METRIC

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14 January 1999
SUPERSEDING
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# EDGEWOOD RESEARCH, DEVELOPMENT, AND ENGINEERING CENTER
# PERFORMANCE PURCHASE DESCRIPTION
# PUMP, CHEMICAL AGENT MONITOR

## 1. SCOPE.

**1.1 Scope.** This specification covers requirements and verification procedures for one type of Chemical Agent Monitor (CAM) pump.

## 2. APPLICABLE DOCUMENTS.

**2.1 General.** The documents listed in this section are specified in Sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this specification, whether or not they are listed.

**2.2 Government documents.**

**2.2.1 Specifications, standards, and handbooks.** The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

FSC 6665

SPECIFICATIONS

DEPARTMENT OF DEFENSE

MIL-STD-461 - Electromagnetic Interference Characteristics, Requirements for

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

MIL-STD-810 - Environmental Test Methods and Engineering Guidelines

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094).

2.2.2 **Other Government documents, drawings, and publications.** The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

PURCHASE DESCRIPTIONS

EA-C-1793 -Chemical Agent Monitor

DRAWINGS

5-15-19256 - CAM Pump Assembly

442-1033 - CAM Interconnection Diagram

It is strongly recommended that suppliers refer to the drawings and/or documents listed in section 6.5 for guidance to ensure that the interface requirements are met.

(Copies of these drawings are available from the Technical Director, U.S. Army Edgewood Research, Development, and Engineering Center, ATTN: SCBRD-ENE-D, Aberdeen Proving Ground, MD 21010-5423).

**2.3 Order of precedence.** In the event of a conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes laws and regulations unless a specific exemption has been obtained.

**3. REQUIREMENTS.**

**3.1 First article.** When specified (see 6.2), a sample shall be subjected to first article inspection in accordance with 4.3.

**3.2 Recycled, recovered, or environmentally preferable materials.** Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational maintenance requirements, and promotes economically advantageous life cycle costs.

**3.3 Interfaces.**

**3.3.1 Interface with CAM.** When installed, the pump shall be an integral part (subassembly) of the monitor assembly and shall fit within the constraints of the left-hand chassis assembly and right-hand chassis assembly without making contact. The pump body length shall be as specified in 3.3.3 to ensure that the pump interfaces and is secured in place between the sieve pump assembly and the drift tube module. The pump shall interface with the sieve pump body delivery ports (Figure 1) and the drift tube module sieve breather assembly manifold plate (Figure 2) while maintaining the sealing properties of the four pump manifold seals and the four mounting bracket mounted seals. The pump drive source shall interface with the CAM interconnection diagram (DWG 442-1033) and shall physically connect with the two-pin connector. Refer to the CAM Pump Assembly (DWG 5-15-19256) interface control drawing for additional details.

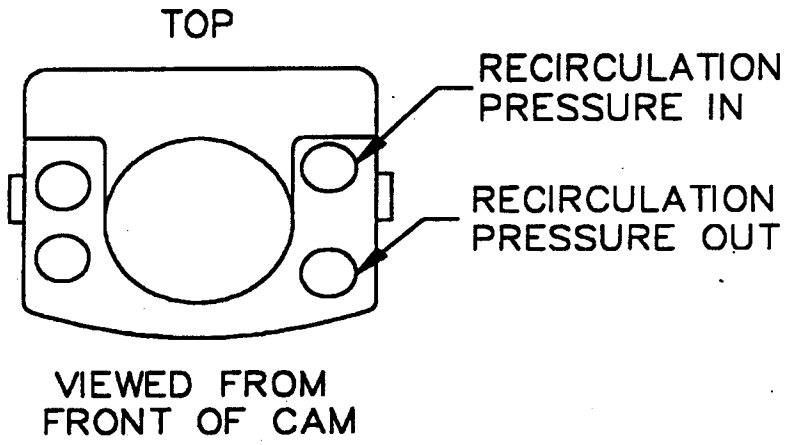
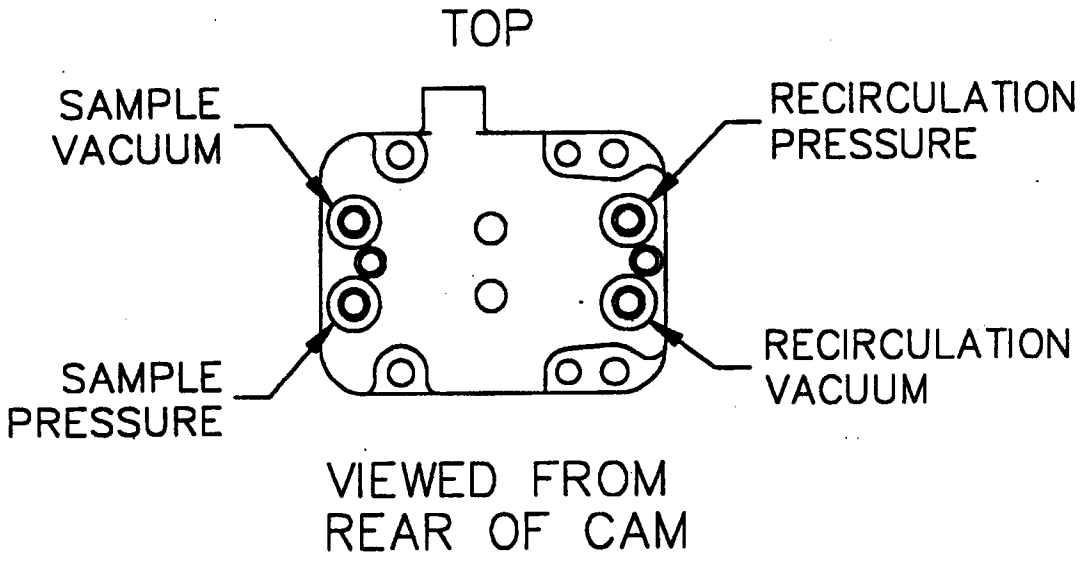



FIGURE 3. Pump-to-sieve pump interface orientation.




**3.3.2 Out-gassing.** When the pump is heated to 75° ± 3°C it shall not outgas material that will cause degradation of the CAM performance. A reduction by more than 25 millivolts (mV) direct current (dc) of the reactant ion peak (RIP) height in a CAM's head amplifier output or the addition of secondary peaks in the wave form shall be unacceptable CAM performance. Head amplifier peak height output (H) is defined in figures 2 and 3.

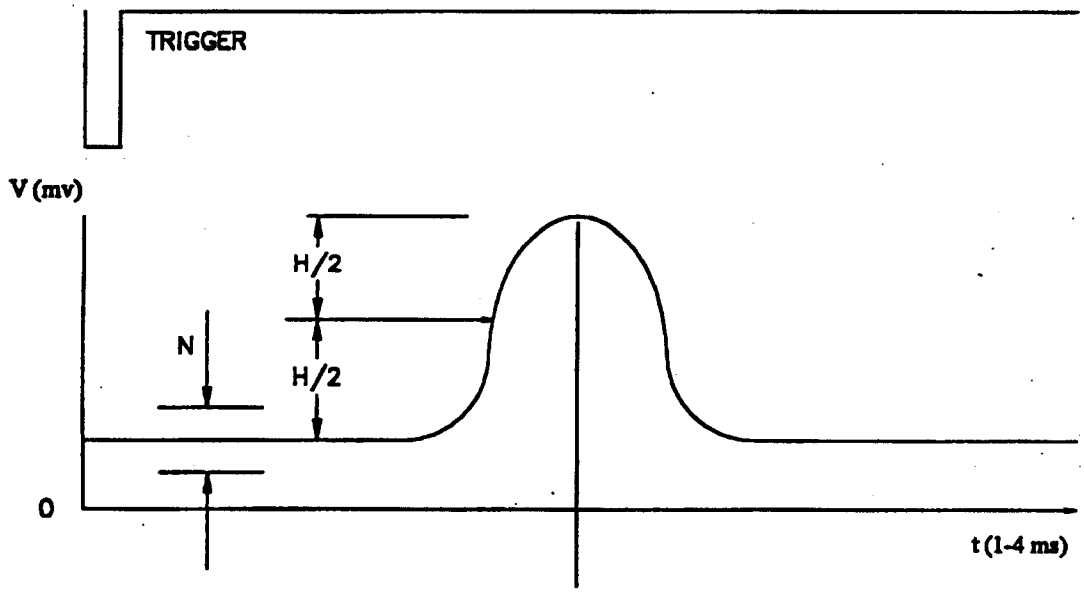



**FIGURE 3.** G-Mode head amplifier output

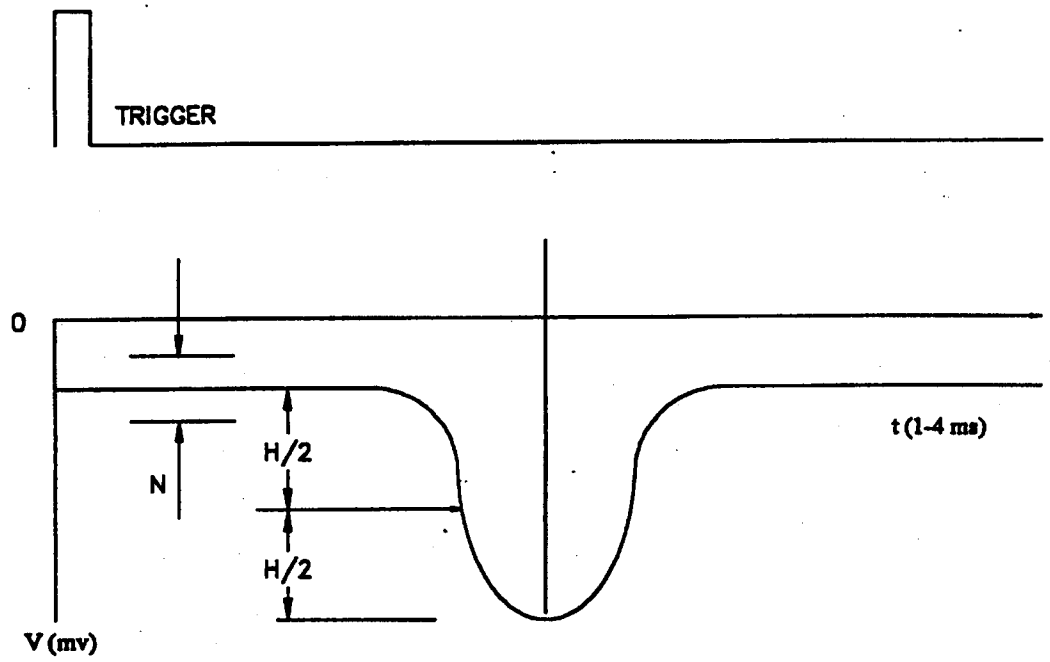



**FIGURE 4.** H-mode head amplifier output

**3.3.3 Dimensions.** Refer to the CAM Pump Assembly (DWG 5-15-19256) interface control drawing for the dimensional properties and constraints of the pump.

**3.3.4 Spectral noise.** With the pump installed in the CAM, the CAM shall successfully pass the test for head amplifier noise output characteristics of less than 12 mV peak-to-peak (p - p) in both the G and H modes (N in Figures 3 and 4). This measurement shall be taken as the maximum positive - to - negative excursion that occurs between a 1.0 and 4.0 milliseconds (ms) drift time (t) on the mobility scan.

**3.3.5 Materials.** The contractor shall select the materials, but the materials shall be capable of meeting all the operational and environmental requirements specified herein. The pump shall be fabricated from compatible materials, inherently corrosion resistant or treated to provide protection against the various forms of corrosion and deterioration that may be encountered in its application and storage.

**3.4 Operational needs.**

**3.4.1 Performance.**

**3.4.1.1 Air flow.** When a voltage of 2.250 $\pm$ 0.010 volts dc is applied to the pump, and the recirculation cylinder outlet (Figure 5) restricted to produce a vacuum pressure of 5.86 kilo Pascals (kPa) $\pm$ 1% (gauge) in air, with a pressure drop of 533 Pascals (Pa) (gauge) to 1245 Pa (gauge) applied to the sample air inlet cylinder, the requirements in Pump Performance Requirements, Table I shall be met simultaneously.

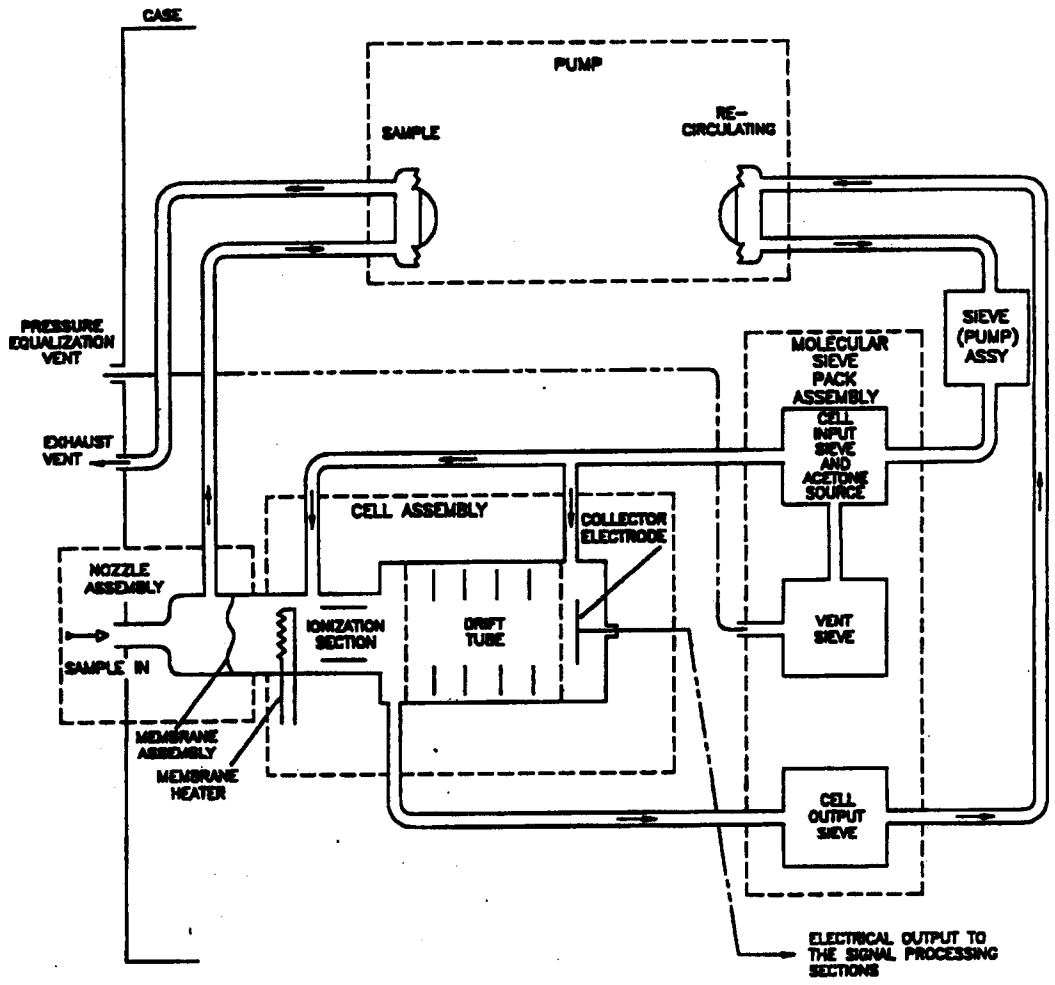



**FIGURE 5.** Air flow diagram

**TABLE I.** Pump performance requirements

| Requirement | Acceptance Limits |
|---|---|
| Current Consumption | Less than 130 milliamps dc |
| Recirculation cylinder air flow | Greater than 360 mL/min |
| Sample cylinder air flow | Greater than 500 mL/min |

**3.4.1.2 Leakage.** The pump shall have a leakage rate of not greater than 0.05 milliliters/minute (mL/min) under a vacuum pressure of 13.3 kPa $\pm$ 5% (gauge) applied to the interior of both pump cylinders.

**3.4.1.3 Nozzle inlet flow.** With the pump installed in the CAM, the nozzle inlet flow shall be 400 to 750 mL/min while the CAM is operating.

**3.5 Environment.** The pump shall have no physical deterioration or damage after each environmental exposure has been completed and the pump has returned to pre–test conditions.

**3.5.1 Operation at low temperature after cold storage.** Pump shall meet the performance air flow requirements (3.4.1.1) while at a temperature of $-25° \pm 3°C$ after storage for not less than 48 hours at $-31° \pm 3°C$. Pump shall then meet leakage (3.4.1.2) requirements at room temperature.

**3.5.2 Operation at high temperature after hot storage.** Pump shall meet the performance air flow requirements (3.4.1.1) while at a temperature of $45° \pm 3°C$ after storage for not less than 48 hours at $70° \pm 3°C$. Pump shall then meet leakage (3.4.1.2) requirements at room temperature.

**3.5.3 Operation at low temperature after cold vibration.** Pump shall meet the performance air flow requirements (3.4.1.1) while at a temperature of $-25° \pm 3°C$ after being subjected to vibration (0.1 $g^2$/Hz, 20 to 500 Hz, 2 hours each axis)), in accordance with MIL–STD–810, method 514.3, category I, while conditioned to and maintained at a temperature of $-31° \pm 3°C$. The pump shall then meet leakage (3.4.1.2) requirements at room temperature.

**3.5.4 Operation at high temperature after hot vibration.** Pump shall meet the performance air flow requirements (3.4.1.1) while at a temperature of $45° \pm 3°$ C after being subjected to vibration (0.1 $g^2$/Hz, 20 to 500 Hz, 2 hours each axis)), in accordance with MIL–STD–810, method 514.3, category I, while at a temperature of $55° \pm 3°C$. The pump shall then meet leakage (3.4.1.2) requirements at room temperature.

**3.5.5 Electromagnetic Interference (EMI).** With the pump installed in the CAM, the CAM shall meet the EMI requirements specified in EMI Requirements, Table II and MIL–STD–461.

**3.5.6 Operation after drop.** With the pump and a dummy battery installed in the CAM, the pump shall twice withstand a drop from a height of 30 inches onto two inches of plywood backed by concrete while at a temperature of $-25° \pm 3°C$. The CAM shall be dropped on the nozzle protective cap and then on the bottom face of the CAM. The CAM shall then meet the nozzle inlet flow (3.4.1.3) requirement. The pump shall then be removed from the CAM and then shall meet the performance requirements for air flow (3.4.1.1) and leakage (3.4.1.2).

**TABLE II.** EMI requirements

| Method | Range | Limit |
|---|---|---|
| RE–02 | 14 kHz to 10 GHz (narrowband)<br><br>14 kHz to 10 GHz (broadband) | Figure 4–14 @ 1 meter<br><br>Figure 4–15 @ 1 meter |

**TABLE II.** EMI requirements (continued)

| Method | Range | Polarity | E-Field | Modulation |
|---|---|---|---|---|
| RS-03 | 14 kHz to 2 MHz | V | 1 V/m | cw, am |
| | 2 MHz to 15 MHz | V | 10 V/m | cw, am |
| | 15 MHz to 30 MHz | V | 10 V/m | cw, am, fm |
| | 30 MHz to 150 MHz | V/H | 5 V/m | cw, am, fm |
| | 150 MHz to 500 MHz | V/H | 5 V/m | cw, am, fm |
| | 500 MHz to 1 GHz | V/H | 5 V/m | cw, am, fm |
| | 1 GHz to 10 GHz | V/H | 5 V/m | cw, pm |

**NOTE:** cw = continuous
am = amplitude modulation, 50% modulation, 1 kHz tone
fm = frequency modulation, 10 kHz deviation, 1 kHz tone
pm = pulse modulation, 1 kHz PRF, 10µsec pulse width, 1% duty cycle

**3.6 Support and ownership.**

**3.6.1 Reliability.** The pump assembly shall have a mean-time-between-failure (MTBF) of not less than 2000 hours, at an 80% confidence level, after undergoing the test profiles shown in Figure 6.

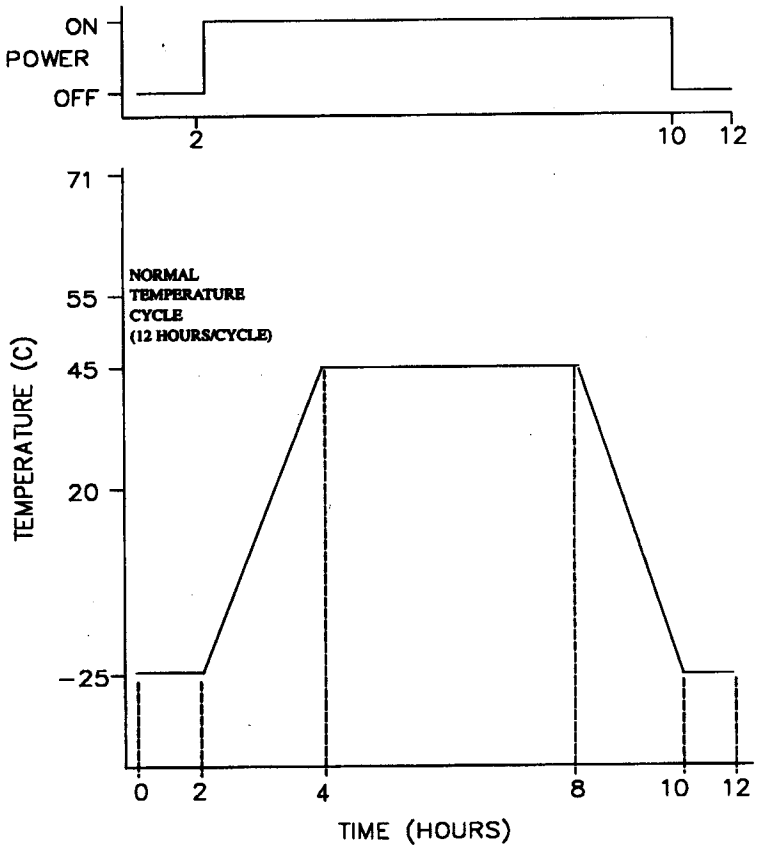



**FIGURE 6.** Normal test cycle temperature profile

**3.6.2 Safety.** The pump shall be free of burrs, sharp edges or slippery surfaces or other characteristics that would present a hazardous condition to the operator or maintainer.

**3.7 Product Marking.** Any marking, tag, or identification plate on the pump shall be consistently located on the exterior of the hardware, securely attached or marked, uniform in shape and size, legible, and visible to the naked eye. The marking information placed on the hardware shall not interfere with or degrade hardware performance. The markings shall withstand extreme temperature, vibration, and out-gassing requirements.

**3.7.1 Unit Identification Marking.** The pump shall be marked as follows:

PUMP ASSY

EA-PRF-1576

Serial No. XXXXXXXXXX

**3.8 Toxic chemicals, hazardous substances, and ozone depleting chemicals (ODCs).** The use of toxic chemicals, hazardous substances, or ODCs shall be avoided, whenever feasible.

**3.9 Government-loaned property.** (See 6.3). The following equipment shall be loaned for testing in accordance with this specification.

1. Chemical Agent Monitor (CAM) and associated technical manuals.

## 4. VERIFICATION.

**4.1 Verification alternatives.** Alternative test methods, techniques, or equipment, including the application of statistical process control, tool control, or cost effective sampling procedures may be proposed. Acceptable alternative verification approaches shall be identified in the contract.

**4.2 Verification methods.**..The methods of verification of the requirements of this specification, as specified in 4.3, are the following:

a. Analysis – Review of data produced as the result of analytical computations.

b. Certification – Written statement attesting to the conformance to a predefined general requirement.

c. Examination – Visual examination of a part and/or its respective installation, or examination of associated drawings, specifications, or purchase orders.

d. Demonstration – An non-instrumented, non-quantitative test where success is determined on the basis of observation alone.

e. Test – The exercising of part, unit, or combinations thereof to obtain measured quantitative results.

**4.3 Classification of inspections.** Two inspection classifications have been identified for verification of performance requirements: first article inspection, and conformance inspection. First article inspection is normally used to verify that manufactured unit(s) meet the requirements of Section 3. Conformance inspection is normally used for each production-line unit prior to its delivery to, and acceptance by, the government. Conformance inspection verifies that the manufactured unit(s)meet selected critical requirements of section 3. A verification matrix is provided in Verification Inspection, Table III, which relates the section 3 requirement to the verification method and the details of the inspections to be performed for each of the inspection classifications.

**4.3.1 First article inspection.** When specified in the contract (see 6.2), a sample shall be subjected to first article inspection. First article inspection shall be performed on 21 production representative units when a first article sample is required (see 3.1). This inspection shall include all the tests, examinations, demonstrations, certifications, and analyses identified by an "X" in column 4 in the Verification Inspection Table III. Column 3 in Table III identifies the applicable verification method paragraph number. The presence of one or more defects shall be cause for rejection. Table IV, First Article Verification Sample Size and Grouping, provides the test sample quantities and grouping for the 21 first article pumps.

**4.3.2 Conformance inspection.** All production items shall be subjected to conformance inspections and shall include the tests, examinations, demonstrations, and certifications identified by an "X" in column 5 in Verification Inspection, Table III. Column 3 in Table III identifies the applicable verification method paragraph number. The contractor shall be responsible for the performance of conformance inspection. Presence of one or more defects shall be cause for rejection.

**TABLE III.** Verification inspection

| Requirement | Requirements Paragraph | Verification Paragraph | First Article Inspection | Conformance Inspection |
|---|---|---|---|---|
| Interface with CAM | 3.3.1 | 4.4.1 | X | |
| Out-gassing | 3.3.2 | 4.4.2 | X | |
| Dimensions | 3.3.3 | 4.4.3 | | X |
| Spectral noise | 3.3.4 | 4.4.4 | X | |
| Materials | 3.3.5 | 4.4.5 | X | |
| Air Flow | 3.4.1.1 | 4.5.1.1 | | X |
| Leakage | 3.4.1.2 | 4.5.1.2 | | X |
| Nozzle inlet flow | 3.4.1.3 | 4.5.1.3 | X | |
| Storage | 3.5.1, 3.5.2 | 4.6.1, 4.6.2 | X | |
| Vibration | 3.5.3, 3.5.4 | 4.6.3, 4.6.4 | X | |
| EMI | 3.5.5 | 4.6.5 | X | |
| Drop | 3.5.6 | 4.6.6 | X | |
| Reliability | 3.6.1 | 4.7.1 | X | |
| Safety | 3.6.2 | 4.7.2 | X | |
| Marking | 3.7.1 | 4.8.1 | X | |
| Toxic Chemicals | 3.8 | 4.7 | X | |

**TABLE IV.** First article verification sample size and grouping

| Group # | Grouping | Sample Size | Requirements Paragraph | Verification Paragraph |
|---|---|---|---|---|
| 1 | Out - gassing | 3 | 3.3.2 | 4.4.2 |
| | Spectral Noise | | 3.3.4 | 4.4.4 |
| | Nozzle Inlet Flow | | 3.4.1.3 | 4.5.1.3 |
| | EMI | | 3.5.5 | 4.6.5 |
| | Drop | | 3.5.6 | 4.6.6 |
| 2 | Reliability | 10 | 3.6.1 | 4.7.1 |

**TABLE IV.** First article verification sample size and grouping (continued)

| | | | | |
|---|---|---|---|---|
| 3 | Low Temp/Cold Storage<br>Low Temp/Cold Vibration | 4 | 3.5.1<br>3.5.3 | 4.6.1<br>4.6.3 |
| 4 | High Temp/Hot Storage<br>High Temp/Hot Vibration | 4 | 3.5.2<br>3.5.4 | 4.6.2<br>4.6.4 |

**4.4 Interfaces.** Interface requirements shall be verified as follows:

**4.4.1 Interface with CAM.** Verify the interface capability of the pump by physically installing the pump in the CAM unit, ensuring electrical connector compatibility, secure mounting within the monitor assembly, interface with the sieve pump and drift tube module while maintaining sealing integrity, and adequate clearance within the specified space constraints.

**4.4.2 Out-gassing.** Pre-heat an oven, with a maximum internal volume of two cubic feet, to 75° ± 3°C. Operate the oven without air exchange for the duration of his test. Connect an oscilloscope, capable of performing 16 averages, to the CAMs rear connector pins D (signal) and B (0V). Pin G may be used as an external trigger for the oscilloscope. Sample the oven air for one minute utilizing an operational CAM fitted with a filtered nozzle standoff. Ensure there are no secondary peaks present in the spectrum. Measure and record the head amplifier waveform height in both the G and H modes using 16 averages. The CAM used to monitor the testing shall conform to the EA-C-1793 Function (3.12.2), Head amplifier (3.12.6c), and Confidence Sample (3.12.9) requirements (see 6.4). Place the pumps in the oven and heat at 75° ± 3°C for 30 minutes. Sample the oven air in both G and H modes. Ensure there are no secondary peaks present in the spectrum. Measure and record the head amplifier waveform height in both the G and H modes using 16 averages. Ensure that the peak heights are within 25 millivolts of the values recorded when the oven was heated and empty.

**4.4.3 Dimensions.** Measure the dimensions to verify the envelope dimensions of the pump assembly.

**4.4.4 Spectral noise.** With the pump installed in the CAM, connect a digital storage oscilloscope between pin D (signal) and pin B (0V monitor) of the CAM's rear socket connector. Apply 5.90 ± 0.15 V(dc) to the rear external supply pins K (+) and S (−). Operate the CAM for not less than 30 minutes in the G mode. Use an average of 16 mobility scans versus time to determine the G mode waveform characteristics. Switch to the H mode and allow the CAM to run for 2 minutes. Using the mobility scans, determine the H mode waveform characteristics. Take noise measurements (N in Figures 3 and 4) for the head amplifier within 30 to 45 minutes of external voltage supply application.

**4.4.5 Materials.** Verify by analysis that the materials meet the requirement of 3.3.5.

**4.5 Operational needs.**

**4.5.1 Performance.** Tests shall be conducted at ambient laboratory temperature unless otherwise specified.

**4.5.1.1 Air flow.** Power source of 2.25 ± 0.010 V (dc) and the required vacuum shall be applied to the sample and recirculation sides of the pump. The flow measurement device shall be observed for 1 minute ± 5 seconds for the required recirculation and sample cylinder air flows. The pump shall maintain the acceptable current consumption limits.

**4.5.1.2 Leakage.** Power source of 2.25 ± 0.10 V (dc) and the required vacuum shall be applied separately to the sample and recirculation sides of the pump. The flow measurement device shall be observed for 1 minute ± 5 seconds to determine the required recirculation and sample cylinder leakage rates.

**4.5.1.3 Nozzle inlet flow.** Install the pump into the CAM and connect a flow meter to the CAM nozzle. Ensure that the connection apparatus does not contaminate the CAM nozzle. Turn on the CAM and measure the nozzle inlet flow rate.

**4.6 Environment.**

**4.6.1 Operation at low temperature after cold storage.** Place pump in an environmental test chamber, lower the internal chamber temperature to −31° ± 3°C and maintain the temperature for not less than 48 hours. Raise the internal chamber temperature to −25° ± 3°C and maintain this temperature for not less than 4 hours. Conduct air flow test (4.5.1.1). Raise the internal chamber temperature to room temperature, allowing pump temperature to stabilize. Conduct test for leakage (4.5.1.2).

**4.6.2 Operation at high temperature after hot storage.** Place pump in an environmental test chamber, raise the internal chamber temperature to 70° ± 3°C and maintain the temperature for not less than 48 hours. Lower the internal chamber temperature to 45° ± 3°C and maintain this temperature for not less than 4 hours. Conduct air flow test (4.5.1.1). Lower the internal chamber temperature to room temperature, allowing pump temperature to stabilize. Conduct test for leakage (4.5.1.2).

**4.6.3 Operation at low temperature after cold vibration.** The sample quantity of pumps shall be placed in a mounting fixture that simulates the mounting interface and orientation of the CAM. Place the pump in an environmental vibration chamber and lower the internal chamber temperature to −31° ± 3°C. Condition the pump to the required temperature for not less than 4 hours. Subject the pump to the required vibration environment while maintaining the required chamber temperature. Raise the internal chamber temperature to −25° ± 3°C and allow the pump to remain at that temperature for not less than 4 hours. Conduct air flow test (4.5.1.1). Raise the internal chamber temperature to room temperature, allowing pump temperature to stabilize. Conduct test for leakage (4.5.1.2).

**4.6.4 Operation at high temperature after hot vibration.** The sample quantity of pumps shall be placed in a mounting fixture that simulates the mounting interface and orientation of

the CAM. Place pump in an environmental vibration chamber and raise the internal chamber temperature to 70° ± 3°C. Condition the pump to the required temperature for not less than 4 hours. Subject the pump to the required vibration environment while maintaining the required chamber temperature. Lower the internal chamber temperature to 45° ± 3°C and allow the pump to remain at that temperature for not less than 4 hours. Conduct air flow test (4.5.1.1). Lower the internal chamber temperature to room temperature, allowing pump temperature to stabilize. Conduct test for leakage (4.5.1.2).

**4.6.5 Electromagnetic Interference (EMI).** Install the required quantity of pumps in the CAM units and ensure that the CAMs then meet the EMI requirements specified in Table IV and MIL-STD-462.

**4.6.6 Operation after drop.** Install the pump into the CAM. Ensure that a dummy battery is in the battery compartment and that the nozzle protective cap, environmental cap, and battery retainer are in position. Place the CAM into an environmental chamber and lower the temperature to −25° ± 3°C. Remove the CAM from the chamber and immediately perform the drop test as specified. With a new battery installed, the CAM shall then meet the nozzle inlet flow (4.5.1.3) requirement. The pump shall then be removed from the CAM and then shall meet the performance requirements for air flow (4.5.1.1) and leakage (4.5.1.2).

**4.7 Support and ownership.**

**4.7.1 Reliability.** The required number of pumps (see Table IV) shall be fixtured to simulate operation in a CAM and operated for the length of time necessary to demonstrate the required reliability. The pumps shall be temperature cycled during the test according to Figure 6 and the corresponding chart below. Parts shall be non-operating between 0-0.5 hours and 6-6.6 hours; otherwise the parts shall be operating during the remaining 12 hour cycle time. Repeat 12 hour cycles until 2000 hour test requirement has been completed. At completion of test, pumps must pass all conformance inspections (see Table III). If desired, pumps may also be tested at times prior to completion of testing.

| TIME | TEMPERATURE |
|---|---|
| 0-2 hours | −25°C |
| 2-4 hours | even ramp from −25°C to +45°C |
| 4-8 hours | +45°C |
| 8-10 hours | even ramp from +45°C to −25°C |
| 10-12 hours | −25°C |

**4.7.2 Safety.** Visually verify that the pump meets the safety requirements.

**4.8 Product Marking.** All markings shall be visually inspected before and after undergoing temperature and vibration environmental testing. Results of the marking process and any out-gassing effect the markings may have shall be required.

**4.8.1 Unit Identification Marking.** Verify through visual inspection that the markings meet the requirements of 3.7 and 3.7.1.

**4.9 Toxic chemicals, hazardous substances, and ozone depleting chemicals (ODCs).** Analysis of parts and materials shall be provided which demonstrate that the pump does not contain toxic substances (see 6.6).

## 5. PACKAGING.

**5.1 Packaging.** For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). Packaging requirements are maintained by the Inventory Control Points packaging activity within the Military Department of Defense Agency, or within the Military Departments System Command. Packaging data retrieval is available from the managing Military Department or Defense Agency automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

## 6. NOTES.

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

**6.1 Intended use.** This pump is intended for use with the Chemical Agent Monitor (CAM).

**6.2 Acquisition requirements.** Acquisition documents should specify the following:

a. Title, number, and date of this specification.

b. Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.2.1).

c. Packaging requirements (see 5.1).

d. The availability of advisory technical information (see 6.5).

e. The availability of necessary Government loaned property (see 6.3 and 6.7).

f. First article inspection:

1.Time allowed for contractor submission of samples for government test and evaluation after award of contract when testing is performed by the government.

2. Name and address of test facility and shipping instructions when testing is performed by the government.

3. Time required for the government to notify the contractor whether or not to proceed with production.

g. Conformance inspection methods and sampling.

**6.3 Government-loaned property.** The contracting officer should arrange to furnish the property listed in 3.9.

**6.4 EA-C-1793.** Citing the specified requirements from this detailed purchase description is for the purpose of establishing the minimum requirements of the CAM to be used to monitor the Out-gassing. As such, its sole purpose is to augment the test method. The limited application of this document as part of the test method makes the need for a waiver for a detailed document unnecessary.

**6.5 Advisory Technical Data Package (TDP) or drawings.** The contracting officer should arrange to provide the following documents and any other advisory information to the contrac-

tor. These documents shall be for reference purposes only. The top drawing for the CAM pump advisory TDP is 442-032.

DRAWINGS

| | |
|---|---|
| 442-032 | - Pump, Rotary |
| 442-021 | - Chemical Agent Monitor |
| 442-031 | - Monitor Assembly |
| 442-070 | - Drift Tube Module |
| 442-301 | - Chemical Agent Monitor System |
| 442-307 | - Sieve Breather Assembly |
| 442-377 | - Seal, Pump Manifold |
| 442-484 | - Connector, 2-Pin |
| 442-654 | - Chassis, RH, Assembly |
| 442-656 | - Chassis, LH, Assembly |
| 442-666 | - Sieve Pump Assembly |
| 442-667 | - Body, Sieve |
| 442-683 | - Seal |
| 442-684 | - Bracket, Mounting |
| 442-1901 | - Manifold Plate |

**6.6 Toxic Substances.** The SD-14 provides a readily available list of toxic chemicals, hazardous substances, and ODCs. (NOTE: The list of toxic chemicals and hazardous substance changes. Any updates to the list will be reflected first in the EPA Title III List of Lists (EPA 560/4-92-011)). The SD-14 can be obtained from:

Federal Supply Service Bureau
Specs Section (3FPB-W)
Suite 8100
470 E. L'Enfant Plaza S.W.
Washington, DC 20407

**6.7 License for handling radioactivity.** The contracting officer should provide the contractor with the requirements for licensing provisions in the handling of the radioactive component (nickel 63).

**6.8 Part or Identifying Number (PIN) structure** Unit identification marking serial number and National Stock Number (NSN) will be provided upon award of contract.

**6.9 Subject term (key word) listing.**

Air flow
Head amplifier output
Out-gassing
Recirculation pressure

Preparing activity:

Technical Director
U.S. Army Edgewood Research, Development
and Engineering Center
ATTN: SCBRD-ENE-S
Aberdeen Proving Ground, MD 21010-5423

**ITEM: PUMP, ROTARY POWER**
**NSN: 4320-01-382-3205**
**P/N: 442-032**
**CLIN 0001**

| ORDERING PERIOD | QUANTITY ORDER RANGE | UNIT PRICE | | |
|---|---|---|---|---|
| | Est Qty: 514 | | | |
| 1 | 200 - 400 | $ | FIRST ARTICLE | $ |
| | 401 - 600 | $ | | |
| | 601 and over | $ | | |
| | Est Qty: 394 | | | |
| 2 | 200 - 400 | $ | | |
| | 401 - 600 | $ | | |
| | 601 and over | $ | | |
| | Est Qty: 546 | | | |
| 3 | 200 - 400 | $ | | |
| | 401 - 600 | $ | | |
| | 601 and over | $ | | |
| | Est Qty: 363 | | | |
| 4 | 200 - 400 | $ | | |
| | 401 - 600 | $ | | |
| | 601 and over | $ | | |
| | Est Qty: 363 | | | |
| 5 | 200 - 400 | $ | | |
| | 401 - 600 | $ | | |
| | 601 and over | $ | | |

**CLIN 0001 PUMP, ROTARY POWER NSN 4320-01-382-3205 P/N 442-032**

**WITH FAT**

| ORDERING PERIOD | QUANTITY ORDER RANGE | UNIT PRICE | X WEIGHT | = WEIGHTED UNIT PRICE | X QUANTITY MULTIPLIER | = WEIGHTED PRICE | = TOTAL WEIGHTED PRICE |
|---|---|---|---|---|---|---|---|
| 1 FAT $ | 200 - 400 | | 0.50 | $ - | 200 | $ - | |
| | 401 - 600 | | 0.40 | $ - | 401 | $ - | |
| | 601 and over | | 0.10 | $ - | 601 | $ - | $ - |
| 2 | 200 - 600 | | 0.50 | $ - | 200 | $ - | |
| | 601 - 1000 | | 0.40 | $ - | 401 | $ - | |
| | 1000 and over | | 0.10 | $ - | 601 | $ - | $ - |
| 3 | 200 - 600 | | 0.50 | $ - | 200 | $ - | |
| | 601 - 1000 | | 0.40 | $ - | 401 | $ - | |
| | 1000 and over | | 0.10 | $ - | 601 | $ - | $ - |
| 4 | 200 - 600 | | 0.50 | $ - | 200 | $ - | |
| | 601 - 1000 | | 0.40 | $ - | 401 | $ - | |
| | 1000 and over | | 0.10 | $ - | 601 | $ - | $ - |
| 5 | 200 - 600 | | 0.50 | $ - | 200 | $ - | |
| | 601 - 1000 | | 0.40 | $ - | 401 | $ - | |
| | 1000 and over | | 0.10 | $ - | 601 | $ - | $ - |
| | | | | | | **TOTAL PRICE** | $ - |
| | | | | | | **FAT** | |
| | | | | | | **TOTAL WEIGHTED PRICE** | $ - |