STATUS OF THE 2010 CENSUS OPERATIONS

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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STATUS OF THE 2010 CENSUS OPERATIONS

THURSDAY, MARCH 5, 2009

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 10 a.m., in room 2154, Rayburn House Office Building, Hon. Wm. Lacy Clay (chairman of the subcommittee) presiding.

Present: Representatives Clay, McHenry, Maloney, Norton, Driehaus, Towns, Westmoreland, Chaffetz, and Issa.

Staff present: Darryl Piggee, staff director/counsel; Jean Gosa, clerk; Michelle Mitchell and Alissa Bonner, professional staff members; Charisma Williams, staff assistant; Leneal Scott, information systems manager; Lawrence Brady, minority staff director; John Cuaderes, minority deputy staff director; Jennifer Safavian, minority chief counsel for oversight and investigations; Dan Blankenburg, minority director of outreach and senior advisor; Adam Fromm, minority chief clerk and Member liaison; Kurt Bardella, minority press secretary; Chapin Fay, minority counsel; and Dr. Christopher Bright, minority senior professional staff member.

Mr. CLAY. The Information Policy, Census, and National Archives Subcommittee of the Oversight and Government Reform Committee will come to order.

Good morning and welcome to today's hearing. We will receive a progress report from the Bureau on its preparations for the 2010 census. We will also examine recommendations made by GAO for improvements needed to address the Bureau's operational challenges and discuss GAO's most recent report on the Bureau's overall readiness for conducting the decennial census.

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.

We will also recognize each side after the opening statements for 10 minutes each, in agreement with both sides.

Without objection, Members and witnesses may have 5 legislative days to submit a written statement or extraneous materials for the record.

I will open with my statement and recognize our esteemed colleague, Mr. McHenry, for his opening statement.

We are at a critical stage of preparation for next year's decennial census. This will be the Bureau's largest and most expensive census operation, costing taxpayers over $14 billion. The Bureau must use all of these resources to ensure an accurate, fair, and complete count on April 1, 2010.

As chairman, my mission is to help the Bureau to conduct the most accurate census in U.S. history.

Last time, in 2000, the census missed 3 million Americans and 1.4 million homes. Most of those that were missed were poor, many were minorities, and the majority were from urban areas; and that is just not good enough.

My standard is very simple: everyone counts and every person must be counted.

The undercount is extremely damaging to States and local communities. It deprives them of proper political representation, Federal formula dollars, and vital information. For every person the Bureau misses, their local community will lose thousands of dollars of Federal funding for 10 years. And given the economic emergency we all face, no city or State can afford to miss anyone.

The Bureau has less than 1 month to complete preparations for address canvassing. This essential operation will ensure the accuracy of its master address list automation, and it will play a critical role in the success of the 2010 census.

For the first time, addresses will be collected and verified using handheld computers. Today we will focus on the Bureau's progress toward strengthening its integrated IT systems and how they can reduce any risks that would jeopardize an accurate enumeration.

I want to thank all of our witnesses for appearing here today, and I look forward to their testimony.

We will also be joined today by our chairman on the Oversight Committee, Mr. Towns or New York, and the ranking member of the full committee, Mr. Issa of California. Thank you both for joining us.

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

Opening Statement
Wm. Lacy Clay, Chairman
"Status of the 2010 Census Operations"

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

Thursday, March 5, 2009
10:00 A.M.

WE ARE AT A CRITICAL STAGE OF PREPARATIONS FOR NEXT YEAR'S DECENNIAL CENSUS.

THIS WILL BE THE BUREAU'S LARGEST AND MOST EXPENSIVE CENSUS OPERATION, COSTING TAXPAYERS OVER $14 BILLION DOLLARS. THE BUREAU MUST USE ALL OF THESE RESOURCES TO ENSURE AN ACCURATE, FAIR AND COMPLETE COUNT ON APRIL 1, 2010.

AS CHAIRMAN, MY MISSION IS TO HELP THE BUREAU TO CONDUCT THE MOST ACCURATE CENSUS IN U.S. HISTORY.

LAST TIME, IN '2000, THE CENSUS MISSED 3 MILLION AMERICANS AND 1.4 MILLION HOMES. MOST OF THOSE WHO WERE MISSED WERE POOR. MANY WERE MINORITIES. AND THE MAJORITY WERE FROM URBAN AREAS.

THAT'S JUST NOT GOOD ENOUGH.

MY STANDARD IS VERY SIMPLE, EVERY ONE COUNTS AND EVERY PERSON MUST BE COUNTED.

THE UNDERCOUNT IS EXTREMELY DAMAGING TO STATES AND LOCAL COMMUNITIES.

IT DEPRIVES THEM OF PROPER POLITICAL REPRESENTATION, FEDERAL FORMULA DOLLARS AND VITAL INFORMATION.

FOR EVERY PERSON THE BUREAU MISSES, THEIR LOCAL COMMUNITY WILL LOSE THOUSANDS OF DOLLARS OF FEDERAL FUNDING...FOR TEN YEARS.

AND GIVEN THE ECONOMIC EMERGENCY WE ALL FACE,

NO CITY OR STATE CAN AFFORD TO MISS ANYONE.

THE BUREAU HAS LESS THAN ONE MONTH TO COMPLETE PREPARATIONS FOR ADDRESS CANVASSING.

THIS ESSENTIAL OPERATION WILL ENSURE THE ACCURACY OF ITS MASTER ADDRESS LIST.

AUTOMATION AND IT WILL PLAY A CRITICAL ROLE IN THE SUCCESS OF THE 2010 CENSUS.

FOR THE FIRST TIME, ADDRESSES WILL BE COLLECTED AND VERIFIED USING HANDHELD COMPUTERS.

TODAY WE WILL FOCUS ON THE BUREAU'S PROGRESS TOWARDS STRENGTHENING ITS INTEGRATED IT SYSTEMS AND HOW THEY CAN REDUCE ANY RISKS THAT WOULD JEOPARDIZE AN ACCURATE ENUMERATION.

I WANT TO THANK ALL OF OUR WITNESSES FOR APPEARING HERE TODAY AND I LOOK FORWARD TO THEIR TESTIMONY.

Mr. CLAY. I will now yield to the distinguished ranking minority member, Mr. McHenry of North Carolina, for a 5-minute opening statement. Thank you.

Mr. MCHENRY. Thank you, Mr. Chairman. I want to congratulate you on attaining the chairmanship. It is certainly historic for Congress and historic for your family, because your father had the same jurisdiction during his chairmanship, and I know that he is certainly proud of the legacy.

Mr. CLAY. Stop making me blush. Thank you.

Mr. MCHENRY. But it is an historic moment and I certainly appreciate it. I want to work in a bipartisan way with you to ensure all the things that you said in your opening statement, I concur, and I do have this hope that we can work in a bipartisan basis to ensure that all Americans are counted. I have the same concerns as Chairman Clay about the undercount. I am looking forward to hear the Bureau explain their procedures for the undercount and the overcount.

Back in 2008, the full Oversight and Government Reform Committee met to discuss the challenges and funding problems facing the Census Bureau, and identify ways to facilitate a full and accurate count in 2010.

Today, almost a year later, we have the opportunity to ask the Bureau exactly where they are in their preparations for the decennial census; where it should be; and how, with Congress's help, it can get there.

The decennial census is a huge undertaking, the largest peacetime mobilization this country has ever seen. The data that are collected affect how government and businesses allocate the resources from the State level all the way down to the small towns and communities in my district, in Chairman Clay's district, and all across America. Therefore, it is important that the Bureau be as open and honest as possible about their preparation for a full count in 2010 and any associated problems that they might incur.

I think I speak for both myself and the chairman when I say this subcommittee will not point fingers if problems exist—they always will with such a massive undertaking—and we will certainly work with you to change existing plans, and we will work with you early and often to make that happen. This includes letting us know about any funding needs that may come up along the way. The Bureau recently received $1 billion in the stimulus and another $2.7 billion is currently in the 2009 omnibus before the Senate today, as well as appropriations for 2010.

Congress has demonstrated its intent to ensure the Census Bureau has every resource it needs to conduct a full and accurate count. With a sufficiently funded Census Bureau, we can ensure a fair and thorough 2010 census that counts everyone and leaves no justification for using any accounting methods.

Finally, I would like to stress the importance of protecting the integrity of the census without manipulation from either party. I know that is rare to hear in Congress.

As was reported today, yesterday, in a meeting with the Senate Commerce Committee leaders, Commerce Secretary Designee Gary Locke expressed his desire for a Census Bureau free of political pressure from the White House. I am encouraged by his comments

and hope that President Obama accepts the Governor's wishes, and restores control of the Census Bureau to the Department of Commerce. Following that, the next census director, who the President has yet to appoint and name, must also state his opinion on a nonpartisan and accurate census.

Based on new reports, Governor Locke did express his intention to employ statistical sampling as a "accuracy check." I am certain that during the Governor's confirmation hearings he will clarify what exactly that means. And what it must not mean is that sampling will be used in any way to manipulate the census data for partisan gain.

Chairman Clay and I share this goal to ensure that every American, every individual in this country, regardless of any race or socioeconomic status or any locational issues or challenges, or any other characteristic, is not counted. We want to make sure every American is counted.

All ideas brought before this subcommittee to help us achieve this goal will be given thorough consideration, and I am confident that together we can formulate a plan to ensure a full and accurate count in 2010.

Thank you, Mr. Chairman.

[The prepared statement of Hon. Patrick T. McHenry follows:]

Statement of Congressman Patrick McHenry
Ranking Member
Subcommittee on Information Policy, Census, and National Archives
"Status of 2010 Census Operations"
March 5, 2009

Thank you, Chairman Clay, and congratulations on continuing your Chairmanship of this Subcommittee in the 111th Congress.

I know your father served as Chairman of the Committee on the Post Office and Civil Service, which has since merged with Oversight and Government Reform, and I'm glad to see you are continuing his tradition of bipartisanship and open dialogue with the Minority. I share your commitment to ensuring a full and accurate census, and look forward to working with you and the Members of this Subcommittee to ensure every single American is counted in 2010.

In mid-2008, the full Oversight and Government Reform Committee met to discuss the challenges and funding problems facing the Census Bureau and identify ways in which to facilitate a full and accurate count in 2010. Today, almost a year later, we have the opportunity to ask the Bureau exactly where it is in its preparations for the decennial census, where it should be, and how, with Congress's help, it can get there.

The decennial census is a huge undertaking – the largest peacetime mobilization the country has ever seen. The data that are collected affect how government and businesses allocate their resources from the state-level all the way down to small towns and communities. Therefore it is important that the Bureau be as open and honest as possible about their preparations for a full count in 2010 and any associated problems that they might encounter. I think I speak for both myself and Chairman Clay when I say this Subcommittee will not point fingers if problems that exist and the need for changes to existing plans are disclosed early and often.

This includes letting us know about any funding needs that may come up along the way. The Bureau recently received $1 billion in the Stimulus, and another $2.7 billion has been set aside specifically for the 2010 census in the Fiscal Year 2009 Omnibus Appropriations Act which is currently before the Senate. Congress has demonstrated its intent to ensure that the Census Bureau has every resource it needs to conduct a full and accurate count. With a sufficiently funded Census Bureau, we can ensure a fair and thorough 2010 Census that counts everyone and leaves no justification for using "accounting" methods.

Finally, I'd like to stress the importance of protecting the integrity of the census from manipulation from either party. Yesterday, in a meeting with Senate Commerce Committee leaders, Commerce Secretary-Designee Gary Locke expressed desire for a Census Bureau free of political pressure from the White House. I am encouraged by his comments, and hope that President Obama accepts the Governor's wishes and restores control of the census to the Department of Commerce. Following that, the next Census Director must also state his opinion on a non-partisan and accurate census.

Based on news reports, Governor Locke did express his intention to employ statistical sampling as an "accuracy check." I am certain that during the Governor's confirmation hearing he will clarify what exactly that means. What it must not mean is that sampling will be used in any way to manipulate census data for partisan gain.

Chairman Clay and I share the goal of ensuring that every individual in America, regardless of race or socioeconomic status or any other characteristic, will be counted. All ideas brought before this Subcommittee to help us achieve this goal will be given thorough consideration. I am confident that together we can formulate a plan that ensures a full and accurate count in 2010.

Again, thank you Mr. Chairman for holding this hearing and I look forward to hearing from our witnesses.

Mr. CLAY. Thank you, Mr. McHenry. I look forward to our endeavors together. Thank you.

Now I recognize the chairman of the Oversight and Government Reform Committee, the gentleman from New York, Mr. Towns. Welcome to the subcommittee.

Chairman TOWNS. Thank you very much. Let me thank you and, of course, the ranking member, Mr. McHenry, and, of course, the ranking member of the full committee, Congressman Issa.

This is a very, very important subject, and, of course, the census is a top priority for the committee, and I will be following it very, very closely and will be willing to work with you to make certain that we are getting a fair and accurate count.

There is no question that the census is a sensitive issue from a political point of view, because it has a direct impact on how seats are apportioned among the States for this body and the House of Representatives. But my goal is for the committee to carry out its oversight work in a responsible, non-partisan manner. I hope we can keep our focus on the management practices and making certain that they have enough staff to do the job that needs to be done; and let's not get caught up in the political stuff that really does not help us to be able to come up with an accurate count.

Of course, I look forward to working with you, Chairman Clay, Mr. McHenry, and, of course, the members of the committee, as well as the ranking member in the full committee, to make certain that this time we get it right. I do believe that we can get it right, but it is going to require all of us focusing on accurate counting rather than the politics of the situation.

So thank you very much, Mr. Chairman, and I yield back on that note.

[The prepared statement of Hon. Edolphus Towns follows:]

Opening Statement

Edolphus "Ed" Towns, Chairman
Full Committee
Committee on Oversight and Government Reform

"Status of the 2010 Census Operations"
Information Policy, Census, and National Archives Subcommittee

Thursday, March 5, 2009
2154 of the Rayburn House Office Building
10:00 A.M.

Thank you, Mr. Chairman. The Census is a top priority for the Committee, and I will be following it very closely.

A fair and accurate census is the only way we have to ensure fair apportionment of members of the House and distribution of vital services to those who need them most. Past censuses left some people out while over-counting others; we won't accept that this time.

Chairman Clay and I share the goal of making sure that everyone is counted fairly next year, as the law requires. This is a monumental task, but we have to get it right. The entire country—now over 300 million strong—is counting on us.

There is no question that the Census is a sensitive issue from a political point of view, because it has a direct impact on how seats are apportioned among the states for this body, the House of Representatives. But my goal is for the committee to carry out its oversight work in a responsible, nonpartisan manner. I hope we can keep our focus on the management practices that will make the census as accurate as possible, and not get caught up in any political maneuvering.

I look forward to working with Chairman Clay and other members of the Subcommittee and the full Committee as we continue our extensive oversight of this critical function. This won't be the last time you hear from us on the Census; we aren't going away.

Mr. CLAY. Thank you very much, Mr. Chair.

I now recognize the gentleman from California, Mr. Issa.

Mr. ISSA. Thank you, Chairman Clay.

Since 1790, America has endeavored to count accurately all the persons in the United States. It is certainly, today, not as automated as we would like in this coming census, but we have tools we didn't have in 1790. We don't have to go up river and check and see who heard that there was a trapper somewhere beyond the last station that anyone knew existed. So in many ways we will have a more accurate count than we did at our founding.

It is a given, though, that we will not have a perfect count. But since estimates begin after the account, it is critical that we have an actual count from which so many estimates are made of other materials. That is the goal of this committee. I can see that it is the goal of this committee on a bipartisan basis.

And the chairman of the full committee, as well—talked about the importance of an accurate count and of the census in general, I think he did so for a reason that many people today, at this hearing, may not yet understand, and that is that we have the shortest Constitution in the world and, yet, it includes the requirement to count every 10 years every person in the United States. Not every citizen; not every voter. Every person. For that reason, it is something that has been non-partisan since our founding, and I am sure will remain so.

Today, I look forward to hearing from our witnesses how we may strive to be more efficient, if possible, but more effective than ever before in that endeavor, because I am sure that the man or woman up the river in 1790 didn't get counted for reasons of difficulty in getting to that count, and I am sure there will be people like that in this decade. But I would like to hear how we can reduce to the absolute minimum any undercount or error in counting.

With that, Mr. Chairman, I thank you and yield back.

Mr. CLAY. I thank the gentleman from California and I appreciate your comments and your historic perspective on the census.

I now would like to recognize our colleague from Ohio, Mr. Driehaus, for an opening statement.

Mr. DRIEHAUS. Thank you, Mr. Chairman, and thank you very much for calling this hearing this morning.

As has already been stated by the Members, it is critically important that we get the count right when it comes to the census. I happen to represent, Mr. Chairman, the city of Cincinnati in my congressional district, and the city of Cincinnati led the charge in challenging the count in the last census because we had so many people, especially in low income and minority communities in Cincinnati, that were not counted. Obviously, this is an issue that is near and dear to our mayor, Mark Mallory, who has led the charge on behalf of the mayors of cities across the country to make sure that we are in fact ensuring an accurate count of all people, as has been mentioned by Mr. Issa.

So I fully support the efforts of the committee, and I would like to invite you, Mr. Chairman, and the committee, if you are considering field hearings on the topic, to come on out to Southwest Ohio and Cincinnati. I am sure our mayor would greet us with open

arms, and we certainly want to make sure, in Cincinnati, that we have a fair count.

So I thank you and I look forward to the testimony today.

Mr. CLAY. I thank the gentleman for the invitation. Your mayor is a wonderful leader of that community and we look forward to the visit.

I want to recognize the gentleman from Utah, Mr. Chaffetz.

Mr. CHAFFETZ. Thank you. I simply want to echo the sentiments of the chairman and of the ranking member, the idea and the notion that we have a fair and accurate count. I also just want to express—and I hope it can be carried back to the men and women who will be the foot soldiers, if you will, who will be out there participating in this census.

I hope they understand the important duty they take on, but also the thanks from their Government. It is going to be tough, difficult work over a long period of time, but there is a great deal of appreciation for the men and women who will serve and spend their time, effort, and talents in order to execute this census in a fair manner. Just please know that this committee, this body of the U.S. Congress, appreciates their service, to all those who are serving this country for this very important endeavor.

With that, I yield back the balance of my time. Thank you.

Mr. CLAY. I thank the gentleman from Utah for his opening statement. I know they have a stake in this upcoming census.

Mr. CHAFFETZ. I am just glad to be counted on this panel, Mr. Chairman. [Laughter.]

Mr. CLAY. I recognize the gentlewoman from New York, Mrs. Maloney.

Mrs. MALONEY. Thank you so much, Chairman Clay, for calling this hearing. And thank you also to Chairman Towns for attending, as well as Ranking Members Issa and McHenry. Thank you so much for being here on this important issue.

Well, it must be the year before the decennial, since the census is so much in the news. As Yogi Berra used to say, "it's deja vu all over again." This is just like it was in 1999. We have press conferences, press releases, charges, countercharges, accusations. So the census must be next year.

Today we have a hearing to see how the census is doing in getting ready for 2010. But this hearing is where the similarities to 2000 end. The controversies of the 2000 census were over the attempts by the scientists at the Census Bureau to use methods to improve a more accurate count. These were ideological differences over how to accomplish that goal.

Today we have a census that has real operational problems, a census that is facing many last minute operational changes that have not gone through field testing to the extent that operational issues were field-tested in 2000. We are not anywhere near the level of attention and testing that took place in 2000.

Let's just look at one area: the fingerprinting operation. This was added just last summer by the Bush administration. Hundreds of thousands of applicants that census will want to hire will have to be fingerprinted. The images run through the Justice Department's computers and then the results returned to the field offices next year. None of this operation has been field-tested anywhere close

to the type of testing that was done prior to 2000 for similar operations. What if it fails or slows the hiring process? This would really hurt the operations of the census.

Or let us look at the proposed second mailing of census forms. Here you have an operation that was looked at in 2000, and rejected in 2000, that has been added to 2010 without a clear explanation as to how the problems that led to its rejection in 2000 would be dealt with.

Or how the management systems that handle payroll and the enumerators work, since we have had to revert to a paper census, after going to a handheld seemed unworkable after spending millions of dollars.

None of them have been given testing anywhere close to what was done in 2000.

Hopefully, we will hear good news today. But I suspect that we will not hear enough that will convince us that there is not real operational problems in the Census Bureau.

Mr. Chairman, as we look at the 2010 census in the coming months, I hope that you and the committee will also take the time to start looking at 2020—something I know that the Government Accountability Office is already doing—as to how we can avoid this type of situation in the future. As you know, I, along with Chairman Dent and Charlie Gonzalez and many others, have put forth bipartisan legislation to make the Census Bureau an independent agency, to allow it to work over the next 10-year cycle of the census without interference, without changing guidelines, without having its budget diminished and changed and moved around. I hope that the committee will be able to look at that in the coming months as we deal with the problems we will be facing in 2010.

Thank you very much, and I thank all the panelists for being here and all my colleagues.

[The prepared statement of Hon. Carolyn B. Maloney follows:]

Statement Census Hearing 3/5/09
Rep. Carolyn Maloney

Thank you Chairman Clay for calling this hearing and thank you Chairman Towns for attending as well as Ranking Members Issa and McHenry.

Well, it must be the year before the decennial since the Census is now so much in the news. As Yogi Berra used to say, it is déjà vu all over again. This is just like it was 1999; we have press conferences, press releases, charges and accusations so the Census must be next year.

Today we have a hearing to see how the Census is doing in getting ready for 2010 but this hearing is where the similarities to 2000 end. The controversies of the 2000 Census were over the attempts by the scientists at the Census to use methods to improve and get a more accurate count. These were ideological differences over how to accomplish that goal. Today we face a Census that has real operational issues.

A Census that is facing many last minute operational changes that have not been field tested to the extent that operational issues were field tested in 2000 -- not nearly close.

Let's look at the fingerprinting operation added just last summer by the Bush administration. Hundreds of thousands of applicants that Census will want to hire will have to be fingerprinted, the images run thru the Justice Department's computers and then the results returned to the local field offices. None of this operation has had a field test any where close to the type of testing that was done prior to 2000 for similar operations.

What if it fails or slows the hiring process?

Or let us look at the proposed second mailing of Census forms. Here you have an operation that was looked at in 2000 and rejected in 2000 that has been added to 2010 without a clear explanation as to how the problems the led to its rejection in 2000 would be dealt with.

Or how the management systems that handle payroll and the enumerators work since we have had to revert to a paper census. None of them have been given testing any where close to what was done in for 2000.

Hopefully we will hear good news today but I suspect that we will not hear enough that will convince us that there will not be real operation problems later this year.

Mr. Chairman, as we look at the 2010 census in the coming months I would hope that the committee will also take the time to start looking at 2020, something I know that GAO is doing, as to how we can avoid this situation in the future. As you know I along with Congressman Dent and Charlie Gonzales have put in legislation to make the Census

an independent agency, to allow it to work over the ten year cycle of the census without interference. I hope that the committee will be able to look a that in the coming months as we deal with the problems we will be facing in 2010.

Thank you

Mr. CLAY. I thank the gentlewoman for her opening statement and realize that the census is a work in progress, and we have to continue to attempt to perfect it. So I thank you and look forward to working with you.

If there are no additional opening statements, the subcommittee will now receive testimony from the witnesses before us today.

I want to start by introducing our panel. We have with us Mr. Thomas Mesenbourg, the Acting Director of the U.S. Census Bureau. Welcome.

Mr. Robert Goldenkoff, Director of Strategic Issues at the GAO. Thank you for being here. Mr. Goldenkoff's responsibilities include directing work on the 2010 census.

He is accompanied by Mr. David Powner, Director of Information Technology Management Issues. Good to see you again, Mr. Powner.

And last, but certainly not least, Mr. Glenn Himes, who is executive director of the Center for Enterprise Modernization at the MITRE Corp.

I want to welcome all of you all to our hearing today.

It is the policy of the Oversight and Government Reform Committee to swear in all witnesses before they testify. Would all of you please stand and raise your right hands?

[Witnesses sworn.]

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

Each of you will have 5 minutes to make an opening statement. Your complete written testimony will be included in the hearing record. The yellow light will indicate it is time to sum up; the red light will indicate your time has expired.

Mr. Mesenbourg, you may proceed with your opening statement.

STATEMENTS OF THOMAS MESENBOURG, ACTING DIRECTOR, U.S. CENSUS BUREAU; ROBERT GOLDENKOFF, DIRECTOR, STRATEGIC ISSUES, U.S. GOVERNMENT ACCOUNTABILITY OFFICE; DAVID A. POWNER, DIRECTOR, INFORMATION TECHNOLOGY, U.S. GOVERNMENT ACCOUNTABILITY OFFICE; AND GLENN S. HIMES, PH.D., EXECUTIVE DIRECTOR, CIVILIAN AGENCIES, CENTER FOR ENTERPRISE MODERNIZATION, THE MITRE CORP.

STATEMENT OF THOMAS MESENBOURG

Mr. MESENBOURG. Chairman Clay, Chairman Towns, Ranking Member McHenry and Issa, and members of the subcommittee, I appreciate the opportunity to report on the Census Bureau's preparations for the 2010 census. The census is upon us. April 1, 2010 is only 392 days from today and I can report we are well on our way toward a successful enumeration.

A complete and accurate address list is the cornerstone of a successful census. Throughout the decade, we regularly updated the address list we used in census 2000. In 2007, we invited tribal, State, and local governments to review our address list for accuracy and completeness as part of the Local Update of Census Address Programs [LUCA]. 11,500 government entities registered for

LUCA, and over 8,100 provided updates. That accounted for an additional 8 million addresses that we have added to our address list.

Address canvassing, the first major operation in the 2010 census, starts on March 30th and runs through July 17, 2009. During address canvassing, 140,000 Census Bureau employees will walk almost every street in America, checking and updating 145 million addresses. Then, in late September, we will validate the listings for group quarters, which include dormitories, group homes, prisons, and the like. This is the first time that group quarters are part of address canvassing, and their inclusion will improve the accuracy and the coverage of the final count.

In December 2008, we conducted the address canvassing operational field test. The test provided an opportunity for our field staff to test the key functionality of the handheld computers in an environment that approximates a real census. Headquarters staff and all of our 12 regional directors participated in the test. The Government Accountability Office and the Commerce Department's Inspector General staff observed the test. The positive results demonstrated the significant improvement that we have made since dress rehearsal and reinforced our confidence in the operation's production readiness.

In April 2008, the Secretary announced the decision not to use handhelds to collect data during the nonresponse followup operation. Late last spring, we completed the high level plan for enumerators to use paper forms to collect information from non-respondents, just as we have done in previous censuses.

In October 2008, we re-scoped the field data collection automation contract responsibilities. The Census Bureau took over responsibility for a number of operations, including the help desk and the operational control system, which is the nerve center for our 494 local census offices that will be responsible for 2010 data collection operations. We made these re-scoping decisions to reduce the overall risk to the census. We have done these operations before and we are confident in our ability to do them again.

At the end of January 2009, we completed the schedule for development, testing, and deployment of the 2010 operational control system that will support 2010 data collection activities, including nonresponse followup. We are making good progress on system development and testing is scheduled to begin April 20, 2009. We will also continue to closely monitor the development and testing of the paper-based operations themselves.

We agree with GAO for the need of a comprehensive testing program. We believe, over the past 11 months, we have established a very robust testing program that is responsive to the recent GAO testing recommendations. GAO made nine recommendations outlining 28 steps that should be taken to strengthen our testing program. We have already implemented 16 of the steps they specified, and 8 others are planned to be implemented. Of the remaining four steps, two of the steps take place later in the cycle and we will implement them at the appropriate time, and an additional step we are going to seek clarification from GAO about their intent on those.

We are also taking steps to address GAO's concerns related to cost estimates. We appreciate GAO's recommendations and we re-

cently provided them with an action plan, and we certainly are committed to implementing those steps outlined in that plan.

In closing, I believe that our current plan has significantly reduced the risk to the 2010 census, and we are prepared to meet the challenges that lie ahead. Members of the subcommittee, the Census Bureau is on track for a successful census, and I am happy to take your questions.

[The prepared statement of Mr. Mesenbourg follows:]

PREPARED STATEMENT OF
THOMAS MESENBOURG
ACTING DIRECTOR
US CENSUS BUREAU

Critical Operations of the 2010 Census – Status Update

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

5 March, 2009

Mr. Chairman, Members of the Sub-Committee, I appreciate this opportunity to report on the Census Bureau's preparations for the 2010 Census. The Census is upon us. April 1, 2010 is only 392 days from today, and I can report that we are well on our way toward a successful enumeration. Today, I will provide an update on the early operations that are now underway and an overview of our testing efforts for the broad array of systems in place to support the collection, integration and tabulation of census data.

A complete and accurate address list is the cornerstone of a successful Census. Throughout the decade we regularly updated the Address List we used in Census 2000 with records from the U.S. Postal Service. Then, in 2007, we invited Tribal, State and Local Governments to review our address lists for accuracy and completeness during the Local Update of Census Addresses Program, what we call LUCA. 11,500 governments registered for LUCA, and 8,188 provided feedback. As a result, we have identified 8 million addresses that have been added to our address list development operation.

We are now training staff for the Address Canvassing operation, the first major operation in the 2010 Census. During Address Canvassing 140,000 Census Bureau employees will walk every street in America checking 145 million addresses and updating the 2010 Census address list. The Address Canvassing operation runs from March 30 – July 17, 2009. Then, in late September, Census employees will validate the listings for what we call Group Quarters, which include dormitories, group homes, prisons, and the like. This is the first time that Group Quarters are part of Address Canvassing, and their inclusion

will improve the accuracy and coverage of the final count. I am pleased to report we are on schedule. Nearly 150 Early-opening Local Census Offices are now open for business, and we have a pool of over 900,000 applicants that we will draw from to field the needed workforce.

Our address listers will be verifying and updating the Address List using handheld computers to capture GPS coordinates for most of the housing units in the country. In December 2008, we conducted the Address Canvassing Operational Field Test. The test provided an opportunity for our field staff to test for a second time key functionality of the handheld computers in an environment that approximates a real census. Our Regional Directors, the Census officials responsible for the program, participated in the test, and the Governmental Accountability Office (GAO) and the Office of Inspector General (OIG) joined the field staff as observers. We were pleased and encouraged by the feedback from listers and observers. The test results confirmed that significant improvements have been made since the Dress Rehearsal and reinforced our confidence in the readiness of the system as we prepare to implement the operation next month.

As you know, the Field Data Collection Automation (FDCA) Program, which includes the handheld computers and the systems that support them, presented enormous developmental challenges last year. In April 2008, after extended consultations with former Census Bureau officials, current staff, and experts from the private sector, the Secretary announced the decision to address these challenges by re-planning our field operations and abandoned the use of handhelds to electronically capture information from households that do not return forms. We call this operation Nonresponse Follow-up (NRFU), and we will use paper-based methods to collect information from non-respondents as we have in prior censuses.

Throughout the summer we worked intensely with our contractor to continue development of the FDCA program and determine the correct delineation of responsibilities. We identified concerns about the progress of what we call the Operations Control System (OCS) for our paper-based operations. These paper-based operations include the NRFU interviews, operations in rural areas where we leave a form for households to mail back, interviews with Group Quarters, and enumeration activities at transient locations like campgrounds. The OCS encompasses the software and systems that form the nerve center for 494 field offices. It is used to define enumerator assignments, and to monitor and report on enumerator productivity. To address these concerns we made the decision in October 2008 for the Census Bureau to assume responsibility for the development of this component of the FDCA program as well. Field enumerators will be conducting a wide range of information gathering activities central to the 2010 Census. We rely on the OCS and need to be sure it is in place and functioning effectively as field operations begin. Assuming responsibility for its development was the best way to ensure this.

It is important to stress that the decisions to move to a paper-based NRFU, and to take control of the development of the OCS, were made to *reduce* the risk of system or operational failure because we have successfully done these things before and are confident in our ability to do them again.

GAO draws appropriate attention to the need for a rigorous and complete testing program. We agree with GAO that a comprehensive testing program is required. Since the initial re-plan in April 2008, we have focused on the things we have not done before to demonstrate to our own satisfaction that the new software and systems will work in production. We worked over the summer to develop a testing inventory and conduct a gap analysis. We then introduced testing metrics into the program management reviews regularly conducted for each operation. We also established a testing officer.

At the end of January 2009 we completed the development testing and production schedule for the OCS for paper-based operations. All 2010 Census systems and interfaces will be tested before operations are in the field. This is a rigorous testing strategy, the effectiveness of which is reflected in our response to the report on our testing plans issued by GAO this week. GAO made 9 recommendations in their draft report outlining 28 specific steps that should be taken to strengthen our testing program. We agree with GAO's recommendations. Moreover, we have already completed 16 of the steps they specify, and 8 others are planned. We believe that of the remaining 4, 2 are pre-mature and 2 will require more discussion with GAO.

We also are taking important steps to address concerns raised by GAO about our cost estimates. We will capture actual costs for all FY 2010 Census operations on an ongoing basis, and provide better analysis and documentation of the assumptions and cost factors that impact our estimates. We appreciate GAO's recommendations concerning our cost estimation procedures, and we will work with them to implement action plans to address them.

When the Census Bureau appeared before the Congress a year ago to discuss the problems we identified with the FDCA program, all of us – Congress, GAO, former Census officials, and representatives from the private sector – recognized that the 2010 Census was at great risk. Since then we worked closely with Congress, GAO, MITRE, and experts from the private sector to re-scope the FDCA program and to re-define the developmental responsibilities for the systems supporting Field operations. The program I just outlined reflects the progress of our combined efforts.

In closing let me stress that the Census Bureau is on solid ground as the 2010 Census begins. We believe that our current plan has significantly reduced the risk to the 2010 Census, and we are poised to meet the enormous challenges in front of us. Members of the Sub-Committee, the Census Bureau is on track for a successful Census. I am happy to take your questions.

Mr. CLAY. Thank you for your testimony, Mr. Mesenbourg.
Mr. Goldenkoff, you may proceed for 5 minutes.

STATEMENT OF ROBERT GOLDENKOFF

Mr. GOLDENKOFF. Chairman Clay, Chairman Towns, Ranking Members McHenry and Issa, and members of the subcommittee, thank you for the opportunity to be here today to provide a progress report on the 2010 census. I am here with Dave Powner, a Director in GAO's Information Technology team.

As requested, in our remarks today, I will provide a broad overview of the status of key census-taking operations and Dave will focus on the finding and recommendations contained in our report on IT testing, which we are releasing today.

This morning's hearing is particularly timely. Exactly 1 year ago today, GAO designated the 2010 census a high risk area for three reasons. First, there were weaknesses in the Census Bureau's IT acquisition and contract management function; second, there were problems with the performance of handheld computers used to collect data; and, third, the ultimate cost of the census is uncertain, although it is currently estimated at more than $14 billion.

At the same time, just over 1 year from now, it will be census day. Little time remains to address the challenges that have emerged thus far and make final preparations for the numerous operations that will take place throughout 2010. The poster board to my right, which is a timeline of key census-taking activities, shows some of the work that lies ahead and the need to stay on schedule in order to keep the census on track. Because of legally mandated deadlines, the Bureau can't call a timeout or press a reset button.

In short, today's hearing is a convenient weigh station on the road to census day, a time to look back on the Census Bureau's efforts over the past year to address the operational challenges that have emerged thus far, as well as to look ahead to what the Bureau needs to do in the coming months to help ensure a successful headcount.

Importantly, the Bureau has made commendable progress over the past year in rolling out key components of the census and has strengthened certain risk management efforts. Still, the census remains high risk because the dress rehearsal of all census operations that was planned for 2008 was curtailed. As a result, critical activities, including some that will be used for the first time in a census, were not tested in concert with one another or under census-like conditions.

The bottom line is that key census-taking activities, including those that will ultimately drive the final cost and accuracy of the count, continue to face challenges and the Bureau's overall readiness for 2010 is uncertain.

One such challenge is building the Bureau's address list. Because a complete and accurate address list is the foundation of a successful census, the Bureau has a number of operations aimed at including every residence in the country and works with the U.S. Postal Service, agencies at all levels of Government, as well as a number of non-governmental entities.

In a few weeks, the Bureau will send thousands of workers to walk every street in the country to update the census address list

and maps in an operation called address canvassing. Census workers will use handheld computers to collect data. As you know, when the devices were tested, they experienced performance problems such as freeze-ups and unreliable transmissions. The Bureau took steps to fix these issues, and the results of a small scale test held last December are encouraging. Nonetheless, more information is needed to determine the Bureau's overall readiness for address canvassing, as the field test was not an end-to-end systems test, did not validate training, help desk support, and other requirements, and did not include urban areas.

Uncertainties also surround the Bureau's ability to implement operations that will be used for the first time in a decennial census, including a targeted second mailing to reduce the nonresponse followup workload and the need to fingerprint temporary census workers. The Bureau's readiness for these activities is uncertain because they have not been tested under census-like conditions.

Another challenge facing the Bureau is reducing the undercount. As with past numerations, the Bureau is putting forth tremendous effort to reach groups that are often missed by the census, such as minorities, renters, and people with limited English proficiency. For example, the Bureau plans to provide language assistance guides in 59 languages, an increase from 49 languages in 2000. The Bureau also plans to deploy a comprehensive communications campaign consisting of, among other efforts, paid advertising and the hiring of as many as 680 partnership staff who will be tasked with reaching out to local governments, community groups, and other organizations in an effort to secure a more complete count.

Although the effects of the Bureau's communication efforts are difficult to measure, the Bureau reported some positive results from its 2000 census marketing efforts with respect to raising awareness of the census. Still, a longstanding challenge for the Bureau is converting that awareness of the census into an actual response.

In summary, just 13 months remain until census day. At a time when major testing should be complete and there should be confidence in the functionality of key operations, the Bureau, instead, finds itself managing late design changes and developing testing plans. The Bureau has taken important steps toward mitigating some of the challenges that it has faced to date, yet much remains uncertain, and the risks to a successful census continue.

I will now turn it over to my colleague, Dave Powner, who will discuss the Bureau's management.

[The prepared statement of Mr. Goldenkoff follows:]

United States Government Accountability Office

GAO

Testimony

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

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2010 CENSUS

Little Time Remains to Address Operational Challenges

Statement of Robert Goldenkoff
Director, Strategic Issues

David A. Powner
Director, Information Technology Management Issues

GAO-09-408T

March 5, 2009

GAO Accountability · Integrity · Reliability

Highlights

Highlights of GAO-09-408T, a testimony before the Subcommittee on Information Policy, Census, and National Archives, Committee on Oversight and Government Reform, House of Representatives

2010 CENSUS

Little Time Remains to Address Operational Challenges

Why GAO Did This Study

The decennial census is a constitutionally-mandated activity that produces data used to apportion congressional seats, redraw congressional districts, and allocate billions of dollars in federal assistance. In March 2008, GAO designated the 2010 Census a high-risk area in part because of problems with the performance of handheld computers used to collect data. The U.S. Census Bureau has since strengthened its risk management efforts and made other improvements; however, the Bureau curtailed a dress rehearsal scheduled for 2008 and was unable to test key operations under census-like conditions. This testimony discusses the Bureau's readiness for 2010 and covers: (1) the importance of reliable cost estimates; (2) building a complete and accurate address list; (3) following up on missing and conflicting responses to ensure accuracy; (4) targeting outreach to undercounted populations; and (5) designing, testing, and implementing technology for the census. The testimony is based on previously issued and ongoing GAO work.

What GAO Recommends

GAO is not making new recommendations, but past reports recommended the Bureau improve its cost estimation procedures and accuracy of its address list, take steps to ensure the readiness of handheld computers, better manage its partnership programs, and conduct end-to-end testing of IT systems. The Bureau generally agreed with the recommendations.

View GAO-09-408T or key components. For more information, contact Robert Goldenkoff at (202) 512-2757 or goldenkoffr@gao.gov or David Powner at (202) 512-9286 or pownerd@gao.gov.

What GAO Found

The Bureau estimates the 2010 Census will cost more than $14 billion over its life-cycle, making it the most expensive census in the nation's history, even after adjusting for inflation. Accurate cost estimates help ensure that the Bureau has adequate funds, and that Congress, the administration, and the Bureau itself have reliable information on which to base advice and decisions. However, as GAO has reported before, the Bureau has insufficient policies and procedures and inadequately trained staff for conducting high-quality cost estimation for the decennial census.

A successful census requires a complete and accurate address list. The Bureau sends thousands of census workers (listers) into the field to collect and verify address information, and this year for the first time, listers will use handheld computers to collect data. During the dress rehearsal, there were significant technical problems. A small-scale field test showed that these problems appear to have been addressed; however, the test was not carried out under full census-like conditions and did not validate all address canvassing requirements.

Nonresponse follow-up, the Bureau's largest and most costly field operation, was initially planned to be conducted using the handheld computers, but was recently changed to a paper-based system due to technology issues. The Bureau has not yet developed a detailed road map for monitoring the development and implementation of nonresponse follow-up under the new design. Such a plan is essential to conducting a successful nonresponse follow-up. Furthermore, the system that manages the flow of work in field offices is not yet developed. Lacking plans for the development of both nonresponse follow-up and this management system, the Bureau faces the risk of not having them developed and fully tested in time for the 2010 Census.

In an effort to reduce the undercount, the Bureau is implementing a program of paid advertising integrated with other communications strategies, such as partnerships with state, local, and tribal governments and community organizations. Moving toward 2010, the Bureau faces long-standing challenges with the nation's linguistic diversity and privacy concerns, which can contribute to the undercounting of some groups.

Since 2005, we have reported concerns with the Bureau's management and testing of key IT systems. We have reviewed the status and plans for the testing of key 2010 Census systems. The Bureau has made progress in conducting systems, integration, and end-to-end testing, but critical testing still remains to be performed before systems will be ready to support the 2010 Census, and the planning for the testing needs much improvement. In short, while the Bureau has made some noteworthy progress in gearing up for the enumeration, with just over a year remaining until Census Day, uncertainties surround the Bureau's overall readiness for 2010.

Mr. Chairman and Members of the Subcommittee:

We are pleased to be here today to discuss the Census Bureau's readiness for conducting the decennial census. Today's hearing is particularly timely because in 2009 the Bureau transitions from planning the 2010 Census to implementing early activities and operations. The Bureau has already initiated large-block canvassing—an operation where temporary field staff validate address lists and maps for census blocks with more than 1,000 housing units in them. Next month, the Bureau is scheduled to conduct address canvassing for remaining census blocks when about 140,000 temporary employees will walk every known street in the country trying to update and verify the Bureau's address list and maps for the country. Later in the year, in a separate effort, the Bureau is scheduled to update the locations of approximately 200,000 "group quarters" including homeless shelters, college residence halls, and group homes. The Bureau will also be opening hundreds of local census offices and refining plans for later operations.

Although the Bureau has made considerable progress in gearing up for the 2010 Census, the path to the decennial has been a difficult one. For example, in April 2008, technical problems with handheld computers used to collect data led the Bureau to redesign its approach to taking the census. While the Bureau had initially planned to use the handheld computers for address canvassing and to collect data from the millions of households that fail to mail back their census questionnaires (an operation called nonresponse follow-up), the handheld computers now will only be used for address canvassing, and the Bureau will instead rely on paper forms to conduct nonresponse follow-up.

Today is the first anniversary of when we designated the 2010 Census to be on our high-risk list because of (1) long-standing weaknesses in the Bureau's information technology (IT) acquisition and contract management function, (2) problems with the performance of handheld computers used to collect data, and (3) uncertainty over the ultimate cost of the census, currently estimated at more than $14 billion.[1] In the past year, the Bureau has strengthened its risk management efforts and made other improvements. Still, the 2010 Census remains high risk, in part because the poor performance of the handheld computers drove the

[1]GAO, *Information Technology: Significant Problems of Critical Automation Program Contribute to Risks Facing 2010 Census*, GAO-08-550T (Washington, D.C.: Mar. 5, 2008).

Bureau to curtail a critical risk management exercise planned for 2008—a "dress rehearsal" of all census operations.[2] As a result, the Bureau missed its only opportunity to demonstrate that the full complement of census-taking activities will work in concert with one another under near-census-like conditions.

In light of this difficult operational environment, effective stewardship of the Bureau is essential to help ensure the census stays on track and the agency continues to embrace a culture of performance and accountability. Key to this will be the timely appointment of a Census Director who is an efficient administrator, a respected technical professional, a strategic leader, and capable of working constructively with Congress, officials at all levels of government, as well as nongovernmental organizations and the statistical community.

At your request, we will discuss the state of the census, paying particular attention to the following:

- the importance of using reliable cost estimates and justifications for spending on census activities;
- building a complete and accurate address list to know where to count people;
- following up on missing and conflicting responses to ensure completeness and accuracy;
- targeting communications and outreach efforts to reduce the differential undercount; and
- designing, testing, and implementing technology to support the census.

Our testimony today is based on our ongoing and recently completed work. See the last page of this statement for a list of our recently issued census reports. To determine the readiness of the Bureau to conduct the 2010 Census, we reviewed and analyzed scheduling, design, operational and testing plans for the various census operations, data from the dress rehearsal sites, and documents related to the December 2008 field test of the handheld computers in Fayetteville, North Carolina, and we interviewed Bureau staff. At the field test, we observed the handheld computers' ability to collect and transmit address data by accompanying census workers as they went door-to-door. In February 2009, we also observed census workers conduct large-block canvassing using laptop

[2]GAO, *High-Risk Series: An Update*, GAO-09-271 (Washington, D.C.: January 2009).

computers. This work was conducted in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audits to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions.

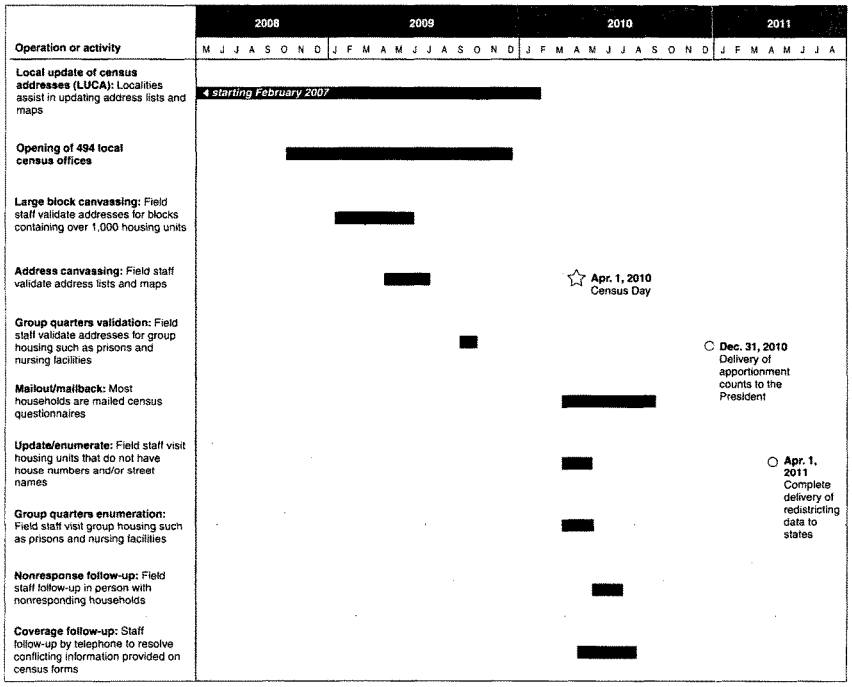
In summary, the Bureau has made commendable progress in rolling out key components of the census, making improvements to the handheld computers, certain risk management efforts, and how it will print the 80 million maps needed by temporary field staff to carry out the enumeration. Nevertheless, at a time when planning activities should be reaching completion, major testing should be winding down, and there should be confidence in the functionality of census-taking activities, the Bureau instead finds itself lacking sufficient policies, procedures, and trained staff to develop high-quality cost estimates, and a number of operations and support systems still need to be designed, planned, or tested. In the 13 months leading up to Census Day, the Bureau will be challenged to implement early operations, complete the final preparations for various activities, make refinements, and address any glitches that arise. With little time remaining, uncertainties surround the Bureau's readiness for 2010.

Background

As you know, Mr. Chairman, the decennial census is a critical national effort mandated by the Constitution. Census data are used to apportion seats in Congress, redraw congressional districts, allocate billions of dollars in federal assistance to state and local governments, and for numerous other public and private sector purposes.

Importantly, the census is conducted against a backdrop of immutable deadlines. In order to meet legally mandated reporting requirements, census activities need to take place at specific times and in the proper sequence. For example, the group quarters validation operation, where census workers verify the location of group quarters, such as nursing homes and college dormitories, needs to be completed after the address canvassing operation. As a result, it is absolutely critical for the Bureau to stay on schedule. Figure 1 shows some dates for selected decennial events.

Figure 1: Timeline of Selected Decennial Events



Source: GAO summary of U.S. Census Bureau information.

The Bureau estimates that the 2010 Census will cost more than $14 billion over its life-cycle, making it the most expensive census in our nation's history. According to the Bureau, the increasing cost of the census is caused in part by various societal trends—such as increasing privacy concerns, more non-English speakers, and people residing in makeshift

and other nontraditional living arrangements—making it harder to find people and get them to participate in the census.

Automation and IT will play a critical role in the success of the 2010 Census by supporting data collection, analysis, and dissemination. According to the Bureau's estimates, it is spending more than $3 billion on IT acquisitions for the census. The Bureau is relying on both the acquisition of new systems and the enhancement of existing legacy systems for conducting operations for the 2010 Census. These systems are to play important roles with regard to different aspects of the process, such as providing geographic information to establish where to count, capturing and integrating census responses, supporting field operations such as address canvassing, and tabulating and publicly disseminating census data.

Providing Reliable Cost Estimates and Justifications for Spending as 2010 Approaches Presents a Major Challenge for the Bureau

Accurate cost estimates are essential to a successful census because they help ensure that the Bureau has adequate funds, and so that Congress, the administration, and the Bureau itself can have reliable information on which to base or advise decisions. However, as we have reported before, the Bureau has insufficient policies and procedures and inadequately trained staff for conducting high-quality cost estimation for the decennial census.[3] The Bureau does not have cost estimation guidance and procedures in place or staff that is certified in cost estimation techniques. The Bureau is developing a new budget management tool that will support the cost estimation process beyond 2010. As part of that, the Bureau will need to establish rigorous cost estimation policies and procedures and use skilled estimators to ensure that future cost estimates are reliable and of high quality.

For example, to help manage the 2010 census and contain costs, over 5 years ago we recommended that the Bureau develop a comprehensive, integrated project plan for the 2010 Census that should include the itemized, estimated costs of each component and a sensitivity analysis[4] and an explanation of significant changes in the assumptions on which

[3]GAO, *2010 Census: Census Bureau Should Take Action to Improve the Credibility and Accuracy of Its Cost Estimate for the Decennial Census*, GAO-08-554 (Washington, D.C.: June 16, 2008).

[4]Sensitivity analysis examines the effect of changing one assumption or cost driver at a time while holding all other variables constant.

these costs were based.[5] In response, the Bureau provided us with the *2010 Census Operations and Systems Plan*, dated August 2007. This plan represented an important step forward by including operational inputs and outputs and describing linkages among operations and systems. However, that document did not include itemized cost estimates of each component or sensitivity analysis, and thus did not provide a valid baseline or range of estimates for the Bureau and Congress. The Bureau has provided annual cost updates as part of its budget submission process, but these too have lacked cost analyses to support them. As the Bureau approaches the final surge in the current decade-long decennial spending cycle, providing reliable cost estimates accompanied by sound justification, as we have recommended, will be important if Congress is to make informed decisions about the levels at which to fund the remainder of the 2010 Census.

Effective Address Canvassing Is Essential for a Complete and Accurate Count

A complete and accurate list of all addresses where people live in the country is the cornerstone of a successful census because it identifies all households that are to receive a census questionnaire and serves as the control mechanism for following up with households that fail to respond. The Bureau goes to great lengths to develop a quality address list and maps, working with the U.S. Postal Service; federal agencies; state, local, and tribal governments; local planning organizations; the private sector; and nongovernmental entities. For example, under the Local Update of Census Addresses (LUCA) program, the Bureau is authorized to partner with state, local, and tribal governments, tapping into their knowledge of local populations and housing conditions in order to secure a more complete count.[6] Between November 2007 and March 2008, over 8,000 state, local, and tribal governments provided approximately 8 million address updates through the LUCA program. The Bureau will send thousands of temporary census workers, known as listers, into the field to collect and verify address information and update maps on-site, including verifying address updates provided through the LUCA program.

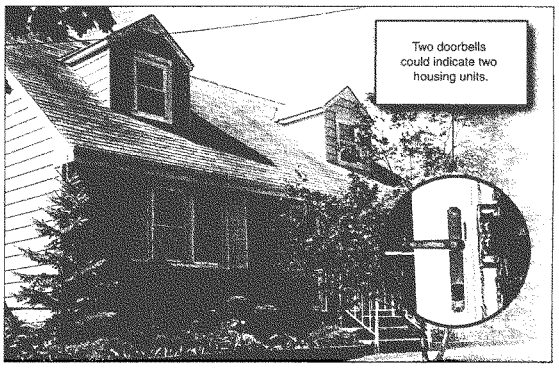
Despite the Bureau's efforts, an inherent challenge is locating unconventional and hidden housing units, such as converted basements and attics. For example, as shown in figure 2, what appears to be a small, single-family house could contain an apartment, as suggested by its two

[5]GAO, *2010 Census: Cost and Design Issues Need to Be Addressed Soon*, GAO-04-37 (Washington, D.C.: Jan. 15, 2004).

[6]Census Address List Improvement Act of 1994, Pub. L. No. 103-430.

doorbells. The Bureau has trained listers to look for extra mailboxes, utility meters, and other signs of hidden housing units and is developing training guides for 2010 to help listers locate hidden housing. Nonetheless, decisions on what is a habitable dwelling are often difficult to make—what is habitable to one worker may seem uninhabitable to another. According to Bureau estimates, approximately 1.4 million housing units were missed in the 2000 Census. If an address is not in the Bureau's address file, its residents are less likely to be included in the census.

Figure 2: Single or Multi-unit Housing?



Source: GAO.

Performance of Handheld Computers Has Improved in Field Testing, but More Information Is Needed to Evaluate Readiness for Address Canvassing

A nationwide address canvassing operation for the 2010 Census is scheduled to begin this spring, when listers will use handheld computers for the first time to collect address data. Listers will add addresses that do not already appear on the Bureau's list and mark for deletion any that they cannot verify according to the rules and guidance developed by the Bureau.

When the handheld computers were tested during the dress rehearsal of the address canvassing operation, the devices experienced such problems as slow or inconsistent data transmission, freeze-ups, and difficulties

collecting mapping coordinates.[7] The software that managers used to review worker productivity and assign work was also troublesome.[8] For example, management reports were unreliable because they pulled data from incorrect sources, and Bureau staff had difficulty using the work management software to reassign work.

The Bureau took steps to fix these issues and, in December 2008, conducted a limited field test in Fayetteville, North Carolina, to test the functionality and usability of the handheld computer, including whether the handheld computer problems encountered earlier had been resolved. Although the Bureau's final evaluation of the field test was due by the end of February 2009, we were not able to review it for this testimony. From our observations of the December 2008 field test and interviews with Bureau officials, the Bureau appears to have addressed many of the handheld computer performance issues, as well as the problems with the work management software, observed during the dress rehearsal. This is an important and noteworthy development.

Nonetheless, more information is needed to determine the Bureau's overall readiness for address canvassing as the field test was not an end-to-end systems evaluation, did not validate all address canvassing requirements, such as training and help desk support, and did not include urban areas. Additionally, the scale of the field test was a fraction of that of the address canvassing operation. The Bureau was to conduct a review of the readiness of the handheld computers in January 2009 but has not yet reported the results of that review. Finally, the Bureau's actual workload for address canvassing—about 144.7 million addresses—is 11 million addresses more than the Bureau had planned for, leaving the Bureau with too few handheld computers to complete the workload in the time originally scheduled. In response, the Bureau will be extending the amount of time listers will be working in the field in affected areas, although not extending the end date of the operation, to compensate for the larger workload.

[7]GAO, *2010 Census: Census Bureau's Decision to Continue with Handheld Computers for Address Canvassing Makes Planning and Testing Critical*, GAO-08-936 (Washington, D.C.: July 31, 2008).

[8]GAO, *2010 Census: Plans for Decennial Census Operations and Technology Have Progressed, But Much Uncertainty Remains*, GAO-08-886T (Washington, D.C.: June 11, 2008).

During the dress rehearsal, listers also experienced problems when collecting address data for large blocks having more than 1,000 housing units. According to the Bureau, the handheld computer did not have the capacity to efficiently collect data for large blocks. The Bureau has taken steps to mitigate this problem. Specifically, in January 2009, the Bureau began using laptop computers and software already used in other operations to canvass the 2,086 blocks it identified as large blocks, and by the end of February 2009, the Bureau had completed approximately 80 percent of large-block canvassing.[9] In February 2009 we observed large-block canvassing in Atlanta, Georgia; Boston, Massachusetts; New York, New York; San Francisco, California; and Washington, D.C. From our preliminary observations, the laptops appear to work well, and listers reported their training was satisfactory. We are in the process of discussing these and other observations with the Bureau.

Bureau Needs to Finalize Field Data Collection Plans

The Bureau's largest and most costly field operation is nonresponse follow-up. The Bureau estimates that it will employ over 600,000 temporary workers to collect data from about 47 million nonresponding households over the course of 10 weeks in 2010. On April 3, 2008, the Bureau announced that it would no longer use handheld computers for nonresponse follow-up and would instead change to a paper-based nonresponse follow-up operation. According to the Bureau, this change added between $2.2 billion to $3 billion to the total cost of the census.

In May 2008, the Bureau issued a plan that covered major components of the paper-based nonresponse follow-up. Bureau officials said that they are developing a more detailed plan that would describe 2010 nonresponse follow-up operations and systems, workflow, major milestones, and roles and responsibilities of different census divisions. Although the plan was due in January 2009, it has yet to be completed. Because this plan serves as a road map for monitoring the development and implementation of nonresponse follow-up, it will be important for the Bureau to complete this plan.

The Bureau has changed plans for many aspects of nonresponse follow-up, and officials are determining which activities and interfaces will be tested and when that testing will occur. Although the Bureau has carried out a

[9]These 2,086 large blocks are located in 332 counties and are concentrated in the following regions: Atlanta, Charlotte, Dallas, Denver, Los Angeles, and New York.

paper-based follow-up operation in past decennials, the 2010 Census includes new procedures and system interfaces that have not been tested under census-like conditions because they were dropped from the dress rehearsal. Bureau officials acknowledged the importance of testing new and modified nonresponse follow-up activities and system interfaces in order to reduce risk but have not yet developed detailed testing plans. Given the number of tasks at hand and the increasingly shorter time frame in which to accomplish them, it will be important for the Bureau to monitor the development of these testing plans, coordinate this testing with other activities, and ensure that testing occurs in time to take corrective actions, if needed.

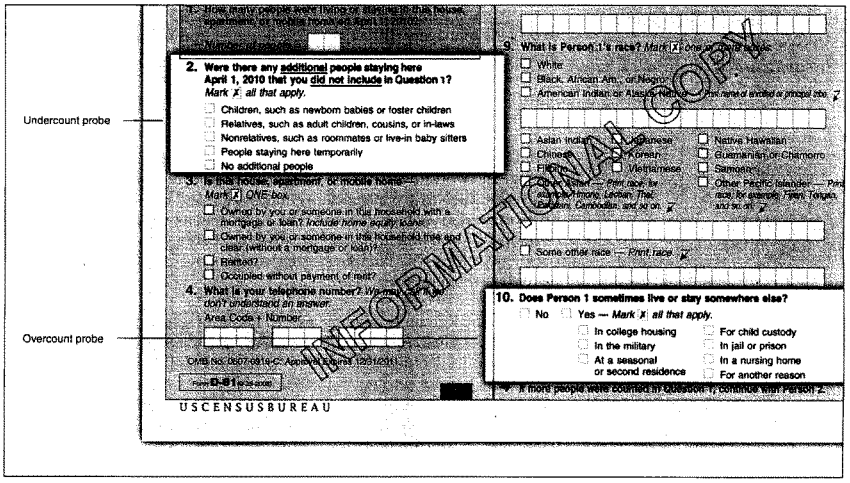
In our previous work, we have highlighted the importance of sound risk management in planning for the decennial census.[10] The Bureau has strengthened aspects of its risk management process. For example, in July 2008, the Bureau identified 31 nonresponse follow-up risks, such as lower than expected enumerator productivity. However, it has not developed mitigation plans for these risks. Officials said that they are reevaluating these risks and plan to develop mitigation plans for high- and medium-priority nonresponse follow-up risks starting in spring 2009. However, the Bureau has not yet determined when these plans will be completed.

Coverage Follow-up Operation Needs to Be Finalized

One of the Bureau's long-standing challenges is resolving conflicting information respondents provide on census forms. This problem can occur, for example, when the number of household members reported on a completed form differs from the number of persons for whom information is provided. In such instances, the Bureau attempts to reconcile the data during the coverage follow-up operation. For 2010, the Bureau plans to expand the scope of this operation and include two questions—known as coverage probes—on the census form to help identify households where someone may have been missed or counted incorrectly (see fig. 3).

[10]GAO-08-886T.

Figure 3: Example of Coverage Probes from Draft 2010 Census Form



Source: GAO presentation of U.S. Census Bureau information.

However, after testing the probes earlier in the decade, the Bureau found one of the probes was problematic in identifying persons potentially missing from the count. Although these probes were included on the forms mailed out during the dress rehearsal, the coverage follow-up operation did not include cases from nonresponse follow-up, which was cancelled from the dress rehearsal. In the absence of a final test of the coverage probes in nonresponse follow-up, the effectiveness of the information generated by the probes is uncertain.

Fieldwork Management System for Most Operations Still Needs to Be Specified and Programmed

A successful census depends, in large part, on the work carried out in the local census offices.[11] For the 2010 Census, this field work cannot be accomplished without a properly functioning OCS. This system is intended to provide managers with essential, real-time information, such as worker productivity and completion rates for field operations. It also allows managers to assign and reassign cases among workers. If the system does not work as intended, it could bog down or delay field operations and introduce errors into data collected.

Initially, the Bureau had planned to use a contractor to develop OCS to manage the workflow for those operations relying on paper-based processes, such as group quarters enumeration and nonresponse follow-up. However, in August 2008, the Bureau created an internal program to develop OCS and other related infrastructure that are needed to support these operations. The Bureau is still in the process of developing OCS for paper-based operations.

Although the Bureau has established a high-level schedule for testing OCS, it has not yet finalized the requirements needed to begin its programming or developed a detailed schedule for conducting additional tests. Further, the Bureau has not yet fully defined how OCS will work together with other systems. According to Bureau officials, the lack of detailed plans for operations, such as nonresponse follow-up, makes it difficult to finalize requirements for OCS or its testing plans. Our work on IT systems testing has shown that without adequate oversight and more comprehensive guidance, the Bureau cannot ensure that it is thoroughly testing its systems and properly prioritizing testing activities before the 2010 Census.

The Bureau Has Taken Steps to Improve Map Production but Faces a Tight Schedule

The Bureau estimates that it will need to produce approximately 30 million different map files from which 80 million paper maps will be printed to assist census workers in locating addresses in major census operations. The quality of maps and the timing of map printing are critical to the success of the census. In addition, many map production and printing activities must be conducted in sequence with no time to spare, putting at risk the Bureau's ability to print its maps on time. The Bureau has taken positive steps to meet its requirements for map production and printing for

[11]For all decennial census operations, the Bureau plans to hire 1.4 million temporary employees who will receive their training and work assignments through 494 local census offices, as well as the 12 regional census centers throughout the country.

2010. For example, in June 2008, the Bureau decided to produce a generic map type in lieu of several operation-specific versions to reduce the number of map files to be produced. Furthermore, the Bureau is preparing to print most of its maps at the local census offices rather than at the regional offices, reducing the need to coordinate map delivery to the local census offices. In addition, the Bureau has replaced its labor-intensive quality assurance process with integrated, automated processes. These steps taken to improve workflow will become particularly important as the Bureau works to produce and print maps on an already compressed schedule.

The Bureau's schedule for producing and printing maps does not allow for any delays in receiving data from other operations or from the contractor delivering map files. For example, the Bureau intends to include map information from address canvassing, which ends in July 2009, in maps that will be used to validate locations of group quarters, which begins in September 2009. Bureau officials have stated that the turnaround time between these operations allows no slippage, and if these data are received late, an entire chain of subsequent map production steps would be thrown off schedule. Furthermore, according to the Bureau, local census offices need to receive map files from the contractor in time to print maps for certain field operations by January 8, 2010. However, the contractor is not scheduled to finish delivering the map files until January 19, 2010. Bureau officials said that they have taken steps to ensure that the necessary map files are delivered in time for printing but are still working to resolve the discrepancy.

Census Marketing Programs Will Need to Improve Response Rates of Historically Undercounted Groups

The Bureau goes to great lengths to reduce the undercount, especially for those groups likely to be undercounted at a higher rate than others, such as minorities and renters. For example, the Bureau plans to provide language assistance guides in 59 languages for completing the census, an increase from 49 languages in 2000. For the first time in 2010, the Bureau plans to send bilingual questionnaires to approximately 13 million households that are currently likely to need Spanish language assistance, as determined by analyzing recent data from a related Bureau survey program.

The Bureau also plans to deploy a multifaceted communications campaign consisting of, among other efforts, paid advertising and the hiring of as many as 680 partnership staff who will be tasked with reaching out to local governments, community groups, and other organizations in an effort to secure a more complete count. Overall, the Bureau estimates it will spend

around $410 million on its communication efforts for the 2010 Census. However, in constant 2010 dollars, this amount is somewhat less than the approximately $480 million that the Bureau spent marketing the 2000 Census.

Although the effects of the Bureau's communication efforts are difficult to measure, the Bureau reported some positive results from its 2000 Census marketing efforts with respect to raising awareness of the census. For example, four population groups—non-Hispanic Blacks, non-Hispanic Whites, Asians, and Native Hawaiians—indicated they were more likely to return the census form after the 2000 Census partnership and marketing program than before its onset. However, a Bureau evaluation demonstrated only a limited linkage between the partnership and marketing effort and improvements in actual census mail return behavior for these or other groups. Put another way, while the Bureau's marketing activities might raise awareness of the census, a remaining challenge is converting that awareness into an actual response. Other marketing challenges include long-standing issues such as the nation's linguistic diversity and privacy concerns, as well as a number of newly emerging concerns, such as local campaigns against illegal immigration and a post-September 11 environment that could heighten some groups' fear of government agencies.

Managing and Testing Information Technology Systems Remain a Concern

Since 2005, we have reported on weaknesses in the Bureau's management of its IT acquisitions, and we remain concerned about the Bureau's IT management and testing of key 2010 Census systems. For example, in October 2007, we reported on the status of and plans for key 2010 Census IT acquisitions and whether the Bureau was adequately managing associated risks.[12] We found critical weaknesses in the Bureau's risk management practices, including those associated with risk identification, mitigation, and oversight. We later presented multiple testimonies on the Bureau's progress in addressing significant risks facing the 2010 Census. In particular, the Field Data Collection Automation (FDCA) program, which includes the development of handheld computers for the address canvassing operation and the systems, equipment, and infrastructure that field staff will use to collect data, has experienced significant problems. For example, in March 2008, we testified that the FDCA program was

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

experiencing schedule delays and cost increases, and was contributing significant risk to the 2010 Census. At that time, we highlighted our previous recommendations to better manage FDCA and the other IT acquisitions.[13]

In response to our findings and recommendations, the Bureau has taken several steps to improve its management of IT for the 2010 Census. For example, the Bureau has sought external assessments of its activities from independent research organizations, implemented a new management structure and management processes and brought in experienced personnel to key positions, and improved several reporting processes and metrics. In part due to our review of the FDCA program, the Bureau requested a revised cost proposal for the FDCA program, which resulted in a cost reduction of about $318 million for the remaining 5-year life-cycle of the program.

As we have previously reported, operational testing planned during the census dress rehearsal would take place without the full complement of systems and functionality that was originally planned, and it was unclear whether the Bureau was developing plans to test all interrelated systems and functionality. At your request, we reviewed the status and plans of testing of key 2010 Census systems. As stated in our report, which we are releasing today, we found that the Bureau has made progress in conducting systems, integration, and end-to-end testing, but critical testing still remains to be performed before systems will be ready to support the 2010 Census, and the planning, execution, and monitoring of its testing needs much improvement.[14] We are making 10 recommendations for strengthening the Bureau's testing of 2010 Census systems. Those recommendations address improvements needed in test planning, management, and monitoring. In response to our report, the Department of Commerce and the Bureau stated they had no significant disagreements with our recommendations.

In summary, little more than a year remains until Census Day. At a time when major testing should be completed and there should be confidence in the functionality of key operations, the Bureau instead finds itself

[13]GAO-08-550T.

[14]GAO, *Information Technology: Census Bureau Testing of 2010 Decennial Systems Can Be Strengthened*, GAO-09-262 (Washington, D.C.: Mar. 5, 2009).

managing late design changes and developing testing plans. The Bureau has taken some important steps toward mitigating some of the challenges that it has faced to date, yet much remains uncertain, and the risks to a successful decennial census remain. Addressing these risks and challenges will be critical to the timely completion of a cost-effective census, and it will be essential for the Bureau to develop plans for testing systems and procedures not included in the dress rehearsal, and for Congress to monitor the Bureau's progress.

As always, we look forward to working with Congress in assessing the Bureau's efforts to overcome these hurdles to a successful census and providing regular updates on the rollout of the decennial in the critical months that lie ahead.

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 Robert Goldenkoff at (202) 512-2757 or David A. Powner at (202) 512-9286 or by e-mail at goldenkoffr@gao.gov or pownerd@gao.gov. Other key contributors to this testimony include Sher'rie Bacon, Thomas Beall, Steven Berke, Vijay D'Souza, Elizabeth Fan, Richard Hung, Andrea Levine, Signora May, Ty Mitchell, Catherine Myrick, Lisa Pearson, Kathleen Padulchick, Crystal Robinson, Melissa Schermerhorn, Cynthia Scott, Karl Seifert, Jonathan Ticehurst, Timothy Wexler, and Katherine Wulff.

Related GAO Products

High Risk: An Update. GAO-09-271. Washington, D.C.: January 2009.

2010 Census: The Bureau's Plans for Reducing the Undercount Show Promise, but Key Uncertainties Remain. GAO-08-1167T. Washington, D.C.: September 23, 2008.

2010 Census: Census Bureau's Decision to Continue with Handheld Computers for Address Canvassing Makes Planning and Testing Critical. GAO-08-936. Washington, D.C.: July 31, 2008.

2010 Census: Census Bureau Should Take Action to Improve the Credibility and Accuracy of Its Cost Estimate for the Decennial Census. GAO-08-554. Washington, D.C.: June 16, 2008.

2010 Census: Plans for Decennial Census Operations and Technology Have Progressed, But Much Uncertainty Remains. GAO-08-886T. Washington, D.C.: June 11, 2008.

2010 Census: Bureau Needs to Specify How It Will Assess Coverage Follow-up Techniques and When It Will Produce Coverage Measurement Results. GAO-08-414. Washington, D.C.: April 15, 2008.

2010 Census: Census at Critical Juncture for Implementing Risk Reduction Strategies. GAO-08-659T. Washington, D.C.: April 9, 2008.

Information Technology: Significant Problems of Critical Automation Program Contribute to Risks Facing 2010 Census. GAO-08-550T. Washington, D.C.: March 5, 2008.

Information Technology: Census Bureau Needs to Improve Its Risk Management of Decennial Systems. GAO-08-259T. Washington, D.C.: December 11, 2007.

2010 Census: Planning and Testing Activities Are Making Progress. GAO-06-465T. Washington, D.C.: March 1, 2006.

Mr. CLAY. Thank you so much, Mr. Goldenkoff.
Mr. Powner, you are recognized for 5 minutes.

STATEMENT OF DAVID A. POWNER

Mr. POWNER. Chairman Clay, Chairman Towns, Ranking Member McHenry, and members of the subcommittee, the accuracy of the 2010 census depends in large part on the proper functioning of IT systems, both individually and when integrated together.

Mr. Chairman, your oversight of the Bureau's acquisition of IT systems was critical last year. In particular, the field data collection system is no longer spiraling out of control, and that contract is $500 million less than the initial estimates provided at your hearings last summer. Your oversight is needed once again in the technology area to ensure that between now and census day these systems are rigorously tested.

Today, we are releasing our latest report, completed at your request, which highlights that significant testing remains. Six major systems need to complete systems testing, and much integration testing needs to occur. Plans for conducting this testing are not completely in place. In order to ensure effective test execution, the Bureau needs comprehensive metrics to monitor test completion and effective executive level oversight to keep the pressure on and to manage risks.

Our report contains 10 detailed recommendations that the Bureau has agreed to address. For example, integration testing includes testing of the interfaces or the handshake between systems. Our work found that not only were there not complete plans or schedules for integration testing of these interfaces, but there was not even a master list or inventory of interfaces. Not having such basic information at this stage is unacceptable, and our recommendations call for the Bureau to develop a master list of interfaces, prioritize the interfaces based on criticality and need date, and to use this to develop all needed integration plans.

To the Bureau's credit, we are seeing more plans and better metrics, but there is still much work ahead in both areas.

I would like to stress the need to prioritize. It is likely the Bureau will not have enough time to test everything, and testing the most important aspects of certain systems, interfaces, and operations is critical given the limited time remaining.

Mr. Chairman, again, thank you for your leadership, and I look forward to your questions.

[The prepared statement of Mr. Powner 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

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INFORMATION TECHNOLOGY

Census Bureau Testing of 2010 Decennial Systems Can Be Strengthened

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

Robert Goldenkoff
Director, Strategic Issues

GAO-09-414T

March 5, 2009

GAO Accountability · Integrity · Reliability

Highlights

Highlights of GAO-09-414T, 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 Testing of 2010 Decennial Systems Can Be Strengthened

Why GAO Did This Study

The Decennial Census is mandated by the U.S. Constitution and provides vital data that are used, among other things, to reapportion and redistrict congressional seats and allocate federal financial assistance. In March 2008, GAO designated the 2010 Decennial Census a high-risk area, citing a number of long-standing and emerging challenges, including weaknesses in the U.S. Census Bureau's (Bureau) management of its information technology (IT) systems and operations. In conducting the 2010 census, the Bureau is relying on both the acquisition of new IT systems and the enhancement of existing systems. Thoroughly testing these systems before their actual use is critical to the success of the census. GAO was asked to testify on its report, being released today, on the status and plans of testing of key 2010 decennial IT systems.

What GAO Recommends

In its report, GAO recommended that the Secretary of Commerce direct the Bureau to complete key system testing activities, develop and maintain plans and schedules for integration testing, and improve the oversight of and guidance for systems testing. In comments on a draft of this report, the department agreed with GAO's recommendations.

What GAO Found

Although the Bureau has made progress in testing key decennial systems, critical testing activities remain to be performed before systems will be ready to support the 2010 census. Bureau program offices have completed some testing of individual systems, but significant work still remains to be done, and many plans have not yet been developed (see table below). In its testing of system integration, the Bureau has not completed critical activities; it also lacks a master list of interfaces between systems and has not developed testing plans and schedules. Although the Bureau had originally planned what it refers to as a Dress Rehearsal, starting in 2006, to serve as a comprehensive end-to-end test of key operations and systems, significant problems were identified during testing. As a result, several key operations were removed from the Dress Rehearsal and did not undergo end-to-end testing. The Bureau has neither developed testing plans for these key operations, nor has it determined when such plans will be completed.

Weaknesses in the Bureau's testing progress and plans can be attributed in part to a lack of sufficient executive-level oversight and guidance. Bureau management does provide oversight of system testing activities, but the oversight activities are not sufficient. For example, Bureau reports do not provide comprehensive status information on progress in testing key systems and interfaces, and assessments of the overall status of testing for key operations are not based on quantitative metrics. Further, although the Bureau has issued general testing guidance, it is neither mandatory nor specific enough to ensure consistency in conducting system testing. Without adequate oversight and more comprehensive guidance, the Bureau cannot ensure that it is thoroughly testing its systems and properly prioritizing testing activities before the 2010 Decennial Census, posing the risk that these systems may not perform as planned.

Status and Plans of 2010 System Testing

System	Testing status	Testing plan completed	Testing schedule completed
Headquarters processing	In progress	Partial	Partial
Master address and geographic information	In progress	Partial	Partial
Decennial response integration	In progress	Partial	Partial
Field data collection automation	In progress	Partial	Partial
Paper-based operations	In progress	No	Partial
Data access and dissemination	In progress	Partial	Partial

Source: GAO analysis of Bureau data.

To view the full product, including the scope and methodology, click on GAO-09-414T. For more information, contact David A. Powner at (202) 512-9286 or pownerd@gao.gov or Robert Goldenkoff at (202) 512-2757 or goldenkoffr@gao.gov.

Mr. Chairman and Members of the Subcommittee:

Thank you for the opportunity to participate in today's hearing on the 2010 census. The U.S. Census Bureau (Bureau) is relying on both the acquisition of new systems and the enhancement of existing legacy systems for conducting operations for the 2010 Decennial Census. As you know, the census is mandated by the U.S. Constitution and provides data that are vital to the nation. These data are used, for example, to reapportion and redistrict the seats of the U.S. House of Representatives, realign the boundaries of the legislative districts of each state, and allocate federal financial assistance. Carrying out the census is the responsibility of the Department of Commerce's Census Bureau, which is relying on automation and technology to improve the coverage, accuracy, and efficiency of the 2010 census. Because the accuracy of the 2010 census depends in part on the proper functioning of these systems, both individually and when integrated, thorough testing of these systems before their actual use is critical to the success of the census.

As you know, in March 2008, we designated the 2010 Decennial Census as a high-risk area, citing a number of long-standing and emerging challenges,[1] including weaknesses in the Bureau's management of its information technology (IT) systems and operations. The 2010 Decennial Census remained as one of our high-risk areas in our recent high-risk update issued in January 2009.[2] This statement summarizes the findings in our report, being released by the subcommittee today, on the status and plans of testing of key 2010 decennial IT systems.[3]

Our work for this report was performed in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective.

[1]GAO, *Information Technology: Significant Problems of Critical Automation Program Contribute to Risks Facing 2010 Census*, GAO-08-550T (Washington, D.C.: Mar. 5, 2008).

[2]GAO, *High-Risk Series: An Update*, GAO-09-271 (Washington, D.C.: Jan. 22, 2009).

[3]GAO, *Information Technology: Census Bureau Testing of 2010 Decennial Systems Can Be Strengthened*, GAO-09-262 (Washington, D.C.: Mar. 5, 2009).

Background

The Bureau's mission is to provide comprehensive data about the nation's people and economy. The 2010 census enumerates the number and location of people on Census Day, which is April 1, 2010. However, census operations begin long before Census Day and continue afterward. For example, address canvassing for the 2010 census will begin in April 2009, while the Secretary of Commerce must report tabulated census data to the President by December 31, 2010, and to state governors and legislatures by March 31, 2011.

The decennial census is a major undertaking for the Bureau that includes the following major activities:

- *Establishing where to count.* This includes identifying and correcting addresses for all known living quarters in the United States (address canvassing) and validating addresses identified as potential group quarters, such as college residence halls and group homes (group quarters validation).
- *Collecting and integrating respondent information.* This includes delivering questionnaires to housing units by mail and other methods,[4] processing the returned questionnaires, and following up with nonrespondents through personal interviews (nonresponse follow-up). It also includes enumerating residents of group quarters (group quarters enumeration) and occupied transitional living quarters (enumeration of transitory locations), such as recreational vehicle parks, campgrounds, and hotels. It also includes a final check of housing unit status (field verification) where Bureau workers verify potential duplicate housing units identified during response processing.
- *Providing census results.* This includes tabulating and summarizing census data and disseminating the results to the public.

Role of IT in the Decennial Census

Automation and IT are to play a critical role in the success of the 2010 census by supporting data collection, analysis, and dissemination. Several systems will play a key role in the 2010 census. For example, enumeration "universes," which serve as the basis for enumeration operations and response data collection, are organized by the Universe Control and

[4]For example, in the "update/leave" operation, after enumerators update addresses, they leave questionnaires at housing units; this occurs mainly in rural areas lacking street names, house numbers, or both.

Management (UC&M) system, and response data are received and edited to help eliminate duplicate responses using the Response Processing System (RPS). Both UC&M and RPS are legacy systems that are collectively called the Headquarters Processing System.

Geographic information and support to aid the Bureau in establishing where to count U.S. citizens are provided by the Master Address File/Topologically Integrated Geographic Encoding and Referencing (MAF/TIGER) system. The Decennial Response Integration System (DRIS) is to provide a system for collecting and integrating census responses from all sources, including forms and telephone interviews. The Field Data Collection Automation (FDCA) program includes the development of handheld computers for the address canvassing operation and the systems, equipment, and infrastructure that field staff will use to collect data. Paper-Based Operations (PBO) was established in August 2008 primarily to handle certain operations that were originally part of FDCA. PBO includes IT systems and infrastructure needed to support the use of paper forms for operations such as group quarters enumeration activities, nonresponse follow-up activities, enumeration at transitory locations activities, and field verification activities. These activities were originally to be conducted using IT systems and infrastructure developed by the FDCA program. Finally, the Data Access and Dissemination System II (DADS II) is to replace legacy systems for tabulating and publicly disseminating data.

Comprehensive Testing Improves Chances of a Successful Decennial Census

As stated in our testing guide and the Institute of Electrical and Electronics Engineers (IEEE) standards,[5] complete and thorough testing is essential for providing reasonable assurance that new or modified IT systems will perform as intended. To be effective, testing should be planned and conducted in a structured and disciplined fashion that includes processes to control each incremental level of testing, including testing of individual systems, the integration of those systems, and testing to address all interrelated systems and functionality in an operational environment.

[5]GAO, *Year 2000 Computing Crisis: A Testing Guide*, GAO/AIMD-10.1.21 (Washington, D.C.: Nov. 1, 1998) and IEEE Std. 12207-2008, *Systems and Software Engineering—Software Lifecycle Processes* (Piscataway, N.J.: 2008).

Further, this testing should be planned and scheduled in a structured and disciplined fashion. Comprehensive testing that is effectively planned and scheduled can provide the basis for identifying key tasks and requirements and better ensure that a system meets these specified requirements and functions as intended in an operational environment.

Dress Rehearsal Includes Testing of Certain Systems and Operations

In preparation for the 2010 census, the Bureau planned what it refers to as the Dress Rehearsal. The Dress Rehearsal includes systems and integration testing,[6] as well as end-to-end testing of key operations in a census-like environment. During the Dress Rehearsal period, running from February 2006 through June 2009, the Bureau is developing and testing systems and operations, and it held a mock Census Day on May 1, 2008. The Dress Rehearsal activities, which are still under way, are a subset of the activities planned for the actual 2010 census and include testing of both IT and non-IT related functions, such as opening offices and hiring staff.

The Dress Rehearsal identified significant technical problems during the address canvassing and group quarters validation operations. For example, during the Dress Rehearsal address canvassing operation, the Bureau encountered problems with the handheld computers, including slow and inconsistent data transmissions, the devices freezing up, and difficulties collecting mapping coordinates. As a result of the problems observed during the Dress Rehearsal, cost overruns and schedule slippage in the FDCA program, and other issues, the Bureau removed the planned testing of several key operations from the Dress Rehearsal and switched key operations, such as nonresponse follow-up, to paper-based processes instead of using the handheld computers as originally planned.

[6]Individual program offices manage individual system testing for the Dress Rehearsal, and integration testing is managed by the pairs of program offices whose interfaces are being tested.

Bureau Is Making Progress in Key System Testing, but Lacks Plans and Schedules

Through the Dress Rehearsal and other testing activities, the Bureau has completed key system tests, but significant testing has yet to be done, and planning for this is not complete. Table 1 summarizes the status and plans for system testing.

Table 1: Status of System Testing and Plans

		2010 system testing		
System	**Dress Rehearsal system testing**	**Testing status**	**Testing plan completed**	**Testing schedule completed**
Headquarters Processing—UC&M and RPS	In progress	In progress	Partial	Partial
MAF/TIGER	Completed	In progress	Partial	Partial
DRIS	Completed	In progress	Partial[a]	Partial[a]
FDCA	Partially completed[b]	In progress	Partial	Partial
PBO	N/A[c]	In progress	No	Partial
DADS	DADS[d] in progress	DADS II in progress	Partial	Partial

Source: GAO analysis of Bureau data.

[a]Program officials stated that DRIS's test plan and schedule were completed but will be modified to reflect changes resulting from the switch to paper-based operations.

[b]System testing related to operations removed from the Dress Rehearsal was not completed. These operations were later moved to PBO.

[c]The office to support PBO was created in August 2008.

[d]DADS system is being used for Dress Rehearsal system testing, but the replacement system, DADS II, is being developed and tested for 2010 operations.

Bureau Has Conducted Limited Integration Testing, but Has Not Developed 2010 Test Plans and Schedules for Integration Testing

Effective integration testing ensures that external interfaces work correctly and that the integrated systems meet specified requirements. This testing should be planned and scheduled in a disciplined fashion according to defined priorities.

For the 2010 census, each program office is responsible for and has made progress in defining system interfaces and conducting integration testing, which includes testing of these interfaces. However, significant activities remain to be completed. For example, for systems such as PBO, interfaces have not been fully defined, and other interfaces have been defined but have not been tested. In addition, the Bureau has not established a master

list of interfaces between key systems, or plans and schedules for integration testing of these interfaces. A master list of system interfaces is an important tool for ensuring that all interfaces are tested appropriately and that the priorities for testing are set correctly. As of October 2008, the Bureau had begun efforts to update a master list it had developed in 2007, but it has not provided a date when this list will be completed.

Without a completed master list, the Bureau cannot develop comprehensive plans and schedules for conducting systems integration testing that indicate how the testing of these interfaces will be prioritized. With the limited amount of time remaining before systems are needed for 2010 operations, the lack of comprehensive plans and schedules increases the risk that the Bureau may not be able to adequately test system interfaces, and that interfaced systems may not work together as intended.

Bureau Has Conducted Limited End-to-End Testing as Part of the Dress Rehearsal, but Has Not Developed Testing Plans for Critical Operations

Although several critical operations underwent end-to-end testing in the Dress Rehearsal, others did not. As of December 2008, the Bureau had not established testing plans or schedules for end-to-end testing of the key operations that were removed from the Dress Rehearsal, nor has it determined when these plans will be completed. These operations include

- update/leave,
- nonresponse follow-up,
- enumeration of transitory locations,
- group quarters enumeration, and
- field verification.

The decreasing time available for completing end-to-end testing increases the risk that testing of key operations will not take place before the required deadline. Bureau officials have acknowledged this risk in briefings to the Office of Management and Budget. However, as of January 2009, the Bureau had not completed mitigation plans for this risk. According to the Bureau, the plans are still being reviewed by senior management. Without plans to mitigate the risks associated with limited end-to-end testing, the Bureau may not be able to respond effectively if systems do not perform as intended.

Bureau Lacks Sufficient Executive-Level Oversight and Guidance for Testing

As stated in our testing guide and IEEE standards, oversight of testing activities includes both planning and ongoing monitoring of testing activities. Ongoing monitoring entails collecting and assessing status and progress reports to determine, for example, whether specific test activities are on schedule. In addition, comprehensive guidance should describe each level of testing and the types of test products expected.

In response to prior recommendations, the Bureau took initial steps to enhance its programwide oversight; however, these steps have not been sufficient. For example, in June 2008, the Bureau established an inventory of all testing activities specific to all key decennial operations. However, the inventory has not been updated since May 2008, and officials have no plans for further updates.

In another effort to improve executive-level oversight, the Decennial Management Division began producing (as of July 2008) a weekly executive alert report and has established (as of October 2008) a dashboard and monthly reporting indicators. However, these products do not provide comprehensive status information on the progress of testing key systems and interfaces. Further, the assessment of testing progress has not been based on quantitative and specific metrics. The lack of quantitative and specific metrics to track progress limits the Bureau's ability to accurately assess the status and progress of testing activities. In commenting on our draft report, the Bureau provided selected examples where they had begun to use more detailed metrics to track the progress of end-to-end testing activities.

The Bureau also has weaknesses in its testing guidance. According to the Associate Director for the 2010 census, the Bureau did establish a policy strongly encouraging offices responsible for decennial systems to use best practices in software development and testing, as specified in level 2 of Carnegie Mellon's Capability Maturity Model® Integration.[7] However, beyond this general guidance, there is no mandatory or specific guidance on key testing activities such as criteria for each level or the type of test products expected. The lack of guidance has led to an ad hoc—and, at times—less than desirable approach to testing.

[7]Capability Maturity Model® Integration is intended to provide guidance for improving an organization's processes and the ability to manage the development, acquisition, and maintenance of products and services. The model uses capability levels to assess process maturity.

Implementation of Recommendations Could Help Ensure Key Testing Activities are Completed

In our report, we are making ten recommendations for improvements to the Bureau's testing activities. Our recommendations include finalizing system requirements and completing development of test plans and schedules, establishing a master list of system interfaces, prioritizing and developing plans to test these interfaces, and establishing plans to test operations removed from the Dress Rehearsal. In addition, we are recommending that the Bureau improve its monitoring of testing progress and improve executive-level oversight of testing activities.

In written comments on the report, the department had no significant disagreements with our recommendations. The department stated that its focus is on testing new software and systems, not legacy systems and operations used in previous censuses. However, the systems in place to conduct these operations have changed substantially and have not yet been fully tested in a census-like environment. Consistent with our recommendations, finalizing test plans and schedules and testing all systems as thoroughly as possible will help to ensure that decennial systems will work as intended.

In summary, while the Bureau's program offices have made progress in testing key decennial systems, much work remains to ensure that systems operate as intended for conducting an accurate and timely 2010 census. This work includes system, integration, and end-to-end testing activities. Given the rapidly approaching deadlines of the 2010 census, completing testing and establishing stronger executive-level oversight are critical to ensuring that systems perform as intended when they are needed.

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

Contacts and Staff Acknowledgements

If you have any questions about matters discussed in this testimony, please contact David A. Powner at (202) 512-9286 or pownerd@gao.gov or Robert Goldenkoff at (202) 512-2757 or goldenkoffr@gao.gov. Other key contributors to this testimony include Sher`rie Bacon, Barbara Collier, Neil Doherty, Vijay D'Souza, Elizabeth Fan, Nancy Glover, Signora May, Lee McCracken, Ty Mitchell, Lisa Pearson, Crystal Robinson, Melissa Schermerhorn, Cynthia Scott, Karl Seifert, Jonathan Ticehurst, Timothy Wexler, and Katherine Wulff.

Mr. CLAY. Thank you so much, Mr. Powner, and thank you for this report outlining what remains ahead for the Bureau. We certainly will exercise that oversight to ensure that they meet these standards.

Dr. Himes, you are recognized for 5 minutes.

STATEMENT OF GLENN S. HIMES

Mr. HIMES. Thank you, and good morning. Thank you for the opportunity you have given to The MITRE Corp. to update the committee on critical operations for the 2010 decennial census. The MITRE Corp. is a not-for-profit organization chartered to work in the public interest. MITRE manages three federally Funded Research and Development Centers [FFRDCs]: one for the Department of Defense, one for the Federal Aviation Administration, and one for the Internal Revenue Service.

Governed by Part 35.017 of the Federal Acquisition Regulations, FFRDCs operate in the public interest with objectivity, independence, freedom from conflict of interest, and full disclosure of their affairs to the respective Government sponsors. It continues to be our privilege to serve with the talented engineers and other professionals who support the Census Bureau in its efforts to prepare and conduct the 2010 decennial census.

We are pleased to report that since MITRE's last appearance before this committee in July, that the Bureau has demonstrated continued improvements in managing and overseeing preparations for the 2010 decennial census. These improvements include an increase in processes and tools to monitor program progress and to identify potential risks.

We are also pleased to report that many significant issues with the field data collection automation control have been resolved. Approximately a year ago we expressed concerns about the cost, schedule, and performance risks for the FDCA program to the Census Bureau.

A risk reduction task force established by the Secretary of Commerce and the Director of the Census Bureau recommended a rebalancing of work from the contractor to the Government. The goal was to enable the contractor to focus on the software system necessary to perform the address canvassing operation. Based on our observations, it appears that the rebalancing has achieved its intended effect, and the risks to the address canvassing operation are substantially reduced.

Although the rebalancing was essential, much of the progress is due to positive steps by the Census Bureau's FDCA program management office and the contractor's development team. Both organizations should be commended for establishing an effective working relationship and overcoming the large challenges they faced in the past year.

Although we are cautiously optimistic about the address canvassing operation, risks remain within it and other operations for the 2010 decennial census. These risks are natural for such large programs. Census Bureau personnel update and monitor these risks on a regular basis, and constant attention will be required until the decennial is completed.

We remain committed to helping the Census Bureau prepare for a successful 2010 decennial census. Thank you for inviting us to this hearing, and I would be happy to answer your questions.

[The prepared statement of Mr. Himes follows:]

MITRE

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

March 5, 2009

Critical Operations of The 2010 Census

Glenn S. Himes, Ph.D.
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The MITRE Corporation

1 Introduction

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

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

The Decennial Census is an enormous undertaking, requiring the U. S. Census Bureau to develop or acquire technology-based solutions that improve quality and efficiency. However, technology itself is not a panacea. The technology requires changes in the roles of the people and the processes they implement. Planning, acquisition, and coordinating the changes to this combination of people, processes, and technology are very complex and filled with risk. This complexity spurred the Census Bureau to request MITRE assistance in 2004.

Today's testimony responds to the topics listed in the hearing invitation from Chairman Clay dated February 13, 2009. These topics include:

- Integration and Testing of the Information Technology Systems
- Analysis of the December 2008 Operational Field Test of the Handheld Computers
- Preparations for Address Canvassing
- Reliability of the Cost Estimate
- Reliability of the Field Infrastructure for Non-Response Follow Up and Other Operations.
- Implementation of the 2010 Census Local Update of Census Address (LUCA) program

We are providing no comments on the Local Update of Census Address program, because MITRE has not been involved in any phase of the LUCA operation. The other topics are addressed in each of the following sections.

2 Integration and Testing of the Information Technology Systems

MITRE has had limited involvement with the integration and testing of information technology (IT) systems required to support conducting the 2010 Decennial Census. Our involvement consisted of observations of some tests of the Address Canvassing system, as described in Sections 3 and 4.

In addition, MITRE assisted the Census Bureau in the development of a program monitoring portal, called the electronic Census Operations Center. The electronic Census Operations Center helps Census Bureau leaders track the overall status of preparations for the Decennial Census, including Information Technology Integration and Testing. The electronic Census Operations Center provides Census Bureau leaders easy access to plans, schedules, status, risks, issues, decision memoranda, and other reference information so they can monitor and control program activities for a successful 2010 Decennial Census.

Overseen by Assistant Director of Decennial Programs, Dr. Dan Weinberg, and created with the help of the Geography and Decennial Management Divisions, the electronic Census Operations Center gathers, coordinates, and disseminates decennial census-related information from across the Census Bureau, including:

- Program Management Reviews, Risk Registers, and approved Detailed Operational Plans for each of the major Census operations
- Weekly schedule reports and the 60-day look-ahead for all activities
- Status on program-level issues, such as Testing, Address Canvassing Workload, and Fingerprinting
- Contact information for each issue manager
- Testing status of eight major operations
- Recent presentations by Census Bureau staff at conferences around the United States.

The Decennial Census Testing Officer provides weekly status updates to the electronic Census Operations Center. This information is available to everyone with access to the Census Intranet and helps integrate information technology activities and uncover critical dependencies.

Finally, an executive-level snapshot of status is extracted and communicated monthly to Census Bureau managers and to the Department of Commerce in a 2010 Census Monthly Status Report.

3 Analysis of the December 2008 Operational Field Test of the Handheld Computers

MITRE was tasked by the Census Bureau to observe the Address Canvassing Operational Field Test of the 2010 Census Field Data Collection Automation (FDCA) System held in Fayetteville, North Carolina during the week of December 8th, 2008. We documented our observations to characterize issues and provide recommendations to assist preparations for the full Address Canvassing operation.

The goals of this observation survey were:

- To understand the Census Address Canvassing Field Operations environment and its use of software, infrastructure, and operational/management procedures in achieving the mission
- To observe the operational and technical workings of an Early Local Census Office (ELCO), particularly with respect to system usage and how operational procedures influence and are influenced by systems
- To identify how the current FDCA system is being used to conduct Address Canvassing and to observe specific examples of system interfaces being exercised
- To observe operational use of the handheld computer by Field Listers for Address Canvassing from a systems perspective to help validate and improve understanding of current FDCA systems operational behavior.

It should be noted that the software under test in the Operational Field Test was not the final version of the software that will be used for Address Canvassing.

Using non-disruptive techniques MITRE documented observations and verbal accounts relative to the support for and conduct of the FDCA-related field operations for Address Canvassing. Several personnel were interviewed to better understand the Early Local Census Office operational support and technology infrastructure and to gain a better understanding of the operational procedures within the Address Canvassing Operation.

Findings

MITRE's observations focused on two specific portions of the Operational Field Test:

- Early Local Census Office Support for Address Canvassing Field Operations
- Address Canvassing Field Operations using the handheld computer.

The Fayetteville ELCO provided an efficient environment for the Address Canvassing operational field test support. Operational management responsibilities and staff boundaries were clear and well understood. The ELCO was a self-contained unit operating in a single facility. All necessary computer hardware, software, and local area networking were provided in-house. Remote access to Census Headquarters systems was provided by commercial carrier network link running as part of the Census FDCA Network.

The field use of the handheld computer by listers and crew leaders provided an efficient means of automating the listing, timesheet, and assignment tracking processes. Based on our observations and information reported during the Fayetteville Address Canvassing Operational Field Test, the operations control system and handheld computer worked effectively and provided the necessary capabilities to perform Address Canvassing. Specific conclusions with respect to FDCA system functionality, performance, stability and usability for Address Canvassing are given below:

Functionality

The FDCA handheld computer and operation control system have acceptable functionality to support Address Canvassing. Office staff, Crew Leaders, and Quality Control Crew Leaders were able to create and update assignments. Listers and Quality Control Listers were able to locate and successfully work their Assignment Areas.

Performance

The FDCA handheld computers demonstrated acceptable performance. Listers and Crew Leaders were able to use the handheld computer device and software to perform their required tasks without undue delay. The FDCA handheld computer transmission performance and operation control system performance were adequate for a single ELCO. A transmission load test involving the simultaneous transmission by more than 60 listers using handheld computers demonstrated acceptable performance. This test simulated the load of a much larger number of users, as transmissions in full operations will occur randomly and will not be synchronized. The risk of performance problems merits continued testing and monitoring until Address Canvassing is completed due to the huge number of workers accessing the system.

Stability

The handheld computer solution performed well. A known anomaly was observed, but the anomaly was reported to the help desk and was resolved by the lister in the field using an operational "workaround." As a result, the desired work was completed successfully. The known workarounds are documented in the full Address Canvassing training materials. The workarounds are being provided to the Help Desk staff as knowledge base articles that can be used to help users in the field.

Usability

The handheld computer solution was usable by Crew Leaders and listers for both Address Canvassing and Quality Control. Several procedural issues were observed and reported that related to the limited degree of the Operational Field Test refresher training. However, these issues will be covered during the full Address Canvassing training activities.

Overall, the Address Canvassing Operational Field Test observations indicate that the tools and operational concepts being employed for Address Canvassing in the ELCO and for field work are fundamentally sound and provide a workable model for the upcoming 2010 Decennial Address Canvassing. The existing issues are manageable, and the FDCA Program Management Office and the contractor continue to address the issues that have been identified through the testing. Continued attention to the remaining risks is recommended until the completion of Address Canvassing considering the size and complexity of the operation.

4 Preparations for Address Canvassing

MITRE was asked to assist with several preparatory tasks for Address Canvassing as described in the rest of this section.

Contingency Software Development:

Former Director Steve Murdock tasked MITRE to develop contingency software and an end-to-end system design that could be used during Address Canvassing if the primary solution experienced catastrophic problems. MITRE worked with the Census Bureau to identify existing Census software that could be re-used and to establish the bare minimum requirements for an Address Canvassing contingency system.

The user requirements were documented and analyzed to develop a set of minimum system requirements needed to conduct Address Canvassing. The Census Contingency architecture included an Operation Control System based on the Census Operation Control System used during the 2006 Census Operational Test. New software was developed for handheld computers for listers and crew leaders, although it was developed to run on laptop computers and handheld computers that the Census Bureau had already acquired.

Agile Development methodologies were employed in the Census Contingency software development. The methodologies included frequent user reviews of functionality and "as-built" software demonstrations. Five demonstration reviews were held during the four month development period

The end-to-end Contingency system, demonstrated in November 2008, included both Operation Control System capabilities and handheld computer capabilities. The effort was halted in December 2008, because the primary solution became sufficiently robust for the Census Bureau to decide an end-to-end contingency was no longer needed.

Operational Readiness Review

The Associate Director for Decennial Census, Mr. Arnold Jackson, asked MITRE to attend the Address Canvassing Operational Readiness Review for the FDCA System held in January 2009. The contractor reviewed the readiness of the FDCA System solution for Address Canvassing and responded to Census questions and comments. An action item list was jointly developed by the contractor and Census for follow up to specific questions and issues raised during the review. MITRE is currently engaged with the Census FDCA Program Management Office on several

tasks relating to Address Canvassing, including post-Operational Readiness Review action items and FDCA Address Canvassing performance analysis and tuning.

System Performance Testing

Mr. Jackson requested a MITRE review of the FDCA system performance testing that was being conducted by the contractor. A major concern was the ability of the FDCA infrastructure to handle the load created by the use of approximately 150,000 handheld computers and the associated number of Local Census Offices during the full Address Canvassing operation.

MITRE worked with FDCA Program Management Office staff to review and assess the FDCA performance requirements and design, performance tests, and performance models. MITRE also toured the contractor's performance testing facility and questioned their engineers about their tools and methodologies. MITRE concluded that the contractor's methodology was consistent with current best practices and was an effective way to estimate performance and scalability of the system. MITRE continues to work with the FDCA Program Management Office in reviewing results of the ongoing contractor testing effort.

Overall Observations

The FDCA Program Management Office and the contractor appear to be collaborating effectively on testing and preparations for Address Canvassing operations. The contractor is executing a structured test program that conforms to best practices and appropriate tools and processes in the areas that MITRE has observed. The levels of cooperation and communication between the FDCA Program Management Office and the contractor have improved significantly in the past year.

Although we are cautiously optimistic about the Address Canvassing operation, risks remain within it and other operations for the 2010 Decennial Census. These risks are natural for such large programs. Census Bureau personnel update and monitor these risks on a regular basis, and constant attention will be required until the Decennial is completed.

5 Reliability of the Cost Estimate

In April 2008, MITRE received direction from Director Murdock to update the FDCA Independent Government Cost Estimate. This was partially in response to a request from Chairman Clay for a review of the costs by MITRE during an April 9, 2008 joint hearing on the FDCA contract by the House Committee on Oversight and Government Reform and the Subcommittee on Information Policy, Census, and National Archives.

The original Independent Government Cost Estimate was produced by MITRE in April 2005 to assist the Census Bureau in the initial planning and acquisition processes for FDCA. The original Independent Government Cost Estimate was $622 million for the lifecycle of the FDCA program. All three proposals from industry were within a 10 percent margin of the MITRE estimate, including the Harris Corporation proposal of $596 million. Census awarded the FDCA contract to the Harris Corporation in March of 2006.

Since the time of contract award, there were several significant program changes that affected the estimated cost of the program. As a result, the FDCA Independent Government Cost Estimate was updated by June 2008 to prepare the Census Bureau for re-negotiating the contract with Harris. The June update is the previous estimate that was provided to this committee.

In August 2008, MITRE was asked to calculate an "estimate to complete" cost to aid contract negotiations that addressed the rebalancing of work from the contractor to the government. The Estimate to Complete reflected all approved changes of scope, the costs incurred to date (aka, "sunk costs"), and the estimated costs of the remaining work. The Harris Corporation and the Census Bureau completed contract re-negotiations in September 2008.

Table 1 provides a brief history of the estimates of the costs of the FDCA contract.

Table 1. Cost Estimate History

Description	Estimates at Time of Contract Award (March 2006)	June 2008 Update	Estimate to Complete
Harris	**$596M**	**$1,306M (Rough Order of Magnitude)**	**$798M (September 2008)**
MITRE Independent Government Cost Estimate	**$622M**	**$726M**	**$795M (August 2008)**

MITRE also reviewed the cost estimates for scope of work that had been transferred to the Census Bureau and found the estimates to be reasonable.

MITRE continues to assist the FDCA Program Management Office on an as-needed basis in evaluating Change Requests (CR) that reflect adjustments to the scope of work. The FDCA Program Management Office has established a firm baseline with the contractor that should facilitate the orderly evaluations of the CRs.

The Census Bureau also requested acquisition guidance from MITRE during the contract negotiations in August 2008. The Census Bureau modified the fee structure and established an Incentive Fee Plan that is better suited to the remaining Harris work. The Incentive Fee Plan establishes a more objective measure of cost and technical performance. Consistent with the Federal Acquisition Regulations, the cost incentives include a target cost, a target fee, and a fee adjustment formula. The technical incentives employ a metrics-based to substantiate claims of fee eligibility.

The new Incentive Fee Plan has only been in operation for one fee period, so it is too soon to determine the effectiveness of the incentive fee structure. The Incentive Fee Plan has effectively established reasonable and attainable performance targets that are clearly communicated with the contractor.

6 Reliability of the Field Infrastructure for Non-response Follow-up and Other Operations

MITRE is not directly involved in the preparations of the infrastructure for Non-Response Follow-Up. Status and testing information is provided to Census Bureau leaders through the electronic Census Operations Center as mentioned earlier. One aspect of that reporting that merits mention is the Census Bureau's approach to risk management.

MITRE assisted the Census Bureau in developing the current procedures to identify and quantify the magnitude of the risks that are identified by Census Bureau personnel. The Census Bureau maintains a risk register that contains the risks that are related to infrastructure for non-response follow-up and other operations. The risk register is reviewed by the Risk Review Board on a weekly basis, and risks are documented in the monthly status report reviewed by the Associate Director for Decennial Census. The report is provided to the Department of Commerce, too.

The risk quantification process employs a generally accepted approach that defines five levels of probability and impact. Each risk is periodically reviewed, providing Census Bureau leaders with an up-to-date list of risks that is ordered by severity. Mitigation plans for the risks of greatest concern are in place to reduce either the probability of occurrence or the impact of a particular risk if it occurs. The Census Bureau is in the process of developing the remainder of the mitigation plans by the end of March 2009.

Appendix A Acronyms

FDCA	Field Data Collection Automation
FFRDC	Federally Funded Research and Development Center
LUCA	Local Update of Census Addresses

Mr. CLAY. Thank you so much, Dr. Himes, for your testimony.

We will begin under a 10 minute rule for each side, and I will start with Mr. Mesenbourg.

Mr. Mesenbourg, it sounds like the Bureau has come a long way since our last meeting. I commend you and your staff. A lot of the work was inspired by GAO findings, so I want to also commend Mr. Powner and Mr. Goldenkoff, along with Mr. Goldenkoff's predecessor, Matthew Siree, for the great work their teams have done on the 2010 census.

It was GAO that first brought to this committee's attention the problems with FDCA. They recommended consistent oversight, to which this subcommittee has been committed. I also want to commend Dr. Himes for the important role MITRE has played in helping the Bureau to resolve problems.

Let's go straight to testing. GAO made 10 recommendations to ensure that testing activities for key systems are completed. What action is the Bureau taking or planning to address GAO's recommendations?

Mr. MESENBOURG. Mr. Chairman, we have provided a detailed response to GAO, but let me just sum up some of the major steps that we have done.

Last April, when the decision was made to re-plan the census and to shift from the handheld use in the nonresponse followup to a paper base, we did a thorough review at that point of our testing program. We did an inventory of the testing and we found some data gaps, and then we addressed those by adding additional tests.

We also, later last year, appointed a testing officer with responsibility over all testing for the decennial census, and we have made testing metrics a key part of every operational review. So we look at the census. We have about 51 key operations that we are doing, and those are things like nonresponse followup. We have 25 systems that those operations interact with, and we have 244 interfaces between systems.

So late last year we also appointed an integration manager who has responsibility to make sure all of the activities that we took out of the FDCA contract now will fit together and will be integrated.

We clearly face some challenges, given the de-scoping of the census. So we took over about 11 key paper operations. And I think we are being responsive to Mr. Powner's comment of trying to prioritize.

So we are implementing what we would call a thread test, and those are key activities within a process, for example, our first focus is on nonresponse followup and group quarters evaluation. Testing on those activities and the operational control system will begin on April 20th. We think those two operations test a huge amount of the functionality that we will use in the other nine operations.

Mr. CLAY. OK, let me stop you right there and ask you in the report, GAO stated that in May 2008 the Bureau established an inventory of all testing activities specific to all key decennial operations, but that the inventory had not been updated since that time. What is the current status of testing activities for the 2010 census?

Mr. MESENBOURG. At this point, we do have a comprehensive inventory of all of the testing that we need to do. Given the time constraints that we are under, there will be some operations that we have performed in the past that we will not test as thoroughly as we will some of the new activities.

Mr. CLAY. Where is the Bureau on the development of the operations control system for paper-based operations?

Mr. MESENBOURG. OK, at the end of January, we integrated the schedule for the operational control system that will control 11 paper-based operations in the census. We integrated that into the master activities schedule. So that is done. And we do have a detailed plan at this point, and schedule, for what we are calling Release–0. Release–0 will focus on the nonresponse followup and the group quarters enumeration. Then we will follow with a Release–1, which will take on additional operations such as remote Alaska. So I believe we have a detailed plan that we can move ahead, and each one of those releases will have testing as part of the sign-off.

Mr. CLAY. And at what date certain can we expect you to report to this subcommittee that adequate plans for total end-to-end testing are in place?

Mr. MESENBOURG. To be honest, there will not be end-to-end testing of all operations, because what we will have to do is we will test at key functionality, which will show up in other operations. What we are going to do, for example, the push of the nonresponse followup into the—that functionality we can test based on the dress rehearsal responses. We will put up a mock environment that will send workload to be identified for nonresponse followup, and we will be able to test that in the operational control system that will control nonresponse followup.

Mr. CLAY. Now, you heard Mr. Powner say time is of the essence, and you still have six major systems that still need to be tested. Are you cognizant that time is of the essence, that we are closing in on a year to go?

Mr. MESENBOURG. Mr. Chairman, we are very cognizant that time is of the essence. We have an extremely tight schedule, and it is going to be critically important that we stick to that schedule.

Mr. CLAY. OK, thank you for that response.

Mr. Driehaus, you may followup.

Mr. DRIEHAUS. Thank you, Mr. Chairman. I just have one very brief question for Mr. Mesenbourg.

Mr. Mesenbourg, I am particularly concerned about the number of houses that are currently in foreclosure across the country, and the transience we are seeing in our population. You know, the movements of population that we are seeing, especially in the inner cities, that are traditionally difficult to count, you know, we are seeing folks move around at record levels; and I am concerned as to whether or not the Census Bureau is taking the necessary steps to account for that movement and how you are coping with that.

Mr. MESENBOURG. It is a growing problem, there is no doubt about that. The address canvassing operation that we will start at March 30th will visit every address, whether occupied or vacant. So the critical first step is to ensure that we have a complete address list for the 2010 decennial census. So that is job one, to make sure we have the list.

Mid-March of next year we will mail out report forms to almost every household in the United States. If that address is vacant, then they will not respond the form and they will go into the non-response followup operation. We will send an enumerator to that address to see if anyone is there. If they are there, we will collect the data. We will go back six times to make sure that we can reach a person. If it is unoccupied, of course, we will miss them.

We have taken some steps to address this issue, so we have added two questions to the 10-question 2010 census form that gets at coverage problems. One of those questions relates to do you have a relative living with you that you may not have listed on the report form. That will kick off an action to put that into a followup activity that will try to identify why that person wasn't listed. So that will be one way that we will attempt to address the issue of foreclosures and people moving in to non-traditional living arrangements.

But I think a key message of both our advertising and our partnership program will be is to get out into the local community and to convince them, through trusted voices in the community, that if you are doubling up or if you are living in a non-traditional living arrangement, that it is important that you be counted and that you are listed on the report form.

Mr. CLAY. Thank you so much.

Mr. McHenry, you are recognized for 10 minutes.

Mr. MCHENRY. Thank you, Mr. Chairman.

Thank you all for testifying today. We certainly appreciate it. This is an important matter that we take very seriously, and I know you do as well.

Mr. Mesenbourg, thank you for your service. I know it has only been brief. You are serving Government only 36 years, and we thank you for it. When the short-timer, Mr. Jackson, sitting behind you, is only there for 20 years, we certainly know you have expertise and great knowledge based on experience, so thank you.

So, Mr. Mesenbourg, it is my understanding there are plans to conduct a post-enumeration survey as part of the 2010 census. Is this correct?

Mr. MESENBOURG. We do have plans to do a coverage measurement program as part of the 2010 census.

Mr. MCHENRY. OK. What is the sample size of this service?

Mr. MESENBOURG. Sample size is going to be about 300,000 housing units.

Mr. MCHENRY. OK. Is this comparable to the 2000 census?

Mr. MESENBOURG. It is comparable to the 2000 census.

Mr. MCHENRY. Is it the same number or——

Mr. MESENBOURG. It is very close to the same number.

Mr. MCHENRY. Do you recall what the 2000 number was?

Mr. MESENBOURG. I don't, off the top of my head, but certainly we can get you that number.

Mr. MCHENRY. Certainly. And has the Bureau increased or changed the post-enumeration survey for this census?

Mr. MESENBOURG. We have made some changes to do a better job trying to identify duplicates in the census. That was an issue in 2000. The focus of the 2010 coverage measurement program is to provide better information about the components of error. So we

will be providing data not only on the net error, but also components of error such as duplicates, omissions, and so on.

Mr. MCHENRY. Has this been changed in the planning process or is this a change from the 2000 census?

Mr. MESENBOURG. This has been the plan during the entire decade.

Mr. MCHENRY. OK. And how does the Bureau tend to use the post-enumeration survey? You outlined generally, but more specifically?

Mr. MESENBOURG. We are using it primarily to provide measures of the error and as input to improving the 2020 decennial census.

Mr. MCHENRY. OK. And is there any thought that the Bureau would use this survey to adjust or change the 2010 count?

Mr. MESENBOURG. The plan does not include any plans to use the coverage measurement for adjustment.

Mr. MCHENRY. OK. Are there any other thoughts to that or any other considerations to that?

Mr. MESENBOURG. Not in our current plan there isn't.

Mr. MCHENRY. OK. Yesterday, as I mentioned in my opening statement, it has been reported that Commerce Secretary Designee Gary Locke met with leaders of the Senate Commerce Committee and, according to the news reports, stated that "so-called sampling will be used minimally as an accuracy check." I believe he is referring to the post-enumeration survey. Is that how you would read it?

Mr. MESENBOURG. Well, the coverage measurement will provide estimates of the number of housing units and the number of persons. Then you will have the apportionment number also. But I am not sure what Governor Locke had in mind.

Mr. MCHENRY. Yes, it is hard to impute from politicians what they mean. So that would be somewhat in keeping with what you have outlined, just as a survey to check the accuracy. OK.

Now, in terms of a fair and accurate census, what is your definition of a fair and accurate census?

Mr. MESENBOURG. Well, we see job one as to count everyone, and we see an expanded advertising and partnership program as a key part of doing that. We also have done a number of additional things from an operational perspective that we hope will improve the count. This will be the first time we are using a short form only census, so 10 questions, 10 minutes to fill it out. We also will be using a bilingual form, English-Spanish, that will target 13 million households in areas where English is not often spoken at home.

We will be using a second mailing, a targeted second mailing, doing a blanket mailing to traditionally low response, low mail response areas, and then sending a replacement form out to another group, to the non-respondents. And we hope and expect that a much more robust partnership program will get the message out to the local community that it is critical to participate in the census.

Mr. MCHENRY. So, in short, do you believe the Bureau's main goal for the 2010 census is to count every person once, only once, and at the right place?

Mr. MESENBOURG. That has always been our goal.

Mr. MCHENRY. All right. So that means a count of people. That means an exact enumeration in counting.

Mr. MESENBOURG. We will make every effort we can to get a response, an actual response back from every household in the United States.

Mr. MCHENRY. Two of the greatest challenges, you have mentioned this and I am glad the Bureau has really thought through the undercount and overcount numbers, and appreciate the fact that you have programs directly focused on the undercount. Would you describe the challenge of the undercount and the overcount as one of the most challenging of the challenges the Bureau faces in the 2010 census?

Mr. MESENBOURG. Well, I think it would be clear getting people to participate is the biggest challenge. So missing people is, in my mind, a more significant challenge than addressing the duplicates. We have done both things, we have added two coverage questions to the 2010 census.

One is to help us get at undercount, where someone incorrectly or mistakenly left a person off the report form that should have been on the report form; and we have added another question to help address the overcount, where someone may have included, let's say, for example, a college student that should have been counted at the dorm where they spend most of their time. So there are two questions there, and answers to those questions will generate a telephone call as part of our coverage followup operations to try to gather more information to get the person counted in the right place.

Mr. MCHENRY. Well, I think we all understand the sensitivities of ensuring that undercounted communities and people are focused upon and ensure that we actually get them counted, which takes a lot of effort, a lot of resources, and we want to be of assistance to that with you and the stakeholders in this.

With that, I would like to yield the remainder of my time to the deputy ranking member, Congressman Westmoreland, from Georgia.

Mr. WESTMORELAND. Thank you, Congressman McHenry.

First to Mr. Goldenkoff and Mr. Powner. You know, I have been in quite a few of these oversight hearings and I have seen a lot of reports from the GAO, and I have never seen one that said you all are doing a good job. So I know that you all do a very good job. But this comes pretty close, when it says that there are no new recommendations. Now, is that because you didn't go in and look at everything again, or are you just going on a past report? Either one of you.

Mr. GOLDENKOFF. I think what you are referring to is our testimony today, and the reasons that there were no new recommendations is that all our recommendations——

Mr. CLAY. Maybe if you move it closer to you, Mr. Goldenkoff.

Mr. GOLDENKOFF. I think what you are referring to is our testimony where we said that there were no new recommendations. That was just because our testimony was based on previously issued work, most of which did contain recommendations.

Mr. WESTMORELAND. OK.

Mr. POWNER. And, Congressman Westmoreland, I just want to be clear.

Mr. WESTMORELAND. OK.

Mr. POWNER. We are releasing a report today on system testing, so not to disappoint. We have 10 new recommendations today that we are releasing for the first time, on testing.

Mr. WESTMORELAND. OK. One of the other things that you had talked about was the complete and accurate address list. Is that correct?

Mr. GOLDENKOFF. That is correct.

Mr. WESTMORELAND. When do you think the best time would have been to get a complete and accurate address list?

Mr. GOLDENKOFF. It is something that goes on throughout the decade. The Bureau is constantly working with the Postal Service, through the Postal Service's delivery sequence file, to update the address list.

And now, as was already mentioned, or starting in April, the Bureau will go out and actually walk every street in the country to verify on the ground housing units, occupied housing units; and it is a difficult task because it is not always clear what meets the eye. There could be several families living in there, so you really have to go within six inches of a house sometimes to see double doorbells, two names on a mailbox that could indicate that there might be somebody living in the basement or in the shed in the back. So it is a very challenging task.

Mr. WESTMORELAND. I understand. But the reality of it is, I guess, the last address check is going to be the most accurate, and to me, at least, the Census Bureau, from information and testimony I heard today from Mr. Mesenbourg, is that they have asked local cities and counties and others to do that, and they are trying to make sure that the information that they have before they do the mailing is also the most recent and most up to date and the most correct information. Would you agree with that?

Mr. GOLDENKOFF. That is correct. You need to do it as close as possible to census day, but at the same time allow for the updating to take place so they can do the mail-out. So there needs to be some buffer in there.

Mr. WESTMORELAND. Thank you.

Mr. CLAY. Thank you, Mr. Westmoreland.

My friend from New York, Mrs. Maloney, is recognized for 5 minutes.

Mrs. MALONEY. Thank you, Mr. Chairman.

I would like to ask the representatives from GAO to respond to the earlier question on whether or not the operational testing on payroll, personnel changes, etc., were up to the systems of 2000? Are they at the same level? Are you pleased and agree with the prior answers to this question, that operational testing was correct, in place, and happening to the degree that it should to make sure that our systems do not falter or fail?

Mr. GOLDENKOFF. I would disagree with that. One of the issues is that there was no dress rehearsal, and the dress rehearsal, as the name implies, is essentially a test census, as close to census-like conditions as one can possibly get without actually conducting the census. So because it was curtailed, what was done during the dress rehearsal was fairly limited, there were certain operations that just weren't tested, so the Bureau is going into 2010 now conducting the actual census, in some respects, flying blind.

For example, there was no load testing. The number of millions of forms, millions of pieces of paper need to be process, and the Bureau never had an opportunity to test under, in a lot of cases, anything close to a load test of what would be a simulated census. So it really fell quite short of that.

Mrs. MALONEY. Well, what are the contingencies if these systems falter or fail? What are the contingencies?

Mr. GOLDENKOFF. In some cases, the Bureau, if it starts falling behind, the Bureau has been good in the past with workarounds and patches. It all depends on how bad the problem is. You know, in some cases the Bureau will fall behind schedule, and that has implications for downstream operations. In other cases things might cost more money. But that is one of the issues, that in some cases there is no backup or there is no contingency; it has to be done and done right.

Mrs. MALONEY. I would like to followup with a question on the budget. You really can't move forward without a proper budget. Do you have a full 10-year cycle cost estimate for the decennial operations that you could give the committee today?

Mr. MESENBOURG. Yes. Our expectation is the life cycle cost is going to be between $14 billion and $15 billion for the decennial census.

If I could, I would like to just respond briefly on the payroll system. The decennial applicant payroll system is up and running. This is the key tool that we use to process applicants and then to pay them. So at this point in time we have over a million applicants in that system. We are actually only going to hire about 140,000 people for address canvassing, but the demand for jobs has been so huge that we have had over a million applicants; and right now we have about 10,000 people that are getting paid through this system, and in another couple weeks that will jump up by about 140,000.

Mrs. MALONEY. How much money were you given in the stimulus plan?

Mr. MESENBOURG. We were given $1 billion.

Mrs. MALONEY. $1 billion?

Mr. MESENBOURG. $1 billion.

Mrs. MALONEY. And what are your plans for spending the additional money you were given in the stimulus plan?

Mr. MESENBOURG. The whole focus of this is to do as good a job as we can improving the count, and the bill language directed us to focus that money on enhanced and improved advertising and partnership activities, and that certainly is our intention. We also hope to invest additional moneys in our coverage followup operation, adding about another million to the workload; and then the remainder of the funds would be there to support key 2010 activities. But in the short term, in terms of 2009, the expenditures will be primarily focused on expanded media buys and advertising and our partnership program.

Mrs. MALONEY. And with the remaining money to make other choices, what is your basis for making these choices? Do you have an analysis of what needs to be done or other areas that you need help and support to make a more accurate census?

Mr. MESENBOURG. Our criteria have been to focus on those activities that will contribute the most to the census. Actually, we have provided a plan to the Office of Management and Budget in terms of what our focus is, and we are awaiting their response at this point.

Mrs. MALONEY. Thank you very much. My time is expended, is no longer. I have used up my time. Thank you. Thank you for all your hard work.

Mr. CLAY. Thank you so much, Mrs. Maloney.

I now go to the gentleman from Utah, Mr. Chaffetz, for 5 minutes.

Mr. CHAFFETZ. Thank you, Mr. Chairman.

Mr. Mesenbourg, you are a career civil servant, correct?

Mr. MESENBOURG. Yes, I am.

Mr. CHAFFETZ. With more than adequate funding, do you believe the Bureau has the talent and capability to oversee a professionally implemented and successful 2010 census?

Mr. MESENBOURG. I do.

Mr. CHAFFETZ. I would like your opinion, as the Census Bureau professional, on an important matter. You are currently operating without a Presidentially appointed, Senate-confirmed director, correct?

Mr. MESENBOURG. That is true.

Mr. CHAFFETZ. Do you believe the Bureau has the talent and expertise to continue planning for and implementing a successful 2010 census without a Presidentially appointed, Senate-confirmed director?

Mr. MESENBOURG. Well, I am doing two jobs at this point, and I guess what I see my job is right now is to continue to execute the plans to conduct a successful 2010 census. I have no ambitions to be permanent director of the Census Bureau, but my job is to keep that train moving down the track so, when we do get a Census Bureau director, we are in a better place than we were before.

Mr. CHAFFETZ. But do you believe that the Bureau has the talent and expertise currently in place right now to execute?

Mr. MESENBOURG. I believe we have the talent to keep the train moving down the track. I am not going to take a position whether we should have a director or not have a director. We have always had a director and I would——

Mr. CHAFFETZ. Fair enough.

Mr. MESENBOURG [continuing]. I think a director would be useful for us.

Mr. CHAFFETZ. As you know, the results of the 2010 census are used for appointment, redistricting at all levels of government, and the allocation of Federal funds. All of this is correct, right?

Mr. MESENBOURG. That is true.

Mr. CHAFFETZ. So, in your opinion, is it better to conduct a census that is free from political influence, or do you think politicians should be telling you how to do your job?

Mr. MESENBOURG. Well, the Census Bureau, in my 36 years, we have made decisions, technical decisions and program decisions, on the technical merit of the issues. We have not made decisions based on any kind of political pressure. That has been my experience over 36 years.

Mr. CHAFFETZ. The census is based on the Constitution, correct?
Mr. MESENBOURG. That is true.
Mr. CHAFFETZ. Do you recall which article or whatnot?
Mr. MESENBOURG. That is embarrassing to say, not.
Mr. CHAFFETZ. Article 1 of the Constitution deals with the powers of Congress, the legislative branch of our Government, correct?
Mr. MESENBOURG. True.
Mr. CHAFFETZ. So regarding anything having to do with the conduct of the census, it should be the Congress that has the authority and jurisdiction, do you agree?
Mr. MESENBOURG. You are getting me into territory I am not an expert on. It is clear the Congress has a responsibility to oversee our operations, yes. I would agree with that.
Mr. CHAFFETZ. How will the Bureau protect the integrity of the census from outright fraud?
Mr. MESENBOURG. From, I am sorry, outright?
Mr. CHAFFETZ. Just outright fraud. What protectors are in place to make sure that doesn't happen?
Mr. MESENBOURG. We have a whole series of quality control operations that we have in place that check the operations. So, for example, when we start address canvas—well, I will give you a better example. Right now we are about 90 percent done with the large block enumeration, and after that—now we have started to send QC people, other enumerators out to check the quality of that work. Every operation that we do will have a QC operation attached to it, and that will be one check.
Another check in terms of housing unit counts, in-person counts, will be our pop estimates programs that makes most of those. That is another quality check that we have.
Mr. CHAFFETZ. So if you have an enumerator who fraudulently fills out data and then submits these facts, do you believe there is a check and a balance in place to deal with that?
Mr. MESENBOURG. I do believe that we have a check in place that will identify that problem, yes.
Mr. CHAFFETZ. What is to keep somebody who gets the form in the mail and then knowingly fills it out incorrectly, I mean grossly incorrectly? How do we deal with that?
Mr. MESENBOURG. Well, there will be some additional checks against some administrative records, information that we have access to. But that is going to be very, very difficult to catch every one of those, if a person added an extra individual in the process. But we will do some re-interviewing there, so if it is systematic on the part of an enumerator, then we would catch it.
Mr. CHAFFETZ. Thank you, Mr. Chairman.
Mr. CLAY. Thank you, Mr. Chaffetz.
Mr. Mesenbourg, let's go back to the operational control system. The OCS is the brains of the whole system of the field operations. When will end-to-end testing for the OCS be in place?
Mr. MESENBOURG. The first testing will be done April 20th through May 1st. So what we have done because of the timing pressures that we are under, we are going to address key operations on an incremental process. So the actual final testing will not be done on all of those interfaces until next March.

Mr. CLAY. Mr. Powner or Mr. Goldenkoff, is that adequate, as far as the response to ensure success?

Mr. POWNER. I think the key is it is a tough challenge for them because not everything is in place. So part of what they are dealing with is you want to test what you have now, but I think it is very important, as was stated, that you come back and retest. The key here, though, is there is a lot of these examples in place. We have six major systems, we heard 244 interfaces, 44 operations.

OK, so when you start looking at all that, getting it all done and testing it in an integrated fashion, end-to-end, as you are asking, Mr. Chairman, see, we don't see all the prioritization and the plans in place. So, going forward, what is very important is that we see the appropriate plans. But then we have key metrics so we know exactly what is done, how well it is done, and then what remains ahead to complete. And the OCS is just one example of many challenges that they face going forward between now and census day.

Mr. CLAY. OK, Mr. Goldenkoff, the Bureau has many challenges facing its final preparation and conduct of the 2010 decennial census. What do you think places the 2010 census at greater risk and what can be done about it?

Mr. GOLDENKOFF. I think there are really two great risks: one, time is running out and, two, the lack of testing of key operations. So as was already stated here today, the Bureau needs to prioritize what it can do, what it can't do; figure out where, within all those different operations and activities that haven't been tested, where the Bureau is most vulnerable; and, second, make sure everything stays on track.

A third area is perhaps more marketing and promotion, because the non-response or the response rate, rather, is key to success.

Mr. CLAY. You know, address canvassing is set to begin nationwide within a few weeks. The Bureau never was able to carry out an end-to-end test of the new handheld devices with all the procedures in the field. How prepared is the Bureau to conduct address canvassing and how can the Bureau be confident that everything will work as the Bureau hopes without having tested it all?

Mr. GOLDENKOFF. Well, I think that—you know, the Bureau does not know what it doesn't know because, again, the lack of testing. They had the operational field test in Fayetteville, NC, and what that demonstrated was that, under the conditions in Fayetteville, NC, the handhelds functioned well. The problems that we had seen in earlier tests did not reemerge.

The problem is that, obviously, the country does not all look like Fayetteville, NC; you have urban areas, you have more rural areas. So the question is how will those handhelds perform, for example, in an area with lots of skyscrapers? Will they be able to lock on to a satellite signal? Will they be able to transmit data? And that is what nobody really knows. It is a big question mark.

Mr. CLAY. Should we be worried about the census being conducted on time?

Mr. GOLDENKOFF. I think that, come April 1st, forms will go out; by law, they need to. The question is really accuracy and quality of the census. Accuracy and cost, rather. That is really what it comes down to. Key operations they will get done, they need to get done. It is just a question of how much will things cost and how

good will the results be. At the end of the day, the data need to be delivered to the President come December 31, 2010. So whether they need to compress operations or speed things up at some point, they are under the gun. So things will happen on time, it is just a question of cost and accuracy.

Mr. CLAY. Sure. Thank you.

Mr. Powner, when the Census Bureau provided comments on GAO's report, it stated that it was putting much more focus on testing new things for 2010 and not testing things that have worked before. What is GAO's assessment of the Bureau's comment?

Mr. POWNER. We would not agree with that. Clearly, it is important to test new things, but if you have old things that are critical and you change software and hardware associated with that, that needs to be tested; and that was really the focus of our report. It is really based on a prioritization. So the prioritization might be new things, but it could very well be older things also.

Mr. CLAY. Thank you for that response.

Now I will recognize the gentleman from Georgia, Mr. Westmoreland, for 5 minutes.

Mr. WESTMORELAND. Thank you, Mr. Chairman. Just following up on some of the comments that the gentleman from Utah had.

Mr. Mesenbourg, what quality controls are you going to have on these enumerators? The gentleman from Utah questioned about them filling out the forms wrong, but what kind of quality controls do you have on these enumerators?

Mr. MESENBOURG. OK, every major operation we have a QC activity related to that, so we will actually go, take a sample of the enumerations, and we will have a different person go back and attempt to collect that same data; and that provides us a clear signal in terms of the quality. If there are issues related to a specific interview, we call that operation a re-interview operation to identify problems. If we identify a problem, then we will zero in on that enumerator and then do 100 percent check of all of their work. But every operation we do we are going to have a QC step built into it to check the quality of it.

Mr. WESTMORELAND. OK. And let's say that you do correctly identify an enumerator. What kind of corrective actions could be taken?

Mr. MESENBOURG. They could be terminated, and certainly they would be out of the enumeratoring business as soon as we identified that.

Mr. WESTMORELAND. OK. I know that the Bureau, as you have mentioned, will automatically mail a second census form to these traditionally, I guess, hard to count areas or the no response. That is correct, right, you will do a second mailing?

Mr. MESENBOURG. Second mailing, a blanket second mailing to areas that have a traditional very low mail response. We will do a blanket mailing and then we will have another group that sort of intermediary, possibly, under 50 percent. Then we will mail the non-respondents, the household that hadn't returned a form will get a form there.

Mr. WESTMORELAND. OK. So you feel comfortable that you are going to hit these under-response areas very well with a second mailing.

Mr. MESENBOURG. We have tested the second mailing during the decade. We used it during the dress rehearsal. We are confident that it will be beneficial.

Mr. WESTMORELAND. So you believe the second mailing is going to enhance your response.

Mr. MESENBOURG. Yes.

Mr. WESTMORELAND. How will you ensure that the data capture isn't wrongfully counted twice for those returned forms from both mailings? What is your system in place there to check that?

Mr. MESENBOURG. OK, in terms of data capture, forms will be returned and go through one of our automated three data capture systems, actually do OCR on the forms. Then we will do a matching operation; every form will have a unique 22 digit identifier on that. If we can't match, that generates a whole host of additional investigative work.

Mr. WESTMORELAND. OK, so——

Mr. MESENBOURG. So we have an automated process to make sure that we are not getting duplicate returns in.

Mr. WESTMORELAND. Thank you.

Mr. Goldenkoff, do you believe, because of all the stuff that we have been hearing in the news about we need a director, we don't have a director, whatever, you and Mr. Powner, do you believe that the Bureau has the right talent in-house to oversee this 2010 census?

Mr. GOLDENKOFF. The Bureau employees are extremely dedicated, extremely competent, and they have lots of experience. The concern is that here it is getting, with 10 yards to go until the goal line, census day, there is no permanent quarterback in place. And the other issue to consider, as well, not only who is calling the shots, who is being held accountable by Congress to the American taxpayers. This is also the time when the Bureau starts planning for the next census, the 2020 census.

So you need somebody in place who will take on, who will be responsible and held accountable for that as well, and making those sorts of decisions. So clearly the competency is there, there is no question about that; we have seen it in past decennials. But we need someone who is a strategic leader and someone who goes through the conventional selection process.

Mr. WESTMORELAND. OK. Given that this short form—and it is only a short form for the census—do you think that better equips the Bureau to conduct this census than in previous——

Mr. GOLDENKOFF. Most definitely. It should improve the response late because it is less burdensome than having a short form and a long form. I mean, back in 2000, studies have shown that the response rate to the short form was higher than to the long form. So you would be more willing to spend 10 minutes than 40 minutes on the long form.

Mr. WESTMORELAND. Right. It makes it a little easier for them to fill it out.

Mr. GOLDENKOFF. That is correct.

Mr. WESTMORELAND. And probably not as deep questions or personal questions as it was.

Is my time up, Mr. Chairman?

Mr. CLAY. Yes, sir. Thank you, Mr. Westmoreland.

I recognize the gentleman from Utah for 5 minutes.

Mr. CHAFFETZ. Thank you, Mr. Chairman.

Mr. Powner, do you believe that there is enough talent to oversee and conduct the 2020 census?

Mr. POWNER. From a technology point of view, for 2020, the Census Bureau needs more IT talent on board, clearly. If you look at what happened last summer with the FDCA problems, fortunately, we have organizations like MITRE. They hired some external folks to come in and help at executive levels. There are folks that are trying to do a good job there right now, but going forward we need more IT talent internal to the Bureau.

Mr. CHAFFETZ. Like previous decennials, the Bureau is using paper and pencil for nonresponse followup. But unlike previous years, we have better maps for enumerators, a targeted second mailing of the census form to the hard-to-count areas, and likely a better applicant pool from which to hire these enumerators. Shouldn't all these factors lead to a more accurate census?

Mr. GOLDENKOFF. Yes, they should lead to a more accurate census. You can handle the nonresponse followup workload faster, which is important because it reduces recall error. So all those things you mentioned should lead to that direction.

Mr. CHAFFETZ. And if you could summarize for me again real quickly the major hurdles you see and if any of these hurdles, you know, what the consequences would be if we are unable to overcome those hurdles.

Mr. GOLDENKOFF. Well, first, time is running out. There is just no time for missteps. There is no slack in the schedule. So to the extent that challenges or glitches emerge—and those things are inevitable—something comes up in testing, there is not a whole lot of time left to figure what the workaround is.

Second, the population is complex, demographically complex. So as I said in my statement, a key challenge is converting that awareness of the census into an actual response. The Bureau has been very good in terms of getting the word out. Ninety percent of the population or so is typically aware of the census, but the actual response rate is much lower. So that would be another hurdle.

Mr. CHAFFETZ. Would you concur or disagree that the census is rooted in Article 1 if the Constitution, which enumerates the powers of the legislative branch?

Mr. GOLDENKOFF. I will pass on that one.

Mr. CHAFFETZ. I guess the question is who do you believe the census director reports to?

Mr. GOLDENKOFF. Well, legally, to the Commerce Secretary. That, I believe, is in statute.

Mr. CHAFFETZ. And is it your experience from past decennials that the director often briefed the President, but never "reported to him?"

Mr. GOLDENKOFF. Well, from what we have seen in news accounts and also from some experience during the Bush administra-

tion, there was some contact between the census director and the White House, OMB, and that is not necessarily a bad thing.

Mr. CHAFFETZ. But communication is a little different than actually reporting to.

Mr. GOLDENKOFF. Right, they are two different things. It is one thing for the White House to be aware of and make sure that the census stays on track, but that is not a reporting relationship. But in terms of holding the Bureau accountable, it is a very powerful tool to have White House involvement. The thing is that the White House, it has to be that right balance between focusing on management and operational issues versus the science of the census. You don't want the White House or any political influence on the science of taking the census.

Mr. CHAFFETZ. Very good.

Thank you, Mr. Chairman.

Mr. CLAY. Thank you, Mr. Chaffetz.

Just one question for Dr. Himes. You know, the Bureau is working with MITRE on mitigation plans. What are your greatest concerns about timetables in the plans?

Mr. HIMES. Sir, I think, again, our greatest concern would be those that GAO has put together, the time to test and verify where the systems are working, particularly from a system view. So we think that there are tools in place that gives Census better insights into the status of their systems than they have had in the past; and the people that are working on them have substantial experience, but it is still a fairly large burden considering the amount of time remaining to track that whole activity end-to-end.

Mr. CLAY. Thank you so much for that response, Dr. Himes.

I will yield to Mr. Westmoreland.

Mr. WESTMORELAND. Thank you, Mr. Chairman. I appreciate that.

I didn't have any other questions, but when Mr. Goldenkoff passed on the Article 1 if the Constitution question, I felt like we might want to discuss that a little bit further, that the GAO understands that we feel like the origin of the census is rooted——

Mr. GOLDENKOFF. Oh, no question, Article 1. I misunderstood the question.

Mr. WESTMORELAND [continuing]. In Article 1 of the Constitution, which enumerates the power of the legislative branch.

Mr. GOLDENKOFF. Yes.

Mr. WESTMORELAND. So I just wanted to make sure that you understood that and you were just passing on the question maybe for——

Mr. GOLDENKOFF. No, I guess I misunderstood the question. I apologize.

Mr. WESTMORELAND. OK.

Mr. GOLDENKOFF. But, definitely, it is Article 1, Section 2, and that spells out the basic requirements of the census.

Mr. WESTMORELAND. Mr. Chairman, I would like to just make a comment, if I could. We all understand how important this census is for redistricting, for the allocation of Federal money, and I am very pleased with the testimony that we have heard today, because I think that everybody on that panel wants to have an accurate

count, an enumeration of everybody in this country, people who are here at the time of the census.

So I think that is the reason that there has been so much about whether the White House wants to have it reported to or to the Commerce Secretary, there is or is not a director. I feel very confident from just the information I have heard from the Census Bureau and the Acting Director there, and from the GAO and the things that they have looked at, that this process is going forward about as well as it could, and that there has been a lot of hard work put into it. So I think that the reason there is so much going on right now is everybody wants to make sure that every person is counted.

So I appreciate all of you coming.

I want to thank the chairman for having this hearing, because I think he recognizes the importance to each and every one of us, and the fact that we get a very accurate count. So with that, Mr. Chairman, I yield back the balance of my time.

Mr. CLAY. Thank you, Mr. Westmoreland.

In conclusion, let me thank the witnesses for their testimony today.

Mr. MCHENRY. If I could ask just one.

Mr. CLAY. You have another question?

Mr. MCHENRY. Yes, just one.

Mr. CLAY. OK, I will yield to Mr. McHenry.

Mr. MCHENRY. Sorry, Mr. Chairman. I just wanted to get this on the record.

Mr. Mesenbourg, from the Census Bureau's perspective—and I am sure these are questions you would like to answer—any and all information attained from the census forms cannot be used for any other person, including tax or law enforcement purposes, is that correct?

Mr. MESENBOURG. That is correct.

Mr. MCHENRY. OK. Many of us have received feedback from our constituents regarding privacy concerns, obviously, very much in mind today, especially. But information given by people to the Census Bureau is confidential by law, is that correct?

Mr. MESENBOURG. By law, by Title 13.

Mr. MCHENRY. All right. And getting people to respond is one of the main challenges, as you mentioned, so is there—because people maybe have a mistrust of Government, what efforts are you taking to ensure that people know that any information given to them is kept only within the Census Bureau and not shared with any other Government agency, department, or any other individual?

Mr. MESENBOURG. Well, that information will be on the report form that everybody receives but, probably more importantly, it is going to be a key focus of our advertising message and our partnership program. So it is one thing for the Census Bureau to tell people it is confidential. In the hard-to-reach segments of the population, our partnership program is aimed to get a trusted voice in that community to tell people that live in that community—and our partnership specialist will be hired from the community that they are working in—that you can trust the Census Bureau that they will hold your data confidential.

Mr. MCHENRY. Finally, if you and your staff could prepare a followup for this. This is too long of a question and our time is short. I would like to know the Census Bureau's full plan to minimize the undercounts and overcounts. I know you already have plans in place, but if we could receive that, I think that would be important for committee members to hear the full breadth and depth of our plan so we can also see ways that we can engage other stakeholders.

Mr. MESENBOURG. Certainly.

Mr. MCHENRY. Thank you, all.

And thank you, Mr. Chairman. I certainly appreciate it.

Mr. CLAY. Very good. Thank you.

The first major operation of the 2010 census, address canvassing begins on March 30th. There will not be any other opportunities to build a complete and accurate address list. Time is of the essence. It is critical that the Bureau work with GAO, MITRE, and use every resource available to get this right. Six major systems still need to be tested, the life-cycle cost estimate needs to be validated, and testing must be prioritized.

Let me thank all of the witnesses for coming today and thank the members of this committee for their singular focus and their commitment to seeing that the 2010 census be successful.

On that note, this hearing is adjourned.

[Whereupon, at 11:40 a.m., the subcommittee was adjourned.]

[The prepared statement of Hon. Diane E. Watson and additional information submitted for the hearing record follow:]

Opening Statement

Congresswoman Diane E. Watson

"Status of the 2010 Census Operations"

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

Thursday, March 5, 2009
2154 Rayburn HOB
10:00 A.M.

Thank you Mr. Chairman for holding today's hearing on the progress of preparations for the upcoming 2010 Census. I sincerely hope that these proceedings provide us with a clear assessment of the complications facing the Census Bureau, and guidance on the actions needed to guarantee the 2010 Census provides an accurate and comprehensive count of the population of the United States.

The practice of conducting a thorough census every 10 years ensures that Americans have proper representation in state and federal government.

With the continuous evolution of the global economic crisis and the passage of the American Recovery and Reinvestment Act last month, the need for the 2010 Census to be as thorough and accurate as possible has grown even greater.

By investing in our transportation, educational, and environmental infrastructure we empower communities to boldly confront their economic challenges, but without precise population data we will not be able to direct federal funds in the most equitable and efficient manner.

GAO investigations of the Census Bureau's operations have revealed considerable problems with the contracting and implementation of information technology systems. The report also details the unreliability of the Census Bureau's life cycle cost estimate, and the absence of adequate testing of their address canvassing and non-response follow-up operations. These challenges put the 2010 Census at "high risk" of undercounting and insufficient representation.

Mr. Chairman, I would like to thank the panelists for cooperating with the committee, and I am eager to hear their testimony on the Census Bureau's progress in

addressing some of the challenges mentioned by the GAO report.

Thank you, and I yield back the remainder of my time.

United States Government Accountability Office

GAO

Report to Congressional Requesters

March 2009

INFORMATION TECHNOLOGY

Census Bureau Testing of 2010 Decennial Systems Can Be Strengthened

GAO-09-262

GAO
Accountability · Integrity · Reliability

Highlights

Highlights of GAO-09-262, a report to congressional requesters

March 2009

INFORMATION TECHNOLOGY

Census Bureau Testing of 2010 Decennial Systems Can Be Strengthened

Why GAO Did This Study

The Decennial Census is mandated by the U.S. Constitution and provides vital data that are used, among other things, to reapportion and redistrict congressional seats. In March 2008, GAO designated the 2010 Decennial Census a high-risk area, citing a number of long-standing and emerging challenges, including weaknesses in the Census Bureau's (Bureau) management of its information technology (IT) systems and operations. In conducting the 2010 census, the Bureau is relying on both the acquisition of new IT systems and the enhancement of existing systems. Thoroughly testing these systems before their actual use is critical to the success of the census. GAO was asked to determine the status of and plans for testing key decennial systems. To do this, GAO analyzed testing documentation, interviewed Bureau officials and contractors, and compared the Bureau's efforts with recognized best practices.

What GAO Recommends

GAO is recommending that the Secretary of Commerce direct the Bureau to complete key system testing activities, develop and maintain plans for integration testing, and improve the oversight of and guidance for systems testing. In comments on a draft of this report, the department agreed with GAO's recommendations.

To view the full product, including the scope and methodology, click on GAO-09-262. For more information, contact David Powner at (202) 512-9286 or pownerd@gao.gov.

What GAO Found

Although the Bureau has made progress in testing key decennial systems, critical testing activities remain to be performed before systems will be ready to support the 2010 census. Bureau program offices have completed some testing of individual systems, but significant work still remains to be done, and many plans have not yet been developed (see table below). In its testing of system integration, the Bureau has not completed critical activities; it also lacks a master list of interfaces between systems; has not set priorities for the testing of interfaces based on criticality; and has not developed testing plans and schedules. Although the Bureau had originally planned what it refers to as a Dress Rehearsal, starting in 2006, to serve as a comprehensive end-to-end test of key operations and systems, significant problems were identified during testing. As a result, several key operations were removed from the Dress Rehearsal and did not undergo end-to-end testing. The Bureau has neither developed testing plans for these key operations, nor has it determined when such plans will be completed.

Weaknesses in the Bureau's testing progress and plans can be attributed, in part, to a lack of sufficient executive-level oversight and guidance. Bureau management does provide oversight of system testing activities, but the oversight activities are not sufficient. For example, Bureau reports do not provide comprehensive status information on progress in testing key systems and interfaces, and assessments of the overall status of testing for key operations are not based on quantitative metrics. Specifically, key operations that do not yet have plans developed are marked as making acceptable progress based solely on management judgment. Further, although the Bureau has issued general testing guidance, it is neither mandatory nor specific enough to ensure consistency in conducting system testing. Without adequate oversight and more comprehensive guidance, the Bureau cannot ensure that it is thoroughly testing its systems and properly prioritizing testing activities before the 2010 Decennial Census, posing the risk that these systems may not perform as planned.

Status and Plans of 2010 System Testing

System	Testing status	Testing plan completed	Testing schedule completed
Headquarters processing	In progress	Partial	Partial
Master address and geographic information	In progress	Partial	Partial
Decennial response integration	In progress	Partial	Partial
Field data collection automation	In progress	Partial	Partial
Paper-based operations	In progress	No	Partial
Data access and dissemination	In progress	Partial	Partial

Source: GAO analysis of Bureau data.

Contents

Figures

Abbreviations

Bureau	Census Bureau
DADS II	Data Access and Dissemination System II
DRIS	Decennial Response Integration System
FDCA	Field Data Collection Automation
IEEE	Institute of Electrical and Electronics Engineers
IT	information technology
MAF/TIGER	Master Address File/Topologically Integrated Geographic Encoding and Referencing system
PBO	Paper-Based Operations
RDS	Replacement Dissemination System
RPS	Response Processing System
RTS	Replacement Tabulation System
UC&M	Universe Control and Management

GAO
Accountability * Integrity * Reliability

United States Government Accountability Office
Washington, DC 20548

March 5, 2009

Congressional Requesters

The Census Bureau (Bureau) is relying on both the acquisition of new systems and the enhancement of existing legacy systems for conducting operations for the 2010 Decennial Census. As you know, the census is mandated by the U.S. Constitution and provides data that are vital to the nation. These data are used, for example, to reapportion and redistrict 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. The Bureau is required to take a population count as of April 1, 2010 (Census Day), and the Secretary of Commerce is required to report to the President on the tabulation of total population by state within nine months of that date.[1]

Carrying out the census is the responsibility of the Department of Commerce's Census Bureau, which is relying on automation and technology to improve the coverage, accuracy, and efficiency of the 2010 census. Because the accuracy of the 2010 census depends, in part, on the proper functioning of these systems, both individually and when integrated, thorough testing of these systems before their actual use is critical to the success of the census.

In March 2008, we designated the 2010 Decennial Census as a high-risk area, citing a number of long-standing and emerging challenges,[2] including weaknesses in the Bureau's management of its information technology (IT) systems and operations. The 2010 Decennial Census remained as one of our high-risk areas in our recent high-risk update issued in January 2009.[3] Given the importance of comprehensive testing prior to the 2010 census, you asked us to determine the status of and plans for the testing of key decennial systems.

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

[2]GAO, *Information Technology: Significant Problems of Critical Automation Program Contribute to Risks Facing 2010 Census*, GAO-08-550T (Washington, D.C.: Mar. 5, 2008).

[3]GAO, *High-Risk Series: An Update*, GAO-09-271 (Washington, D.C.: Jan. 22, 2009).

To address this objective, we analyzed documentation related to system, integration, and end-to-end testing,[4] including plans, schedules, and results, and interviewed Bureau officials and contractors. We then compared the Bureau's practices with those identified in our testing guide and other best practices.[5] We conducted this performance audit from June 2008 to February 2009, in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. Appendix I contains further details about our scope and methodology.

Background

The Bureau's mission is to provide comprehensive data about the nation's people and economy. Its core activities include conducting decennial, economic, and government censuses; conducting demographic and economic surveys; managing international demographic and socioeconomic databases; providing technical advisory services to foreign governments; and performing other activities such as producing official population estimates and projections.

Conducting the decennial census is a major undertaking that includes the following major activities:

- *Establishing where to count.* This includes identifying and correcting addresses for all known living quarters in the United States (address canvassing) and validating addresses identified as potential group quarters, such as college residence halls and group homes (group quarters validation).
- *Collecting and integrating respondent information.* This includes delivering questionnaires to housing units by mail and other methods,[6]

[4]System testing verifies that a system meets specified requirements. Integration testing verifies that systems, when combined, work as intended. End-to-end testing verifies that a set of systems work as intended in an operational environment.

[5]See, for example, GAO, *Year 2000 Computing Crisis: A Testing Guide*, GAO/AIMD-10.1.21 (Washington, D.C.: Nov. 1, 1998); and IEEE Std 12207-2008, *Systems and Software Engineering-Software Life Cycle Processes* (Piscataway, N.J.: 2008).

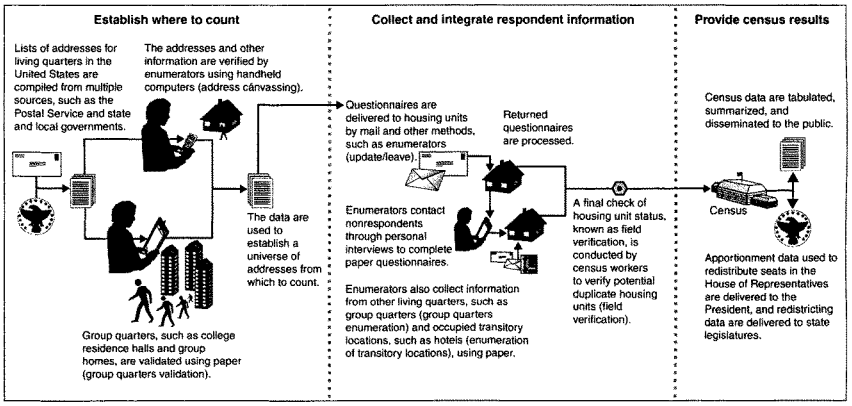
[6]For example, in the "update/leave" operation, after enumerators update addresses, they leave questionnaires at housing units; this occurs mainly in rural areas that lack street names, house numbers, or both.

processing the returned questionnaires, and following up with nonrespondents through personal interviews (nonresponse follow-up). It also includes enumerating residents of group quarters (group quarters enumeration) and occupied transitional living quarters (enumeration of transitory locations), such as recreational vehicle parks, campgrounds, and hotels. It also includes a final check of housing unit status (field verification) where Bureau workers verify potential duplicate housing units identified during response processing.

- *Providing census results.* This includes processes to tabulate and summarize census data and disseminate the results to the public.

Figure 1 illustrates key decennial activities.

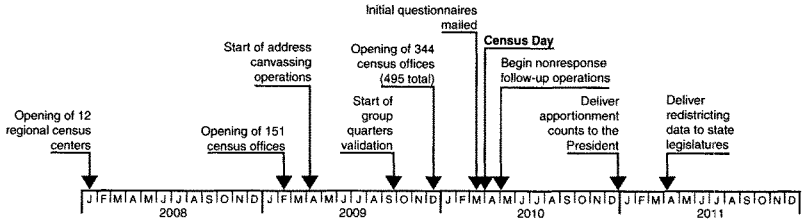
Figure 1: Summary of Key Decennial Activities



Source: GAO analysis of Bureau data.

The 2010 census enumerates the number and location of people on Census Day, which is April 1, 2010. However, census operations begin long before Census Day and continue afterward. For example, address canvassing for the 2010 census will begin in April 2009, while tabulated census data must be distributed to the President by December 31, 2010, and to state legislatures by March 31, 2011. Figure 2 presents a timeline of key decennial operations.

Figure 2: Timeline of Key Decennial Activities



Source: GAO summary of Bureau data.

Role of IT in the Decennial Census

Automation and IT are to play a critical role in the success of the 2010 census by supporting data collection, analysis, and dissemination. Several systems will be used in the 2010 census. For example, enumeration "universes," which serve as the basis for enumeration operations and response data collection, are organized by the Universe Control and Management (UC&M) system, and response data are received and edited to help eliminate duplicate responses using the Response Processing System (RPS). Both UC&M and RPS are legacy systems that are collectively called the Headquarters Processing Systems.

Geographic information and support to aid the Bureau in establishing where to count U.S. citizens are provided by the Master Address File/Topologically Integrated Geographic Encoding and Referencing (MAF/TIGER) system. The Decennial Response Integration System (DRIS) is to provide a system for collecting and integrating census responses from all sources, including forms and telephone interviews. The Field Data Collection Automation (FDCA) program includes the development of handheld computers for the address canvassing operation and the systems, equipment, and infrastructure that field staff will use to collect the data. Paper-Based Operations (PBO) was established in August 2008, primarily to handle some of the operations that were originally part of FDCA. PBO includes IT systems and infrastructure needed to support the use of paper forms for operations such as group quarters enumeration activities, nonresponse follow-up activities, enumeration at transitory locations activities, and field verification activities. These activities were originally to be conducted using IT systems and infrastructure developed by the FDCA program. Finally, the Data Access and

Dissemination System II (DADS II) is to replace legacy systems for tabulating and publicly disseminating data.

Table 1 describes the key systems supporting the 2010 census, as well as the offices responsible for their development.

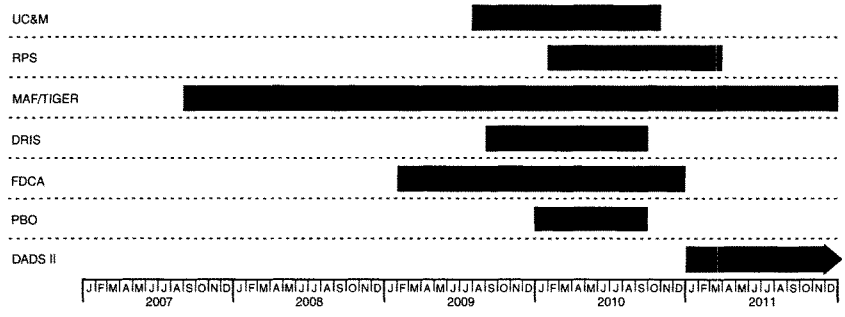
Table 1: Key Systems Supporting 2010 Census

System name	Responsible entity	Description
Headquarters Processing—Universe Control and Management (UC&M)	Decennial System and Processing Office	Organizes address files into enumeration "universes," which serve as the basis for enumeration operations and response data collection. UC&M data contain, among other things, a list of addresses to which census respondent forms must be delivered. This functionality is critical to ensuring that census respondent forms are delivered to the correct addresses.
Headquarters Processing—Response Processing System (RPS)	Decennial System and Processing Office	Receives response data and edits the data to help eliminate duplicate responses by, for example, identifying people who have been enumerated more than once. After response data are finalized, they are provided to DADS II for tabulation and dissemination.
Master Address File/Topologically Integrated Geographic Encoding and Referencing (MAF/TIGER) system	Geography Division	Provides geographic information and support to aid the Bureau in establishing where to count the U.S. population for the 2010 census. The Bureau's address list—MAF—is associated with the TIGER system, which is a geographic information system containing street maps and other geographic features. MAF/TIGER was recently updated under the MAF/TIGER Accuracy Improvement Project in April 2008, which provided corrected coordinates on a county-by-county basis for all current features in the TIGER database.
Decennial Response Integration System (DRIS)	DRIS Program Management Office and Lockheed Martin (lead contractor)	Collects and integrates census responses from all sources, including forms and telephone interviews. DRIS is to improve accuracy and timeliness by standardizing the response data and providing the data to other Bureau systems for analysis and processing.
Field Data Collection Automation (FDCA)	FDCA Program Management Office and Harris (lead contractor)	Provides automation support for field data collection operations. It includes the development of handheld computers for the address canvassing operation and the systems, equipment, and infrastructure that field staff will use to collect data. It is to establish office automation for the 12 regional census centers, the Puerto Rico area office, and approximately 494 temporary local census offices. FDCA handheld computers were originally to be used for nonresponse followup, but due to problems in testing, nonresponse followup was switched to paper-based operations.
Paper-Based Operations (PBO)	Decennial System and Processing Office	Established in August 2008, primarily to handle operations that were originally part of FDCA. PBO includes IT systems and infrastructure needed to support the use of paper forms for operations such as group quarters enumeration, nonresponse followup, enumeration at transitory locations, and field verification.
Data Access and Dissemination System II (DADS II)	DADS II Program Management Office and IBM (lead contractor)	Replaces legacy systems for tabulating and publicly disseminating data. DADS II includes the Replacement Tabulation System and the Replacement Dissemination System, which are 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. The Replacement Tabulation System is responsible for tabulating 2010 census data. The Replacement Dissemination System is responsible for distributing and disseminating census results.

Source: GAO analysis of Bureau data.

Figure 3 shows the timeframes when each of the systems for the 2010 census are to be operational, according to the Census Bureau.

Figure 3: Dates Key Decennial Systems Are to Be Operational



Source: GAO summary of Bureau data.

We Have Previously Reported on Weaknesses in Management of Census IT Systems

We have reported long-standing weaknesses in the Bureau's management of its IT systems. For example, in October 2007, we reported on the status and plans of key 2010 census IT acquisitions and whether the Bureau was adequately managing associated risks.[7] We identified critical weaknesses in the Bureau's risk management practices, including those associated with risk identification, mitigation, and executive-level oversight. Further, operational testing planned during the census Dress Rehearsal would take place without the full complement of systems and functionality that was originally planned, the Bureau had not finalized its plans for testing all the systems, and it was unclear whether the plans would include testing to address all interrelated systems and functionality. We recommended that the Bureau develop a comprehensive plan to conduct an end-to-end test of its systems under census-like conditions.

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

In March 2008, we designated the 2010 census as a high-risk area, citing several long-standing and emerging challenges.[8] These challenges included, among other things, weaknesses in risk management and system testing, elimination of several operations from the 2008 Dress Rehearsal, and questions surrounding the performance of handheld computers developed for the 2010 census. We have also testified[9] on significant risks facing the 2010 census. For example, in March 2008, we testified that the FDCA program was experiencing significant problems, including schedule delays and cost increases resulting from changes to system requirements, which required additional work and staffing. Shortly thereafter, in April 2008, we testified on the Bureau's efforts to implement risk reduction strategies, including the decision to drop the use of handheld computers during the nonresponse follow-up operation and revert to a paper-based operation. Further, in June 2008, we testified that the Bureau had taken important steps to plan for a paper-based nonresponse follow-up operation, but several aspects remained uncertain. We concluded that it was critical to test capabilities for supporting the nonresponse follow-up operation.

In July 2008, we reported that continued planning and testing of the handheld computers would be critical to the address canvassing operation.[10] Specifically, the Bureau had developed a testing plan that included a limited operational field test, but the plan did not specify the basis for determining whether the FDCA solution was ready for address canvassing and when and how this determination would occur.

In response to our findings and recommendations, the Bureau has taken several steps to improve its management of the 2010 Decennial Census. For example, the Bureau has sought external assessments of its activities from independent research organizations, implemented a new management structure and management processes, brought in experienced personnel in key positions, and established improved reporting processes and metrics.

[8]GAO-08-550T; GAO, *Census 2010: Census at Critical Juncture for Implementing Risk Reduction Strategies*, GAO-08-659T (Washington, D.C.: Apr. 9, 2008).

[9]GAO-08-550T; GAO, *2010 Census: Census at Critical Juncture for Implementing Risk Reduction Strategies*, GAO-08-685T (Washington, D.C.: Apr. 15, 2008) and GAO, *2010 Census: Plans for Decennial Census Operations and Technology Have Progressed, But Much Uncertainty Remains*, GAO-08-886T (Washington, D.C.: June 11, 2008).

[10]GAO, *2010 Census: Census Bureau's Decision to Continue with Handheld Computers for Address Canvassing Makes Planning and Testing Critical*, GAO-08-936 (Washington, D.C.: July 31, 2008).

Comprehensive Testing Improves Chances of a Successful Decennial Census

As stated in our testing guide and the Institute of Electrical and Electronics Engineers (IEEE) standards,[11] complete and thorough testing is essential for providing reasonable assurance that new or modified IT systems will perform as intended. To be effective, testing should be planned and conducted in a structured and disciplined fashion that includes processes to control each incremental level of testing, including testing of individual systems, the integration of those systems, and testing to address all interrelated systems and functionality in an operational environment.

- *System testing:* verifies that the complete system (i.e., the full complement of application software running on the target hardware and systems software infrastructure) meets specified requirements. It allows for the identification and correction of potential problems within an individual system, prior to integration with other systems.
- *Integration testing:* verifies that systems, when combined, work together as intended. Effective integration testing ensures that external interfaces work correctly and that the integrated systems meet specified requirements.
- *End-to-end testing:* verifies that a defined set of interrelated systems, which collectively support an organization's core business area or 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.

To be effective, this testing should be planned and scheduled in a structured and disciplined fashion. Comprehensive testing that is effectively planned and scheduled can provide the basis for identifying key tasks and requirements and better ensure that a system meets these specified requirements and functions as intended in an operational environment.

Dress Rehearsal Includes Testing of Certain Systems and Operations

In preparation for the 2010 census, the Bureau planned what it refers to as the Dress Rehearsal. The Dress Rehearsal is managed by the Bureau's Decennial Management Division, in collaboration with other Bureau divisions (including the program offices, shown in table 1, which are responsible for developing and testing each of the systems). The Dress

[11]GAO/AIMD-10.1.21 and IEEE Std. 12207-2008.

Rehearsal includes systems and integration testing,[12] as well as end-to-end testing of key operations in a census-like environment. During the Dress Rehearsal period, running from February 2006 through June 2009, the Bureau is developing and testing systems and operations, and it held a mock Census Day on May 1, 2008. The Dress Rehearsal activities, which are still under way, are a subset of the activities planned for the actual 2010 census and include testing of both IT and non-IT related functions, such as opening offices and hiring staff.

Dress Rehearsal Testing of Key Systems and Activities Identified Problems with Technologies

The Dress Rehearsal tested several activities involving key systems. For example, the Bureau tested key systems with address canvassing and group quarters validation operations, including FDCA handheld computers and the MAF/TIGER system. In addition, the Bureau used the UC&M system and MAF/TIGER to provide an initial list of housing unit addresses for the Dress Rehearsal test sites. Questionnaires were mailed to these housing units in April 2008. Subsequently, a mock Census Day was held on May 1, 2008—1 month later than originally planned. The mock Census Day was delayed, in part, to focus greater attention on testing the technology being used.

The Dress Rehearsal identified significant technical problems during the address canvassing operations. For example, the Bureau had originally planned to use handheld computers, developed under the FDCA program, for operations such as address canvassing and non-response followup. However, from May 2007 to June 2007, the Bureau tested the handhelds under census-like conditions for the first time during the Dress Rehearsal address canvassing operation. Bureau officials observed a number of performance problems with the handheld computers, such as slow and inconsistent data transmissions.[13] In addition, help desk logs revealed that users had frequently reported problems, such as the devices freezing up or users having difficulties collecting mapping coordinates and working with large blocks (geographic areas with large numbers of housing units, more often found in urban areas).

The Bureau also found system problems during testing of the group quarters validation operation, in which field staff validate addresses as

[12]Individual program offices manage individual system testing for the Dress Rehearsal, and integration testing is managed by the pairs of program offices whose interfaces are being tested.

[13]For more information on performance of the handheld computers, see GAO-08-936.

group quarters and collect information required for their later enumeration. As part of this operation, the Bureau tested the operations control system—designed to manage field operations that rely on paper, as well as those that rely on the handheld computers—and the system was found to be unreliable. As a result, the workload for these operations had to be supplemented with additional paper-based efforts by local census office staff, instead of being performed electronically, as intended.

Results of Dress Rehearsal Testing Led to Decisions to Remove Testing of Certain Operations and to Revert to Some Paper-Based Processes for Key Operations

As a result of the problems observed with the handheld computers and operations control system, cost overruns and schedule slippage in the FDCA program, and other issues, the Bureau removed the planned testing of key operations from the Dress Rehearsal as follows:

- update/leave (that is, after enumerators update addresses, they leave questionnaires at housing units; this occurs mainly in rural areas lacking street names, house numbers, or both),
- nonresponse follow-up,
- enumeration of transitory locations,
- group quarters enumeration, and
- field verification.

Furthermore, in April 2008, the Secretary of Commerce announced a redesign of the 2010 Decennial Census, including the FDCA program. Specifically, the Bureau would no longer use handheld computers for nonresponse follow-up (its largest field operation), but would conduct paper-based nonresponse follow-up, as in previous censuses. It would, however, continue to use the handheld computers for the address canvassing operations. In May 2008, the Bureau issued a plan that detailed key components of the paper-based operation and described processes for managing it and other operations. It later established the PBO office to manage designing, developing, and testing paper-based operations, as well as to prepare related training materials.

Additional Testing Is Planned to Supplement the Dress Rehearsal

In addition to the planned Dress Rehearsal testing, the Bureau is planning supplementary testing to prepare for the 2010 Decennial Census. This testing includes system, integration, and end-to-end testing of changes resulting from the Dress Rehearsal, operations or features that were not tested during the Dress Rehearsal, and additional features or enhancements that are to be added after the Dress Rehearsal.

Bureau Is Making Progress in Conducting Key Decennial System Testing, but Lacks Plans and Schedules to Guide Remaining Efforts

The Bureau has made progress in conducting system, integration, and end-to-end testing for the 2010 census, but much remains to be done. Significant testing remains to be done, and many plans for the remaining testing activities have not been developed. The weaknesses in the Bureau's IT testing can be attributed, in part, to a lack of sufficient executive-level oversight and guidance on testing. Without comprehensive oversight and guidance, the Bureau cannot ensure that it is thoroughly testing its systems before the 2010 Decennial Census.

Bureau Has Performed Many System Testing Activities, but Much Remains to be Done

Through the Dress Rehearsal and other testing activities, the Bureau has completed key system tests, but significant testing has yet to be performed, and planning for this is not complete. For example, the Headquarters Processing systems (UC&M and RPS) are still completing system testing related to the Dress Rehearsal, and the program office is planning for further testing. For DRIS, on the other hand, system testing related to the Dress Rehearsal is complete, and additional 2010 system testing is under way. Table 2 summarizes the status and plans for system testing.

Table 2: Status of System Testing and Plans (Dress Rehearsal and 2010 Testing)

		2010 system testing		
System	**Dress Rehearsal system testing**	**Testing status**	**Testing plan completed**	**Testing schedule completed**
Headquarters Processing—UC&M and RPS	In progress	In progress	Partial	Partial
MAF/TIGER	Completed	In progress	Partial	Partial
DRIS	Completed	In progress	Partial[a]	Partial[a]
FDCA	Partially completed[b]	In progress	Partial	Partial
PBO	N/A[c]	In progress	No	Partial
DADS	DADS[d] in progress	DADS II in progress	Partial	Partial

Source: GAO analysis of Bureau data.

[a]Program officials stated that DRIS's test plan and schedule were completed but will be modified to reflect changes resulting from the switch to paper-based operations.

[b]System testing related to operations removed from the Dress Rehearsal was not completed. These operations were later moved to PBO.

[c]The office to support PBO was created in August 2008.

[d]DADS is being used for Dress Rehearsal system testing, but the replacement system, DADS II, is being developed and tested for 2010 operations.

Dress Rehearsal System Testing for Headquarters Processing Systems Is Partially Completed, but Additional Test Plans for 2010 System Testing Have Not Yet Been Developed

For both Headquarters Processing Systems (UC&M and RPS), system testing for the Dress Rehearsal has been partially completed, as shown in table 3.

- For UC&M, Dress Rehearsal system testing is divided into three phases, as shown. These phases include a total of 19 products (used to control and track Dress Rehearsal enumeration activities). The completed phases (1 and 2) included the development and testing of 14 products. Program officials had planned to complete testing of the remaining 5 products for UC&M by October 2008, but as of December 2008, the program had not yet completed this testing.
- For RPS, Dress Rehearsal system testing is being done by component—eight components perform functions for key activities such as data integration—where response data are integrated before processing. According to program officials, development and testing of four components are complete, and the remaining four components are planned to be completed by March 2009.

Table 3: Status of System Testing and Plans for Headquarters Processing Systems (Dress Rehearsal and 2010 Testing)

	Dress Rehearsal system testing		2010 system testing			
System	Dates	Testing status	Dates	Testing status	Testing plan completed	Testing schedule completed
UC&M					Partial	Partial[a]
Phase 1	7/07–9/07	Completed	6/09–8/09	Not started		
Phase 2	12/07–5/08	Completed	10/09–5/10	Not started		
Phase 3	7/08–	In progress[b]	6/10–8/10	Not started		
RPS					Partial	Partial[a]
Components 1–4	1/08–9/08	Completed	12/09–9/10	Not started[c]		
Components 5–8	10/08–	In progress[b]	9/10–12/10	Not started		

Source: GAO analysis of Bureau data.

[a]High-level schedules have been defined; detailed schedules are not complete.

[b]Completion has been delayed.

[c]For 2010 operations, only two components will be included; two were combined and one was omitted.

In addition to ongoing Dress Rehearsal system testing, the program office intends to perform system testing for 2010 census operations, but plans for this testing have not yet been developed. According to program officials, they have not developed testing plans and schedules for additional testing for the 2010 census because Bureau management has not yet finalized the requirements for 2010 operations. Finalizing these requirements may

involve both changes to existing requirements and new requirements. Program officials stated that they do not anticipate substantial changes in UC&M and RPS system requirements for 2010 census operations and plan to have them finalized by May 2009. In commenting on a draft of this report, the Bureau provided an initial test plan and schedule, but did not provide the finalized baselined requirements for the Headquarters Processing Systems for 2010 operations.

Until the baseline requirements are established, it is unclear whether the amount of additional testing necessary for 2010 census operations will be significant. According to industry best practices, defining requirements for a system is important because they provide a baseline for development and testing activities and are used to establish test plans, which define schedule activities, roles and responsibilities, resources, and system testing priorities. The absence of finalized requirements increases the risk that there may not be sufficient time and resources to adequately test the systems, which are critical to ensuring that address files are accurately organized into enumeration universes and that duplicate responses are eliminated.

MAF/TIGER Program Has Partially Completed Testing, but Test Plans and Schedules Are Incomplete and Ability to Track Progress Is Unclear

System testing has been partially completed for MAF/TIGER products (that is, extracts from the MAF/TIGER system) required for the 2010 census. For MAF/TIGER, testing activities are defined by products needed for key activities, such as address canvassing. During Dress Rehearsal system testing, the program office completed testing for a subset of MAF/TIGER products for address canvassing, group quarters validation, and other activities.

Additional system testing is planned for the 2010 census. According to program officials, as of December 2008, the Bureau had defined requirements and completed testing for 6 of approximately 60 products needed for 2010 operations (these 6 products are related to address canvassing). The program office has also developed detailed test plans and schedules through April 2009, but these do not cover all of the remaining products needed to support the 2010 census. Table 4 is a summary of the status of MAF/TIGER 2010 testing and plans.

Table 4: Status of System Testing[a] and Plans for MAF/TIGER (2010 Testing)

Census activities	Dates	Testing status	Testing plan completed	Testing schedule completed
Address canvassing (including testing of MAF/TIGER updates)	5/08–5/09	In progress	Partial	Partial
Group quarters validation	12/08–9/09	In progress	Partial	Partial
Enumeration universe (including group quarters enumeration, enumeration of transitory locations)	12/08–10/10	In progress	Partial	Partial
Nonresponse follow-up	3/09–6/10	Not started	Partial	Partial
Field verification	10/08–10/10	In progress	Partial	Partial
Post-census products	3/10–11/10	Not started	Partial	Partial

Source: GAO analysis of Bureau data.

[a]System tests of a subset of MAF/TIGER products were also performed during the Dress Rehearsal.

According to program officials, the detailed test plans for the remaining products will be developed after the requirements for each are finalized. As mentioned, establishing defined requirements is important because these provide a baseline for development and testing activities and define the basic functions of a product. The officials stated that they were estimating the number of products needed, but would only know the exact number when the requirements for the 2010 census operations are determined. The officials added that, by January 2009, they plan to have a detailed schedule and a list of the products needed through December 2009.

Without knowing the total number of products, related requirements, and when the products are needed for operations, the Bureau risks both not sufficiently defining what each product needs to do and not being able to effectively measure the progress of MAF/TIGER testing activities, which therefore increases the risk that there may not be sufficient time and resources to adequately test the system and that the system may not perform as intended.

DRIS Testing Is Under Way; Plans Have Been Established but Will Be Revised

System testing has been partially completed for DRIS components, including paper, workflow control and management, and telephony.[14] Portions of the functionality in each DRIS component are being developed and tested across five increments for 2010 operations. As of November 2008, the program had planned and completed testing of increments 1, 2, and 3. Testing of increment 4 is currently ongoing. Table 5 is a summary of the status of DRIS testing for 2010 operations. (In addition, system testing of a subset of DRIS functionality, including the integration of certain response data, took place during the Dress Rehearsal.)

Table 5: Status of System Testing[a] and Plans for DRIS (2010 Testing)

Phase	Dates	Testing status	Testing plan completed[b]	Testing schedule completed[b]
Increment 1	12/07–3/08	Completed	N/A	N/A
Increment 2	3/08–7/08	Completed	N/A	N/A
Increment 3	6/08–11/08	Completed	N/A	N/A
Increment 4	10/08–5/09	In progress	Partial	Partial
Increment 5	3/09–7/09	Not started	Partial	Partial

Source: GAO analysis of Bureau data.

[a]System tests of a subset of DRIS functionality were also performed during the Dress Rehearsal.

[b]Program officials stated that DRIS's test plan and schedule were completed, but will be modified to reflect changes resulting from the switch to paper-based operations.

The DRIS program has developed a detailed testing plan and schedule, including the remaining testing for increment 5. For example, detailed testing plans have been developed for all 558 functional requirements for DRIS. According to program officials, most of the 558 functional requirements will be fully tested during increments 4 and 5. As of November 2008, 22 of the 558 requirements had been tested.

Although plans and schedules were completed, the change from handheld computers to paper processes for nonresponse follow-up has caused changes to DRIS processing requirements. For example, DRIS program officials stated that they now need to process an additional 40 million

[14]DRIS functionality includes the following: (1) the paper segment processes census paper forms; (2) the workflow control and management segment provides the databases, workflow, and interfaces to capture response data, store these data, and transfer data between segments and external entities; and (3) the telephony segment provides infrastructure and application for performing coverage follow-up operations, telephone questionnaire assistance, and interactive voice response operations.

paper forms generated as a result of this switch. Although DRIS program officials stated that they are prepared to adjust their test schedule and plan to accommodate this change, they cannot do so until the requirements have been finalized for the switch to paper processes. (This responsibility is primarily that of the PBO program office.) Furthermore, based on the switch to paper, DRIS may not be able to conduct a test using these operational systems and live data. This increases the risk that the Bureau could experience problems with these systems and the processing of paper forms during the 2010 census. The DRIS program office is addressing this risk by developing alternative strategies for testing and providing additional resources as contingencies for activities that may not be fully tested before 2010 operations begin.

FDCA System Testing Is Proceeding on an Aggressive Schedule, but Key Test Plans Have Not Been Developed

FDCA testing has been partially completed, but much more work remains. System testing for FDCA took place during the Dress Rehearsal, but problems encountered during this testing led to the removal of key operations from the Dress Rehearsal[15] and the April 2008 redesign, as described earlier. Going forward, FDCA development and testing for 2010 operations are being organized based on key census activities. For example, FDCA testing for the address canvassing and group quarters validation operations was completed in December 2008. The FDCA contractor is currently developing and testing a backup system (known as the continuity of operations system) for address canvassing and group quarters validation, and is currently testing another system (known as map printing) to provide printed maps for paper-based field operations, such as nonresponse follow-up. Table 6 summarizes the FDCA test status.

Table 6: Status of System Testing and Plans for FDCA (2010 Testing)

Census activity	Dates	Status	Testing plan completed	Testing schedule completed
Address canvassing/group quarters validation	5/08–12/08	Partially completed	N/A	N/A
Map printing	5/08–6/09	In progress	Partial	Partial
Continuity of operations	9/08–5/09	In progress	Partial	Partial

Source: GAO analysis of Bureau data.

[15]These include update/leave, nonresponse follow-up, enumeration of transitory locations, group quarters enumeration, and field verification, as mentioned earlier.

Although system testing for address canvassing and group quarters validation was recently completed, program officials have not demonstrated that all current system requirements have been fully tested. As part of a contract revision required by the April 2008 redesign, the FDCA program established a revised baseline for system requirements on November 20, 2008. According to program officials, this revision included both modifications to previous requirements and removal of requirements that were part of activities transferred to PBO. As of December 2008, program officials stated that detailed testing plans for many of the requirements exist, but need to be revised to address the newly baselined requirements.

Furthermore, as of December 2008, the FDCA program had not finalized detailed testing plans and schedules for the continuity of operations and map printing systems. According to program officials, they had not yet developed detailed testing plans and schedules for testing systems' requirements because their focus has been on testing the system for address canvassing and group quarters validation. Officials added that they plan to begin testing the requirements for the continuity of operations system in January 2009, and for the map printing system in February 2009. However, without having established testing plans and schedules for these systems, it is unclear what amount of testing will be needed and whether sufficient time has been allocated in the schedule to fully test these systems before they are needed for operations.

Paper-Based Operations Are in Early Development, but Detailed 2010 Testing Plans and Schedules Have Not Yet Been Developed

Testing has only recently started for PBO because it is still in the preliminary phase of program planning and initial system development as the Bureau shifts responsibility for certain operations from the FDCA program office to PBO. Because this office has only recently been created, it is currently hiring staff, developing a schedule for several iterations of development, establishing a means to store and trace requirements, developing testing plans, and establishing a configuration management process.

According to program officials, development will occur in five releases, numbered 0 through 4. The first release, Release 0, is planned to contain functionality for the nonresponse follow-up and group quarters enumeration activities. Table 7 provides the current status of PBO Release 0 test activities.

Table 7: Status of System Testing and Plans for PBO Release 0 (2010 Testing)

Phase	Dates	Status	Testing plan completed	Testing schedule completed
Complete initial system testing (Alpha testing)	10/08–3/09	Started	No	Partial
Additional testing (Beta testing)	3/09–4/09	Not started	No	Partial
Mock field testing activities for nonresponse follow-up and group quarters enumeration	4/09–5/09	Not started	No	Partial

Source: GAO analysis of Bureau data.

However, the Bureau still has not yet determined when detailed testing plans and schedules for PBO systems will be developed. Officials stated that a more detailed schedule for Release 0 and development schedules for the remaining releases are under development, and that they plan to have the majority of the schedules developed by the end of January 2009. In commenting on a draft of this report, the Bureau provided a partial schedule for PBO test activities.

Furthermore, officials stated they had not yet fully defined which requirements PBO would be accountable for, and which of these requirements will be addressed in each iteration of development. The officials did state that the requirements will be based on those requirements transferred from FDCA as part of the reorganization. Bureau officials stated they had not yet completed these activities because responsibility for the requirements was only formally transferred as of October 2008. The program office expects to have its first iteration of requirements traceable to test cases by March 2009. However, officials did not know what percentage of program requirements will be included in this first iteration.

Although progress has been made in establishing the PBO program office, numerous critical system development activities need to be planned and executed in a limited amount of time. Because of the compressed schedule and the large amount of planning that remains, PBO risks not having its systems developed and tested in time for the 2010 Decennial Census. Testing is critical to ensure that the paper forms used to enumerate residents of households who do not mail back their questionnaires, group quarters, and transitional living quarters are processed accurately.

DADS II Is in Early Stages of Development, and Testing Plans and Schedules Are Being Developed

The DADS system (which had been used in the 2000 census) is currently being tested during the Dress Rehearsal, which is scheduled to be completed in March 2009. However, the Bureau intends to replace DADS with DADS II, which is currently being developed and tested for 2010 operations. DADS II is still in the early part of its life cycle, and the program office has only recently started system testing activities. The two main DADS II components, the Replacement Tabulation System (RTS) and Replacement Dissemination System (RDS), are being developed and tested across a series of three iterations. As of December 2008, the program had begun iterations 1 and 2 for RTS, and iteration 1 for RDS. Table 8 summarizes the RTS and RDS testing status.

Table 8: Status of System Testing and Plans for DADS II Components (2010 Testing)

Phase	Dates	Status	Testing plan completed	Testing schedule completed
RTS			Partial[a]	Partial[a]
Iteration 1	7/08–4/09	In progress		
Iteration 2	9/08–10/09	In progress		
Iteration 3	3/09–4/10	Not started		
Deployment	2/10–7/10	Not started		
RDS			Partial[a]	Partial[a]
Iteration 1	7/08–3/09	In progress		
Iteration 2	1/09–3/10	Not started		
Iteration 3	5/09–8/10	Not started		
Deployment	7/10–2/11	Not started		

Source: GAO analysis of Bureau data.

[a]High-level plans have been defined; detailed plans are not complete.

The DADS II program office has developed a high-level test plan for RTS and RDS system testing, but has not yet defined detailed testing plans and a schedule for testing system requirements. System requirements for the new system have been baselined, with 202 requirements for RTS and 318 requirements for RDS. According to program officials, the program office is planning to develop detailed testing plans for the system requirements for both RTS and RDS.

Bureau Has Conducted Limited Integration Testing, but Has Not Developed 2010 Test Plans and Schedules for Integration Testing

Effective integration testing ensures that external interfaces work correctly and that the integrated systems meet specified requirements. This testing should be planned and scheduled in a disciplined fashion according to defined priorities.

For the 2010 census, each program office is responsible for and has made progress in defining system interfaces and conducting integration testing, which includes testing of these interfaces. However, significant activities remain in order for comprehensive integration testing to be completed by the date that the systems are needed for 2010 operations. For example, DRIS has conducted integration testing with some systems, such as FDCA, UC&M, and RPS, and is scheduled to complete integration testing by February 2010. The FDCA program office has also tested interfaces related to the address canvassing operation scheduled to begin in April 2009. However, for many other systems, such as PBO, interfaces have not been fully defined, and other interfaces have been defined but have not been tested. Table 9 provides the status of integration testing among key systems.

Table 9: Integration Testing Status

System	Testing status	Description
UC&M and RPS	In progress	Conducted testing during the Dress Rehearsal, but until requirements are baselined for the 2010 census, it is unclear whether changes have occurred that would require retesting. According to program officials, all UC&M and RPS interfaces will be fully tested by an independent testing group within the Bureau.
MAF/TIGER	In progress	Conducted testing with systems, such as FDCA, during the Dress Rehearsal and in preparation for the 2010 address canvassing operation. However, interfaces with other systems, such as RPS and UC&M, are still in development and have not been retested following the Dress Rehearsal.
DRIS	In progress	Conducted testing with systems, such as FDCA, for the group quarters validation operation. However, interfaces with other systems, such as PBO, are still in development and have not been tested. According to program officials, interface testing may not be completed until February 2010 due to the limited availability of other systems for testing.
FDCA	In progress	Conducted testing with systems, such as DRIS and MAF/TIGER, for the address canvassing and group quarters validation operations. However, interface testing with systems for other operations, such as map printing, has not been completed.

System	Testing status	Description
PBO	Not started	Evaluating interfaces but has not yet fully defined or developed them.
DADS II	Not started	Defining and developing its interfaces for the RDS and RTS system. According to program documentation, interfaces for RTS are planned to be fully tested by July 2009, and interfaces for RDS are planned to be fully tested by July 2010.

Source: GAO analysis of Bureau data.

In addition, the Bureau has not established a master list of interfaces between key systems, or plans and schedules for integration testing of these interfaces. A master list of system interfaces is an important tool for ensuring that all interfaces are tested appropriately and that the priorities for testing are set correctly. Although the Bureau had established a list of interfaces in 2007, according to Bureau officials, it was not updated because of resource limitations at the time and other management priorities. As of October 2008, the Bureau had begun efforts to update this list, but it has not provided a date when this list will be completed.

Without a completed master list, the Bureau cannot develop comprehensive plans and schedules for conducting systems integration testing that indicate how the testing of these interfaces will be prioritized. This is important because a prioritized master list of system interfaces, combined with comprehensive plans and schedules to test the interfaces, would allow for tracking the progress of this testing. With the limited amount of time remaining before systems are needed for 2010 operations, the lack of comprehensive plans and schedules increases the risk that the Bureau may not be able to adequately test system interfaces, and that interfaced systems may not work together as intended.

Bureau Has Conducted Limited End-to-End Testing as Part of the Dress Rehearsal, but Has Not Developed Testing Plans for Critical Operations

The Dress Rehearsal was originally conceived to provide a comprehensive end-to-end test of key 2010 census operations; however, as mentioned earlier, because of the problems encountered with the handheld devices, among other things, testing was curtailed. As a result, although several critical operations underwent end-to-end testing in the Dress Rehearsal, others did not. According to the Associate Director for the 2010 census, the Bureau tested approximately 23 of 44 key operations during the Dress Rehearsal. Examples of key operations that underwent end-to-end testing during the Dress Rehearsal are address canvassing and group quarters validation. An example of a key operation that was not tested is the largest field operation—nonresponse follow-up.

Although the Bureau recently conducted additional testing of the handhelds, this test was not a robust end-to-end test. In December 2008, after additional development and improvements to the handheld computers, the Bureau conducted a limited field test for address canvassing, intended to assess software functionality in an operational environment. We observed this test and determined that users were generally satisfied with the performance of the handhelds. According to Bureau officials, the performance of the handheld computers has substantially improved from previous tests. However, the test was not designed to test all the functionality of the handhelds in a robust end-to-end test—rather, it included only a limited subset of functionality to be used during the 2009 address canvassing operations. Further, the field test did not validate that the FDCA system fully met specified requirements for the address canvassing operation. Bureau officials stated that additional testing of the FDCA system, such as performance testing, mitigated the limitations of this field test.

Nonetheless, the lack of robustness of the field test poses several risks for 2010 operations. Specifically, without testing all the FDCA system's requirements in a robust operational environment, it is unclear whether the system can perform as intended when the address canvassing operation begins in April 2009.

Furthermore, as of December 2008, the Bureau has neither established testing plans nor schedules to perform end-to-end testing of the key operations that were removed from the Dress Rehearsal, nor has it determined when these plans will be completed. As previously mentioned, these operations include

- update/leave,
- nonresponse follow-up,
- enumeration of transitory locations,
- group quarters enumeration, and
- field verification.

Although the Bureau has established a high-level strategy for testing these operations, which provides details about the operations to be tested, Bureau officials stated that they have not developed testing plans and schedules because they are giving priority to tests for operations that are needed in early 2009. In addition, key systems needed to test these operations are not ready to be tested because they are either still in development or have not completed system testing. Until system and

integration testing activities are complete, the Bureau cannot effectively plan and schedule end-to-end testing activities. Without sufficient end-to-end testing, operational problems can go undiscovered, and the opportunity to improve these operations will be lost.

The decreasing time available for completing end-to-end testing increases the risk that testing of key operations will not take place before the required deadline. Bureau officials have acknowledged this risk in briefings to the Office of Management and Budget. The Bureau is in the process of identifying risks associated with incomplete testing and developing mitigation plans, which it had planned to have completed by November 2008. However, as of January 2009, the Bureau had not completed these mitigation plans. According to the Bureau, the plans are still being reviewed by senior management. Without plans to mitigate the risks associated with limited end-to-end testing, the Bureau may not be able to respond effectively if systems do not perform as intended.

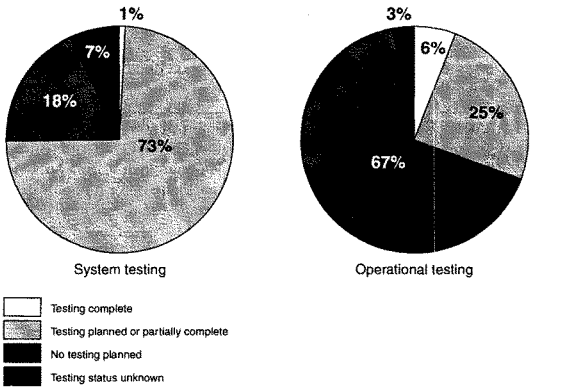
Bureau Lacks Sufficient Executive-Level Oversight and Guidance for Testing

As stated in our testing guide and IEEE standards, oversight of testing activities includes both planning and ongoing monitoring of testing activities. Ongoing monitoring entails collecting and assessing status and progress reports to determine, for example, whether specific test activities are on schedule. Using this information, management can effectively determine whether corrective action is needed and, if so, what action should be taken. In addition, comprehensive guidance should describe each level of testing (for example, system, integration, or end-to-end), criteria for each level, and the type of test products expected. The guidance should also address test preparation and oversight activities.

Although the 2010 Decennial Census is managed by the Decennial Management Division, the oversight and management of key census IT systems is performed on a decentralized basis. DRIS, FDCA, and DADS II each have a separate program office within the Decennial Automation Contracts Management Office; Headquarters Processing and PBO are managed within the Decennial System and Processing Office; and MAF/TIGER is managed within the Geography Division. Each program has its own program management reviews and develops plans and tracks metrics related to testing. These offices and divisions collectively report to the Associate Director for the 2010 Census. According to the Bureau, the associate director chairs biweekly meetings where the officials responsible for these systems meet to review the status of key systems development and testing efforts.

In addition, in response to prior recommendations, the Bureau took initial steps to enhance its programwide oversight; however, these steps have not been sufficient to establish adequate executive-level oversight. In June 2008, the Bureau established an inventory of all testing activities specific to all key decennial operations. This inventory showed that, as of May 2008, 18 percent of about 1049 system testing activities had not been planned. (See fig. 4.) In addition, approximately 67 percent of about 836 operational testing activities had not been planned.

Figure 4: Inventory of Testing Activities as of May 2008



Source: GAO analysis of Bureau data.

Although officials from the Decennial System and Processing Office described the inventory effort as a means of improving executive-level oversight, the inventory has not been updated since May 2008, and officials have no plans for further updates. Instead, officials stated that they plan to track testing progress as part of the Bureau's detailed master schedule of census activities. However, this schedule does not provide comprehensive status information on testing.

In another effort to improve executive-level oversight, the Decennial Management Division began producing (as of July 2008) a weekly

executive alert report and has established (as of October 2008) monthly dashboard and reporting indicators. However, these products do not provide comprehensive status information on the testing progress of key systems and interfaces. For example, the executive alert report does not include the progress of testing activities, and although the dashboard provides a high-level, qualitative assessment of testing for key operations and selected systems, it does not provide information on the testing progress of all key systems and interfaces.

Further, the assessment of testing progress has not been based on quantitative and specific metrics. For example, the status of testing key operations removed from the Dress Rehearsal was marked as acceptable, or "green," although the Bureau does not yet have plans for testing these activities. Bureau officials stated that they marked these activities as acceptable because, based on past experience, they felt comfortable that a plan would be developed in time to adequately test these operations. The lack of quantitative and specific metrics to track progress limits the Bureau's ability to accurately assess the status and progress of testing activities. In commenting on a draft of this report, the Bureau provided selected examples in which they had begun to use more detailed metrics to track the progress of end-to-end testing activities.

Finally, although the Bureau announced in August 2008 that it was planning to hire a senior manager who would have primary responsibility for monitoring testing across all decennial systems and programs, the position had not been filled as of January 2009. Instead, agency officials stated that the role is being filled by another manager from the Decennial Statistical Studies Division, who has numerous other responsibilities.

The Bureau also has weaknesses in its testing guidance; it has not established comprehensive guidance for system testing. According to the Associate Director for the 2010 Census, the Bureau did establish a policy strongly encouraging offices responsible for decennial systems to use best practices in software development and testing, as specified in level 2 of Carnegie Mellon's Capability Maturity Model® Integration.[16] However, beyond this general guidance, there is no additional guidance on key testing activities such as criteria for each level or the type of test products

[16]Capability Maturity Model® integration is intended to provide guidance for improving an organization's processes, and gives the ability to manage the development, acquisition, and maintenance of products and services. The model uses capability levels to assess process maturity.

expected. Standardized policies and procedures help to ensure comprehensive processes across an organization and allow for effective executive-level oversight. The lack of guidance has led to an ad hoc—and, at times—less than desirable approach to testing.

Conclusions

While the Bureau's program offices have made progress in testing key decennial systems, much work remains to ensure that systems operate as intended for conducting an accurate and timely 2010 census. Several program offices have yet to prepare and execute system test plans and schedules and ensure that system requirements are fully tested. In addition, the Bureau has not developed a master list of interfaces, which is necessary to prioritize testing and to develop comprehensive integration test plans and schedules. Additionally, end-to-end testing plans for key operations have not been finalized or executed based on established priorities to help ensure that systems will support census operations.

Weaknesses in the Bureau's IT testing can be attributed, in part, to a lack of sufficient executive-level oversight and guidance. More detailed metrics and status reports would help the Bureau to better monitor testing progress and identify and address problems. Giving accountability for testing to a senior-level official would also provide the focus and attention needed to complete critical testing. Also, completing risk mitigation plans will help ensure that actions are in place to address potential problems with systems. Given the rapidly approaching deadlines of the 2010 census, completing these important tests and establishing stronger executive-level oversight and guidance are critical to ensuring that systems perform as intended when they are needed.

Recommendations for Executive Action

To ensure that testing activities for key systems for the 2010 census are completed, we are making 10 recommendations. We recommend that the Secretary of Commerce require the Director of the Census Bureau to expeditiously implement the following recommendations:

- For the Headquarters UC&M and RPS, finalize requirements for 2010 census operations and complete testing plans and schedules for 2010 operations that trace to baselined system requirements.
- For MAF/TIGER, establish the number of products required, define related requirements, and establish a testing plan and schedule for 2010 operations.

- For FDCA, establish testing plans for the continuity of operations and map printing systems that trace to baselined system requirements.
- For PBO, develop baseline requirements and complete testing plans and schedules for 2010 operations.
- Establish a master list of system interfaces; prioritize the list, based on system criticality and need date; define all interfaces; and develop integration testing plans and schedules for tracking the progress of testing these interfaces.
- Establish a date for completing testing plans for the operations removed from the Dress Rehearsal operations and prioritize testing activities for these operations.
- Finalize risk mitigation plans detailing actions to address system problems that are identified during testing.
- Establish specific testing metrics and detailed status reports to monitor testing progress and better determine whether corrective action is needed for all key testing activities.
- Designate a senior manager with primary responsibility for monitoring testing and overseeing testing across the Bureau.
- In addition, after the 2010 census, we recommend that the Bureau establish comprehensive systems and integration testing guidance to guide future testing of systems.

Agency Comments and Our Evaluation

The Associate Under Secretary for Management of the Department of Commerce provided written comments on a draft of this report. The department's letter and general comments are reprinted in appendix II.

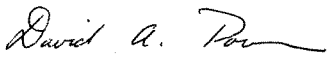
In the comments, the department and Bureau stated they had no significant disagreements with our recommendations. However, the department and Bureau added that since the FDCA replan last year, their testing strategy has been to focus on those things they have not done before, and to demonstrate to their own satisfaction that new software and systems will work in production. The department added that it has successfully conducted Census operations before, and was focusing "on testing the new things for 2010—not things that have worked before."

While we acknowledge that the Bureau has conducted key census operations before, the systems and infrastructure in place to conduct these operations have changed substantially since the 2000 census. For example, while the Bureau has conducted paper-based nonresponse

followup during previous censuses, it will be using newly developed systems which have not yet been fully tested in a census-like environment to integrate responses and manage the nonresponse followup work load. In addition, new procedures, such as one to remove questionnaires that were mailed in late from the nonresponse followup operation, have not been tested with these systems. Any significant change to an existing IT system introduces the risk that the system may not work as intended; therefore, testing all systems after changes have been made to ensure the systems work as intended is critical to the success of the 2010 census.

In addition, the department and Bureau provided technical comments, such as noting draft plans that had been developed after the conclusion of our work, that we have incorporated where appropriate.

We are sending copies of this report to the Secretary of Commerce, the Director of the U.S. Census Bureau, and other appropriate congressional committees. The report also is available at no charge on the GAO Web site at http://www.gao.gov. If you have any questions about this report, please contact David Powner at (202) 512-9286 or pownerd@gao.gov. GAO staff who made contributions to this report are listed in appendix III. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report.



David A. Powner
Director, Information Technology
Management Issues

List of Congressional Requesters

The Honorable Tom Carper
Chairman
Subcommittee on Federal Financial Management, Government Information, Federal Services, and International Security
Committee on Homeland Security and Governmental Affairs
United States Senate

The Honorable Edolphus Towns
Chairman
The Honorable Darrell Issa
Ranking Member
Committee on Oversight and Government Reform
House of Representatives

The Honorable Wm. Lacy Clay
Chairman
The Honorable Patrick T. McHenry
Ranking Member
Subcommittee on Information Policy, Census, and National Archives
Committee on Oversight and Government Reform
House of Representatives

The Honorable Michael R. Turner
House of Representatives

Appendix I: Scope and Methodology

To determine the status of and plans for testing key decennial systems, we analyzed documentation related to system, integration, and end-to-end testing.[1] For system testing, we analyzed documentation related to each key decennial system, including system test plans, schedules, requirements, results, and other test-related documents. We then compared the Bureau's practices with those identified in our testing guide and Institute of Electrical and Electronics Engineers (IEEE) standards[2] to determine the extent to which the Bureau had incorporated best practices in testing. We also interviewed program officials and contractors of key decennial systems to obtain information on the current status of and plans for testing activities.

For integration testing, we analyzed interface control documents, interface testing plans, and schedules. We also analyzed documentation of the Census Bureau's (Bureau) oversight of integration testing activities, including efforts to issue integration testing guidance and monitor the progress of integration testing activities. We interviewed program officials at each key decennial system program office to obtain information on the current status of and plans for integration testing and interviewed program officials at the Decennial Systems Processing Office to obtain information on the executive-level oversight of integration testing activities. We compared the Bureau's practices with those identified in our testing guide and IEEE guidance.

For end-to-end testing, we analyzed documentation related to the testing of key census operations during the Bureau's Dress Rehearsal, additional testing conducted for the address canvassing operation, and efforts to establish testing plans and schedules for operations removed from the Dress Rehearsal. We also observed the Bureau's operational field test, held in December 2008 in Fayetteville, North Carolina. We interviewed program officials at the Decennial Systems Processing Office to obtain information on the current status and plans for end-to-end testing activities. We compared the Bureau's practices with those identified in our testing guide and IEEE guidance.

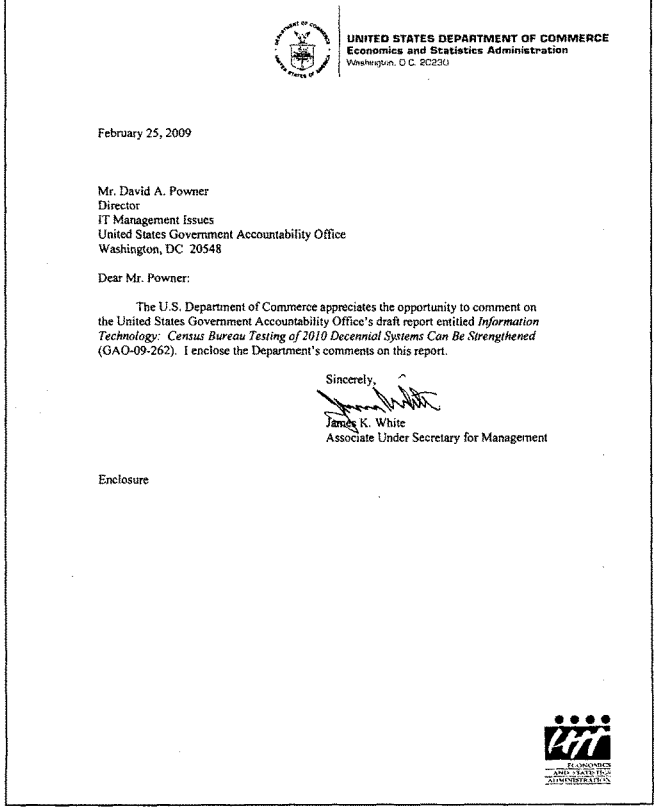
[1]System testing verifies that a system meets specified requirements. Integration testing verifies that systems, when combined, work as intended. End-to-end testing verifies that a set of systems work as intended in an operational environment.

[2]GAO/AIMD-10.1.21 and IEEE Std 12207-2008.

We also analyzed documentation of the Bureau's overall oversight of testing, including its executive alert reports and monthly dashboard reports. In addition, we assessed system testing guidance and interviewed the Associate Director for the Decennial Census to obtain information on the overall oversight of testing activities.

We conducted this performance audit from June 2008 to February 2009 in the Washington, D.C., and Fayetteville, North Carolina, areas, in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective.

Appendix II: Comments from the Department of Commerce



UNITED STATES DEPARTMENT OF COMMERCE
Economics and Statistics Administration
Washington, D.C. 20230

February 25, 2009

Mr. David A. Powner
Director
IT Management Issues
United States Government Accountability Office
Washington, DC 20548

Dear Mr. Powner:

The U.S. Department of Commerce appreciates the opportunity to comment on the United States Government Accountability Office's draft report entitled *Information Technology: Census Bureau Testing of 2010 Decennial Systems Can Be Strengthened* (GAO-09-262). I enclose the Department's comments on this report.

Sincerely,

James K. White
Associate Under Secretary for Management

Enclosure

Census Bureau Comments on Draft Government Accountability Office (GAO) Report
"Census Bureau Testing of 2010 Decennial Systems Can Be Strengthened"
(GAO-09-262)

The Census Bureau appreciates this opportunity to review this draft GAO report and to provide its comments.

Overall, we have no significant disagreements with the specific testing recommendations at the end of this report, but we do have the following comments concerning the findings.

General Comment

Generally, and in particular on page 14, this report describes various criteria that GAO believes should constitute effective testing, including end-to-end testing of all systems, operations, and interfaces. Our testing strategy is—and has been since the re-plan last year—to focus on those things we have not done before, and to demonstrate to our own satisfaction that the new software and systems will work in production. We will have only one opportunity to use these new things, and they must work the first and only time they will be deployed.

As part of our strategy, one aspect of the re-plan decision was for Census Bureau staff to take responsibility for several major systems we originally had included in the Field Data Collection Automation (FDCA) contractor's scope of work—e.g., the Operational Control System for field operations, including integrating our payroll and personnel system for hundreds of thousands of temporary workers. We made this decision to *reduce* the risk of system or operational failure, because the Census Bureau has successfully done these things before, and we believe we can do so again. While we will test these systems with our internal stakeholders, we are putting much more focus on testing the new things for 2010, not on testing things that have worked before. While risks remain, we are managing those risks through a process that includes risk assessment, development of mitigation strategies, and (as needed) development of contingency plans.

Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact	David A. Powner, (202) 512-9286 or pownerd@gao.gov
Staff Acknowledgments	In addition to the contact name above, individuals making contributions to this report included Cynthia Scott (Assistant Director), Sher`rie Bacon, Barbara Collier, Neil Doherty, Vijay D'Souza, Nancy Glover, Lee McCracken, Jonathan Ticehurst, Melissa Schermerhorn, and Karl Seifert.