

INCH-POUND

A-A-59131C

1 JUNE 2019

SUPERSEDING

A-A-59131B

14 MAY 2014

COMMERCIAL ITEM DESCRIPTION

DETECTOR METAL FLAW, EDDY CURRENT, IMPEDANCE PLANE

The General Services Administration has authorized the use of this Commercial Item Description, for all federal agencies.

1. SCOPE.

This commercial item description (CID) defines the minimum performance and technical requirements for a lightweight microprocessor-based eddy current flaw detection instrument suitable for Nondestructive Inspection (NDI) use in a military industrial maintenance environment, which may be at fixed military bases, deployed to austere forward operating locations, or naval vessels afloat. This CID provides for first article testing.

2. CLASSIFICATION.

There are five types and two classes of metal flaw detectors.

- | | |
|----------|--|
| Type I | Basic Kit with case, charger, and accessories. |
| Type II | Intermediate Kit with case, charger, and accessories, with bolthole scanner. |
| Type III | Intermediate Kit with case, charger, and accessories, with bolthole scanner, aluminum bolthole standard, and probes. |
| Type IV | Intermediate Kit with case, charger, and accessories, with bolthole scanner, steel bolthole standard, and probes. |
| Type V | Intermediate Kit with case, charger, and accessories, with bolthole scanner, aluminum, steel, and titanium bolthole standards, and probes. |

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any other data that may improve this document should be addressed to AFLCMC/EZSS, Bldg. 28, 2145 Monahan Way, Wright-Patterson AFB, OH 45433-7017 or emailed to ENGINEERING.STANDARDS@US.AF.MIL. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.dla.mil>.

AMSC N/A

FSC 6635

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

Type VI	DELETED
Type VII	DELETED
Type VIII	DELETED
Class 1	Normal Industrial Maintenance Environment.
Class 2	High Radio-Frequency (RF) Environment.
Class 3	DELETED

3. SALIENT CHARACTERISTICS.

3.1 General.

The instrument shall have a microprocessor-based, impedance plane display and have dual frequency with frequency mixing capability.

3.2 Foreign object damage.

The instrument shall be designed to prevent loss of components, which could generate foreign object damage to weapon systems or engines.

3.3 Size and weight.

The basic & intermediate instrument size shall have no dimension exceeding 12 inches and the weight shall not exceed 7 pounds with batteries installed (not including scanners).

3.4 Power requirements.

The instrument shall operate when supplied with either 100-250 Volt Alternating Current – 50 or 60 Hertz (100-250 VAC – 50/60 Hz) automatically selected and connected directly, through means of a battery charger connected to 100-250VAC-50/60Hz, or batteries/battery pack(s) as described below.

3.4.1 Battery charger.

The instrument shall be supplied with a separate battery charger(s) that is/are able to simultaneously charge two batteries/battery pack(s) and provide power to operate the instrument and charge installed batteries/battery pack.

3.4.2 Battery duration.

The cells in the rechargeable battery pack(s) shall not have a charge “memory” limitation that causes the instrument to operate for less than the specified time, and provide at least 6 hours of continuous use without scanner or display backlighting, and at least 3 hours of continuous use with both scanner and backlighting at 68 °F. The instrument must incorporate a visible means of indicating the charge condition of the battery pack(s) and shall provide a low battery warning in order to perform a post-calibration before the battery is exhausted. A minimum of four complete sets of batteries/battery pack(s) shall be provided, in order to provide 24-hour a day operation.

3.4.3 Battery charging.

The batteries shall be easily rechargeable without tools and require no longer than 4 hours to charge from 50% to 100% capacity, nor more than 8 hours for a complete charge.

3.4.4 Battery replacement.

The instrument shall be capable of continuous 24-hour per day - 7 day per week operation, by swapping rechargeable battery packs by the user without tools and within 90 seconds while meeting the requirements of 3.3. If designed for proprietary battery packs, the government shall acquire the design specifications and a limited license for manufacture after contract expiration.

3.4.5 Battery safety.

The instrument shall incorporate battery safety devices to prevent thermal runaway and cell rupture.

3.4.5.1 Air transport.

The extra sets of batteries/battery pack shall have a protective case to permit airline transport (see <http://www.faa.gov/> for additional information).

3.4.5.2 Lithium battery.

Any lithium batteries used shall be in accordance with NAVSEA TM S9310- AQ-SAF-010. Detailed instructions for the approval process including testing requirements are contained in this technical manual. In some cases, the testing requirements can be waived if particular conditions are met, per NAVSEA TM S9310-AQ-SAF-010.

3.4.5.3 Waivers.

The responsible government engineering office will coordinate with their respective safety organization, and provide any waiver recommendations to the Contracting Officer.

3.5 Controls.

The instrument function controls shall be menu driven, not to exceed two sub-menu levels on basic and intermediate instruments. As a minimum, the instrument shall accommodate control of the following functions.

3.5.1 Frequency.

The operating frequency shall be selectable from 60 Hz to 6 MHz (minimum range), with a precision of two significant digits (i.e., 1 Hz steps from 60-100Hz; 10 Hz steps from 100Hz-1kHz; 100Hz steps from 1-10kHz; 1kHz steps from 10kHz-100kHz; 10kHz from 100kHz-1MHz; and 100kHz steps from 1-6MHz). The frequency synthesizer shall be accurate to within 5% of the selected value. Sampling rate shall be a minimum of 500 Hz.

3.5.2 Gain.

The instrument shall be capable of at least 90 dB of amplification range for both the vertical (y) and horizontal (x) axes.

3.5.3 Probe drive.

The instrument probe drive circuit shall allow the equipment operator to vary the signal driving the probe independent of gain and frequency adjustment. The instrument shall operate low frequency spot, slider, ring style, or wide-field ribbon absolute, differential, or reflection probes without use of an external pre-amplifier. Low frequency operation, 1000 Hz or less, should be capable of providing a signal response through 0.25 inch of aluminum without preamplification.

3.5.4 Phase rotation.

The instrument shall be able to rotate the eddy current impedance vector, as viewed on the display, through a full 360 degrees in one degree or smaller increments in either the clockwise or counter-clockwise directions.

3.5.5 Filters.

The instrument shall be equipped with high pass, low pass, and bandpass filters. The low pass filter shall be selectable from 10 Hz to 1500 Hz minimum range, and the high pass filter shall be selectable from 0 to 500 Hz minimum range.

3.5.6 Alarm function.

The instrument shall incorporate an alarm (gate) system that will trigger an audible and/or visual alarm when the test signal enters or leaves a designated alarm zone. The alarm function shall be adjustable for size, position, and shape, and useable in both the impedance plane and sweep modes. The audio alarm frequency shall be lower than 2000 Hz and have an intensity of 50-70dB at three feet.

3.5.7 Programmable test procedures.

The instrument shall have the capability to program, store, and recall a minimum of 100 instrument test parameter settings. The instrument memory shall enable alphanumeric labeling of programs. Programmed instrument settings shall be adjustable after recall. The memory shall retain the settings for a minimum of 168 hours after electrical power is turned off and primary batteries are removed. The instrument shall have a "load default" feature based on Technical Order (T.O.) 33B-1-2 settings, unless otherwise specified in the solicitation or post-award conference. These settings are available upon request.

3.5.8 Data capture.

The instrument shall have the capability to freeze, store, and export a minimum of 100 screen displays, instrument settings or both for subsequent review or download to computer or printer. Files shall export to a common image file format (e.g. .tif, .jpg, etc.) or PDF. The instrument shall have the capability to capture a minimum of 60 seconds of impedance plane trace data (x/y versus time) for subsequent review or download to a computer. The instrument shall have the capability to store a minimum of 20 trace data files. External PC software shall not be required to export screen displays or instrument settings to an external memory device.

3.6 Instrument display.

The instrument shall have a color display with a minimum resolution of VGA (640 x 480 pixels) and no vertical/horizontal dimension less than 3.4 inches. The display shall be easily seen both in bright light (i.e., flight line ~ 500 foot-candles) or low light (i.e., hanger ~ 10 foot-candles) conditions. The brightness level shall be adjustable. The refresh rate shall be a minimum of 60 Hertz. The display shall have a selectable graticule for both major and minor divisions. Where applicable, displays shall have options of displaying numerical values in inch-pound units.

3.7 Persistence.

The display persistence shall be variable and adjustable from 0.1 to 10 seconds, in 0.1 second increments, minimum range or until cleared by the operator.

3.8 Display modes.

All instruments shall display eddy current inspections signals in the impedance plane (flying dot) and the vertical amplitude versus time (sweep) as a minimum. These display modes shall be user selectable as individual displays or simultaneous as single or dual views. Basic and intermediate instruments shall have dynamic bolthole scanner display.

3.8.1 Impedance plane mode.

The impedance plane mode shall display the eddy current signal as an impedance vector representing the vector sum of the test coil inductive reactance and resistance. The impedance plane mode shall be available for both manual and bolthole scanner modes. The display shall incorporate separate controls for horizontal and vertical positioning of the balance point anywhere on the screen.

3.8.2 Sweep mode.

The sweep mode shall display the vertical impedance plane component of the eddy current signal as a function of time. The instrument shall be capable of synchronizing with an external signal.

3.8.3 Dynamic bolthole scanner mode.

The display shall have a dynamic mode that is compatible with the bolthole scanner defined in 3.11.1. The dynamic display shall automatically initiate a sweep trace at the start of each scanner probe rotation. Display options shall include showing only the current sweep (y versus t) while automatically erasing the previous sweep information, showing impedance plane and sweep, and a waterfall type display to show consecutive sweeps if connected to an indexing scanner. The full 360-degrees of rotation shall be displayed regardless of any nominal changes in rotation speed of the scanner probe.

3.9 Conductivity and coating thickness measurement.

The instrument shall be capable of measuring electrical conductivity and non-conductive coating thickness as specified below. The instrument shall come equipped with appropriate probes, cables, non-conductive shims, and standard for conductivity and thickness measurement. The probe(s) shall be replaceable in the field without the need for depot or contractor intervention.

3.9.1 Electrical conductivity.

The instrument shall be capable of measuring electrical conductivity of materials in the minimum range from 1 to 65% IACS (International Annealed Copper Standard). The instrument shall be capable of using 60 ± 10 kHz and 500 ± 20 kHz for conductivity measurement. The measurement accuracy for the range from 1 to 65% IACS shall be within $\pm 0.5\%$ IACS from 32 to 100 °F with liftoff up to 0.010 inch. Measurements shall be displayed digitally.

3.9.2 Non-conductive coating thickness.

The instrument shall be capable of measuring non-conductive coatings up to 0.025 inch thick. The measurement accuracy from 0.0 to 0.015-inch, shall be within ± 0.001 inch of the reading. Measurements shall be displayed digitally.

3.10 External connections.

The instrument shall accommodate the following external connections.

3.10.1 Probe interface.

The instrument shall have a 16-pin Fischer Lemo FGG.2B connector, unless otherwise specified or negotiated with the Contracting Officer. Typical pin out wiring is as follows:

Pin 1 – Signal ground	Pin 9 – Index pulse
Pin 2 – Positive (+) Detector input	Pin 10 – Resistor drive for bridge probes
Pin 3 – Resistor drive for bridge probes	Pin 11 – Negative (-) detector input
Pin 4 – Voltage drive for reflection probes and scanners	Pin 12 – Ground to null
Pin 5 – ID chip	Pin 13 – Ground to erase
Pin 6 – Tachometer pulses	Pin 14 – Positive (+) 5V for alarm
Pin 7 – Positive (+) Motor power for scanners	Pin 15 – Positive (+) 5V for scanner
Pin 8 – Motor power return	Pin 16 – Scanner direction

3.10.2 Probe compatibility.

The instrument shall be electronically compatible with all currently available commercial off-the-shelf absolute, reflection, and differential-type probes.

3.10.3 Scanner interface.

The instrument shall interface and be compatible with bolthole scanners including MiniMite, Spitfire 2000 and RA 2000. As a minimum, the eddy current instrument shall provide the following: (1) scanner power; (2) sweep coordination (external triggering); (3) control of scanner probe revolutions per minute (RPM); (4) compatibility with remote null switching on the scanner; and (5) capability to change probes in the field. The scanner control capability shall be included with the instrument and be ready for use. Types II through V shall include a high-speed bolthole scanner in the kit.

3.10.4 Analog output.

The instrument shall have analog outputs to allow for horizontal and vertical component test signal monitoring.

3.10.5 Computer interface.

The instrument shall include Microsoft Windows (7 or later version) compatible software and cables to enable communication with a personal computer. Software capabilities shall include: (1) software version updates; (2) uploading and downloading instrument program settings; and (3) data reporting utilities such as downloading screen captures or traces. While open architecture is preferred, if the instrument does not store the data in a standard software format (e.g. .tif, .jpg, .txt, etc.), software shall be provided to convert the file format. The instrument shall have USB connectivity.

3.10 X-Wireless communication.

Wireless communication capabilities shall be hardware disabled at the factory and a certificate of compliance provided with each instrument unless otherwise specified in the contract.

3.10.6 Printer output.

The instrument shall be capable of printing screen presentations and test procedures. This may be accomplished either directly to a USB printer or through a Microsoft Windows (7 or later version) compatible computer, with supplied software. The instrument shall come with drivers for common commercially available printers.

3.10.7 Video output.

The instrument shall have a Video Graphics Array (VGA) output for interfacing with a 15-pin DE-15 video projector connection to present the display in a classroom environment.

3.11 Accessories.**3.11.1 Bolthole scanner.**

Types II through V shall contain a high speed bolthole scanner. Bolthole scanners shall have a minimum speed range of 1000 to 2400 revolutions per minute and discrete speeds shall include 1200, 1500, 1800, and 2400 revolutions per minute, if not infinitely variable. Bolthole scanner size shall not exceed $6 \times 3 \times 2$ inches, excluding the probe. Bolthole scanner shall have sufficient torque to rotate a 0.750 inch diameter probe at 1500 revolutions per minute through the 0.875 inch thick aluminum plate assembly of the universal eddy current standard, NSN 6635-01-587-1418. The scanner shall operate with a probe using a Fischer 4-pin connector operating with a reflection differential coil arrangement.

3.11.2 Protective carry cases.

The instrument shall include soft-shell and hard-shell carrying cases. The soft shell case shall be ergonomically designed and protect the instrument from damage during use while still allowing access to all external connections and have appropriate hand/neck straps to help prevent accidental loss. The hard-shell case shall be suitable for storing and shipping the instrument with accessories. If the hard-shell case with instrument and accessories weighs in excess of 25 pounds, the hard shell case shall include rollers and

collapsible handle typically found on luggage. The hard-shell case size and total weight shall be limited to airline checked baggage restrictions of 50 pounds and dimensions of 62 total inches (length plus width plus height). The cases shall be designed to protect the instrument from an 18 inch drop in soft case and a 36 inch drop in the hard case.

3.11.3 Cables.

The instrument shall have a cable to connect absolute “Microdot” type probes to the instrument. The instrument shall have a cable to connect Fischer Triax probes to the instrument. Types II through V instruments shall have a cable to connect the bolthole scanner to the instrument. The instrument shall have a cable to connect a VGA projector to the instrument. The instrument shall have a cable to connect to a USB computer port. Cable lengths shall be between 6 and 10 feet.

3.11.4 Probes.

All types shall contain a shielded surface probe kit, all with Fischer Triax connectors and internal balance coils: two each 1/8 inch diameter stainless-steel shaft, straight pencil probes with 4 inches overall length with a frequency range of 50-500kHz; two each 1/8 inch diameter stainless-steel shaft, 0.50 inch drop, 90 degree pencil probes with 6 inch overall length with a frequency range of 50-500kHz; two each 1/8 inch diameter flexible copper shaft, straight pencil probes with 6 inches overall length with a frequency range of 50-500kHz; two each 1/8 inch diameter stainless-steel shaft, straight pencil probes with 4 inches overall length with a frequency range of 1-3MHz; and two each 1/8 inch diameter stainless-steel shaft, 0.50 inch drop, 90 degree pencil probes with 6 inches overall length with a frequency range of 1-3MHz. The instrument shall have a conductivity/coating thickness probe to meet the requirements in 3.9. Conductivity probe diameter shall not exceed 0.50 inch.

3.11.4.1 Probes – Types II through V.

Types II through V shall include a plastic bolthole probe kit for the scanner containing 21 bolthole probes with an adjustable diameter feature in sizes 1/8 inch to 3/4 inch in 1/32 inch increments, with its own separate ruggedized container. Working length shall be a minimum of 1.0 inch below 0.250 inch diameter and a minimum of 2.0 inches at or above 0.250 inch diameter. Bolthole probes shall have an operational frequency range suitable for the included reference standards for each Type.

3.11.5 Reference standards.

All instruments, except Type IV, shall include aluminum conductivity standards with conductivity of 30 $\pm$ 1% and 60 $\pm$ 1% IACS. Applicable bolthole and surface reference standard meeting the requirements of NSN 6635-01-587-1418, P/N NRK-3A or NSN 6635-01-092-5129, P/N 7947479-10, shall be provided according to Type. Type V includes NSN 5280-01-352-1336, P/N NRK-3AST. Alloys are 7075-series aluminum, 4340 steel, and 6AL-4V titanium, unless otherwise specified. Drawings are available upon request.

3.12 Environmental conditions.

The instrument shall be operable in the following environmental conditions.

3.12.1 Explosive atmospheres.

The instrument shall be tested and certified by a reputable laboratory for safe use, while operating on batteries, in an explosive atmosphere as defined by Class 1, Division 2, Group D, in the NFPA 70 Chapter 5, Article 500. The testing method shall be in accordance with MIL-STD-810H, Method 511.7, Explosive Atmosphere, Procedure I, using a Fischer Triax eddy current manual surface probe and Fischer Lemo cable attached, in a typical operating condition.

3.12.2 Operating conditions.

The instrument and accessories shall perform to the specification in this CID throughout temperatures from

15 to 120 °F at up to 90% relative humidity and from sea level to 5280 feet above sea level. For use below 50 °F, the instrument shall start at an ambient temperature of 50 °F, and then shall operate on battery power for a minimum of 30 minutes at temperatures of 15 to 32 °F, and similarly for a minimum of 60 minutes at temperatures from 32 to 50 °F.

3.12.2.1 Normal maintenance environment – Class 1.

The equipment shall operate in an industrial work environment.

3.12.2.2 High radio-frequency (RF) environment – Class 2.

The contractor shall test the instrument's Electro- Magnetic Interference (EMI) capabilities in a high Radio-Frequency (RF) environment (e.g., above deck per MIL-STD-461) and provide a test report per DI-EMCS-80201 as part of first article testing to the Contracting Officer within 90 days of contract award.

3.12.3 Storage conditions.

The instrument and accessories shall perform to the specifications in this CID following a seven day exposure to temperatures from 0 to 158 °F at up to 95% relative humidity with instruments in shipping cases.

3.12.3 Ingress protection (IP) rating.

The instrument shall have a minimum IP66 rating.

3.12.4 Drop test.

The instrument shall meet MIL-STD-810H transit drop test, method 516.8, procedure IV.

3.12.5 Vibration test.

The instrument shall meet MIL-STD-810H, method 514.8, Annex C, Table 514.8C-IX General Exposure, one hour each axis, instrument outside case and powered.

3.12.6 Shock test.

The instrument shall meet MIL-STD-810H, method 516.8, procedure I functional shock test, half-sine at 15G, 11ms with 6 positive/negative shocks per axis, instrument outside case and powered.

3.13 Calibration.

The instrument shall be user calibrated without the need for manufacturer's periodic calibration. No factory recalibration decals shall be applied to the instrument.

3.14 Software revisions.

Software revisions shall be user installable from a Microsoft Windows-based (7 or later versions) personal computer or memory device direct to the instrument. All software revisions made during the life of the contract shall be included at no additional charge. A copy of revisions, and any necessary executable software, released during the life of the contract shall be provided to AFLCMC/EZPT-NDIO Tinker AFB, OK 73145-3318, or as specified in the solicitation or contract, to ensure proper configuration management.

3.15 User's documentation.

One copy, on CD/DVD of the commercial operation and maintenance instructions, including calibration procedures and adjustments, as applicable, shall be shipped with each item. The documentation shall include information for battery safety and known environmental restrictions on battery disposal. The manual shall provide instructions for users to replace internal battery for clock and memory functions, if applicable.

3.16 Provisioning.

Two paper and two electronic copies of the operation and maintenance instructions (above), illustrated parts breakdown, diagnostics, and servicing instructions, shall be sent to the Contracting Officer for delivery to the Equipment Specialist and cognizant Engineer. The documentation shall be releasable for third-party repairs after expiration of the contract, subject to standard government non-disclosure agreements between original equipment manufacturers (OEMs) and third-party providers. Recommendations for long-term provisioning shall be sent to Contracting Officer for delivery to the Program Management Specialist, Inventory Management Specialist, Production Management Specialist, Equipment Specialist, and cognizant Engineer. For subsequent delivery orders, any changes to the instructions or recommended provisioning shall be sent to the Contracting Officer for similar distribution.

3.17 Warranty.

A minimum one-year warranty, to include parts, labor, and two-way shipping, shall be included against manufacturing defects.

3.18 Options.

A listing of all available accessory items, extended warranties, periodic recalibrations/recertifications, and standard repairs shall be provided to the Contracting Officer for government consideration (see DI-ILSS-80868). Pricing shall match the quantity breakdowns provided in the solicitation or contract.

3.19 Post-award conference.

A post-award conference may be held at the manufacturer's location after successful completion of first article testing to discuss potential customization of software, kitting changes, and certification of interface software for installation on government networked computers. A minimum of 30 days advance notice shall be provided. Any changes affecting cost require approval by the Contracting Officer.

3.20 Sub-contracting plan.

The proposal shall include a subcontracting plan that meets the requirements of 19.7 of the Federal Acquisition Regulation (FAR).

4. REGULATORY REQUIREMENTS.

The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with 23.403 of the Federal Acquisition Regulation (FAR).

4.1 Metric products.

Products manufactured to metric dimensions will be considered on an equal basis with those manufactured using inch-pounds unit, provided they fall within specified tolerances using conversion tables contained in the latest revision of FED-STD-376, and all other requirements of this CID are met. If a product is manufactured to metric dimensions and those dimensions exceed tolerances specified in the inch-pound units, a request should be made to the contracting officer to determine if the product is acceptable. The contracting officer has the option of accepting or rejecting the product.

5. PRODUCT CONFORMANCE.**5.1 Product conformance.**

The products provided shall meet the salient characteristics of this CID, conform to the producer's own drawings, specifications, standards, and quality assurance practices, and be the same product offered for sale in the commercial marketplace. The government reserves the right to require proof of such conformance.

5.2 Market acceptability (MA).

All of the following market acceptance criteria are necessary to document the quality, reliability, and supportability of the product to be provided under this specification:

1. The company producing the item must have been producing eddy current flaw detectors for at least the past three years;
2. The company must have sold the basic commercial instrument in the industrial market for a minimum of one year; and
3. The company must have sold at least 50 instruments similar to the instruments being offered, with no major defects within the last year. A major defect is a defect, which affects the performance of the instrument and requires an engineering change to the instrument's original configuration in order for the instrument to perform the requirements of this CID.
4. Instrument repairs shall be provided in the contiguous U.S. and shall have an average repair time of two calendar weeks or less.

5.3 First article test.

Requirements for first article testing, performed in accordance with 9.3 of the FAR, will be provided in the solicitation.

6. PACKAGING.

Preservation, packing, and marking shall be as specified in the contract or order.

7. NOTES.

(This section contains information of a general or explanatory nature which may be helpful, but is not mandatory.)

7.1 Part or identification number (PIN).

The following PIN procedure is for government purposes and does not constitute a requirement for the contractor.

This example describes a part numbering system for CID A-A-59131C.

AA59139C 1 1 Example of reference part number:

AA59131C-1-1

- Type:
- 1- Type I - Basic Kit with case, charger, and accessories
 - 2- Type II - Intermediate Kit with case, charger, and accessories, with bolthole scanner
 - 3- Type III - Intermediate Kit with case, charger, and accessories, with bolthole scanner, aluminum bolthole standard, and probes
 - 4- Type IV - Intermediate Kit with case, charger, and accessories, with bolthole scanner, steel bolthole standard, and probes
 - 5- Type V - Intermediate Kit with case, charger, and accessories, with bolthole scanner, aluminum, steel, and titanium bolthole standards, and probes

- Class:
- 1- Class 1 - Normal Industrial Maintenance Environment
 - 2- Class 2 - High Radio-Frequency (RF) Environment

7.2 Source of documents.

7.2.1 Copies of government documents.

Copies of government documents are available online at <https://quicksearch.dla.mil>.

7.2.2 Copies of technical orders.

Copies of Technical Orders are available from AFLCMC/EZGTP, at 405-736-2112 or DSN 336-2112.

7.2.3 Copies of the Federal Acquisition Regulations (FAR).

Copies of the FAR documents are available online at <http://acquisition.gov/far/index.html>.

7.2.4 Copies of the National Fire Protection Association (NFPA).

Copies of NFPA document are available online at <http://www.nfpa.org> or from NFPA, 1 Batterymarch Park, Quincy, MA 02169-7571.

7.2.5 Copies of Naval Sea Systems Command Technical Manual (NAVSEA TM).

Copies of NAVSEA TM are available online at

https://www.public.navy.mil/navsafecen/Documents/afloat/Surface/CS/Lithium_Batteries_Info/LithBattSAFE.pdf

7.3 National stock numbers (NSNs).

The following is a list of NSNs assigned that correspond to this CID. The list may not be indicative of all possible NSNs associated with the CID.

<u>NSN</u>	<u>Type</u>	<u>Part Number</u>	<u>CAGE CODE</u>
TBD	Type I	A-A-59131C-1-1	81348
TBD	Type II	A-A-59131C-2	81348
6635-00-463-1574RN	Type III	A-A-59131C-3-1	81348
TBD	Type IV	A-A-59131C-4	81348
TBD	Type V	A-A-59131C-5	81348

7.4 Ordering data.

The contract or order should specify the following:

- Title, number, and date of this document.
- Product conformance provisions.
- The solicitation will provide for any required independent-laboratory first article testing or government testing, as appropriate.
- Packaging requirements.

7.5 Key words.

Bolthole scanner
Dual frequency
Eddy current
Electrical conductivity
Electromagnetic testing
Impedance plane

7.6 Changes from previous issue.

Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

CONCLUDING MATERIAL

MILITARY INTERESTS:

Custodians:
Army - GL
Navy - AS
Air Force - 11
DLA - GS

**CIVIL AGENCY COORDINATING ACTIVITY:
GSA-FAS**

Preparing activity:
Air Force - 11

(Project 6635-2019-002)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil>.