A REVIEW OF THE CENSUS BUREAU'S RISK MANAGEMENT ACTIVITIES FOR IT ACQUISITIONS

HEARING

BEFORE THE

SUBCOMMITTEE ON INFORMATION POLICY, CENSUS, AND NATIONAL ARCHIVES

OF THE

COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM

HOUSE OF REPRESENTATIVES

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A REVIEW OF THE CENSUS BUREAU'S RISK MANAGEMENT ACTIVITIES FOR IT ACQUISITIONS

TUESDAY, DECEMBER 11, 2007

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON INFORMATION POLICY, CENSUS, AND NATIONAL ARCHIVES,
COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM,
Washington, DC.

The subcommittee met, pursuant to notice, at 2:33 p.m., in room 2154, Rayburn House Office Building, Hon. Wm. Lacy Clay (chairman of the subcommittee) presiding.

Present: Representatives Clay and Turner.

Staff present: Darryl Piggee, staff director/counsel; Jean Gosa, clerk; Adam C. Bordes, professional staff member; Michelle Mitchell, legislative assistant, Office of Wm. Lacy Clay; and John Cuaderes, minority senior investigator.

Mr. CLAY. The Subcommittee on Information Policy, Census, and National Archives of the Committee on Oversight and Government Reform will now come to order. Today's hearing will examine the Census Bureau's planning and management of its key information technology systems and infrastructure to be used in the 2010 census. We will hear from the Census Bureau and GAO on their activity concerning the risk management of agency IT acquisitions for the upcoming census, as well as representatives of the key vendors involved with these projects.

Without objection, the Chair and ranking minority member will have 5 minutes to make opening statements followed by opening statements not to exceed 3 minutes by any other Member who seeks recognition. Without objection, Members and witnesses may have 5 legislative days to submit a written statement for these materials for the record.

I will begin with my opening statement.

Welcome to today's hearing examining the Census Bureau's planning and management of key information technology systems and infrastructure for the 2010 census.

In October of this year, the GAO issued a report entitled, "Information Technology: Census Bureau Needs to Improve Its Risk Management of the Decennial Systems." The study found that of the three acquisitions for the 2010 census, two were not on schedule and that the Bureau plans to delay testing certain functionality. As a result, GAO offered four recommendations for

addressing the risk management problems related to IT for the 2010 census.

Last month, the Department of Commerce Inspector General issued its semiannual report to Congress. During the review of this technology, the IG observed several problems: the handheld computer functions frequently froze; the processing of large address lists was slow; and help desk support for resolving users' computer problems was inadequate.

The problems cited are urgent and must be addressed immediately.

Today, we will examine the problems cited and recommendations offered by GAO and hear from the Census Bureau and the IT contractors for the 2010 census about their efforts to effectively and efficiently address the problems identified.

And let me add to that, that this is not a dog and pony show. We are here for answers, and we want to hear what direction you will be taking as far as how we make this a complete and accurate census.

[The prepared statement of Hon. Wm. Lacy Clay follows:]

Good morning. Welcome to today's hearing examining the Census Bureau's planning and management of key information technology systems and infrastructure for the 2010 Census. In October of this year, the Government Accountability Office (GAO) issued a report entitled "Information Technology: Census Bureau Needs to Improve Its Risk Management of Decennial Systems." The study found that of the three key IT acquisitions for the 2010 Census, two were

not on schedule, and that the Bureau plans to delay testing certain functionality. As a result, GAO offered four recommendations for addressing the risk management problems related to IT for the 2010 Census.

Last month, the Department of Commerce Inspector General issued its Semiannual Report to Congress. During its review of this technology, IG observed several problems: the handheld computer functions frequently froze; the processing of large address lists was slow; and help desk support for resolving users' computer problems was inadequate. The problems

cited are urgent and must be addressed immediately.

Today, we will examine the problems cited and recommendations offered by GAO, and hear from the Census Bureau and the IT contractors for the 2010 Census about their efforts to effectively and efficiently address the problems identified.

Mr. CLAY. Right now, as is the policy for this committee, we will swear in all witnesses, and I would ask you to stand and raise your right hands.

[Witnesses sworn.]

Mr. CLAY. I ask that each of the witnesses give a brief summary of the testimony and to keep the summary under 5 minutes in duration. Your complete written statements will be included in the hearing records, and Mr. Kincannon, welcome, and let us begin with you.

STATEMENTS OF CHARLES LOUIS KINCANNON, DIRECTOR, U.S. BUREAU OF THE CENSUS; DAVID POWNER, DIRECTOR, INFORMATION TECHNOLOGY MANAGEMENT ISSUES, GOVERNMENT ACCOUNTABILITY OFFICE; AND MATTHEW SCIRÈ, DIRECTOR, STRATEGIC ISSUES, GOVERNMENT ACCOUNTABILITY OFFICE

STATEMENT OF CHARLES LOUIS KINCANNON

Mr. KINCANNON. Mr. Chairman, thank you for the opportunity to be here this afternoon to discuss the key information technology systems under development for the reengineered short form 2010 census. Four major census IT systems illustrate the extent to which our Nation lies at the heart of our 2010 operations: the MAF/TIGER Accuracy Improvement Project [MTAIP]; the Decennial Response Integration System [DRIS]; the Field Data Collection Automation program [FDCA]; and the Data Access and Dissemination System [DADS]. They are all critical to the success of the census, and I must say, the timing is critical to the success of these programs.

Mr. Chairman, I cannot emphasize too strongly that we must have the necessary funding to carry forward these projects to success. And we must have that funding at the time that we are going to be able to use it to accomplish our tasks.

As you know, the recent 7-week delay in funding census programs resulted from the first continuous resolution passed at the beginning of this fiscal year. This didn't allow a planned increase in census funding and forced us to delay and reduce the scope of our dress rehearsal. I want to thank the committee for its help in making sure that we got the funds that we needed, at least through Friday, and we will all hope for things to continue in the same vein.

Over the next 3 years, delays in funding are one of the biggest risks that the 2010 census faces. Indeed, any additional delays will put greater risk in the face of the successful Census Bureau.

Before I talk about what we are doing for 2010, I want to note that there is nothing new about the Census Bureau employing and developing new technology to improve the census. From the use of automatic tabulating machines from the 19th century to the development of the TIGER data base in the 1980's and our data capture system in 2000, we have been a pioneer in development for the use of technology to meet our needs. And the pattern of countries overseas following our lead in adopting the same technology has demonstrated that I think we are leading the way in a number of areas.

From the 2010 census, the use of handheld computers represents the most fundamental change in census operations in many years, and they are the key to leveraging technology to improve the quality of census results and to control the costs.

I want to emphasize to the committee that this is a new program for us. We have never done anything of this type on this scale before. Consequently, there are significant risks which are exacerbated by the strict time line that I mentioned earlier. It is possible that we will not have enough time to incorporate all of the functionalities that we have earlier planned. Adapting in this way is one way that we can reduce risks and still meet our schedule.

I can report that the FDCA contractor, the Harris Corp., has provided a handheld computer that is functioning well in the initial dress rehearsal address-canvassing operations. The device has proved to be reliable, secure and user-friendly. We have successfully collected precise GPS coordinates for housing units and map features; data has been transmitted effectively both by LAN lines and by wireless technology. And our field workers are comfortable with the devices.

As with any operation of this magnitude, the dress rehearsal is also identifying challenges. This is not unexpected. In fact, meeting these challenges is a fundamental step in the development of the 2010 systems and the very reason we conduct a dress rehearsal.

Looking toward nonresponse followup, in the nonresponse followup operational test in the dress rehearsal next year, we will continue to monitor user problems. We will work with the Harris Corp. to assist handheld computer performance in terms of the fundamental objectives of the 2010 census.

Our other contracts are on time and on budget. It is imperative that we test all of the interfaces between FDCA and our data capture system. After proving the functionality for nonresponse followup for the handhelds, this is the highest priority of our dress rehearsal.

We have weathered the storm caused by the first CR, but just barely; the reason the GAO report on the status of census IT systems emphasized the need for an end-to-end systems test, both for systems supplied by contractors and those developed by the government. Because of the CR and the elimination of most of the paper-based operation originally planned for the dress rehearsal, there is an increased risk in the interfaces between these two sets of systems to mitigate the potential interface problems. We are considering additional testing in 2009.

Your continued support is vital as we proceed with the development of the IT systems, and I thank you again for this opportunity to address these issues with you, and I look forward to your questions.

[The prepared statement of Mr. Kincannon follows:]

PREPARED STATEMENT OF
CHARLES LOUIS KINCANNON
DIRECTOR
US CENSUS BUREAU

Hearing to Examine Issues Relating to the Census Bureau's Risk Management of Key 2010 Information Technology Acquisitions

Before the Subcommittee on Information Policy, Census, and National Archives
U.S. House of Representatives

11 December 2007

Mr. Chairman, thank you for the opportunity to be here this afternoon to discuss the key information technology (IT) systems under development for the reengineered short form 2010 Census. Throughout the decade we have entered into a series of major IT acquisitions that constitute the foundation of our 2010 Census operations. Taken together, these systems are central to meeting our goals to improve accuracy, contain cost and mitigate risk.

Today, I am going to discuss four major 2010 Census IT systems that illustrate the extent to which automation lies at the heart of our 2010 operations.

- The MAF/TIGER Accuracy Improvement Project (MTAIP) is providing corrected coordinates on a county-by-county basis for all features of the Topologically Integrated Geographic Encoding and Referencing (TIGER) geographic database underlying our Master Address File (MAF).

- The Field Data Collection Automation (FDCA) program, which includes the handheld computers and related systems, and the IT infrastructure for the Regional Census Centers and Local Census Offices, will allow census enumerators using hand held computers to capture and transmit information from the interviews they conduct with households that do not return their forms. The FDCA program also is designed to transmit and update enumerator assignments, and to support address list updating activities.

- The Decennial Response Integration System (DRIS) will capture and process census responses from all sources, including returned questionnaires, telephone interviews, and the handheld computers.

- The Data Access and Dissemination System II (DADS II) will replace and improve upon our existing systems for tabulating and disseminating the data and products we produce.

Timing is critical to the success of these systems. I cannot emphasize too strongly that not only do we need adequate funding, we need it in time to make use of it. Our deadlines are not randomly selected; they all have to be in line with our fixed legal deadline of delivering the population count to the President and Congress for apportionment. Our new technology must be field tested prior to the 2010 Census if we are to assure Congress and the American people that the Census Bureau is indeed ready to implement the anticipated technological innovations. Delays, even of a few weeks, add risks to our operation that could compromise our effectiveness and the quality of our data.

We cannot buy back time. As you know, the recent six-week delay in funding Census programs resulting from the "clean" Continuing Resolution (CR) passed at the beginning of FY 2008 forced us to delay and reduce the scope of our Dress Rehearsal, which will now begin on May 1, 2008. (A full list of operations in the reduced scope Dress Rehearsal is available upon request.)

I want to thank the Committee for your help in getting us the funding in October that minimized the effect of this delay, and in making sure that the subsequent CR includes the funding we need. While we will not be able to test all systems we originally wanted to in 2008, we will be able to test the most critical, including handheld computers used for the Non-Response Follow-up operation. Over the next three years, delays in funding are the biggest risk for the 2010 Census. Time is precious and we cannot afford to lose more.

Before I review our major systems, I think it's worth taking a moment to touch on the Census Bureau's long tradition of advancing technological innovations to improve our accuracy and efficiency. At the end of the 19th century, it was the Census Bureau that introduced Herman Hollerith's automatic tabulating machine into productive use – a machine that led to the foundation of IBM. In the 1940s and 1950s we used the early electronic computing machines, precursors to modern computers, to more effectively tabulate information. In fact, UNIVAC I, the world's first commercial computer, was designed for the U.S. Census Bureau to help process the 1950 Census. UNIVAC was the first electronic computer used by a civilian government agency. From the 1950s through the 1980s, we worked with the National Institute of Standards and Technology to develop FOSDIC (Film Optical Sensing Device for Input to Computers), which was capable of "reading" information from a negative microfilm copy of census questionnaires and transferring responses to magnetic tape for processing. The continuing adaptation of the system to emerging computer technologies increased the efficiency of data tabulation operations and the accuracy of census data.

In the 1980s, we developed for the first time a single, integrated, automated geographic database that covers the entire United States. We call this the Topologically Integrated Geographic Encoding and Referencing (TIGER) database. This is a computer-readable, seamless map of the United States that we use to geographically place addresses and produce the maps we need for census operations and products. TIGER jump-started the entire Geographic Information Systems industry in the United States. In effect, TIGER opened the door for the development of

MapQuest and Google Maps, and for the navigation systems we commonly find in many of today's automobiles.

By the 1990s, we recognized that we needed to move away from Census home-grown technologies. The capabilities of a robust, nascent IT industry had by then exceeded our internal abilities. Private sector involvement in Census 2000 technical systems was unprecedented. The most important example is the enormously successful data capture system developed by Lockheed-Martin Corporation that captured information from more than 120 million census questionnaires.

So there is nothing new about the Census Bureau's use of technology. In fact, we've been on the cutting edge of technological innovation in census and survey taking for over 100 years. For the 2010 Census, the use of hand held computers represents the most fundamental change in census operations, and they are the key to leveraging technology to improve accuracy and control costs.

I can report that the FDCA contractor, Harris Corporation, has provided a hand held computer that is functioning well in the initial Dress Rehearsal address canvassing operations. During Address Canvassing, where census enumerators verify and update the census address list, the devices have proven to be reliable, with a hardware failure rate of less than 1%. That is well below industry standards. The devices are also secure – they require a fingerprint and password to operate, and the data are fully encrypted in the device and during transmission. And the devices are proving to be functional. We have successfully collected precise GPS coordinates for housing units and map features; data has been transmitted effectively via both landline and wireless transmissions; and our workers are increasingly comfortable with the device. We were also able to identify software problems and apply solutions simultaneously and uniformly to all devices via electronic transmission to each device upon start-up.

These successes in the Dress Rehearsal build on our experience in the census tests we conducted in 2004 and 2006, where both users and technical observers identified issues relating to mobile computing device reliability, mapping applications, and GPS collection. The Census Bureau structured the FDCA acquisition strategy to provide a technical solution for the 2010 Census that mitigated risks in the development of the system, and the results to date indicate that improvements to the hand held computer design provide a sound platform for delivering a 'production' automation solution for the 2010 Census field operations.

As with any operation of this magnitude, the Dress Rehearsal is also identifying challenges. This is not unexpected. In fact, meeting these challenges is a fundamental step in the development of the 2010 systems and the very reason we conduct the Dress Rehearsal. During the test, Census stakeholders, Census Bureau officials, and Harris Corporation personnel interacted daily to review problems and other concerns noted by field employees. Harris deployed software patches during the operation that substantially reduced average transmission time.

Following the Address Canvassing operation for the Dress Rehearsal, Census Bureau and Harris Corporation staff identified problems and analyzed their causes to learn from this operation. Teams conducted more detailed analyses of the transmission component of the design and performance during Address Canvassing. These analyses included data on average transmission

time, the average size of transmissions, the type of data being transmitted, and the number of transmissions. Harris also analyzed the end-to-end transmission workflow, problems documented in help desk tickets, and assignment area size. These analyses led to a number of corrective measures that are now being taken to improve performance of the hand held computer and of the transmission process, for example:

- The initial hand held computer software design inhibited efficient transmission to and from the hand held computer, resulting in enumerator downtime. We resolved this by making improvements to the database design and implementing hardware and software upgrades.

- The hand held computers did not function well if the data files were too large. They worked most efficiently with assignment areas of up to 720 addresses. However, approximately 3% of the assignment areas had more than that. We are addressing this issue by limiting the size of the assignment areas and the amount of data that must be downloaded and processed on the hand held computer to maximize efficiency.

Looking toward the Non-response Follow-up Dress Rehearsal operational test early next year, we will continue to monitor user problems. We will work through Harris Corporation to capture, and summarize on a regular basis, information that will enable us to document hand held computer performance improvements upon the Address Canvassing baseline, or to identify areas in need of further study. More broadly, as with other components of the overall Census design, we also will continue to assess hand held computer performance in terms of the fundamental objectives for the 2010 Census: reduce operational risk, improve the accuracy of census coverage, and contain costs.

I want to emphasize to the Committee that this is a new program for us. Consequently, there are significant risks. These risks are exacerbated by the strict timeline that I stressed earlier in this testimony. It is possible that we will not have enough time to incorporate all of the functionality in the FDCA system that we initially planned. This is the only way that we can mitigate the risks associated with completing development of this new system under the intense time constraints we now face.

The Decennial Response Integration System will work hand-in-hand with FDCA. That system currently is on time, on budget, and meeting all performance metrics. DRIS will capture and integrate census responses from all sources, including the mailed in questionnaires, telephone interviews, and the handheld computers. We have a lot of experience working with Lockheed Martin Corporation, our contractor for DRIS, on data capture and integration, and we are confident that efforts will be successful. It is imperative, though, that we test all of the interfaces between DRIS and FDCA, and this, after proving the hand held computer functionality for Non-Response Follow-up, is the highest priority for our Dress Rehearsal. Development and testing for all DRIS systems is underway, and we are working closely with Lockheed Martin to evaluate the cost, schedule and technical baselines at a very detailed level. Again, the DRIS contract is on schedule and on budget.

The MAF/TIGER Accuracy Improvement Project is ahead of schedule and under budget. The realigned geographic database has functioned well in the Dress Rehearsal, and we will complete the project nation-wide by Spring of next year.

The contract for the replacement of our Data Access and Dissemination System was recently awarded, and initial planning is underway.

In closing, I want to stress again the reality of our schedule constraints. The next decennial census will be the largest peacetime mobilization in history. The Census Bureau, in the last half of 2009, will have to process 3 million job applications, and hire and train 800,000, workers who will conduct the Constitutionally mandated 2010 Census. The systems we are using will need to be fully developed, tested and put in place.

We have weathered the storm caused by the first CR, but just barely. The recent Government Accountability Office (GAO) report on the status of Census IT systems emphasized the need for an end-to-end systems test, both for systems supplied by contractors and developed by the government. Because of the elimination of most of the smaller paper-based operations originally planned for the Dress Rehearsal, all of which are controlled through automated systems in the local census offices, (including update-leave, Group Quarters enumeration, service based enumeration and the Be Counted program) there is increased risk in the interfaces between these paper-based systems and our automated systems. Because we have done these operations before, we were willing to operate with this level of potential new risk. To mitigate potential interface problems, the bureau is considering additional testing of system interfaces in 2009.

We need and appreciate your continued support as we proceed with the development of the IT systems fundamental to a successful Census in 2010.

Thank you again for this opportunity to address these issues with you. I look forward to your questions.

Mr. CLAY. Thank you, Mr. Kincannon, for your testimony.
Our next witness will be David Powner. Please proceed.

STATEMENT OF DAVID POWNER

Mr. POWNER. Thank you, Mr. Chairman, for allowing me the opportunity to participate in today's hearing on the 2010 decennial census information technology acquisitions. The use of automation will be critical to the success of the decennial. The Bureau estimates it will spend about $3 billion on information technology for the 2010 census. However, these technologies can present enormous risks and challenges if not managed effectively.

With me today is Matt Stray, director of GAO Strategic Issues team, who has been closely monitoring the mobile computing device performance issues. Mr. Chairman, I would like to thank you and Ranking Member Turner for your early and frequent oversight of these acquisitions.

In 2004, we started looking into the Bureau's institutional IT management capacity for you. We concluded from this review that there was much room for improvement. In March 2006, we testified before this subcommittee that neither the integration sytem nor the field data system collection project offices have the full set of capabilities needed to effectively manage these acquisitions.

At that period, we stated that incomplete management activities, including those that required management, risk management and contract monitoring, increased the risk that the acquisitions will encounter problems in meeting costs and scheduled expectations.

At this subcommittee's request, I will summarize our recent report on the status of four key acquisitions and discuss whether the Bureau is adequately managing key acquisition risks.

In addition to the integration system in the field data collection system, which includes the mobile computing devices, there are two other major acquisitions, one to modernize data bases of addresses in maps and another to tabulate and disseminate data.

The four acquisitions are showing mixed progress in meeting their costs and schedule estimates. The data base acquisition has been on schedule and within budget. The other acquisitions have been experiencing delays and one has experienced cost increases. Specifically, the dissemination contract has been awarded 2 years later than originally planned. The field data collection system cost estimate has increased several times due to poor cost estimation and requirements, and we project additional cost increases.

In addition, both the field data collection system and the integration systems are deferring functionality to later bills, which typically results in the increased cost. In addition, deferring functionality means that the operational testing scheduled to occur during the dress rehearsal will not include the full compliment of decennial systems and their functionality. This raises the significance of systems testing post dress rehearsal.

Given the relevant test plans were not completed, we recommended that the Bureau complete such plans, including end-to-end testing to test the full compliment systems.

Turning toward the management of the decennial acquisitions, the Bureau has identified mismanagement with its key acquisitions; for example, acknowledgement, which includes baselines, in-

creasing requirements and aggressive test schedules. Despite this, we found three areas that could be strengthened: identifying risks, establishing mitigation plans and reporting those risks to key executives.

For example, promoting mobile computer device performance issues associated with slow and inconsistent data transmissions had not been identified and tracked by the project office despite problems arising during the dress rehearsal. Because these devices are keystone to the reengineered census, it is essential that the Bureau perform the appropriate oversight of how the performance compares to what is expected and ensure that all performance limitations are figuratively addressed.

We made a number of recommendations to the Bureau to approve the suspension activities, and to its credit, it is working on a national plan to strengthen these areas.

In summary, Mr. Chairman, the IT acquisition plans for the 2010 census will require continuous oversight. Although we are always seeing moderate cost increases, to date, the delay and functionality are a great concern because they will result in additional cost increases.

These delays also elevate the importance of system integration in testing that will occur post dress rehearsal.

Going forward, it is important that the Bureau closely monitor the cost schedule and function and delivery of its acquisitions; effectively manage its key risks associated with increasing requirements, system interfaces and mobile computing devices performance problems; and effectively plan and execute all systems testing, including the tests in the interrelated systems.

This concludes my statement. Thank you for your leadership and oversight.

[The prepared statement of Mr. Powner and Mr. Scirè follows:]

United States Government Accountability Office

GAO

Testimony

Before the Subcommittee on Information Policy, Census, and National Archives, Committee on Oversight and Government Reform, U.S. House of Representatives

For Release on Delivery
Expected at 2:00 p.m. EST
Tuesday, December 11, 2007

INFORMATION TECHNOLOGY

Census Bureau Needs to Improve Its Risk Management of Decennial Systems

Statement of David A. Powner
Director, Information Technology Management Issues

Mathew J. Scirè
Director, Strategic Issues

GAO-08-259T

December 11, 2007

GAO Accountability Integrity Reliability

Highlights

Highlights of GAO-08-259T, a testimony before the Subcommittee on Information Policy, Census, and National Archives, Committee on Oversight and Government Reform, U.S. House of Representatives

INFORMATION TECHNOLOGY

Census Bureau Needs to Improve Its Risk Management of Decennial Systems

Why GAO Did This Study

For Census 2010, automation and information technology (IT) are expected to play a critical role. The Census Bureau plans to spend about $3 billion on automation and technology that are to improve the accuracy and efficiency of census collection, processing, and dissemination. From February 2006 through June 2009, the Bureau is holding a "Dress Rehearsal" during which it plans to conduct operational testing that includes decennial systems acquisitions.

In October 2007, GAO reported on its review of four key 2010 Census IT acquisitions to (1) determine the status and plans, including schedule and cost, and (2) assess whether the Bureau is adequately managing associated risks. This testimony summarizes GAO's report on these key acquisitions and describes GAO's preliminary observations on the performance of handheld mobile computing devices used during the Dress Rehearsal.

What GAO Recommends

In its report, GAO made recommendations that the Bureau strengthen its systems testing and risk management activities, including risk identification and oversight. The Bureau agreed to examine additional ways to manage risks, but disagreed with the view that a full complement of systems would not be tested, stating it planned to do so during the Dress Rehearsal or later; however, the test plans have not been finalized and it remains unclear whether this testing will be done.

To view the full product, including the scope and methodology, click on GAO-08-259T. For more information, contact David A. Powner at (202) 512-9286 or pownerd@gao.gov.

What GAO Found

As of October 2007, three key systems acquisitions for the 2010 Census were in process, and a fourth contract had recently been awarded. The ongoing acquisitions showed mixed progress in meeting schedule and cost estimates. Two of the projects were not on schedule. The award of the fourth contract, originally scheduled for 2005, was awarded in September 2007. In addition, one project had incurred cost overruns and increases to its projected life-cycle cost. As a result of the schedule changes, the full complement of systems and functionality that were originally planned will not be available for upcoming Dress Rehearsal operational testing. This limitation increases the importance of further system testing to ensure that the decennial systems work as intended.

The Bureau's project teams for each of the four IT acquisitions had performed many practices associated with establishing sound and capable risk management processes, but critical weaknesses remained. Three project teams had developed a risk management strategy that identified the scope of the risk management effort. However, not all project teams had identified risks, established mitigation plans, or reported risks to executive-level officials. For example, one project team did not adequately identify risks associated with performance issues experienced by handheld mobile computing devices, even though Census field staff reported slow and inconsistent data transmissions with the device during the spring Dress Rehearsal operations. The magnitude of these difficulties is not clear, and the Bureau has not fully specified how it plans to measure the performance of the devices. Until the project teams implement key risk management activities, they face an increased probability that decennial systems will not be delivered on schedule and within budget or perform as expected.

Performance of Risk Management Activities by Key Census Acquisition Projects

	Acquisition projects			
Specific practices	**1**	**2**	**3**	**4**
Preparing for risk management				
Determine risk sources and categories	○	●	●	●
Define risk parameters	●	●	●	●
Establish and maintain a risk management strategy	◐	●	●	●
Identify and involve the relevant stakeholders	◐	◐	●	◐
Identify and analyze risks				
Identify and document the risks	●	◐	●	◐
Evaluate, categorize, and prioritize risks	◐	●	●	●
Mitigate risks				
Develop risk mitigation plans	◐	◐	●	○
Monitor status and implement risk mitigation plans	◐	◐	●	◐
Executive oversight				
Review status with executive-level management	○	○	●	●

● practice fully implemented ◐ practice partially implemented ○ practice not implemented

Source: GAO analysis of Census project data against industry standards.

Mr. Chairman and Members of the Subcommittee:

Thank you for the opportunity to participate in today's hearing on the 2010 Decennial Census Information Technology (IT) acquisitions that are an integral part of the reengineered census. As you know, the decennial census is mandated by the U.S. Constitution and provides data that are vital to the nation. These data are used to reapportion the seats of the U.S. House of Representatives, realign the boundaries of the legislative districts of each state, allocate billions of dollars in federal financial assistance, and provide a social, demographic, and economic profile of the nation's people to guide policy decisions at each level of government.

Carrying out the census is the responsibility of the Department of Commerce's Census Bureau, which is now preparing for the 2010 Census. The Bureau is required to count the population on April 1, 2010, and the Secretary of Commerce is required to report to the President on the tabulation of total population by state within 9 months of that date.[1]

The Bureau plans to rely on automation and technology to improve the coverage, accuracy, and efficiency of the 2010 Census, and has awarded four key IT contracts to that end. It is also holding what it refers to as a Dress Rehearsal, from February 2006 through June 2009, a period centering around a mock Census Day on April 1, 2008.[2] Planned Dress Rehearsal activities include operational testing of the 2010 Census systems in a census-like environment. The Bureau estimates that its IT acquisitions will absorb about $3 billion of the total $11.5 billion cost of the entire census.

As requested, our testimony today will summarize our report on the four key IT acquisitions. In the report, we (1) determined the status and plans, including schedule and costs, for four key IT acquisitions; and (2) assessed whether the Bureau is adequately managing the risks facing these key system acquisitions.[3] The report contains a detailed overview of the scope and methodology we used. As you also requested, our testimony today describes GAO's preliminary observations on the performance of handheld

[1]13 U.S.C. 141 (a) and (b).

[2]Since issuance of our report in October 2007, the Bureau has tentatively moved the mock Census Day from April 1, 2008 to May 1, 2008.

[3]GAO, *Information Technology: Census Bureau Needs to Improve Its Risk Management of Decennial Systems*, GAO-08-79 (Washington, D.C.: Oct. 5, 2007).

mobile computing devices used during address canvassing activities in the Dress Rehearsal.[4] The preliminary observations presented in this report are based on field work we have conducted at the two Dress Rehearsal sites (Stockton, CA and Fayetteville, NC), as well as a review of Bureau documentation of its own observations of the Dress Rehearsal. The work on which this testimony is based was performed in accordance with generally accepted government auditing standards.

Results in Brief

As of October 2007, three key systems acquisitions for the 2010 Census were in process, and a fourth contract had recently been awarded:

- In one project, the Bureau is modernizing the database that provides address lists, maps, and other geographic support services for the census. This project is on schedule to complete improvements by the end of fiscal year 2008 and is meeting cost estimates.
- In a second project, the Bureau is acquiring systems, equipment, and infrastructure for field staff to use in collecting census data. Deliverables provided to date include handheld mobile computing devices and installation of key support infrastructure. However, the schedule for this acquisition has been revised, resulting in delays in system development and testing of interfaces. Also, the life-cycle cost estimates for this program have increased, and we projected an $18 million cost overrun by December 2008. According to the contractor, the overrun is due primarily to an increase in the number of system requirements.
- In a third project, the Bureau is acquiring a system for integrating paper, telephone responses, and field operations. The software development and testing are on schedule to provide (by December 2007) an initial system to process the major census forms during the Dress Rehearsal activities. However, the system development schedule was revised in October 2005, which is delaying some functionality. For example, a telephone-assistance system that was originally intended to be completed by fiscal year 2008 has been delayed. This acquisition is meeting current cost estimates.
- Finally, a contract to replace the current system used to tabulate and disseminate census data was recently delayed by about a year (it was

[4]Address canvassing is a field operation to build a complete and accurate address list. In this operation, census field workers go door to door verifying and correcting addresses for all households and street features contained on decennial maps.

ultimately awarded in September 2007). As a result, of the 1-year delay, the Dress Rehearsal activities will use the current tabulation and dissemination system rather than a modernized version.

The delays mean that the Dress Rehearsal operational testing will take place without the full complement of systems and functionality that was originally planned. As a result, further system testing will be necessary to ensure that the decennial systems work as intended. However, as of October 2007, Bureau officials had not finalized their plans for testing all the systems, and it is not clear whether these plans would include testing to address all interrelated systems and functionality, such as end-to-end testing.[5] According to officials, these plans will not be finalized until February 2008. Without sufficient testing of all systems and their functionality, the Bureau increases the risk that costs will increase further, that decennial systems will not perform as expected, or both.

As of October 2007, the four project teams managing the acquisitions had performed many practices associated with establishing sound and capable risk management processes. However, critical weaknesses remained. Specifically, three of the four project teams had developed risk management strategies identifying the scope of their risk management efforts; however, three project teams had weaknesses in identifying risks, establishing mitigation plans that identified planned actions and milestones, and reporting risk status to executive-level officials. For example, one project team did not adequately identify risks associated with performance issues experienced by handheld mobile computing devices. Further, in May and June 2007, both we and the Census Bureau observed the use of the handheld mobile computing device in Census-like conditions and these observations revealed a number of performance issues with the devices, such as slow and inconsistent data processing. The magnitude of these performance issues remains unclear. The Field Data Collection Automation (FDCA) contract anticipates the Bureau's need for data on the performance of the handheld mobile computing device; however, the Bureau has not fully specified the performance data it will use for the devices. As we have previously reported, a root cause of weaknesses in completing key risk management activities is the lack of

[5]End-to-end testing is a form of operational testing that is performed to verify that a defined set of interrelated systems that collectively support an organizational core business function interoperate as intended in an operational environment. The interrelated systems include not only those owned and managed by the organization, but also the external systems with which they interface.

policies for managing major acquisitions at the Bureau.[5] Until the project teams implement key risk management activities, they face an increased probability that decennial systems will not be delivered on schedule and within budget or perform as expected.

Because the entire complement of systems will not be available for Dress Rehearsal activities as originally planned, we recommended that the Census Bureau plan for and perform end-to-end testing so that all systems are tested in a census-like environment. Further, to help ensure that the three key acquisitions for the 2010 Census operate as intended, we recommended that the project teams strengthen risk management activities, including those associated with risk identification, mitigation, and oversight.

In written comments on a draft of our report, the department agreed to examine additional ways to manage risks and prepare a formal action plan in response to our final report. However, the department said it had a major disagreement with our findings with regard to not conducting operational testing on a full complement of the key decennial systems, stating it plans to test all critical systems and interfaces during the Dress Rehearsal or later. Nonetheless, the Bureau's test plans have not been finalized, and it remains unclear whether testing will address all interrelated systems and functionality in a census-like environment, as would be provided by end-to-end testing. Consistent with our recommendation, following up with documented test plans to do end-to-end testing will help ensure that decennial systems will work as intended.

Background

Conducting the decennial census is a major undertaking involving many interrelated steps including

- identifying and correcting addresses for all known living quarters in the United States (known as "address canvassing");
- sending questionnaires to housing units;
- following up with nonrespondents through personal interviews;
- identifying people with nontraditional living arrangements;
- managing a voluminous workforce responsible for follow-up activities;

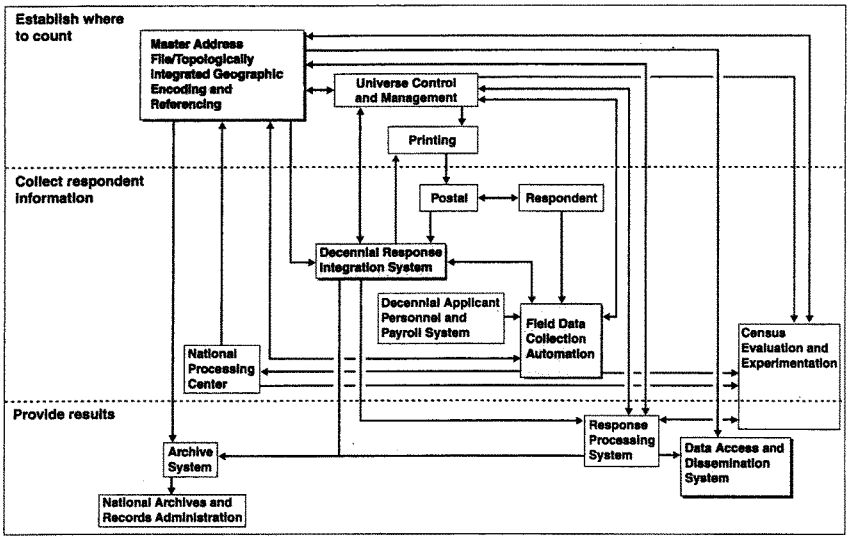
[5]GAO, *Census Bureau: Important Activities for Improving Management of Key 2010 Decennial Acquisitions Remain to be Done*, GAO-06-444T (Washington, D.C.: Mar. 1, 2006).

- collecting census data by means of questionnaires, calls, and personal interviews;
- tabulating and summarizing census data; and
- disseminating census analytical results to the public.

Role of IT in the Decennial Census

The Bureau estimates that it will spend about $3 billion on automation and IT for the 2010 Census, including four major systems acquisitions that are expected to play a critical role in improving coverage, accuracy, and efficiency. Figure 1 shows the key systems and interfaces supporting the 2010 Census, and highlights the four major IT systems we discuss today. As the figure shows, these four systems are to play important roles with regard to different aspects of the process.

Figure 1: Key 2010 Census Systems and Interfaces



Source: U.S. Census Bureau.

Note: Shaded boxes indicate systems discussed in the report.

To establish where to count (as shown in the top section of fig. 1), the Bureau will depend heavily on a database that provides address lists, maps, and other geographic support services. The Bureau's address list, known as the Master Address File (MAF), is associated with a geographic information system containing street maps known as the Topologically Integrated Geographic Encoding and Referencing (TIGER®) database.[7]

[7]TIGER is a registered trademark of the U.S. Census Bureau.

The MAF/TIGER database is the object of the first major IT acquisition—the MAF/TIGER Accuracy Improvement Project (MTAIP).

To collect respondent information (a process depicted in the middle section of fig. 1), the Bureau is pursuing two initiatives. First, the Field Data Collection Automation (FDCA) program is expected to provide automation support for field data collection operations as well as reduce costs and improve data quality and operational efficiency. This acquisition includes the systems, equipment, and infrastructure that field staff will use to collect census data, such as handheld mobile computing devices.[8] Second, the Decennial Response Integration System (DRIS) is to provide a system for collecting and integrating census responses from all sources, including forms, telephone interviews, and handheld mobile computing devices in the field. DRIS is expected to improve accuracy and timeliness by standardizing the response data and providing it to other Bureau systems for analysis and processing.

To provide results (see the bottom section of fig. 1), the Data Access and Dissemination System II (DADS II) acquisition is to replace legacy systems for tabulating and publicly disseminating data. The DADS II program is expected to provide comprehensive support to DADS. Replacement of the legacy systems is expected to

- maximize the efficiency, timeliness, and accuracy of tabulation and dissemination products and services;
- minimize the cost of tabulation and dissemination; and
- increase user satisfaction with related services.

Table 1 provides a brief overview of the four acquisitions.

[8]Handheld mobile computing devices will be used to update the Bureau's address list, to perform follow-up at addresses for which no questionnaire was returned, and to perform activities to measure census coverage.

Table 1: Four Key IT Acquisitions Supporting Census 2010

IT acquisition	Purpose
MAF/TIGER Accuracy Improvement Project (MTAIP)	Modernize the system that provides the address list, maps, and other geographic support services for the Census and other Bureau surveys
Field Data Collection Automation (FDCA)	Provide automated resources for supporting field data collection, including the provision of handheld mobile computing devices to collect data in the field, including address and map data
Decennial Response Integration System (DRIS)	Provide a solution for data capture and respondent assistance
Data Access and Dissemination System (DADS II)	Develop a replacement for the DADS legacy tabulation and dissemination systems

Source: GAO analysis of Census Bureau data.

Responsibility for these acquisitions lies with the Bureau's Decennial Management Division and the Geography Division. Each of the four acquisitions is managed by an individual project team staffed by Bureau personnel. Additional information on the contracts for these four systems is provided in appendix I of the report.

In preparation for the 2010 Census, the Bureau plans a series of tests of its (new and existing) operations and systems in different environments, as well as to conduct what it refers to as the Dress Rehearsal. During the Dress Rehearsal period, which runs from February 2006 through June 2009, the Bureau plans to conduct development and testing of systems, run a mock Census Day, and prepare for Census 2010, which will include opening offices and hiring staff. These Dress Rehearsal activities are to provide an operational test of the available system functionalities in a census-like environment, as well as other operational and procedural activities.

Decennial IT Acquisitions Were at Various Stages of Development and Showed Mixed Progress against Schedule and Cost Baselines

As of October 2007, three key decennial systems acquisitions were in process and a fourth contract had recently been awarded. The ongoing acquisitions (FDCA, DRIS) showed mixed progress in providing deliverables while adhering to planned schedules and cost estimates. The two ongoing projects had experienced schedule delays; the date for awarding the fourth contract was postponed several times. In addition, we estimated that one of the ongoing projects (FDCA) will incur about $18 million in cost overruns. In response to schedule delays as well as other factors, including cost, the Bureau made schedule adjustments and planned to delay certain system functionality. As a result, Dress Rehearsal operational testing will not address the full complement of systems and functionality that was originally planned, and the Bureau has not yet finalized its plans for further system tests. Delaying functionality increases the importance of operational testing after the Dress Rehearsal to ensure that the decennial systems work as intended.

MTAIP Was Completing Improvements on Schedule and at Estimated Cost

MTAIP is a project to improve the accuracy of the MAF/TIGER database, which contains information on street locations, housing units, rivers, railroads, and other geographic features. We reported that MTAIP was on schedule to complete improvements by the end of fiscal year 2008 and was meeting cost estimates.

As of October 2007, the acquisition was in the second and final phase of its life cycle. In Phase II, which began in January 2003 and is ongoing, the contractor is developing improved maps for all 3,037 counties in the United States. We reported that the contractor had delivered more than 75 percent of these maps, which are due by September 2008. Beginning in fiscal year 2008, maintenance for the contract will begin. The contract closeout activities are scheduled for fiscal year 2009.

FDCA Had Provided Deliverables but Had Delayed Functionality and Was Experiencing Cost Increases

FDCA is to provide the systems, equipment, and infrastructure that field staff will use to collect census data. At the peak of the 2010 Census, about 4,000 field operations supervisors, 40,000 crew leaders, 500,000 enumerators and address listers, and several thousand office employees are expected to use or access FDCA.

As of October 2007, the contractor was in the process of developing and testing FDCA software for the Dress Rehearsal Census Day, and had delivered 1,388 handheld mobile computing devices to be used in address canvassing for the Dress Rehearsal. Also, key FDCA support infrastructure had been installed, including the Security Operation Center. In future

contract phases, the project will continue development, deploy systems and hardware, support census operations, and perform operational and contract closeout activities.

However, the Bureau revised FDCA's original schedule and delayed or eliminated some of its key functionality from the Dress Rehearsal, including the automated software distribution system. According to the Bureau, it revised the schedule because it realized it had underestimated the costs for the early stages of the contract, and that it could not meet the contractor's estimated level of first-year funding because the fiscal year 2006 budget was already in place. According to the Bureau, this initial underestimate led to schedule changes and overall cost increases.

According to the Bureau, FDCA was meeting all planned milestones on the revised schedule. For example, all sites for Regional Census Centers and Puerto Rico Area Offices had been identified. According to the Bureau, it is on schedule to open all these offices in January 2008.

The project life-cycle costs had increased. At contract award in March 2006, the total cost of FDCA was estimated not to exceed $596 million. In May 2007, the life-cycle cost rose by a further $23 million because of increasing system requirements, which resulted in an estimated life-cycle cost of about $647 million. Table 2 shows the life-cycle cost estimates for FDCA as of October 2007.

Table 2: FDCA Life-Cycle Cost Estimates

			Cost estimates (in millions)	
Execution period	**Start date**	**End date**	**September 2006**	**May 2007**
Baseline planning period	March 31, 2006	June 30, 2006	$11	$11
Execution Period 1	July 1, 2006	December 31, 2008	200	225
Execution Period 2	January 1, 2009	September 30, 2011	319	318
Execution Period 3	August 1, 2010	End of contract	10	10
Leased equipment	N/A	N/A	12	12
Management reserve	N/A	N/A	7	5
Award fee	N/A	N/A	65	65
Total			**$624**	**$647**

Source: GAO analysis of Census Bureau data.

Note: Total may not add due to rounding.

In addition, FDCA had already experienced $6 million in cost overruns, and both our analysis and the contractor's analysis expected FDCA to experience additional cost overruns. Based on our analysis of cost performance reports (from July 2006 to May 2007), we projected that the FDCA project will experience further cost overruns by December 2008. The FDCA cost overrun was estimated between $15 million and $19 million, with the most likely overrun to be about $18 million. The contractor, in contrast, estimated about a $6 million overrun by December 2008.

According to the contractor, the major cause of projected cost overruns was the system requirements definition process. For example, in December 2006, the contractor noted a significant increase in the requirements for the Dress Rehearsal Paper Based Operations in Execution Period 1. According to the cost performance reports, this increase has meant that more work must be conducted and more staffing assigned to meet the Dress Rehearsal schedule.

The Bureau agreed that cost increases occurred in some cases because of the addition of new requirements, most of which related to the security of IT systems, but added that in other cases, increases occurred from the process of the contractor converting high-level functional requirements into more detailed specific requirements. However, the process of developing detailed requirements from high-level functional requirements does not inevitably lead to cost increases if the functional requirements were initially well-defined.

The FDCA schedule changes have increased the likelihood that the systems testing at the Dress Rehearsal will not be as comprehensive as planned. The inability to perform comprehensive operational testing of all interrelated systems increases the risk that further cost overruns will occur and that decennial systems will experience performance shortfalls.

After a Schedule Revision, DRIS Was Delivering Reduced Functionality at Projected Cost

DRIS is to provide a system for collecting and integrating census responses, standardizing the response data, and providing it to other systems for analysis and processing. The DRIS functionality is critical for providing assistance to the public via telephone and for monitoring the quality and status of data capture operations.

Although DRIS was currently on schedule to meet its December 2007 milestone, the Bureau revised the original DRIS schedule after the contract was awarded in October 2005. Under the revised schedule, the

Bureau delayed or eliminated some functionality that was expected to be ready for the Dress Rehearsal mock Census Day.

According to Bureau officials, they delayed the schedule and eliminated functionality for DRIS when they realized they had underestimated the fiscal years 2006 through 2008 costs for development. As shown in table 3, the government's funding estimates for DRIS Phase I were significantly lower than the contractor's.

Table 3: DRIS Cost Estimates for Phase I (as of March 2006)

	Cost estimates (in millions)	
Fiscal year	**Contractor**	**Government**
2006	$18.6	$11.2
2007	53.3	23.8
2008	48.7	31.5
Total	**$120.6**	**$66.5**

Source: GAO analysis of Census Bureau data.

Originally, the DRIS solution was to include paper, telephone, Internet, and field data collection processing; selection of data capture sites; and preparation and processing of 2010 Census forms. However, the Bureau reduced the scope of the solution by eliminating the Internet functionality. In addition, the Bureau has stated that it will not have a robust telephone questionnaire assistance system in place for the Dress Rehearsal. As of October 2007, the Bureau was also delaying selecting sites for data capture centers, preparing data capture facilities, and recruiting and hiring data capture staff.

Although Bureau officials told us that the revisions to the schedule should not affect meeting milestones for the 2010 Census, the delays mean that more systems development and testing will need to be accomplished later. Given the immovable deadline of the decennial census, the Bureau is at risk of reducing functionality or increasing costs to meet its schedule.

The DRIS project was not experiencing cost overruns, and our analysis of cost performance reports from April 2006 to May 2007 projected no cost overruns by December 2008. As of May 2007, the DRIS contract value had not increased.

DADS II Contract Had Recently Been Awarded after a Delay

The DADS II acquisition is to replace the legacy DADS systems, which tabulate and publicly disseminate data from the decennial census and other Bureau surveys.[9] The DADS II contractor is also expected to provide comprehensive support to the Census 2000 legacy DADS systems.

The DADS II contract award date had been delayed multiple times. The award date was originally planned for the fourth quarter of 2005, but the date changed to August 2006. On March 8, 2006, the Bureau estimated it would delay the award of the DADS II contract from August to October 2006 to gain a clearer sense of budget priorities before initiating the request for proposal process. The Bureau then delayed the contract award again by about another year. In January 2007, the Bureau released the DADS II request for proposal, and the contract was finally awarded in September 2007. Because of these delays, DADS II will not be developed in time for the Dress Rehearsal. Instead, the Bureau will use the legacy DADS system for tabulation during the Dress Rehearsal. Nonetheless, the Bureau plans to have the DADS II system available for the 2010 Census.

Delayed Functionality Increases the Importance of Further Operational Testing

Operational testing helps verify that systems function as intended in an operational environment. However, for operational system testing to be comprehensive, system functionality must be completed. Further, for multiple interrelated systems, end-to-end testing is performed to verify that all interrelated systems, including any external systems with which they interface, are tested in an operational environment. However, as described above, two of the projects had delayed planned functionality to later phases, and one project contract had just recently been awarded in September 2007. As a result, the operational testing that is to occur during the Dress Rehearsal period around April 1, 2008, will not include tests of the full complement of decennial census systems and their functionality. As of October 2007, the Bureau had not yet finalized its plans for system tests. If further delays occur, the importance of these system tests will increase. Delaying functionality and not testing the full complement of systems increases the risk that costs will rise further, that decennial systems will not perform as expected, or both.

[9]The DADS II contract was originally planned to establish a new Web-based system that would serve as a single point for public access to all census data and integrate many dissemination functions currently spread across multiple Bureau organizations.

The Bureau Was Making Progress in Risk Management Activities but Critical Weaknesses Remained

The project teams varied in the extent to which they followed disciplined risk management practices. For example, three of the four project teams had developed strategies to identify the scope of the risk management effort. However, three project teams had weaknesses in identifying risks, establishing adequate mitigation plans, and reporting risk status to executive-level officials. These weaknesses in completing key risk management activities can be attributed in part to the absence of Bureau policies for managing major acquisitions, as we described in an earlier report.[10] Without effective risk management practices, the likelihood of project success is decreased.

According to the Software Engineering Institute (SEI), the purpose of risk management is to identify potential problems before they occur. When problems are identified, risk-handling activities can be planned and invoked as needed across the life of a project in order to mitigate adverse impacts on objectives. Effective risk management involves early and aggressive risk identification through the collaboration and involvement of relevant stakeholders. Based on SEI's Capability Maturity Model® Integration (CMMI®), risk management activities can be divided into four key areas

- preparing for risk management,
- identifying and analyzing risks,
- mitigating risks, and
- executive oversight.

The discipline of risk management is important to help ensure that projects are delivered on time, within budget, and with the promised functionality. It is especially important for the 2010 Census, given the immovable deadline.

[10]GAO-06-444T.

Project Teams Had Usually Established Risk Preparation Activities, but Some Improvements in These Activities Were Needed

Risk preparation involves establishing and maintaining a strategy for identifying, analyzing, and mitigating risks. The risk management strategy addresses the specific actions and management approach used to perform and control the risk management program. It also includes identifying and involving relevant stakeholders in the risk management process. Table 4 shows the status of the four project teams' implementation of key risk preparation activities as of October 2007.[11]

Table 4: Risk Management Preparation Activities Completed for the Key 2010 Census Systems

Specific practices	MTAIP	FDCA	DRIS	DADS
Determine risk sources and categories	○	●	●	●
Define parameters used to analyze and categorize risks and parameters used to control risk management efforts	●	●	●	●
Establish and maintain the strategy to be used for risk management	◐	●	●	●
Identify and involve the relevant stakeholders of the risk management process as planned	◐	◐	●	◐

● practice fully implemented

◐ practice partially implemented

○ practice not implemented

Source: GAO analysis of project data.

As the table shows, three project teams had established most of the risk management preparation activities. However, the MTAIP project team had implemented the fewest practices. The team did not adequately determine risk sources and categories or adequately develop a strategy for risk management. As a result, the project's risk management strategy was not comprehensive and did not fully address the scope of the risk management effort, including discussing techniques for risk mitigation and defining adequate risk sources and categories. In addition, three project teams (MTAIP, FDCA, and DADS II) had weaknesses regarding stakeholder involvement. The three teams did not provide sufficient evidence that the

[11]This analysis primarily addresses project teams' implementation of risk management processes. According to our analysis, the contractors for the three contracts awarded (MTAIP, FDCA, and DRIS) had implemented adequate risk management processes involving risk preparation, risk identification and analysis, and risk mitigation.

relevant stakeholders were involved in risk identification, analysis, and mitigation activities; reviewing the risk management strategy and risk mitigation plans; or communicating and reporting risk management status.

These weaknesses can be attributed in part to the absence of Bureau policies for managing major acquisitions, as we described in our earlier reports.[12] Without adequate preparation for risk management, including establishing an effective risk management strategy and identifying and involving relevant stakeholders, project teams cannot properly control the risk management process.

The Project Teams Had Identified and Analyzed Risks but Not All Key Risks Were Identified

Risks must be identified and described in an understandable way before they can be analyzed and managed properly. This includes identifying risks from both internal and external sources and evaluating each risk to determine its likelihood and consequences. Table 5 shows the status of the four project teams' implementation of key risk identification and evaluation activities at the time of our October 2007 report.

Table 5: Risk Identification and Evaluation Activities Completed for the Key 2010 Census Systems

Specific practices	MTAIP	FDCA	DRIS	DADS
Identify and document the risks	●	◐	●	◐
Evaluate and categorize each identified risk using the defined risk categories and parameters, and determine its relative priority	◐	●	●	●

● practice fully implemented

◐ practice partially implemented

○ practice not implemented

Source: GAO analysis of project data.

[12]GAO, *Information Technology Management: Census Bureau Has Implemented Many Key Practices, but Additional Actions Are Needed*, GAO-05-661 (Washington, D.C.: June 16, 2005) and GAO, *Census Bureau: Important Activities for Improving Management of Key 2010 Decennial Acquisitions Remain to be Done*, GAO-06-444T (Washington, D.C.: Mar. 1, 2006).

As of July 2007, the MTAIP and DRIS project teams were adequately identifying and documenting risks, including system interface risks. For example, the MTAIP project team identified significant risks regarding potential changes in funding and the turnover of contractor personnel as the program nears maturity, and the DRIS project team identified significant risks regarding new system security regulations, changes or increases to Phase II baseline requirements, and new interfaces after Dress Rehearsal.

In contrast, the FDCA project team had not identified or documented any significant risks related to the handheld computers that will be used in the 2010 Census, despite problems arising during the Dress Rehearsal. The computers are designed to automate operations for field staff and eliminate the need to print millions of paper questionnaires and maps used by temporary field staff to conduct address canvassing and nonresponse follow-up. Automating operations may allow the Bureau to reduce the cost of operations; thus, it is critical that the risks surrounding the use of the handheld computers be closely monitored and effectively managed to ensure their success. However, the Bureau has not identified or documented risks associated with a variety of handheld computers performance problems that we identified through field work conducted at your request. Specifically, we found that during Dress Rehearsal activities between May 2007 and June 2007, as the Bureau tested a prototype of the handheld computers, field staff experienced multiple problems. For example, the field staff told us that they experienced slow and inconsistent data transmissions from the handheld computers to the central data processing center. The field staff reported the device was slow to process addresses that were a part of a large assignment area. Bureau staff reported similar problems with the handheld computers in observation reports, help desk calls, and debriefing reports. In addition, our own analysis of Bureau documentation revealed problems with the handheld computers:

- Bureau observation reports revealed that the Bureau most frequently observed problems with slow processing of addresses, large assignment areas, and transmission.
- The help desk call log revealed that field staff most frequently reported issues with transmission, the device freezing, mapspotting and assignment areas.
- Debriefing reports illustrated the impact of the handheld mobile computing problems on address canvassing. For example, one

participant commented that the field staff struggled to find solutions to problems and wasted precious time in replacing the devices.

- A time-and-motion study conducted by the Census Bureau indicated that field staff reported significant downtime in two test locations—about 23 percent in one location and about 27 percent in another location. The study, which is a draft that is subject to change, also described occurrences of failed transmissions and field staff attempts to resolve transmission problems.

Collectively, the observation reports, help desk calls, debriefing reports, and time-and-motion study raised serious questions about the performance of the handheld computers during the address canvassing operation. According to the Bureau, the contractor has used these indicators to identify and address underlying problems during the Dress Rehearsal. Still, the magnitude of handheld computers performance issues throughout the Dress Rehearsal remains unclear. For example, the Bureau received analyses from the contractor on average transmission times. However, the contractor has not provided analyses that show the full range of transmission times, nor how this may have changed throughout the entire operation.

In addition, the Bureau has not fully specified how it will measure performance of the handheld computers, even though the FDCA contract anticipates the Bureau's need for data on the performance of the handheld computers. The FDCA contract outlines the type of data the contractor will provide the Bureau on the performance of the handheld computers. Specifically, sections of the FDCA contract require the handheld computers to have a transmission log with what was transmitted, the date, time, user, destination, content/data type, and the outcome status. Another section of the Bureau's FDCA contract states that the FDCA contractor shall provide near real time reporting and monitoring of performance metrics and a "control panel/dash board" application to visually report those metrics from any Internet enabled PC. However, the contractor and the Bureau are not using a dashboard for Dress Rehearsal activities. Rather, during the Dress Rehearsal, the Bureau plans to identify what data and performance they would need for tracking the performance of the handheld computers in 2010 operations.

In order for the Bureau to ensure that the FDCA handheld computers are ready for full scale operations, it will have to identify risks on a tight time frame. We recommended in a report on the Bureau's earlier version of the handheld computers that the Bureau define specific, measurable

performance requirements for the handheld computer and other census-taking activities that address such important measures as productivity, cost savings, reliability, durability, and that the Bureau test the device's ability to meet those requirements in 2006.[13]We also recommended in a March 2006 testimony that the Bureau validate and approve FDCA baseline requirements.[14] The Bureau is working within a compressed time frame. By law, the decennial census must occur on April 1, 2010, and the results must be submitted to the President in December 2010. These dates cannot be altered, even if preparations are delayed. Access to real-time performance metrics via a "control panel/dash board" would assist Bureau management in assessing the handheld computer's performance and maximize the amount of time the Bureau and the contractor would have to remedy any problems identified during operations. Further, the Bureau's tight 2010 Decennial Operations Schedule allows little time for fixing problems with the device, raising the importance of the Bureau's access to these performance indicators. Such data would help fully inform stakeholders of the risks associated with the handheld computer, and allow project teams to develop mitigation activities to help avoid, reduce, and control the probability of these risks occurring.

Finally, the FDCA and DADSII project teams did not provide evidence that specific system interface risks are being adequately identified to ensure that risk handling activities will be invoked should the systems fail during 2010 Census. For example, although the DADS II will not be available for the Dress Rehearsal, the project team did not identify any significant interface risks associated with this system.

One reason for these weaknesses, as mentioned earlier, is the lack of Bureau policies for managing major acquisitions. If risks are not adequately identified and analyzed, management may be prevented from monitoring and tracking risks, and taking the appropriate mitigation actions, increasing the probability that the risks will materialize and magnifying the extent of damage incurred in such an event.

[13]GAO, *2010 Census: Basic Design Has Potential, but Remaining Challenges Need Prompt Resolution*, GAO-05-9 (Washington, D.C.: January12, 2005).

[14]GAO-06-444T.

Three of Four Project Teams' Risk Mitigation Plans and Monitoring Activities Were Incomplete

Risk mitigation involves developing alternative courses of action, workarounds, and fallback positions, with a recommended course of action for the most important risks to the project. Mitigation includes techniques and methods used to avoid, reduce, and control the probability of occurrence of the risk; the extent of damage incurred should the risk occur; or both. Table 6 shows the status of the four project teams' implementation of key risk mitigation activities.

Table 6: Risk Mitigation Activities Completed for Key 2010 Census Systems

Specific practices	MTAIP	FDCA	DRIS	DADS
Develop a risk mitigation plan for the most important risks to the project, as defined by the risk management strategy	◐	◐	●	○
Monitor the status of each risk periodically and implement the risk mitigation plan as appropriate	◐	◐	●	◐

● practice fully implemented

◐ practice partially implemented

○ practice not implemented

Source: GAO analysis of project data.

Three project teams (MTAIP, FDCA, and DADS II) had developed mitigation plans that were often untimely or included incomplete activities and milestones for addressing the risks. Some of these untimely and incomplete activities and milestones included the following:

- The FDCA project team had developed mitigation plans for the most significant risks, but the plans did not always identify milestones for implementing mitigation activities. Moreover, the plans did not identify any commitment of resources, several did not establish a period of performance, and the team did not always update the plans with the latest information on the status of the risk. In addition, the FDCA project team did not provide evidence of developing mitigation plans to handle the other significant risks as described in their risk mitigation strategy. (These risks included a lack of consistency in requirements definition and insufficient FDCA project office staffing levels).
- The mitigation plans for DADS II were incomplete, with no associated future milestones and no evidence of continual progress in working towards mitigating a risk. In several instances, DADS II mitigation plans were listed as "To Be Determined."

With regard to the second practice in the table (periodically monitoring risk status and implementing mitigation plans), the MTAIP, FDCA, and DADS II project teams were not always implementing the mitigation plans as appropriate. For example, although the MTAIP project team has periodically monitored the status of risks, it mitigation plans do not include detailed action items with start dates and anticipated completion dates; thus, the plans do not ensure that mitigation activities are implemented appropriately and tracked to closure. The FDCA and DADS II project teams did not identify system interface risks nor prepare adequate mitigation plans to ensure that systems will operate as intended. Because they did not develop complete mitigation plans, the MTAIP, FDCA, and DADS II project teams cannot ensure that for a given risk, techniques and methods will be invoked to avoid, reduce, and control the probability of occurrence.

Project Teams Were Inconsistent in Reporting Risk Status to Executive-Level Management

Reviews of the project teams' risk management activities, status, and results should be held on a periodic and event-driven basis. The reviews should include appropriate levels of management, such as key Bureau executives, who can provide visibility into the potential for project risk exposure and appropriate corrective actions. Table 7 shows the status of the four project teams' implementation of activities for senior-level risk oversight at the time of our prior report.

Table 7: Executive-Level Risk Oversight Activities Completed for the Key 2010 Decennial Systems

Specific practices	MTAIP	FDCA	DRIS	DADS
Review the activities, status, and results of the risk management process with executive-level management, and resolve issues	○	○	●	●

● practice fully implemented

◐ practice partially implemented

○ practice not implemented

Source: GAO analysis of project data.

The project teams were inconsistent in reporting the status of risks to executive-level officials. DRIS and DADS II did regularly report risks; however, the FDCA and MTAIP projects did not provide sufficient evidence to document that these discussions occurred or what they covered. Failure to report a project's risks to executive-level officials

reduces the visibility of risks to executives who should be playing a role in mitigating them.

Implementation of GAO Recommendations Should Help Improve the Bureau's Risk Management

To help ensure that the Bureau's four key acquisitions for the 2010 Census operate as intended, we made several recommendations in our report. First, to ensure that the Bureau's decennial systems are fully tested, we recommended that the Secretary of Commerce require the Director of the Census Bureau to direct the Decennial Management Division and Geography Division to plan for and perform end-to-end testing so that the full complement of systems are tested in a census-like environment.

In written comments on a draft of our final report, the department disagreed with our findings that a full complement of systems would not be tested, stating it plans to do so during the Dress Rehearsal or later. Nonetheless, the Bureau's test plans have not been finalized, and it remains unclear whether testing will address all interrelated systems and functionality in a census-like environment, as would be provided by end-to-end testing. Consistent with our recommendation following up with documented test plans to do end-to-end testing will help ensure that decennial systems will work as intended.

Further, we recommended that the Secretary direct the Director of the Census Bureau to ensure that project teams strengthen risk management activities associated with risk identification, mitigation, and oversight. The department agreed to examine additional ways to manage risks and is working on an action plan to strengthen risk management activities.

In summary, the IT acquisitions planned for 2010 Census will require continued oversight to ensure that they are achieved on schedule and at planned cost levels. Although, as of October 2007, the MTAIP and DRIS acquisitions were currently meeting cost estimates, FDCA was not. In addition, while the Bureau was making progress developing systems for the Dress Rehearsal, it was deferring certain functionality, with the result that the Dress Rehearsal operational testing would address less than a full complement of systems. Delaying functionality increases the importance of later development and testing activities, which will have to occur closer to the census date. It also raises the risk of cost increases, given the immovable deadline for conducting the 2010 Census.

Further, the Bureau's project teams for each of the four acquisitions had implemented many practices associated with establishing sound and capable risk management processes, but they were not always consistent:

the teams had not always identified risks, developed complete risk mitigation plans, or briefed senior-level officials on risks and mitigation plans. At this stage, we are particularly concerned about managing the risks associated with the handheld mobile computing devices, the numerous systems interfaces, and the remaining systems testing. Regarding the handheld mobile computing devices, it is critical that performance of these devices is clearly specified, measured, and that deficiencies in performance is effectively addressed. Until the project teams and the Decennial Management Division implement appropriate risk management activities, they face an increased probability that decennial systems will not be delivered on schedule and within budget or perform as expected.

Mr. Chairman and members of the subcommittee, this concludes our statement. We would be happy to respond to any questions that you or members of the subcommittee may have at this time.

If you have any questions on matters discussed in this testimony, please contact David A. Powner at (202) 512-9286 or Mathew Scirè at (202) 512-6806 or by e-mail at pownerd@gao.gov or sciremj@gao.gov. Other key contributors to this testimony include Mathew Bader, Thomas Beall, Jeffrey DeMarco, Richard Hung, Barbara Lancaster, Andrea Levine, Signora May, Cynthia Scott, Niti Tandon, Amos Tevelow, Jonathan Ticehurst, and Timothy Wexler.

Appendix I: Key 2010 Census Information Technology Acquisitions

IT acquisition	Contractor	Purpose	Contract type	Contract award
MAF/TIGER Accuracy Improvement Project (MTAIP)	Harris Corporation	Modernize the system that provides the address list, maps, and other geographic support services for the Census and other Bureau surveys	Cost plus award fee	June 2002
Field Data Collection Automation (FDCA)	Harris Corporation	Provide automated resources for supporting field data collection, including the provision of handheld mobile computing devices to collect data in the field, including address and map data	Cost plus award fee with some firm fixed price elements	March 2006
Decennial Response Integration System (DRIS)	Lockheed Martin Corporation	Provide a solution for data capture and respondent assistance	Cost plus award fee with some firm fixed price elements	October 2005
Data Access and Dissemination System (DADS II)	IBM	Develop a replacement for the DADS legacy tabulation and dissemination systems	To be determined	September 2007

Source: GAO analysis of Census Bureau data.

Mr. CLAY. Thank you.
Mr. Scirè.

STATEMENT OF MATTHEW SCIRÉ

Mr. SCIRÈ. Thank you for the opportunity to be here today. I believe the statement that Mr. Powner made reflects my thoughts as well.

I would just add that we believe that continued oversight is very important at this critical point in time as we approach nonresponse followup, and look forward to working with the committee.

Thank you.

Mr. CLAY. Thank you so much for that. And it is time to get to the questioning.

Let me start with Mr. Kincannon.

Director, we have seen delays in both the FDCA and DRIS systems acquisitions that have required the Bureau the establish later schedules for completing each project.

How is the Bureau managing the risk associated with delaying key functionality for the 2010 census decennial IT system acquisition? And how will this impact the activities of the 2008 dress rehearsal?

Mr. KINCANNON. Mr. Chairman, the effects on the 2008 dress rehearsal are mixed with the CR and its effects on the dress rehearsal. But we believe that the slight delays in work on the DRIS contract, which is in fact within budget, will not adversely affect what we are doing here in the dress rehearsal.

We had to make those rearrangements because, although our lifecycle estimates of the cost for the DRIS contract are still intact, the opinion and advice of the contractor was that the spacing by fiscal year was wrong. And we had to make some adaptations in order to shift funding for certain projects sooner. And therefore, other projects had to be delayed somewhat.

The delays both from the CR and other aspects for FDCA do affect what will be tested in the dress rehearsal. But the key functionalities will be tested in the dress rehearsal. The integration system itself and the ability of handheld analysis to address a canvas has already been tested. The functionality was demonstrated. The problems were identified. And we will carry out later this spring the nonresponse followup for the dress rehearsal using the handheld, and then we will learn more about that test, I am sure.

But we believe that functionality will go forward as planned starting in June.

Mr. CLAY. Mr. Powner.

Mr. POWNER. I think the key is, the functionality is not being tested going into the dress rehearsal. It needs to be tested after the dress rehearsal. That has been our point all along. When you look at the test plans that you would like to see in place, those currently aren't there. So the Census Bureau acknowledges those need to be done, and I think Mr. Kincannon mentioned that there is key 2009 testing that needs to occur, and it is important that we have a plan and we stick to that plan with the post dress rehearsal testing.

Mr. CLAY. How will the Census Bureau address that, Mr. Kincannon? Will you have back-up plans?

Mr. KINCANNON. We have plans to begin testing in 2009 to make sure that we cover all of the important functionalities.

It is not a function of the handheld computers, but it was a function of DADS, which was delayed in being awarded, of not being able to test that with the dress rehearsal data. But we do plan to produce the data using the old DAD system, and we plan to test the new DAD system before 2010 with the data from the dress rehearsal passing through that system again and with data from the 2000 census to make sure that functionality is there.

Mr. CLAY. It is my understanding that the Bureau has engaged with the MITRE Corp. to evaluate the systems under development through a FDCA contract in order to test the reliability and effectiveness of the devices under development.

Can you summarize your findings of MITRE's work for us, and would you also please submit all internal documents regarding MITRE's evaluation to the subcommittee for our records?

Mr. KINCANNON. The work that MITRE has done with us on a number of activities, not just FDCA but other activities in the planning for the 2010 census and for current activities of the Census Bureau, have been very helpful to us. We have not had a formal evaluation done by MITRE of the FDCA project, but they have reflected with us on certain activities, and we will be glad to provide those documents to the subcommittee.

Mr. CLAY. And what was their summary of FDCA?

Mr. KINCANNON. They have some concerns about the match between capacity to get the work done and the amount of time left to get the work done. And we are addressing that, and we will be continuing to address that both with the Harris Corp. and with MITRE and with our internal resources.

It may lead, as I have said in my testimony, to determining that certain functionalities that were planned for the handhelds might be handled in a different way. And although we have not decided that, we are researching several areas to see whether there's a good way to handle those in an alternative way.

Mr. CLAY. Let me ask you this, Dr. Kincannon. Can you tell us with confidence that there are no inherent risks within the FDCA program that will require the Bureau to transition into contingency plans for a paper-based census?

Mr. KINCANNON. I don't see any—I don't see any major risk that we would have to transition into a full backup of a paper-based census. I doubt that we have the resources to do that at this time, and I don't believe that it is necessary.

I believe there will be functionalities where we have to choose different backup.

I'll give you an example. In some hard-to-enumerate areas, there are, typically in every census, high rise buildings, private apartments or housing developments that have high nonresponse rates and require special action on our part. Optimally, we had planned that we would use the handhelds to do that special kind of operation which we referred to as a blitz. Maybe that's an exaggerated term, but it gets people busy.

And, in fact, we have discovered them in the test in Queens where we were conducting a blitz in such a building with the same

kinds of problems, that there were communications problems using the electronic devices that we had then.

It is probably more practical in an isolated case like that to use a back up that is paper-based. You give everybody a stack of questionnaires. They start at the top of the packet and work their way down, or maybe go the other way around. And then you convert those paper forms, as we will for all of the mail-in forms, by scanning them into the system. That is an example of the way of—where we may well use a back-up system that is paper-based but not drop the automation plans now and try to plan a complete census based on paper.

Mr. CLAY. I would like to ask about the DADS two systems that will not be available for the 2008 dress rehearsal. What plans are in place to develop and test this system in time for the 2010 census?

Mr. KINCANNON. Well, the DADS system, the contract was recently just led on DADS to—as we referred to it, we have a lots of names for things, and they make me dizzy sometimes. When I am preparing for something like this, I have to ask repeatedly, now what does DAD mean, and what does, you know, so forth and so on. But you are experienced with this and not only at the census.

We will have a system in time for the 2010 census, and we will have tested its functionality before 2010 by using the data from the 2008 dress rehearsal and also taking data from the 2000 census and running that big volume of data through DADS 2. So I think that is good.

The same company that did DADS 1 won the contract for DADS 2 in a pattern that is all too familiar, and I guess is our fate, so we are confident that they will be all to produce the updated system that is necessary because of the aging of equipment and methods used to do that delivery of data.

Mr. CLAY. In order to strengthen risk management activities for census acquisition, GAO made three recommendations to improve the process in place. These included an end to system testing, processes to mitigate risk and including senior Bureau leadership into decisionmaking activities.

Please discuss your actions to address each of these recommendations.

Mr. KINCANNON. We are committed to end-to-end testing, and we have said that—what we are not able to test in the dress rehearsal, we plan to find the resources, find the time to do this in 2009 so we can be confident of all of those links between the different paper-based and electronically based systems and make sure about that functionality.

On risk identification mitigation, we have, as the GAO observed, a number of provisions in effect and functioning in different offices, but they had very good suggestions for where we can strengthen that. I think it is basically true that we have agreed with their recommendations and are working to implement them.

The involvement of top management in decisionmaking, there is pretty heavy involvement in the top management in the Census Bureau's top three layers of management in decisions about the operations and the procurement and the planning for the 2010 cen-

sus. And we would intend to strengthen that and make sure close attention is paid.

I may have not done every bit of my duty here in my position because I have been in this very odd position, never sure whether October or November or December was going to bring release from my current responsibilities, but I'm going to assume now that I am going to be doing this for a while and will be paying close attention.

Mr. CLAY. You will be holding a place then.

Mr. KINCANNON. Yes, sir.

Mr. CLAY. One of the points that really stands out to me from the GAO assessment is that the risk management plans are pretty weak. And I want to know, is there any plans in place at this point to address the points of GAO brought up about risk management?

Mr. KINCANNON. Yes, sir. We transmitted to the GAO last week an action plan that provided information about how we are addressing that, and we have not heard back, but if they think we have missed some point, then I am sure we will hear further from them. And I am sure GAO can provide that to you. We can provide it.

Mr. CLAY. Let me find out from Mr. Powner.

Have you had an opportunity to look at——

Mr. POWNER. We have looked. There does appear to be a commitment, as I mentioned in my oral statement. There is a commitment to putting national plans in place to more effectively manage risks, and that includes, clearly, three things: An acknowledgment of all of the risks. We saw some gaps. We think those gaps are closing. Having mitigation plans in place and having the key executives fully engaged in mitigating those risks going forward, and we have seen a commitment from the Bureau on that.

Mr. CLAY. This committee would be happy to get your assessment of the plan as well as what was submitted to GAO.

Let me ask also Mr. Kincannon, the Bureau disagreed the GAO's recommendation with regard to performing end-to-end testing so that a full compliment of systems is tested in a census-like environment. In response, you have told GAO that you plan to test all critical systems and interfaces during the dress rehearsal and later. GAO tells us, however, the test plans are not complete.

When will they be completed? And doesn't a decrease in the number of dress rehearsal operations increase the need for end-to-end systems testing between the dress rehearsal and the 2010 decennial?

Mr. KINCANNON. Our disagreement was—we weren't disagreeing with the principle, and we asserted we would be doing the end-to-end testing in the dress rehearsal. Our commitment was based on the approval of the President's budget for the fiscal year, before the CR in other words. It was not desirable to eliminate some of the paper-based functionalities in it from the dress rehearsal test because it denied us the opportunity for an end-to-end test in realistic census-like conditions. We cannot recreate fully those census-like conditions, but we can assemble those components and test them in 2009 in the event of a hot house kind of way to make sure the functionality is there. We are committed to try to do that.

Mr. CLAY. Mr. Powner, any response?

Mr. POWNER. I think it is fair to say, since our report was issued and we went back and forth on that issue, that the Bureau is clearly more committed to testing. That is our perspective on that, and I think a hearing such as this has helped with the situation here.

Mr. CLAY. OK.

Mr. Kincannon, in 2005, GAO recommended that the Bureau define specific measurable requirements for the mobile computing devices and that they test the device's ability to meet those requirements in 2006.

Again, in 2006, GAO recommended that the Bureau obtain validation and approval of baseline requirements for the FDCA project. Have requirements been developed? If not, then why not?

Mr. KINCANNON. Well, we now, from the address canvas, have some baseline data about the performance capabilities of the handhelds in field use. And we have discovered some problems and are dealing with those problems, but we do have a base of data about key aspects of their performance from which we can begin to develop standards that will define not only what we expect from the Harris Corp.'s devices but for what the productivity of individual and enumerators will be.

And we agree with the GAO with whether we have to use the information derived from that activity as the basis for moving forward with practical, realistic goals, performance goals and measures so that we can set standards and then measure performances against those standards.

Mr. CLAY. Mr. Powner, any response? Or Mr. Scirè.

Mr. SCIRÈ. We have learned a little bit more about what the Bureau is doing in the area of measurement, and I think that we described it is that they have taken some first steps. We have learned that the Bureau wasn't even measuring average processing times, as an example. But as you know, an average disguises a lot so we would expect they could go beyond that, look at the distribution processing times, establish performance metrics that are expressed in terms of the percent of instances in which the handheld computers are meeting expectations.

So, for example, you might have a performance metric which would say 95 percent of the time the handhelds are transmitting information within 12 seconds. That is just an example. I don't know that should be the exact number.

But we would expect that the Bureau would then move in that direction and develop performance measures which are much more specific than simple averages. And that is a measurement of times. There are obviously other areas of performance of the handheld devices that you would also expect to develop performance measures that they could then use to hold Harris accountable for the work that they are doing.

Mr. CLAY. Any response to what Mr. Scirè has said?

Mr. KINCANNON. Executive branch agencies complain about GAO, and they are always nagging about this thing or the other. But GAO has been quite helpful in this case in pointing out reasonable things that we need to do that will help make for a better census. And I think we are going to profit from that.

Mr. CLAY. Let me ask Mr. Scirè or Mr. Powner. Please describe for us the major flaws inherent in the Bureau's risk management

strategies for the decennial IT acquisition. Are the flaws based upon lacking or ill-defined system requirements during the design phase, or are there other contract management issues that contribute to the problem?

Mr. POWNER. Clearly, if you look at their risk management activities, some of the things you mentioned there, requirements, management and contract oversight, those are a couple of key risks and that is nothing new. That is something that we have been reporting and you have been asking questions for several years now on.

When you look at their risk management activities, again, what we saw was first of all, certain risks were clearly being made as part of their formal risk management program. For example, system interfaces between the systems, that seemed to fall between the cracks, having the appropriate mitigation plans in place, and also we were looking for key evidence that the executives were engaged in mitigation of those risks.

So those were the key areas where they were lacking.

Mr. CLAY. And you think they have begun to address them?

Mr. POWNER. Yes. I mentioned the action plan that they sent over to us just recently. That is a good start in the right direction to more appropriately manage these risks, but going forward, there is a lot of work because some of these are going to be around for a while. Especially when you start looking at the requirements, creating the remaining testing and pushing a lot out into the later bill to try to get more development testing done in the later phases, and that is difficult given the moveable deadline.

Mr. CLAY. GAO reported that the FDCA cost estimate has increased by more than $50 million and that additional cost increases are expected. What are two reasons for the increase, and are the cost increases correlated with deficiencies in the designs or incomplete definitions of system requirements and in the contracts agreed to with the vendors?

Mr. POWNER. If you look at the cost increases to date, Mr. Chairman, clearly incomplete requirements and growing requirements is one reason why we see increase in costs. Another key reason was a poor estimate to begin with.

Mr. CLAY. So are you saying the Census Bureau did not exactly know what they were purchasing?

Mr. POWNER. I think they knew what they were purchasing, but when you have incomplete requirement definition up front—and the Census Bureau isn't alone in this. We see this commonly throughout the Federal Government where you have incomplete or not a complete cost estimate to begin with. I mean, we had a contract that we increased contract costs twice already. We actually have a technique where we look at burn rates and project overruns. We project additional ones going forward, and I think, with growing requirements, we will expect more increases.

Mr. CLAY. Mr. Powner, for the viewing public, break that down into I guess household terms. If we were purchasing something for a household, give me an example of what went wrong here with the $50 million overrun. How would we——

Mr. POWNER. Clearly, if you look at the reasons for the overrun, it was increasing requirements and, of course, cost estimates. So if

you were building a house, you would have aspects of your house, you know, in terms of square footage, you know, the features you have learned in your kitchen and those types of things; you would define those features going forward. That is what you would expect in a border. So it is no different from a system.

With your system requirements, you would want to see specificity in terms of exactly what you want so that the contractor can then carry out that plan.

As you start adding requirements to a system, it is the same thing as when you start adding systems to your home. If you want something more in the kitchen and want additional square footage or this feature or that feature, you are going to start seeing the cost go up, and that is exactly what is happening with that system.

Mr. CLAY. So if we wanted marble countertops, that would add a little bit more to it.

All right. Thank you for that explanation.

Let me also ask you, GAO recommended that the Bureau perform end-to-end testing on its system. Why is this so important, and what are your concerns in the Bureau's plans in this area? Are the Bureau's reasons for resisting this idea reasonable?

Mr. POWNER. Today we are hearing that there is a receptivity to the end testing, which is a good thing.

The important item here is, because not everything will be tested during the dress rehearsal as originally planned, the inter relationships of these many systems, and there are many—we talked about four major acquisitions today. There are legacy systems, and there are a lot of interfaces here that need to work. So it is important that we have the appropriate integration testing and testing to make sure that not only the individual pieces work, but they work as a whole.

What we did not see was the test plans in place to make sure that this happens. There is a commitment to do the end-to-end testing now, we are hearing, in 2009. And that is a good thing. But that will also require continued oversight to make sure those test plans are complete and that they are vigorously executed.

Mr. SCIRÈ. If I can add to that, the importance I think is that sort of testing be done under census-like conditions. As Mr. Kincannon was saying, that is where you are going to see the limitations of the systems. And for the nonresponse followup to the dress rehearsal, there's a critical interface here that needs to be tested then. It is not something that it could be tested later, and that is the interface between FDCA and DRIS, and how that works with late returns.

One of the arguments for introducing the handheld was a cost savings that would accrue by doing this late mail return. That gives you that capacity. So that is something where that interface would be important to be tested during the dress rehearsal rather than later.

Mr. CLAY. So those are some of the areas that this subcommittee should continue to have oversight over.

Mr. SCIRÈ. Absolutely.

Mr. CLAY. And leading up to the 2010.

So any other areas we need to possibly exercise oversight and really pay attention to?

Mr. POWNER. I think if you look at the testing going forward, that is a key one. In monitoring the cost and scheduling performance of these major acquisitions, clearly you want to do that and then also to—the performance and resolution of the issues with the mobile computing devices, that would be a third.

Mr. SCIRÉ. If I could add to that, as far as looking at the computing device. I think it is true that we still don't know the magnitude of the performance issues that we and the IG and the census itself observed during the address-canvassing dress rehearsal. So I think it is something that deserves continuing oversight.

Mr. CLAY. And in your opinion, the top three acquisition risks facing the Bureau between now and the 2010 census?

Mr. POWNER. I would say the increasing requirements, managing the many interfaces and the remaining testing.

Mr. CLAY. Mr. Kincannon, anything else to add?

Mr. KINCANNON. I had a long dry spell there, Mr. Chairman. But I have two or three.

Mr. CLAY. We will always give you the opportunity to respond.

Mr. KINCANNON. It is true that we think also just about the most important thing, well, the functionalities of the handheld in the dress rehearsal will be tested, and that very important one of how we deal with late rural returns is a big money saver. In the test censuses in 2006, up to 14 percent of the receipts were late mail receipts, and that translates into a lot of savings if we get that information immediately transmitted back to the handhelds in the field so we don't send people to knock on those doors.

In the old system with paper, we were never able to catch up so we would have to knock on those doors again, those being irritated a second time, and we have a second piece of paper and sent it in and then it had to be duplicated. So that is very important, but we are planning to test that in the dress rehearsal. We endeavored in making our modifications to the dress rehearsal, as we deleted or constrained things under the DRIS—under the CR, we tried to preserve the most important things that we really have to have good knowledge about the functionality. We would have liked to have had it all, but we couldn't have it all.

We have mistakes and errors that we have made, but some of them would have been avoided if we hadn't gotten—by the CR.

Let me also say that, of these four contracts, three are essentially on schedule. We have made some schedule modifications and within budget, but one of them is only just beginning. So that is not a fair test, but all three of those have, as a characteristic, they are things that we have done before with contractors. And so those have worked very well because we had experience with them.

The problem with the FDCA was it was something that we have not done before, and we did not do a good job of understanding what the cost should be.

And so we did have to make a change both in the overall cost and in the timing by fiscal year of funding this meeting.

I think that is a distinguishing characteristic.

The GAO report has some very handy little charts, sort of like the consumer reports chart. You know you are going to buy a car. They are the same thing. A little empty circle means you are not doing it right, and a full circle means you are doing it right. And

I think you file consistently the processing order, so that No. 1 is intake and so forth. Winding up with four being DADS. They have been very logical. The intake really looks like the worst of it. It has the most half circles and a couple of completely empty circles, and yet it is on time and within budget. And that is not because we shouldn't be excused of doing these things, but it is because we understood the process and exercised good control even without following some of the proper procedures. But that makes it very important that we follow the proper procedures on FDCA.

Mr. CLAY. And you know, Mr. Director, you have with your tenure here in Washington, with your service at the Bureau and with, I guess we would put it as your tentative stay at the top, and we will get a successor for you; you have been through this before. You know you cannot count on a CR that—we don't know if you get a CR, you get an appropriations bill, and you understand the work of Washington, and that is why it is so important that we get this right. And yes, there will be a dress rehearsal in 2008 but you don't get a dress rehearsal in 2010, and we need to get it right. And I know you are aware of that, and under your stewardship, just keep us on track for 2010 census.

Mr. KINCANNON. I will do my best, sir, thank you.

Mr. CLAY. I know you will.

And with that, I will dismiss this panel and call up the second panel. Thank you all for your statements and testimony.

On our second panel, we have a highly distinguished group of individuals who are highly qualified to address the issues associated with the four major IT acquisitions underway for the upcoming decennial census.

And beginning to my left is Ms. Cheryl L. Janey, who is the president of the civil programs business unit of the Government Communications System Division of Harris Corp. There she overseas the development and production of advanced communication systems for agencies of the U.S. Government and their prime contractors.

And welcome, Ms. Janey.

Ms. Judy F. Marks, is president of Lockheed Martin Transportation and Security Solutions, A division of the Lockheed Martin Corp. In this role, she manages three lines of business which focus on advanced mission, critical information technology solutions, including Census Data Capture and Communications Netware Infrastructure Program.

Thank you for being here, too.

And Mr. Tom Romeo serves as the director of Federal civilian agencies for IBM Global Business System Services. In this role, he is responsible for all IBM services, business relationships and contracts throughout the Federal, Civilian agency community, including the Department of Commerce and Census Bureau.

And I welcome you all together.

And it is the policy of the subcommittee to swear in all witnesses before they testify. I ask you to stand and raise your right hands.

[Witnesses sworn.]

Mr. CLAY. Thank you. Let the record reflect that all witnesses answered in the affirmative.

I will ask each witness to now give an oral summary of his or her testimony and keep it under 5 minutes in duration. Bear in mind that your complete written statement will be included in the hearing record.

And without objection, I would like to submit the opening statement of my colleague and ranking member, Mr. Turner of Ohio.

[The prepared statement of Hon. Michael R. Turner follows:]

Opening Statement of Ranking Member Michael R. Turner
OGR Subcommittee on Information Policy, Census and the National Archives Hearing on
"A Review of the Census Bureau's Risk Management Activities for IT Acquisitions".

December 11, 2007

Mr. Chairman thank you for holding this hearing on The Census Bureau and their key IT programs for the 2010 Decennial Census. I appreciate this Subcommittee's continued interest in the 2010 Decennial Census and following up with the work we did in the last Congress.

As the Bureau continues its preparation for a short-form only census, it is undertaking two major contracts: the Field Data Collection Automation program and the Decennial Response Integration System. These two technology contracts have a combined value of over $1 billion. These major contracts signal the first real "hi-tech" census, and our examination of whether the Bureau is properly managing these programs is critical to the 2010 Decennial Census.

Testing for the 2010 Decennial Census is already underway. The 2010 dress rehearsal is evaluating technology concepts in San Joaquin County California and Fayetteville, North Carolina. I understand key Census activities continue to have problems, including problems with the new handheld computers, which failed to perform adequately.

This is not the first time the handhelds have been tested. In 2006, the Bureau had similar problems during tests in Travis County, Texas and the Cheyenne River Reservation in South Dakota.

The purpose of Bureau's testing is to uncover potential problems and then quickly address them. However, given the results of the 2006 Census tests, and what GAO is reporting today, we will need to determine whether the Bureau has the ability to resolve problems with the handhelds and properly test

them in time for the 2010 Census. Clearly, these issues must be resolved before the 2010 Census.

Mr. Chairman, I look forward to reading witness testimony, especially from the GAO who has been our eyes and ears on this issue since 2005. The closer we get to 2010 the brighter the spotlight will shine on the Census Bureau. Hopefully the work we have done in the past and continue to do today will go a long way towards ensuring a fair and accurate Decennial Census.

Mr. CLAY. And we will now begin with Ms. Janey.
You may begin.

STATEMENTS OF CHERYL L. JANEY, PRESIDENT OF CIVIL PROGRAMS, HARRIS CORP.; JUDY MARKS, PRESIDENT, LOCKHEED MARTIN TRANSPORTATION AND SECURITY SOLUTIONS; AND TOM ROMEO, DIRECTOR, FEDERAL CIVILIAN AGENCIES, IBM GLOBAL BUSINESS SERVICES

STATEMENT OF CHERYL L. JANEY

Ms. JANEY. Congressman Clay, my name is Cheryl Janey, and I am the president of the civil business division for Harris Corp. I am pleased to have the opportunity to discuss the role of Harris in supporting the Census Bureau in the 2010 decennial.

The Field Data Collection Automation [FDCA], program was awarded to Harris in April 2006. Since the contract was awarded, we formed a team of highly skilled professionals focused on successfully supporting the 2010 census. We are delighted with the progress to date and are proceeding at an aggressive pace.

The FDCA program provides the automation support for the Bureau to collect quality data in an efficient and cost-effective manner for the 2010 census. This includes the hardware, applications and infrastructure necessary to support field activities.

We interact daily with the Bureau to manage the technical schedule and cost risks of the program. Rigorous testing has been conducted and will continue throughout the FDCA program.

The handheld device marks the first time enumerators will use electronic means to collect and record data. This is a historic milestone for the Bureau and one which must be met with careful planning and testing to ensure the data remains secure, the process efficient, and ultimately that the decennial is accurate and complete.

In spring 2007, Harris delivered a secure, robust and reliable system as part of the dress rehearsal address-canvassing field operation. During address canvassing, we successfully deployed nearly 1,400 intuitive handheld devices developed by Harris. Key FDCA supported infrastructure were deployed, including the Network Operations Center, Security Operation Center, Data Processing Centers, and a help desk. Overall, the testing and the handheld reliability exhibited during the spring DRAC field operations was encouraging. Valuable information was gathered through the process, which was the purpose of this early field evaluation.

When necessary, Harris utilized secure over-the-air software upgrade procedures to correct defects and maintain operational effectiveness. Some challenges surfaced, including issues with transmission speed and synchronization, but this is understandable at this phase of a program of this size and complexity. Harris developed temporary fixes to the problems encountered and is actively working toward permanent resolution in time for the planned operational tests.

Using the systems engineering approach, we established a lessons learned review board. This board prioritizes and reviews corrective action plans, including the testing process. Once fixes are made and tested, they are integrated into the system and the system test is run to ensure they work to accomplish the desired re-

sults. We have followed this process with critical improvements to transition, speed and synchronization time, among others, ensuring they perform as designed in the upcoming operational tests.

The security of the collected data has been a paramount concern to the Bureau and also of Harris. Multiple overlapping layers of security have been embedded in design and deployment of the handheld devices. We have created security systems to protect Title 13 and other sensitive data during collection and transmission and at any point throughout the process.

The Bureau recently commissioned an independent assessment of the security measures. This assessment validated the technical and procedure designs and risk mitigations that we have incorporated into the program to safeguard data.

Given the unbending census date of April 1, 2010, we have limited time to incorporate any changes required as a result of field integration and field testing. The recent period of reduced funding during the first Continuing Resolution did have some impact on timing and the scope of the planned NRFU dress rehearsal. Harris is actively working with the Bureau developing a revised testing approach for NRFU and all remaining operations that will meet both the financial and timing limitations of the Bureau.

We have confidence in the capability and performance of the infrastructure and are moving carefully and thoughtfully through the planning process to ensure reliability is not compromised and integrity is maintained.

Harris Corp. will continue to support the Bureau in managing risks and will contribute in any way to make sure the 2010 decennial will provide the most accurate, complete and secure count of our Nation's population.

Mr. Chairman, I appreciate the opportunity to testify before you today. I look forward to answering any questions you may have.

[The prepared statement of Ms. Janey follows:]

HARRIS

Testimony of Cheryl L. Janey,
President, Harris Corporation Civil Business Unit,
before the Subcommittee on Information Policy, Census and National Archives
Committee on Oversight and Government Reform
U.S. House of Representatives
December 11, 2007

Chairman Clay, Congressman Turner and members of this distinguished subcommittee, my name is Cheryl Janey and I am the President of the Civil Business Unit for Harris Corporation. I am pleased to have the opportunity to discuss the role of Harris in supporting the Census Bureau in the 2010 decennial. The Field Data Collection Automation (FDCA) program was awarded to Harris in April 2006. Since the contract was awarded, we have formed a team of highly-skilled professionals focused on successfully supporting the 2010 census. We are delighted with our progress to date and are proceeding at an aggressive pace.

The FDCA program provides the automation support for the Bureau to collect high-quality data in an efficient and cost-effective manner for the 2010 census. This includes the hardware, applications, and infrastructure necessary to support field activities. We interact daily with the Bureau to manage the technical, schedule and cost risks of the program. Rigorous testing has been conducted and will continue throughout the FDCA program. The handheld device marks the first time enumerators will use electronic means to collect and record data. This is an historic milestone for the Bureau, and one which must be met with careful planning and testing to ensure the data remains secure, the process efficient, and ultimately that the decennial is accurate and complete.

In Spring 2007 Harris delivered a secure, robust, and reliable system to the Bureau as part of the Dress Rehearsal Address Canvassing (DRAC) field operation. During address canvassing, we successfully deployed nearly 1,400 intuitive handheld devices developed by Harris. Key FDCA support infrastructure were deployed, including the Network Operations Center, Security Operation Center, Data Processing Centers and a Help Desk.

Overall, the testing and the handheld reliability exhibited during the spring DRAC field operations was encouraging. Valuable information was gathered through the process, which was the purpose of this early field evaluation. When necessary, Harris utilized secure "over-the-air" software upgrade procedures during the evaluation to correct defects and maintain operational effectiveness. Some challenges surfaced, including issues with transmission speed and synchronization, but this was understandable at this stage of a program of this size and complexity. Harris developed temporary fixes to the problems encountered and is actively working toward permanent resolution in time for the Non-Response Follow-Up (NRFU) operational test. Using a systems engineering approach, we established a lessons learned review board. This board prioritizes and reviews corrective action plans including the testing process. Once fixes are made and tested they are integrated into the system and a system test is run to ensure they work to accomplish the desired results. We have followed this process with critical improvements to transmission speed and synchronization times, among others, ensuring they perform as designed in the upcoming NRFU operational testing.

The security of collected data has been a paramount concern of the Bureau and also of Harris. Multiple, overlapping layers of security have been embedded in the design and deployment of the handheld devices. We have created a security system to protect Title 13 and other sensitive data at collection or transmission and at any point throughout the process. The Bureau recently commissioned an independent assessment of the FDCA security measures. This assessment validated the technical and procedural design and risk mitigations that we have incorporated into the program to safeguard data.

Given the unbending Census Day of April 1, 2010, we have limited time to incorporate any changes required as a result of field enumeration. The recent period of reduced funding during the first continuing resolution did have some impact on

the timing and the scope of the planned NRFU dress rehearsal. Harris is actively working with the Bureau developing a revised testing approach for NRFU and remaining operations that will meet both the financial and timing limitations facing the Bureau. We have confidence in the capabilities and performance of the system infrastructure and handheld devices and are moving carefully and thoughtfully through planning process to ensure reliability is not compromised and integrity maintained.

Harris Corporation will continue to support the Bureau in managing risk and will contribute in any way to assure that the first automated census will provide the most accurate, complete and secure count of our nations' population.

Mr. Chairman and Members of the Subcommittee, I appreciate the opportunity to testify before you today. I look forward to answering any questions you may have. Thank you.

Mr. CLAY. Thank you so much.
Ms. Marks, you may proceed.

STATEMENT OF JUDY MARKS

Ms. MARKS. Thank you, Chairman Clay.

My name is Judy Marks. I am president of Lockheed Martin Transportation and Security Solutions. I appreciate the opportunity to speak to this community. I am pleased to share the progress we are making on the Decennial Response Integration System [DRIS], program for the 2010 census. Today I will describe what the Lockheed Martin team has done and is doing to keep the DRIS program pivotal to the success of 2010 on track.

First, I want to reassure this committee that we understand how important the census is to our Nation. The constitutional mandate is a weighty responsibility. Certainly one such as the census merits special respect and consideration for the results touch every one of us in this room, indeed touch every individual American.

To this end, I am pleased to report that, to date, 100 percent of the DRIS program deliverables have been made on time and in full compliance with the requirements. Together, Lockheed Martin and the Census Bureau are on schedule and within budget for this core system.

Our team supported the census in conducting the 2000 census, the most accurate in our Nation's history, and we have effectively applied lessons learned from our 2000 experience. Lockheed Martin's leadership program began in 2005 following a competitive proposal process. The responsibilities of the DRIS program include designing, building, testing, deploying, implementing, operating maintaining, and securing the systems, infrastructure, staffing, procedures and all of the facilities needed to successfully carry out the 2010 census.

Through these activities, we provide assistance to the public through the telephone. We will receive, capture and standardize census data provided to telephone agents or through census forms, and we will receive standardized data collected by the handheld computers.

Following the conclusion of the census activity, we will also dispose of the systems and infrastructure associated with the census, and finally, we will decommission the 2010 facilities and staff.

Lockheed Martin has remained within the original Census Bureau total lifecycle funding in addressing DRIS requirements, and we remain committed to delivering DRIS solutions within the planned lifecycle funding and on schedule.

Our role is distinctly separate from two other components of 2010 census represented on this panel, the FDCA program by the Harris Corp. and the Data Access in Dissemination Program led, too, by IBM.

I would like to now touch on some of the highlights of the DRIS program to date.

First, we have completed system development for the upcoming dress rehearsal system and are now in the midst of system integration test efforts. This system has been deployed and is currently being tested and certified at the national processing center in Indiana.

And all of these activities prepare our team for the dress rehearsal in May 2008 where we will test the solution and identify areas that still require refinement prior to 2010. We have already demonstrated multiple functions of the 2008 dress rehearsal system to the Census Bureau and to other stakeholders, thereby continuing to reduce risk to this test. In the time that remains before 2010, Lockheed Martin and the Census Bureau will focus on the following: We will continue to implement a comprehensive system test approach which will drive performance, which will enhance quality and which will reduce risk. We're actively engaging in services of small businesses that can add value in the DRIS program.

Currently, our small business participation objective is 30 percent of our contract value, and I'm proud to say we're on target to surpass this objective. We're continuing our proven record of earned value management, scheduling management and risk management on the program to ensure that DRIS remains fully compliant as it is today and we'll continue to operate as an integrated highly cooperative government industry team from which we all benefit. The census is absolutely critical to every American citizen.

The data the Bureau collects during the process helps foster our democratic process. In order to achieve the success, the Census Bureau must rely on support from an array of people, processes and technology. The DRIS program will use information technology and automation to accurately securely and efficiently count this Nation's population. We are accomplishing this by advancing a strong foundation we've built in partnership with the Bureau, a collaborative team structure, proven risk reduction and program management practices, focus on inclusion of small businesses, and we continue to deliver the right capability on time and within budget. At Lockheed Martin, we are committed to serving the U.S. Census Bureau with excellence and partnership to carry out this critical congressional mandate in 2010.

Mr. Chairman, I look forward to your questions on this statement and my written testimony. Thank you.

Mr. CLAY. Thank you so much, Ms. Marks.

[The prepared statement of Ms. Marks follows:]

Testimony of Judy Marks,
President, Lockheed Martin Transportation and Security Solutions

Before

Information Policy, Census, and National Archives Subcommittee
Oversight and Government Reform Committee

On

Decennial Response Integration System (DRIS) for the 2010 Census
Tuesday, December 11, 2007
2154 Rayburn HOB – 2:00 P.M.

Chairman Clay, Ranking Member Turner and Members of the Committee:

Thank you for the opportunity to discuss the Decennial Response Integration System (DRIS) for the 2010 Census. I look forward to sharing the progress the Lockheed Martin Team has achieved on this important program—specifically, that the program is meeting the Census Bureau's requirements and performing on schedule and within budget. This testimony will outline our team's progress, roles and responsibilities, and program management approaches to ensure that the Census Bureau can conduct the Census on April 1, 2010 and submit the results to the President in December 2010, as mandated in our U.S. Constitution.

We recognize that the data collected in the decennial headcount supports the democratic process—as it is used to determine each state's Congressional representation, as well as to allocate federal and state funds to communities for neighborhood improvements, public health, education, transportation and more.

In order to conduct a census of this size, the Bureau relies on support from an array of people, process, and technology. In the case of the DRIS program, the Bureau has teamed with industry to embrace information technology and automation to accurately, efficiently, securely, and quickly count the nation's growing and changing population. Lockheed Martin supported the Census Bureau for the Census 2000 and we stand in partnership with them today, developing the technology infrastructure to support this large undertaking.

I am here before this committee to talk about the Lockheed Martin team's progress on the Census 2010 DRIS system. I will specifically address our program management approach to keeping the DRIS program, central to Census 2010, on track. I will give examples of planning, testing, and management control activities to ensure that our contractual obligations with the Bureau are met in a timely and cost-effective manner.

The Lockheed Martin team and the Census Bureau are on schedule and within budget for this core system for the 2010 Census. Together, we are using lessons learned from the 2000 Census and applying strong program management disciplines, such as earned value management and risk management, to keep the program on track. We will continue to use these skills and approaches as we prepare for the 2008 Census Test and the 2010 Census.

ROLES AND RESPONSIBILITIES

In September of 2005, the Lockheed Martin team was awarded the DRIS contract after a competitive proposal process. Our contract responsibilities are to support the 2010 Census by designing, building, testing, deploying, implementing, operating, maintaining, securing, and then disposing of the systems, infrastructure, staffing, procedures, and facilities needed to:

- Receive, capture, and standardize census data provided by respondents via census forms and telephone agents;
- Receive standardized data collected via hand-held computers (HHCs); and
- Provide assistance to the public through the telephone.

There are other components of Census 2010 that are not part of Lockheed Martin's DRIS contract and two other components are represented in today's hearing by my panel colleagues from Harris Corporation and IBM. The hand-held computers, which are provided by Harris under the Field Data Collection Automation (FDCA) contract, will directly interface with the DRIS system as a data source. And the Data Access and Dissemination System II (DADS II), which was awarded to IBM in September 2007, provides data tabulation and dissemination services after the 2010 Census data is collected, but does not interface with the DRIS system.

PROGRESS:

The Lockheed Martin team is continuing to meet all of the Bureau's requirements on schedule and within budget. We are preparing to conduct the Census Test in May of 2008 to test the solution and identify areas that need refinement ahead of 2010. With DRIS system development for the Census Test complete, we are now in the process of performing internal testing and certification of the deployed system at the National Processing Center in Jeffersonville, Indiana.

Demonstrated Capabilities:
In preparing for the Census Test, we have demonstrated several functions of the test system to the Census Bureau and other stakeholders. These include:

- Call Center Telephony Demo:
  - Outbound telephone solution to support follow-up on submitted forms;
  - Inbound telephone solution to provide citizens with questionnaire assistance;
- End-to-End Paper Process Demo
  - Accepts, scans, and processes paper forms through the full system.

Testing Approach:
Lockheed Martin believes that thorough system testing drives performance, quality, and risk reduction. The DRIS team employs a robust, comprehensive and progressive test discipline that begins testing at the smallest components of the system and continues to build toward the final testing of a fully-operational system in the field. Gate reviews are embedded into our test plan at strategic progress points to confirm readiness for the next level of testing. In addition to standard systems engineering tests, examples of census system development tests include:

- Validating that census forms and data successfully process through system paths as defined by the Bureau's business process;
- Confirming that the efficiency of the system does not compromise data accuracy; and
- Confirming operation and data transfer accuracy between DRIS and external interfaces (for example, FDCA).

Software Development Maturity:
As part of a larger company assessment initiative, the DRIS program is on track to receive a CMMI assessment; the Software Engineering Institute's rating methodology using the Capability Maturity Model® Integration (CMMI®). CMMI is a model for improving and appraising performance of development organizations. While our DRIS contract requires a CMMI Level 3 maturity, our organization strives for a Level 5 to foster a culture of continuous process improvement and optimize our enterprise-wide engineering and program management processes. Through our commitment to CMMI, we are able to reduce the number of defects, and improve cost estimation and project control to provide our customers with high-quality, technically reliable systems on schedule and on budget. Our CMMI validation audit will complete in early 2008.

Customer Satisfaction:
Our customer satisfaction levels are high as demonstrated by two recent examples of formal feedback. After completing an extensive Integrated Baseline Review, the Census Bureau rated the DRIS program as fully compliant with program requirements to date. In November, our team earned its second consecutive 100 percent award fee for our proven solution, readiness for Census Test, and robust program management processes.

PERFORMANCE SUCCESS FACTORS

Team Experience:
Lockheed Martin's team is fortunate to have significant experience in census systems integration. Our DRIS team has spent many years evolving our census expertise. Lockheed Martin and its partners have specific, and applicable, domain knowledge, examples of which are summarized below, that is being applied on DRIS 2010.

- **Lockheed Martin** has successfully developed, managed and delivered three censuses (US 2000, UK 2001, Canada 2006).
- **IBM**, a trusted telephony solution provider, worked with our team in the 2000 Census.
- **Computer Sciences Corporation,** which leads large-scale paper data capture center operations, managed the Baltimore Data Capture Center in 2000 as a member of TRW's 2000 performance team.
- **Vangent,** in addition to expertise in large-scale paper data capture center operations management, is an internationally-recognized call center management company. Vangent managed the Phoenix Data Capture Center in 2000 as a member of the TRW's 2000 performance team.
- **Cardinal Technologies Services,** a small, veteran-owned business with UK 2001 Census experience, provides strategic support, proposal preparation, and program office support services such as configuration and data management support.
- **Métier,** a small, woman-owned business, provides risk, schedule, and action item management to the DRIS Program Office using experience from the Census 2000.
- **Evolver,** a small business with experience from Census 2000 and UK Census 2001, will deploy the data capture system to operational sites and provide system administration for the deployed system. Evolver is part of Lockheed Martin's Mentor-Protégé Program.

Lessons Learned in 2000
Through our Census 2000 experience, we learned several key lessons that are benefiting the current DRIS program. Lockheed Martin, along with many of our current teammates, helped the Bureau make the 2000 Census the most accurate ever undertaken — processing 120 million forms with a 99

percent accuracy rate. The Data Capture System (DCS) for the Census 2000 used information technology to scan and process the census forms quickly and accurately. It was also the first time the Census Bureau used automated recognition technology to read handwriting. With the Census 2000 as our foundation, we are already achieving even more challenging accuracy goals for automated data capture during our tests performed to date.

We are also leveraging Census 2000 experience as a foundation for forward planning. For example, the DRIS paper system was matured during the last Census, allowing us more time to spend refining and tailoring the Call Center Technology. Additionally, our team was able to take advantage of the Census 2000 facility identification efforts to quickly identify the East Coast Paper Data Capture Facility for the 2010 Census. Currently, we are using that knowledge to help identify our West Coast Facility.

Customer/ Industry Working Relationship
Also key to our strong program performance to date is the working relationship of our team with the Census Bureau. The Bureau's program leadership facilitates effective decision making, establishes clear priorities, and understands the balance between cost, quality, and schedule.

The Census Bureau's ability to optimize its contractor relationships is an invaluable asset on a program of this size. The organization of the Bureau's DRIS program office and the Lockheed Martin DRIS program team mirror each other, creating clear and effective lines of communication.

We operate as a fully-integrated and highly collaborative government/ industry team. Our team stays coordinated through the use of integrated program teams, which include our industry teammates and Bureau staff, to keep communications flowing at all levels. In addition, we leverage technology, such as e-mail, a team portal, and work group collaboration (WGC) tools, to enable open sharing of information and DRIS data with the Census Bureau.

Additionally, we receive constant feedback, both formally and informally, to keep the program on track. The Monthly Technical Monitor Report (TMR), which provides up-to-date feedback on performance, helps identify watch items in several performance categories. Both internal reviews and external reviews with other stakeholders infuse independent oversight.

Program Management Process:
The Lockheed Martin team is committed to rigorous earned value management, schedule management, and risk management as key program management practices to achieve the successful implementation of the 2010 Census. Since establishing the baseline of the program in 2006, the DRIS program has been fully compliant in each of these areas. These tools and processes are how we operate to ensure success.

Earned Value Management:
In 2006, we implemented Earned Value processes for the Census DRIS program. The use of Earned Value Management ensures a comprehensive approach to reviewing cost and schedule variances on a monthly basis. The DRIS program integrated a review of risks and metrics into the earned value review process, enabling the program team to validate cost estimates based on program risk and objective evidence of progress.

The DRIS program requirement to follow Earned Value methodology has been verified and DRIS was declared fully compliant through internal audits conducted in 2006. In addition, the

Government Accountability Office (GAO) has reviewed our implementation of our Earned Value methodology and had no corrective actions or findings.

We use a fully-integrated cost and schedule management tool to define and monitor our progress toward our schedule. This allows the team to immediately see cost impacts driven by changes in the schedule. We also use metrics to conduct a weekly schedule analysis.

Enterprise-Wide Risk Management:
Risk management, a key function of effective program management, helps ensure that the Census will be conducted on time, on budget. We have fully implemented risk management in all aspects of the DRIS program and our plan has been reviewed and validated by the GAO as compliant with the program requirements.

To date, all predicted risks to the 2010 Census are minimal and have containment plans. Our team is using WorkLenz, a tool developed by partner Métier, to track and manage potential risks to the program. Reports are reviewed at weekly team meetings, monthly Cost Reviews as well as quarterly Program Management Reviews (PMRs). Additionally, our team conducts quarterly risk brainstorming sessions with the Census Bureau to discuss potential risks we may encounter in the next phase of the lifecycle as well as provide status on existing risks and the effectiveness of the mitigation steps.

For every key risk, the DRIS team has established weekly working groups to review and monitor development and test progress. We have put measures in place to track the status of key interfaces such as the Census Bureau Headquarters Processing Activity and FDCA. The DRIS and FDCA program teams communicate weekly and monthly on topics such as interfaces, testing, and program management progress to ensure optimal integration at the earliest opportunity to reduce potential downstream risks. These discussions generated contingency planning elements to be embedded into both systems.

In terms of managing the risks connected to security and data privacy, we are taking proactive steps to ensure that all government security requirements are satisfied or exceeded. Our DRIS leadership team includes an industry security expert focused on developing a highly stringent, and visible, information technology, physical and personnel security infrastructure.

CHALLENGES & RISK REDUCTION:

The most significant challenges that we face are:
- Managing risks connected to FDCA;
- Maximizing the value of the 2008 Test;
- Meeting our small business objectives; and
- Managing change as the 2010 Census approaches.

Managing Risks Connected to FDCA:
The Census Bureau plans to provide enumerators with newly procured hand-held computers under the Field Data Collection Automation (FDCA) program to collect census data from those households that do not respond via paper or telephone. As this is a new factor of the 2010 Census, there is some concern about its readiness for Census Test and the 2010 Census.

This program is important to meeting the Census Bureau's objectives and we are working closely with the FDCA contractor, Harris, to ensure its readiness for integration into the DRIS system.

From a quality perspective, the DRIS system is designed to receive data via multiple channels including paper forms, the telephone, and software transfers from approved, secure sources. The method of collection does not impact our ability to deliver high-quality data to the Census Bureau.

Maximizing the Value of the 2008 Test
We are currently testing the primary FDCA /DRIS interface prior to the 2008 Test. We are confident that there will be sufficient testing windows during the Census Test to adequately test the remaining interfaces.

Meeting Our Small Business Objectives:
The Lockheed Martin Team remains focused on the small business participation objective of 30 percent of the total contract value over the entire life of the DRIS 2010 contract. While we are projected to slightly surpass this goal, we remain active on our small business subcontracting plan, outreach, or subcontractor performance management.

In order to keep this objective on track, Lockheed Martin has added a Small Business Advocate to our DRIS program leadership team. Our DRIS Small Business Advocate manages and monitors progress against the proposed subcontracting plan and serves as a main point of contact for potential small business subcontractors. Our DRIS Small Business Advocate, Ms. Jane Cass, can be reached by phone at 301.313.2873 and by e-mail at jane.cass@lmco.com.

Our partners are participating in the 30 percent small business objective as well. Our core industry teammates, which include three small businesses out of seven companies, are actively involved in outreach activities to seek and engage small businesses in all aspects of the program including engineering, development, testing, deployment, and operations support.

The team is taking a multi-task approach to effectively identify and engage small businesses across all social economic groups. These activities include:

- Identifying and soliciting small businesses with needed skills through Lockheed Martin's Corporate Supplier Database and existing on-going Lockheed Martin contracts;
- Participating in congressional sponsored outreach activities such as the Congressional Black Caucus Annual Legislative Conference;
- Reviewing small business referrals from the Census Bureau's Acquisition Division and investigating skill and program requirement matches;
- Establishing and promoting mentor/protégé relationships with small businesses known for exceptional past performance; and
- Leveraging supplier diversity resources to participate in outreach activities such as the National Minority Supplier Development Council Conference, the Native American Conference, the DoD Mentor Protégé Conference, the Veterans Business Conference, the Women's Business Enterprise National Council National Conference, and the DoE Annual Small Business Conference.

Managing Change as the 2010 Census Approaches
Given the importance of the 2010 Census and the significance of the results, late changes may be identified that need to be incorporated into the DRIS solution. We have designed the system to be able to incorporate these changes, as needed. However, all requirements must be reviewed and assessed for complexity and impact to the system before they are agreed to and incorporated.

CONCLUSION

Mr. Chairman, at Lockheed Martin, we are committed to serving the US Census Bureau with excellence to carry out this critical Constitutional mandate in 2010. We are committed to delivering the DRIS system for the 2010 Census on time and on budget. We are managing risks accordingly so that we can remain within the Bureau's budget for the total life cycle cost of the program.

We are particularly proud to have the opportunity to work on a program of such critical, national importance. In so doing, and in strong partnership with the Census Bureau, our team brings to bear our technical skills and resources to implement this initiative in a manner that is timely, accurate, and cost effective. We continue to serve the Bureau with pride and dedication—doing all that we can meet our objectives and minimize external risks to the program so that the Census can be conducted on April 1, 2010.

Mr. CLAY. Mr. Romeo, you may proceed.

STATEMENT OF TOM ROMEO

Mr. ROMEO. Thank you, Mr. Chairman. And thank you for the opportunity to testify before you today. My name is Tom Romeo. I'm the director of Federal services for IBM's Global Services Business in the public sector. I'm here today to talk about IBM's role in supporting the Census Bureau for the 2010 U.S. census, especially focussing on those concerns identified in the GAO report on October 2007. IBM has a long history of working with the Census Bureau. The first automated census of 1890 was the inspiration for the birth of the Hollerith card, the foundation of modern computing, which remained in use through the 1970's. Herman Hollerith's company was one of the founding companies of the IBM Corp. In more recent times, IBM supported the 2000 census as the prime contractor for the first Data Access and Dissemination System [DADS] contract, providing both data tabulation and Internet data dissemination.

In 2005, IBM was proud to be part of the winning Lockheed Martin team on the 2010 Decennial Response and Integration System [DRIS]. Our role in that contract was to provide the systems supporting both the telephony and Internet data collection channels for the 2010 census. In September of this year we were awarded the DADS II contract, and will again be providing data tabulation and Internet data dissemination services for the 2010 census and for other Census Bureau surveys.

The October GAO report identified various concerns regarding the schedule and status of the programs with which we are involved. And we would like to comment briefly on these. With respect to the DADS II contract, although an earlier award would have allowed us to begin development sooner, we do not believe the delay is a significant risk to the timely tabulation of the 2010 census data. We should point out that the original DADS contract was awarded in April 1997, only a few months earlier in the decade than the new DADS II contract.

At that time there were no existing tabulation or dissemination systems, so the risks were arguably higher than it is today. In addition, the proposed replacement tabulation system is built on the same technology and architecture as the original tabulation system, so the upgrades required to make it ready for the 2010 census are not as significant as was required to build the original system for the 2000 census. Using the current tabulation system to support the 2008 dress rehearsal, although not ideal, is a completely workable and low-risk approach to meeting current schedule constraints.

With respect to data dissemination, our system development schedule is built around the launch of the new system in early 2011, and we believe the schedule will give us sufficient time to achieve our objectives. The GAO report also mentioned that the DRIS Telephone Questionnaire Assistance capability, that is the inbound calling functions, will not be developed in time to support the 2008 dress rehearsal. The funding constraints from fiscal year 2006 through fiscal year 2008 described in the GAO report did require the exclusion of some telephone system functionality.

However, most of the functionality selected for exclusion from the 2008 system was part of the 2000 census, and was therefore a lower risk for later deployment. The dress rehearsal telephony system focused instead on outbound calling functions that were not implemented for the 2000 census. We do support additional possibly end-to-end system testing in 2009 that includes the full set of telephony features, which is what the Census Bureau currently plans.

In closing, we would like to express both our commitment to seeing the Census Bureau through a successful 2010 census and our appreciation for the Census Bureau's work today. In our long history of working with the Census Bureau, we have been thoroughly impressed by their professionalism and dedication of both their employees and leaders and by their focus on continuous improvement in technology innovation.

Thank you for the opportunity to testify and I'm happy to answer any questions.

Mr. CLAY. Thank you so much, Mr. Romeo. And thank you all for your testimony.

[The prepared statement of Mr. Romeo follows:]

Testimony of Tom Romeo
Director of Federal Services
IBM Global Business Services, Public Sector

Information Policy, Census and National Archives Subcommittee
Oversight and Government Reform Committee
Tuesday, December 11, 2007
2154 Rayburn HOB – 2:00 P.M.

Hearing on Status of the Census Bureau's Risk Management of Information Technology Acquisitions for the Upcoming 2010 Census

Chairman Clay, Ranking Minority Member Turner, and Members of the Subcommittee, thank you for this opportunity to testify before you today on the status of information technology acquisitions for the upcoming 2010 Census. My name is Tom Romeo and I am Director of Federal Services for IBM's Global Business Services, Public Sector.

IBM is proud to be involved with many projects with the United States Department of Commerce, including our current work effort with the Census Bureau Data Access and Dissemination Systems (DADS) and the Decennial Response Integration System (DRIS). I am here today to talk about IBM's role in supporting the U.S. Census Bureau for the 2010 U.S. Census, with a focus on some of the concerns identified in the GAO report of October 2007 (Report GAO-08-79).

History of the Census and IBM

IBM has a long history of working with the Census Bureau. The first automated census of 1890 was the inspiration for the birth of the Hollerith card, the foundation of modern computing which remained in use through the 1970's. Herman Hollerith's company was

one of the founding companies of the IBM Corporation. More recently, IBM supported the 2000 U.S. Census as the prime contractor for the first Data Access and Dissemination System (DADS) contract, providing both data tabulation and Internet data dissemination.

IBM's Role and Responsibility

Currently, IBM is supporting the Census Bureau as part of two major contracts. In 2005, IBM was proud to be part of the winning Lockheed Martin team on the 2010 Decennial Response and Integration System (DRIS). Our role on that contract is to provide the systems supporting both the Telephony and Internet data collection channels for the 2010 Census. In September of this year, we were awarded the DADS II contract, and will again be providing data tabulation and Internet data dissemination services for the 2010 Census and other Census Bureau surveys. Our work in each of these contracts is described further below.

1. Telephony and Internet data collection channels for the 2010 Census

To further clarify IBM's role within the Census Bureau's activities, let me start with describing our role on the DRIS contract. The DRIS contract initially included data collection from the public via three channels: paper forms, telephone, and Internet. IBM's role on the DRIS team is to provide the systems and technology to support the last two channels: telephone and Internet. Although the Internet channel was removed from the contract, if it is returned, we will be ready to provide a secure, user-friendly, and

highly accurate method of collecting data from the public over the Internet, as we have done in recent Censuses in Canada and Australia.

The telephone channel is currently intended to provide a number of inbound and outbound calling services. Inbound services include the limited collection of new responses, support for follow-up on responses already received via telephone or other channels, responding to requests from the public for replacement forms and foreign language forms and guides, and answering questions from the public about the Census and the specific survey questions. Outbound services include additional follow-up on responses already received. The common enabling technology for the telephone channel is a centralized service composed of an Interactive Voice Response (IVR) with voice recognition software, an Agent Desktop application, and an automated dialer which maximizes efficiency in call processing for both inbound and outbound operations.

We are actively engaged in planning, testing, and control activities as we design and develop these capabilities. The overall system solution was architected and designed as part of the proposal we submitted to the Census Bureau in 2005, and it included our baseline cost estimates. As we prepare to begin each Phase of the program, we work with the Census Bureau in Integrated Project Teams (IPTs) to understand and refine the capabilities to be developed within that phase, and then develop detailed resource estimates showing the hardware, software, and labor skills required over time for each phase of the life cycle. The development is accomplished using a set of iterated builds, each one incorporating more capability than the last, until the functions planned for the

phase are completed. This iterated approach mitigates our risk, since we always have a fully-functional iteration to fall back on. As each component is completed, we incorporate a series of tests into the development of each component of the system, including unit testing, string testing, integration testing, and system testing. Once each component is fully tested, it is released to the next environment for further integrated testing with other components. We monitor and control our progress and spending against schedule and cost baselines, reviewing our progress each month using earned value techniques. Since the program was initiated in 2005, our work has been completely on schedule and slightly under budget, and we are currently forecasting no change from this status for the life of the program.

2. Data tabulation and Internet data dissemination services for the 2010 Census and other Census Bureau surveys.

Moving on to the DADS and DADS II contracts, IBM is responsible for providing the data tabulation and Internet data dissemination services for the 2010 Census and other Census Bureau surveys. For tabulation, IBM will be given the individual household and person records as collected through the DRIS and FDCA contracts and pre-processed, cleansed, and sanitized by the Census Bureau, and produce a large volume of reports. These reports will provide summarize totals of the number of people and number of households in numerous geographic areas across the U.S. including states, cities, counties, zip code tabulation areas, census tracts, census blocks and block groups, voting districts, school districts, and thousands of other geographical divisions of the country. These reports also show demographic data about these regions, including short form data

such as age, race, ethnicity, family relationships, and other characteristics of the population. The tabulation solution we are proposing is based on the system architecture and design that we successfully used to tabulate the short and long-form Census in 2000.

For Internet dissemination, IBM will develop a system to replace the current American FactFinder system (www.factfinder.census.gov). This system offers free public access to tabulated data not only from the decennial Census, but also the results of several other major Census surveys, including the American Community Survey, the Economic Census, many annual Economic surveys, and the Population Estimates program. Proposed new capabilities will offer users better searching and navigation capabilities, more flexible ways to analyze and pivot the information, and additional ways to visualize the data using charts, graphs, and maps. This system will also be based on newer, more adaptable and flexible Internet technology than what was available when we first implemented the system almost eight years ago.

The IBM contract also includes an option for a third system, a limited access ad hoc query system that offers authorized users the opportunity to directly query Census records and produce summarized reports.

Our planning, testing, and control activities for the DADS and DADS II contracts follow a similar process to that described for DRIS. The overall system solution for DADS II was designed as part of the proposal that we submitted in 2007. For each of the upcoming option years of the contract, we will work with the DADS PMO to identify the

specific capabilities and functions to be developed and deployed during the year, and provide detailed resource estimates. These annual updates will fit within the overall structure of our proposal and the contract. Our thorough understanding of the requirements for tabulation and dissemination within the Census Bureau give us a significant advantage in moving forward with the design and development of the associated systems. This year, we are beginning the design of both the tabulation and the dissemination systems to be used in support of the 2010 Census. The majority of the development will take place in 2008, and 2009, with 2010 primarily focused on data conversion, testing, and transition. The DADS systems will also be built using a set of iterations, three iterations for the tabulation system, and four for the dissemination system. Unit and string testing will be done on each module and component within an iteration, and the entire iteration will be subject to independent system and integration testing when complete. Each subsequent iteration will include all the capabilities in the previous iterations; those capabilities will be regression tested with the new iteration. We monitor and control our progress and spending against schedule and cost baselines, reviewing our progress each month using earned value techniques. We have never gone over our authorized funding on the DADS contract, and in several years, have spent less than the authorized amount.

GAO Report (GAO-08-79): Information Technology

The GAO report identified three major areas of concern associated with programs with which IBM is involved: (1) timing of the DADS II contract award and the impact of the delayed award on delivering functionality when required; (2) delays in delivering system

functionality associated with the DRIS Telephone Questionnaire Assistance that will not be tested during the 2008 Dress Rehearsal; (3) risk management. We would like to comment briefly on each of these areas.

(1) Timing of the DADS II contract award and the impact of the delayed award on delivering functionality when required. With respect to the DADS II contract, although an earlier award would have allowed us to begin development sooner, we do not believe the delay is a significant risk to the timely tabulation of Census 2010 data. We should point out that the original DADS contract was awarded in April 1997, only a few months earlier in the decade than the new DADS II contract. At that time, there were no existing tabulation or dissemination systems, so the risk was arguably higher then that it is today. In addition, the proposed replacement tabulation system is built on the same technology and architecture as the original tabulation system, so the upgrades required to make it ready for the 2010 Census are not as significant as was required to build the system in time for the 2000 Census. Using the original system to support the 2008 Dress Rehearsal, although not ideal, is a completely workable and low-risk approach to meeting current schedule constraints.

With respect to data dissemination, the inclusion of this system for the 2008 Dress Rehearsal was never in the plan. Our current data dissemination system development schedule is build around a launch of the new system in early 2011, and we believe this schedule will give us sufficient time to achieve our objectives. The proposed replacement dissemination system expands the use of Commercial Off the Shelf (COTS) software, offering greater capabilities with custom development. Should unforeseen

circumstances occur, we have several risk mitigation strategies identified, such as reducing the number of features incorporated in each system iteration. At worst case, we could disseminate some of the initial 2010 data using the current American FactFinder application, and roll out the new system a bit later. We do not expect this to be required, but we mention it to emphasize that under no circumstances will the Census Bureau be without the ability to disseminate the 2010 results to the public via the Internet.

(2) Delays in delivering system functionality associated with the DRIS Telephone Questionnaire Assistance that will not be tested during the 2008 Dress Rehearsal. The GAO report also mentioned that the Telephone Questionnaire Assistance capability (that is, the inbound calling functions) will not be developed in time to support the 2008 Dress Rehearsal. The funding constraints from FY06 through FY08 described in the GAO report did require the exclusion of some system functionality. However, most of the functionality selected for exclusion from the 2008 system had been part of the 2000 Census, and was therefore felt to be lower risk for later deployment. The Dress Rehearsal telephony system focused instead on outbound calling functions that were not implemented for the 2000 Census. We do support additional, possibly end-to-end system testing in 2009 that includes the full set of telephony features, which is what the Census Bureau currently plans. For the Telephony Channel, the 2009 Test will include inbound calling capabilities such as multi-skill routing, Interactive Voice Response (IVR), the Language Guide and Form Fulfillment, and Short-Form Data Capture – all the capabilities that were not included in the 2008 test. We anticipate that this end-to-end test will achieve the Census Bureau's objectives for full testing prior to the 2010 Census.

(3) Risk management. The GAO report cited several concerns with respect to the Census Bureau's risk management processes. In our opinion, the Census Bureau has one of the most integrated and effective risk management processes that we have seen in the federal government. The Census Bureau's overall approach to system testing, including several large-scale system and operational field tests prior to the actual execution of the Census, could be taken as a model by other organizations with high-risk operational activities. In addition, their commitment to developing a complete Census architecture including all the Census Bureau and contractor-built systems will and has already assisted the Census Bureau in identifying possible issues related to data exchanges between and among the various systems that make up the entire solution. Finally, our working practice with the Census Bureau includes regularly scheduled reviews both of the risks that we identify and our proposed mitigation strategies as well as a discussion of risks identified by the Census Bureau themselves. From our perspective, the Census Bureau takes risk management very seriously.

When looking at each of the specific major programs, the GAO report found that the DRIS program has full implemented its risk management practices, while citing some risk management processes as not being fully implemented within the DADS program. We should point out that at the time of the GAO analysis, the DADS II contract had not yet been awarded. Of the nine specific risk management practices cited by GAO, the DADS program was found to have fully implemented five of the practices, partially implemented three of the practices, and not implemented one of the practices. Now that

the contract has been awarded, more specific risk management plans can be put in place. We are also transitioning to enhanced processes under the new contract. In addition, because IBM is the incumbent contractor, many potential risks to the DADS program are now considerably reduced. Our response to each of the four areas not found to be fully implemented are described below:

(1) *Identify and involve the relevant stakeholders of the risk management process as planned* (partially implemented). No specific omissions related to the DADS program were provided by GAO, but we can say that we are involved in presenting risks each month to DADS program stakeholders from across the Census Bureau as part of our regular Program Management Review (PMR), and have been doing so for the past decade. Senior executives and representatives from the various survey programs who use DADS services are invited and attend these meetings. The attendees offer commentary, suggestions, and recommendations if the proposed risk mitigation activities do not appear sufficient or appropriate for the identified risks.

(2) *Identify and document the risks* (partially implemented). The GAO report states that the DADS II projects did not provide evidence that specific system interface risks are being adequately identified to ensure that risk handling activities will be invoked should the systems fail during 2010 Census. For example, GAO notes that although the DADS II will not be available for the Dress Rehearsal, the DADS project team did not identify any significant interface risks associated with this system. What we believe GAO may not realize is that, in comparison with the rest of the Decennial Census interfaces, the requirements for interfacing with the DADS II system are comparatively modest. Only two interfaces are required: one from the Census Bureau's Response Processing System,

which is responsible for cleansing and sanitizing the response data, and the other from the MAF/TIGER system, which describes the mapping between census blocks and the other geographical units for which data is tabulated, such as states, counties, zip codes, census tracts, and other areas. These are essentially one-time data transfers with some test deliveries prior to the final data handoff. As the incumbent contractor, we have significant experience in working with the Census Bureau on these handoffs. Our current understanding is that these interfaces will be very similar to those that were implemented in 2000. Although getting the data on time is clearly on the critical path to delivering the tabulated results to Congress and the public on schedule, we believe that the risk in these interfaces is low in comparison to other interfaces such as the near-real-time data exchanges required between the FDCA and DRIS systems, for example. And in general, IBM works very closely with the DADS PMO to identify and document risks. Both IBM and the DADS PMO maintain a register of risks. On a monthly basis, we review the current risks identified by each team, and discuss the risk mitigation actions and contingency plans for the most highly-rated risks. We also regularly identify risks during our weekly joint Project Management Meetings, and as stated earlier, present these risks at our stakeholder Program Management Reviews.

(3) *Develop a risk mitigation plan for the most important risks to the project, as defined by the risk mgmt strategy* (not implemented). The GAO report concludes that the mitigation plans for DADS II were incomplete, with no associated future milestones and no evidence of continual progress in working towards mitigating a risk. In several instances, DADS II mitigation plans were listed as "To Be Determined." However, not only do all of our own risk mitigation plans include specific actions, but to the best of our

understanding, all the risks identified by the DADS PMO have fully defined risk mitigation activities as well.

(4) *Monitor the status of each risk periodically* (partially implemented). The GAO report concluded that the DADS II project teams did not identify system interface risks nor prepare adequate mitigation plans to ensure that systems will operate as intended. In addition, GAO believes that the DADS II risk reviews showed no evidence of developing riskhandling action items, tracking any existing open risk-handling action items, or regularly discussing mitigation steps with other risk review team members. Further, they believe that because they did not develop complete mitigation plans, the DADS II project teams cannot ensure that for a given risk, techniques and methods will be invoked to avoid, reduce, and control the probability of occurrence. However, as stated earlier, we believe that the interface risks for the DADS II system are very low, and that the risk mitigation actions are in place for all the identified risks.

Conclusion

In closing, we would like to express both our commitment to seeing the Census Bureau through a successful 2010 Census, and our appreciation for the Census Bureau's work to date. In our long history of working with the Census Bureau, we have been thoroughly impressed by the knowledge, professionalism, and dedication of its employees and leaders, as well as by their commitment to continuous improvement and technology innovation. We would urge the members of the Committee to support their colleagues in passing the full Commerce Department appropriations bill for FY08 as quickly as possible, allowing us and the Census Bureau to move forward expeditiously both in

executing the 2008 Dress Rehearsal and beginning development of the complete system to be used for the 2010 Census.

Thank you for the opportunity to testify.

Mr. CLAY. Let me start with Ms. Janey.

Significant concerns have been raised that Harris is scheduled for deliverables, such as software and hardware, may not meet the Bureau's schedules for deliverables under FDCA. Can you assure us that your schedules are in concert with the Bureau's deadlines and needs?

Ms. JANEY. I can, Mr. Chairman. We are working with the Bureau on a literally daily basis as well as with the GAO to ensure that our delivery schedule matches the means needs of the Bureau.

Mr. CLAY. OK. Let me ask a question similar to what I asked Mr. Kincannon earlier. Can you describe for us the role Harris played in the FDCA evaluation conducted by MITRE Corp? What types of information or data did Harris provide to MITRE for the evaluation? Can you summarize the findings of MITRE and its characterization of Harris's work under the FDCA contract? And can you state with confidence that there are no interests—inherent risk within the FDCA program that will require the Bureau to transition into contingency plans for a paper-based census?

Ms. JANEY. Well, I will start with the end of that first. Any time a new system is implemented, it's a challenge and there are risks to it. That's why Harris, in conjunction with the Bureau and the varying oversight agencies that are working with the Bureau, are focusing so keenly on ensuring that we are sticking to a plan and sticking to a schedule. I can't speak specifically about the findings that MITRE gave. I think I would direct you to the Bureau or to MITRE themselves. Harris regularly provides significant amounts of data both at the raw data summary level and everything in between. We did coming out of the dress rehearsal where there were some synchronization challenges and timeframes, and have since provided updated information back again to the Bureau and to GAO. So I can't speak specifically for the MITRE summary, but I can tell you that Harris has provided any information that's requested and——

Mr. CLAY. Has MITRE responded back to you all—to Harris with a summary?

Ms. JANEY. No. I think MITRE was working with the Bureau.

Mr. CLAY. I see. OK. Thank you for that response. Let me go to Ms. Marks. Apparently, Ms. Marks, the DRIS project has already experienced one scheduling delay and has been altered to operate at a reduced level of functionality. Can you explain why this is? And was it solely due to inadequate system requirements, definitions from the Bureau?

Ms. MARKS. Mr. Chairman, thank you for that opportunity to answer. The challenge that DRIS ran into when we were competitively selected in 2005 is the Bureau had done their best to identify all of the program requirements that they could that they knew at the time. For example, there are multiple forms used in the census.

For the purpose of running a competitive procurement, the Bureau selected one representative form to have both ourselves and the competition bid. It turns out today there are 62 unique forms and they continue to be defined as we go into 2010. All of those forms will be tested on a paper basis at the dress rehearsal. So it's those kind of additional finite definition that happen as you con-

tinue to go through the decade and as you get closer to the census that are to be expected.

So we are staying within the life cycle limit. We have stayed within that funding profile and we do look forward to a successful 2010 census because of that.

Mr. CLAY. Thank you for that response, Ms. Marks, because of the delays in DRIS, the Bureau will not have a telephone questionnaire assistance system in place for the dress rehearsal. Normally they would have these data capture centers complete by the end. How will you seek to mitigate future system vulnerabilities that arise between the dress rehearsal and the actual 2010 decennial census?

Ms. MARKS. Well, Mr. Chairman, as we were defining what would go into the dress rehearsal with obviously some of the changes that were occurring, we prioritized functions in the following manner: If we had a function that worked—and we are very proud to have been the 2000 census provider—if there was a function that worked, like the telephone questionnaire, we prioritized that to be tested at a later date. What we wanted to test early were the functions that had never been in use before. The most important function being the interface face with FDCA. We are testing all of the primary interfaces with FDCA at the 2008 dress rehearsal, and we believe that is the most critical risk item to retire between ourselves, the Harris Corp., and the Bureau. All of the other functions, they are not going to be in dress rehearsal in 2008. We have proposed, again, within that life cycle funding to the Census Bureau to do it in 2009, including the telephone questionnaire.

Mr. CLAY. And you are pretty comfortable with the telephone questionnaire?

Ms. MARKS. We are. It worked successfully in the past.

Mr. CLAY. Let me go to Mr. Romeo. And thank you for your response. How will the late development of DADS II affect your ability to ensure that the system will be adequately integrated and tested in time for the decennial? What challenges do you foresee that what may require further scheduling delays or cost overruns? And can you describe for us how you plan to test the full functionality of DADS II while it is in development?

Mr. ROMEO. Sure. Thank you, Mr. Chairman. So the award was a little bit later than we had hoped. So we didn't get started as soon as we had hoped. But the testing today—the plan for the testing is to use the existing DADS system for the dress rehearsal test and then to retest with the newly developed system. The data in the DADS system is the data collected by DRIS passed to the Census Bureau cleanse and then passed to DADS for analysis and presentation to the public. And because of that schedule, it is a later requirement in the system. The interfaces between DRIS and the DADS system are very similar to the interfaces that we implemented for the 2000 census, and they are fairly limited. There's two interfaces. So we're very confident that the test, using the existing system, will give us a great head start and the later test with the new system will be adequate to ensure the functionality.

Mr. CLAY. Thank you. Let me ask a panel-wide question. We'll start with Ms. Janey and just move down the line.

Because the Bureau has delayed its schedule for FDCA, DRIS and DADS II contract as well as delayed functionality of key system activities beyond the dress rehearsal, there are increased risks associated with system integration and interoperability among all four acquisitions. Can each of you please describe for us how you are mitigating the risk associated with system compatibility and interoperability prior to April 2010, and has the Bureau effectively managed its enterprise architecture development activities to ensure its systems are fully interoperable and they're integrated? I'll start with you, Ms. Janey and see if you can tackle that.

Ms. JANEY. Well, I liken it to a relay, Chairman Clay. Each individual runner in a relay can operate at his personal best, but that relay team won't win unless the handoffs are efficient. I think the same can be true of the criticality of the interfaces between DRIS and FDCA particularly in this census. I'm happy to tell you that Harris is working with the Bureau, with Lockheed Martin to ensure that we test and rigorously test those interfaces as they developed. Is there as much time as we'd want? No. But I don't think there is ever as much time as we want. We are developing rigorous testing plans at the Bureau's direction and in cooperation with the Bureau, with Lockheed Martin and with all of the contractors involved to ensure that we've tested it adequately far before the 2010 census.

Mr. CLAY. OK. Thank you for that. Ms. Marks.

Ms. MARKS. Mr. Chairman, the DRIS system accepts data from three sources. We either receive the paper forms, we receive inputs via the telephone VRE call centers or we receive them electronically from the FDCA system. And then as Mr. Romeo shared, some of that data after we submit all of this data to the Census Bureau, they are the only people who cleanse it and then several of—some of that data then goes to the DADS system.

So we have the ability to accept data in any one of three manners as a secure manner and we test each of those rigorously. We have already started testing prior to dress rehearsal some files coming to from FDCA to get basically an advanced start on testing some of the interfaces. Again, all of those primary interfaces will be tested in 2008, and we always have the ability to continue in 2009 in the end-to-end test that Director Kincannon spoke of this morning.

Mr. CLAY. Thank you for that. Mr. Romeo.

Mr. ROMEO. Thank you, Mr. Chairman. With the DADS system, because of the similarities to the receipt of data from the 2000 system from the Census Bureau and that we will receive in the 2010 census, we're very confident that the testing will be adequate to ensure that the system is fully functional.

Mr. CLAY. What is the current earned value management data allowing regarding shelving, regarding constant schedule performance for the key acquisitions? Specifically, are you on schedule to deliver on your schedule estimate, Ms. Janey?

Ms. JANEY. As was discussed earlier, requirements have continued to evolve with the FDCA system and we are experiencing a—less than a 10 percent overrun on the project to date.

Mr. CLAY. Has the Bureau adequately defined specific requirements for the major system acquisitions that you are associated with? Has it been clear what they're purchasing?

Ms. JANEY. As Director Kincannon stated earlier, this is the first time a handheld has been used. It's involving a different part of the Bureau, in the field operations. So not surprisingly, there is some evolution to the requirements. That was not unexpected, but it's continued to go. What I'm pleased to tell you is that the Bureau is actively working to get to a point in the very near future where we lock down the requirements so that the requirements are set and we are then moving forward to the date that we are constantly reminded of.

Mr. CLAY. I know that the Harris Corp. has had several government contracts, I guess, in its history. And this is taxpayers' money. So I mean, it's not open-ended. And it ought to be guarded and we should be good stewards of it, all of us.

Ms. JANEY. Absolutely, Chairman Clay. We have—75 percent of Harris money goes to the government in one shape or form.

Mr. CLAY. All right. How about Ms. Marks, your earned value management data, what is it showing?

Ms. MARKS. Our earned value management data shows us on cost and on schedule within the life cycle budget for the DRIS program, and the Census Bureau has completed all requirements definition and they are firm.

Mr. CLAY. And that goes back to your history with the Bureau in, I guess, the 2000 census?

Ms. MARKS. I think the fact that we have personnel who have worked together, the fact that we have people who are skilled in the census domain practice and the fact that those are the people assigned to this project along with a wonderful team of subcontractors who are small and large businesses who all participated in the 2000 census helps us reduce risk and stay on schedule.

Mr. CLAY. Thank you for that response. Mr. Romeo.

Mr. ROMEO. We also are on budget and on schedule.

Mr. CLAY. Thank you for that response.

If anyone else has anything to add?

Ms. MARKS. No, sir.

Mr. CLAY. If not, let me thank you, thank the panel for their indulgence today. And that ends the testimony of this panel. And without objection, the committee is adjourned. Thank you.

[Whereupon, at 3:54 p.m., the subcommittee was adjourned.]

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