



**DEPARTMENT OF PROCUREMENT SERVICES  
NON-COMPETITIVE REVIEW BOARD (NCRB) APPLICATION**

Complete this cover form and the **Non-Competitive Procurement Application Worksheet** in detail. Refer to the page entitled **"Instructions for Non-Competitive Procurement Application"** for completing this application in accordance with its policy regarding NCRB. Complete "other" subject area if additional information is needed. Subject areas must be fully completed and responses merely referencing attachments will not be accepted and will be immediately rejected.

Department <b>Aviation</b>	Originator Name <b>George Lyman</b>	Telephone <b>(773) 894-5291</b>	Date <b>3/24/14</b>	Signature of Application Author 
Contract Liaison <b>David Bowman</b>	Email Contract Liaison <b>david.bowman@cityofchicago.org</b>	Telephone <b>(703) 686-7089</b>		

List Name of NCRB Attendees/Department	
George Lyman - Aviation	3/24/14
Tom Stastny - Aviation	3/24/14
David Bowman - Aviation	3/24/14
James Hankin - Aviation	3/24/14

Request NCRB review be conducted for the product(s) and/or service(s) described herein.  
 Company: **Exelis, Inc.**  
 12930 Worldgate Dr. Herndon, VA 20170

Contact Person: <b>Sharon Goldin</b>	Phone: <b>(571) 203-1569</b>	Email: <b>sharon.goldin@exelisinc.com</b>
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Project Description: **Installation and Maintenance of Exelis V-MAT Universal Access Transceiver (UAT) Automatic Dependent Surveillance-Broadcast (ADS-B) Vehicle Tracking Units**

This is a request for:

New Contract       Amendment / Modification

**Contract Type**

Blanket Agreement    Term: 60 (# of mo)       Time Extension       Vendor Limit Increase       Scope Change

Standard Agreement

Contract Number: \_\_\_\_\_  
 Specification Number: \_\_\_\_\_  
 Modification Number: \_\_\_\_\_

**Department Request Approval**

3/24/14  
 DEPARTMENT HEAD OR DESIGNEE      DATE

PRINT NAME

**Recommended Approval**

5-7-14  
 BOARD CHAIRPERSON      DATE

PRINT NAME

(FOR NCRB USE ONLY)

Recommend Approval/Date: 5-7-14

Return to Department/Date: \_\_\_\_\_

Rejected/Date: \_\_\_\_\_

Approved       Rejected

5/8/14  
 CHIEF PROCUREMENT OFFICER      DATE



**DEPARTMENT OF PROCUREMENT SERVICES  
NON-COMPETITIVE REVIEW BOARD (NCRB) APPLICATION  
JUSTIFICATION FOR NON-COMPETITIVE PROCUREMENT WORKSHEET**

All applicable information on this worksheet must be addressed using each question found on the "Instructions for Non-Competitive Procurement Application" in this application.

**Justification for Non-Competitive Procurement Worksheet**

**PROCUREMENT HISTORY**

1. Describe the requirement and how it evolved from initial planning to its present status.

According to the Federal Aviation Administration (FAA), potentially serious incidents and accidents involving aircraft and vehicles at airports occur every year. Many of these events occur during periods of reduced visibility for flight crews and air traffic controllers. On November 14, 2011, the FAA released Advisory Circular (AC) No. 150/5220-26 to provide guidance on the installation of Airport Ground Vehicle Automatic Dependent Surveillance – Broadcast (ADS-B) Out Squitter Equipment for airport ground vehicles, which the FAA refers to as a "cornerstone technology in the FAA's Next Generation Air Transportation System (NextGen) initiative to modernize the safety, efficiency, and capacity of the National Airspace System." According to the AC, "ADS-B will provide improved surveillance in the terminal, en route, and on surface environments, and will provide equipped aircraft with shared situational awareness via a cockpit display of proximate traffic." The AC also states that "the FAA strongly encourages airport operators to voluntarily equip appropriate vehicles with airport ground vehicle ADS-B squitter units." Both O'Hare and Midway International Airports are among the 44 airports identified in the AC as primary locations for installation by 2017.

Appendix A to AC 150/5220-26 presents the list of products meeting the requirements of the ADS-B specification, published in the FAA document "Vehicle Automatic Dependent Surveillance – Broadcast (ADS-B) Specification, Version 2.4," published May 1, 2012. That list is limited to exactly one (1) product, the Vehicle Movement Area Transmitter (VMAT) manufactured by FreeFlight Systems and sold by Exelis, Inc.

2. Is this a first time requirement or a continuation of previous procurement from the same source? If so, explain the procurement history.

This is a first time requirement for procurement.

3. Explain attempts made to competitively bid the requirement (attach copy of sources contacted.)

Because Exelis is the only FAA-approved supplier of the ADS-B tracking units, no attempts were made to competitively bid the requirement.

4. Describe in detail all research done to find other sources; list other cities, companies in the industry, professional organizations contacted. List periodicals and other publications used as references.

The Federal Aviation Administration (FAA) Advisory Circular 150/5220-26 was issued in late 2011 to address the installation of ADS-B tracking units, and Exelis is listed in the AC as the sole approved vendor for these units. No other ADS-B vehicle tracking units are approved by the FAA for operation.

5. Explain future procurement objectives. Is this a one-time request or will future requests be made for doing business with the same source?

This is a request for a 5-year contract for installation and servicing of the Exelis VMAT units. The initial installation will total one-hundred ten (110) units, seventy-five (75) at O'Hare International Airport and thirty-five (35) at Midway International Airport. Subsequent purchases under this contract may total as many as one-hundred twenty-five (125) units at O'Hare (for a total of 200 units at O'Hare) and sixty-five (65) units at Midway (for a total of 100 units at Midway). Should additional units or ongoing servicing be required after five years, future procurement competition will be dependent on whether the FAA approves other vendors to provide ADS-B vehicle tracking units and/or whether other companies are licensed in the future to service and maintain the Exelis equipment.

6. Explain whether or not future competitive bidding is possible. If not, explain in detail.

Future need for additional tracking units, replacement units, or ongoing service may be eligible for competitive bidding in the event that the FAA approves other vendors to provide ADS-B vehicle tracking units certified to be compliant



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with the requirements of Advisory Circular 150/5220-26.

**ESTIMATED COST**

1. What is the estimated cost for this requirement or for each contract, if multiple awards are contemplated? What is the funding source?

The estimated total cost for this contract is \$4,500,000. The funding sources are 2013-582-085-2015-8000-H800005E and an FAA grant.

The price for purchase and installation of the initial 110 VMAT squitters is \$799,120, broken down below in Tables 1 and 2 between the initial seventy-five (75) units for O'Hare and the initial thirty-five (35) units for Midway. Annual service pricing begins at \$57,000 at O'Hare and \$26,600 at Midway, with 3% annual escalation (Tables 3 and 4). Total costs for both airports over the five-year contract period are estimated at \$1,214,024. Subsequent purchases under this contract may total as many as one-hundred twenty-five (125) units at O'Hare (for a total of 200 units at O'Hare) and sixty-five (65) units at Midway (for a total of 100 units at Midway). The additional units and maintenance, plus options such as extra installation kits, mobile software, extended warranties and provisions for out-of-warranty service would bring the total cost of this contract to no more than \$4,500,000, including \$3,000,000 at O'Hare and \$1,500,000 at Midway.

Table 1: VMAT Purchase and Installation for Initial 75 Units and Installation at O'Hare

Item	Amount	Cost	Total
VMAT Units (Squitters) <sup>1</sup>	75	\$5,800 per unit	\$435,000
Exelis Installation Services <sup>2</sup>	1	\$99,200 one-time fee	\$99,200
Purchase and Installation Price <sup>3</sup>			\$534,200

Table 2: VMAT Purchase and Installation for Initial 35 Units and Installation at Midway

Item	Amount	Cost	Total
VMAT Units (Squitters) <sup>1</sup>	35	\$5,800 per unit	\$203,000
Exelis Installation Services <sup>2</sup>	1	\$61,920 one-time fee	\$61,920
Purchase and Installation Price <sup>3</sup>			\$264,920

**Notes:**

1. The price for the initial seventy-five (75) VMAT units includes the VMATs, installation kits, and two-year hardware warranty.
2. The required installation services include the installation activities required of Exelis by the FAA advisory circular.
3. Fifty percent (50%) payable at Pre-Installation and Training, with the remainder payable at completion of the Installation.

Pricing for ongoing maintenance required for the continued operation of the initial one hundred ten (110) VMAT units, seventy-five (75) initial units at O'Hare and thirty-five (35) initial units at Midway, are broken down in Tables 3 and 4 below with a 3% annual escalation.



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**Table 3: Annual VMAT Service Pricing for Initial 75 Units at O'Hare**

Year 1	Year 2	Year 3	Year 4	Year 5
\$57,000	\$58,710	\$60,471	\$62,285	\$64,154

**Table 4: Annual VMAT Service Pricing for Initial 35 Units at Midway**

Year 1	Year 2	Year 3	Year 4	Year 5
\$26,600	\$27,398	\$28,220	\$29,067	\$29,939

Should additional VMAT units be purchased during the term of the five (5) year maintenance period for use at ORD or MDW, pricing for the additional VMATs would be based on the table below (2014 cost with 3% annual escalation thereafter), including hardware and installation. Annual maintenance of \$782.80/unit (in 2014, with 3% escalation thereafter), as required by FAA Advisory Circular No. 150/5220-26, would be in addition to the costs below.

Extra vehicle installation kits, which allow VMAT units to be moved between vehicles, may be purchased during the term of the five (5) year maintenance period for use at ORD or MDW. (VMAT units purchased for operation at ORD can only be moved onto other vehicles at ORD, and VMAT units purchased for operation at MDW can only be moved onto other vehicles at MDW). Pricing for extra vehicle installation kits purchased in 2014 would be \$1,900/unit with 3% annual escalation thereafter.

An extended warranty option is available on the VMAT hardware to cover three years of operation beyond the basic two year warranty. Pricing for the extended warranty would be \$1,500/unit with 3% annual escalation.

Any out-of-warranty services or services not currently contemplated would be compensated on a time and materials basis (\$140/hour labor rate in 2014 with 3% annual escalation) as may be required.

Including all additional units and service, plus potential options such as extra installation kits, mobile software, extended warranties and provisions for out-of-warranty service, the total cost of this contract may total up to \$4,500,000, including \$3,000,000 at O'Hare and \$1,500,000 at Midway.

**2. What is the estimated cost by fiscal year?**

Estimated cost by year for the initial purchase is presented in the following table. Timing and need for any additional unit purchases will be dependent upon requirements and would be in addition to the following.

**Estimated Cost by Fiscal Year (O'Hare)**

Year 1	Year 2	Year 3	Year 4	Year 5
\$591,200	\$58,710	\$60,471	\$62,285	\$64,154

**Estimated Cost by Fiscal Year (Midway)**

Year 1	Year 2	Year 3	Year 4	Year 5
\$291,520	\$27,398	\$28,220	\$29,067	\$29,939

**3. Explain the basis for estimating the cost and what assumptions were made and/or data used (i.e., budgeted amount, previous contract price, current catalog or cost proposal from firms solicited, engineering or in-house estimates, etc.)**



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The cost estimates shown are a direct quotation provided by the contract liaison at Exelis to CDA for one hundred ten (110) initial VMAT units and installation services, seventy-five initial (75) units for O'Hare and thirty-five initial (35) units for Midway.

4. Explain whether the proposed Contractor or the City has a substantial dollar investment in original design, tooling or other factors which would be duplicated at City expense if another source was considered. Describe cost savings or other measurable benefits to the City which may be achieved.

Not applicable. This is a first time installation.

5. Explain what negotiation of price has occurred or will occur. Detail why the estimated cost is deemed reasonable.

CDA's consultant, Ricondo & Associates (R&A), contacted Exelis with respect to its pricing and was told that the unit cost of \$5,800 was a standard fixed price. As evidence, Exelis provided R&A with a copy of its purchase order from Denver International Airport for 55 VMAT units priced at \$5,800 per unit, plus license, installation, and first-year service costs of \$175,775 for a year-one total cost of \$494,775 or \$8,996/unit. The year-one cost proposal for CDA totals \$7,122.67/unit, reflecting scale economies in service and installation.

**SCHEDULE REQUIREMENTS**

1. Explain how the schedule was developed and at what point the specific dates were known.

AC 150/5220-26, which addresses the ADS-B tracking units, was released on November 14, 2011. The technical specifications for manufacturing ADS-B squitter units for airport ground vehicles were published in the FAA's document "Vehicle Automatic Dependent Surveillance – Broadcast (ADS-B) Specification, Version 2.4, published May 1, 2012.

Subsequent to this guidance, the FAA issued a grant to the City of Chicago on September 24, 2012, in the amount of \$421,875, for purchase and installation of squitter units at O'Hare International Airport. The FAA has been aggressive in encouraging CDA to install the VMAT units using this grant money.

2. Is lack of drawings and/or specifications a constraining factor to competitive bidding? If so, why is the proposed Contractor the only person or firm able to perform under these circumstances? Why are the drawings and specifications lacking? What is the lead time required to get drawings and specifications suitable for competition? If lack of drawings and specifications is not a constraining factor to competitive bidding, explain why only one person or firm can meet the required schedule.

Not applicable. Lack of drawings and/or specifications is not a constraining factor to this procurement.

3. Outline the required schedule by delivery or completion dates and explain the reasons why the schedule is critical.

Pursuant to the FAA grant for purchase and installation of the VMAT units, and acknowledging the FAA's aggressive push to have the units installed, time is of the essence with this procurement. In any event, the grant money is only available for four (4) years beginning on the issuance date of September 24, 2012.

4. Describe in detail what impact delays for competitive bidding would have on City operations, programs, costs and budgeted funds.

The FAA has determined that the installation of the VMAT units is critical to the "safety, efficiency, and capacity of the National Airspace System," and has identified O'Hare and Midway Airports as among the 44 targeted primary installation locations. If completed in an expeditious manner, the purchase and installation costs for the initial installation at O'Hare will be largely offset by the FAA grant to the City of Chicago for this purpose.

**EXCLUSIVE OR UNIQUE CAPABILITY**

1. If contemplating hiring a person or firm as a Professional Service Consultant, explain in detail what professional skills, expertise, qualifications, and/or other factors make this person or firm exclusively or uniquely qualified for the project. Attach a copy of the cost proposal, scope of services, and Temporary Consulting Services Form.



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Exelis is the only FAA-approved supplier for the ADS-B vehicle tracking units, and Exelis' VMAT units are the only Universal Access Transceiver (UAT) Automatic Dependent Surveillance-Broadcast (ADS-B) vehicle tracking units that are fully compliant and certified under the FAA's Advisory Circular 150/5220-26.

2. Does the proposed firm have personnel considered unquestionably predominant in the particular field?

As the only FAA-certified provider of the ADS-B equipment, installation, and servicing sought by CDA, Exelis personnel are without question the predominant experts in the field. FreeFlight Systems has developed the VMAT to be fully compliant with FAA's Advisory Circular 150/5220-26 and Exelis is the only supplier to be certified by the FAA to be compliant with this circular.

3. What prior experiences of a highly specialized nature does the person or firm exclusively possess that is vital to the job, project or program?

Exelis has installed ADS-B equipment in several other major airports, including Boston Logan, St. Louis Lambert, and Denver International Airports.

4. What technical facilities or test equipment does the person or firm exclusively possess of a highly specialized nature which is vital to the job?

Exelis is the only approved FAA supplier for the ADS-B vehicle tracking unit (VMAT). The VMAT is certified by the FAA to be compliant under Advisory Circular 150/5220-26. Due to the strict requirements under Advisory Circular 150/5220-26, Exelis works closely with the airport, FAA, and FCC to obtain all necessary data for proper installation and testing. Exelis personnel will train Airport personnel on the proper way to install each kit. Once all units have been installed, Exelis will verify the kits are operating properly, conduct user training, and update configuration matrices for all units. Exelis personnel are required to conduct a Site Acceptance Test (SAT) at the airport in accordance with Advisory Circular 150/5220-26. Exelis is required to manage the acceptance testing process and submit SAT documents and updates to the FAA's Quality Reliability Officer (QRO) or the QRO's representative.

5. What other capabilities and/or capacity does the proposed firm possess which is necessary for the specific job, project or program which makes them the only source who can perform the work within the required time schedule without unreasonable costs to the city?

Exelis is the only approved FAA supplier for VMAT ADS-B vehicle tracking units. Included with the purchase of VMAT units are full installation and maintenance services. Because Exelis is the only approved FAA supplier for ADS-B vehicle tracking units and they include installation and maintenance services, they are the only source who can perform the necessary work.

6. If procuring products or equipment, describe the intended use and explain any exclusive or unique capabilities, features, and/or functions the items have which no other brands or models, possess. Is compatibility with existing equipment critical from an operational standpoint? If so, provide detailed explanation?

Exelis' VMAT is a Universal Access Transceiver (UAT) Automatic Dependent Surveillance-Broadcast (ADS-B) vehicle tracking unit, allowing for accurate, real-time tracking of surface vehicles in the airport movement area providing increase operational safety and efficiency. The VMAT has been developed to be fully compliant with FAA Advisory Circular 150/5220-26 and it is certified by the FAA to be compliant with the circular. The VMAT unit allows continuous transmission of vehicle position and identification. Data transmitted from vehicles is picked up by FAA ADS-B ground infrastructure and displayed on the air traffic controller displays in the tower allowing them to see vehicle locations on the movement area in relation to aircraft. Data is also displayed in the cockpit of appropriately equipped aircraft for enhanced awareness.

7. Is competition precluded because of the existence of patent rights, copyrights, trade secrets, technical data, or other proprietary data (attach documentation verifying such)?

Competition is precluded because Exelis is the only supplier of ADS-B vehicle tracking units that are certified to be compliant with FAA Advisory Circular 150/5220-26. Exelis is the only approved FAA supplier for the ADS-B vehicle tracking unit.



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8. If procuring replacement parts and/or maintenance services, explain whether or not replacement parts and/or services can be obtained from any other sources? If not, is the proposed firm the only authorized or exclusive dealer/distributor and/or service center? If so, attach a letter from manufacturer on company letterhead.

Exelis is the only approved supplier for the ADS-B vehicle tracking unit. Included with the purchase of VMAT units from Exelis are all installation and maintenance services. As long as VMAT units are deployed, Exelis is responsible for ensuring that the units are operating properly and all necessary paperwork is in order. Ongoing support from Exelis is required on every unit, whether under warranty or not. Exelis will coordinate replacement of defective units in accordance to the Airport's warranty and support agreement. Defective units covered under the manufacturer's warranty will be repaired or replaced in accordance to the warranty and support agreement. For units no longer covered under warranty, Exelis will provide a time and materials quote for the repair and processing of any defective units.

**MBE/WBE COMPLIANCE PLAN**

On October 25, 2013, CDA received approval of its No Stated Goals request for MBE/WBE participation from the Department of Procurement Services (DPS) Compliance Division. A copy of the CDA request and DPS approval are attached.

OTHER

1. Explain other related considerations and attach all applicable supporting documents, i.e., an approved "ITGB Form" or "Request For Individual Hire Form".



## DEPARTMENT OF PROCUREMENT SERVICES NON-COMPETITIVE REVIEW BOARD (NCRB) APPLICATION INSTRUCTIONS FOR NON-COMPETITIVE PROCUREMENT APPLICATION

### INSTRUCTIONS FOR PREPARATION OF NON-COMPETITIVE PROCUREMENT APPLICATION

If a City Department has determined that the purchase of supplies, equipment, work and/or services cannot be done on a competitive basis, a justification must be prepared on this "Justification for Non-Competitive Procurement Application" in which procurement is requested on a or non-competitive basis in accordance with 65 ILCS 5/8-10-4 of the Illinois Compiled Statutes. Using this instruction sheet, all applicable information must be addressed on the worksheet. The information provided must be complete and in sufficient detail to allow for a decision to be made by the Non-Competitive Procurement Review Board. For Amendments, Modifications, describe in detail the change in terms of dollars, time period, scope of services, etc., its relationship to the original contract and the specific reasons for the change. Indicate both the original and the adjusted contract amount and/or expiration date with this change.

Attach a DPS Checklist and any other required documentation; the Board will not consider justification with incomplete information documentation or omissions.

#### PROCUREMENT HISTORY

1. Describe the requirement and how it evolved from initial planning to its present status.
2. Is this a first time requirement or a continuation of previous procurement from the same source? If so, explain the procurement history.
3. Explain attempts made to competitively bid the requirement (attach copy of sources contacted).
4. Describe in detail all research done to find other sources; list other cities, companies in the industry, professional organizations contacted. List periodicals and other publications used as references.
5. Explain future procurement objectives. Is this a one-time request or will future requests be made for doing business with the same source?
6. Explain whether or not future competitive bidding is possible. If not, explain in detail.

#### ESTIMATED COST

1. What is the estimated cost for this requirement or for each contract, if multiple awards are contemplated? What is the funding source?
2. What is the estimated cost by fiscal year?
3. Explain the basis for estimating the cost and what assumptions were made and/or data used (i.e., budgeted amount, previous contract price, current catalog or cost proposal from firms solicited, engineering or in-house estimate, etc.)
4. Explain whether the proposed Contractor or the City has a substantial dollar investment in original design, tooling or other factors which would be duplicated at City expense if another source was considered. Describe cost savings or other measurable benefits to the City which may be achieved.
5. Explain what negotiation of price has occurred or will occur. Detail why the estimated cost is deemed reasonable.

#### SCHEDULE REQUIREMENTS

1. Explain how the schedule was developed and at what point the specific dates were known.
2. Is lack of drawings and/or specifications a constraining factor to competitive bidding? If so, why is the proposed Contractor the only person or firm able to perform under these circumstances? Why are the drawings and specifications lacking? What is the lead time required to get drawings and specifications suitable for competition? If lack of drawings and specifications is not a constraining factor to competitive bidding, explain why only one person or firm can meet the required schedule.
3. Outline the required schedule by delivery or completion dates and explain the reasons why the schedule is critical.
4. Describe in detail what impact delays for competitive bidding would have on City operations, programs, costs and budgeted funds.

#### EXCLUSIVE OR UNIQUE CAPABILITY

1. If contemplating hiring a person or firm as a Professional Service Consultant, explain in detail what professional skills, expertise, qualifications, and/or other factors make this person or firm exclusively or uniquely qualified for the project. Attach a copy of the cost proposal, scope of services, and **Temporary Consulting Services Form**.
2. Does the proposed firm have personnel considered unquestionably predominant in the particular field?
3. What prior experiences of a highly specialized nature does the person or firm exclusively possess that is vital to the job, project or program?
4. What technical facilities or test equipment does the person or firm exclusively possess of a highly specialized nature which is vital to the job?
5. What other capabilities and/or capacity does the proposed firm possess which is necessary for the specific job, project or program which makes them the only source who can perform the work within the required time schedule without unreasonable costs to the City?
6. If procuring products or equipment, describe the intended use and explain any exclusive or unique capabilities, features and/or functions the items have which no other brands or models, possess. Is compatibility with existing equipment critical from an operational standpoint? If so, provide detailed explanation?
7. Is competition precluded because of the existence of patent rights, copyrights, trade secrets, technical data, or other proprietary data (attach documentation verifying such)?
8. If procuring replacement parts and/or maintenance services, explain whether or not replacement parts and/or services can be obtained from any other sources? If not, is the proposed firm the only authorized or exclusive dealer/distributor and/or service center? If so, attach letter from manufacturer on company letterhead.

#### MBE/WBE COMPLIANCE PLAN

- \* All submissions must contain detailed information about how the proposed firm will comply with the requirements of the City's Minority and Women Owned Business program. All submissions must include a completed C-1 and D-1 form, which is available on the Procurement Services page on the City's intranet site. The City Department must submit a Compliance Plan, including details about direct and indirect compliance.

#### OTHER

1. Explain other related considerations and attach all applicable supporting documents, i.e., an approved "ITGB Form" or "Request For Individual Hire Form".

#### REVIEW AND APPROVAL

This application must be signed by both Originator of the request and signed by the Department Head. After review and final disposition from the Board, this application will be signed by the Board Chairman. After review and final disposition from the Board, this form will be presented to the Chief Procurement Officer recommending approval.



## Department of Procurement Services Project Checklist

Attach required forms for each procurement type and detailed scope of services and/or specifications and forward original documents to City Hall, Room 806, Attention: Chief Procurement Officer.

For blanket agreements, original or lead department must consult with other potential departments who may want to participate on the blanket agreement. If grant funded, attach copy of the approved grant application and other terms and conditions of the funding source. Note: 1) Funding: Attach information if multiple funding lines; 2) Individual Contract Services: Include approval form signed by Department Head and OBM; 3) ITGB: IT project valued at \$100,000.00 or more, attach approval transmittal sheet.

<b>Current Date:</b> March 21, 2014		<b>Estimated Contract Award Date:</b>	
<b>Department Name:</b> Aviation		<b>Contract Liaison:</b> David Bowman	<b>Project Manager:</b> George Lyman
<b>Requisition No:</b> 89713	<b>Specification No:</b> 123886	<b>Telephone:</b> 773 686-7089	<b>Telephone:</b> 773 894-5291
<b>PO No:</b>	<b>Modification No:</b>	<b>Email:</b>	<b>Email:</b>
		<b>Contract Liaison Signature</b> 	

**Project Description:** Installation and Maintenance of Exelis V-MAT Universal Access Transceiver (UAT) Automatic Dependent Surveillance-Broadcast (ADS-B) Vehicle Tracking Units

**Funding:**

<input type="checkbox"/> Corporate	<input type="checkbox"/> Bond	<input checked="" type="checkbox"/> Enterprise	<input type="checkbox"/> Grant*	<input type="checkbox"/> Other:
<input type="checkbox"/> IDOT/Transit	<input type="checkbox"/> IDOT/Highway	<input type="checkbox"/> FHWA	<input type="checkbox"/> FTA	<input type="checkbox"/> FAA

LINE	FY	FUND	DEPT	ORGN	APPR	ACTV	PROJECT	RPTG	ESTIMATED \$ DOLLAR AMOUNT
	13	582	85	2015	8000	0140			4,500,000.00

Check One:

**New Contract Request**       **Modification or Amendment**

**Purchase Order Information:**

<b>Contract Term (No. of Years):</b> 5.0	<b>MBE/WBE/DBE Analysis:</b>
<b>Estimated Spend/Value:</b> \$ 4,500,000.00	<input type="checkbox"/> Full Compliance <input type="checkbox"/> Contract Specific Goals
<b>*Grant Commitment / Expiration Date:</b>	<input checked="" type="checkbox"/> No Stated Goals <input type="checkbox"/> Waiver Request
<b>Pre-Bid/Submittal Conference:</b>	Attach MBE/WBE or DBE Goal Setting Memo
<input type="checkbox"/> Yes <input type="checkbox"/> Mandatory	
<input type="checkbox"/> No <input type="checkbox"/> Site Visit	

**Purchase Order Type:**

Blanket/Purchase Order (DUR)  
 Master Consultant Agreement (Task Order)  
 Standard/One-Time Purchase

**Contract Type:**

Architect Engineering  
 Commodity  
 Construction     JOC  
 Professional Services  
 Revenue Generating  
 Vehicle & Heavy Equipment  
 Work Service  
 Joint Procurement  
 Reference Contract

**Modification/Amendment Type:**

Time Extension  
 Vendor Limit Increase  
 Scope Change/Price Increase/Additional Line Item(s)  
 Requisition Encumbrance Adjustment  
 Other (specify):

**Procurement Method:**

Bid     RFP     RFQ     RFI  
 Small Order

**Special Approvals Required:**

Emergency  
 Non-Competitive Review Board (NCRB)  
 Request for Individual Contract Services  
 Information Technology Governance Board (ITGB)  
 GSA/US Communities

**Innovative Procurement:**

Pilot Test

**Vendor Info:**

Name:  
E-mail:  
Address:  
  
Contact Person:  
Phone:



CHICAGO DEPARTMENT OF AVIATION  
CITY OF CHICAGO

MEMORANDUM

To: Jamie L. Rhee  
Chief Procurement Officer

Attention: Elizabeth Granados-Perez  
Deputy Procurement Officer

Richard Butler  
First Deputy Procurement Officer

From: Rosemarie S. Andolino  
Commissioner

Subject: **Request for New Non-Competitive Procurement Contract for Installation and Maintenance of Exelis V-MAT Universal Access Transceiver (UAT) Automatic Dependent Surveillance-Broadcast (ADS-B) Vehicle Tracking Units**

*Handwritten: RSA 3/24/14*

The Chicago Department of Aviation (CDA) requests approval and assistance in awarding a five (5) year non-competitive procurement contract to Exelis, Inc. (Exelis) for installation and maintenance of airport ground vehicle Automatic Dependent Surveillance – Broadcast (ADS-B) Out Squitter Equipment at O’Hare and Midway International Airports. ADS-B Out Squitter equipment enables vehicles to be accurately tracked and identified when moving about the airfield by use of a periodic radio-signal broadcast from the squitter unit.

On November 14, 2011, the Federal Aviation Administration (FAA) released Advisory Circular (AC) No. 150/5220-26 to provide guidance on the installation of Airport Ground Vehicle Automatic Dependent Surveillance – Broadcast (ADS-B) Out Squitter Equipment for airport ground vehicles. This technology, which the FAA considers a “cornerstone technology in the FAA’s Next Generation Air Transportation System (NextGen) initiative,” is intended to reduce incidents and accidents involving aircraft and ground vehicles at airports. According to the AC, “the FAA strongly encourages airport operators to voluntarily equip appropriate vehicles with airport ground vehicle ADS-B squitter units.”

Both O’Hare and Midway International Airports are among the 44 airports identified in the AC as primary locations for installation by 2017, and on September 24, 2012, the FAA issued a grant to the City of Chicago in the amount of \$421,875 for purchase and installation of squitter units at O’Hare. The FAA has been aggressive in encouraging CDA to install the ADS-B units using this grant money.

Appendix A to AC 150/5220-26 presents the list of products meeting the requirements of the ADS-B specification, published in the FAA document “Vehicle Automatic Dependent Surveillance – Broadcast (ADS-B) Specification, Version 2.4,” published May 1, 2012. That list is limited to exactly one (1) product, the Vehicle Movement Area Transmitter (VMAT) manufactured by FreeFlight Systems and sold by Exelis, Inc. Exelis has installed VMAT equipment in several other major airports, including Boston Logan, St. Louis Lambert, and Denver International Airports.





This is a request for a 5-year contract for installation and servicing of the Exelis VMAT units. The initial installation will total one-hundred ten (110) units, including seventy-five (75) at O'Hare International Airport and thirty-five (35) at Midway International Airport. Subsequent purchases under this contract may total as many as one-hundred twenty-five (125) units at O'Hare (for a total of 200 units at O'Hare) and sixty-five (65) units at Midway (for a total of 100 units at Midway).

The price for purchase and installation of the initial 110 VMAT squitters is \$799,120 (\$534,200 at O'Hare and \$264,920 at Midway). Annual service pricing begins at \$57,000 at O'Hare and \$26,600 at Midway, with 3% annual escalation. As additional units are purchased, total costs for maintenance will increase as well. Additional options such as extra installation kits, mobile software, extended warranties, and provisions for out-of-warranty service may also add to the total cost, which may total up to \$3,000,000 for O'Hare and \$1,500,000 at Midway. The FAA grant for \$421,875 will partially offset the cost of the squitter units at O'Hare.

As Exelis is the only vendor licensed and capable of installing and servicing this equipment, CDA is requesting a non-competitive procurement for this service. Future need for additional tracking units, replacement units, or ongoing service may be eligible for competitive bidding in the event that the FAA approves other vendors to provide ADS-B vehicle tracking units certified to be compliant with the requirements of Advisory Circular 150/5220-26.

Procurement Type: Non-Competitive Bid  
Funding: 2013 582 085 2015 8000 H800005E  
Duration: 5 Years + 181 Day Extension Option  
Estimated Contract Value: \$4,500,000  
User Deputy: George Lyman Phone: (773) 894-5291

The following CDA employees participated in drafting the Specifications and/or negotiating with the Contractor:

George Lyman  Deputy Commissioner Date 3/24/14  
Tom Stastny  Airport Manager Date 3/24/14  
David Bowman  Supervisor of Contracts Date 3/24/14  
James Hankin  Coordinator of Special Projects Date 3/24/14



# CERTIFICATE OF LIABILITY INSURANCE

DATE(MM/DD/YYYY)  
03/24/2014

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Aon Risk Services Northeast, Inc. New York NY Office 199 Water Street New York NY 10038-3551 USA	CONTACT NAME:		
	PHONE (A/C. No. Ext): (866) 283-7122	FAX (A/C. No.): (800) 363-0105	
INSURED Exelis Inc. 1650 Tyson Blvd., Suite 1700 McClean VA 22102 USA	E-MAIL ADDRESS:		
	INSURER(S) AFFORDING COVERAGE		NAIC #
	INSURER A:	ACE American Insurance Company	22667
	INSURER B:		
	INSURER C:		
	INSURER E:		

COVERAGES CERTIFICATE NUMBER: 570053185589 REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS. Limits shown are as requested

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR			XSLG27327977 SIR applies per policy terms & conditions	10/31/2013	10/31/2014	EACH OCCURRENCE \$1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$1,000,000 MED EXP (Any one person) Excluded PERSONAL & ADV INJURY \$1,000,000 GENERAL AGGREGATE \$10,000,000 PRODUCTS - COMP/OP AGG \$6,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:						
A	<input checked="" type="checkbox"/> AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> NON-OWNED AUTOS			ISA H08722973	10/31/2013	10/31/2014	COMBINED SINGLE LIMIT (Ea accident) \$2,000,000 BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)
	<input type="checkbox"/> UMBRELLA LIAB <input type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> DED <input type="checkbox"/> RETENTION						EACH OCCURRENCE AGGREGATE
A	<input checked="" type="checkbox"/> WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR / PARTNER / EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N Y	N/A	WLRC4787435A All other States SCFC47874361 Wisconsin	10/31/2013	10/31/2014	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$2,000,000 E.L. DISEASE-EA EMPLOYEE \$2,000,000 E.L. DISEASE-POLICY LIMIT \$2,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)  
City of Chicago, its officers, employees and elected representatives are included as Additional Insured in accordance with the policy provisions of the General Liability policy.

## CERTIFICATE HOLDER

## CANCELLATION

City of Chicago Attn: James Hankin Coordinator of Special Projects Department of Aviation 10510 W. Zemke Road Chicago IL 60666 USA	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE  <i>Aon Risk Services Northeast Inc</i>

Holder Identifier :

Certificate No : 570053185589

Sharon Goldin  
Contracts Manager  
Air Traffic Management

Exelis Inc.  
12930 Worldgate Drive  
Herndon, VA 20170

703 473 5132 Mobile  
Sharon.goldin@exelisinc.com  
www.exelisinc.com



August 4, 2013

George W. Lyman  
General Manager  
Chicago Department of Aviation  
Airport Airfield Operations Section  
P.O. Box 66142  
Chicago, IL 60666  
Via email: [george.lyman@cityofchicago.org](mailto:george.lyman@cityofchicago.org)

Re: Sole Source Justification VMATs

Dear Mr. Lyman:

The VMAT is a Universal Access Transceiver (UAT) Automatic Dependent Surveillance-Broadcast (ADS-B) vehicle tracking unit, allowing for accurate, real-time tracking of surface vehicles in the airport movement area providing increased operational safety and efficiency. The VMAT has been developed to be fully compliant with Federal Aviation Administration (FAA) Advisory Circular 150/ 5220-26 and is certified by the FAA to be compliant with the circular. Exelis Inc. is the only approved FAA supplier for the ADS-B vehicle tracking unit.

If you have any additional questions or need additional information, please do not hesitate to contact me. Thank you for the opportunity to earn your business.

Regards,

A handwritten signature in blue ink that reads "Sharon Goldin".

Sharon Goldin  
Contracts Manager  
Air Traffic Management  
Herndon, Virginia

cc: Ted Carniol, Exelis

**CONFIDENTIAL/PROPRIETARY - This information is provided solely for the recipient's use in evaluating Exelis for award of the services/supplies stated herein. Recipient shall not disclose or otherwise use the information contained herein without the express written consent of Exelis.**

**CERTIFICATE OF INSURANCE**  
**Issued on behalf of Insurers by**  
**Willis of New York, Inc. – Aerospace**  
**One World Financial Center**  
**200 Liberty Street**  
**New York, N.Y. 10281**  
**Telephone (212) 915-8888, Fax (212) 519-5431**

**Certificate of Insurance**

**This is to certify to:**

City of Chicago  
Department of Aviation  
10510 W. Zemke Rd.  
Chicago, Illinois 60666

**(Sometimes referred to herein as the Certificate Holder(s))**

**that the Insurers listed below, each for their own part and not one for the other, are providing the following insurance:**

**NAMED INSURED:** Exelis Inc., and/or affiliated companies and/or subsidiary

**NAMED INSURED'S ADDRESS:** 1650 Tysons Blvd.  
McLean, VA 22102

**INSURANCE COVERAGE** Aviation Liability

**POLICY PERIOD:** October 31, 2013 to October 31, 2014 on both dates at 12:01 A.M. Local Standard Time at the address of the Named Insured.

**GEOGRAPHICAL LIMITS:** Worldwide

**LIMITS OF LIABILITY:** **Note: Aggregate Limits may be reduced due to paid claims**  
  
Combined Single Limit Bodily Injury & Property Damage, including Products, Completed Operations, Airside Liability, Aviation Premises Operators, Grounding Liability  
USD5,000,000 any one occurrence/aggregate

**SPECIAL PROVISION(S)**

**Subject always to the scope of the policies noted above and the policies' declarations, insuring agreements, terms, conditions, limitations, exclusions, deductibles warranties and endorsements remaining paramount: Solely as respects: (i) the Coverage(s) noted above; (ii) the Contract(s) (and then only to the extent of the Named Insured's obligation to provide insurance under the terms of the Contract(s)):**

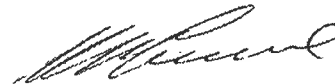
It is certified that Insurers are aware of the terms and conditions of the Chicago Department of Aviation, Installation and Maintenance for Airports Exelis VMAT Universal Access Transceiver (UAT) Automatic Dependent Contract. ;

- (1) The certificate holder is included as an Additional Insured as respects liability arising out of the Named Insured's performance or non-performance of its obligations under the purchase agreement.
- (2) **As respects All Coverages:** Insurers waive their rights of subrogation against the Additional Insured but only to the same extent that the Named Insured has waived its rights of recovery against and/or indemnified the Additional Insured in the purchase agreement..
- (3) **Solely as respects Liability Coverage(s):** The Additional Insured shall have the same protection as would have been available had this policy been issued individually to it except that this fact shall not in any event increase the Insurers' total liability beyond the limits set forth in the policies.
- (4) **Solely as respects Liability Coverage(s):** This insurance is primary and without right of contribution from any other insurance as may be carried by the Additional Insured.
- (5) The Certificate holder shall be provided thirty (30) days written notice of cancellation

**This Certificate of Insurance is issued as a summary of the insurances under the policies noted above and confers no rights upon the Certificate Holder(s) as regards those insurances other than those provided by the policies. The undersigned has been authorized by the above insurers to issue this certificate on their behalf and is not an insurer and has no liability of any sort under the above policies as an insurer as a result of this certification.**

DATE OF ISSUE: March 24, 2014

**WILLIS AEROSPACE**  
A Division of Willis of New York, Inc.



*Authorized Representative*  
*Martin E. McConnell*  
*Senior Vice President*

**Aviation Products Liability**

INSURER/ADDRESS

One or Member Companies  
through United States Aviation Insurance Group  
New York, NY (AS LEAD INSURER)

POLICY NUMBER

SIHL1-492V

**Certificate No. Exelis 11-01-13-06**

CERTIFICATE OF FILING FOR  
CITY OF CHICAGO ECONOMIC DISCLOSURE STATEMENT

EDS Number: 41577  
Certificate Printed on: 04/01/2014

Date of This Filing:03/11/2013 08:09 AM  
Original Filing Date:03/11/2013 08:09 AM

Disclosing Party: Exelis Inc.  
Filed by: Mr. Rick Sawyer

Title:Contracts Administrator

Matter: ADS-B Site lease at Midway Airport  
Applicant: Exelis Inc.  
Specification #: n/a  
Contract #: n/a

The Economic Disclosure Statement referenced above has been electronically filed with the City. Please provide a copy of this Certificate of Filing to your city contact with other required documents pertaining to the Matter. For additional guidance as to when to provide this Certificate and other required documents, please follow instructions provided to you about the Matter or consult with your City contact.

A copy of the EDS may be viewed and printed by visiting <https://webapps1.cityofchicago.org/EDSWeb> and entering the EDS number into the EDS Search. Prior to contract award, the filing is accessible online only to the disclosing party and the City, but is still subject to the Illinois Freedom of Information Act. The filing is visible online to the public after contract award.





**CITY OF CHICAGO  
ECONOMIC DISCLOSURE STATEMENT and AFFIDAVIT  
Related to Contract/Amendment/Solicitation  
EDS # 41577**

**SECTION I -- GENERAL INFORMATION**

A. Legal name of the Disclosing Party submitting the EDS:

Exelis Inc.

Enter d/b/a if applicable:

The Disclosing Party submitting this EDS is:

the Applicant

B. Business address of the Disclosing Party:

12930 Worldgate Drive  
Suite 400  
Herndon, VA 20170  
United States

C. Telephone:

703-668-6302

Fax:

Email:

rick.sawyer@exelisinc.com

D. Name of contact person:

Mr. Rick Sawyer

E. Federal Employer Identification No. (if you have one):

45-2083813

F. Brief description of contract, transaction or other undertaking (referred to below as the "Matter") to which this EDS pertains:

ADS-B Site lease at Midway Airport

Which City agency or department is requesting this EDS?

DEPT OF PROCUREMENT SERVICES

Specification Number

n/a

Contract (PO) Number

n/a

Revision Number

n/a

Release Number

n/a

User Department Project Number

n/a

## **SECTION II -- DISCLOSURE OF OWNERSHIP INTERESTS**

### **A. NATURE OF THE DISCLOSING PARTY**

1. Indicate the nature of the Disclosing Party:

Publicly registered business corporation

Is the Disclosing Party incorporated or organized in the State of Illinois?

Yes

### **B. DISCLOSING PARTY IS A LEGAL ENTITY:**

1.a.1 Does the Disclosing Party have any directors?

No

1.a.3 List below the full names and titles of all executive officers and all directors, if any, of the entity. Do not include any directors who have no power to select the entity's officers.

<b>Officer/Director:</b>	Mr. David Melcher
<b>Title:</b>	CEO and President
<b>Role:</b>	Officer
-----	
<b>Officer/Director:</b>	Mr. Peter Milligan
<b>Title:</b>	Senior V.P. and CFO
<b>Role:</b>	Officer
-----	
<b>Officer/Director:</b>	Ms. Ann Davidson
<b>Title:</b>	Senior V.P. Chief Legal Officer, Corp. Secretary
<b>Role:</b>	Officer
-----	

## 2. Ownership Information

Please provide ownership information concerning each person or entity having a direct or indirect beneficial interest in excess of 7.5% of the Disclosing Party. Examples of such an interest include shares in a corporation, partnership interest in a partnership or joint venture, interest of a member or manager in a limited liability company, or interest of a beneficiary of a trust, estate, or other similar entity. Note: Pursuant to Section 2-154-030 of the Municipal code of Chicago, the City may require any such additional information from any applicant which is reasonably intended to achieve full disclosure.

There are no owners with greater than 7.5 percent ownership in the Disclosing Party.

## **SECTION III -- BUSINESS RELATIONSHIPS WITH CITY ELECTED OFFICIALS**

Has the Disclosing Party had a "business relationship," as defined in [Chapter 2-156 of the Municipal Code](#), with any City elected official in the 12 months before the date this EDS is signed?

No

## **SECTION IV -- DISCLOSURE OF SUBCONTRACTORS AND OTHER RETAINED PARTIES**

The Disclosing Party must disclose the name and business address of each subcontractor, attorney, lobbyist, accountant, consultant and any other person or entity whom the Disclosing Party has retained or expects to retain in connection with the Matter, as well as the nature of the relationship, and the total amount of the fees paid or estimated to be paid. The Disclosing Party is not required to disclose employees who are paid solely through the Disclosing Party's regular payroll.

"Lobbyist" means any person or entity who undertakes to influence any legislative or administrative action on behalf of any person or entity other than: (1) a not-for-profit entity, on an unpaid basis, or (2) himself. "Lobbyist" also means any person or entity any part of whose duties as an employee of another includes undertaking to influence any legislative or administrative action.

If the Disclosing Party is uncertain whether a disclosure is required under this Section, the Disclosing Party must either ask the City whether disclosure is required or make the disclosure.

1. Has the Disclosing Party retained any legal entities in connection with the Matter?

No

3. Has the Disclosing Party retained any persons in connection with the Matter?

No

## **SECTION V -- CERTIFICATIONS**

### **A. COURT-ORDERED CHILD SUPPORT COMPLIANCE**

Under [Municipal Code Section 2-92-415](#), substantial owners of business entities that contract with the City must remain in compliance with their child support obligations throughout the contract's term.

Has any person who directly or indirectly owns 10% or more of the Disclosing Party been declared in arrearage of any child support obligations by any Illinois court of competent jurisdiction?

No

### **B. FURTHER CERTIFICATIONS**

1. Pursuant to [Municipal Code Chapter 1-23](#), Article I ("Article I")(which the Applicant should consult for defined terms (e.g., "doing business") and legal requirements), if

the Disclosing Party submitting this EDS is the Applicant and is doing business with the City, then the Disclosing Party certifies as follows:

- i. neither the Applicant nor any controlling person is currently indicted or charged with, or has admitted guilt of, or has ever been convicted of, or placed under supervision for, any criminal offense involving actual, attempted, or conspiracy to commit bribery, theft, fraud, forgery, perjury, dishonesty or deceit against an officer or employee of the City or any sister agency; and
- ii. the Applicant understands and acknowledges that compliance with Article I is a continuing requirement for doing business with the City.

NOTE: If Article I applies to the Applicant, the permanent compliance timeframe in Article I supersedes some five-year compliance timeframes in certifications 2 and 3 below.

I certify the above to be true

2. The Disclosing Party and, if the Disclosing Party is a legal entity, all of those persons or entities identified in Section II.B.1. of this EDS:

- a. are not presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from any transactions by any federal, state or local unit of government;
- b. have not, within a five-year period preceding the date of this EDS, been convicted of a criminal offense, adjudged guilty, or had a civil judgment rendered against them in connection with: obtaining, attempting to obtain, or performing a public (federal, state or local) transaction or contract under a public transaction; a violation of federal or state antitrust statutes; fraud; embezzlement; theft; forgery; bribery; falsification or destruction of records; making false statements; or receiving stolen property;
- c. are not presently indicted for, or criminally or civilly charged by, a governmental entity (federal, state or local) with committing any of the offenses set forth in clause B.2.b. of this Section V;
- d. have not, within a five-year period preceding the date of this EDS, had one or more public transactions (federal, state or local) terminated for cause or default; and
- e. have not, within a five-year period preceding the date of this EDS, been convicted, adjudged guilty, or found liable in a civil proceeding, or in any criminal or civil action, including actions concerning environmental violations, instituted by the City or by the federal government, any state, or any other unit of local government.

I certify the above to be true

3. Neither the Disclosing Party, nor any Contractor, nor any Affiliated Entity of either the Disclosing Party or any Contractor nor any Agents have, during the five years

before the date this EDS is signed, or, with respect to a [Contractor](#), an [Affiliated Entity](#), or an [Affiliated Entity](#) of a [Contractor](#) during the five years before the date of such [Contractor's](#) or [Affiliated Entity's](#) contract or engagement in connection with the Matter:

- a. bribed or attempted to bribe, or been convicted or adjudged guilty of bribery or attempting to bribe, a public officer or employee of the City, the State of Illinois, or any agency of the federal government or of any state or local government in the United States of America, in that officer's or employee's official capacity;
- b. agreed or colluded with other bidders or prospective bidders, or been a party to any such agreement, or been convicted or adjudged guilty of agreement or collusion among bidders or prospective bidders, in restraint of freedom of competition by agreement to bid a fixed price or otherwise; or
- c. made an admission of such conduct described in a. or b. above that is a matter of record, but have not been prosecuted for such conduct; or
- d. violated the provisions of [Municipal Code Section 2-92-610 \(Living Wage Ordinance\)](#).

I certify the above to be true

4. Neither the Disclosing Party, [Affiliated Entity](#) or [Contractor](#), or any of their employees, officials, [agents](#) or partners, is barred from contracting with any unit of state or local government as a result of engaging in or being convicted of

- bid-rigging in violation of [720 ILCS 5/33E-3](#);
- bid-rotating in violation of [720 ILCS 5/33E-4](#); or
- any similar offense of any state or of the United States of America that contains the same elements as the offense of bid-rigging or bid-rotating.

I certify the above to be true

5. Neither the Disclosing Party nor any [Affiliated Entity](#) is listed on any of the following lists maintained by the Office of Foreign Assets Control of the U.S. Department of the Treasury or the Bureau of Industry and Security of the U.S. Department of Commerce or their successors: the [Specially Designated Nationals List](#), the [Denied Persons List](#), the [Unverified List](#), the [Entity List](#) and the [Debarred List](#).

I certify the above to be true

6. The Disclosing Party understands and shall comply with the applicable requirements of [Chapters 2-55 \(Legislative Inspector General\)](#), [Chapter 2-56 \(Inspector General\)](#) and [Chapter 2-156 \(Governmental Ethics\)](#) of the Municipal Code.

I certify the above to be true

7. To the best of the Disclosing Party's knowledge after reasonable inquiry, the following is a complete list of all current employees of the Disclosing Party who were, at any time during the 12-month period preceding the execution date of this EDS, an employee, or elected or appointed official, of the City of Chicago.

None

8. To the best of the Disclosing Party's knowledge after reasonable inquiry, the following is a complete list of all gifts that the Disclosing Party has given or caused to be given, at any time during the 12-month period preceding the execution date of this EDS, to an employee, or elected or appointed official, of the City of Chicago. For purposes of this statement, a "gift" does not include: (i) anything made generally available to City employees or to the general public, or (ii) food or drink provided in the course of official City business and having a retail value of less than \$20 per recipient.

None

#### C. CERTIFICATION OF STATUS AS FINANCIAL INSTITUTION

The Disclosing Party certifies that, as defined in [Section 2-32-455\(b\) of the Municipal Code](#), the Disclosing Party

is not a "financial institution"

#### D. CERTIFICATION REGARDING INTEREST IN CITY BUSINESS

Any words or terms that are defined in [Chapter 2-156 of the Municipal Code](#) have the same meanings when used in this Part D.

1. In accordance with [Section 2-156-110 of the Municipal Code](#): Does any official or employee of the City have a financial interest in his or her own name or in the name of any other person or entity in the Matter?

No

#### E. CERTIFICATION REGARDING SLAVERY ERA BUSINESS

If the Disclosing Party cannot make this verification, the Disclosing Party must disclose all required information in the space provided below or in an attachment in the "Additional Info" tab. Failure to comply with these disclosure requirements may make any contract entered into with the City in connection with the Matter voidable by the City.

The Disclosing Party verifies that the Disclosing Party has searched any and all records of the Disclosing Party and any and all predecessor entities regarding records of investments or profits from slavery or slaveholder insurance policies

during the slavery era (including insurance policies issued to slaveholders that provided coverage for damage to or injury or death of their slaves), and the Disclosing Party has found no such records.

I can make the above verification

## **SECTION VI -- CERTIFICATIONS FOR FEDERALLY-FUNDED MATTERS**

Is the Matter federally funded? For the purposes of this Section VI, tax credits allocated by the City and proceeds of debt obligations of the City are not federal funding.

No

## **SECTION VII -- ACKNOWLEDGMENTS, CONTRACT INCORPORATION, COMPLIANCE, PENALTIES, DISCLOSURE**

The Disclosing Party understands and agrees that:

- A. The certifications, disclosures, and acknowledgments contained in this EDS will become part of any contract or other agreement between the Applicant and the City in connection with the Matter, whether procurement, City assistance, or other City action, and are material inducements to the City's execution of any contract or taking other action with respect to the Matter. The Disclosing Party understands that it must comply with all statutes, ordinances, and regulations on which this EDS is based.
- B. The City's Governmental Ethics and Campaign Financing Ordinances, [Chapters 2-156](#) and [2-164](#) of the Municipal Code, impose certain duties and obligations on persons or entities seeking City contracts, work, business, or transactions. A training program is available on line at [www.cityofchicago.org/city/en/depts/ethics.html](http://www.cityofchicago.org/city/en/depts/ethics.html), and may also be obtained from the City's Board of Ethics, 740 N. Sedgwick St., Suite 500, Chicago, IL 60610, (312) 744-9660. The Disclosing Party must comply fully with the applicable ordinances.

I acknowledge and consent to the above

The Disclosing Party understands and agrees that:

- C. If the City determines that any information provided in this EDS is false, incomplete or inaccurate, any contract or other agreement in connection with which it is submitted may be rescinded or be void or voidable, and the City may pursue any remedies under the contract or agreement (if not rescinded or void),



at law, or in equity, including terminating the Disclosing Party's participation in the Matter and/or declining to allow the Disclosing Party to participate in other transactions with the City. Remedies at law for a false statement of material fact may include incarceration and an award to the City of treble damages.

- D. It is the City's policy to make this document available to the public on its Internet site and/or upon request. Some or all of the information provided on this EDS and any attachments to this EDS may be made available to the public on the Internet, in response to a Freedom of Information Act request, or otherwise. By completing and signing this EDS, the Disclosing Party waives and releases any possible rights or claims which it may have against the City in connection with the public release of information contained in this EDS and also authorizes the City to verify the accuracy of any information submitted in this EDS.
- E. The information provided in this EDS must be kept current. In the event of changes, the Disclosing Party must supplement this EDS up to the time the City takes action on the Matter. If the Matter is a contract being handled by the City's Department of Procurement Services, the Disclosing Party must update this EDS as the contract requires. NOTE: With respect to Matters subject to Article I of [Chapter 1-23 of the Municipal Code](#) (imposing PERMANENT INELIGIBILITY for certain specified offenses), the information provided herein regarding eligibility must be kept current for a longer period, as required by [Chapter 1-23](#) and [Section 2-154-020 of the Municipal Code](#).

I acknowledge and consent to the above

The Disclosing Party represents and warrants that:

F.1. The Disclosing Party is not delinquent in the payment of any tax administered by the Illinois Department of Revenue, nor are the Disclosing Party or its [Affiliated Entities](#) delinquent in paying any fine, fee, tax or other charge owed to the City. This includes, but is not limited to, all water charges, sewer charges, license fees, parking tickets, property taxes or sales taxes.

I certify the above to be true

F.2 If the Disclosing Party is the Applicant, the Disclosing Party and its [Affiliated Entities](#) will not use, nor permit their subcontractors to use, any facility listed by the U.S. E.P.A. on the federal [Excluded Parties List System \("EPLS"\)](#) maintained by the U.S. General Services Administration.

I certify the above to be true

F.3 If the Disclosing Party is the Applicant, the Disclosing Party will obtain from any contractors/subcontractors hired or to be hired in connection with the Matter certifications equal in form and substance to those in F.1. and F.2. above and will not, without the prior written consent of the City, use any such

contractor/subcontractor that does not provide such certifications or that the Disclosing Party has reason to believe has not provided or cannot provide truthful certifications.

I certify the above to be true

## **FAMILIAL RELATIONSHIPS WITH ELECTED CITY OFFICIALS AND DEPARTMENT HEADS**

This question is to be completed only by (a) the Applicant, and (b) any legal entity which has a direct ownership interest in the Applicant exceeding 7.5 percent. It is not to be completed by any legal entity which has only an indirect ownership interest in the Applicant.

Under [Municipal Code Section 2-154-015](#), the Disclosing Party must disclose whether such Disclosing Party or any "Applicable Party" or any Spouse or Domestic Partner thereof currently has a "familial relationship" with any elected city official or department head. A "familial relationship" exists if, as of the date this EDS is signed, the Disclosing Party or any "Applicable Party" or any Spouse or Domestic Partner thereof is related to the mayor, any alderman, the city clerk, the city treasurer or any city department head as spouse or domestic partner or as any of the following, whether by blood or adoption: parent, child, brother or sister, aunt or uncle, niece or nephew, grandparent, grandchild, father-in-law, mother-in-law, son-in-law, daughter-in-law, stepfather or stepmother, stepson or stepdaughter, stepbrother or stepsister or half-brother or half-sister.

"Applicable Party" means (1) all corporate officers of the Disclosing Party, if the Disclosing Party is a corporation; all partners of the Disclosing Party, if the Disclosing Party is a general partnership; all general partners and limited partners of the Disclosing Party, if the Disclosing Party is a limited partnership; all managers, managing members and members of the Disclosing Party, if the Disclosing Party is a limited liability company; (2) all principal officers of the Disclosing Party; and (3) any person having more than a 7.5 percent ownership interest in the Disclosing Party. "Principal officers" means the president, chief operating officer, executive director, chief financial officer, treasurer or secretary of a legal entity or any person exercising similar authority.

Does the Disclosing Party or any "Applicable Party" or any Spouse or Domestic Partner thereof currently have a "familial relationship" with an elected city official or department head?

No

## **ADDITIONAL INFO**

Please add any additional explanatory information here. If explanation is longer than 1000 characters, you may add an attachment below. Please note that your EDS, including all attachments, becomes available for public viewing upon contract award. Your attachments will be viewable "as is" without manual redaction by the City. You are responsible for redacting any non-public information from your documents before uploading.

List of vendor attachments uploaded by City staff

None .

List of attachments uploaded by vendor

None .

## **CERTIFICATION**

Under penalty of perjury, the person signing below: (1) warrants that he/she is authorized to execute this EDS on behalf of the Disclosing Party, and (2) warrants that all certifications and statements contained in this EDS are true, accurate and complete as of the date furnished to the City.

/s/ 03/11/2013

Mr. Rick Sawyer

Contracts Administrator

Exelis Inc.

This is a printed copy of the Economic Disclosure Statement, the original of which is filed electronically with the City of Chicago. Any alterations must be made electronically, alterations on this printed copy are void and of no effect.

## **Exelis Compliances**



DEPARTMENT OF PROCUREMENT SERVICES  
CITY OF CHICAGO

**NO STATED GOAL REPLY MEMORANDUM**

TO: Rosemarie S. Andolino  
Commissioner  
Chicago Department of Aviation

FROM:   
Jamie L. Rhee  
Chief Procurement Officer

DATE: OCT 25 2013

RE: Installation and Maintenance of Exelis V-MAT Universal Access Transceiver (UAT) Automatic Dependent Surveillance-Broadcast (ADS-B) Vehicle Tracking Units  
Spec# TBD

---

After further review and consideration, the Department of Procurement Services approves the No Stated Goal request for the installation and maintenance of Exelis V-MAT Universal Access Transceiver (UAT) Automatic Dependent Surveillance-Broadcast (ADS-B) Vehicle Tracking Units for Chicago Department of Aviation.

If you have any questions, please contact Monica Jimenez, Deputy Procurement Officer at (312) 744-0845 or via email at [monica.jimenez@cityofchicago.org](mailto:monica.jimenez@cityofchicago.org).

JLR:gs



CHICAGO DEPARTMENT OF AVIATION  
CITY OF CHICAGO

**MEMORANDUM**

To: Jamie L. Rhee  
Chief Procurement Officer

Attention: James McIsaac  
Deputy Procurement Officer

Monica Jimenez  
Deputy Procurement Officer

From: Rosemarie S. Andolino 10/11/13  
Commissioner

Subject: MBE/WBE Goals for Installation and Maintenance of Exelis V-MAT Universal  
Access Transceiver (UAT) Automatic Dependent Surveillance-Broadcast (ADS-B)  
Vehicle Tracking Units  
Specification # TBD

The Chicago Department of Aviation (CDA) requests no stated goals be set for MBE/WBE participation for the above mentioned non-competitive procurement specification. This request is based on the specialized commodity nature of Inspection and Maintenance of Exelis V-MAT Universal Access Transceiver (UAT) Automatic Dependent Surveillance-Broadcast (ADS-B) Vehicle Tracking Units and the lack of true subcontracting opportunities.

The CDA has conducted a search on the DPS website (screen print results attached) to identify certified MBE/WBE firms that could participate in a commercially useful manner for the above mentioned contract and, at present, CDA has not discovered any MBE/WBE firms available on the City's directory of certified firms that could participate on this contract.

If you have any questions or need additional information regarding this recommendation, please contact David Bowman at (773) 686-7089.

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## Certification and Compliance System (C2)

**MWDBE Directory**  
Search City of Chicago's MWDBE Directory, by entering search terms and clicking Search. You must select at least one certification type.  
Department of Procurement Services Disclaimer

**Search by Business Name or DBA**  
Business Name/DBA:  Title:

**Search by Business Description**  
Business Description:  V-MAT Vehicle Tracking Units

**Search by Commodity Code**  
Commodity Code:  Select to Lookup Commodity Code  
Select to Lookup Commodity Code  
Select to Lookup Commodity Code  
Select to Lookup Commodity Code

**Search by Contact Person**  
Contact Person/Owner: 

First name	Last name
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>

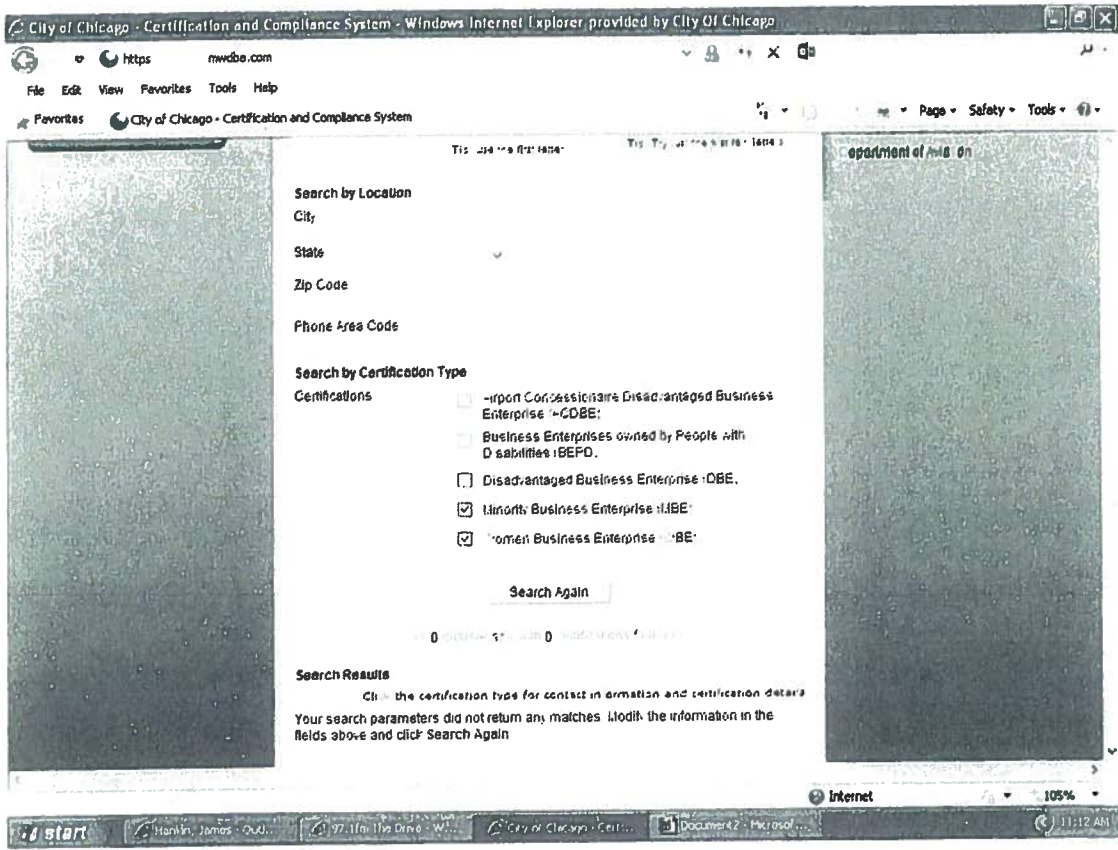
 Title:

**Search by Location**

**System Links**

- » System Login
- » Password Reminder
- » Account Lookup
- » FAQs
- » MWDBE Directory
- » Apply for Certification
- » Upcoming Events
- » Staff Information
- » Contact Us & Support

Department of Procurement Services  
Department of Business Affairs and Consumer Protection  
Department of Aviation





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Police  
Fire

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Apply for Certification

Current Bid Opportunities

Bid Tabulations

# Certification and Compliance System (C2)

**MWDBE Directory**

Search City of Chicago's MWDBE Directory by entering search terms and clicking Search. You must select at least one certification type.

Department of Procurement Services Disclaimer

**Search by Business Name or DBA**

Business Name/DBA:

**Search by Business Description**

Business Description:

**Search by Commodity Code**

Commodity Code:

**Search by Contact Person**

Contact Person/Owner:

**Search by Location**

**System Links**

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Department of Procurement  
Department of Business Affairs  
Department of Consumer Protection  
Department of Aviation

Department of Aviation

Search by Location

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Zip Code

Phone Area Code

Search by Certification Type

Certifications

- Airport Concessionaire Disadvantaged Business Enterprise (ACDBE)
- Business Enterprises owned by People with Disabilities (BEPO)
- Disadvantaged Business Enterprise (DBE)
- Minority Business Enterprise (MBE)
- Women Business Enterprise (WBE)

Search Again

0 businesses with 0 certifications found

Search Results

Click the certification type for contact information and certification details

Your search parameters did not return any matches. Modify the information in the fields above and click Search Again.

**Department Facts**

ABOUT US:  
City of Chicago  
City Services

**City Services**

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## Certification and Compliance System (C2)

**MWDBE Directory**

Search City of Chicago's MWDBE Directory by entering search terms and clicking Search. You must select at least one certification type.

Department of Procurement Services [Disclaimer](#)

**Search by Business Name or DBA**

Business Name/DBA  Title: Just a few letters of the business name

**Search by Business Description**

Business Description  Vehicle Tracking Transponders

**Search by Commodity Code**

Commodity Code  Click on a Commodity Code to see a list of items and their available Commodity Codes

**Search by Contact Person**

Contact Person-Owner 

First Name	Last Name
<input type="text"/>	<input type="text"/>

 Title: Just a few letters of the business name

**Search by Location**

**System Links**

- System Login
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- Apply for Certification
- Upcoming Events
- Staff Information
- Contact Us & Support

Department of Procurement Services  
Department of Business Affairs and Consumer Protection  
Department of Aviation

Department of Aviation

Search by Location

City: \_\_\_\_\_

State: \_\_\_\_\_

Zip Code: \_\_\_\_\_

Phone Area Code: \_\_\_\_\_

Search by Certification Type

Certifications

- Airport Concessions/Disadvantaged Business Enterprise - ACDBE
- Business Enterprises owned by People with Disabilities - BEPD
- Disadvantaged Business Enterprise - DBE
- Minority Business Enterprise - MBE
- Women Business Enterprise - WBE

[Search Again](#)

0 Business Enterprises found

**Search Results**

Click the certification type for search information and certification details

Your search parameters did not return any matches. Modify the information in the fields above and click Search Again

## **Exelis Detailed Specifications**

## **DETAILED SPECIFICATIONS**

### **SCOPE**

According to the Federal Aviation Administration (FAA), potentially serious incidents and accidents involving aircraft and vehicles at airports occur every year. In late 2011, the FAA released Advisory Circular (AC) No. 150/5220-26 to provide guidance on the installation of Airport Ground Vehicle Automatic Dependent Surveillance – Broadcast (ADS-B) Out Squitter Equipment for airport ground vehicles, in order to “provide improved surveillance in the terminal, en route, and on surface environments.” The AC states that “the FAA strongly encourages airport operators to voluntarily equip appropriate vehicles with airport ground vehicle ADS-B squitter units.” Both O’Hare and Midway International Airports are among the 44 airports identified in the AC as primary locations for installation by 2017.

The Chicago Department of Aviation (CDA) desires to contract for the installation and maintenance of up to three hundred (300) ADS-B squitter units (also known as Vehicle Movement Area Transponders, or “VMATs”) at O’Hare and Midway. The initial installation will total one-hundred ten (110) units, seventy-five (75) of which will be at O’Hare International Airport (O’Hare) and thirty-five (35) of which will be at Midway International Airport (Midway). Subsequent purchases under this contract may total as many as one-hundred twenty-five (125) units at O’Hare (for a total of 200 units at O’Hare) and sixty-five 65 units at Midway (for a total of 100 units at Midway).

### **HARDWARE/SOFTWARE (LINE 1)**

Contractor shall provide CDA with the following hardware, software, and support:

- One-hundred ten (110) FAA-approved VMATs (initial order only, with option for additional units)
- One-hundred ten (110) vehicle installation kits (initial order only, with option for additional units)
- Installation, training and verification as described below
- Two-year hardware warranty
- One (1) year trial of (10) user licenses of MobileVue for mobile device monitoring

Payment for HARDWARE/SOFTWARE shall be on a per-unit basis for delivered VMAT units, including installation kits and two-year hardware warranty. Unit price shall be fixed for the initial 110 units ordered; unit pricing for subsequent orders shall be dependent on lot size ordered. All unit prices shall be for year 2014, subject to 3% annual escalation thereafter. Fifty percent (50%) of payment due for HARDWARE/SOFTWARE shall be made upon delivery of units and completion of “PRE-INSTALLATION AND TRAINING” as defined below. The remaining fifty percent (50%) of payment due shall be made upon completion of “INSTALLATION” as defined below.

## **FCC/FAA TRANSMIT APPROVAL**

CDA shall be responsible for obtaining approval from the Federal Communications Commission (FCC) for transmission of VMAT signals. Contractor shall assist by coordinating with the Federal Aviation Administration Service Area Frequency Management Office (FMO), obtaining an a Non-Government (NG) Transmit Number (NG Txxxxxx ) from the FAA Service Area(or Regional) FMO, and applying to the FCC for a license to transmit.

Contractor shall assist CDA as necessary to obtain International Civil Aviation Organization (ICAO) addresses from the FAA for each of the VMAT units. Contractor shall draft a letter to be sent from CDA to obtain ICAO addresses.

## **PRE-INSTALLATION AND TRAINING**

Once approval has been received and the FAA has provisioned International Civil Aviation Organization (ICAO) addresses, Contractor shall deliver all installation kits, conduct on-site installation kit training, and oversee CDA's installation of the first five installation kits.

Contractor will conduct one (1) kickoff teleconference to discuss the overall process, introduce key personnel, and begin project planning and coordination. This meeting will be held utilizing web-meeting technology. During the Pre-Installation phase, two parallel sets of activities occur:

Installation Kit Installation. Following the training period, CDA will prepare the vehicles by installing mounting brackets for the VMAT units, Global Positioning System (GPS) and Universal Access Transceiver (UAT) antennas, appropriate gauge wire for tapping into accessory power, and appropriate gauge wire and lengths to properly conceal and run to antenna sources. The configuration matrix for these vehicles will be reviewed and changes made accordingly. Vehicle installation kits shall include all brackets, antennas, connectors, and cabling required with the exception of the electrical wiring required for tapping into the vehicle power source. After the initial set of five (5) installation kits have been installed with guidance from Contractor personnel, CDA shall install the remainder of the installation kits in the selected vehicles.

Data Collection and VMAT Configuration. Contractor will work with CDA to collect information regarding the vehicles that are to be outfitted with a VMAT unit. For each vehicle, the following information will be collected for planning and configuration purposes:

- Vehicle name / description
- Vehicle type
- Vehicle tag
- Emitter category
- Vehicle length and width (meters)
- Vehicle ID/call sign

A transmit map of the airport surface shall be used to control the on/off function of the vehicle unit. Contractor will provide CDA with copies of a .kml formatted map received from the FAA. The map will be loaded on the VMAT units during the configuration phase and copies of the map shall be retained for configuration management.

## **INSTALLATION (LINE 2)**

Contractor will provide configuration management services for each VMAT device based on serial number, provisioned ICAO address, vehicle designator, and vehicle tag. These details will be tracked using the configuration matrix. Contractor will update and complete the configuration matrix for the units installed, if required, and confirm that the correct VMAT devices are deployed in the intended vehicles through a review of the configuration label on the front of the unit.

At a minimum, the following information will be tracked in the matrix:

- Vehicle description
- Vehicle tag
- Vehicle ID
- VMAT serial number
- ICAO address
- Link frequency
- Airport VMAT transmit map date and checksum
- Emitter category
- Vehicle length (meters)
- Vehicle width (meters)
- Configure date/initials
- Installation date/initials
- Acceptance test verification date/initials

Dated copies of the updated configuration matrix will be provided to the FAA and CDA as changes are made. This information shall be kept online by Contractor for reference. Contractor will provide the FAA with copies of the validated matrix according to the site acceptance procedures.

Contractor shall perform one installation phase at O'Hare and one installation phase at Midway, with Contractor having delivered preconfigured VMAT units at each location. Contractor shall install VMAT radios into pre-installed brackets, and make power and antenna connections. CDA may elect for multiple installation phases to allow installation and operational use of a set or "lot" of VMAT units in some vehicles while pre-installation activities continue on other vehicles. If CDA elects for multiple installation phases, a provisional acceptance of each lot is required for CDA to use the units operationally while subsequent lots are installed.

Contractor shall be required, in accordance with Advisory Circular 150/5220-26, to manage the site acceptance testing (SAT) process and submit SAT documents and updates to the FAA's Quality Reliability Officer (QRO) or the QRO's representative. Other than for installation and testing purposes, units may not be used operationally without passing SAT testing or receiving provisional acceptance.

After the initial lot installation, Contractor will submit an updated preliminary SAT report for all devices that have been installed and have had their configuration verified. The FAA will review the preliminary SAT report and determine if any corrective actions are required or grant provisional operational use of the installed units listed in the report. The FAA has agreed to allow units to operate with provisional acceptance for up to six (6) months.



Once all units have been installed and CDA is ready to proceed with final acceptance, Contractor shall perform the final SAT. This will include complete testing of a random sampling of approximately 10% of the total installed units. These units will be retested by Contractor, and if desired, by the FAA or one of its representatives. Each selected unit will have its configuration revalidated. Once all units have been validated, a final SAT report will be submitted to the FAA's Quality Reliability Officer (QRO) or the QRO's representative. The FAA will determine if any corrective actions are required or approve CDA's units for operation.

Contractor will work with CDA to test three vehicles with installed and configured VMAT units on their ability to transmit. The units will be selected for their ability to practically travel to the various regions of defined in the map required for testing. The units will be configured with the current FAA provided .kml map. The results of this test will be used to satisfy these requirements for all other VMAT units with the same part number and which have had loaded the same map. The .kml airport transmit maps will be considered the same if they have the identical checksum, date, and number of zones. Contractor will be responsible for verifying performance.

Payment for INSTALLATION (LINE 2) shall be on a lump sum basis for all installed units. Lump sum prices shall be provided separately for installation at O'Hare and Midway Airports. Lump sum prices shall be fixed for the initial 75 (O'Hare) and 35 (Midway) units ordered; pricing for subsequent orders shall be dependent on lot size ordered and included in the price of future unit hardware. All unit prices shall be for year 2014, subject to 3% annual escalation thereafter. Fifty percent (50%) of payment due for INSTALLATION (LINE 2) shall be made upon delivery of units and completion of "PRE-INSTALLATION AND TRAINING" as defined above. The remaining fifty percent (50%) of payment for INSTALLATION (LINE 2) shall be due upon completion of this task.

### **ANNUAL MAINTENANCE (LINE 3)**

Once the SAT final report has been submitted to the FAA and accepted, the first annual maintenance period shall begin, with subsequent annual maintenance periods commencing on the anniversary thereafter. Payment for ANNUAL MAINTENANCE (LINE 3) shall be on a lump sum basis for all installed units, payable at commencement of the maintenance period and annually thereafter with three percent (3%) annual escalation.

As long as the VMAT units are deployed, Contractor is responsible for ensuring that the units are operating properly and that the paperwork is in order. Ongoing support is required on every installed unit, whether under warranty or not, unless a unit has been decommissioned and removed.

During this period, CDA personnel will have access to a support hotline and trouble ticket portal to report any issues that may arise and get status on any outstanding items. In addition to a support desk function, the support and maintenance phase includes services outlined in FAA Advisory Circular No. 150/5220-26 such as:

- Shipping of warranty replacement VMAT if defective unit is detected or identified by FAA as such
- Recertification/documentation of new VMAT unit in the event of a warranty replacement or repair
- Tracking of unit configuration and relevant installation and maintenance documents (certifications, licenses, and configuration matrix)

Contractor shall maintain a customer support website that will maintain current unit configurations, copies of required certifications and licenses, and relevant installation documents, and allow CDA to submit and track issues and defects.

Issues will be registered with Contractor through the customer support website or by contacting the Contractor support office. Issues registered with support will be triaged and processed through the customer support website. All issues will be assigned and tracked with a unique ticket number. This data will be used to help determine transient vs. system issues and will be used as an input in overall product improvement. The support office will coordinate with the required resources to mitigate issues that are entered into the system. Contractor will respond within two (2) working days to any issues reported through the website or telephone hotline and employ commercially reasonable practices to resolve issues.

In accordance with Advisory Circular 150/5220-26, Contractor shall maintain the configuration matrix and all SAT materials. Changes to any item tracked in the matrix shall be communicated to Contractor so it can notify the FAA accordingly. Contractor will keep records of the current configuration state and a history of changes in its online support system.

Contractor will coordinate replacement of units determined to be defective in accordance with CDA's warranty and support agreement. Defective units covered under the manufacturer's warranty shall be repaired or replaced in accordance with the terms of the warranty and support agreement. Contractor will work with CDA to replace each unit, update the configuration matrix, and coordinate with the FAA accordingly to submit and process an amendment to the SAT. Units identified as defective shall not be used operationally. Replacement units for any defective units returned to Contractor support offices shall be shipped within five (5) business days.

In the event the airport transmission map is updated, the new maps shall be uploaded individually to each VMAT unit, and Contractor will submit an amended SAT report. The VMAT with the new map will continue to operate in a provisional state for up to six months until the amended SAT report is approved.

Contractor shall be responsible at all times for ensuring that the VMAT units are operating properly and documentation is current and complete in order to maintain support on each installed unit, whether under warranty or not, unless decommissioned and removed by CDA.

#### **UNIT TRANSFERS (LINE 4)**

If CDA determines a need to transfer a unit to another vehicle after final acceptance by FAA, Contractor shall update the configuration matrix and submit an amended SAT report with the updated information to the FAA for approval. The relocated unit will continue to operate in a provisional state for up to two months until the amended SAT report is approved. Activities related to support up to four (4) VMAT units per airport transferred twice a year to another vehicle shall be included in ANNUAL MAINTENANCE (LINE 3). Additional unit transfers, if required, shall be conducted on a time and materials basis based on approved labor rates for 2014 with three percent (3%) annual escalation. Contractor shall provide a quote for the transfer(s) prior to initiating work.

#### **FAA UPDATES (LINE 5)**

The FAA may monitor units for operational compliance and may report issues to either CDA or Contractor. CDA will report to Contractor any issues raised by FAA, and any issues reported to Contractor by FAA shall be reported to CDA. Once an issue has been raised, appropriate investigation and mitigation, if required, shall be performed by Contractor upon direction and approval of CDA.

At any time, the possibility exists that the FAA may require or recommend that installed VMAT units be updated. Should updates be required by the FAA, Contractor shall coordinate with the FAA to determine the process for applying an update.

Contractor will communicate to CDA the details of the update and any actions they must take. If determined to be required, updating of the units shall be handled on a time and materials basis based on approved labor rates for 2014 with three percent (3%) annual escalation. Contractor shall provide a quote for the update(s) prior to initiating any service or repair work.

## **WARRANTY**

All VMAT units shall be covered under manufacturer's two-year hardware warranty and included in the price for HARDWARE/SOFTWARE (LINE 1). Defective units covered under the manufacturer's warranty will be repaired or replaced in accordance with the terms of the warranty. CDA will return the defective unit to Contractor's support office. Within 5 business days, Contractor will ship a replacement unit to the Airport. Contractor will replace each unit, update the configuration matrix, and coordinate with the FAA accordingly to submit and process an amendment to the SAT.

The following items are not included in Contractor supplied maintenance and support services:

1. Replacement of consumable items.
2. Repair or replacement of equipment under warranty maintenance damaged by vandalism, accident, fire, riot, civil disturbance or acts of war.
3. Repair or replacement of equipment damaged by acts of God, including, but not limited to, lightning strikes, flood, unusually severe weather or other acts of nature.
4. Repair or replacement of equipment under maintenance damaged by modifications or adjustments made by CDA personnel and not authorized by Contractor or not performed under Contractor's supervision and direction.
5. Repair or replacement of equipment under maintenance damaged by operation in an unsuitable environment such as inadequate air conditioning, humidity control, or faulty electric power.
6. Repair or replacement of equipment under maintenance damaged by relocation of equipment not performed by Contractor or under Contractor's supervision and direction.
7. Problems caused by faulty power including sags and surges.
8. Contractor will use commercially reasonable efforts to provide the CDA with six (6) months prior notice to the End of Life (EOL) for any equipment. Once equipment has reached EOL, Contractor shall no longer be responsible for maintaining such equipment, nor shall Contractor have any responsibility to replace the equipment at its own expense. After equipment has reached EOL, Contractor will identify options for CDA to replace the equipment. Any and all equipment purchased under this contract will not reach EOL before the end of the five (5) year contract term and any extension period thereafter.

## **NON-WARRANTY SERVICE (LINE 6)**

For units no longer covered by warranty or service agreement, or repairs/replacements due to reasons specifically excluded from the manufacturer's warranty and/or Contractor's support agreement, service will be handled on a time and materials basis based on approved labor rates for 2014 with three percent (3%) annual escalation. Contractor shall provide a quote for the repair and processing of any defective units prior to conducting any repair or replacement.

**EXTENDED WARRANTY (LINE 7)**

Extended hardware warranties shall be provided at CDA's option to provide an additional three (3) years of warranty coverage for any or all units beyond the standard two-year warranty. Payment for EXTENDED WARRANTY (LINE 7), if elected by CDA, shall be on a per-unit basis based on 2014 pricing with three percent (3%) annual escalation thereafter.

**EXTRA INSTALLATION KITS (LINE 8)**

Extra vehicle installation kits which allow VMAT units to be moved easily between vehicles at the same Airport may be purchased at CDA's option. Payment for EXTRA INSTALLATION KITS (LINE 8) shall be on a per-unit basis based on 2014 pricing with three percent (3%) annual escalation thereafter.

**MOBILEVUE LICENSES (LINE 9)**

Symphony® MobileVue™ licenses may be purchased by CDA during the term of the five (5) year maintenance period for use at O'Hare or Midway.

Symphony MobileVue is a situation awareness display system that displays real-time aircraft and vehicle surveillance data on a portable device. Symphony MobileVue puts real-time surveillance data in the hands of the people who are operating on the surface of an airport, providing significant improvements in safety and efficiency. MobileVue enables airfield operations staff to have real-time access to surveillance and taxi-time information on a portable device. MobileVue provides airport operators with a depiction of their location in relation to aircraft and other vehicles operating around and on the airport surface.

MobileVue is licensed on a per-device annual subscription. Payment for MOBILEVUE LICENSES (LINE 9) shall be on a per-unit basis depending on lot size ordered and based on 2014 pricing with three percent (3%) annual escalation thereafter.

## **Exelis Response to CDA (Proposal)**



April 2, 2014

George Lyman  
P.O. Box 66142  
Chicago, IL 60666

Re: Proposal for Initial Order of 110 VMATs, Installation and Maintenance Services with Options for Additional VMAT Units and Symphony® MobileVue™ Software Licenses

Dear Mr. Lyman:

Exelis Inc. ("Exelis") is pleased to submit this revised proposal to supply the Chicago Department of Aviation ("Airport") with an initial order of one hundred ten (110) Vehicle Movement Area Transponder (VMAT) units plus installation training, licensing, verification and ongoing maintenance required for the continued operation of these units as described in FAA Advisory Circular No. 150/5220-26. Seventy-five (75) of these units are for use at Chicago O'Hare International Airport ("ORD"), and thirty-five (35) are for use at Chicago Midway International Airport ("MDW"). The price breakdown is presented in Table 1a and Table 1b below.

**Table 1a: VMAT Pricing for 75 VMAT Units and Installation at ORD**

Item	Amount	Cost	Total
VMAT Units (Squitters) <sup>1</sup>	75	\$5,800 each	\$435,000
Exelis Installation Services <sup>2</sup>	1	\$99,200 one-time fee	\$99,200
<b>Purchase and Installation Price<sup>3</sup></b>			<b>\$534,200</b>

**Table 1b: VMAT Pricing for 35 VMAT Units and Installation at MDW**

Item	Amount	Cost	Total
VMAT Units (Squitters) <sup>1</sup>	35	\$5,800 each	\$203,000
Exelis Installation Services <sup>2</sup>	1	\$61,920 one-time fee	\$61,920
<b>Purchase and Installation Price<sup>3</sup></b>			<b>\$264,920</b>

Notes:

- 1) The price for the VMAT units includes the VMATs, the installation kits, and a two-year hardware warranty. Any and all equipment purchased under this contract will not reach EOL before the end of the five (5) year contract term and any extension period thereafter.
- 2) The required installation services include the installation activities required of Exelis by the FAA advisory circular.
- 3) Fifty percent (50%) payable at Pre-Installation and Training, with the remainder payable at completion of the Installation.

Pricing for ongoing maintenance required for the continued operation of the VMAT units as described in FAA Advisory Circular No. 150/5220-26 is presented in Table 2a and Table 2b below. Payment is due at

completion of the Installation and annually thereafter on the anniversary thereof. Annual maintenance services to be provided within the quoted price are described in the maintenance section of this proposal.

**Table 2a: Annual VMAT Service Pricing for 75 Units at ORD**

<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>
\$57,000	\$58,710	\$60,471	\$62,285	\$64,154

**Table 2b: Annual VMAT Service Pricing for 35 Units at MDW**

<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>
\$26,600	\$27,398	\$28,220	\$29,067	\$29,939

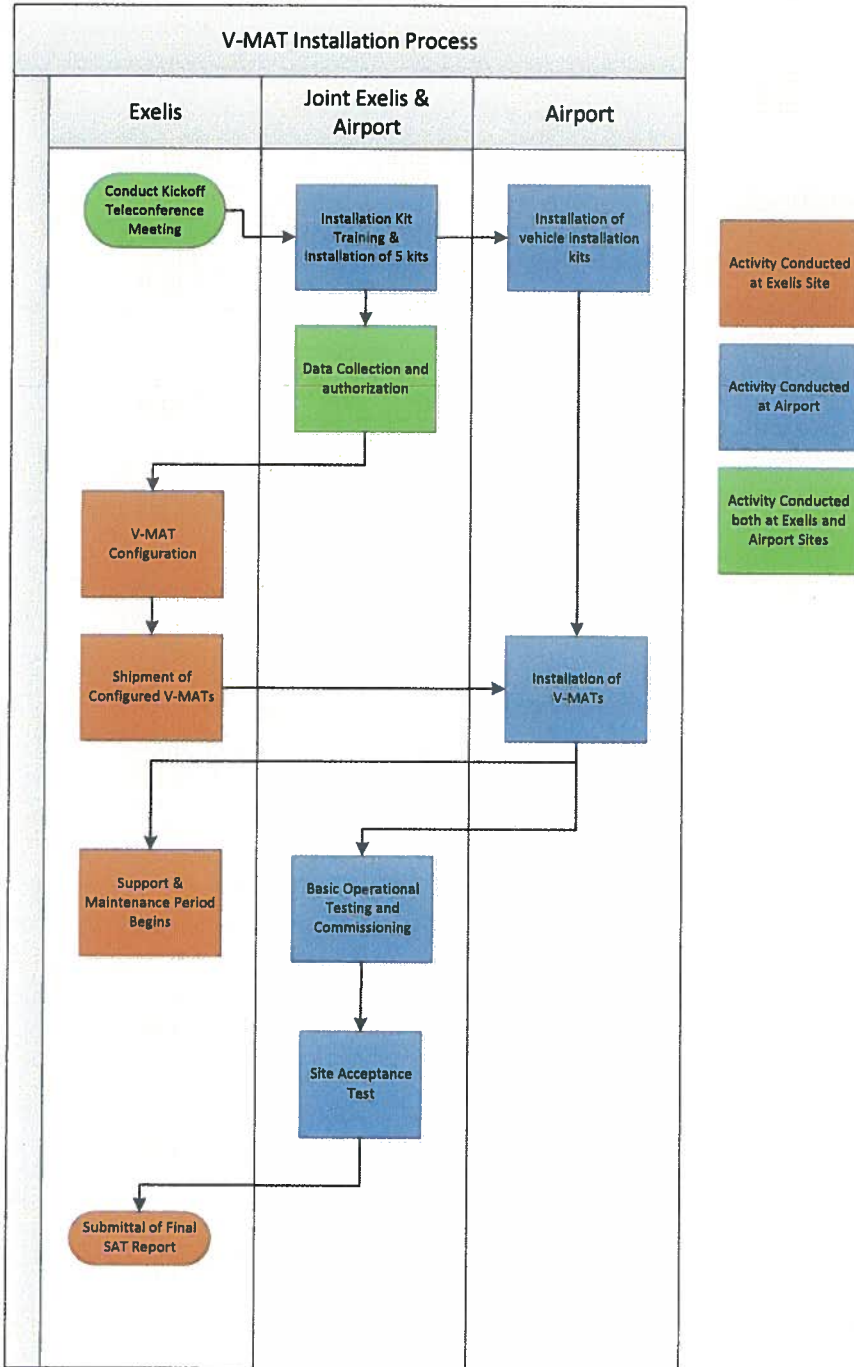
This proposal also contains options for additional hardware, software and professional services. Options include:

- Additional VMAT units, plus installation services and ongoing maintenance for ORD.
- Additional VMAT units, plus installation services and ongoing maintenance for MDW.
- Extra vehicle installation kits which allow VMAT units to be moved easily between vehicles at the same airport.
- Extended warranty on the VMAT hardware to cover three years of operation beyond the basic two year warranty.
- MobileVue licenses allowing vehicles operating in the movement area to have a moving map display of their position on the airport surface and the positions of all other aircraft and vehicles operating in the movement area.
- Additional time and materials as may be required.

Information for these options is presented in the options section of this proposal.

## Installation Services

The process for VMAT configuration, installation, and testing at a high level is depicted in the following figure. Descriptions of these activities follow the diagram. Subsequent paragraphs specify details regarding each phase of the process.





## **1. Pre-installation**

During the pre-installation phase, Exelis will conduct one kickoff teleconference to discuss the overall process, introduce key personnel, and begin project planning and coordination. This meeting will be held utilizing web-meeting technology. During the pre-installation phase, two (2) parallel sets of activities occur:

### Installation kit installation

During this phase, the "installation kits" consisting of antennas, cabling, brackets, and connectors will be delivered to the Airport. Exelis personnel will require either an escort to access appropriate areas or airport identification badges to conduct the installation and training. The installation kits do not contain parts needed to run power to the vehicle. Power installation recommendation and parts are up to the airport with guidance from Exelis. Installation of these components is the most time consuming part of the process. Exelis will train Airport personnel on the proper way to install these kits and will oversee installation of five (5) kits. After this initial training, it is the Airport's responsibility to install the remaining kits in the rest of the vehicles.

### Data Collection and VMAT configuration

Exelis personnel work with Airport personnel to gather relevant target vehicle data required for configuration of the VMAT units as well as for configuration management and tracking purposes.

Exelis will work with the Airport, FAA, and FCC to obtain transmit authorization, vehicle ICAO address "tail numbers", and movement area maps for loading into the VMAT units prior to installation.

Once all relevant vehicle configuration data is collected, authorizations received, maps finalized, and ICAO addresses provisioned, Exelis will pre-configure these units at our offices prior to shipment to the Airport.

## **2. Installation**

This phase commences once installation kits have been installed, and VMAT units have been preconfigured. This proposal supports one installation phase where Exelis will ship preconfigured VMAT units to the Airport. Under no circumstances will the Airport be allowed to operate the VMATs until either a provisional acceptance has been granted, or site acceptance test (SAT) has been conducted.

There is an option for multiple installation phases to allow installation and operational use of a set or "lot" of VMAT units in some vehicles while pre-installation activities continue on other vehicles. If the Airport desires more than one installation phase, Exelis personnel will travel to the Airport to conduct basic operational testing and work with the FAA to grant a provisional acceptance to allow the Airport to utilize the VMATs while subsequent installation activities continue. Exelis will then verify proper operation, conduct user training, and update configuration matrices as appropriate. A provisional acceptance will be granted by the FAA to allow operational use of the current lot of VMAT units for up to six (6) months while the subsequent lot continues with installation activities. Note, Exelis will conduct this service on a time and materials (T&M) basis.

### **3. Site Acceptance Testing**

Once all VMAT units have been installed, a Site Acceptance Test (SAT) must take place in accordance with FAA Advisory Circular No. 150/5220-26. Exelis will travel to the Airport to conduct testing. Once all units have been validated, a final SAT report will be submitted to the FAA's Quality Reliability Officer (QRO).

### **4. Support and Maintenance**

Once all units are operational and have been accepted, the support and maintenance period begins. As long as the VMAT units are deployed, Exelis is responsible for ensuring that the units are operating properly and that the paperwork is in order. On-going support is required on every installed unit, whether they are under warranty or not, unless they have been decommissioned and removed.

During this period, Airport personnel will have access to a support hotline and trouble ticket portal to report any issues that may arise and get status on any outstanding items. In addition to a support desk function, the support and maintenance phase includes services outlined in FAA Advisory Circular No. 150/5220-26 such as:

- Shipping of warranty replacement VMAT if defective unit is detected or identified by FAA
- Recertification/documentation of new VMAT unit in the event of a warranty replacement or repair
- Tracking of unit configuration and relevant installation and maintenance documents (certifications, licenses, and configuration matrix)

The following paragraphs outline in more detail activities associated with each phase.

## **1. PRE-INSTALLATION**

The following paragraphs outline in greater detail activities associated with the pre-installation phase. Following an initial kickoff and training session, this phase consists of two parallel processes: 1) Vehicle Pre-Installation, and 2) Data collection and VMAT Configuration.

### **KICKOFF AND TRAINING**

Exelis will conduct an initial web teleconference project kickoff session to introduce key personnel and review the installation process and project timeline.

Once the Airport has received FCC approval for transmission, the FAA has provisioned the ICAO addresses, and the installation kits are made available onsite, Exelis will conduct on-site installation kit training and oversee the Airport's installation of the first five installation kits. Exelis personnel will require either an escort to access appropriate areas or airport identification badges to conduct the installation and training.

### **VEHICLE PRE-INSTALLATION**

Following the kickoff and training, the Airport will proceed to perform pre-installation activities on the rest of the Airport's vehicles. Installation of these installation kits is the most time consuming process of deploying VMATs, so it is important to kick this activity off early while working other tasks in parallel. During this phase, the Airport will prepare the vehicles by installing mounting brackets for the VMAT, GPS and UAT antennas, appropriate gauge wire for tapping into accessory power, and appropriate

gauge wire and lengths to properly conceal and run to antenna sources. The configuration matrix for these vehicles will be reviewed and changes made accordingly. Note the vehicle installation kits include all brackets, antennas, connectors, and cabling required with the exception of the electrical components required for tapping into the vehicle power source. Electrical components can consist of 24 AWG power and ground wires, butt splices, relay switches, fuse taps, fuses, in-line fuses, ground terminal lugs. Power source planning needs to be recommended by authorized airport personnel. Electrical components necessary to run power will be airport provided with guidance from Exelis. After the initial set of five installation kits have been installed with guidance from Exelis personnel, the Airport will have the responsibility to install the remainder of the installation kits in the selected vehicles.

While the Airport continues to install the remainder of the installation kits, Exelis will coordinate and/or perform the following activities.

## **DATA COLLECTION & VMAT CONFIGURATION**

### **VEHICLE DATA COLLECTION**

Exelis will work with the Airport to collect information regarding the vehicles that are to be outfitted with a VMAT. For each vehicle, the following information will be collected for planning and configuration purposes:

- Vehicle name / description
- Vehicle Type
- Vehicle Tag
- Emitter Category
- Aircraft/Vehicle Length and Width (meters)
- Vehicle ID/call sign

Exelis will track this information within the site configuration matrix and will use this in subsequent phases of installation and support.

### **FCC / NTIAA TRANSMIT AUTHORIZATION**

Prior to initiating any transmission from the units, the Airport must receive FCC approval. Exelis will work with the Airport to receive a transmit license by:

1. Coordinating first with the FAA Service Area Frequency Management Office (FMO).
2. Obtaining an a Non-Government (NG) Transmit Number (NG Txxxxxx ) from the FAA Service Area/Regional Office FMO
3. Applying to the FCC for a license to transmit.

### **ICAO ADDRESS PROVISIONING**

Exelis will work with the Airport to request the necessary ICAO addresses for each of the VMAT units and to create a letter to be sent indicating the following:

- Request for airport ground vehicle ADS-B equipment
- Number of 24-bit ICAO codes required
- Point of contact
- Name and address of the airport where equipment will operate

## **VMAT TRANSMIT MAP PROVISIONING**

The VMAT transmit map for the airport surface must be used to control the VMAT on/off function of the vehicle unit. Exelis will provide the installation team and the Airport copies of the .kml formatted map received from the FAA. The map will be loaded on the VMAT during the configuration phase. Copies of the map will be kept under configuration management.

## **VMAT PRE-CONFIGURATION**

Exelis will pre-configure the VMAT units prior to shipping them to the Airport using the software configuration interface. The pre-configuration will occur after the Airport has verified the recipient vehicle data for the each lot of units to be delivered.

Exelis will provide configuration management services for each VMAT device based on serial number, provisioned ICAO address, vehicle designator, and vehicle tag. These details will be tracked using the configuration matrix. Once configured, the devices will be shipped to the Airport, with an updated copy of the configuration matrix. Each shipped lot or replacement unit will be shipped with an updated copy of the matrix.

## **2. INSTALLATION**

This proposal supports one installation phase where Exelis will ship preconfigured VMAT units to the Airport. Under no circumstances will the Airport be allowed to operate the VMATs until either a provisional acceptance has been granted, or site acceptance test (SAT) has been conducted.

There is an option for multiple installation phases to allow installation and operational use of a set or "lot" of VMAT units in some vehicles while pre-installation activities continue on other vehicles. If the Airport desires more than one installation phase, this can be provided on a time and materials (T&M) basis. The quantity of each lot is to be defined through coordination of Exelis and the Airport. The installation phase of the initial lot can begin once all vehicle data is collected and verified, vehicle pre-installations are complete on the initial vehicle set, and the initial lot of VMAT units has been configured. Upon completion of activities for each lot, subsequent lot installation activities can begin as soon as the same criteria are met for the next set of vehicles.

The following paragraphs provide more detail for activities within this phase.

### **DEVICE INSTALLATION**

Once the prerequisite conditions have been met, Exelis will ship each lot of preconfigured VMAT units to the Airport. At this point, device installation consists of mounting the units in the mounting bracket and connecting the power, UAT antenna, and GPS antenna cabling. At this time, Exelis and the Airport will update and complete the configuration matrix for the units installed, if required, and confirm that the correct VMAT devices are deployed in the intended vehicles through a review of the configuration label on the front of the unit.

At a minimum, the following information will be tracked in the matrix:

- Vehicle description
- Vehicle tag
- Vehicle ID
- VMAT Serial Number
- ICAO Address

- Link frequency
- Airport VMAT transmit map date and checksum
- Emitter Category
- Vehicle Length (meters)
- Vehicle Width (meters)
- Configure Date/Initials
- Installation Date/Initials
- SAT Verification Date/Initials

Dated copies of the updated configuration matrix will be provided to the FAA and the Airport as changes are made. This information will be kept on-line in the Exelis support database for reference. Exelis will provide the FAA with copies of the validated matrix according to the site acceptance procedures.

### **PROVISIONAL ACCEPTANCE (OPTIONAL)**

If the Airport selects the option for multiple installation phases, a provisional acceptance of each lot is required for the Airport to use the VMAT units operationally while subsequent lots are installed.

The time to install VMAT units is largely dependent on the Airport's efficiency in performing the vehicle kit installations. Since VMAT units may not operate without acceptance, a means to achieve provisional acceptance for installed units has been created. This process involves installation inspection, configuration verification, basic operational testing and submittal of a preliminary SAT report to the FAA. Provisional acceptance will allow the Airport to use VMAT units that have been installed in the initial delivery lot, while awaiting installation of next lot and final acceptance for all the units.

After the initial lot installation, Exelis will submit an updated preliminary SAT report for all devices that have been installed and have had their configuration verified. The FAA will review the preliminary SAT report and determine if any corrective actions are required or grant provisional operational use of the installed units listed in the report. The FAA has agreed to allow units to operate with provisional acceptance for up to six (6) months.

### **3. SITE ACCEPTANCE TESTING (SAT)**

Other than for installation and testing purposes, units cannot be used operationally without passing SAT testing or receiving provisional acceptance.

Exelis is required, in accordance with Advisory Circular 150/5220-26, to manage the acceptance testing process and submit SAT documents and updates to the FAA's Quality Reliability Officer (QRO) or the QRO's representative.

### **FINAL ACCEPTANCE**

Once all units have been installed and the Airport is ready to proceed with final acceptance, Exelis will return to the Airport site to perform the final SAT. Exelis personnel will require either an escort to access appropriate areas or airport identification badges to conduct the final SAT. This will include a more complete testing of roughly 10% of the total installed units. Using the configuration matrix, the units required for random testing will be selected. These units will be retested by Exelis, and if desired, by the FAA or one of their representatives. Each selected unit will have its configuration revalidated and items 001 through 013 of the INCO/SAT Checklist re-confirmed. Once all units have been validated, a

final SAT report will be submitted to the FAA's Quality Reliability Officer (QRO) or the QRO's representative.

The FAA will then determine if any corrective actions are required or approve the Airport's units for operation.

#### **VALIDATION OF AIRPORT VMAT TRANSMIT MAP FUNCTIONALITY**

Exelis will work with the Airport to test three vehicles with installed and configured VMAT units on their ability to transmit in accordance of the INCO/SAT checklist items. The units will be selected for their ability to travel to the various regions of defined in the map required for testing. The units will be configured with the current FAA provided .kml map. These units will be used to perform the INCO/SAT items: 010, 011, 012, and 013. The results of this test will be used to satisfy these requirements for all other VMAT units with the same part number and who have had loaded the same map. The .kml airport VMAT transmit maps will be considered the same if they have the identical checksum, date, and number of zones. Exelis will use in-house applications and experienced on-site airport vehicle operators to verify performance.

### **4. SUPPORT AND MAINTENANCE**

Once the SAT final report has been submitted to the FAA and accepted, the maintenance and support period begins. The following paragraphs describe functions associated with maintenance and support.

#### **ISSUE RESOLUTION AND TRACKING**

Exelis will provide front line support and maintenance for all units according to its support agreement. Exelis will maintain a customer support website that will allow the Airport to submit and track issues and defects. Additionally, the support database will maintain current unit configurations, copies of required certifications and licenses, and relevant installation documents.

Issues will be registered with Exelis through the customer support website or by contacting the Exelis support office. Issues registered with support will be triaged and processed through the customer support website. All issues will be assigned and tracked with a unique ticket number. This data will be used to help determine transient vs. system issues and will be used as an input in overall product improvement. The support office will coordinate with the required resources to mitigate issues that are entered into the system.

#### **CONFIGURATION MANAGEMENT**

In accordance with Advisory Circular 150/5220-26, Exelis will maintain the configuration matrix and all SAT materials. Changes to any item tracked in the matrix, must be communicated to Exelis so they can notify the FAA accordingly. Exelis will keep records of the current configuration state and a history or changes in its online support system.

#### **UNIT REPLACEMENT**

Exelis will coordinate replacement of units determined to be defective in accordance to the Airport's warranty and support agreement. Under no circumstances, once a unit has been identified to be defective, should it be used operationally.

### **UNITS UNDER WARRANTY**

Defective units covered under the manufacturer's warranty will be repaired or replaced in accordance with the terms of the warranty and support agreement. The Airport will return the defective unit to the Exelis' support office. Within 5 business days, Exelis will ship a replacement unit to the Airport.

Exelis will work with the Airport to replace each unit, update the configuration matrix, and coordinate with the FAA accordingly to submit and process an amendment to the SAT.

### **UNITS NOT COVERED BY WARRANTY**

Before any work is performed on a unit no longer covered by warranty, Exelis will provide a time and materials quote for the repair and processing of any defective units NOT covered under the manufacturer's warranty or service agreement.

### **UPDATING UNITS**

While it is anticipated that the VMATs' configuration is stable, the possibility exists that the FAA may require or recommend the installed units be updated. Since the details of any particular update are not known at this time, the process and details of what is required will be handled on a case-by-case basis. Exelis will coordinate the FAA to determine the process for applying an update. Exelis will communicate to the Airport the details of the update and any actions they must take. If determined to be required, updating of the units is not covered under the warranty or the maintenance agreement and will be handled on a T&M basis.

### **MAINTAINING SAT REPORT**

In accordance with Advisory Circular 150/5220-26, Exelis will maintain the configuration matrix and all SAT materials. Exelis will coordinate with the Airport and the FAA to maintain the SAT documents. This is included in the annual maintenance.

### **FAA COMPLIANCE MONITORING**

The FAA will monitor units for operational compliance and may report issues to either the Airport or Exelis. Once an issue has been raised the unit will be triaged and may be deemed defective and require some mitigation.

### **UNIT TRANSFER TO ANOTHER VEHICLE**

Once the Airport has received Final Acceptance and there is a need to transfer a unit to another vehicle, the configuration matrix must be updated, the unit must be verified, and Exelis will submit an amended SAT report with the updated information to the FAA for approval. The relocated unit will continue to operate in a provisional state for up to two months until the amended SAT report is approved. Activities related to support up to four (4) VMAT units (per airport) transferred twice a year to another vehicle are included in the annual maintenance fees. Activities related to support of more than four (4) VMAT units (per airport) transferred twice a year to another vehicle are not included in the annual maintenance, and will be conducted on a T&M basis.

### **UPDATES TO THE MAP**

In the event the VMAT airport transmit map is updated, the new maps must be uploaded individually to each VMAT, and Exelis will submit an amended SAT report. The VMAT with the new map will continue to operate in a provisional state for up to six months until the amended SAT report is approved. Activities related to support for VMAT transmit map updates are included in the annual maintenance.

**INCLUDED IN THIS INITIAL ORDER:**

**Hardware:**

- One hundred ten (110) FAA approved movement area vehicle tracking radios (VMATs)
- One hundred ten (110) vehicle installation kits
- Installation, training and verification as described above
- Two-year hardware warranty

**Installation Services (as described above)**

- Installation training for on-site staff
- Post-installation verification
- Installation documentation and submittal

**Maintenance Services (priced per year as quoted starting after installation):**

- Issue and resolution tracking via a customer support website
- Configuration Management of relevant installation and maintenance documents (certifications, licenses, and configuration matrix) and vehicle configurations
- Shipping of warranty replacement VMAT if defective unit is detected or identified by FAA
- Recertification/documentation of new VMAT in the event of a warranty replacement or repair
- Maintenance of SAT report documentation

As long as the VMAT units are deployed, Exelis is responsible for insuring that the units are operating properly and that the paperwork is in order so on-going support is required on every installed unit, whether they are under warranty or not, unless they have been decommissioned and removed.

**NOT INCLUDED IN THIS INITIAL ORDER BUT AVAILABLE ON A TIME AND MATERIALS BASIS:**

**Hardware:**

- Installation of new firmware, software and hardware as required to maintain FAA compliance
- Costs associated with transferring VMAT units between vehicles

**Installation Services for non-warranty repair or replacement**

- Documentation updates
- Multiple phased installation and provisional acceptance testing
- Retesting of replaced unit including installation verification and SAT



**PRICING FOR INITIAL ORDER**

To recap, the initial order of one hundred (100) VMAT units is decomposed in to seventy five (75) units for ORD and twenty five (25) units for MDW.

- For ORD, the price for the 75 VMAT units, including installation kits and a two-year warranty is \$435,000 plus \$99,200 for installation services. The required annual support begins at completion of Installation and is priced at \$57,000 per year, with 3% annual escalation, to be paid annually on the anniversary of the Installation.
- For MDW, the price for the 35 VMAT units, including installation kits and a two-year warranty is \$203,000 plus \$61,920 for installation services. The required annual support begins at completion of Installation and is priced at \$26,600 per year, with 3% annual escalation, to be paid annually on the anniversary of the Installation.

**OPTIONS**

Hardware, software, and services:

**Additional VMAT units** may be purchased during the term of the five (5) year maintenance period for use by the Airport at ORD or MDW. Pricing for VMATs purchased in 2014 (including hardware and installation) is shown in the table below, plus annual maintenance (\$782.80/unit) as required by FAA Advisory Circular No. 150/5220-26.

# Units Purchased	Price Per Unit	# Units Purchased	Price Per Unit
5	\$ 10,880	45	\$ 7,500
10	\$ 10,150	50	\$ 7,400
15	\$ 9,100	55	\$ 7,380
20	\$ 8,580	60	\$ 7,360
25	\$ 8,260	65	\$ 7,350
30	\$ 7,980	70	\$ 7,340
35	\$ 7,770	75+	\$ 7,330
40	\$ 7,620		

Please note that above pricing will escalate 3% annually in years 2-5 of the five (5) year maintenance period.

**Extra vehicle installation kits** which allow VMAT units to be moved easily between vehicles may be purchased during the term of the five (5) year maintenance period for use at ORD or MDW. Note, VMAT units purchased for operation ORD can only be moved onto other vehicles at ORD, similarly VMAT units purchased for operation MDW, can only be moved onto other vehicles at MDW. Pricing for extra vehicle installation kits purchased in 2014 is \$1,900/unit. Please note that this pricing will escalate 3% annually in years 2-5 of the five (5) year maintenance period.

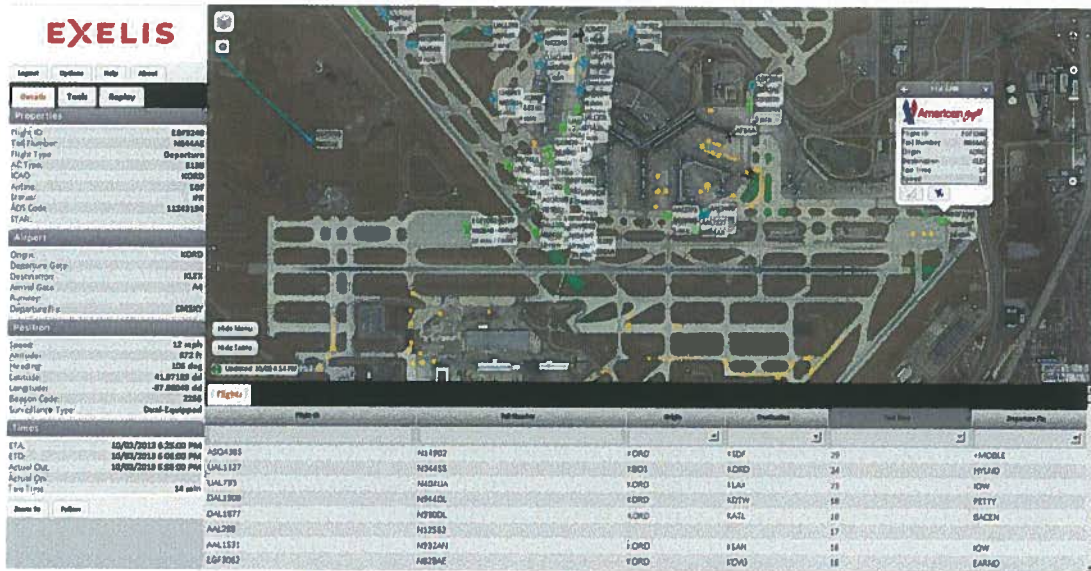
**Extended warranty** on the VMAT hardware to cover three years of operation beyond the basic two year warranty (\$1,500/unit). Please note that this pricing will escalate 3% annually in years 2-5 of the five (5) year maintenance period.

**Additional services** on a time and materials basis (\$140/hour labor rate) as may be required. Please note that this labor rate will escalate 3% annually in years 2-5 of the five (5) year maintenance period.

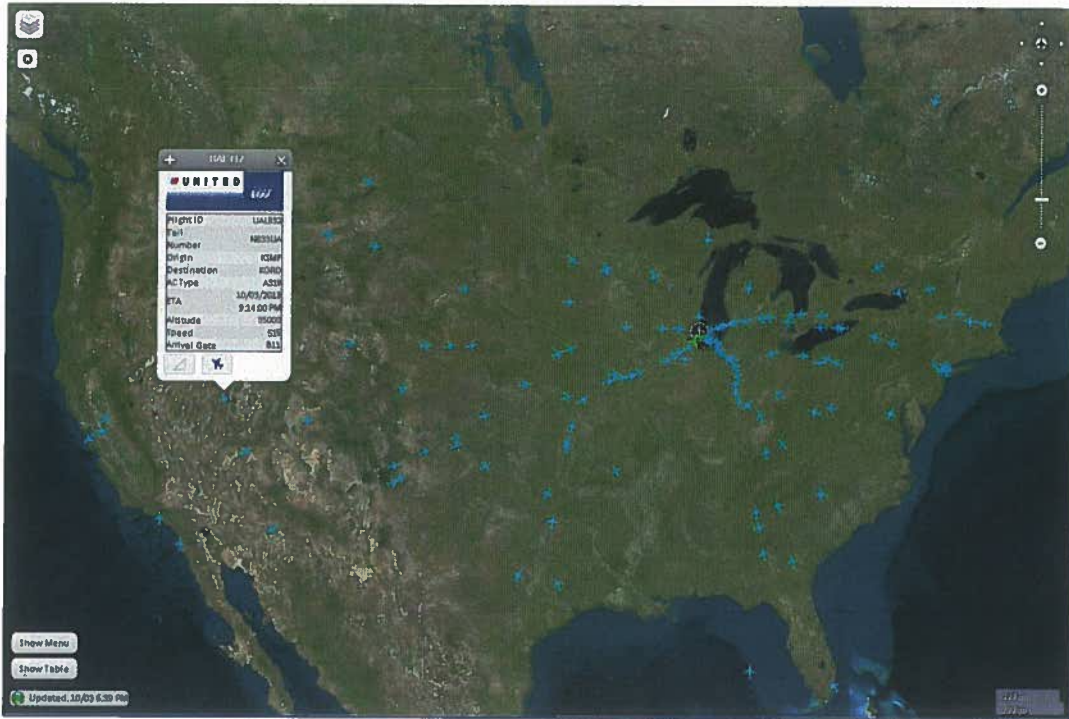
**Symphony® MobileVue™ licenses** may be purchased by the Chicago Department of Aviation during the term of the five (5) year maintenance period for use at ORD or MDW.

Symphony *MobileVue* is a situation awareness display system that displays real-time aircraft and vehicle surveillance data on a portable device. *Symphony MobileVue* puts real-time surveillance data in the hands of the people who are actually operating on the surface of an airport, providing significant improvements in safety and efficiency. *MobileVue* enables airfield operations staff to have real-time access to surveillance and taxi-time information on a portable device. Airfield operations staff are able to manage their activities (Part 139 inspections, maintenance, snow removal, towing operations, etc.) based on what is actually happening on the airfield, and with coverage of approaching aircraft. For emergency operations, Incident Commanders and other emergency responders can effectively respond and manage emergency operations in the field, with all responders able to view the same real-time situation awareness display.

With airport vehicles equipped with *VMATs*, *MobileVue* will enhance safety and efficiency in movement and non-movement areas by providing airport operators with a depiction of their location in relation to aircraft and other vehicles operating around and on the airport surface.



**MobileVue Display Screen of ORD Surface**



**MobileVue Display Screen of ORD Nationwide Arrivals**

MobileVue is licensed on a per-device annual subscription. The following table presents the annual incremental Discounted pricing for MobileVue licenses.

**Symphony MobileVue Annual Incremental Price per License by Number of Licenses\***

Number of Licenses	10	11-20	20+
<b>Discounted Price**</b>	<b>\$2,000</b>	<b>\$1,800</b>	<b>\$1,500</b>

\* Minimum of 10 licenses is required.

\*\* Airport must purchase at least fifty (50) VMAT units to receive the discounted pricing.

Please note that above pricing will escalate 3% annually in years 2-5 of the five (5) year maintenance period.

**MOBILEVUE FEATURES**

- Simple, familiar hardware and display interface
- Supports zoom, pan and centering operations
- User configurable information display
- Displays aircraft taxi-times for DOT compliance monitoring
- Easy to install and update wirelessly
- User selectable background maps and colors

**MOBILEVUE BENEFITS**

- Easy to deploy and use
- Accessible via a Web-Browser and compatible with multiple systems (Apple iOS, Google Android and Windows)

- Provides real-time situation awareness for routine and irregular operations, emergency operations, aircraft and airfield maintenance activities, Part 139 inspection activities and airfield construction activities
- Low bandwidth requirements enable the use of existing Wi-Fi, 3G and 4G wireless communications

Please review this proposal at your convenience and feel free to contact me in regard to any questions or concerns at [sharon.goldin@exelisinc.com](mailto:sharon.goldin@exelisinc.com) or 703 473-5132 or contact Ted Carniol at [ted.carniol@exelisinc.com](mailto:ted.carniol@exelisinc.com) or 703 627-8323 if you require additional technical information. This proposal is valid for sixty (60) days.

Thank you for the opportunity to earn your business.

Regards,



Sharon Goldin  
Manager, Contracts  
Air Traffic Management  
Herndon, Virginia

cc: Ted Carniol, Exelis  
Chris Zanardi, Exelis

**Exelis Anticipated Cost Over 5 Years – New Contract**

The price for purchase and installation of the initial 110 VMAT squitters is \$799,120 (\$534,200 at O'Hare and \$264,920 at Midway). Annual service pricing begins at \$57,000 at O'Hare and \$26,600 at Midway, with 3% annual escalation. Total costs for both airports over the five-year contract period are estimated at \$1,214,024 for the initial 110 units.

Table 1: VMAT Purchase and Installation for Initial 75 Units and Installation at O'Hare

Item	Amount	Cost	Total
VMAT Units (Squitters)	75	\$5,800 per unit	\$435,000
Exelis Installation Services	1	\$99,200 one-time fee	\$99,200
Purchase and Installation Price			\$534,200

Table 2: VMAT Purchase and Installation for Initial 35 Units and Installation at Midway

Item	Amount	Cost	Total
VMAT Units (Squitters)	35	\$5,800 per unit	\$203,000
Exelis Installation Services	1	\$61,920 one-time fee	\$61,920
Purchase and Installation Price			\$264,920

Table 3: Annual VMAT Service Pricing for Initial 75 Units at O'Hare

Year 1	Year 2	Year 3	Year 4	Year 5
\$57,000	\$58,710	\$60,471	\$62,285	\$64,154

Table 4: Annual VMAT Service Pricing for Initial 35 Units at Midway

Year 1	Year 2	Year 3	Year 4	Year 5
\$26,600	\$27,398	\$28,220	\$29,067	\$29,939

Estimated cost by fiscal year is as follows:

Estimated Cost by Fiscal Year (O'Hare)

Year 1	Year 2	Year 3	Year 4	Year 5
\$591,200	\$58,710	\$60,471	\$62,285	\$64,154

Estimated Cost by Fiscal Year (Midway)

Year 1	Year 2	Year 3	Year 4	Year 5
\$291,520	\$27,398	\$28,220	\$29,067	\$29,939

Should additional VMAT units be purchased during the term of the five (5) year maintenance period for use at ORD or MDW, pricing for the additional VMATs would be based on the table below (2014 cost with 3% annual escalation thereafter), including hardware and installation. Annual maintenance of \$782.80/unit (in 2014, with 3% escalation thereafter), as required by FAA Advisory Circular No. 150/5220-26, would be in addition to the costs below.

# Units Purchased	Price Per Unit
5	\$ 10,880
10	\$ 10,150
15	\$ 9,100
20	\$ 8,580
25	\$ 8,260
30	\$ 7,980
35	\$ 7,770
40	\$ 7,620

# Units Purchased	Price Per Unit
45	\$ 7,500
50	\$ 7,400
55	\$ 7,380
60	\$ 7,360
65	\$ 7,350
70	\$ 7,340
75+	\$ 7,330

Extra vehicle installation kits, which allow VMAT units to be moved between vehicles, may be purchased during the term of the five (5) year maintenance period for use at ORD or MDW. (VMAT units purchased for operation at ORD can only be moved onto other vehicles at ORD, and VMAT units purchased for operation at MDW can only be moved onto other vehicles at MDW). Pricing for extra vehicle installation kits purchased in 2014 would be \$1,900/unit with 3% annual escalation thereafter.

An extended warranty option is available on the VMAT hardware to cover three years of operation beyond the basic two year warranty. Pricing for the extended warranty would be \$1,500/unit with 3% annual escalation.

The estimated labor rate for additional services that may be required but are not currently contemplated under this agreement would be:

Hourly Labor Rate by Fiscal Year

<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>
\$140.00	\$144.20	\$148.53	\$152.98	\$157.57

ORD

Line	Quantity	Cost	Unit	Total
1 Hardware/Software	75	5800 ea		435,000
2 Installation	1	99200 lump		99,200
3 Annual Service Total				302,621
1 Additional Units	125	10880 ea		1,360,000
3 Additional Maintenance	125	880.7106 ea		110,089
8 Extra Install Kits	20	1900 ea		38,000
7 Extended Warranty	200	1591.35 ea		318,270
4,5,6 Additional Service	2000	140 hr		280,000
9 MobileVue	8	1800		14,400
Total				2,957,580

would be lower with larger batches  
would be lower in earlier years

could be higher or lower

MDW

Line	Quantity	Cost	Unit	Total
1 VMAT Units	35	5800 ea		203,000
2 Installation	1	61920 lump		61,920
3 Annual Service Total				141,223
1 Additional Units	65	10880 ea		707,200
3 Additional Maintenance	65	880.7106 ea		57,246
8 Extra Install Kits	10	1900 ea		19,000
7 Extended Warranty	100	1591.35 ea		159,135
4,5,6 Additional Service	1000	140 hr		140,000
9 MobileVue	4	1800		7,200
Total				1,495,924

would be lower with larger batches  
could be higher with escalation

could be higher or lower

Annual Service - ORD

Year	1	2	3	4	5 Total
	57000	58710	60471.3	62285.439	64154
					302,621

Annual Service - MDW

Year	1	2	3	4	5 Total
	26600	27398	28219.94	29066.5382	29938.53
					141,223

**Estimated Contract Total 4,453,504**





U.S. Department of  
Transportation  
**Federal Aviation  
Administration**

# Advisory Circular

Consolidated to include Change 1

**Subject:** Airport Ground Vehicle Automatic  
Dependent Surveillance - Broadcast (ADS-B)  
Out Squitter Equipment

**Date:** 11/14/2011  
**Initiated by:** AAS-1

**AC No:** 150/5220-26  
**Change:**

## 1. Purpose of the Advisory Circular.

This Advisory Circular (AC) provides guidance on the development, installation, testing, approval, and maintenance of Automatic Dependent Surveillance – Broadcast (ADS-B) Out squitter units for airport ground vehicles. Using this AC, airports will be able to acquire approved and authorized airport ground vehicle ADS-B squitter units that are compliant with Title 14 Code of Federal Regulations (CFR), Part 91, Automatic Dependent Surveillance-Broadcast (ADS-B) Out Performance Requirements to Support Air Traffic Control (ATC) Service, as well as the initial set of ADS-B applications. Please note that the technical specifications for manufacturing ADS-B squitter units for airport ground vehicles are published in the FAA’s document, Vehicle Automatic Dependent Surveillance - Broadcast (ADS-B) Specification, Version 2.4, published May 01, 2012.

## 2. To Whom this AC Applies.

a. All airport ground vehicle ADS-B squitter units must meet the requirements stated in the Airport Ground Vehicle ADS-B Specification, Version 2.4.

b. Airport and vehicle operators should follow the operational guidance in this AC to ensure proper operation of airport ground vehicle ADS-B units. While such units are not currently required, the FAA strongly encourages airport operators to voluntarily equip appropriate vehicles with airport ground vehicle ADS-B squitter units.

c. In general, use of this AC is not mandatory. However, use of this AC is mandatory for all Part 139 certificated airports using this equipment, as well as projects funded with federal grant monies through the Airport Improvement Program (AIP) and with revenue from the Passenger Facility Charge (PFC) Program. See Grant Assurance No. 34, Policies, Standards, and Specifications, and PFC Assurance No.9, Standards and Specifications.

d. The AC is required for vendors developing, installing, testing, and seeking approval of ADS-B units in airport ground vehicles.

e. It is also recommended for vendors, airport operators, and other personnel who will implement, monitor, and use the airport ground vehicle ADS-B squitter units on the

airport. ADS-B squitter units used must meet the technical specifications of this AC. The FAA will issue a separate AC on operational use of ground vehicles equipped with ADS-B squitter units in the future.

f. The primary locations for installation of ADS-B squitters on vehicles are the 35 airports equipped with ASDE-X and the nine airports scheduled to receive ASSC upgrades to their ASDE-3 systems. ASDE-X and ASSC systems are needed to receive the ADS-B squitter signals for use on ATC displays. Airport Operators at these 44 airports (as shown in Appendix A) are encouraged, but not required, to equip their vehicles with ADS-B squitters in order to enhance safety and situational awareness. In the future, FAA may deploy ASSC or ADS-B surface surveillance volumes to additional airports that could then be appropriate sites for equipage of vehicles with ADS-B squitters. Information on grant funding eligibility is addressed in FAA Order 5100-38, the Airport Improvement Program Handbook.

g. Airports without FAA deployed surface surveillance may choose to equip their vehicles with ADS-B squitters. Aircraft equipped with ADS-B in avionics and Cockpit Display of Traffic Information (CDTI) will enable pilots to see ADS-B equipped vehicles location on in cockpit moving maps. This equipage is expected to become more widespread in future years. Airports without FAA deployed surface surveillance should consider current and near-term equipage of the aircraft using their airport when deciding on investments in ADS-B vehicle squitters.

### **3. Background.**

Every year, there are incidents and accidents involving aircraft and vehicles at airports that have potentially serious consequences. Many of these events occur in periods of reduced visibility, which can result in a loss of situational awareness for flight crews and air traffic controllers. The FAA is in the process of deploying several systems and technologies to help reduce the number and severity of these incidents. Automatic Dependent Surveillance – Broadcast (ADS-B) has been identified as a cornerstone technology in the FAA’s Next Generation Air Transportation System (NextGen) initiative to modernize the safety, efficiency, and capacity of the National Airspace System.

ADS-B will provide improved surveillance in the terminal, en route, and on surface environments, and will provide equipped aircraft with shared situational awareness via a cockpit display of proximate traffic. In order to achieve the benefits of ADS-B on the airport surface, surface vehicles and aircraft should be equipped with the ability to transmit ADS-B messages.

At airports with no surface surveillance, ADS-B can serve as a means to improve situational awareness for both air traffic control and aircraft operators equipped with the ability to receive and display ADS-B messages. This capability provides for a high level of safety. The inclusion of airport vehicles into the surface surveillance picture gives air traffic controllers and operators one more way to identify traffic issues, understand the most efficient way to proceed on the airport surface, and avoid incursions.

At airports already equipped with surface surveillance, such as Airport Surface Detection Equipment – Model X (ASDE-X), ADS-B will provide pilots with improved communication with air traffic control and efficiency of operations. ASDE-X information is fed into the Traffic Information Service-Broadcast (TIS-B) service and could provide pilots with a complete surface picture. This situational awareness can be employed to provide supplemental benefits to existing surface surveillance and provide an additional resource for future applications of ADS-B in the surface environment.

**a. ASDE-X and ASSC.** The FAA has deployed the ASDE-X to 35 airports. The FAA is also upgrading existing Airport Surveillance Detection Equipment-Model 3 (ASDE-3) sites at 9 airports with multi-lateration (MLAT) capability to produce an Airport Surface Surveillance Capability (ASSC). This will give air traffic control the ability to maintain surveillance of ground targets. The ASDE-X and ASSC systems were designed to support safe ground operations at an airport by providing reliable and accurate information on the location of aircraft and ground vehicles. They do this through a combination of technologies, including airport surface movement radar (SMR), airport surveillance radar (ASR), MLAT, and ADS-B.

Due to the inherent problems associated with radio frequency and radar transmissions, a single sensor surveillance system may not provide a complete and accurate depiction of a target to the controller. The ASDE-X system mitigates this problem by fusing the data from several different sources, primary and secondary radar including MLAT and ADS-B, to provide the most accurate target information as compared to single sensor systems. The ASDE-X system receives the ADS-B position report, the radar return, and MLAT position report and “fuses” them into a single accurate target report. Data fusion provides the most complete and accurate picture of the intended target’s position and motion. For example, fused data, combining data from the SMR, MLAT, and ADS-B, would provide controllers with the aircraft’s size, identification, and position whereas each data source alone could only provide a piece of this information. These systems also can alert controllers to potential conflicts so they can take appropriate action to prevent surface incidents.

The radar component of the ASDE-X and ASSC systems can detect aircraft and vehicles in and around the airport operational area without the use of airport ground vehicle ADS-B squitter units. However, during periods of heavy and sustained precipitation, the precipitation may attenuate the radar, thus reducing the probability of vehicle detection. In these cases, vehicles equipped with airport ground vehicle ADS-B squitter units can be tracked by two additional sources of position data, ADS-B and MLAT, thus increasing the accuracy and probability of detection. Additionally, the ADS-B message set provides identification data that is not available from the ASDE-X or ASSC systems.

ADS-B differs from MLAT in the method in which position data is computed. An MLAT system depends on a series of receivers on the surface calculating the difference in the time of arrival of a signal from targets to determine position. At least four sensors are necessary to provide position information that is both accurate and has a high level of integrity. ADS-B transmits a signal, much like a transponder, but the position information is satellite based, such as those in the Global Positioning System (GPS) constellation. The position and

identification information derived from the ADS-B is transmitted to air traffic control and fused with ASDE-X surveillance sources. ADS-B can serve to supplement existing MLAT surveillance for air traffic control, and MLAT can be used as an input to the TIS-B service to provide a more complete traffic picture to operators who have equipped with the ability to display ADS-B.

**b. ADS-B.** The ADS-B system is an advanced surveillance technology that combines a satellite positioning service, aircraft avionics, and ground infrastructure to enable transmission of more accurate information between aircraft and air traffic control. The system enables equipped aircraft and ground vehicles to continually broadcast information, such as identification, current position, altitude, and velocity. ADS-B uses information from a position service, e.g. GPS, to determine the aircraft/vehicles location, thereby making this information more timely and accurate than the information provided by a conventional radar system. ADS-B also can provide the platform for aircraft to receive various types of information, including ADS-B transmissions from other equipped aircraft or vehicles. ADS-B is automatic because no external interrogation is required, but is “dependent” because it relies on onboard position sources and onboard broadcast transmission systems to provide surveillance information to air traffic control and ultimately to other airport users.

The capability of transmitting ADS-B information is referred to as “ADS-B Out”. ADS-B Out can provide a more accurate and timely position report that includes identity and other information, but it does not provide operators with any new services or information. Operators can voluntarily equip with the equipment necessary to receive ADS-B messages and other broadcast services, such as TIS-B, and display that information in the cockpit. The receive function of ADS-B is referred to as “ADS-B In”; ADS-B In is not required by the final rule but can provide significant benefits.

The ADS-B system provides aircraft/vehicle position information using data provided by the unit’s GPS navigation system and transmitted via Mode S Extended Squitter (ES) or Universal Access Transceiver (UAT). ADS-B equipment receives highly accurate GPS signals and uses them to determine the precise location of the aircraft/vehicles on the airport surface. The system converts that position into a unique digital code and transmits it, along with a unique identification code, to locate and identify the exact aircraft/vehicle. The broadcast of the ADS-B position provides a signal for MLAT, providing two separate sources of position data. This precise data also enables other ADS-B applications, including Airport Traffic Situation Awareness (ATSA with Indications and Alerts). Airport Traffic Situation Awareness involves the use of a cockpit display that depicts the runway environment and displays traffic from the surface up to approximately 1,000 feet above ground level on final approach and is used by the flight crew to help determine runway occupancy. This application also is designed to reduce the potential for deviations, errors, and collisions by increasing flight crew situational awareness while operating an aircraft on the airport. This application also provides an alerting function to assist in the identification of conflicts and/or the avoidance of runway incursions. Flight crews will use a cockpit display and possible aural notifications to increase awareness of other traffic positions in the squitter area.

The vehicle ADS-B squitter units will support the following ADS-B applications:

- Air Traffic Control (ATC) Surveillance for Airport Situation Awareness;
- Airport Traffic Situation Awareness; and
- Airport Traffic Situation Awareness with Indications and Alerts.

Airport ground vehicle ADS-B squitter units are being deployed to further enhance the ability to reduce the risk of runway incursions and conflict between aircraft and vehicles operating in the airport. The airport ground vehicle ADS-B squitter units utilize an ADS-B transmitter to broadcast a highly accurate position (GPS based), which is received by various ground stations and aircraft on or near the airport and presented on a display. Additionally, the ADS-B system provides a mechanism for the delivery and display of an integrated surface picture to airport operators through an additional display capability. While ATC surveillance benefits are only applicable to airports that currently have ASDE-X or ASSC, airport ground vehicle squitter units may be deployed at any airport. These airports could still derive benefit from airport ground vehicle squitter units through ADS-B cockpit applications and through airport operator displays.

The airport ground vehicle ADS-B squitter unit will utilize a sensor navigation source capable of providing highly accurate position data as outlined in the specification. The airport ground vehicle ADS-B squitter units can operate on either the 1090 ES link or the 978 MHz/UAT link; however, due to the 1090 MHz spectrum congestion and use by numerous other systems, the FAA strongly prefers the use of the 978 MHz/UAT link. The existing terminal radar secondary surveillance system, many aircraft transponders, and several other systems currently use the 1090 MHz frequency. The extensive use of the 1090 MHz frequency has the potential to cause numerous degradations to any system using 1090 MHz.

Whether the unit is capable of transmitting on just one link or both (1090 and 978 MHz), the unit must only transmit on one link at any given time. The airport ground vehicle ADS-B squitter transmissions will only be active when the vehicle position is within the defined squitter transmit area. The ADS-B equipment will contain a transmit map that will control the unit on/off function based on position of the vehicle on the airport.

The FAA will authorize the airport operator and potentially other entities to deploy the airport ground vehicle ADS-B squitter units. The vehicles equipped with the ADS-B squitter units will include airport vehicles, fire and rescue vehicles, other vehicles authorized by the airport operator, and FAA vehicles.

**c. Airports Eligible for Early Implementation.** The Federal Communication Commission (FCC) is pursuing a rulemaking to allow vehicles to transmit on 1090 MHz. The FCC approved the waiver request on February 12, 2010 in DA 10-259. The use of 978 MHz is already approved for use on vehicles.

**Table 1. Airports with Existing or Planned FAA Surveillance Systems.**

The future use of vehicle units at airports other than those equipped with FAA surveillance systems is not yet defined. Below is a table of airports currently equipped or planned to be equipped with FAA surveillance systems by 2017.

Identifier	Airport
<b>ASDE-X equipped airports</b>	
BWI	Baltimore-Washington International Thurgood Marshall Airport
BOS	Boston Logan International Airport
BDL	Bradley International Airport
MDW	Chicago Midway Airport
ORD	Chicago O'Hare International Airport
CLT	Charlotte Douglas International Airport
DFW	Dallas-Ft. Worth International Airport
DEN	Denver International Airport
DTW	Detroit Metro Wayne County Airport
FLL	Ft. Lauderdale/Hollywood Airport
MKE	General Mitchell International Airport
IAH	George Bush Intercontinental Airport
ATL	Hartsfield-Jackson Atlanta International Airport
HNL	Honolulu International –Hickam Air Force Base Airport
JFK	John F. Kennedy International Airport
SNA	John Wayne-Orange County Airport
LGA	LaGuardia Airport
STL	Lambert-St. Louis International Airport
LAS	Las Vegas McCarran International Airport
LAX	Los Angeles International Airport
SDF	Louisville International Airport-Standiford Field
MEM	Memphis International Airport
MIA	Miami International Airport
MSP	Minneapolis St. Paul International Airport
EWR	Newark International Airport
MCO	Orlando International Airport
PHL	Philadelphia International Airport
PHX	Phoenix Sky Harbor International Airport
DCA	Ronald Reagan Washington National Airport
SAN	San Diego International Airport
SLC	Salt Lake City International Airport
SEA	Seattle-Tacoma International Airport
PVD	Theodore Francis Green State Airport
IAD	Washington Dulles International Airport
HOU	William P. Hobby Airport
<b>Airports to be equipped with ASSC (2014-2012 timeframe)</b>	
SFO	San Francisco International Airport
CLE	Cleveland/Hopkins International Airport
PIT	Pittsburgh International Airport
PDX	Portland International Airport
ADW	Andrews Air Force Base
ANC	Anchorage International Airport

CVG	Cincinnati/Northern Kentucky International Airport
MSY	Louis Armstrong New Orleans International Airport
MCI	Kansas City International Airport

**d. Definitions.** In this AC, the words “must”, “should”, and “may” are used to define different levels of requirements:

- (1) **Must:** Conveys a requirement.
- (2) **Should:** Describes a recommendation.
- (3) **May:** Denotes a permissible practice or action, but not a requirement.

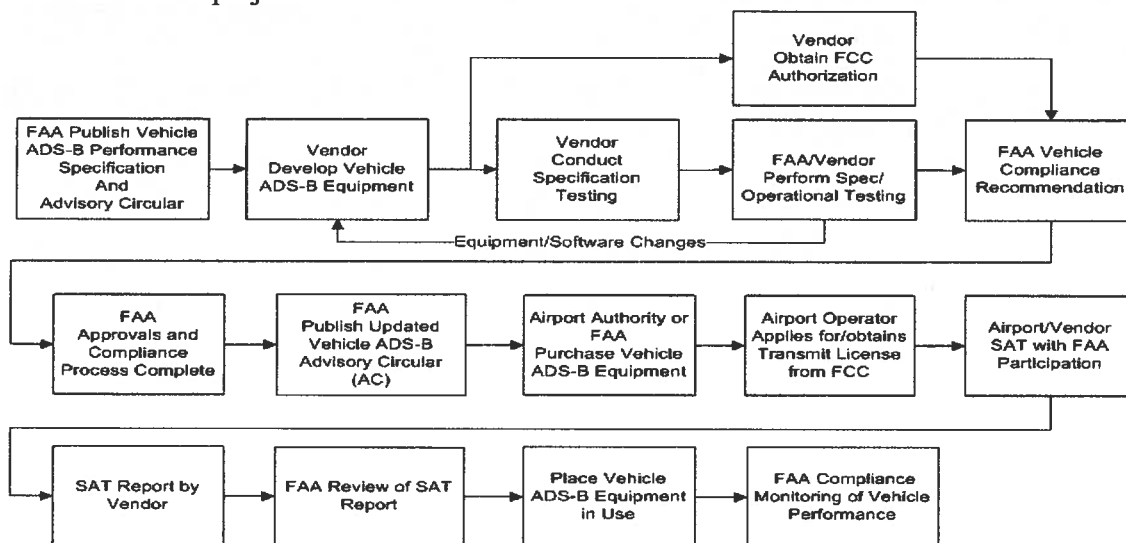
(4) **Airport Ground Vehicle ADS-B Equipment:** The navigation source, processing, and ADS-B transmission equipment that determines the position of the surface vehicle in which it resides and broadcasts that information on one of the two ADS-B data links (978 MHz UAT or 1090 MHz ES).

(5) **Squitter:** Output pulses from an airport ground vehicle ADS-B squitter unit generated by an internal triggering system rather than by external interrogation pulses.

(6) **Squitter Transmit Map for Airport Surface:** The squitter maps of the airport surface will define where the squitter unit will be active by controlling the squitter transmit out. The FAA will generate the squitter transmit maps and post them online for download. All airports with ASDE-X will have a Squitter Transmit Map available for download on the website for no charge. Squitter Transmit Maps for Airport Surface will be derived from ASDE-X maps.

**4. Developing Equipment to Specification.**

**a. Airport Ground Vehicle ADS-B Process Diagram.** The following process flow diagram (Figure 1) provides an overview of the steps and processes necessary to complete the vehicle ADS-B project.



**Figure 1. Vehicle ADS-B Process Diagram**

**b. Airport Ground Vehicle ADS-B Specification.** The vehicle ADS-B squitter specification document (version 2.4) details requirements for the vehicle units residing in airport surface vehicles, which are necessary to determine the position of the surface vehicle in which it resides and broadcast that information on one of the two ADS-B data links. This document provides the requirements for both 978 MHz UAT and 1090 MHz ES transmissions. Vendors producing equipment for surface vehicles must adhere to the requirements stated in the document.

The document addresses the broadcast of ADS-B only (the reception and display of ADS-B data in the vehicle is not addressed). Additionally, the document addresses testing and compliance of the airport ground vehicle ADS-B squitter units and includes guidelines for verification.

**c. FAA Specification Testing.** The airport ground vehicle ADS-B Factory Acceptance Test (FAT) plan and Site Acceptance Test (SAT) plan will outline the test procedures and processes necessary for the vehicle units to demonstrate compliance with the specification document. The airport ground vehicle ADS-B squitter units will be tested to verify they meet the functional and performance requirements. Testing includes the bench tests and environmental tests outlined in the specification document. Requirements for unit level testing are described for both 1090 MHz ES and 978 MHz UAT equipment. These tests are performed at the vendor's facilities as approved by the FAA. Integration testing of the airport ground vehicle ADS-B unit, including the navigation system and the ADS-B transmitting system, is conducted to verify system performance. The vendor submits test documentation to the FAA verifying successful completion of the specified tests. The FAA reserves the right to witness specific test procedures at the vendor's facility.

**d.** Subsequent to obtaining approval for the bench and environmental test results, the vendor will make a unit available to the FAA for additional testing at the FAA Technical Center. The FAA will conduct additional testing of the unit for an operational equivalent to a first article test. This testing will consist of limited bench testing of key requirements to verify performance. The FAA may require the vendor to provide test tool support similar to the capabilities that the vendor may have used for the factory bench testing to enable specific tests or provide access to internal test points for verification. Also, the unit will be subjected to testing at a specified test facility that verifies the operation at an airport location. The FAA will provide information to the vendor to generate a squitter transmit map for the airport surface to support the testing. The equipment will be tested to verify the squitter transmit map for the airport surface requirements within and outside of the squitter area. This test will consist of operating the equipment and subjecting the equipment to scenarios similar to those that would be encountered at the airport within which the vehicle is intended to operate.

The FAA Technical Center has developed test plans, which will reference the testing requirements in the specification document, additional equipment-level tests that may be required at the FAA facility, and a Site Acceptance Testing (SAT) Checklist that will provide a detailed description of the SAT procedures that are required to demonstrate vehicle unit compliance.

Additionally, equipment manufacturers shall provide the FAA Technical Center evidence of a quality control program for production of their airport ground vehicle ADS-B units when submitting the factory test report.



If the FAA authorizes the equipment, the FAA will update this AC to list the manufacturers whose vehicle units are authorized to operate on the airport surface.

## **5. Equipment Testing.**

**a. Vendor Site Acceptance Testing (SAT).** The vendor will conduct Site Acceptance Testing (SAT) with assistance from the airport at each airport that implements the airport ground vehicle ADS-B units. The FAA will verify SAT compliance of the units for any airport installing and utilizing the vehicle units. Subsequent SAT events at the same airport may be approved via post-SAT report submittals. This operational testing will require manufacturers to validate that the airport ground vehicle ADS-B squitter units are installed properly, updated squitter transmit maps are in all equipment units, all squitter airport map boundaries are correct, International Civil Aviation Organization (ICAO) codes are properly entered, and the airport ground vehicle ADS-B units operate properly. Successful completion of this phase of testing will verify compliance of the equipment.

Upon completion of the SAT report, the vendor must submit a copy of the report to the FAA for review.

**b. FAA Airport Ground Vehicle ADS-B Validation of SAT.** All units must undergo SAT. The vendor must submit the SAT report to the FAA, who will evaluate the submitted report and associated data for any deficiencies to determine whether the airport ground vehicle ADS-B units at the airport are ready for operation. The FAA may participate in each airport's SAT upon delivery of the airport ground vehicle ADS-B squitter units or choose to evaluate the vendor-provided SAT report only.

If deficiencies are found during SAT, the FAA will notify the vendor, which must take corrective actions to make the units compliant with the SAT. The vendor must submit a follow-up SAT report to the FAA, who will decide whether the system has passed the SAT and can be put into operation.

## **6. Requirements to Operate Equipment.**

**a. FCC Equipment Authorization.** Vendors are required to obtain FCC Equipment Authorization in accordance with 47 CFR Part 2, Subpart J. FCC form 731 must be filed for each unique product identifier and a unique FCC identifier is required on the product label. Product documentation must accompany the application, fees must be submitted, and descriptions of the required test data must be provided. Paragraph 2.1033(c) lists the requirements for equipment types other than those operating under Part 15 or Part 18 of the FCC rules.

Test requirements for equipment types other than those operating under Part 15 or Part 18 are described in the paragraphs listed in paragraph 2.1041. Paragraph 2.947 outlines the measurement procedure. The following paragraphs list measurement data requirements:

- 2.1046 – RF power output
- 2.1047 – Modulation Characteristics

- 2.1049 – Occupied Bandwidth
- 2.1051 – spurious emissions at antenna terminals
- 2.1053 – Field strength of spurious radiation (substitution method)
- 2.1055 – Frequency stability
- 2.1057 – Frequency spectrum to be investigated
- 2.1091 – RF radiation exposure evaluation: mobile devices
- 2.1093 - RF radiation exposure evaluation: portable devices

Applications for equipment authorization must be submitted electronically and the required exhibits must be in one of the following electronic file types : Adobe Acrobat (pdf), JPEG, Microsoft Excel, Microsoft Word, WordPerfect, or plain text. FCC requires up to 13 different exhibit types:

1. Identification label and location information
2. Attestation statements
3. External photos
4. Block diagrams
5. Schematics
6. Test Report
7. Test setup photos
8. User's manual
9. Internal photos
10. Parts list and tune-up information
11. RF exposure information
12. Operational description
13. Cover letters

All applications can be submitted to FCC via its OET Laboratory Division electronic filing site at <https://fjalfoss.fcc.gov/oetcf/eas/>. The application begins with the form 731 after which attachments are submitted. The web site automatically provides a fee form 159. Fees can be paid on-line via credit card or by mail using a hard copy of the form. Reviews take 5–10 weeks to complete.

**b. FCC Transmit Authorization.** Airport authorities or entities approved by the FAA to use Ground Vehicle ADS-B Out Squitter Equipment are required to obtain a license to transmit prior to operating. Title 47 CFR Part 87 governs the licensing and operation of equipment transmitting within aviation frequency bands. The applicable parts of 47 CFR Part 87 and references contained within shall be followed.

Applications for a transmit license can be filed through the FCC's Universal Licensing System (ULS). The ULS can be accessed at <http://wireless.fcc.gov/ULS/index.htm?job=home>. Airport authorities or entities approved by the FAA can apply to operate up to 200 vehicle squitters under a single application. A waiver adopted by the FCC on February 12, 2010 under DA 10-259 governs the use of 1090 MHz extended squitter on vehicles. Applications for a transmit licenses shall be filed under the station class MOU for Aeronautical Utility Mobile Stations.

Prior to filing with the FCC, the applicant is required to coordinate with the applicable FAA Regional Frequency Management Office (FMO). The Regional FMO will provide a coordination number that should be included in the application to the FCC. Contact information and geographic areas of responsibility can be found at

[http://www.ntia.doc.gov/files/ntia/publications/d\\_5\\_11.pdf](http://www.ntia.doc.gov/files/ntia/publications/d_5_11.pdf)

## **7. Airport Ground Vehicle ADS-B Operational Guidance.**

**a. Compliance Monitoring/Airport Ground Vehicle ADS-B Performance Compliance.** The FAA will perform compliance monitoring throughout the life cycle of the airport ground vehicle ADS-B squitter units.

FAA will perform compliance monitoring of the units at airports where airport ground vehicle ADS-B units are installed. If system performance is degraded such that repair/replacement is required, the QRO will be notified. The airport operator will be notified to cease operating the nonfunctional airport ground vehicle ADS-B unit until the unit is operating within the specified requirements.

**b. Airport Requirements.** At airports implementing airport ground vehicle ADS-B squitter units, certain limitations will be imposed to maximize the benefits of this system. These limitations include the following:

(1) The FAA will only authorize the use of ADS-B squitter units by airport Operator or entities approved by the FAA and coordinated with the FCC and FAA Spectrum Office.

(2) The FAA will authorize a maximum of 200 total (1090 ES and UAT) airport ground vehicle ADS-B squitter units per location to ensure the performance of other FAA surveillance systems operating on the 1090 MHz frequency is not degraded. While any combination of 200 total units per airport is allowed, the FAA encourages airports to use the UAT units rather than the 1090 ES units due to potential congestion of the 1090 MHz spectrum.

(3) Vehicles equipped with the airport ground vehicle ADS-B squitter units must meet the requirements outlined in the Airport Ground Vehicle ADS-B Specification, Version 2.31.

(4) The operation of aircraft ground vehicle ADS-B squitter units is confined to the airport movement area. Use of the proper Squitter Transmit Map will ensure compliance with this requirement.

**c. Airport Ground Vehicle ADS-B Squitter Unit Maintenance.** The FAA will monitor compliance of the airport ground vehicle ADS-B squitter unit with the specification document through the SBS Compliance Monitor system. Any failures to comply will result in maintenance/replacement of the unit. Any observed issues with the airport ground vehicle ADS-B squitter units at the airport should be reported to FAA, who will in turn report the

deficient unit to the local airport operator. The airport operator is responsible for coordinating with the vendor to ensure the airport ground vehicle ADS-B squitter units are repaired or replaced.

**d. Obtaining Current Airport Maps.** The vendor-supplied user interface software will upload an airport ground vehicle ADS-B squitter transmit map for the airport surface to the airport ground vehicle ADS-B unit. The FAA must supply the vendor and airport with the current squitter transmit map for the airport surface in a .kml format from which the vehicle squitter transmit map for the airport surface should be created and uploaded to the airport ground vehicle ADS-B unit. The squitter transmit map for the airport surface must be used to control the airport ground vehicle ADS-B squitter on/off function of the vehicle unit.

The FAA will provide a website where the current squitter transmit map for the airport surfaces can be downloaded. If there is an updated squitter transmit map for the airport surface, the FAA will notify the airport operator.

**e. Radio Call Sign Assignment.** The airport ground vehicle ADS-B squitter units will be programmed with the vehicle radio call signs. The radio call signs are used in Air Traffic Control communications and will also be displayed on the ASDE-X display. A call sign is limited to a maximum of eight (8) characters. An example of possible call sign designators are as follows:

- CTYxxx is a city vehicle (xxx is number)
- ARFxxx is the aircraft rescue and fire fighting department vehicle
- FAAxxx is an FAA vehicle
- APTxxx is an airport operator vehicle

**f. Vehicle 24-Bit ICAO Code Assignment.** Each vehicle that is equipped with an airport ground vehicle ADS-B squitter unit must be uniquely identifiable. This will be accomplished by programming and storing the appropriate 24-bit ICAO identification and vehicle identification information into the unit in accordance with instructions provided by the manufacturer. Airport operators may request a block of 200 24-bit ICAO identification codes from the FAA Aircraft Registration Branch.

The block of 200 ICAO identification codes will enforce the limit of 200 airport ground vehicle ADS-B devices (total of 1090 ES and UAT) per airport.

To obtain the 24-bit ICAO identification codes, approved airport authorities must send a signed and dated letter that indicates the following:

- Request is for airport ground vehicle ADS-B equipment
- Number of 24-bit ICAO codes required
- Point of contact
- Name and address of the airport where equipment will operate

Airports should send their requests to the following addresses:

Via U.S. Postal Service:

Aircraft Registration Branch, AFS-750 PO Box 25504  
Oklahoma City OK 73125

Via express courier:

Aircraft Registration Branch, AFS-750 6425 South Denning Ave  
Registry Building  
Oklahoma City OK 73169  
866-762-9434

**g. Training.** The airport ground vehicle ADS-B equipment manufacturer must provide a detailed training manual as part of the FAA specification compliance process. The FAA will review the training material to ensure all training plans and materials are properly developed for use by the FAA and airports that purchase the equipment.

## 8. Obtaining FAA and Other Publications.

**a. RTCA Documents.** Obtain RTCA documents from RTCA, Inc., 1828 L Street NW, Suite 805, Washington DC 20036, (202) 833-9339, or from the RTCA website at <http://www.rtca.org>.

(1) RTCA/DO-260B, Minimum Operational Performance Standards for 1090 MHz Extended Squitter Automatic Dependent Surveillance Broadcast (ADS-B) and Traffic Information Services - Broadcast (TIS-B), December 2, 2009.

(2) RTCA/DO-282B, Minimum Operational Performance Standards for Universal Access Transceiver Automatic Dependent Surveillance - Broadcast Revision B, December 2, 2009.

**b. Title 14 of the Code of Federal Regulations (14 CFR), Aeronautics and Space.** Obtain copies of 14 CFR Parts 21, 23, 25, 27, 29, 43, and 91 from the Superintendent of Documents, Government Printing Office, PO Box 979050, St. Louis MO 63197. For general information, call 202-512-1800, fax 202-512-2250, or visit <http://www.gpo.gov/fdsys/> (select "Code of Federal Regulations").

(1) 14 CFR Part 91, Automatic Dependent Surveillance-Broadcast (ADS-B) Out Performance Requirements to Support Air Traffic Control (ATC) Service, Final Rule, May 28, 2010, <http://www.gpo.gov/fdsys/pkg/FR-2010-05-28/pdf/2010-12645.pdf>.

**c. FAA Advisory Circulars.** Access copies of ACs on the FAA website at [http://www.faa.gov/regulations\\_policies/advisory\\_circulars/](http://www.faa.gov/regulations_policies/advisory_circulars/).

**d. FAA Technical Standard Orders (TSO).** Find a current list of technical standard orders at <http://www.airweb.faa.gov/rgl>. You will also find the TSO Index of Articles at the same location.

**e. ARINC, Inc.** Obtain copies of ARINC documents from ARINC, Inc., 2551 Riva Road, Annapolis MD 21401, 800-633-6882 (telephone), 410-956-5465 (fax), or at <http://www.arinc.com>.

**f. SAE International.** Order SAE documents from SAE International, 400 Commonwealth Drive, Warrendale PA 15096-0001, 724-776-4970 (telephone), 724-776-0790 (fax) or at <http://www.sae.org>.

A handwritten signature in cursive script, appearing to read "J. R. White for".

Michael J. O'Donnell  
Director of Airport Safety and Standards

**APPENDIX A. QUALIFIED PRODUCTS**

FAA Approved Model Number: FDL-978-TXG/E  
Name: V-MAT (Vehicle Movement Area Transmitter)  
ADS-B data link: 978 MHz Universal Access Transceiver  
Vendor: Exelis, Inc.  
Manufacturer: FreeFlight Systems  
Contact: Exelis  
(855) 890-5137  
[Sales.CAS@exelisinc.com](mailto:Sales.CAS@exelisinc.com)  
[www.exelisinc.com](http://www.exelisinc.com)

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