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**2010 CENSUS PLANNING MEMORANDA SERIES**

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MEMORANDUM FOR      The Distribution List

From:                      Arnold Jackson *[signed]*  
Acting Chief, Decennial Management Division

Subject:                    2010 Census ELCO/LCO IT Equipment Deployment and  
De-Installation Assessment Report

Attached is the 2010 Census ELCO/LCO IT Equipment Deployment and De-Installation Assessment Report. The Quality Process for the 2010 Census Test Evaluations, Experiments, and Assessments was applied to the methodology development and review process. The report is sound and appropriate for completeness and accuracy.

If you have questions about this report, please contact Karen Seebold at (301) 763-9340.

Attachment

# 2010 Census ELCO and LCO IT Equipment Deployment and De-installation Assessment

U.S. Census Bureau standards and quality process procedures were applied throughout the creation of this report.

Final Report

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Decennial Management Division





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## **Executive Summary**

In 2005, the Census Bureau awarded a contract for Field Data Collection Automation (FDCA) support to the Harris Corporation (DMD, 2008). Harris Corporation was responsible for the procurement and installation of office and field automation hardware and software for the 2008 Dress Rehearsal and the 2010 Census Local Census Offices that were responsible for managing and implementing the field data collection operations.

For the 2010 Census, IT Deployment consisted of the installation of the office computing environment in one hundred fifty-one Early Local Census Offices that began opening in October 2008, and the implementation of a mobile computing environment that included: handheld computers, laptop computers, air cards, and secure digital cards that were used during the address canvassing field operation that began in January 2009.

In August 2009, the Census Bureau began opening an additional three hundred forty-three Local Census Offices that also required an office computing environment. The office computing environment included the following types of equipment: computer workstations, printers, network electronics, servers, infrastructure cabling, and telecommunications that effectively supported field operations, payroll, e-mail, word processing, and a document repository.

For the 2010 Census, there were four different office sizes that required different amounts of equipment. The number of personal computers that an Local Census Office received ranged from 19 to 25, depending on the office size and the projected workload. To mitigate the risk of telecommunications failure and to ensure continuous communications capability, the Census Bureau installed two additional T-1 lines in each Local Census Office.

De-installation of the office computing environment began in September 2010 and was completed by November 2010. IT de-installation consisted of the removal and sanitization of the equipment and telecommunication lines from the Local Census Offices. All equipment was shipped to the National Processing Center in Jeffersonville, Indiana for asset management and final disposition.

The Field Data Collection Automation contract cost for creating these computing environments was \$93.5 million. The cost includes: the installation and de-installation of equipment, asset management, and telecommunication costs. The installation and deinstallation cost of the office and mobile computing environment was completed under budget due to deployment efficiencies.

For the 2020 Census, it must be decided early in the decade whether or not the IT equipment will be purchased or leased. If the decision is to lease the IT equipment, then it must be decided how the property will be tracked and managed. In addition, a thorough telecommunications and equipment analysis should be performed and realistic quantitative data must be provided as part of the system requirements. These quantitative data are vital to enable each system to be effectively performance tested, including load and stress testing, to ensure that all systems will be able to perform at acceptable levels during peak production.





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# 1. Introduction

## Scope

This assessment covers the Early Local Census Offices (ELCOs) and Local Census Offices (LCOs) Information Technology (IT) Equipment Deployment and De-installation processes and support implemented during the 2010 Census.

## Intended Audience

The intended audience for this assessment report are the stakeholders responsible for planning the 2020 Census.

# 2. Background

## 2.1 2000 Census

During Census 2000, extensive use of computer automation and an advanced telecommunications infrastructure was deployed successfully. The automation and telecommunications infrastructure consisted of several components that was broadly classified into two categories: networks and telecommunications. The networks consisted of the Decennial Network Operations Center (DNOC), computer networks within LCOs, Data Capture Centers (DCC), and Regional Census Centers (RCC) as well as the wide area network connections between these components. The voice and data telecommunications consisted of telephone lines and telephone networks, as well as high speed data lines.

The Field Automation Infrastructure Team was responsible for the design, development, and implementation of automation and telecommunications for the RCCs, Early Local Census Offices (ELCOs), and LCOs. The team consisted of participating members from:

- Decennial Systems and Contract Management Office (DSCMO),
- Decennial Management Division (DMD),
- Field Division (FLD),
- Technologies Management Office (TMO),
- Telecommunications Office (TCO),
- Financial and Administrative Systems Division (FASD).

Overall, the Census 2000 automation and telecommunications efforts were successful. The Census 2000 experience demonstrated the need for earlier planning and better communication between different levels of management.

In 2005, the Census Bureau awarded a contract for Field Data Collection Automation (FDCA) support to the Harris Corporation (DMD, 2008). Harris Corporation was responsible for the procurement and installation of office and field automation hardware and software for the 2008 Dress Rehearsal and the 2010 Census ELCOs and LCOs. The development of the Office Computing Environment (OCE) was done in-house for the 2004 and 2006 Census Tests (DMD, 2008).

## **2.2 2010 Census**

IT Deployment consisted of delivering and setting up a Mobile Computing Environment (MCE) (includes the handheld-computers, laptop computers, aircards, and secure digital cards) for the address canvassing operation which began in January 2009 and the OCE in the E/LCOs. OCE equipment deployment included:

- Computer workstations (monitors and CPUs)
- Printers
- Routers
- Servers
- Switches
- Infrastructure cabling
- Telecommunications (both data and telephone lines)
- Bar code readers
- Copiers

As the office spaces were accepted, the Census Bureaus furniture supplier delivered and installed the office furniture. Once the furniture was installed, a schedule of deployment activities was established and tracked to ensure the timely delivery and installation of the office computing environment and the mobile computing environment. Limited testing was done at the time of installation, to ensure the ELCOs/LCOs were ready to support field data collection activities.

The amount of OCE needed in a typical ELCO was based on the projected Nonresponse Follow Up (NRFU) workload. In 2000, the OCE quantities were distributed uniformly to the LCOs. However, in 2010, there were four different office sizes that required different amounts of equipment. The number of personal computers (PCs) that an LCO received ranged from 19-25, depending on the office size and the projected workload.

Additional telecommunication lines were installed in the LCOs for the 2010 Census, as a contingency plan in case there was a failure with the original telecommunication lines. LCOs

were equipped with two additional T-1 lines. The two T-1 lines for the LCOs included one additional line each for data and local phone service.

### **IT De-installation**

De-installation of OCE for 2010 began in September 2010 and was completed by November 2010. IT de-installation consisted of the removal and sanitization of the OCE equipment from the LCOs once the field activities for the 2010 census were over. Every asset had to be physically accounted for or reported as lost, missing, or stolen. The Administrative and Customer Service Division (ACSD) required a property official certification witness to be present at the LCOs to certify that the de-installation procedures were followed correctly.

The data found on the OCE equipment were sanitized to remove all Title 13 data. Sanitization means rendering data completely unrecoverable per the National Institute of Standards and Technology (NIST) guidelines. Sanitization of the OCE equipment was the responsibility of the FDCA contractor, Harris Corporation. The following OCE equipment was sanitized: computer workstations, servers, routers, and switches. The printers were manually checked to make sure that no paper was left inside the machine. OCE equipment that did not successfully complete sanitization was shipped to the National Processing Center. Sanitization of the OCE equipment in the LCOs began in mid-September 2010 and finished in early November 2010.

The de-installation process began once sanitization was complete. Staff in the LCOs used a Multi-Purpose Form (MPF) to ensure that each piece of OCE equipment was accounted for. Harris hired Asset Recovery Technicians (ARTs) to remove telecommunications network infrastructure hardware from the equipment racks and to disconnect OCE equipment and cables. Asset Recovery Agents (ARA) packaged and shipped all equipment to the NPC. Census staff oversaw the de-installation activities to ensure that Title 13 procedures were followed when packing and shipping the IT equipment.

### **National Processing Center**

During the de-install process, NPC and Harris staff were responsible for receiving the IT equipment and accounting for it upon arrival. NPC worked with the Administrative and Customer Service Division (ACSD) to dispose of and disseminate excess IT equipment following the closure of the LCOs.

Once the IT equipment was received at the NPC warehouse, ACSD accounted for each piece of equipment to ensure that the IT equipment was reconciled with the inventories in their property management database. The IT equipment was then sorted by equipment type and disposed of and surplus through the GSA excess website.

### 3. Methodology

#### 3.1 Methods

Quantitative analysis and qualitative fact-finding methodologies were used to gather data for this report. The following table list the questions to be answered and data sources.

#### 3.2 Questions to be Answered

Question	Data Source
1. Was enough staff hired to handle the de-installation of LCO Office Computing environment (OCE) equipment?	Debriefings
2. Were sufficient quantities of the Mobile Computing Equipment (MCE) ordered for the regions for the 2009 Address Canvassing operation? How did we determine the number of MCE devices that were needed? How much equipment was ordered? How many spares were ordered? What was the number of lost, missing or stolen, and hand-held computers?	MCE De-install Closeout Report FDCA CR HHC/SDC Deployment Quantities Address Canvassing Assessment
3. Did regions follow proper procedure for the deployment and de-installation operations? If proper procedures were not followed, what were the causes?	Debriefings
4. What procedures were used for the OCE deployment and de-installation?	D-503.3-2010 Decennial Census LCO Closeout manual & Unisys Standard Deployment Process Guide
5. What type of OCE equipment was deployed and de-installed?	Decennial Census LCO Closeout manual
6. How was the OCE deployment and de-installation monitored and tracked? What was the timeframe (actual vs. planned) for OCE deployment?	Debriefings & 2010 Master Activity Schedule (MAS)
7. What was the final disposition of the OCE and MCE? What was the procedure and how was receipt accomplished? Were there any problems?	Decennial Census LCO Closeout manual
8. Were sufficient quantities of OCE equipment ordered? How much equipment was ordered? When we changed to a paper NRFU, how did we determine how many computers would be needed to handle the keying workload?	LCOs Addressing Canvassing & NRFU Workloads LCO Equipment spreadsheet NRFU Re-plan
9. How did the repair/replacement process for the OCE equipment work? Were sufficient replacements/parts on hand to avoid delays?	Debriefings
10. Did the RCCs send staff to the ELCO/LCO deployment of OCE equipment?	Debriefings
11. Did training properly prepare staff for packaging the de-installation of LCO OCE equipment? What type of training was provided?	Debriefings
12. What was the total amount of OCE equipment lost? What is the breakdown of OCE lost by type of equipment? If OCE equipment was lost, were proper procedures followed?	Summary of Lost/Missing/Stolen (LMS) OCE by Region and 2010 LCO De-installation Metrics
13. Did Harris provide the service we expected with LCO deployment and de-installation? What problems did we encounter with Harris?	Debriefings
14. Did the property management system provided by Harris meet expectations? What problems did we encounter with the property management system?	Debriefings
15. What were the major lessons learned from ELCO pre-deployment, deployment, and post-deployment and LCO pre-deployment, deployment, and post-deployment? What did we change from ELCO pre-deployment, deployment, and post-deployment for LCO pre-deployment, deployment and post-deployment based on these lessons learned?	Debriefings
16. What were the major lessons learned from LCO de-installation?	Debriefings

## 4. Limitations

There were no limitations related to the results found in this report.

## 5. Results

The following questions include all sub-questions as presented in the study plan, and in Section 3.1 above, followed by data that answer each question.

### 5.1 Was enough staff hired to handle the de-installation of LCO Office Computing environment (OCE) equipment?

Yes, it was not necessary to hire new staff for the de-installation of the LCOs. There were enough existing RCC and LCO staff to oversee the de-installation process.

### 5.2 Were sufficient quantities of the Mobile Computing Equipment (MCE) ordered for the regions for the 2009 Address Canvassing operation? How did we determine the number of MCE devices that were needed? How much equipment was ordered? How many spares were ordered? What was the number of lost, missing or stolen, and hand-held computers?

Yes, sufficient quantities of MCE were ordered for the regions for the 2009 Address Canvassing operation. The Census Bureau provided technical and functional requirements for the Hand Held Computers (HHCs). Harris used these requirements to determine how many devices would be needed for the 2010 Census. This count included the amount of spares that would be needed as well. The Census Bureau determined the number of HHCs by ELCO based on the address canvassing workload for each office. There were a total of 154,802 hand-held computers needed for the 2009 Address Canvassing operation. In addition, there were 14,427 HHC spares that were ordered. There were a total of 115 hand-held computers that were reported lost, missing, or stolen.

There were a total of 322,782 Secure Digital (SD) Cards ordered for the 2009 Address Canvassing operation. Initially, there were issues with data transmission using the HHCs. It was determined that the SD cards were the issue and an additional 30,000 SD Cards were ordered for the HHCs. This remedied the transmission problem. There were 208 Secure Data Cards that were reported lost, missing, or stolen.

There were a total of 2,467 laptop computers ordered for the 2009 Address Canvassing operation. There were an additional 151 spare laptop computers that were ordered. There were 27 laptop computers that were reported lost, missing, or stolen.

During the ELCO deployments, 21 laptop computers were stolen from delivery trucks. These laptops were not recovered.

There were a total of 1,774 Air Cards ordered for the 2009 Address Canvassing operation. The Air Cards were ordered for the field offices to provide mobile broadband support. There were six Air Cards that were reported lost, missing, or stolen. The six Air Cards that were reported lost, missing, or stolen were not recovered.

### **5.3 Did regions follow proper procedures for the deployment and de-installation operations? If proper procedures were not followed, what were the causes?**

IT Deployment consisted of delivering and setting up the MCE (including the handheld-computers and secure digital cards) and the OCE in the E/LCOs before they opened. The MCE and OCE deployment teams developed and implemented processes to coordinate the deployment of the MCEs and the OCE to the E/LCOs.

IT de-installation consisted of the removal and sanitization of the OCE equipment from the LCOs once the 2010 Census field operations were completed. Every asset had to be physically accounted for or be reported as Lost, Missing, or Stolen. Administrative and Customer Service Division (ACSD) required a property official certification witness to be present at the LCOs to certify that the de-installation procedures were followed correctly.

For deployment, the regions were able to follow the proper procedures to successfully deploy the MCE and OCE to the E/LCOs. There were however several suggestions to improve the deployment process. One suggestion for improving deployment was to have an IT staff member from the RCC walk through the space prior to deployment. This would prepare the IT staff by familiarizing themselves of the layout of the E/LCO prior to deployment. Another suggestion was that in rural LCOs, an IT staff member is greatly needed for when the IT equipment is first deployed, so that procedures are followed correctly.

For IT de-installation, overall procedures were followed fairly well given everything that needed to be accomplished. There were just a few procedures that were troublesome. For example, not attaching the original Multi-purpose Form (MPF) that listed all equipment being shipped on pallet #1 was an issue. There were several instances of this, staff either forgot to attach the MPF or attached a copy instead of the original. The other procedure that caused some problems was the overnight delivery of the MPF to the RCC. Some offices took more than 24 hours to ship the MPF to the RCC due to lack of communication between the RCC and the LCO.

Eleven of the twelve regions thought that the LCO closeout manual and the training in Lakewood, Colorado in June 2010 either “fully prepared” or “adequately prepared” the

region to effectively close out the LCOs. One region mentioned that after the procedures were released there were many changes that occurred. While there was one manual that contained all of the procedures, several sections were released late in the process making it difficult for the regions to consistently implement closeout processes across all of the LCOs. All of the regions agreed that the weekly calls that Decennial Operations Technical Support (DOTS) staff held with the RCCs either “fully prepared” or “adequately prepared” the regions to effectively close the LCOs.

#### **5.4 What procedures were used for the OCE deployment and de-installation?**

Unisys Corporation, a FDCA sub-contractor, was responsible for providing the technicians and site leads needed for the deployment of the OCE to the E/LCOs. Unisys provided the technicians and site leads with a process guide and checklist to ensure that the deployment of the OCE was completed successfully. The OCE deployment process was divided into five basic functions. These five basic functions were:

- **Deployment Preparation** included activities required to prepare the Deployment Team to effectively prepare for deployment of a site.
- **Site Setup and Physical Control** included activities to be taken by the Site Lead to ensure the site had been prepared for receipt of equipment. These activities were completed by the Site Lead prior to the delivery of the equipment.
- **Infrastructure and Server Installation** included activities required to establish the network infrastructure and ensure full connectivity prior to the deployment of hardware and peripherals.
- **Hardware and Peripheral Installation** included activities required to deploy all hardware and peripheral items at each site and ensure all hardware and peripherals were operational.
- **Deployment Closeout** included the activities required to complete the deployment process and obtain “Ready for Use” (RFU) declaration that was signed by the Site Lead.

There was no manual for the deployments, instead numerous resource documents were posted to the FDCA portal. These documents included:

- AMS Equipment List (This is a list of all the equipment that was deployed to the LCO with the barcode numbers for each)
- LCO phone numbers (an Excel file with tab for each LCO site)
- Telco extension site list (list of sites and when their telco extension will take place, prior to deployment)
- Observation list of staff from the Project Management Office observing deployments



- Unisys site lead contact information sheet (leads responsible for the offices deployment)
- Weekly deployment schedule sent out by space/leasing
- Unisys Deployment Process Guide
- Census LCO Equipment Acceptance Checklist

For de-installation, the regions used the D-503.3-2010 Decennial Census LCO Closeout manual. In addition, LCO Closeout Training was held in Lakewood, Colorado in June 2010 to train the Lead Support Coordinators (LSC) and Space Leasing Coordinators in each region on the de-installation operation. Prior to de-installation, a teleconference was held with the regions to review the process and provide guidance on updates and/or changes to the de-installation procedures.

The data found on the OCE equipment were sanitized to remove all Title 13 data from the OCE equipment. Sanitization means rendering data completely unrecoverable per the National Institute of Standards and Technology (NIST) guidelines. Sanitization of the OCE was the responsibility of the Field Data Collection Automation (FDCA) contractor, Harris Corporation.

The de-installation of the OCE occurred after sanitization was completed and documented. Census staff verified each piece of equipment against the details found in the Multi-Purpose Form (MPF). OCE equipment that did not successfully complete sanitization was shipped to the NPC. All other equipment that was sanitized was also handled, packed, and shipped by Asset Recovery Agents (ARA) to the National Processing Center (NPC) in Jeffersonville, Indiana.

## **5.5 What type of OCE equipment was deployed and de-installed?**

The following type of OCE was deployed and de-installed in the ELCOs and LCOs:

- Computer workstations (monitors and CPUs)
- Printers
- Routers
- Servers
- Switches
- Infrastructure cabling
- Telecommunications (both data and telephone lines)
- Bar code readers
- Copiers

**5.6 How was the OCE operation monitored and tracked? What was the timeframe (actual vs. planned) for OCE deployment?**

The OCE operation was monitored and tracked by a variety of methods. Census used Remedy, the Government Communications Services Division Engineering Knowledge Oasis (GEKO) database, spreadsheets developed by the TMO, and de-installation schedules developed by Field Division.

The timeframe for the OCE deployment for the ELCOs began on September 26, 2008 and was completed on March 24, 2009. The timeframe for the OCE deployment for the LCOs began on August 17, 2009 and was completed on December 8, 2009. These timeframes met our planned dates for deployment of the OCE.

**5.7 What was the final disposition of the OCE and MCE? What was the procedure and how was receipt accomplished? Were there any problems?**

The OCE equipment was shipped from the LCOs to the NPC in Jeffersonville, IN. Upon its arrival at NPC, the equipment was inventoried and sanitized if it was unable to be sanitized in the LCO. Once it was inventoried and sanitized, the custodianship was changed from the FDCA Contractor to Census. Administrative and Customer Service Division (ACSD) was then responsible for surplusing the equipment.

There were very few problems. Harris reported that 287 out of 65,306 pieces of equipment arrived damaged. Overall the process ran smoothly and was efficient. Of the 287 pieces of equipment, the FDCA Contractor was able to repair 246 pieces of equipment. The FDCA Contractor disposed of 41 pieces of equipment.

The SD cards were returned to Harris at their Largo, Maryland facility for receipt, reconciliation, and destruction. Of the 323,000 SD cards, 220,000 SD cards that potentially contained Title 13 information were destroyed using a disintegrator that pulverized the SD cards into particles less than 3/32 inches. The remaining 103,000 SD cards did not contain Title 13 information and were returned to Census for potential reuse.

The HHCs, Laptops and Air Cards were returned to the Census headquarters for receipt, reconciliation, and disposition. Prior to shipment, the HHCs were hard reset to factory settings and the laptops were sanitized using a sanitization software solution. HHC or Laptop assets that could not be hard reset or sanitized, respectively, were sent to the FDCA Depot in Lockbourne, Ohio for proper disposition.

The HHCs and laptops were transferred from the FDCA Contractor to Census in terms of property custodianship. The HHCs were then moved off-site to a NOAA storage facility where they still remain. The laptops were re-purposed and sent back out to the regions for their use for the remainder of the 2010 Census.

**5.8 Were sufficient quantities of OCE equipment ordered? How much equipment was ordered? When we changed to a paper Non-Response FollowUp (NRFU), how did we determine how many computers would be needed to handle the keying workload?**

Yes, sufficient quantities of OCE equipment were ordered for the 2010 Census. There were 15,281 telephones, 12,217 CPUs and monitors, 2,964 black and white printers, 494 color printers; 5,928 headsets for the telephones, and 5,667 bar code readers that were ordered. Additionally, each LCO had a spare phone, computer, and barcode reader in their office.

Once the decision was made to return to a paper Non Response FollowUp (NRFU) operation, Field Division determined the additional quantities of computers that would be needed to handle the keying workload. Geography Division provided Field Division with the additional housing units that were identified during the Address Canvassing operation. There data were then analyzed to determine which LCOs needed additional computers to handle the increased keying workload for NRFU. There were only a few LCOs that needed additional computers for the additional keying workload for NRFU.

**5.9 How did the repair/replacement process for the OCE equipment work? Were sufficient replacements/parts on hand to avoid delays?**

When the LCO staff discovered an issue with a piece of equipment, after trying some basic troubleshooting if the equipment appeared to be broken, they would submit a Remedy ticket. The RCC received the ticket and in turn forwarded the ticket to Decennial Operations Technical Support (DOTS) staff. The DOTS staff would then submit the ticket to Harris. Harris would then review the ticket to determine if a replacement was needed in the field office. If a replacement was needed Harris would supply the field office with the needed equipment. In addition, Harris would receive the piece of broken equipment and would try to repair the equipment so that it could be used again in the field. Sufficient equipment were on hand at the warehouse to avoid delays. However, each LCOs had a spare phone, computer, and barcode reader in the office to use until a replacement was sent out so that work could continue.

**5.10 Did the RCCs send staff to the ELCO/LCO deployment of OCE equipment?**

For both the ELCO/LCOs deployment, the regions sent available RCC staff or if there were LCO managers on board, then the local managers were there to monitor the deployment. In some instances, other staff, such as Regional Technicians oversaw the deployment of equipment to the assigned offices.

**5.11 Did training properly prepare staff for packaging the de-installation of LCO OCE equipment? What type of training was provided?**

Field staff did not pack the OCE equipment. The FDCA contractor hired subcontractors who were responsible for packing. The training provided by the FDCA contractor prepared the subcontracting staff for packaging the LCO OCE.

Census trained the LSCs on the de-installation process and gave them an LCO closeout guide. In turn, the LSCs trained the LCO staff on closeout procedures and they were provided with an LCO version of the closeout guide. Therefore, all parties were aware of the procedures and what the subcontractors were hired to do.

Additionally, the bi-weekly IT support calls were used to update and provide guidance to RCC staff on the LCO de-installation, including preparing staff for the packaging of the OCE. Field Division also hosted weekly calls during the de-installation of equipment to update regional staff on any issues.

**5.12 What was the total amount of OCE equipment lost? What is the distribution of the OCE lost by type of equipment? If OCE equipment was lost, were proper procedures followed?**

There were a total of 37 OCE equipment that were lost, missing, or stolen for the 2010 Census. This includes 25 Bar code scanners, 11 phones, and one printer, that were reported lost, missing, or stolen.

The Census Computer Incident Response Team (CIRT) was notified and the proper documentation was completed by the RCCs, FDCA contractor, and Headquarters.

According to the PII and Privacy offices, all procedures were followed correctly when OCE went lost, missing, or stolen.

**5.13 Did Harris provide the service we expected? What problems did we encounter with Harris?**

Harris was responsible for ensuring that FDCA equipment was de-installed, along with removing the IT infrastructure from the LCOs during closeout. During the LCO closeout, Harris Corporation was the contractor responsible for ensuring and overseeing that each LCO OCE was appropriately packed and shipped.

Ten out of the twelve regions rated the level of preparedness provided by the Harris representatives for the FDCA de-install and removal of the IT infrastructure as “Totally prepared” or “Somewhat prepared”. Only two out of the twelve regions described the level of preparedness provided by Harris as inadequate.

Several regions felt that Harris was prepared and the pre-deinstallation conference calls, held by Harris representatives with TMO help desk staff in attendance, were good.

Nine out of twelve regions felt that the FDCA contractors began their work in the LCOs when scheduled. Also, ten out of the twelve regions reported that the work of the FDCA contractors finished as scheduled. Some of the regions comments were:

- Chicago and Charlotte RCCs stated that the FDCA contract staff was timely. There were occasional issues with schedule changes or personnel going to the wrong location. However, most of the time the process began as scheduled.
- Some regions felt that the Harris schedule was not followed and that they were not really on time. However, the Harris personnel worked out any scheduling problems so that the LCOs closed on time even when problems occurred.
- Generally, the regions felt that as time went on and bugs were worked out of the process, the timeliness of the FDCA contract personnel meeting the schedule, conducting work as planned and concluding on time got much better. This was due to the fact that personnel working for Harris were quick to react to any problems, correct any issues, and provide immediate feedback to their field personnel.

Ten out of the twelve regions agreed that the level of communication between the regions and the Harris personnel was either “Very effective” or “Somewhat effective”. Two regions stated that their communications with Harris were either “Neither effective nor ineffective” or “Somewhat ineffective”.

**5.14 Did the property management system provided by Harris meet expectations? What problems did we encounter with the property management system?**

The Asset Management System (AMS) was developed and implemented by Harris as a system to track ELCO/LCO IT equipment assets. There were no formal requirements documented by the Census Bureau to Harris. When the decision was made by the Census Bureau to buy the equipment instead of leasing the equipment, the Census Chief Financial Officer (CFO) requested that additional information be incorporated to provide “property management” attributes such as, unit costs and depreciation value. ACSD decided to merge data from the AMS into the Census Bureau’s Accountable Property Management System (APMS).

The Harris depot was stocked with equipment that the Census Bureau was not able to track until equipment was deployed. Instead, equipment was tracked through the bill of lading, which allowed the Census Bureau to track what equipment was being shipped, how much equipment was being shipped, and when equipment was deployed to an LCO. There was not an automated system that was employed that could give the

Census Bureau a real time status of what was in stock at the Harris depot. There were also initial start up issues with deploying AMS in the LCOs. Although Harris was able to provide support to the regional users to resolve these issues, the AMS was never fully operational to meet the Census Bureau's asset management requirements. Instead, Harris used smart spreadsheets that tracked the equipment. These spreadsheets were labor intensive and, in some instances, delayed the de-installation in offices because of missed emails.

**5.15 What were the major lessons learned from ELCO pre-deployment, deployment, and post-deployment and LCO pre-deployment, deployment, and post-deployment? What did we change from ELCO pre-deployment, deployment, and post-deployment for LCO pre-deployment, deployment, and post-deployment based on these lessons learned?**

A major lesson learned for pre-deployment was for the regional IT staff to get involved earlier in the Design Intent Drawing (DID) process to look for impacts to IT. During the ELCO deployments, the regional IT staff were not involved or were involved late in the DID process. The drawings were often incomplete when submitted to Harris/Unisys. Many system related problems, such as electrical, cabling, or placement of equipment had to be resolved during or after deployment, increasing costs and causing delays.

Another major lesson learned for pre-deployment was to eliminate the equipment drawings from the DID process. The equipment drawing component of the DID process identified the location of the telephones in the LCO, and the corresponding call group(s) for each instrument. During the ELCO deployments, the telecommunication equipment drawing required staff in the Regional Census Centers (RCCs) to constantly update the drawing using AutoCAD software when changes were made. Using AutoCAD software was a very tedious and time consuming process.

The regional IT staff should have been more involved with the space acceptance throughout the ELCO and LCO pre-deployment process. For the LCOs, most regions were able to send IT staff to at least some of the offices. There were clearly less problems encountered during the deployment when IT conducted a site visit prior to acceptance. Most problems identified such as missing or misplaced electrical outlets or data drops, circuit location/activation, etc., were quickly corrected. Few problems identified in advance were not followed up on and corrected by deployment. Some offices combined the inspection trip with the Intrusion Detection System walkthrough. Other creative suggestions were to develop a checklist that the Space/Leasing staff could follow when IT was not onsite, and to take pictures of the site for IT staff to review later, especially during deployment. The idea of creating a checklist that Space/Leasing staff could follow when IT was not onsite was incorporated for the LCO deployment.

During the ELCO installation, RCC staff did not have a clear understanding of their involvement, and were often not onsite when the circuits were installed and tested. There was also confusion regarding the scheduling and location of the T1/Primary Rate Interface (PRI) circuits and their extension into Census space including the location of Smart Jacks.

Overall, there was less confusion during the LCO installations, largely because of improved scheduling and better identification of the specific circuit locations. Since the IT staff had been involved in the earlier ELCO installations, they were also more aware of the issues and potential problems that might occur.

For the LCO deployments, most regions involved their IT staff earlier in the DID process. This included participation in the planning, as well as working more closely with the Space/Leasing staff. Both staffs benefitted from their experience with the ELCOs, which enabled more accurate information regarding the location of PCs, telephones, electrical wiring and furniture, to be incorporated into the final DID drawings. It was clear that the earlier and more closely the IT and Space/Leasing staffs worked with each other, and with Harris/Unisys, the better that all parties understood the process, and the less time had to be spent post-deployment making changes and correcting errors. Additionally, the flexibility that was built into the office infrastructure provided the capability to rearrange furniture and equipment to support operations.

For the LCO deployments, the responsibility for setting up the call groups was transferred from Harris to the regional LSCs. Harris implemented a standard template for the call groups, which put a single telephone in each group, and placed the rest in an open pool, thus eliminating the need for the equipment drawing. This change had several positive effects. Most importantly, it resulted in getting the LSCs involved much earlier in the entire planning and DID process, providing better communication, a clearer understanding of the procedures involved, less wasted effort updating drawings, and an overall smoother operation. Having the LSCs set up the call groups in advance, and even pre-programming the telephones in some instances, clearly saved time and costs. As a result, the DID would now more accurately indicate the final location of all PCs and telephones. Since the LSCs had access to the Call Manager, this also provided more flexibility to the LCOs when adjustments to the telephone call groups were needed. Spending time earlier in the process on planning and getting it right the first time, helped avoid spending time later correcting errors.

Harris Corporation worked closely with Census to strengthen the deployment strategy for the LCO phase. Tighter requirements determining the site readiness of an LCO for deployment of the OCE enabled the team to offset the threat presented by last minute delays to accepting space. Similar to the closer monitoring and communication Census and GSA adopted, Census and Harris adopted the same weekly phone regimen. Ensuring a “pool” of LCOs were “site-ready” gave Census and Harris the re

flexibility in deployment and thus in opening the LCOs to support operations. With better control and predictability in which sites were to deploy, logistical challenges Harris had previously encountered allowed better scheduling of deployment teams; consistent deployment production-levels were achieved as compared with the ebb and flow encountered during the ELCO phase.

Testing during the deployment period was the best opportunity to identify any faulty equipment and to ensure that it was fully functional prior to the start of production. Defective equipment will generally fail during its initial uses, and can therefore be replaced ahead of production with minimal impact.

The degree of testing provided during deployment was questionable. Census had little input into the testing process conducted by the Unisys deployment team, and it was often difficult to even observe and follow all of the procedures. A checklist of what tests were performed was made available once the deployment was complete, but would have been more helpful if it had been made available during the actual process. There was little time or opportunity for Census to conduct any tests beyond what was performed during deployment. Basic administrative procedures such as logging on, checking mail, and creating files were the extent of most post-deployment testing.

Equipment that failed during deployment while Unisys was on-site was quickly replaced. Procedures for replacing defective equipment post-deployment (through Remedy) needed some initial clarification, but worked well once understood.

#### **5.16 What were the major lessons learned from LCO de-installation?**

The de-installation schedule began in September 2010 with ten offices scheduled for sanitization/OCE pick up. While not every region had an office represented the first week, starting with a fewer number did allow the closeout team and regions to observe the closeout process and identify areas that needed improvement. It was during these first few weeks that it became clear that there were some issues with how the Asset Recovery Technicians were performing their job and measures were taken to improve things in this area. Within the first few weeks of equipment arriving at the NPC, it was noticed that there was some damage to the printers. Therefore instructions were revised on how the Asset Recovery Assistants should pack the printers to prevent damage.

Another major lesson learned is that the Census Bureau needs to develop de-installation procedures earlier during the Census operation. In addition, the Census Bureau needs to develop an automated certification and notification process rather than using scanned paper forms and emails. An automated certification and notification process would use computer software so that regional staff would not have to scan paper forms and send emails. Instead regional staff would be able to use computer software to easily complete these tasks. An automated certification and



notification process would reduce paper and make this process much more efficient. It was highly recommended by the regions to initially schedule a dry run with one LCO in each region as a means to train all of the RCC staff. This would put all personnel supporting closeout for the region on the same page.

## **6. Cost**

The total contract costs for the Office Computing Environment were \$93.5 million. The Office Computing Environment contract included the following cost: Installation and De-installation of the OCE in the regional offices was \$27.4 million, Asset Management was \$5.7 million, Telecommunication costs were \$24.4 million, and \$36 million for LCO equipment.

In November 2008, the Department of Commerce decided that the Census Bureau would purchase the mobile computing devices and office equipment instead of leasing. The decision was driven by the cost of the initial lease compared with the purchase costs of the Handheld Computers (HHCs). Since the HHC lease was considered a capital lease (to which the Government could not enter into) the decision by DOC (given its perception that leasing might be a more expensive lifecycle) was to purchase all equipment. Disposition of all equipment became a cost the Government would assume.

The cost for installation and deinstallation of the ELCO/LCOs was under budget due to deployment efficiencies. However, the ELCOs deployment finished on 03/06/09, four months and five days later than planned due to delays in acquiring ELCO space on time. LCO deployments finished one month and six days later than planned. In addition, the LCO IT equipment was de-installed on 11/19/10, two weeks early than planned.

## **7. Related Evaluations, Experiments, and/or Assessments**

The Addressing Canvassing MCE Assessment.

## **8. Key Lessons Learned, Conclusion & Recommendations**

### **8.1 2010 IT Deployment and De-installation Program Lessons Learned**

1. For ELCO/LCO pre-deployment, regional IT staff needs to get involved early in the site design process to look for impacts to IT.
2. Early identification of telecommunication infrastructure deficiencies and non-baseline configurations critical to program schedule, including the development of contingency plans. During Census 2010, infrastructure deficiencies and non-baseline configurations resulted in unplanned work, and additional contractor/Census resources introduced risk, and in some cases, affected the deployment schedule for a site.

3. The Asset Management System (AMS) must have the ability to be updated in real time at deployment and throughout the de-installation process. For the 2010 Census, AMS updates required PC access which was not available at deployment or time of de-installation. In addition, the system had no real-time bulk update capability.

## **8.2 Conclusion**

The 2010 Early Local Census Offices (ELCO) and Local Census Offices (LCO) IT Equipment Deployment and De-installation process for the 2010 Census was implemented successfully. IT equipment was successfully deployed, tracked, and de-installed.

The 2010 Early Local Census Offices (ELCO) and Local Census Offices (LCO) IT Equipment Deployment and De-installation process was a collaborative effort between the Technology Management Office (TMO), the Field Division, the NPC, and the Harris Corporation. The dedication, exceptional knowledge, and skill of all of these teams ensured that this program was a success.

## **8.3 2020 E/LCO IT Deployment and De-installation Recommendations**

1. For the 2020 Census, it must be decided early in the decade whether or not the IT equipment will be purchased or leased. If the decision is to lease the IT equipment, then it must be decided how the property will be tracked and managed. One option could be to use a modified version of APMS or something similar to track and manage the IT equipment.
2. Use experienced IT staff rather than contractors for de-installation, packing and shipping of the OCE.
3. For each individual system, a thorough analysis of the intended usage should be performed and realistic quantitative data must be provided as part of the system requirements. These quantitative data are vital to enable each system to be effectively performance tested, including load and stress testing, to ensure that all systems will be able to perform at acceptable levels during peak production.
4. If feasible, schedule a dry run for de-installation of the OCE with one LCO in each region to provide training for the RCC staff assigned to office closeout activities.
5. Use a real-time inventory management system for IT property accountability.
6. Establish a dedicated property accountability position for IT equipment in each RCC.
7. Deploy IT staff to LCO locations that do not successfully complete the sanitization

process.

## **9. Acknowledgements**

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## **10. References**

Decennial Management Division, “2008 Census Dress Rehearsal Study Plan: Field Office Environment (with Harris-provided IT technology) Assessment.” August 2008.