

METROPOLITAN WASHINGTON AIRPORTS AUTHORITY

STATEMENT OF WORK

FOR

**RADIO SYSTEM UN-INTERRUPTIBLE POWER SUPPLY (UPS) UNITS
MAINTENANCE, REPAIR, AND REPLACEMENT SERVICES**

AT

**RONALD REAGAN WASHINGTON NATIONAL AIRPORT,
WASHINGTON DULLES INTERNATIONAL AIRPORT,
STEVEN F. UDVAR-HAZY CENTER, AND THE
TYSON'S CORNER RADIO SITE**



January 3, 2011

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SECTION II - INTRODUCTION

- A. The Authority is a public body politic and corporate, created with the consent of the Congress of the United States by the District of Columbia Regional Airports Authority Act of 1985, as amended, and Ch. 598, Virginia Acts of Assembly of 1985, as amended. The purpose of this entity is to plan, provide, and actively manage world-class access to the global aviation system in a way that anticipates and serves the needs of the National Capital area. The Authority employs approximately 1,300 people in a structure that includes central administration, airports management and operations, and police and fire departments. The Authority operates from two locations: Washington Dulles International Airport (IAD) and Ronald Reagan Washington National Airport (DCA). For Additional information, Offerors are encouraged to visit the Authority's website at <http://www.mwaa.com>.
- B. The Authority's Wireless and Radio Systems Department, identified as MA-630, manages and maintains the Authority's mission critical, 800 MHz Radio Communication Systems and conventional Authority radio system that provides radio communications to Authority users and to Mutual Aid constituencies within its geographical support areas. The principle location for the Wireless and Radio Department is Hanger 5, National Airport. A satellite office is maintained at Dulles Airport.
- C. The Authority currently operates a five-site, eleven channel, Motorola 800MHz SmartZone 4.1, Public Safety 800 MHz Radio Communications System. This radio system is a complex, fully integrated infrastructure of Motorola PROPRIETARY hardware and multi-application software. The Master and Simulcast Prime Site are located at Reagan National Airport. There are three (3) remote sites at Dulles. The fifth site is located at Tyson's Corner. The 800 MHz Radio Network is an "outside" system and is maintained by Motorola. However, there is a critical need to communicate inside buildings, pedestrian tunnels, and in other underground facilities. This is accomplished with "in-building" Supplemental Radiating Systems (UPS) which extends the 800 MHz Radio Network into buildings and tunnels.
- D. Currently, the Department has several large UPS systems supporting various parts of the 800MHz Radios System, and the systems used by the Authority to communicate with Federal, State, and local partners. Un-interruptible power supplies (UPS) are an integral part of the Authority's power management system for its sensitive, mission-critical 800 MHz Radio System. The required UPS systems are "in-line", as an "always on" electronic device that protects the sensitive 800MHz System hardware from undesired features of the power source (outages, sags, surges, bad harmonics, etc.) that can adversely affect the performance of the radio system. They also serve to maintain continuous power during the time frame when power is switched to a generator source (when available). Appendix A provides and inventory of the large UPS units that support Authority Radio Systems.
- E. SUMMARY OF WORK

The work of the Offeror shall include:

1. On call maintenance and repairs of all UPS units listed in Appendix A.
2. Semi-Annual inspection and Preventive Maintenance Services of all UPS units listed in Appendix A.
3. Monthly visual inspection of all UPS units listed in Appendix A.
4. Performance of supplemental services on an "on-call", time and materials basis. Work may include alteration, improvement, battery replacement, and/or overhaul of UPS units, which when completed will modify and/or enhance the system operation, performance, reliability, safety etc. beyond existing levels.

5. Any item(s) of work, inspections, parts, and services listed in this specification shall not be construed as limiting the Offeror to those items in Appendix A but shall be viewed as minimum requirements.

SECTION III - BASE SERVICES**01 DESCRIPTION OF SERVICES**

The Offeror shall provide all management, supervision, personnel, labor, materials, parts and equipment necessary to successfully perform the requirements contained in this specification. These services shall include, but not be limited to, full maintenance and repair services and documentation of activity and services performed on the UPS units as described in this Statement of Work and in accordance with the original equipment manufacturer's recommended guidelines and all current applicable codes and regulations unless otherwise directed by the Authority in writing.

02 PROJECT MANAGER

The Offeror shall designate a Project Manager for the life of the Contract. The Project Manager shall:

- A. Have full authority to act for the Offeror to carry out all the provisions of the Contract.
- B. Be responsible for managing all Critical Outage Reports and for arranging and performance of Supplemental Services.
- C. The Project Manager shall be available for calls 24 hours a day, seven (7) days a week.
- D. The names of the Project Manager and a qualified alternate who shall assume the Project Manager's duties when the primary Project Manager is absent shall be identified as Key Personnel.

03 FULL MAINTENANCE AND REPAIR SERVICES

- A. The Offeror shall perform all maintenance and repair required to maintain all components of each UPS unit listed in Appendix A in an operational condition as prescribed by the original equipment manufacturer's specifications/guidelines with an operation up time of 99% or better.
- B. The term "Base Services" means that the offeror shall provide "full preventative and remedial maintenance and repairs, including labor, manufacturer certified spare parts and factory repair (when required) to the UPS units listed in Appendix A on site, at each Authority location for a fixed monthly fee. Remedial maintenance includes all repairs to all UPS units, when the malfunction is caused by normal "wear and tear" and not by an Act of God, accidental physical damage, water damage, or an act of vandalism.
- C. UPS components requiring factory repair shall be included in the fixed price monthly service fee. The Offeror shall remove, pack, transport/ship, re-install, and optimize/align repaired UPS components at no additional cost to the Authority.
- D. The number of UPS units to be supported may change in time. The Authority shall add to, or delete from, the number of UPS units serviced under this contract through the contract modification process with corresponding/negotiated cost adjustments.

04 INSPECTIONS AND PREVENTIVE MAINTENANCE SERVICES

- A. The Offeror shall provide preventive maintenance services for the UPS units at Authority locations, twice a year. PM services shall be performed between the hours of 9 AM – 4:00 PM, Monday through Friday. At least fifteen (15) calendar days prior to the proposed start date for PM services, the Offeror shall prepared a proposed schedule which details the hours and location(s) that the Offeror proposes to

perform PM services and submit the schedule to the COTR for approval. If a change in the approved schedule is required, the Offeror shall submit a written change request to the COTR for approval. Work shall not begin until approval has been received from the COTR.

B. Annual/Bi-Annual Preventive Maintenance and Inspection services of the UPS Power Module(s). All checks shall be designed to be performed either during normal operation with no danger to the UPS's operation condition and the critical load, or during off line operation, in the bypass mode and shall be performed in accordance with the manufactures recommended schedule and shall also include:

1. Visual Inspection

- Inspect all printed circuit boards connections for cleanliness, swab contacts if necessary.
- Inspect all power connections for signs of overheating.
- Inspect all subassemblies, bridges and legs for signs of component defects or stress.
- Inspect all DC capacitors for signs of leakage.
- Inspect all AC capacitors for signs of leakage.
- Inspect and inventory all customer owned spare parts.
- Inspect for, and perform as required, any open engineering changes.

2. Internal Operating Parameters

- DC Ground Detection Offset.
- Inverter leg current average balance.
- Output filter current average phase balance.
- Rectifier bridge current average leg balance.
- AC Protection settings and operation.
- DC Protection settings and operation.
- Input and Output Frequency and Voltage Bandwidth settings.
- Verify DC filter capacitance.
- Verify AC tank and trap filter capacitance.
- Power Supply voltages and waveforms.
- Replace Power Module power supply back up control battery cells.
- Static Switch leakage testing.

3. External Operating Parameters

- System Input Voltages (all phases).
- System Input Currents (all phases).
- DC Charging Voltage (float and equalize), record settings, adjust to nominal.
- Rectifier phase on and walk up.
- Inverter phase on and walk up.
- Adjust all panel meters to measured values.
- System Bypass Voltages (all phases).
- Manual and UV Transfer Testing, verify uninterrupted transfer waveform.
- Outage simulation, and battery capability testing, and verify charger current limit.
- Generator operation and interface verification.

3. Environmental Parameters

- UPS area ambient temperature and condition of ventilating equipment.
- General Cleanliness of UPS Power Module.
- General Cleanliness of UPS area.
- Replace all air filters.
- Clean control panel/CRT screen.

4. Battery Cabinet Checks
 - General appearance of Battery System (all types)
 - General cleanliness of Battery System area. (all types)
 - Inspect cells for physical abnormalities.
 - Inspect all DC connections for abnormalities.
 - Battery System area ambient temperature and condition of ventilating equipment.
 5. Monitoring System Parameters
 - Alarm archive review and printing.
 - Alarm lamp test - local and remote.
 - Replace all open monitor bulbs.
 6. General
 - Customer Consultation.
 - Verbal Recommendations.
 - General Observations.
 7. Following the Major PM inspection, a written report will be provided detailing the results of the inspection, and making specific recommendations toward future remedial action, upgrades, or sparing.
- C. Annual/Bi-Annual Battery System Maintenance and Inspection services shall be performed in accordance with the manufactures recommended schedule and shall also include:
1. Measure and record total system float voltage and individual battery voltages using a digital voltmeter.
 2. Batteries will be load tested with a portable tester applying 2.5 times its ampere hour rating for 15 seconds and record battery voltage at end of test period. Batteries may also have the internal resistance, impedance or conductance recorded, and load testing 10% during bi-annual inspections.
 3. Measure and record ambient temperature and all negative post temperatures.
 4. Measure and record all of the intercell/unit connector and battery cable contact resistances using a digital low resistance ohmmeter to verify that connection resistances are within the acceptable values determined for the particular battery, per manufacturers' guidelines. Not applicable to units with spade terminals.
 5. Visually inspect conditions and appearance of the following:
 - Main terminal connections, intercell/unit connectors, cables, and associated hardware.
 - Cell/unit covers, containers, and post seals.
 - Battery racks or cabinets and associated components and hardware.
 6. Mechanicals and Housekeeping Review:
 - Spot check torque on battery rack frames, rails and braces.

- Retorque all battery connections found to be beyond acceptable contact resistance values. Connection resistances remaining above acceptable limits should be analyzed to determine the effect of the increased resistance on connection integrity, remedy as required.
 - Perform cleaning of accessible surfaces and surrounding areas.
7. Inspect and/or adjust the following:
- Float and equalize voltage settings.
 - Operation of output current and voltage meters.
 - General housekeeping of equipment.
8. Review of Customer maintained records and safety documentation:
- Check for warning/hazard labels and operation information placards.
 - Inspect area for safety equipment if required.
9. Provide Customer with a written report:
- Describe condition of the batteries and any maintenance which Contractor deems necessary.
 - Provide condition report, by e-mail, to the Authority COTR.
- D. The Offeror shall prepare a Preventive Maintenance and Inspection Report (Sample at APPENDIX G) for each Authority UPS that is serviced. A format for the report shall be proposed by the Offeror and approved by the Authority COTR. The report shall include:
1. Detailed narrative of the Inspections performed.
 2. PM Services performed. State UPS unit(s) serviced, their status and any exception conditions and any setting adjustment made during the PM service.
 3. The results of all tests conducted and readings taken.
- E. The Offeror shall provide digital photographs of any unusual conditions or operating characteristics discovered during reactive or PM services.

05 CRITICAL RESPONSE TIME CALL BACKS

- A. A Critical Outage Report is notification by the COTR or authorized Authority staff that there is a failure of an UPS in support of a radio system providing radio coverage within the airport premises. (Ronald Reagan Washington National and Washington Dulles International Airports, Dulles Toll Road). The Report shall include the following information:
1. The Authority Point-of-Contact making the report and contact information.
 2. Location of the Outage (Site, Building ID).
 3. Accurate technical description of the problem.
 4. Any other relevant technical information that is known that will assist the technician in responding to the report.

5. Coordinating Instructions. Indicate contact information for access or other communication requirements with Authority or MA-630 Staff.

- B. The Offeror shall provide the COTR with a single point of contact 24 hours a day, 365 days a year to receive Critical Outage Reports. An Offeror employee, not voice mail, shall answer calls placed by the COTR or his/her representative. The Offeror employee shall be responsible for logging the call and forwarding the Critical Outage Report to the Offeror's Technician.

- C. The Offeror shall be available to respond to UPS, service callback requests and emergencies as necessary at the Airport 24 hours a day 365 days a year for the term of the Contract. The Offeror shall respond, on site, to Critical Outage Report requests within 4 (four) hours from notification and restore a failed UPS within 8 hours from notification. The term "EMERGENCY" is defined as "an alarm condition on the UPS or any situation that has caused the Uninterruptible Power Supply Unit to cease working and thereby jeopardize Authority radio capabilities. "RESPONSE TIME" is defined as from the time the Offeror receives the call from the Authority to the time the Offeror arrives at the Airport, and checks-in with the COTR (or representative).

- D. If the Offeror determines additional technical support is needed to complete the required repairs and return the UPS to operation, the Offeror shall provide the addition technical support at no additional cost to the Authority. No repair shall be postponed due to lack of Offeror technical support.

- E. The Offeror shall provide UPS Manufacturer Factory Trained and Certified Technical Staff to perform base services.

SECTION IV - SUPPLEMENTAL SERVICES

01 DESCRIPTION OF SERVICES

- A. The Authority may, during the course of this contract, request that the Offeror perform supplemental services which are outside the requirements of Base Services. All work performed under Supplemental Services will be requested and approved in advance in writing by the COTR using the "Contract Services Call Order" form (Appendix B). The Call Order will contain a detailed description of the services that are required from the Offeror. The Offeror shall provide the COTR a detailed cost estimate, which includes an itemized breakdown for labor, parts and materials as well as a schedule with critical milestones for completing the Call Order.
- B. Supplemental services include, but are not limited to, the following tasks:
1. Repairs due to acts of God, misuse, abuse, water damage and other events that are not viewed as "fair wear and tear".
 2. The Contractor may be requested to replace a UPS capacitor, batteries, or a non-repairable unit that has suffered a catastrophic failure during [or resulting in] an emergency situation. All replacement units should be comparable in size, power and performance to the unit being replaced. This contract WILL NOT be used by the Authority as a vehicle to upgrade adequately performing UPS units. The Call Order process will be used to order replacement units and batteries, and capacitors. The Contractor will be requested to provide a written cost proposal for the replacement unit/item(s). At that time, pending availability of funds, the COTR will approve the call order.
 3. During the life of this contract, new products and technologies may become available in the marketplace. These products and technologies could offer significant advantages to the Authority in terms of economy, efficiency, quality and mission effectiveness. It is in the Authority's interest to take advantage of such technology in a disciplined manner consistent with law, regulation, and Authority policies. Any change in the scope of this contract due to technological enhancements will be reflected to the contractor in the form of contract modification that specifically this area of change.

02 CALL ORDER

- A. Supplemental Service shall be **APPROVED IN ADVANCE** via a signed Call Order (APPENDIX B). The Offeror shall provide the Authority an accurate written estimate of the level of effort (labor category, hours, cost, and schedule) for the Offeror to complete the work requested by the Authority. These estimates are to be provided by the Offeror to the Authority at least 48 hours prior to the Offeror initiating any work on a task. The Offeror shall not initiate any work until receipt of an **APPROVED** Call Order. Email approval of a call order is acceptable authorization to proceed. The Contracting Officer's Technical Representative shall issue all Call Orders associated with this contract.
- B. For each call order, the Offeror shall provide the following before the Call Order will be approved for the work.
1. Estimated Price - Based on the fully loaded hourly rates in Section III Schedule.
 2. Project Understanding - Offeror will provide her/his understanding of what is required by this Statement of Work, and how all requirements shall be satisfied by completing the Work Items portion of Section 2: WORK ESTIMATE. The Offeror shall provide a cost proposal for the

proposed work by adding the labor categories, hours required, cost per hour, and the estimate cost to perform each "Work Item". The labor categories and rates listed on the Schedule shall be used to complete the Call Order.

3. The Offeror shall notify the Authority in writing when it has reached 80 percent of the authorized value of the Call Order. In addition, the Offeror shall notify the Authority in writing if the cost ceiling in the approved Call Order may be exceeded.
4. The Offeror shall perform supplemental service(s) required by the Call Order and report completion to the COTR.
5. Call Orders will be listed as a separate line item on invoices and include a copy of the call order.

SECTION V - QUALIFICATION OF STAFF**01 BASE SERVICES - KEY PERSONNEL**

The Offeror's staff that will respond to UPS Critical Outage Reports shall be identified as key personnel. Key personnel must be on-call to arrive within four (4) hours after notification (phone or e-mail) and must be an employee of the vendor or of an identified sub-offeror. Offeror shall demonstrate that he/she has sufficient UPS Manufacturer factory trained, authorized and certified technicians to perform preventive and corrective maintenance and respond within the response time required by the SOW.

A. Project Manager

- 1 The Project Manager shall have a minimum of eight years (8) years experience managing UPS contracts/projects of the size and scope described in this Specification.
- 2 Technical Staff responding to UPS Critical Outage Reports
 - a. Education and Experience: High school diploma or graduate equivalency diploma. Accredited technical school or an approved apprentice program.
 - b. Specialized Experience: A minimum of three years experience in installing, diagnosing, repairing and maintaining all types of UPS units with a minimum of one year of demonstrated and recent experience in maintaining a POWERWAVE UPS interfaced with a Motorola 800 MHz Trunked, Simulcast Radio System.
 - c. Certifications: POWERWARE trained and certified technician.

B. The Offeror will provide resumes certification (format provide in Appendix H) for all proposed personnel. Offerors are advised that by submission of a resume, the Offeror is understood to affirm that the individual shall be made available upon award of a contract as noted in Paragraph F below.

- 1 Name.
- 2 Total Number of years of Experience.
- 3 Number of Year Experience UPS Maintenance.
- 4 Current Work Location.
- 5 Work experience (beginning with current position):
 - a. Employer: Dates (month/year); Title(s) held
 - b. Responsibilities/tasks shall be discussed in sufficient detail so as to permit comparison with contract requirements. Specific examples of work assignments, accomplishments, and products shall be provided.
 - c. Offerors shall avoid any gaps in experience as it may lead to confusion and need for further clarification.
- 6 Education and Training Completed (Date(s); Institution: Major/Minor).

7 Professional Certifications - (Date(s); Institution).

8 Awards and Special Recognitions

C. All requests for approval of substitutions under this contract must be in writing and provide a detailed explanation of the circumstances necessitating the proposed substitutions. They must contain a complete resume (Authority Format) for the proposed substitute or addition, and any other information requested by the Contracting Officer or needed by him to approve or disapprove the proposed substitutions. All substitutions proposed during the duration of this contract must have qualifications of the person being replaced. The Contracting Officer or his authorized representative will evaluate such requests and promptly notify the Offeror of his approval or disapproval thereof in writing.

02 SUPPLEMENTAL SERVICES STAFF

A. The Authority's UPS support workload is variable and unexpected demands sometimes arise. The Offeror will be responsible for providing competent UPS specialists to meet variable demands in workload. The Labor categories anticipated for this work is are described in Appendix C.

B. Offeror shall demonstrate that the Offeror has sufficient qualified staff to perform supplemental services by completing the staff skills matrix. The staff skill matrix shall summarize relevant experience of proposed supplemental services staff, including any subcontractor staff, specific to UPS repair and replacement actions. List all test equipment in which the proposed individual is qualified to use relative to UPS repair and replacement actions and how expertise was obtained. Additionally, Offeror will provide a narrative description of experience relevant to this project. Offeror and subcontractor staff experience shall be shown separately.

03 STAFF QUALIFICATIONS

The Offeror shall warrant that all persons assigned to the performance of this contract shall be employees of the Offeror (or specified Subcontractor), are Manufacturer Certified to perform maintenance and shall be fully qualified to perform the work required. The Offeror shall include a similar provision in any contract with any Subcontractor selected to perform work under this contract.

04 UNACCEPTABLE STAFF

The Authority may, for reasonable cause, require the contractor to cease using a particular employee, or require the contractor to compel a subcontractor to cease using a particular employee to provide services to the Authority under this Contract. Circumstances that constitute "reasonable cause" include, but are not limited to, employee dishonesty, employee incompetence in performing the services, or employee failure to follow contract requirements or established procedures of which the employee is aware. The Authority will provide documentation supporting its request to the contractor. Should the Authority at any time request that any contractor employees providing services under the Contract be changed, the contractor agrees to do so within the time frame specified in the Authority's written request.

SECTION VI - CONTRACT START UP**01 EQUIPMENT CONDITION SURVEY**

- A. The Offeror shall, within fifteen (15) days from the Contract award, perform an inspection and assess the condition of all equipment covered under this Specification (Appendix A) to establish a UPS condition baseline. The equipment condition survey shall include documenting of observed deficiencies in equipment condition, operation and/or performance in an Equipment Condition Survey Report which will serve as a “baseline” for the Offeror’s UPS maintenance services to the Authority.
- B. The Equipment Condition Survey Report shall document all deficiencies that the Offeror has identified, together with a detailed breakdown of the estimated cost to repair each deficiency and a recommended priority to correct each. A draft copy of the Condition Survey Report shall be submitted to the COTR within five (5) business days of the inspection completion date and a final report to be submitted to the COTR within five (5) business days after comments have been received from the COTR. The Authority will determine how and when each item will be addressed. Correction of these deficiencies will be accomplished by either Supplemental Services under this Specification or by competitive bid procurement as determine by the Authority. Any deficiencies found after the Equipment Condition Survey Report has been submitted will be considered the Offeror’s responsibility and will be covered under Base Services or Supplemental Services depending on the circumstances.

SECTION VII - CONTRACTOR REQUIREMENTS**01 INVENTORY AND REPLACEMENT PARTS**

- A. The Offeror shall certify to having a service facility and a full inventory of supplies and equipment required to maintain the UPS inventory (APPENDIX A) within a seventy five (75) mile radius of the Dulles and National Airports.
- B. Only Original Equipment Manufacturer ("OEM") new parts will be used to repair Authority UPS units. After market or refurbished parts are not be used in support of this effort. However, if it is determined by the Offeror that Original Equipment Manufacturer ("OEM") new parts are not available, then OEM refurbished or used parts would be acceptable. In these instances, the Contractor shall notify the COTR or authorized designee that new parts are not available and as a result OEM refurbished parts or used parts will need to be used. The COTR shall provide approval to the Offeror or authorized designee prior to such parts being ordered and stocked.
- C. The Offeror shall provide a warranty on all parts and labor for a minimum period of ninety (90) days from the completion of the service. In the case of parts, if the OEM standard warranty period is greater than ninety (90) days, the manufacturer's warranty period will prevail. Any additional repairs required within the warranty period will be at the expense of the Offeror. If additional parts are required they will be replaced at no additional cost to the Authority

02 AIRPORT SECURITY BADGES AND DRIVING PERMITS

- A. Offeror shall be responsible for, at its own expense, obtaining the proper fingerprinting, training, badges and customs seal required to access the restricted areas of the airports including the Air Operations Area (AOA), Security Identification Display Area (SIDA), Customs and Immigration.
- B. Offeror staff performing UPS maintenance services will be required to have Airport Identification badges in their possession and displayed at all times while on Authority properties. The Offeror shall provide the COTR with a list of employees who will be applying for security badges five (5) work days prior to the start of the Contract. All Offeror employees working at the Authority shall complete the appropriate ID card application and obtain a security badge no later than fifteen (15) days from the award of the Contract. The cost for the ID Badges are as follows:
- 1 Ronald Reagan Washington National Airport. ID Badges are issued for \$50/year per badge.
 - 2 Washington Dulles International Airport. ID Badges are issued for \$50/year, per badge.
 - 3 ID Badges expire in the birth month of the holder. In addition to the annual badge fee, there is a one-time fee of \$29 for fingerprinting. The Offeror shall pay these fees.
- C. Identification badges issued by the Authority must be visibly worn at all times while in the SIDA.
- D. The Offeror shall be responsible for, at its own expense, compliance with the requirements and procedures to obtain approval of any motor vehicle to operate in the Air Operations Area (AOA).

03 COMMUNICATION AND COORDINATION

- A. The Offeror shall maintain effective communication and coordination with the Authority utilizing email, telephones, faxes, pagers, cameras etc. to ensure the Authority is kept abreast of current work in progress and planned for the term of the Contract.

1. Reporting of Critical Outage Reports shall be to the Offeror's 24Hour POC.
 2. Calls concerning status of Critical Outage Reports shall be made to the Project Manager. If the PM is not available, the Authority shall contact the designated alternate. The Offeror may specify another contact point as long as the phone is answered by an Offeror's employee and the information required by the COTR or his/her representative is provided within one hour.
 3. The Offeror shall provide a daily status on outstanding Critical Outage Reports.
 4. The requirements for and status of Supplemental Services shall be coordinated with the Offeror's PM.
 5. The Offeror shall provide a detailed e-mail report when Preventive Maintenance, Critical Outage Reports or Supplemental Services are completed. The Offeror shall submit a report format (similar to the sample provided in APPENDIX G to the COTR for approval).
 6. The Offeror shall contact the COTR regarding any issues that will delay mitigation of a Critical Outage Report.
 7. Other support contracts - The Contractor may need to coordinate support and maintenance activities with other Authority contractors on site. This contract will involve coordination/oversight but not supervision of other support contractors.
- B. Reporting - Contractor shall submit a monthly report to the CO and COTR that describes the overall status of the contract and the Authority UPS. This report will follow a format agreed to by the Authority and the Contractor. The format of the report is expected to change from time to time. Initially, the report is expected to contain the following sections:
1. Overview.
 2. Accomplishments, planned activities, summary of performance metrics, and issues.
 3. Tracking of performance measures and other identified metrics.
 4. Personnel – Update Key Personnel and personnel supporting supplemental services Roster.
 5. Base Services:
 - a. Work accomplished during the reporting period and work planned to be accomplished during the next reporting period.
 - b. Issues.
 6. Supplemental Services
 - a. Status of each project.
 - b. Work accomplished during the reporting period and work planned to be accomplished during the next reporting period.
 - c. Issues.

SECTION VIII - CONTRACT PHASE OUT

01 SECURITY BADGES

Upon expiration/termination of the Contract or discontinuance of employment of any of Offeror's personnel (including subcontractors) working for the Airports Authority, all keys, security badges, and all other Authority identification shall be surrendered to the COTR.

02 RECORDS AND DOCUMENTATION

Upon Contract termination or the end of the contract term, all records and documentation, including, but not limited to, databases, drawings, O&M manuals, preventive maintenance schedules, preventive maintenance records, data etc. shall remain the sole property of the Authority.

03 PREVENTIVE MAINTENANCE TASKS

It is the Authority's intent that all preventive maintenance tasks be completed on all equipment covered under this Specification two (2) months prior to the expiration of the base Contract period.

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APPENDIX A
UPS INVENTORY

APPENDIX A - UPS INVENTORY

Line No	Manufacturer	Model No	Serial No	KVA	Voltage	Phase	Battery Type	Location
1	Powerware Plus	PLUS 36	BP365A0035	36	IN 480/277 VAC OUT 208/120 VAC	3	Sealed	Ramp Tower Radio Room, B-Concourse, Dulles Airport
2	Powerware	9330-40	EX193AXX05	40	IN 208/120 VAC OUT 208/120 VAC	3	Sealed	Backup Radio Tower Site, Dulles Airport
3	Powerware	Profile	BP414CO535	36	IN 240/120 VAC OUT 240/120 VAC	1	Sealed	Tysons Tower Site (8675 Leesburg Pike), Intersection of Dulles
4	Powerware	9315-50	EP314ZBA03	50	IN 208/120 VAC OUT 208/120 VAC	3	Sealed	DCA Prime Site, 3rd Floor, Hangar 5, National Airport
5	Powerware	9315-50	EP314ZBA04	50	IN 208/120 VAC OUT 208/120 VAC	3	Sealed	DCA Prime Site, 3rd Floor, Hangar 5, National Airport
6	Powerware	9315-50	EW494ZBA06	50	IN 208/120 VAC OUT 208/120 VAC	3	Sealed	Back-up Radio Room, 3rd Floor, Hangar 5, National Airport.
7	Powerware	9330-40	EX193AXX03	40	IN 208/120 VAC OUT 208/120 VAC	3	Sealed	Room 115N, first floor Hangar 5, National Airport
8	Chloride	EDP 70/50-2x2	B173793	50	IN 208/120 VAC OUT 208/120 VAC	3	Sealed	Room 113, first floor, Hangar 5, National Airport
9	Liebert	NFINITY	090430100_BU7	24	IN 240/120 VAC OUT 240/120 VAC	1	Sealed	North Tower Site, Dulles Airport
10	Liebert	NFINITY	0907201002BU7	24	IN 240/120 VAC OUT 240/120 VAC	1	Sealed	North Tower Site, Dulles Airport
11	Liebert	NFINITY	0904301007BU7	24	IN 240/120 VAC OUT 240/120 VAC	1	Sealed	South Tower Site, Dulles Airport
12	Liebert	NFINITY	0904701001BU7	24	IN 240/120 VAC OUT 240/120 VAC	1	Sealed	South Tower Site, Dulles Airport

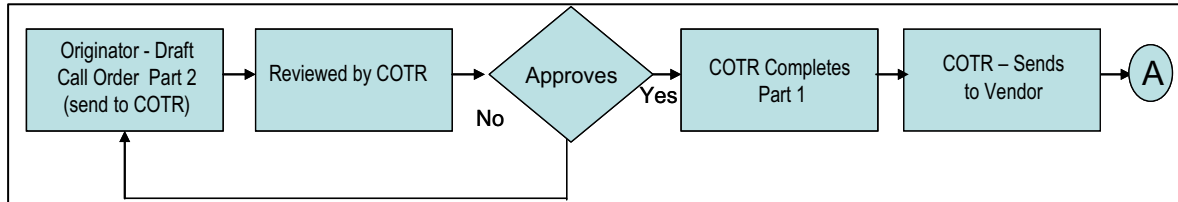
APPENDIX B1

GUIDE FOR USING AND COMPLETING THE CONTRACT SERVICE CALL ORDER

APPENDIX B1 - GUIDANCE FOR USING AND COMPLETING THE CONTRACT SERVICES CALL ORDER (CALL ORDER).

I Background

The Contracting Officer may authorize the use of a Call Order to order contract services that are specified on the contract schedule. This procedure provides detailed guidance on the use of Call Orders to order services when authorized.



II Requirements

The MA-630, Authority or Contractor staff member initiates a call order by completing PART 2 – REQUIREMENTS. In PART 2; the requestor enters the contract number and the contractor’s point-of-contact for work under this contract (obtained from the Department’s Contracting Officer’s Technical Representative (COTR)). The Location and Description of work is specified. The description of work must include sufficient information to allow the Contractor to prepare an accurate work estimate. If necessary, include an attachment, which is referenced in PART 2, with the required work details. Clearly answer the questions of what needs to be done, where the work needs to be performed, when it needs to be completed, and list deliverables required.

Example

PART 2. REQUIREMENTS

I.1 REQUESTOR INFORMATION				
Requester	MA#	Phone	Today’s Date	Date Required
Derek Kelly	630	703 417 3492	June 26, 2007	July 11, 2007
I.2 CONTRACTOR INFORMATION				
Contractor:	RCC		Contract #:	1-07-C045 RCC
Address:	2809 Emerywood Parkway Suite 505 Richmond, Virginia 23294		POC:	Jeffrey D. Pegram, P.E.
			Phone:	804 353 0300
Other Data:			FAX:	804 353 8059
LOCATION/DESCRIPTION OF WORK (Name, Account Code, and Description of Work)				
Dulles Airport employs an AM radio transmitter to broadcast parking and other advisory information to airport constituencies that are traveling to Dulles on the Dulles Access highway. The AM (Traveler’s Advisory) radio station at IAD (WPQE998) is being moved about 250’ and an Engineering Study is needed to accomplish two (2) major objectives: <ol style="list-style-type: none"> 1. A detailed drawing that supports the implementation of the AM radio system at it’s new location with bill of materials. 2. The radio System is old and replacement is required. Identify and recommend a replacement system. Upon Authority approval of the recommended system, incorporate into the BOM in step 1. Attachments provide background information for this work. On site visit will be required to support solution development. Provide Work Estimate by June 29, 2007 Call Order Deliverables: <ol style="list-style-type: none"> 1. Radio System Recommendation. 2. Detailed Installation Drawing – System installation including antenna and mast. 3. Bill of Materials. 				

III Review and Approval of the Requirement

The draft Call Order is forwarded to the MA-630 Contracting Officer's Technical Representative (COTR) for review.

The COTR reviews the requirements.

- If the COTR concurs with the requirement, the COTR completes PART 1.
 - The COTR completes the Call Order Header Information with a brief TITLE that summarizes the work required and then adds a Call Order Number.
 - A Call Order number consists of the YEAR, the Julian Date, and a sequence number starting with the number 1 (within each Julian date). You can Google for the Julian day. For example the third call order issued on 2 January 2008 would have the following call order Number: 2008-002-03.
 - The Header will print on all pages of the call order to allow for identification of pages when they become separated.

Example

CONTRACT SERVICES CALL ORDER

PART 1: CALL ORDER REQUEST: (Number 2008-177-1); Title: Dulles AM Radio Advisory System

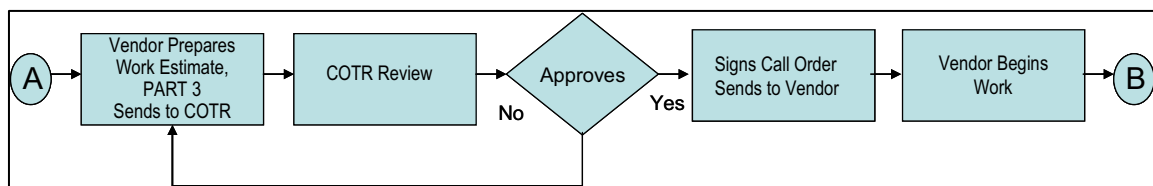
Work Summary
Radio Engineering and Design of the relocated Dulles AM Radio Advisory System

- If the COTR requires additional information, the COTR can return the Call Order to the originator for additional information or add additional information to the Call Order Requirements.

The COTR forwards the Call Order to the appropriate vendor(s) for a work estimate.

IV Work Estimate and Approvals (PART 3)

The Contractor prepares a work estimate and returns a signed work estimate to the COTR.



The work estimate, if extensive, can be provided as an Attachment with a summary of deliverables or work items listed in PART 3

Once work items are entered, the Contractor signs and dates the estimate in the appropriate blocks and returns the Call Order to the COTR for review and approval. If the COTR has questions or additional clarifying information is needed, the COTR will return the Call Order to the Contractor for additional information. Once the work estimate is determined to be acceptable by the COTR, the COTR will sign and date PART 3 in the appropriate blocks and forward the Call Order to the Contractor. Upon receipt of the signed Call Order, the Contractor can begin work described in the Call Order. The Contractor will not begin work until a signed call order is received. The Contractor will only perform the

work described in the approved call order. Furthermore, the cost to the Authority shall not exceed the "Estimated Cost" cited in the approved call order.

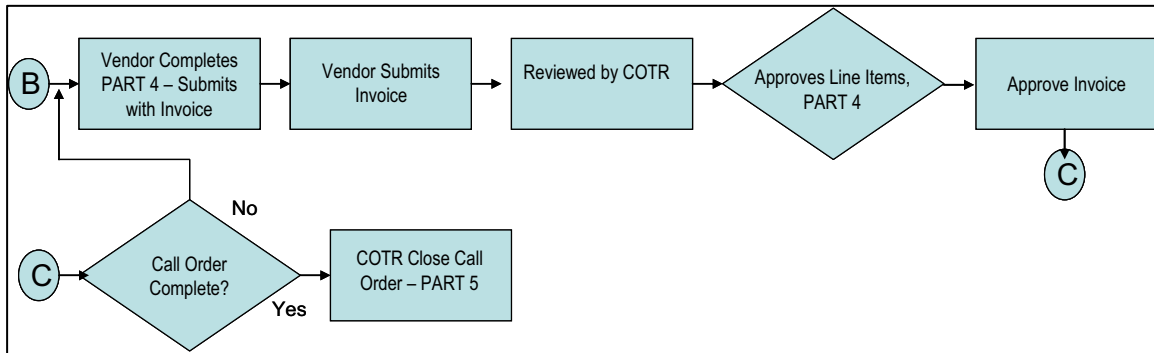
Example

PART 3: WORK ESTIMATE/WORK APPROVALS

WORK ESTIMATE					
MWAA Estimator		Contractor Estimator		JDP	
Estimate Date:		Site Visit Date:		To Be Scheduled	
Work Items(s) <i>(Additional Lines May be Added)</i>		Labor Category	Cost	QTY	Estimated Cost
1. Visit existing facilities/location and new location; Discuss desired feature		Radio Engineer	###.##	8 hrs +exp	\$#,###.
2. Review of available technologies, current equipment, and potential vendors		Radio Engineer	###.##	6 hrs	\$#,###.
3. Prepare Design Diagram, Site Detail, equipment list (BOM), and bidders list		Radio Engineer	###.##	10 hrs	\$#,###.
4. Review Materials with MA-630 and finalize		Radio Engineer	###.##	4 hrs	\$#,###.
5.					
6.					
Total Estimate Cost:				28 hrs	\$#,###.
Notes/Comments: <i>(List Attachments if provided)</i> Detailed drawings or plans do not include structural analysis, surveys, civil engineering, or foundation design, but may incorporate such information as available from other sources. Cost estimate is inclusive of expenses for one on-site visit. <i>(NOTE: By signing the Call Order, the Contractor acknowledges that he/she will only perform the work described herein after this call order is approved in writing by the COTR. Furthermore, the cost to the Authority shall not exceed the "Estimated Cost" cited above.)</i>					
Contractor Signature:	/s/	Date:	mm/dd/yyyy		
Print Name		Title:			
COTR Signature	/s/	Date Approved (COTR)	mm/dd/yyyy		
Print Name	Derek Kelly	Title:	Department Manager		

V PART 4: WORK COMPLETED/ACCEPTED

PART 4 is used by the Contractor to document and invoice for work completed. The accomplishment of a call order may take more than one month to complete and progress payments in conjunction with a monthly billing cycle are authorized for work accomplished. The Contractor completes Part 4 "Work Completed/Accepted" by entering the work accomplished and payment claimed. The Work Items and Deliverables listed for which payment is claimed MUST track with the Work Items/Deliverables listed in PART 2. Part 4 can be separated from the Call Order and attached to an invoice to support the amount invoiced (Note that the Call Order Identification will be in the Header of the document). PART 4 is also intended to be cumulative and resubmitted with additional work completed to support follow on monthly invoices.



Upon receipt of an Invoice with Call Order PART 4 Attachments, the COTR will review each PART 4 line item and approve or disapprove each line for payment by signature in Column F and adding a Date. (Column G). Disapproved amounts are subtracted from the invoice and payment is authorized for approved items. The COTR shall contact the Contractor when line items are disapproved.

Example

PART 4: WORK COMPLETED/ACCEPTED (Contractor Completes Col A, through E and submits with Invoice)

A - Invoice Date (Contractor)	B - Invoice Number (Contractor)	C - Invoice Amount (Contractor)	D - Call Order Balance (Contractor)	E - Product/Services Delivered/Comments (Contractor)	F - Approved/Disapproved By (COTR)	G-Date (COTR)

VI PART 5: Close Out the Call Order

Once the work required by a call order is completed, all parts are submitted with the invoice in which final payment is claimed. The COTR verifies the work completed and accepted and completes the "Call Order Close Out" Section of PART 5 and retains a copy of the completed Call Order for the life of the Contract.

Example

PART 5: CALL ORDER CLOSE OUT (Completed by COTR when all requirements of the Call Order are fulfilled.)

Inspector/COTR Signature:		Inspector/COTR's Comments:	
Inspector/COTR: (Print Name and Title)		Completion/Inspection Date:	

APPENDIX B2
CALL ORDER FORM MASTER

CONTRACT SERVICES CALL ORDER

CALL ORDER REQUEST: (Number 20 __ - __ - __); Title: _____

Work Summary

1. REQUIREMENTS

REQUESTOR INFORMATION				
Requestor	MA#	Phone	Today's Date	Date Required
CONTRACTOR INFORMATION				
Contractor:			Contract #:	
Address:			POC:	
			Phone:	
Other Data:			FAX:	
D. LOCATION/DESCRIPTION OF WORK (Name, Account Code, and Description of Work)				

CONTRACT SERVICES CALL ORDER

CALL ORDER REQUEST: (Number 20 __ - __ - __); Title: _____

Work Summary

2. WORK ESTIMATE/WORK APPROVALS

WORK ESTIMATE				
MWAA Estimator		Contractor Estimator		
Estimate Date:		Site Visit Date:		
Work Items(s) <i>(Additional Lines May be Added)</i>	Labor Category	Cost	QTY	Estimated Cost
1.				
2.				
3.				
4.				
5.				
6.				
Total Estimate Cost:				
Notes/Comments: <i>(List Attachments if provided)</i>				
<i>(NOTE: By signing the Call Order, the Contractor acknowledges that he/she will only perform the work described herein after this call order is approved in writing by the COTR. Furthermore, the cost to the Authority shall not exceed the "Estimated Cost" cited above.)</i>				
Contractor Signature:		Date:		
Print Name		Title:		
COTR Signature		Date Approved (COTR)		
Print Name		Title:		

CONTRACT SERVICES CALL ORDER

CALL ORDER REQUEST: (Number 20 __ - __ - __); Title: _____

Work Summary .

3. RECORD/ACCEPTANCE OF WORK *(Contractor Completes Col A, B, C, F and G and submits with Invoice)*

A - Invoice Date <i>(Contractor)</i>	B - Invoice Number <i>(Contractor)</i>	C - Invoice Amount <i>(Contractor)</i>	D - Approved By <i>(COTR)</i>	E-Approval Date <i>(COTR)</i>	F - Call Order Balance <i>(Contractor)</i>	G - Product/Services Delivered/Comments <i>(Contractor)</i>

CALL ORDER CLOSE OUT *(Completed by COTR when all requirements of the Call Order are fulfilled.)*

Inspector/COTR Signature:		Inspector/COTR's Comments:	
Inspector/COTR: <i>(Print Name and Title)</i>		Completion/Inspection Date:	

APPENDIX C
LABOR CATEGORY DESCRIPTIONS

Appendix 1
Labor Category Descriptions

Labor Category	Duties	Experience/Qualifications	Education	Required Certifications
Electrician	Performs operation and maintenance of electrical power systems beginning at the service entrance of buildings and structures, and maintains complete wiring systems, conduit systems, cable systems, conductors, switches, receptacles, outlets, device plates, and grounds and light fixtures. Installs, operates and maintains power generation equipment, emergency generating devices, and large uninterruptible power supplies. Installs, trouble shoots and repairs electrical units such as generators, motors, voltage regulators, and large uninterruptible power supplies; locates sources of malfunction; and accomplishes required repairs by splicing or replacing wiring, rewinding armatures and field coils, replacing commutators, and replacing damaged parts. Uses common hand tools, tubing and conduit benders, hand-and-motor-operated conduit-threading machines, soldering irons, and hand drills. Ensures that all replacements are of the same kind, equal or better type, style, quality, grade, or class to obtain specific operating characteristics or to match other items already in place. Ensures that all work conforms to the National Electric Code	Have at least five years experience as an exterior and interior electrician within a commercial or industrial building. One-year experience installing and maintaining large uninterruptible power supplies.	High school diploma or equivalent technical education through an accredited technical school and/or through and approved apprentice program to qualify as a journeyman electrician.	Manufacturer/Factory Trained and Certified based on equipment listed in Appendix A. Holds a valid Virginia Journeyman's License.
Tradesman, Electronic Technician I	Perform tests and measurements of an electrical, electro-mechanical, and uninterruptible power supplies of various sizes, in accordance with commercial standards. Troubleshoots related product malfunctions and modifies, wires and replace electrical components, as required to correct malfunctions and restore operational capability.	Four (4) years relevant electrical work experience as an electronic technician with one (1) year direct experience in the installation and maintenance of UPS units of various sizes.	High school diploma or graduate equivalency diploma. Training in the installation, trouble shooting maintenance, testing and de-installation of UPS units.	Manufacturer/Factory Trained and Certified based on equipment listed in Appendix A.
Tradesman, Electronic Technician II	Perform tests and measurements of an electrical, electro-mechanical, and uninterruptible power supplies of various sizes using standard test equipment, and analyze results to evaluate performance and determine need for adjustment. Perform preventative maintenance and calibration of UPS Units, equipment and systems. Read blueprints, wiring diagrams, schematic drawings, and engineering instructions for assembling electronics units, applying knowledge of electronic theory and components. Identify and	Six (6) years relevant work experience with the testing of electronic equipment of which two (2) years direct experience in the installation and maintenance of UPS units of various sizes.	High school diploma or graduate equivalency diploma. A technical school degree (electronic/electrical). Training in the installation, trouble shooting maintenance, testing and de-installation of UPS units.	Manufacturer/Factory Trained and Certified based on equipment listed in Appendix A.

Appendix 1
Labor Category Descriptions

Labor Category	Duties	Experience/Qualifications	Education	Required Certifications
	<p>resolve equipment malfunctions. Maintain system logs and manuals to document testing and operation of equipment. Assemble, test, and maintain circuitry or electronic components according to engineering instructions, technical manuals, and knowledge of electronics. Adjust and replace defective or improperly functioning circuitry, batteries, and electronics components.</p>			
<p>Tradesman, Senior Electronic Technician III</p>	<p>Test electrical and UPS units, using standard test equipment, and analyze results to evaluate performance and determine need for adjustment, repair or replacement. Perform preventative maintenance and calibration of equipment and systems. Read blueprints, wiring diagrams, schematic drawings, and engineering instructions for assembling electronics units, applying knowledge of electronic theory and components. Identify and resolve equipment malfunctions. Maintain system logs and manuals to document testing and operation of equipment. Assemble, test, and maintain circuitry or electronic components according to engineering instructions, technical manuals, and knowledge of electronics. Adjust and replace defective or improperly functioning circuitry, batteries, and electronics components. May supervise or direct the work of more junior personnel.</p>	<p>Eight (8) years relevant work experience with the testing of electronic equipment of which five (5) years should be relevant work experience in the installation, testing and trouble shooting, and repair of UPS Units of various sizes. .</p>	<p>High school diploma or graduate equivalency diploma. A technical (electronic/electrical) school degree is also required.</p>	<p>Manufacturer/Factory Trained and Certified based on equipment listed in Appendix A.</p>
<p>Engineer, Electrical/Electronics</p>	<p>Design, implement, maintain, and improve electrical facilities, components, products, uninterruptible Power supplies, and systems for commercial, industrial, and domestic purposes. Develops blueprints, wiring diagrams, schematic drawings, and engineering instructions for assembling electronics units, and applying knowledge of electronic theory and components. Operate computer-assisted engineering and design software and equipment to perform engineering tasks. Inspect completed installations and observe operations, to ensure conformance to design and equipment specifications and compliance with operational and safety standards.</p>	<p>Four (4) years of progressively more complex work experience in the design, development, integration and analysis of hardware projects including UPS installations</p>	<p>Bachelor's degree in electrical/electronics engineering from a college or university accredited by an accrediting body recognized by the U.S. Department of Education</p>	<p>Manufacturer/Factory Trained and Certified based on equipment listed in Appendix A.</p>

APPENDIX D

SKILLS MATRIX FOR PROPOSED SUPPLEMENTAL SERVICES STAFF

APPENDIX D - SKILLS MATRIX FOR PROPOSED SUPPLEMENTAL SERVICES STAFF

Skills Matrix	Name: Labor Category:	Name: Labor Category:	Name: Labor Category:	Name: Labor Category:
Experience:				
Total year(s) of experience related to the functional areas below:				
Specialized Experience in Installing and maintaining large Uninterruptible power supply units.				
Years with current Company				
Education:				
Bachelors Degree				
High school diploma or graduate equivalency diploma.				
Accredited technical school				
Approved apprentice program				
Cetifications:				
Factory Trained and Certified - Powerwave				
Factory Trained and Certified - Chloride				
Factory Trained and Certified - Liebert (NFINITY)				
Virginia Electrician Journeyman's License				
Functional Areas:				
UPS Troubleshooting and Diagnostics				
Repair UPS units				
Replace UPS Components				
Test Batteries				
Replace Batteries				
Designed Installation of Large UPS units				
Developed Installation Drawing and Instructions				
Supervised UPS Installations				
Conduct UPS Testing for correct operation per factory specifications.				
Installed/Removed UPS Units				
Qualified in the Use of the following test equipment: (List for each Individual)				
How was qualification Obtained?				

APPENDIX E
RESUME FORMAT

APPENDIX E - RESUME FORMAT

Information Required	Proposed Individual	Reserved
Name		
Labor Category		
TOTAL year(s) of experience		
# of YEARS of recent experience in operating, and maintaining a UPS		
Education – Degree/ Major, Minor /Diploma		
Education: Technical or Trade Schools		
Certifications: Factory Trained and Certified - Powerwave Factory Trained and Certified - Chloride Factory Trained and Certified - Liebert (NFINITY) Virginia Electrician Journeyman's License		
Specify the Type and Model of electronics test equipment related to this work in which the Proposed Individual is proficient.		

Note: The experience described below **must** substantiate the information represented in the above table and any matrices or summary tables include in the offereor's response.

Relevant General and Specialized Experience

Work History *(Describe Employment History Starting with the Most Recent Employment) (Note: Any significant gaps in employment shall be explained.)*

Company/Employment From to Dates/Job Title
(Describe the work performed and skills employed)

Company/Employment From to Dates/Job Title
(Describe the work performed and skills employed)

Company/Employment From to Dates/Job Title
(Describe the work performed and skills employed)

Certification:

I hereby state that the information in this resume is true, accurate and correct and consent is given for disclosure of this resume for proposal evaluation purposes. I will be available to perform as (Labor Category) for any resultant contract.

Signature of Person Identified on Resume

Date

Signature
(Signature of person authorized to sign on behalf of the firm submitting the resume.)

Date

APPENDIX F
CORPORATE/COMPANY EXPERIENCE FORM

Appendix F – Corporate/Company Experience Form
(Use one form for each reference being submitted.)

1. Complete Name of Reference (Government agency, commercial firm, or other organization)	
2. Complete Address of Reference	
3. Contract Number or other control number	4. Date of contract
5. Date work was begun	6. Date work was completed
7. Contract type, initial contract price, estimated cost and fee, or target cost and profit or fee	8. Location of work (country, state or province, county, city)
9a. Reference/Technical point of contact (name, title, address, telephone no. and email address)	9b. Reference/Contracting point of contact (name, title, address, telephone no. and email address)
10. Current status of contract (choose one): <input type="checkbox"/> Work continuing, on schedule <input type="checkbox"/> Work continuing, behind schedule <input type="checkbox"/> Work completed, no further action pending or underway <input type="checkbox"/> Work completed, routine administrative action pending or underway	<input type="checkbox"/> Work completed, claims negotiations pending or underway <input type="checkbox"/> Work completed, litigation pending or underway <input type="checkbox"/> Terminated for Convenience <input type="checkbox"/> Terminated for Default Other (explain)
11. Provide a summary description of contract work, not to exceed 1/2 page in length. Describe the nature and scope of work, its relevancy to this contract, and a description of any problems encountered and your corrective actions.	
13. Describe the extent to which your team members (subcontractors) on the solicitation contributed to the effort described in Block 11. Describe the extent to which the employees from your company who performed the effort described in Block 11 will be performing under this solicitation.	
14. MWAA is an Airports Authority. Describe the nature of your customer on this contract. How is your customer similar to MWAA, or if not similar, how is your experience with this customer relevant to MWAA?	

APPENDIX G
PREVENTIVE MAINTENANCE AND INSPECTION REPORT

APPENDIX G – PREVENTIVE MAINTENANCE AND INSPECTION REPORT

UPS Maintenance Report

Site Information:	
Name:	
Address:	

Company Staff Member Conducting Services:	Contact Information:	
Point of Contact	Phone	
Company Address:	FAX	
	E-mail	

Equipment Information:	Unit/Model:	KVA:	KW:
Serial No:	CTO:		

CTO – Configure to Order

Battery Information:			
Manufacturer:	Type:	Date Code	
No of Strings:	No of Trays/Strings:	No of Jars/Trays:	
Battery Type:	<input type="checkbox"/> Sealed	<input type="checkbox"/> Lead Acid	<input type="checkbox"/> NiCad

Input Reading		Bypass Reading		Output Reading MOB Closed		Other Readings	
Nominal		Nominal		Nominal		Nominal DC Link	
A-B VAC		A-B VAC		A-B VAC		DC Link Volts	
B-C VAC		B-C VAC		B-C VAC		Battery Volts	
C-A VAC		C-A VAC		C-A VAC		POS/Ground	
A-N VAC		A-N VAC		A-N VAC		Neg/Ground	
B-N VAC		B-N VAC		B-N VAC		AC Ripple	
B-N VAC				B-N VAC		Ripple Amps	
A-I				A-I			
B-I				B-I			
C-I				C-I			
Frequency (Hz)				Frequency (Hz)			
				Percent Load			

VAC – Volts AC

MOB – Main Output Breaker Closed [Yes or No] LOAD on UPS? [Yes or No] (Circle one)

Environmental		Battery Room Cleanliness	
UPS Room Temperature	Remote Monitor Panel Operation	Battery Room Temperature	
UPS Room Ventilation	UPS Alarm Queue	Batter Room Ventilation	
UPS Air Filters	UPS Room Cleanliness	Battery Visual Inspection	

Notes:
Signature: