

**SOLE SOURCE PURCHASE DESCRIPTION FOR THE ACQUISITION OF
TWO (2) MITSUBISHI MV2400ST WIRE ELECTRICAL DISCHARGE MACHINES
(EDM)**

1. SCOPE

1.1. Scope. The purchase description set forth below describes the requirements of the Government for two (2 EA) Mitsubishi MV2400ST, Advance Submersible Wire Electrical Discharge Machines (EDM's) with moving column design. It is the Government's intent that a single primary contractor be awarded this contract, and be responsible for the provision of equipment, and the accomplishment of all work detailed by this specification.

2. APPLICABLE DOCUMENTS

2.1. General. The documents listed in this section are cited 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 the completeness of this list, document users are cautioned that they must meet all specified requirements of documents 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 shall be the current edition at time of solicitation.

FEDERAL STANDARDS

FED-STD-313 -----Material Safety Data, Transportation Data and
Disposal Data for Hazardous Materials
Furnished to Government Activities

(Copies available online at <http://quicksearch.dla.mil/>)

MILITARY STANDARDS

MIL-STD-130N w/ Change 1 -----Identification Marking of U.S. Military Property
(Copies available online at <http://quicksearch.dla.mil/>)

NAVSEA

OSHECM Chapter 250 Rev 1 -----NAVSEA Occupational Safety, Health and
Environment Control Manual for Naval
Shipyards Chapter 250

(Copies available online at <http://www.navsea.navy.mil/Home/Shipyards/Norfolk.aspx>)

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 -----Safety and Health Requirements Manual

(Copies available online at <http://www.usace.army.mil/Safety-and-Occupational-Health/Safety-and-Health-Requirements-Manual/>)

UNIFIED FACILITIES CRITERIA (UFC)

UFC 3-301-01 w/ Change 3 ----- Structural Engineering

(Copies available online at <https://www.wbdg.org/ffc/dod/unified-facilities-criteria-ufc/ufc-3-301-01>)

2.2.2. Other Government 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 of these documents shall be the current edition at time of solicitation.

JAPANESE INDUSTRIAL STANDARD (JIS)

(Copies available online at [JISC-Japanese Industrial Standards Committee](http://www.jisc.go.jp/))

COMBINED FEDERAL REGULATIONS

29 CFR 1910-----General Industry, OSHA Safety and Health Standards

29 CFR 1915-----Occupational Safety and Health Standards for Shipyard Employment

40 CFR 82-----Protection of Stratospheric Ozone

(Copies available online at <http://www.gpo.gov/fdsys>)

LOCAL ATTACHMENTS

Attachment A ----- Site-Specific Regulations

Attachment B ----- Installation Location Drawing

(Copies attached to the solicitation)

2.3. Non-Government Publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents shall be the current edition at time of solicitation.

B11 STANDARDS

B11.0 Safety of Machines; General Requirements and Risk Assessment

ANSI B11.19—2010 Performance Criteria for Safeguarding

(Copies available from B11 Standards Inc., 7901 Westpark Dr., McLean, VA 22102)

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO 4414 -----Pneumatic Fluid Power - General Rules and
Safety Requirements for Systems and Their
Components

(Copies available at <http://webstore.ansi.org/> or American National Standards Institute,
Dept. 969, 1430 Broadway, New York, NY 10018)

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION

NEMA MG 1 -----Motors and Generators
NEMA Z535.4-----Product Safety Signs and Labels
NEMA 250-----Enclosures for Electrical Equipment (1000 Volts
Maximum)

(Copies available at <http://www.nema.org> or National Electrical Manufacturers Association,
1300 North 17th Street, Suite 1752, Rosslyn, VA 22209)

NATIONAL FIRE PROTECTION ASSOCIATION

NFPA 70 -----National Electrical Code
NFPA 79 -----Electrical Standard for Industrial Machinery

(Copies available at <http://www.nfpa.org> or NFPA, 1 Batterymarch Park, Quincy, MA
02169)

2.4. Order of Precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1. Safety Signs and Labels. Safety signs and labels in accordance with NEMA Z535.4 shall be securely attached to the equipment in visible locations, at the point of hazard(s), with any safety precautions to be observed by the operator or maintenance personnel permanently marked on the signs.

3.1.1. Audible Noise Level. Audible noise emitted by the equipment shall not exceed 84 decibels (dB), measured on the “A” weighted scale of a standard Type II sound level meter, at the operator's work position or any point at a distance of three (3) feet from the equipment. Noise generated by the work piece shall be excluded in determining compliance of the equipment with the 84 dB requirements.

3.1.2. Hazardous Material Exclusions. Supplies or materials being provided as part of the equipment shall be free of known hazardous materials. Hazardous materials shall not be brought on site without prior approval of the Government Point of Contract and cognizant shipyard personnel. Hazardous materials not needed for this project are prohibited. Definitions of hazardous materials are specified in the latest version, including revisions

adopted during the term of the contract, of FED-STD-313. Notwithstanding any other hazardous material usage permitted in this contract, radioactive materials or instruments capable of producing ionizing radiation as well as materials which contain asbestos, mercury, lithium, methylene chloride, lead (= or >0.06%), or polychlorinated biphenyls (PCB's) are prohibited. Nickel Metal Hydride and lithium batteries are permissible for memory backup. Class I Ozone Depleting Substances as defined in 40 CFR 82 shall not be used in the performance of this contract or be provided as part of the equipment. Exceptions to the prohibition of these materials must be referred to the Contracting Officer in writing, for consideration, not later than 60 calendar days after effective date of contract and prior to any work being performed.

3.1.2.1. PCB Certification. Written certification from the manufacturer that the equipment contains no detectable PCBs (less than two (2) parts-per-million) shall be provided. The certification shall be on manufacturer's letterhead and signed by a company official who is empowered to provide same. A PCB label plate stating the PCB compliance certification shall be supplied and attached to the equipment.

3.1.3. Environmental protection. Under the operating, service, transportation, and storage conditions described herein, the EDM's shall not emit materials hazardous to the ecological system as prohibited by Federal, state, or local statutes in effect at the point of installation.

3.2. Construction. The EDM's shall be constructed of parts that are new, without defects, and free of repairs. The structure shall withstand all forces encountered during operation of the EDM's to its maximum rating and capacity without distortion.

3.2.1. Fastening Devices. All screws, pins, bolts, and other fasteners shall be installed to prevent unintentional loosening. Fastening devices subject to removal or adjustment shall not be permanently installed.

3.2.2. Threads. All threaded parts, either US or SI, used on the EDM's and its related attachments and accessories shall conform to ISO/EN/DIN/JIS standard, and the applicable "Detailed Standard" section referenced therein.

3.2.3. Corrosion Control. All system components shall be protected against corrosion and deterioration by appropriate material selection, application of coatings and sealants. The system and its parts shall be painted on all sides, prior to assembly, except mating surfaces such as mounting flanges and motor shafts. Painting shall result in a highly wear-resistant finish, which guarantees continued protection to the surfaces covered against the specified environment under all service conditions. Exposed ferrous parts such as screws, bolts, nuts, washers shall be treated to resist corrosion in a salt-laden, moist, variable temperature atmosphere. Protection such as chrome plating, galvanizing or other electrical/chemical process, or stainless steel is acceptable. Stainless steel parts shall be passivated. Aluminum parts shall be anodized or chemically treated followed by two coats of weather-resistant exterior paint. Dissimilar metals shall not be used in direct contact with each other without suitable means for preventing electrolytic corrosion. All paint shall be lead and chromate free.

3.2.4. Workmanship. Workmanship of the EDM's shall meet all requirements specified herein and shall be of a quality equal to that prevailing among manufacturers producing equipment of the type covered by this purchase description.

3.3. Components. The EDM's shall consist of not less than the following components:

3.3.1. Chiller System. The chiller shall be adjustable up to 19,000 BTU/hr. The chiller shall utilize R410A refrigerant.

3.3.2. Thermal Stability and Displacement. The machine shall have a thermal stability and displacement system that is synchronized through the main controller and thermal sensors on the machine casting, controlling temperature of machine structure, synchronized with dielectric fluid temperature, stabilizing accuracy of machining by controlling relative displacement of upper and lower guides. Thermal stability shall be provided via circulating cooling fluid through the machine structure including the Z-Axis base, X and Y Axis linear shaft motors, and machine table. The machine shall be equipped with a temperature controller synchronized with the machine casting, a conductivity probe system measuring 1~200 µs/cm.

3.3.3. Table. The worktable shall be IAW 3.4 Table I.

3.3.4. Upper and Lower Guides. The Upper and Lower guides shall be equipped with solid round wire diamond guides and be IAW 3.4 Table I.

3.3.5. Automatic Wire Threading (AWT) System. The EDM shall be provided with an AWT system. The AWT shall be programmable from user screen and within the part program providing three (3) modes: standard, high speed (10 second wire threading time), and small start hole threading (0.020" Ø hole). The AWT shall provide 19 inches of annealed wire for threading. The AWT shall use a multi-step water jet threading process using a jet nozzle. The AWT shall have a system to filter particulate down to 0.0004". The AWT shall be compatible for using brass wire and coated high speed wire. The AWT shall have the following features:

- a. Submerged in the gap threading up to 16 inches
- b. Fine hole insert with parameter adjustment to prevent the wire from being inserted into a nearby hole
- c. Insert at breakpoint
- d. Automatic re-threading for broken wire
- e. Operator programmable quick rethread function
- f. Maintenance pages set by the operator for total maintenance intervals
- g. Contact Release after insertion

3.3.6. Wire Processor . The wire processor shall chop the used wire into small pieces, allowing several large spools to be consumed. The design shall be easily removable allowing the operator to use the chopper or remove it for special wire types or sizes. The system shall have a wire catch basket that is easily accessible to the operator for routine maintenance.

3.3.7. Power Supply. The EDM's shall be provided with a Transistorized Pulse Circuit V350-V AEII with full anti-electrolysis protection.

3.3.8. Controller Features. The machine controller shall consist of a personal computer (PC) CNC Controller, incorporating all manufacturer's standard features by utilizing a Windows embedded operating system. The CNC unit shall provide programmable automatic control of machine functions, operating modes, axis movement, complete graphic program checking, and other part program directed functions for the EDM's. Movement in the X, Y, Z, U, and V axes shall be independent and shall be capable of independent positioning.

Control features shall include Manual Data Input (MDI), simultaneous control of four axes (X, Y, U, and V), linear and circular interpolation, programmable interface, part program and buffer edit capability, part program storage, fixed cycles, and control diagnostics to at least board level. The CNC shall direct machine functions from command data stored in memory. The data stored in memory shall be input by the media, and have the capabilities specified herein. The control shall initiate a halt and error signal should a fault condition occur in the control. The control shall automatically shut down when internal operating temperatures exceed safe operating limits. The CNC shall include the following features:

- a. Entrance control shall reduce the dent of approach point on a thick work piece, allow shape adjustment from convex to concave
- b. Step-less control for step finishing, accurate finishing of complex parts, and wall straightness on varying thicknesses
- c. Corner control to provide 3 levels of control to increase corner precision during both the rough-cut and skim cut processes:
 - (1) Operator selection to improve rough cut accuracy
 - (2) Anti-short circuit control at small corners
 - (3) Fine adjustment
- d. Wire tension control shall suppress tension fluctuation during machining
- e. Cost save mode shall optimize pump operation, power supply output, wire and filter consumption
- f. Quick response servo system to eliminate machine stoppage during a short circuit
- g. Power control shall automatically optimize and adjust the machine settings to achieve optimal machining conditions
 - (1) Power control for operator selection of all machining parameters including cutting feed rates and offsets and to also optimize power settings to match work piece conditions and thickness changes
- h. One (1) each, 19" inch high definition (HD) Liquid Crystal Display (LCD) or equivalent touch screen monitors
- i. Automatic 2D Views of Program with Zoom & Move Functions
- j. Automatic Reporting/Charting
- k. Mouse & Keyboard Input
- l. Two (2) USB Ports
- m. DNC Hardware (Ethernet 1000 BASE-T/100 BASE-TX/10 BASE-T Network Connection)
- n. Anti-Virus Program
- o. Most current Windows operating system
- p. 30 GB CFAST with a 1 GB partition for user program storage

- q. Standard G & M Code NC Data
- r. 2D-CAM Programming to provide a step-by-step approach to inputting 3D model data (Parasolid format), extracting the tool path and converting it to an NC program
- s. Import DXF and IGES CAD files directly for conversion to NC programs
- t. E-manuals and alarm procedures shall include trouble shooting /solutions for the operator and easy system software updating via USB flash drive
- u. Graphical part plotting
- v. Sealed cabinet
- w. Forced air cooling / heat exchanger for the control cabinet
- x. Rotary axis support function
- y. Automatic alignment and pick-up routine
- z. Handheld pendant control shall be able to reach all areas for set-up operations

3.3.9. Pneumatic System. All pneumatic system shall conform to ISO 4414, and shall be complete, including all pumps, valves, piping, cylinders, and pressure controls including protection from over-pressurization. The existing air supply is 75 PSI within 20' of the machine location.

3.3.10. Energy Isolating Devices. The equipment shall be provided with energy isolation devices (e.g., power switches, safety devices, circuit breakers, valves) that protect personnel from the release of hazardous energy and are integral to the component being isolated and locked out. The devices shall be designed and manufactured such that they can be padlocked in the OFF position. This includes both mechanical and electrical devices. An energy isolation device shall be installed as the first energy control device on all major components of the system such that the component can be isolated at the component level.

3.3.11. Electrical System. The machine shall conform to NFPA 79 or equivalent ISO/EN/DIN/JIS standards. The existing electrical power source available at the installation site is three (3) phase 480 VAC 60Hz. The machine's electrical system shall be tolerant of voltage fluctuation of ± 10 percent. The electrical system shall be complete, including transformers required to modify the existing source voltage to the proper operating voltage of the equipment. A properly rated and fused single disconnect device, controlling all electrical power to the equipment, shall be utilized on the machine with means of lockout in the off position only.

3.3.11.1. Motors. Motors shall be rated for continuous duty and shall have ball or roller bearings of the sealed and permanently lubricated type. Alternating-current (AC) motors shall be designed to operate on 60-Hz and each motor enclosure shall meet the requirements for a drip-proof enclosure. All motors 1 HP and above shall meet the requirements of NEMA MG 1. Each motor shall have an identification plate to identify manufacturer, model identification, serial number, voltage, amperage, horsepower, phase, frequency, and frame number written in the English language. Servo motors are exempt from these requirements. Motor horsepower shall be the manufacturer's standard or standard optional horsepower as indicated on the manufacturer's design and construction drawing(s), unless otherwise specified herein.

3.3.11.2. Electrical Enclosures. Electrical components of the equipment shall be contained in enclosures of drip-proof construction and of minimum size consistent with good design practices and ventilation of components, meeting the requirements of NEMA 250 Type 12.

3.3.11.3. Arc Flash Protection. The machine enclosures shall be marked for arc flash in accordance with Section 3.7. herein, and shall adhere to NFPA 79 Paragraph 16.2.3 “Safety Signs for Electrical Enclosures” for arc flash safety.

3.3.11.4. Work Envelope Lighting. The equipment shall include lighting to illuminate the work envelope. The lighting shall comply with NFPA 79 requirements and have a protective shield.

3.3.11.5. Facility Electrical Connections. Electrical connections made to the facility electrical system shall conform to NFPA 70.

3.3.11.6. Hour Meter. The EDM’s shall be equipped with a digital hour meter embedded in the controller. The hour meter shall be installed to display accumulated operating time of the main drive motor. The meter shall be of the non-resetting type and shall have a range of 0 to 99,999.9 hours in increments of 0.1 hours and shall revert to zero (0) upon reaching the maximum count.

3.4. Size and Capacity. The size and capacity of the EDM’s shall be not less than specified in Table I.

| Table I Size and Capacity | |
|----------------------------------|--|
| Dielectric Supply Tank Capacity | 259 gallons |
| Workpiece Dimensions (W,D,H) | 41.3 Inches x 32.3Inches x 16.5 Inches |
| Workpiece Weight | 3,307lbs. |
| Table Dimensions | 33 Inches x 25 Inches |
| Machining Range (XYZ) | 23.6 Inches x 15.7 Inches x 16.7 Inches |
| U/V Travel (from center) | ±3.0 Inches x ±3.0 Inches |
| Taper Angle @ Thickness | 15° @ 10.2 Inches |
| Solid Round Diamond Guides | 0.012 Inches |
| Minimum Drive Unit / Resolution | 0.000002 (2 Millionths) Inches |
| Table Rapid Feed | 51.2 Inches Per Minute |
| Wire Diameter Range (Inches) | 0.004 -0.012 Inches (.010 Inches Standard) |
| Minimum Wire Thread Start Hole | 0.020 Inch |
| Maximum Workpiece AWT Height | 16.0 Inches |
| Wire Tension | 200-2550(G) |
| Wire Spool | 22 lbs. |
| Wire Spool | 35 lbs. |
| Filter System | Paper cartridge (2 each) |
| Filter Precision | 5 microns |
| Ion-Exchange Resin | 1 cubic foot (6.4 gal dry) |

3.5. Fixturing and Tooling. The following Hirschman fixturing, and tooling shall be provided with the EDM’s as specified in Table III.

| Table III Fixturing and Tooling | |
|--|----------|
| Part Number and Name | Quantity |

| | |
|--|---|
| H4265 Counter Support | 4 |
| H2851 Clamping Jaw Set (M8) | 2 |
| H4110 M 3D Pallet | 6 |
| H4000 M Clamper | 6 |
| H4620 Mighty Vice | 2 |
| H4537.E Clamping Insert | 2 |
| H4537 Vertical Vice | 2 |
| H4410 Vertical Unit | 2 |
| H4420 Swiveling/Indexing Unit | 2 |
| H2495 Adapter | 2 |
| H4270 Magnet Holder | 2 |
| Rotary Table - MDHWi201R-BB (60 mm Thru Hole) | 2 |
| MMK M8 Scroll Chuck (60 mm Thru Hole with Jack Screw Adjustment) | 2 |

3.6. Standard Equipment. All standard equipment required for proper operation of the EDM's shall be furnished including a wire alignment gauge and a basic work piece clamping kit.

3.7. Marking on Instruments, Control Panels, and Plates. All words on instruments, control panels, and plates shall be in the English language. Characters shall be engraved, etched, embossed, or stamped in boldface on a contrasting background. All plates shall be corrosion resistant. Industrial stickers shall be acceptable.

3.7.1. Lubrication Plate. A lubrication plate shall be permanently and securely attached to each machine. The plate shall contain the following information:

- Points of lubricant application
- Servicing interval
- Type of lubricant
- Viscosity
- Military or Federal Specification for each lubricant (If applicable)
- Size and type of each lubricant filter

3.7.2. Nameplate. A nameplate shall be permanently and securely attached to each machine. The nameplate shall contain the information listed below. If the machine is a special model, the model designation shall include the model number of the basic standard machine and a suffix identified in the manufacturer's permanent records.

- Nomenclature
- Manufacturer's name
- Manufacturer's model designation
- Manufacturer's serial number
- Power input (volts, total amps, phase, frequency)
- Contract Number
- Date of manufacture

3.7.3. Identification Marking of Military Property. An Item Unique Identification Marking (IUID) shall be provided in accordance with MIL-STD-130N and all applicable documents within the standard with Machine Readable Information (MRI) for item

identification marking and automatic data capture. The application of Human Readable Information (HRI) shall be used in combination with MRI and free text.

3.8. Plan of Action and Milestones. The contractor shall provide a POA&M to identify contractor performance dates of all major events from contract award to completion of all contract requirements. The initial POA&M shall be delivered thirty (30) calendar days After Contract Award (ACA). The milestones shall be prepared using a recognized project management technique (preferably Microsoft Project). The Government and the contractor shall review the report on a monthly basis. The contractor shall notify the Government prior to making any changes to the POA&M. All changes to the POA&M shall be approved in advance by the Government. The POA&M shall detail such items as engineering, procurement of major hardware, assembly, operational debug, factory acceptance, shipment, installation, training, and final acceptance test.

3.9. Technical Data. Three (3) hard copies of both operator and maintenance manuals and one (1) searchable electronic copy.

3.9.1. OSHA Approved Certification. The equipment and its installation specified herein shall be inspected, approved as defined in 29 CFR 1910.399, and labeled by a Nationally Recognized Testing Laboratory (NRTL) as defined in 29 CFR 1910.7. The NRTL inspection shall include validation of the OSHA compliance requirements in paragraph 3.1.4. A satisfactory NRTL Field Evaluation Report shall be provided to the receiving activity after equipment delivery and installation.

3.9.2. Test Data Results Used for Evaluation of Equipment to Meet Specification Requirements. The Contractor shall submit a written test report of all tests and results conducted at destination. The test report shall be submitted within 10 working days after the tests are performed.

3.10. Installation. Contractor shall be responsible for attached Installation Responsibilities chart and Local Documents Attachment A for site specific facility requirements. Installation shall comply with EM 385-1-1 and UFC 3-301-01. Installation location shall be IAW Attachment B. Maximum allowable space for each machine is (W, D, and H) 12 feet x 12 feet x 10 feet.

3.10.1. Structural Installation. The Contractor shall accurately set, align, plumb, field connect with sufficient bolts, or weld all structural steel required to make installed equipment permanent. Temporary bracing shall be provided, and subsequently removed, as necessary.

3.10.2. Mechanical Installation. The Contractor shall provide all labor, fluids, piping, interconnecting hoses, and any other materials to move, locate, set level, align, lubricate, and make ready to operate all equipment required by this contract. All machinery shall be installed to original manufacturer's tolerances.

3.10.3. Electrical Installation. The Contractor shall provide all labor, wiring, cables, disconnects, connectors, breakers, and any other materials for complete installation of any requisite electrical equipment from the government point of delivery. Installation shall include necessary power, control, and interconnecting wiring installed in conduit.

3.10.4. Installation Drawings. The drawings shall contain at least, but shall not be limited to, the following information and requirements of Attachment A:

- a. Overall and principal dimensions in sufficient detail to establish limits of space in all directions required for installation, operation, and servicing. See Table 1 for maximum allowable footprint.
- b. Amount of clearance required to permit opening of doors and removal of plug-in units
- c. Clearance for travel or rotation of any moving parts
- d. Interface mounting and mating information, such as dimensions of location for attaching hardware, and meet the manufacturer vibration design requirement
- e. Interface pipe and cable attachments required for installation and co-functioning of the item to be installed with related items
- f. Mounting place details, hardware requirement lists, drilling plans and shock mounting buffers
- g. Weight of each component and total unit
- h. Location, type and dimensions of cable entrances, terminal boards, electrical connectors, and ducts
- i. Interconnecting and cable detail
- j. Peak electrical load (Amps) requirement to support all proposed equipment in its fully configured and operational state, including all accessories

3.11. Hazardous Energy Control (HEC) Program, Lockout/Tags-Plus (LOTP).

HEC/LOTP shall be accomplished in accordance with OSHECM Chapter 250 and 29 CFR 1915.89.

4. QUALITY ASSURANCE

4.1. Responsibility for Inspection. The contractor shall be responsible for the performance of all inspection requirements specified herein. Only supplies that totally conform to the specifications shall be offered for inspection and test. The contractor's test schedule shall allow consecutive inspection and test of the supplies offered. The Government reserves the right to charge the contractor for any Government re-inspection cost when supplies are not ready at the time requested by the contractor or when necessitated by prior rejection. The Government reserves the right to perform any inspections set forth in the purchase description where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1. Responsibility for Compliance. All items must meet all requirements of sections 3 and 4.

4.2. Classification of Inspections. The inspection requirements specified herein are classified as follows:

- a. Final Inspection/Acceptance test (Destination) (see 4.4).

4.3. Inspection Conditions. All inspections, tests, and examinations shall be performed in an indoor facility with ambient conditions of 55 degrees F to 100 degrees F and 10 percent to 95 percent relative humidity.

4.4. Final Inspection/Acceptance Test (Destination). Final inspection and acceptance test shall be performed on the EDM's to ensure conformance with this purchase description. The acceptance test shall be performed only after the EDM's are installed at their final location. The acceptance test shall consist of the examination in 4.6 and test 4.6.1. The machine shall pass the examination, all tests, and the final inspection to be accepted.

4.5. Examination. The EDM's shall be examined to determine compliance with all requirements of this purchase description.

4.6. Tests. The following tests shall be performed as required in paragraphs 4.4. All instruments and tools required to perform and evaluate the tests shall be furnished by the supplier and measuring instruments shall be calibrated in accordance with the attached Quality Assurance Provision (QAP).

Performance Cutting Test. Two (2) identical parts shall be machined to test accuracies and surface finish capabilities. The material shall be D2 tool steel, RC 60 – 62 hardness, 4 inches thick, using 0.012 diameter wire. Tooling design and geometry shall be of the manufacturer's choice. The test shall include a variety of cuts to include shoulder and face cuts and arcs. Surface finish on all cuts shall be not greater than 32 RMS. The test pieces shall be identical to within +/- 0.00025" on each cut. The performance cutting test shall include producing a 10-degree taper, within +/- 0.5 degree. Two separate cuts shall be performed on one test piece with a maximum deviation 0.010 degree from the 10-degree programmed angle.

INSTALLATION RESPONSIBILITIES

| Government | Contractor | |
|------------|------------|---|
| (XX) | () | a. Provide machine foundation in accordance with the manufacturer's design requirements. |
| () | (XX) | b. Furnish labor and material handling equipment for off-loading and placing item on foundation. |
| () | (XX) | c. Provide and install anchor bolts and nuts. |
| () | (XX) | d. Set and rough level the machine on its foundation. |
| () | (XX) | e. Level and align machine. |
| () | (XX) | f. Connect machine to the provided utilities hook-up. |
| () | (XX) | g. Provide all necessary tools, gages, and instrumentation necessary to perform the required tests. |
| () | (XX) | h. Provide and charge all systems with fluids in accordance with manufacturer's instructions. |
| () | (XX) | i. Material for performance testing at Government facility. |

GOVERNMENT RESPONSIBILITIES

- (XX) Provide utilities hook-up within 20 feet of the machine
- () Government will connect utilities to the machine based on the contractor's accepted site drawings.
- () Assign one mechanic (mechanical/hydraulic) and one maintenance mechanic (electrical/electronic) to provide information and any additional materials for the contractor's representative during installation, verification, and initial startup of the machine.
- () No work shall be performed by customer personnel when the contractor's representative is not in the immediate work area during installation, verification, and initial startup of the machine.

CONTRACTOR RESPONSIBILITIES

- () If installed by customer, upon verifying and certifying the machine is correctly installed, demonstrate the operation and performance of the equipment. Verification of installation shall be included within the warranty.