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Motion Sensor Project at Fort Hood, Texas, Generally Complied With the American Recovery and Reinvestment Act

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INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
400 ARMY NAVY DRIVE
ARLINGTON, VIRGINIA 22202–4704

April 29, 2011

MEMORANDUM FOR COMMANDING GENERAL, U.S. ARMY CORPS OF ENGINEERS
AUDITOR GENERAL, DEPARTMENT OF THE ARMY

SUBJECT: Motion Sensor Project at Fort Hood, Texas, Generally Complied With the American Recovery and Reinvestment Act (Report No. D-2011-062)

The DoD Office of Inspector General is performing audits of DoD's implementation of Public Law 111-5, "American Recovery and Reinvestment Act of 2009" (Recovery Act), February 17, 2009. This report discusses our review of Energy Conservation and Investment Program (ECIP) Project 69693, "Install 8,000 Motion Sensors," at Fort Hood, Texas. Specifically, we reviewed the planning, funding, initial project execution, and tracking and reporting phases of the motion sensor project to determine whether personnel at Fort Hood and the U.S. Army Corps of Engineers (USACE) complied with the Act's requirements, Office of Management and Budget Memorandum M-09-10, "Initial Implementing Guidance for the American Recovery and Reinvestment Act of 2009," February 18, 2009, and subsequent related guidance. Although the project received additional funding for design work, our review focused on funds allocated directly to the project for installation of the motion sensors.

Implementation of the motion sensor project generally complied with the Recovery Act. Fort Hood Directorate of Public Works (DPW) and USACE personnel properly planned the motion sensor project. USACE personnel distributed Recovery Act funds in a timely manner and the Funding Authorization Documents (FADs) identified a Recovery Act designation. Although, USACE personnel generally implemented the initial execution phase of the project effectively, we identified that USACE personnel omitted two Federal Acquisition Regulation (FAR) clauses required by implementation guidance for the Recovery Act in two task orders to install the motion sensors. USACE contracting personnel agreed and subsequently modified the task orders to include the required FAR clauses.

PROJECT ADEQUATELY PLANNED

DPW and USACE personnel properly planned the motion sensor project at Fort Hood. DPW personnel submitted a DD Form 1391 for the ECIP project for the installation of motion sensors at Fort Hood on March 9, 2009. The scope of the project was to install 8,000 motion sensors within selected buildings at an estimated program cost of $1.45 million, excluding separately provided planning and design funds supporting Army Recovery Act ECIP projects. To support the DD Form 1391, DPW personnel provided an initial list of specific buildings at Fort Hood where the motion sensors would be installed.

DPW personnel also developed a detailed cost analysis for the motion sensor project. The cost analysis included costs for energy, maintenance materials, and maintenance labor, in addition to sensor unit costs that included demolition, labor, materials, and

profit. The cost analysis projected annual savings of about $640,000 from the use of motion sensors to turn building lighting off when spaces are unoccupied. Annual savings were based on reduced energy consumption and the difference between the current maintenance cost and future motion sensor maintenance cost. The motion sensor cost analysis was reasonable and supported by the project documentation. The table below shows the computation of the annual savings.

Projected Annual Savings From Installation of 8,000 Motion Sensors

Avoidance	Per Sensor*	Total
Energy	$ 64.31	$ 514,454
Current Maintenance	27.41	219,292
Future Sensor Maintenance	(11.72)	(93,795)
Savings	**$ 80.00**	**$ 639,951**

*Per-sensor amounts have been rounded to two decimal places.

Using a 15-year economic life, DPW personnel projected a savings-to-investment (SIR) ratio of 5.6 on the cost benefit analysis. The DoD Energy Manager's Handbook defines a SIR as a measure of a project's economic performance. The SIR expresses the relationship between the present value of the savings over the study period to the present value of the investment costs. According to the DoD Energy Manager's Handbook, if a project's SIR is 1.0 or higher, the project is cost-effective.

The "American Recovery and Reinvestment Act of 2009, Department of Defense Energy Conservation Investment Program Plan," May 15, 2009 (updated June 2010), states that the ECIP program historically averages more than $2 in life-cycle savings for every dollar invested. The Office of the Assistant Secretary of Defense (Production and Logistics), "Energy Conservation Investment Program Guidance," March 17, 1993, states, "Projects must have a SIR greater than 1.25 and a payback period of 10 years or less." DPW personnel computed a simple payback of 2 years for the project.

DPW project planners estimated the need for about 8,000 motion sensors to be installed in selected buildings at Fort Hood. In September 2009, the USACE Huntsville Engineering Support Center (HESC), Alabama, issued a task order for engineering and technical services to Onix, Incorporated to determine the total number of motion sensors needed for installation in buildings at Fort Hood. Onix, Incorporated prepared a concept design and determined that fewer than 4,000 sensor locations would provide the necessary coverage for the selected buildings if the project included ceiling sensors, which cover a larger area than wall sensors. As a result, Fort Hood DPW and USACE personnel planned to install motion sensors in additional buildings and split the project into the two phases discussed in the Initial Project Execution section on page 3.

TIMELY FUNDING FOR THE MOTION SENSOR PROJECT

The "American Recovery and Reinvestment Act of 2009, Department of Defense Energy Conservation Investment Program Plan," May 15, 2009 (updated June 2010), identified projects funded through the "Military Construction, Defense-Wide" appropriation and valued at $120 million. The Deputy Under Secretary of Defense (Installations and

Environment) centrally controls ECIP funding allocation on a project-by-project basis. DoD personnel allocated $32.1 million for 16 Army Recovery Act ECIP projects, including $2.19 million in planning and design funds supporting the 16 projects. Of the $32.1 million, DoD personnel approved $1.45 million for construction of the motion sensor project at Fort Hood.

Personnel at the HESC received about $1.32 million in Recovery Act military construction funds for the motion sensor project from USACE Headquarters in a timely manner. All funding documents properly cited Treasury Appropriation Fund Symbol 97 0501, "Military Construction, Defense-Wide" appropriation.

The DoD ECIP Plan listed the project cost at $1.45 million, and HESC contracting personnel obligated $1.26 million to the project, allowing approximately $190,000 ($1.45 million less $1.26 million) in potential bid savings. The Army ECIP program manager and personnel from USACE plan to use the available funds to install additional motion sensors for light fixtures in other buildings at Fort Hood.

INITIAL PROJECT EXECUTION ADEQUATE

HESC contracting personnel generally solicited and awarded contracts with full transparency; however, two task orders omitted FAR clauses required by the Recovery Act. During Phase 1, improved design efficiencies enabled the contractor to install the 3,955 motion sensors in all the buildings originally identified for the project. Phase 2 included installation of about 2,500 more motion sensors in additional buildings at Fort Hood.

On November 30, 2009, HESC awarded task order 46 on Contract W912DY-09-D-0037 to Johnson Controls Building Automation Systems to complete the Phase 1 installation at a contract cost of $730,036. To complete Phase 2 installation, HESC personnel awarded task order 02 on contract W912DY-10-D-0012 to EMC Engineers, Incorporated, (EMC Engineers) on August 19, 2010, at a contract cost of $534,725. HESC contracting personnel awarded the Johnson Controls Building Automation Systems and EMC Engineers task orders from previously competed contracts in a timely manner.

We reviewed the FAR clauses in the Johnson Controls Building Automation Systems Multiple Award Task Order Contract (MATOC) and the task order for the installation of motion sensors. We found that FAR Clause 52.212-5, "Contract Terms and Conditions Required to Implement Statutes or Executive Orders-Commercial Items" and FAR Clause 52.225-22, "Notice of Required Use of American Iron, Steel and Other Manufactured Goods-Buy American Act-Construction Materials" were omitted. In addition, USACE HESC contract personnel omitted FAR Clause 52.212-5 from both the EMC Engineers MATOC and task order to install motion sensors at Fort Hood, Texas. USACE HESC contract personnel agreed and subsequently modified the task orders for Johnson Controls Building Automation Systems and EMC Engineers to include the required FAR Clauses.

CONTRACTORS REPORTED REQUIRED INFORMATION

"American Recovery and Reinvestment Act – Reporting Requirements" requires contractors for Recovery Act projects to report project information at www.Recovery.gov. Johnson Controls Building Automation Systems and EMC Engineers submitted required Recovery Act recipient information including total project dollar value, project status, number of jobs created, and subcontract awards.

CONCLUSION

Fort Hood DPW and HESC personnel ensured that the $1.45 million Recovery Act project was properly planned. Headquarters USACE personnel distributed Recovery Act military construction funds in a timely manner, the FADs identified the correct Recovery Act designation, and contracting actions were generally adequate. During our review, we determined that USACE HESC contract personnel generally implemented the initial execution phase of the project effectively. We identified that USACE HESC contract personnel omitted two FAR clauses required by the Recovery Act within two task orders applicable to the motion sensor project. HESC personnel agreed and subsequently modified the two task orders to include required FAR clauses. As a result, we are not making any recommendations in this memorandum.

REVIEW OF INTERNAL CONTROLS

DoD Instruction 5010.40, "Managers' Internal Control Program (MICP) Procedures," July 29, 2010, requires DoD organizations to implement a comprehensive system of internal controls that provides reasonable assurance programs are operating as intended and evaluates the effectiveness of the controls. Controls over the Recovery Act project were generally adequate; however, we identified one internal control weakness in the administration of the motion sensor project as defined by DoD Instruction 5010.40. Personnel at USACE HESC omitted two FAR clauses in two contract task orders as required by the Recovery Act and discussed in detail in the Initial Project Execution section of this memorandum. We will provide a copy of the memorandum to the senior official in charge of internal controls for USACE Headquarters.

AUDIT STANDARDS

We conducted this audit under Project No. D2009-D000LF-0298.003 from September 2009 through March 2011 in accordance with generally accepted government auditing standards. Generally accepted government auditing standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our conclusions based on our audit objectives.

AUDIT METHODOLOGY

We visited Fort Hood and the HESC to review the motion sensor project. We interviewed Fort Hood and HESC project managers, engineers, and contract specialists. We reviewed the project requirement and justification, and construction funding

documents allocated to the project. Specifically, we reviewed DD Form 1391, the project cost analysis, a current working estimate, project engineering estimates, funding authorization documents, and contract documentation for task order 46 under contract W912DY-09-D-0037 to Johnson Controls Building Automation Systems and task order 02 under contract W912DY-10-D-0012 to EMC Engineers. We also reviewed Federal, DoD, and Army guidance. Although we determined whether the contractor reported in accordance with FAR 52.204-11, we did not validate the data reported by the contractor to the www.Recovery.gov Web site at this time. We plan to address the adequacy of recipient reporting in a future DoD Office of the Inspector General report.

The DoD Office of the Inspector General reviewed Recovery Act projects other than the 8,000 Motion Sensor Project at Fort Hood and will issue reports on those projects when reviews have been completed.

Before selecting DoD Recovery Act projects for audit, the Quantitative Methods and Analysis Division (QMAD) of the DoD Office of the Inspector General analyzed all DoD agency-funded projects, locations, and contracting oversight organizations to assess the risk of waste, fraud, and abuse associated with each. QMAD selected most audit projects and locations using a modified Delphi technique, which allowed QMAD to quantify the risk based on expert auditor judgment and other quantitatively developed risk indicators. QMAD used information collected from all projects to update and improve the risk assessment model. QMAD selected 83 projects with the highest risk rankings; auditors chose some additional projects at the selected locations.

QMAD did not use classical statistical sampling techniques that would permit generalizing results to the total population because there were too many potential variables with unknown parameters at the beginning of this analysis. The predictive analytic techniques employed provided a basis for logical coverage not only of Recovery Act dollars being expended, but also of types of projects and types of locations across the Military Services, Defense agencies, State National Guard units, and public works projects managed by USACE.

USE OF COMPUTER-PROCESSED DATA

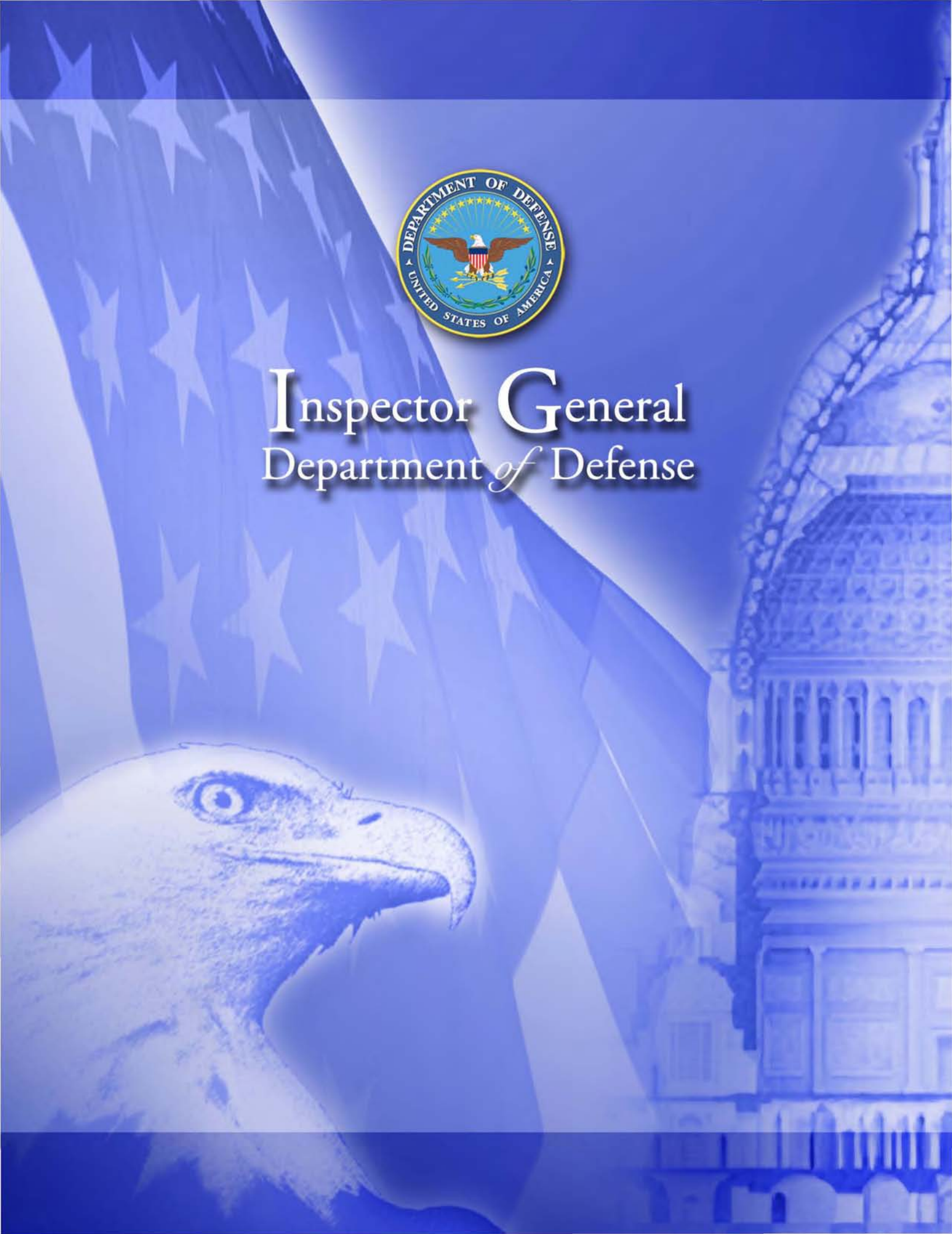
We relied on computer-processed data from the Federal Business Opportunities (FBO) Web site, the Federal Procurement Data System – Next Generation, and the Central Contractor Registration. FBO is a single, government-wide point-of-entry for Federal Government procurement opportunities. The Federal Procurement Data System – Next Generation is a dynamic, real-time database in which contracting officers can update data to include new actions, modifications, and corrections. The Central Contractor Registration is the primary registrant database for the U.S. Federal Government that collects, validates, stores, and disseminates data in support of agency acquisition missions. We compared data generated by each system with the DoD Expenditure Plans, information from Army personnel, and DoD and Army ECIP guidance to support the audit conclusions. We determined that the data were sufficiently reliable for the purposes of our report.

PRIOR AUDIT COVERAGE

The Government Accountability Office, the DoD Office of the Inspector General, and the Military Departments have issued reports and memoranda discussing DoD projects funded by the Recovery Act. You can access unrestricted reports at http://www.recovery.gov/accountability.

We appreciate the courtesies extended to the staff. If you desire, we will provide a formal briefing on the results. Please direct questions to me at (703) 604-8866.

Alice F. Carey
Assistant Inspector General
Readiness, Operations, and Support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