified (see 3.3.6).
 - d. Control test samples, if different (see 4.4.5).
 - e. Level of packaging and packing (see 5.1).
- 6.3 <u>First article</u>. First article samples shall be tested and approved under the appropriate provisions of 7-104.55 of the Defense Acquisition Regulation. The contracting officer should include specific instructions in all procurement instruments regarding arrangements for examination, tests and approval of the first article (see 3.1).

- 6.4 Recycled materials. The use of recycled materials which meet the requirements of the applicable material specifications without jeopardizing the intended use of the item shall be encouraged.
- 6.5 Electromagnetic compatability. The contracting officer should submit a copy of the reports required (see 4.5.10) to Commander, US Army Communications Research and Development Command, ATTN: DRDCO-CM Fort Monmouth, NJ 07703 for approval.
- 6.6 Changes from previous issue. Asterisks are not used in this revision, to identify changes with respect to the previous issue, due to the extensiveness of the changes.

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