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**2010 Census: Assessing the
Census Bureau's Progress**

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1 Introduction

The MITRE Corporation is a not-for-profit organization chartered to work in the public interest. MITRE manages three Federally Funded Research and Development Centers (FFRDCs): one for the Department of Defense, one for the Federal Aviation Administration, and one for the Internal Revenue Service. A Federally Funded Research and Development Center (FFRDC) is a unique organization that assists the United States government with scientific research and analysis, development and acquisition, and/or systems engineering and integration. FFRDCs address long-term problems of considerable complexity, analyze technical questions with a high degree of objectivity, and provide creative and cost-effective solutions to government problems.

Governed by Part 35.017 of the Federal Acquisition Regulations, FFRDCs operate in the public interest with objectivity, independence, freedom from conflict of interest, and full disclosure of their affairs to their respective sponsors.

Because the Decennial Census is such an enormous undertaking, the U. S. Census Bureau has often turned to technology-based solutions to improve quality and efficiency. However, technology itself is not a panacea. The technology requires changes in the roles of the people and the processes they implement. Planning, acquisition, and coordinating the changes to this combination of people, processes, and technology are very complex and filled with risk. Because of this complexity, the Census Bureau requested MITRE assistance in 2004.

MITRE's support to the Census Bureau on its Field Data Collection Automation (FDCA) program falls into roughly four phases: preparation, cost estimation, independent assessments, and support. MITRE provided testimony on April 9, 2008 to this committee on the activities in each of the four phases. Today's testimony provides observations of the Census Bureau's improvements in managing the FDCA program by developing and implementing key plans and schedules, updating the estimated cost of the FDCA contract, and preparing to renegotiate the contract.

Improvements in Developing and Implementing Key Plans and Schedules: In April 2008, the Director of the Census Bureau asked MITRE to provide recommendations on how to improve the Bureau's management of the FDCA program. MITRE worked with Census leaders to define and implement plans, schedules, and processes. The Bureau has demonstrated substantial improvements in these last two months. Further details are provided in Section 2.

Updated Estimated Cost of the FDCA Contract: MITRE developed the original Independent Government Cost Estimate in April 2005. In April 2008, the Director of the Census Bureau asked MITRE to update the estimated cost of the FDCA contract to account for changes in the

scope of the program. MITRE completed the update in May 2008. The estimated costs are substantially lower than the rough order of magnitude (ROM) estimate provided by the contractor, the Harris Corporation. In spite of the significant difference between the IGCE and the Harris ROM, MITRE has high confidence that the program can be accomplished at the estimated cost.

Our confidence in our estimate is not based solely on the maturity of our cost model. Our confidence is also based on our ability to develop a technical reference model that we rapidly implemented as a proof of concept demonstration on a commercially available handheld computer. Further details are provided in Section 3.

Preparation to Renegotiate the FDCA Contract: The FDCA contractor, the Harris Corporation, is expected to submit its updated contract cost proposal by July 15, 2008. MITRE has been asked to participate in the evaluation of the revised cost proposal. This is described in further detail in Section 4.

2 Improvements in Developing and Implementing Key Plans and Schedules

Since April 2008, MITRE has helped Census leaders define and implement plans, schedules, processes, and initiatives. The Census Bureau has made substantial improvements to the management of its programs including:

- The development of a program improvement roadmap and the assignment of action officers to carry out specific activities.
- The initiation of an infrastructure assessment to determine the readiness and capability of the infrastructure provided by the FDCA contractor at the Local Census Offices and Regional Census Centers.
- The assignment of Census Bureau personnel to Harris locations to improve the transfer of critical knowledge. They are also referred to as “embedded personnel.”
- The update of the FDCA Independent Government Cost Estimate. It is discussed in more detail in Section 3.

Program Improvement Roadmap. The Census Bureau recently initiated a roadmap for improvement comprised of six major activities. Census assigned action officers to lead and be accountable for progress in each area. Each action officer developed milestones and reports status to the Director on a regular basis. Although these activities began only two months ago, substantial progress has been accomplished, including:

1. **Improve Communications.** MITRE and Census are developing a Communications Plan that addresses both internal and external stakeholders.
2. **Reduce FDCA Risk.** The Census Bureau aggressively pursued a revised FDCA cost proposal from Harris by July 15, 2008 to use as the basis for renegotiating the FDCA contract. The Census Program Management Office (PMO) is completing an assessment of the FDCA software to determine the current condition of the software.
3. **Develop Program Testing Plan.** The Census team developed a catalog of test activities and a revised Program Test Strategy that is currently undergoing review. A new test plan for Address Canvassing was completed and is also under review. The plan includes embedding Census Bureau personnel at the developer sites, an activity that is already underway.
4. **Improve Program Management.** The Associate Director for the Decennial Census established the vision for a Census Operations Center. Both a web site and a physical Operations Center are being developed to provide access to key program information. A Program Management Plan was completed that included roles, responsibilities, and decision-making authority. Progress is being made on risk management. The list of program risks was updated, and regular meetings are being held to discuss the key

issues facing the program. Managers are responding quickly to requests for document reviews and approvals, which is creating a faster decision tempo. MITRE has actively contributed to the activities of the program management group.

5. **Update the Integrated Schedule.** The Census schedule group completed an update of the Integrated Schedule on May 22, 2008. A process was developed to monitor progress against the schedule on a weekly basis.
6. **Replan of the Non-Response Follow-Up Operation.** The team developed and delivered the Paper-Based Non-Response Operation (NRO) Group Operational Concept. This product depicts the major steps in the Non-Response Operations and highlights the related information flows. The work of this group formed the basis for the set of new requirements for paper based NRFU(Non-Response Follow Up) that were delivered to Harris on schedule on June 6, 2008. MITRE has been closely involved with these activities.

Infrastructure Assessment. Based on problems observed during the Address Canvassing (AC) dress rehearsal performed in May 2007, the Census Bureau identified risks associated with the FDCA infrastructure. MITRE was tasked by Census to independently assess whether the proposed infrastructure will meet Census performance needs during peak demand periods. A team of MITRE engineers has been reviewing design documents, visiting field locations, and developing a simulation model as part of the assessment of the proposed infrastructure.

Embedding of Census Bureau Personnel. The Census Bureau has begun embedding personnel at the Largo, Maryland development facilities. Similarly, Harris is providing personnel who are full-time at Census Bureau headquarters. These personnel have most recently assisted in the development of the new requirements for the paper-based NRFU operation along with personnel from MITRE.

3 Updated Estimated Cost of the FDCA Contract

On January 16, 2008, the Census Bureau delivered a final set of requirements for the FDCA program to the Harris Corporation. The Census Bureau requested a Rough Order of Magnitude (ROM) cost estimate by the end of the month to account for the additional requirements that were over and above the original contract scope.

On January 31, 2008, a joint Census and MITRE team completed a FDCA software architecture assessment that concluded: "Given the current Harris software development plan AND given the current scope, schedule, and budget turbulence, the team concludes there is a low confidence of successful implementation of paper and automated field operations."

On February 4, Harris provided the Census Bureau with the requested ROM, which represented a significant increase to the contract. Because of concerns about the program cost and performance, the Secretary of Commerce and the Director of the Census Bureau commissioned a FDCA Risk Reduction Task Force to examine program alternatives.

The FDCA Risk Reduction Task Force evaluated four program alternatives and their risks. The task force recommended, and the Director of the Census Bureau and the Secretary of Commerce accepted "Alternative 2", which included five key recommendations:

- Automated Address Canvassing provided by Harris
- Paper-Based NRFU Operations
- Operational Control System (OCS) for Paper-Based Operations, including a Paper-Based NRFU provided by Harris
- Single Regional Census Centers (RCC) network solution provided by the Census Bureau
- Census Coverage Measurement (CCM) Automated Instrument and OCS provided by Census Bureau.

Based on these changes to the FDCA Program, the Harris Corporation revised their ROM for the total contract cost to \$1306 million (compared to the current baseline of \$703 million).

On April 9, 2008, the House Committee on Oversight and Government Reform and the Subcommittee on Information Policy, Census, and National Archives held a joint hearing on the FDCA contract. During the hearing, Representative Clay stated:

"Please, let me inject right here that we would like from you, Mr. Providakes (Sr. V.P. and General Manager of the MITRE Corporation), as well as GAO, a scrubbing of Harris' contract. We would like your analysis of just what the American tax payer is paying for."

Subsequently, the MITRE Corporation received direction from U.S. Census Bureau Director, Dr. Steven Murdock, to update the FDCA Independent Government Cost Estimate (IGCE).

The original IGCE was produced by MITRE in April 2005 to assist the Census Bureau in the initial planning and acquisition processes for FDCA. It served as a key data source and tool in the cost evaluation process for proposals from the contractors bidding for the FDCA contract.

The original IGCE was \$620 million for the lifecycle of the FDCA program. All three proposals from industry were within a 10 percent margin of the MITRE estimate, including the Harris Corporation proposal of \$595 million. Census awarded the FDCA contract to the Harris Corporation in March of 2006.

Since the time of contract award there have been several significant changes that impact the estimated value of the contract. These changes include:

- Engineering Change Proposals (ECPs) submitted by Harris and accepted by Census that modify the original scope of the contract.
- A set of requirements that were developed by the Census Bureau and delivered to Harris on January 16, 2008.
- The recommendation by the FDCA Risk Reduction Task Force and the approval by the Secretary of Commerce to revert to a paper based NRFU operation for the 2010 Decennial Census.

The IGCE is developed with the assistance of a sophisticated analytical model. The model was updated in two steps. First, the model was updated to reflect the current contract base of \$703 million by adding the engineering ECPs that were approved prior to January 16, 2008. The second update included the changes from the January 16th, 2008 requirements and the Risk Reduction Task Force recommendations.

One purpose of this initial update was to represent the changes in program scope introduced by the ECPs. The other purpose was to “tune” the model using the Harris program performance during the first eighteen months of the contract. Additional adjustments were made to the inputs of the model to account for:

- The equipment at the LCO’s (local Census offices) was increased based on input provided by the Census Bureau for this pre-NRFU replan time period.
- The award fee structure in the IGCE was changed to reflect Harris’ proposed structure as presented to the Census Bureau in January 2006.
- Labor rates and equipment costs were reviewed and updated.

Table 1 summarizes the cost estimates based on the current contract base.

Table 1. Cost Estimates at Contract Award and After Approved Updates

Description	Estimates at Contract Award (April 2006)	Current Contract Base (December 2007)
Harris	\$596M	\$703M
IGCE	\$620M	\$722M

For the second step of updating the IGCE, MITRE updated the IGCE model to reflect the new requirements delivered to Harris on January 16, 2008 and the recommendations of the FDCA Risk Reduction Task Force. During briefings of the draft IGCE results, MITRE received feedback about the assumptions from Harris managers and engineers and from Census Bureau managers. As a result, the latest version of the IGCE reflects:

- The January 16, 2008 set of requirements.
- The recommendations of the FDCA Risk Reduction Task Force.
- Acceptance of ECP-11 for additional equipment at the Regional Census Centers.
- Additional program changes identified in February and March 2008.
- Comments received from review of the IGCE by Harris and Census Bureau managers
- Associated secondary impacts to help desk and other operations and automation
- Award fee updates
- Increases in the number of Local Census Offices (LCO) and the equipment in each LCO to account for increased workload caused by a paper-based NRFU.

The latest value of the MITRE IGCE is contained in Table 2, along with Harris' ROM and MITRE and Harris prior contract values and cost estimates.

Table 2. Cost Estimates Including Current Alternative

Description	Estimates at Time of Contract Award (April 2006)	Harris' Current Contract Base (December 2007)	Scope Updated to Reflect Current Alternative (May 2008)
Harris	\$596M	\$703M	\$1,306M (Rough Order of Magnitude)
IGCE	\$620M	\$722M	\$726M

MITRE met with representatives from the Government Accountability Office (GAO), who reviewed the IGCE methodology and results.

The major changes in the estimated contract costs for the IGCE from the Current Contract Base to the Current Alternative are contained in Table 3. It should be noted that the cost impact of the new requirements delivered on January 16, 2008 was relatively small.

It should be noted that the IGCE represents the estimated contract cost. MITRE estimates that the Census Bureau will require additional funding for a management reserve of \$67 million. This is based on 10 percent of the base contract (excluding award fees) according to best practices for a complex information technology program of this size.

Table 3. Major IGCE Cost Changes

Contract Change	Cost Impact in IGCE (\$Millions)
Reduced Number of Handheld Computers	-130
Removal of Census Coverage Measurement Software from Scope	-7
Reduction of Award Fees Percentages	-8
Increase in Help Desk Support	59
Increase in equipment in each Local Census Office	40
New and Modified Requirements	17
Inclusion of RCC Equipment	13
Miscellaneous Adjustments Based on Comments from Harris and Census	13
Increase in number of Local Census Offices	7
Total Cost Increase in IGCE	4

Note: Cost estimates are rounded to nearest million

The update of the IGCE was neither an audit nor a validation of the Harris ROM. Because the ROM was not provided with a full basis of estimate, it is not possible to deduce the causes of the differences. However, based on cost summaries provided by MITRE and Harris in a common framework for the Department of Commerce, the primary differences appear to occur in three cost categories:

Software Development	\$199 million
Help Desk	\$68 million
Common Support	\$296 million

In spite of the significant difference between the IGCE and the Harris ROM, MITRE has high confidence that the program can be accomplished at the estimated cost. Although some of the technologies that are relevant to this program have changed in the past two years, we believe the technology is sufficiently mature to perform the program at the estimated costs.

Our confidence in our estimate is not based solely on the maturity of our cost model. Our confidence is also based on our ability to develop a technical reference model that we rapidly implemented as a proof of concept demonstration on a commercially available handheld computer. A technical reference model describes the standards and technologies that enable the development and implementation of a business application. The proof of concept was implemented to validate the power, maturity, and ease of use of readily available hardware and software components that comply with our technical reference model.

4 Preparation to Renegotiate the FDCA Contract

The Harris Corporation is expected to provide their updated contract cost estimate on July 15, 2008. MITRE has been asked to participate in the evaluation of the revised cost proposal. MITRE has a funded task order to assist the Director of Acquisition and the Associate Director for Decennial Census with review of the Harris cost proposal and to participate in the cost negotiations. The Associate Director has indicated that he will use the MITRE IGCE as one source of data during the review of the Harris cost proposal and the subsequent negotiations.

Appendix A Acronyms

CCM	Census Coverage Measurement
DMD	Decennial Management Division
DoC	Department of Commerce
DRIS	Decennial Response Integration System
DSAT	Decennial Systems Architecture Review Team
ECP	Engineering Change Proposal
FDCA	Field Data Collection Automation
GAO	Government Accountability Office
HHC	Handheld Computer
IG	Inspector General
IGCE	Independent Government Cost Estimate
NRFU	Non-Response Follow Up
NRO	Non-Response Operation
OCS	Operational Control System
PM	Program Manager
PMO	Program Management Office
RCC	Regional Census Centers
ROM	Rough Order of Magnitude