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2010 CENSUS PLANNING MEMORANDA SERIES

No. 239

MEMORANDUM FOR The Distribution List

From: Burton Reist *[signed]*
Acting Chief, Decennial Management Division

Subject: 2010 Census Content and Forms Design Program Assessment Report

Attached is the 2010 Census Content and Forms Design Program 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 any questions about this document, please contact Kuopei White at (301) 763-5344.

Attachment

September 20, 2012

2010 Census
Content and Forms Design Program
Assessment Report

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

Final

Kuopei White

Decennial Management Division

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Executive Summary

This assessment report documents the results and major findings from the operations of the 2010 Census Content and Forms Design Program. Only Public Use Forms and other materials produced within the purview of the Decennial Management Division Content and Language Branch are covered within the scope of this assessment. Materials produced outside of the Content and Language Branch, such as field procedures, manuals, and field evaluation questionnaires, are not within the scope of this assessment. The report aims to inform the Content and Forms Design Integrated Product Team, stakeholders, and decision-makers on the successes, impacts, and recommended changes and improvements for future censuses.

The research questions in this assessment were answered by utilizing lessons learned documents, census reports and documents, and other tracking reports. The main research questions and results related to the Content and Forms Design Program are described below:

1. What was the process and outcome for determining final 2010 questionnaire content?

   The content determination activities started early in the decade through tests sponsored by the Content Research and Development Team and later through the Content and Forms Design Integrated Product Team in conjunction with the Mode Consistency Subgroup. Team members provided input and recommendations based on past test results and recommended 2010 Census questionnaire content for a baseline. Once the content was baselined, a formal Change Control process was established to handle questionnaire content and design changes.

   Materials used for the 2010 Census Mailout/Mailback operation were pre-tested and field tested extensively during the decade. Questionnaires used for field operations, such as Be Counted, Group Quarters Enumeration, and Enumeration at Transitory Locations, were not field tested due to the de-scoping of the 2008 Census Dress Rehearsal. Although these questionnaires were cognitively pre-tested in 2008, some recommendations from theses tests were not included in the final questionnaire due to timing issues.

   In general, content was finalized early enough to meet field operational and print production schedules, but many "non-substantive" content updates to English text did affect translation, forms design, and thorough review of the language questionnaires. The final 2010 Census printed materials produced under the Content and Forms Design Program met the needs of various operations and subject matter experts. However, some of the forms/questionnaires produced by other areas could have benefitted if they were developed and reviewed under the Content and Forms Design Program.

2. What was the review process and what were the outcomes? How well did the automated system (IBEAM) perform?

   A structured five-step review process was established for reviewing, adjudicating, updating, and finalizing the 2010 Census questionnaires and other supporting materials. Each review step resulted in updated draft forms that were validated against comments received before

the next round of review. These steps were: 1) Initial review of drafts; 2) Content and Forms Design Integrated Product Team review that included review for data capture and response processing; 3) Initial quality review; 4) Final quality review; and 5) Technical table review.

The reviewers of the 2010 Census forms were identified and most of them participated fully. It would be beneficial if the reviewers also included the "owners" of one or more of the content areas, not limited to demographic content, on the questionnaire and who participated during the content determination process.

The review process generally enabled thorough review of the materials and produced print files that met the standard set forth in the print contracts we had. The process could be made more efficient by establishing a portal for form deliveries, and providing an electronic/automated mechanism for documenting reviewer comments and change history of each print item. A formal inspection confirming that the final print files required for the printing process were all present, valid, and correctly formatted, prior to delivery for print production, could have also helped eliminate forms being re-delivered due to design errors.

The Information Base for Exchange Administration and Management system, used as the primary source to create the 2010 Census questionnaires, performed as designed and ensured content consistency across questionnaires for different operations. It eliminated the need for the Administrative and Customer Services Division's forms designers to manually input questionnaire content into the forms design software. The system also notified the content users and the form designers the status of each questionnaire as well as helped to document changes in an organized fashion. Subject matter experts used the system to compile keying specifications and the processing staff used the system to generate record layouts for post data collection processing.

Since the system did not have an integrated design tool, there were instances where content elements submitted from the IBEAM system (such as graphic and character spaces) were not received successfully by the forms design software. Additionally, the keying matrix report generated from the IBEAM system was not utilized as designed by the data capture contractor in an automated fashion.

In general, the system performed well for creating consistent content for the English and Spanish 2010 Census questionnaires. It would be beneficial if the system could be used in managing content in languages other than English and Spanish, as well as other materials including letters, envelopes, and other public use forms. The system, as a content repository, should also integrate and include the content collaboration and forms review processes in its workflow.

3. <u>What was the process and outcome for ensuring the 2010 paper questionnaires could be data captured and processed correctly?</u>

The 2010 Census paper questionnaires were designed using the 2008 Census Dress Rehearsal questionnaire as the base. Lockheed Martin, the 2010 Census data capture

contractor, conducted data capture for the 2008 Dress Rehearsal questionnaires and participated in the testing and finalization of the 2010 Census questionnaires.

To the extent possible, the 2010 Census questionnaires were drafted following the design guidelines provided in the "Forms Design Guidelines" issued by Lockheed Martin for successful data capture. Due to paper size limitation on the inclusion of additional content, it was extremely challenging to design a questionnaire that completely conformed to all of these guidelines. In addition, the guidelines did not include enough flexibility for designing all form types. For the 2020 Census, data capture of paper questionnaires should be included early in the content testing phase so that the data capture technology can be optimized for the designed forms. Additionally, the questionnaire content should be determined and modified in conjunction with the overall look of the questionnaire, as well as its implications for data capture and data quality.

4. Were requirements and issues communicated timely and sufficiently with stakeholders?

   While issues found during the forms design and finalization process were generally communicated with stakeholders in a timely and sufficient manner, and resolved without any impact to the succeeding operations, there were difficulties managing requirements that were undefined or came in late from field operational areas. Improvements are also needed for delivery of draft forms to the data capture contractor. For the 2020 Census, a formal procedure should be established for gathering and documenting requirements. These requirements should be incorporated in a database that can be used to facilitate content discussion and the forms review process among stakeholders.

5. How did the planned start and finish dates for each of the content and forms design activities/deliveries compare to the actual dates?

   The 2010 Census Content and Forms Design Program operations had the baseline start date of June 29, 2006. This start date was early enough to include all the planning and production activities from the 2008 Census Dress Rehearsal materials. The baseline finish date for the program was September 14, 2009. The first print file, the "Notice of Visit" sheet, was approved for print delivery on May 23, 2008. The last print file, the postcard with the Telephone Questionnaire Assistance telephone numbers in six languages, was delivered on January 22, 2010. Other than a few late deliveries due to operational changes (revision of the advance letter or addition of the Direct Mail postcard), the majority of the print files were delivered on time or ahead of schedule.

Recommendations

The key recommendations from the results of the 2010 Census Content and Forms Design Program are listed below:

- Make sure timing is sufficient for testing the operational-specific content. Content development and testing for all operations should begin earlier and should include all related Public Use Forms and supporting materials, not just questionnaires.

- Content modifications to forms in the future need to be evaluated with forms design elements, mode, and language usage in mind (such as for size, color, and spacing implications for the specific-language form) and be tested for successful data capture before implementation.

- For the 2020 Census, testing like-kind groups of forms together would work better than testing forms individually. This approach is also applicable for establishing content, designing layout, reviewing, and finalizing questionnaires, where designers and reviewers would work more efficiently and produce greater consistency across like-kind forms.

- The content and form review process can be made more efficient by expanding IBEAM functionality to allow integrated review by stakeholders where each reviewer can view real-time information, such as comments and responses from others, supporting documents, and change history to a specific question or to a form.

- Develop a corporate forms repository that includes content and design elements for data collection instruments, mailing pieces and other supporting materials. This will enhance our ability to produce consistent content and forms layout across operational areas.

1. INTRODUCTION

1.1 Scope

The purpose of this assessment is to determine if the 2010 Census Content and Forms Design (CFD) program was designed and implemented properly and produced quality materials for various 2010 Census operations in the United States and Puerto Rico[1]. This assessment will document the overall performance of the CFD program by looking at the processes and/or systems used for content determination, forms design, review, and finalization of the 2010 Census printed materials.

The CFD program assessment seeks to inform the related program areas, stakeholders, and decision makers of recommended changes or improvements for future censuses.

Only materials produced within the purview of the Decennial Management Division (DMD) Content and Language Branch (CLB) are covered within the scope of this assessment. Materials produced outside of the CLB, such as field procedures, manuals, and field evaluation questionnaires, are not within the scope of this assessment.

1.2 Intended Audience

This report is intended for U.S. Census Bureau program managers involved in planning for the 2020 Census. It also will be relevant for those who manage various decennial census field operations, as well as data capture and processing, and communication. It will be of particular value to those in DMD working on designing and finalizing data collection instruments for the 2020 Census.

2. BACKGROUND

The 2010 Census CFD program supports the Census Bureau's mission of serving as the leading source of quality data about the nation's people and economy. Like all previous censuses, the goal for the CFD team members was to produce public use materials, such as questionnaires, letters, envelopes, notices, assistance guides, and information cards to help generate a high response rate and consistent responses across operations for this short-form only 2010 Census.

Every question on the census short form is either mandated (i.e., specifically called for by federal law) or required (i.e., federal law explicitly calls for the data and the decennial census is the only source for the data, or there are case law requirements imposed by the federal courts). As required by law, the specific wording of the questions and response categories must be sent to Congress two years prior to the census date. In addition, the Census Bureau works with the Office of Management and Budget (OMB) and other external stakeholders (e.g., U.S. Congress,

[1] Content and forms work for the Island Areas is out of scope for this assessment.

the Census Advisory Committees, other Federal Agencies, state and local governments, academia, private industries, and others) to develop the decennial census questionnaire content and question wording. The OMB must approve each response option, and the method and mode of data collection, in order to limit public burden.

To produce various forms for the 2010 Census, CFD received content and layout inputs from internal intercensal test results, policy guidance, postal regulations, data capture guidelines, printing requirements, and requests from internal and external stakeholders.

2.1 Census 2000

In Census 2000, both the short form and long form mail packages and other printed materials were designed through a manual process of delivering a mocked up item to the Administrative and Customer Service Division (ACSD) to design for each of the Public Use Forms.

The Census 2000 "Total Design Method" approach differed from previous census mailout operations in that it made multiple mail contacts with a household with successive mailings of an advance letter, the questionnaire package, and a reminder postcard. It also placed high emphasis on redesigning general questionnaire appearance, format, and visual effect to achieve high mail response rates (U.S. Census Bureau, 2000).

In addition to producing both the short and long form mail packages, the Census Bureau also designed and produced forms to be used by operations such as Update/Leave (U/L), List/Enumerate, Special Populations, Be Counted (BC), Nonresponse Followup (NRFU), and other materials such as assistance guides in 49 languages, a foreign language identification flashcard, a Privacy Act notice, and enumerator aids and notices.

Lessons learned from Census 2000, and throughout the decade, indicated that in some instances, the content was still being changed up until a week prior to the form delivery for production printing. Forms design was not coordinated with the data capture technology until later in the process[2] which caused many revisions and drafts of the forms. The lateness in finalizing the questionnaires and printing prototypes made the development of data capture software more complicated and more costly (Brinson and Fowler, 2003).

Other lessons learned from Census 2000 include (Brinson and Fowler, 2003):

- There should be better integration of forms design specifications with data capture system development.
- Internal stakeholders should be brought together earlier in the planning phase to set guidelines for development of requirements, specifications, procedures, and data review to ensure integrated development (i.e., keying rules).

[2]At the time of the contract award for data capture in 1996, the assumption was that the data capture system could be adapted to capture information from any type of form. A comprehensive set of data capture and processing technical requirements was not available to the forms design team (Longini, 2000)

- There should be standardization of definitions, edits, and forms design (i.e., field length) across the multiple modes of data capture.
- A date when no additional changes can be made to the questionnaire must be established early in the planning process.
- A change request (CR) process must be in place and fully implemented during forms design for any changes from the agreed upon content, layout, color, and design of a form.

2.2 Intercensal Testing

A number of content cognitive tests and operational tests were conducted between Census 2000 and the 2010 Census that contributed to the final content and forms layout of 2010 Census Public Use Forms.

Several major nationally representative Mailout/Mailback (MO/MB) tests leading to the 2008 Census Dress Rehearsal (DR) were also conducted to study questionnaire content and design, residence rules (and how we present them to respondents), response options, and mailing strategies. In the 2003 National Census Test (NCT), we studied content, alternative self-response options and contact strategies, and alternative presentations of the race and Hispanic origin questions. Based on the results from the 2003 test, we further studied questionnaire content in the 2005 NCT to improve completeness and accuracy of reporting tenure, relationship, age and date of birth, and race and Hispanic origin items.

Some of the intercensal testing activities include (U.S. Census Bureau, 2010a):

- 2002: Tested MO/MB forms design; Census Alternative Questionnaire Experiment form using variations of the Census 2000 questions and residence rules.

- 2003: Conducted a National Census Test and tested MO/MB forms design; race and Hispanic origin questions; coverage questions; residence rules; and Internet response option.

- 2004: Conducted a Census Test and tested forms design; race questions that include Some Other Race and Hispanic origin; NRFU instrument behavior coding; and usability.

- 2005: Conducted a National Census Test with 22 test panels including modified relationship, age, date of birth, sex, race, Hispanic origin, and coverage questions; Internet content; and embedded markings on forms. This was also the first national test of a bilingual (English/Spanish) form.

- 2006: Conducted a Census Test and tested bilingual form (cognitive testing based on 2003 results recommending the "swim lane" design); Update/Enumerate (UE) coverage questions tested at an American Indian reservation; three-part race/Hispanic origin/ancestry question; and NRFU instrument.

- 2007: Field tested the bilingual form that includes the first implementation of a new design for tract sample selection.

Building on the results of these tests, in November 2007, the Census Bureau finalized the 2010 Census question content. In March 2008, the 2010 Census questions were submitted to the U.S. Congress. In May 2008, the Census Bureau conducted the 2008 Census DR using MO/MB, Chinese in-language fulfillment, and English/Spanish bilingual forms. Meanwhile, due to the de-scoping of the 2008 Census DR, a number of cognitive and/or field tests were conducted on the enumerator information sheet, enumerator questionnaire, Enumeration at Transitory Locations forms, BC questionnaire, 2010 Census mail package materials (letters and envelopes), and envelopes with new postal elements.

From 2008 to 2009, the 2010 Census experimental coverage questions, race/Hispanic origin panels, and deadline messaging/compressed schedule letters were cognitively tested. CFD also cognitively tested mail packages with the American Community Survey (ACS) and 2010 Census envelopes/messages for consistency and to gauge respondent reaction to receiving both the ACS and 2010 Census form (U.S. Census Bureau, 2010a).

2.3 2010 Census

For the 2010 Census, CLB produced a total of 76 distinct questionnaire types, 61 different letters/reminder cards, 61 unique envelopes, 17 field material components, and 59 language assistance guides for use by various 2010 Census operations in the U.S. and Puerto Rico. Print files were produced for the following operations:

- Questionnaire packages for self-response data collection operations (MO/MB including experimental designs for stateside only, U/L, and BC in six languages).
- Questionnaires and materials used for field data collection operations including Group Quarters Validation (GQV); Group Quarters Enumeration (GQE) with the Individual Census Report (ICR), Shipboard Census Report (SCR), and Military Census Report (MCR); NRFU; and Enumeration at Transitory Locations (ETL).
- In-language questionnaire packages in six languages.
- Language materials such as the Language Reference Dictionary, the Language Identification Card, and Language Assistance Guides.

Specific tasks for producing these materials included the following:

- Coordinating 2010 Census content discussions among stakeholders and determining final content.
- Providing design specifications and ensuring operational needs were met.
- Reviewing and ensuring the designed questionnaires met data capture specifications with accurate final content before submitting to print.

For the 2010 Census forms, content determination activity took place through the CFD Integrated Product Team (IPT) and in conjunction with a Mode Consistency Subgroup.

Members provided input and recommendations and all content was finalized through the IPT, followed by recommendations that were put forward to an Executive Guidance Group where the final content was baselined based on the decisions made. The decisions also informed content changes for the 100-percent short form items on the ACS long form questionnaire (Waite, 2004).

Any changes to questions, instructions, or response options from the baselined version were required to go through the CR process and be approved before being implemented on a questionnaire or other data collection instrument. Changes to questions, instructions, or response options that resulted from typographical errors, formatting differences, or mode consistency testing did not require the CR process. They were instead brought to the attention of the CFD IPT group at subsequent meetings for resolution.

To ensure content consistency across questionnaires, the Information Base for Exchange Administration and Management (IBEAM) system was used to enter the content for questionnaires for the 2010 Census. The IBEAM system was first developed in 2003 with the intent to achieve better accuracy, consistency, reduction of time-consuming manual processes in questionnaire design, and to achieve better integration between forms design, data capture, and processing systems.

The IBEAM system is an automated system that receives and retains metadata for decennial questionnaire production and response processing from a content manager. The metadata contained in IBEAM include questionnaire content (questions, instructions, and response fields), questionnaire design and layout, data capture requirements, and record layouts. The IBEAM system management segments are Content Development, Layout and Design, Data Capture, Data Processing, Data Analysis, and Data Dissemination.

The IBEAM system enabled users to control and track changes in content, response options, design elements, and instructions. By providing the content in an automated way, reusing verified content, and indicating response field characteristics and placement on the form, the system enabled content managers to provide the overall plan for the questionnaire rather than manually producing content and form design instructions for each like-kind form.

A structured five-step review process was also added for the 2010 Census forms design work. The review steps included: 1) initial review of drafts by subject matter experts; 2) CFD IPT review (including review by Headquarters Processing staff for response processing and by contractor Lockheed Martin for data capture); 3) initial quality review; 4) final quality review; and 5) technical table review. The CFD program envisioned that these steps would bring structure and efficiency to the decennial forms creation process.

3. METHODOLOGY

There are five overall research topics, supported by the groups of specific questions in Section 3.1 that this study will address:

- Process for Content Determination
- Process for Forms Design and Review
- Data Capture/Processing
- Communication with Stakeholders
- Schedule Management

3.1 Research Questions

Process for Content Determination

1. What was the process and outcome for determining final 2010 questionnaire content?
   a) Was the 2010 Census content fully tested and was each test timed appropriately according to established procedures?
   b) Was the final 2010 Census content finalized early enough to meet operational and print production schedules?
   c) Was the final 2010 Census content finalized early enough to allow translation, design, and review of non-English language forms?
   d) Were the proper protocols in place and used for content changes (i.e., change requests)?
   e) Did the final printed materials accurately reflect the content needs of the subject matter experts/operational areas?
   f) Was the content determination process integrated well with 2010 ACS content?
   g) Was the work scope for the CFD IPT adequate in producing 2010 printed materials that are consistent and accurate across other operational areas?
   h) What content issues arose during the 2010 Census operations?

Process for Forms Design and Review

2. What was the review process and what were the outcomes?
   a) Did the new 2010 structured five-step process for reviewing materials work as planned to create efficiency in designing, reviewing, and finalizing the forms?
   b) Did the new 2010 structured five-step process for reviewing materials work as planned to create error-free, quality forms?
   c) Was the forms design process able to identify where forms design errors in both IBEAM and non-IBEAM materials occurred to inform 2020 Census planning?
   d) Were all key reviewers identified to fully participate in finalization of the designed forms?
   e) Did the final files submitted for print meet the standard needed by the commercial printing industry?
   f) Were there adequate staffing resources to finalize the content and to produce print files that met the timing needs for data capture and printing?

3. How well did the automated system (IBEAM) perform?
   a) Were the enhancements made to the IBEAM system after 2008 helpful in ensuring content consistency across forms and reducing forms design errors?
   b) Was the IBEAM system utilized as planned by stakeholders in content determination, forms design, data processing, and record keeping for the 2010 Census printed materials?
   c) How was the IBEAM system utilized for designing the 2010 Census language questionnaires?

Data Capture/Processing

4. What was the process and outcome for ensuring the 2010 paper questionnaires could be data captured and processed correctly?
   a) Was the forms design guideline document provided by the data capture contractor (Lockheed Martin) adequate, appropriate, and followed in all of the forms designed for data capture?
   b) Was the forms design guideline document provided by Lockheed Martin developed/updated with the correct inputs from forms designers/stakeholders?
   c) How well did the content development process interface with data capture requirements?

Communication with Stakeholders

5. Were requirements and issues communicated timely and sufficiently with stakeholders?
   a) Was there sufficient communication with stakeholders in relevant operational areas to obtain requirements for 2010 Census printed materials?
   b) Was there sufficient and timely communication with stakeholders on issues raised during the forms design/finalization process?
   c) How well did the process provided for reviewers to report errors alleviate conflicting corrections, redundancies, and inclusion of superseded or incorrect information?

Schedule Management

6. How did the planned start and finish dates for each of the content and forms design activities/deliveries compare to the actual dates?
   a) Was there adequate time in the schedule for thorough reviews of the materials?
   b) Was the forms design process completed on schedule or were there bottlenecks that could be identified and reduced and/or eliminated for 2020 Census planning?

3.2 Methods

A number of methods were used to perform the analysis to compile the information in the 2010 Census CFD program assessment:

- Evaluation of forms issues documented in the CFD IPT meetings and comments from reviewers and stakeholders.
- Compilation of lessons learned and assessment reports from various decennial operations.
- Analysis of submission history of content and forms design changes from the IBEAM Notification Reports on various IBEAM questionnaires.

4. LIMITATIONS

The results and recommendations discussed in this report are from a CFD program perspective for creating paper data collection instruments and related printed materials. Thus these should be considered in the context of the needs and requirements of other Census Bureau divisions and programs.

5. RESULTS

5.1 Process for Content Determination: What was the process and outcome for determining final 2010 questionnaire content?

This activity took place in the CFD IPT[3] through regular meetings and in conjunction with the Mode Consistency Subgroup. IPT members provided input and recommendations based on past test results and all content was discussed and approved through this group before a recommendation was put forward to the Executive Guidance Group to be baselined in January, 2007. On March 30, 2007, as required by law, the Census Bureau submitted to Congress the list of subjects planned for inclusion in the short forms, and submitted to Congress the actual questions in March 2008. These were posted in the Federal Register on March 26, 2008.

There were changes made to the questions, instructions, or response options after content were baselined. There was also an executive decision that changed the census design which resulted in a CR being submitted for additional printed materials, such as the bilingual U/L mailing pieces and a direct mail postcard. Late operational requirements also resulted in changes of form color for some GQE questionnaires and the enumerator reinterview questionnaire. These changes all went through the CR process and were approved before implementation.

5.1.1 Was the 2010 Census content fully tested and was each test timed appropriately according to established procedures?

As required by the Census Bureau's Statistical Quality Standards, data collection instruments and supporting materials must be pretested with respondents to identify problems. Problems related to content, order/context effects, skip instructions, formatting, navigation, and edits must be identified and then refined, prior to implementation, based on the pretesting results (U.S. Census Bureau, 2010b).

To finalize the revised 2010 census questions and supporting materials, mail package materials (envelope messages, etc.), in-language fulfillment questionnaires, as well as the bilingual questionnaires, were tested between 2002 and 2008 before conducting the 2008 Census DR.

[3] This decade, the Content and Forms Design Integrated Product Team (IPT) started as the Content Research and Development (R&D) team and switched to an IPT after most of the content had been finalized.

The English versions of these questions and instructions were tested extensively which started early in the decade. Included in Table 1 is a list of the various pretests conducted on the content and forms design of the MO/MB questionnaires.

Table 1: Pretests Conducted on Questionnaires and Print Materials

Year	Test Type/Sample Size	Test Subject
2002	Cognitive Test (95)	English short form - five formats of residence rules instructions, coverage questions, and enumeration (sequential, grid, list)
2003-2004	Cognitive Test (50)	English short form - five formats of residence rules instructions and one household coverage question
2005	Cognitive Test (14)	English short form - space saving features, roster questions, and revised instructions for Hispanic origin and race questions
2006	Cognitive Test (20)	Other Living Quarters Validation Questionnaire and flashcard
2008	Cognitive Test (15) – 1st Phase	Advance Letter, Initial Cover Letter, Reminder Postcard, Replacement Cover Letter
2008	Cognitive Test (15) – 2nd Phase	Outgoing envelope, Initial Cover Letter, English short form, Return envelope

Source: http://www.census.gov/srd/www/byyear.html

Recommendations from each of the pretests listed above were incorporated into several major field tests, as shown in Table 2, which contributed to the final 2010 Census content:

Table 2: Field Tests Conducted with Questionnaires and Print Materials

Year	Test Type/Sample Size	Test Subject
2003	National Census Test (160,000 Housing Units in MO/MB areas only)	Eight versions of the questions on Hispanic origin and race, variations in contact strategy, and alternative response modes
2004	Census Test (200,000 Housing Units)	Residency rules and coverage questions; new race and Hispanic origin questions; GQV; NRFU Hand Held Computer
2005	National Census Test (210,000 Housing Units in MO/MB areas)	Variations (13 panels) of questionnaire content (including race/ethnicity, tenure, relationship, age/date of birth, residence rules instructions), questionnaire design alternatives (i.e., space saving and other design options), Internet layouts (i.e., topic- or person-based), strategies for implementing a replacement questionnaire mailing, methods to improve within household coverage, and a bilingual census form
2006	Census Test (213,000 HUs)	Residence rules and instructions

Source: http://www.census.gov/srd/www/byyear.html

Appendix A provides a list of changes made since Census 2000 to the short form questions on the MO/MB questionnaires.

For the various field operations, we conducted more tests on operations rather than content for questionnaires and supporting materials. Operational forms that were tested are shown in Table 3.

Table 3: Pretests Conducted on Operational Forms After De-Scope of 2008 Census DR

Year	Test Type/Sample Size	Test Subject
2008	Usability Test (19)	Identify elements of the layout and flow of the NRFU paper form that are problematic
2008	Qualitative Test (164)	ETL questionnaire, Unit Verification Page, and Listing Sheet
2008	Cognitive Test (24)	Test respondents' understanding and use of the BC questionnaire
2008	Cognitive Test (30)	NRFU paper form

Source: http://www.census.gov/srd/www/byyear.html

Although plans were made to test the BC, ETL, GQE (ICR and MCR) questionnaires in the 2008 Census Dress Rehearsal, this did not happen due to budget constraints. The BC form went through expert review and cognitive testing, the ETL had a small qualitative test, and the ICR only had an external expert review (Dillman, 2006). No field-testing was performed on the operational-specific content of the ETL, BC, ICR and MCR questionnaires.

Additionally, most of the tests for the enumerator questionnaire (EQ) prior to 2008 were done under the assumption that the 2010 Census would utilize handheld computers (Childs, 2008). Due to the NRFU re-plan decision made in April 2008, the Census Bureau designed and printed four enumerator forms (three questionnaires and an information sheet) for testing paper enumerator questionnaires for NRFU, UE and ETL in July, 2008. Since the NRFU final print files for production printing had to be delivered by February 26, 2009, and ETL by April 17, 2009, recommendations from the cognitive tests were only accepted if the changes would not involve further testing and drastic re-design of the forms.

5.1.2 Was the final 2010 Census content finalized early enough to meet operational and print production schedules?

The U.S. Congress requires that decennial census subject matter content be finalized three years prior to the census and that the content of the questions be finalized two years in advance of the census. Content must also be finalized early enough to allow time for designing, printing, addressing, assembling, and kitting the final materials for each census operation. Thus, a milestone schedule for the 2010 Census CFD activities was established, as shown in Table 4.

Table 4: CFD Milestone Activities

Key Content and Design Schedule Activities	Start	Finish
Content and Forms Design Project	06/29/06	09/14/09
Finalize 2010 Census Content		01/03/07
Decision: 2010 Census Non-English Questionnaire Languages		11/23/07
Develop Final List of 2010 Census Data Collection Instruments	12/13/07	03/20/07
Design and Deliver Advance Letter and Reminder Packages for Print	01/15/08	09/17/09
Design and Deliver Questionnaires Packages for Print	12/10/07	07/23/09
Design and Deliver Field Materials for Print	03/10/08	07/29/09
Design and Deliver Experimental Packages for Print	08/05/08	09/14/09

Source: 2010 Census Detailed Operations Plan for the Content and Forms Design Program

In general, we established a successful process for the delivery of draft and final form deliveries to the data capture and print contractors for 2010 Census activities. Appendix B shows the print file approval dates and delivery dates for those 2010 Census Public Use Forms (PUFs) designed and produced under the CFD program for listed census operations.

One of the lessons learned was that we did not plan for materials needed for advertising or promotional purposes, which occurred well before these forms were finalized and printed. We received requests for items such as mail questionnaires (English and bilingual), advance letter, cover letter, and outgoing and return envelopes, which often require staff to assemble mock-ups with Dress Rehearsal forms. In the future, print timing for these purposes (especially if envelopes are required) should also be considered.

5.1.3 Was the final 2010 Census content finalized early enough to allow translation, design, and review of non-English language forms?

DMD provided the English text and mockup of items that needed to be translated into another language to DMD's Translation Services staff in the Puerto Rico and Island Areas Branch. For the 2010 Census, Spanish language forms were translated in-house and the forms were designed by ACSD, while the other four primary non-English languages (Chinese, Korean, Russian and Vietnamese) were contracted out for both translation and forms design (since ACSD did not have the capability for these in-language materials). This translation arrangement for the language materials required significant lead time for translation, verification, adjudication, and finalization, especially since they had to be contracted out. The English content and design had to be final before any significant design work could begin on in-language materials. Often, the translated text did not “fit” on the page in the same way as the designed English language materials. Therefore, either the translations had to be tweaked (as was the case for some Spanish questionnaires) or the font size was adjusted (for all of the in-language questionnaires). To complicate the matter, CLB had to alter the in-language questionnaires that were delivered in

Portable Document Format (PDF) from the translation contractor in order to meet requirements after reviews performed by data capture contractors. We originally planned on at least six months for any translated item from the time we prepared the contract and delivered the English text until we received the final translated file for approval. We did not plan for any in-house forms modifications.

According to our in-house translators, it appears that the timeline and scope for CFD IPT was not adequate. They expressed that adequate time was not allowed to ensure that translations were consistent (specifically with the address collection portion of the questionnaires); to enable cross-reference for consistency among forms; and to ensure confidence that all appropriate forms pertaining to the operation had been translated.

Based on feedback received from lessons learned sessions, it would be better to bring language form design back in house so that forms can be updated for both translation and typesetting. At a minimum, both translation and typesetting of non-Spanish foreign language forms should be done by the same contractor using software that is compatible with in-house design tools. The translation contractor used for the 2010 Census did some minimal design work, but corrections or translation changes ultimately were done in DMD CLB using available desktop applications. If a contractor must be used, the translation contractor needs to be able to update the translated forms.

5.1.4 Were the proper protocols in place and used for content changes (i.e., change requests)?

The process that was in place for the 2010 Census required that once content was baselined, if changes other than typographical errors were needed to questions, instructions, or response options, they must go through a formal change control process and approved on by the CFD IPT.

There were major content changes that impacted multiple divisions and could not be resolved by the CFD IPT alone. These change requests were submitted to and approved by the Census Integration Group (CIG):

1) Add the bilingual U/L mailing pieces;
2) Add five foreign language sentences to the Advance Letter (U.S. only);
3) Add the Direct Mail postcard to the mailout operation;
4) Change form color for the Puerto Rico GQE forms and enumerator reinterview questionnaire;
5) Remove Job Line information from the Advance Letter;

During the research/information gathering phase for this assessment, however, it was apparent that an improved documentation process was needed for these content-related change requests. There were many “minor” changes that were not documented fully and it was very difficult to collect CIG-approved specifics for those “major” changes. In the future, a central database for documenting these change requests for all operational areas may be beneficial.

5.1.5 Did the final printed materials accurately reflect the content needs of the subject matter experts/operational areas?

During the content development process for questionnaires and forms used in various field operations, we found out that not all stakeholders were involved in the initial development of the materials, which may have impacted the quality of the data collected. For example, address data fields should not be shared by two or more address elements and they needed to be tested to accommodate PR addresses. Additionally, CFD was not involved in kit and form preparations and was not involved in reviewing and finalizing some of the key field forms. Specifically, CFD should have been able to assist with the development of the pre-interview (screener) questionnaire, the Unit Verification Page, in conjunction with the development of ETL questionnaire to ensure content consistency between the two.

5.1.6 Was the content determination process integrated well with 2010 American Community Survey (ACS) content?

DMD staff worked closely with the American Community Survey Office (ACSO) through CFD IPT and ACS Content Council meetings, specifically regarding mode consistency concerns on the one-hundred percent items and coordination on wording and design of related mailing pieces. Regular meetings were held to discuss and coordinate messaging on printed materials and outreach efforts.

Additionally, the 2010 GQV operation also took advantage of lessons learned from the ACS GQ operation. GQ type codes were made consistent between both operations and 2010 Census military enumeration methods were coordinated successfully based on ACS GQ experiences.

5.1.7 Was the work scope for the CFD IPT adequate in producing 2010 printed materials that are consistent and accurate across other operational areas?

The CFD IPT was organized as a DMD-lead inter-divisional team. The members include staff from ACSD, Field Division (FLD), Statistical Research Division, Decennial Statistical Studies Division, Decennial Systems and Processing Office (DSPO), Decennial Automation and Contracts Management Office (DACMO), Population Division (POP), Housing and Household Economic Statistics, Census 2010 Planning Office, Customer Liaison and Marketing Services Office, Public Information Office, Geography Division, and Systems Support Division. The stated work scope of CFD IPT was to cover all content-related issues and concerns, to ensure consistency between the various data collection instruments and materials, and to comply with requirements necessary for printing, mailing, data collection, data capturing, and data processing.

Printed materials produced under the CFD IPT were generally accurate and consistent in content and design across operational areas. However, there were many other forms and questionnaires (including electronic instruments) produced by other areas for the 2010 Census that were out of scope for the CFD IPT. Content for these instruments, paper or electronic, were not coordinated and/or reviewed by the CFD IPT. For example, feedbacks from stakeholders indicated that content for some of the printed items such as the flashcard for the GQV operation and the Unit

Verification Page for the ETL operation should have been reviewed and finalized by the CFD IPT.

Although not in-scope for the 2010 CFD IPT, one of the tasks that CLB undertook initially and should be considered for future scope inclusion for the CFD IPT, is the coordination of keying specification creation for data capture as questionnaires are being developed. As pointed out in the 2010 Decennial Response Integration System (DRIS) Paper Questionnaire Data Capture Assessment Report, the communication of rules for keying was not well coordinated between FLD and subject matter areas prior to the release of training materials, resulting in FLD procedures that were in conflict with data capture/keying rules established by Subject Matters Experts (SMEs). There seems to be a need for more integration and the CFD IPT may be a good forum of communication between FLD, subject matter areas, the data capture provider and the processing area. As the questionnaires are being designed and finalized, each response field for every questionnaire can have an owner who provides requirements and can speak to the entire lifecycle usage and processing of that field.

5.1.8 What content issues arose during the 2010 Census operations?

- Use of the word "Negro" – Findings from several cognitive tests as well as public feedback during the 2010 Census confirmed that many respondents viewed the term as outdated or offensive.
- Congressional inquiry to add a "Dominican" category to the race question, and add a citizenship question to the 2010 Census questionnaires.
- Puerto Rico residents misinterpreted the question on home ownership. Respondents sent in home equity and mortgage forms with the census questionnaires which caused processing issues.
- The Spanish translation of "resident" on various letters was misunderstood as legal resident status, which could have had a negative impact on response rates.
- Puerto Rico respondents misunderstood the Spanish translation of the Middle Initial question as "initial here" which resulted in reprocessing of more than 400,000 returns.
- The instruction on the Puerto Rico return envelope of how to insert the questionnaire was not translated into Spanish, which caused higher manual check-in rates.

5.2 Process for Forms Design and Review: What was the review process and what were the outcomes? How well did the automated system (IBEAM) perform?

For the 2010 Census, the five-step review process implemented for reviewing, updating and finalizing census printed materials included:

1) Initial review of drafts: This review was performed by subject matter experts for content. The form was updated with reviewer comments for the next review step.
2) CFD IPT review performed by IPT members: This review step also involved reviews performed by DSPO staff for response processing and by Lockheed Martin for data capture. Comments were incorporated in the new draft form for the next review step.

3) Initial quality review: Updated form was reviewed by all staff in CLB to ensure that it was designed properly with correct content.
4) Final quality review performed by a small group of individuals who have not seen the draft form in previous review cycles.
5) Technical table review performed by all stakeholders.

The materials were produced for review through the following methods:

- Paper questionnaires: Except for GQV questionnaires and non-Spanish foreign language questionnaires, CLB staff created and entered questionnaire attributes such as number of pages, size, fold, data field characteristics, and wording for questions and instructions into the IBEAM system and transmitted this to ACSD for forms design.

- Letters, envelopes, flashcards, non-IBEAM (GQVs and non-Spanish foreign language) questionnaires, and other field materials: CLB staff created these items by submitting a mockup or word file to ACSD via hand delivery or email.

For each review, CLB staff prepared materials, notified reviewers, received and consolidated comments, and requested ACSD form designers to update print items by sending modifications through IBEAM or via email (for those non-IBEAM items).

5.2.1 Did the new 2010 structured five-step process for reviewing materials work as planned to create efficiency in designing, reviewing, and finalizing the forms?

The process generally worked well as designed and every form went through the same review process. CLB sent out each form via email attachment along with a review spreadsheet to gather comments from each reviewer. For each review, the deadline was clearly identified in the subject line of the email. For the most part, CLB followed established schedules for the design, review and finalization of the forms.

From the 2010 CFD operation, it was found that there were many repetitive comments from each review. Since not all comments were accepted, better records should be kept and shared so reviewers do not need to make the same comments more than once. If a historical log of comments and resolutions is kept for the form, it could be delivered to reviewers with each review. Such a comprehensive log will include all comments and be stored in a spreadsheet or an automated database so that the change history of each form can be kept in one place for all stakeholders and reviewers. It would also be helpful to have actual form images associated with reviewer comments. The process could be made more efficient by placing the form to be reviewed and the review logs on a shared network drive instead of as email attachments. Doing so could also ensure the correct version of the form was reviewed.

It was also learned that time and resources could be saved by working with families of questionnaires (or packages of related forms) instead of individual questionnaires in the entire process for all areas involved, such as researchers and testers, content specialists, forms designers, translators, and reviewers.

5.2.2 Did the new 2010 structured five-step process for reviewing materials work as planned to create error-free, quality forms?

With every division represented in the CFD IPT and participating in the structured review process on content, data capture and processing, quality, and finally table review, ideally the final print files that were delivered to printer should have been of good quality and error-free. This was not always the case, however.

Although all form changes were made in time for print production delivery, some changes were made later in the overall process than planned. This created the need for additional resources to meet the deadlines. These late changes included wording changes to some instructions and data capture fields on the enumerator questionnaires, wording changes on the ICR letters at the back of the questionnaires, finalization of 2010 Census website address/link, and design of some graphic items.

Errors found on the final printed materials:

One of the phone numbers on the final printed reminder postcard for U/L areas was wrong: we used 1-866-763-2010 instead of 1-866-783-2010. The error occurred in a draft where incorrect update instructions were submitted to ACSD. This error went undetected for the next three update cycles by reviewers during internal checks, and was finalized after final quality and table reviews. The error was finally identified in March 2010 and an arrangement was made with the phone company to re-route calls from the incorrect numbers to the correct line.

Additionally, there was a design error detected on the PR ICR questionnaire after delivery of the print file. The tint percentage for one checkbox was changed from 65 percent to 50 percent during the final update of a graphic element to the form. This was identified by Lockheed Martin as a critical error for data capture, but was not corrected due to time limitations.

There were other errors found, but those were corrected by re-delivering print files in time for printing. For example, a typographic error occurred on the enumerator reinterview questionnaire where the word “respondent” was misspelled as “repsondent” in the Interviewer Instruction in Question S1. This was detected after completion of all review steps including the review of the printer proof.

5.2.3 Was the forms design process able to identify where forms design errors in both IBEAM and non-IBEAM materials occurred to inform 2020 Census planning?

The process allowed detection and elimination of most of the errors related to content and layout on the forms for both data captured and non-data captured print items. During the review cycles, subject matter experts provided wording and style guidance such as text wrapping and font style for questions and instructions. CLB staff were able to detect and correct some obvious design errors received from the forms design area, such as upside down crop marks, border width, and font size/type. The process generally worked well. However, it was learned that multiple reviews were needed for detecting other design errors that affected printing and data capture for

the questionnaires, such as on color composition, tint percentage, segmentation line size, and font embedding.

All IBEAM and non-IBEAM questionnaires went through reviews for DRIS's systems testing purpose. Lockheed Martin participated in two formal review steps before questionnaires were finalized for print: the CFD IPT review and the preflight review. During the CFD IPT review, a Lockheed Martin representative reviewed the draft questionnaires and provided comments mostly on spacing and fitting issues (See Appendix C for an example). Once comments were incorporated, we sent the questionnaire to Lockheed Martin to define the form for data capture testing. We relied on Lockheed Martin's print contractor during the preflight review to provide feedback on items related to print production (See Appendix D for an example). However, since we do not have the expertise or tools in this area, we were often unable to confirm whether we actually made the corrections or introduced additional errors during the questionnaire finalization process before sending them to print.

It should be noted that we did not correct all design errors found during the reviews due to space limitations and differences in perceived impact between the Census Bureau and Lockheed Martin. For example, we had to correct errors that the contractor characterized as "cosmetic" such as misspelled labels and words. We did not correct some of the spacing issues for compliance to data capture requirements because the changes would require either larger paper or smaller font size.

5.2.4 Were all key reviewers identified to fully participate in finalization of the designed forms?

Most of the key reviewers were identified and participated in the forms design and finalization process. However, improvements could be made to the process of gathering, tracking, and documenting requirements from each area, and to identify owner(s) for each data field. A formal signoff/approval procedure from these owners/reviewers in each of the review cycles needs to be established so that issues such as address fields capture rules, interviewer instruction wording, and form color variation could be identified earlier in the forms design process.

It is also recommend that only one designated point of contact and a backup need to be established from each division. The review process should be improved so that we ensure each stakeholder participated in each review and signed off on the forms or the parts of forms for which he or she is responsible, and documents disagreements with the final content/design of the form.

5.2.5 Did the final files submitted for print meet the standard needed by the commercial printing industry?

The Printing Program Office in DACMO was responsible for preparing print contracts and overseeing the entire printing operation. As specified in the print contracts, we promised that the final files delivered for all printed materials, including questionnaires, letters, and envelopes would:

- Be delivered to the print contractor in PDF format via CD or email.
- Contain embedded printer and screen fonts within the PDF file.
- Contain flat tones, including 10 percent, 20 percent, 25 percent, and 50 percent, to be printed using 150 lines per inch, with 45-degree angle, elliptical dot halftone screen tints for questionnaires, or 133 lines per inch for other items.

It was discovered that in some instances, the final print files that were delivered had the wrong barcode size or color tint percentage. There were also issues with embedded fonts on some foreign language forms. These issues were identified by Lockheed Martin's print contractor during preflight review and corrected before the final files were delivered. In general, however, the print files met the standards needed by the commercial printing industry and for data capture.

5.2.6 Were there adequate staffing resources to finalize the content and to produce print files that met the timing needs for data capture and printing?

During the peak of 2010 forms production period, CLB had three full-time staff members working on the core production activities that included coordinating with stakeholders, finalizing content, reviewing and verifying updates made to each of the forms, and managing translation activities. The same staff was also responsible for statusing more than 4,500 lines of schedule activities and making the most updated materials available for presentations or advertising activities undertaken by the communications areas. These materials often involved handmade mockup packages that required printing, cutting and gluing multiple pieces of print items. Resources within CLB could have been allocated more efficiently had the requirements for all the activities been obtained earlier.

Once updates were agreed upon for any content and design element of a questionnaire for each review cycle, CLB compiled and submitted changes to ACSD. ACSD had four designers in rotation to create and update 2010 Census forms. ACSD staff tried their best to make updates and often worked overtime to accommodate the volume of form change requests. Since adding or deleting words from a form often resulted in changes to text wrapping, line spacing, or placement of a data element on the form, it had to be manually adjusted by forms designers. The updated forms returned from ACSD, therefore, were not always error-free and had to be reviewed in their entirety by CLB staff, DRIS (for questionnaires), and DACMO staff for compliance with data capture and printing requirements.

It was learned from feedback during the lessons learned sessions that the data capture contractor was concerned about spending time and resources on re-work when asked to review forms that were not final, delivered late, or delivered multiple times. Coordination for forms delivery to DRIS and accurately tracking in-coming questionnaires by DRIS could be improved to make the process more efficient and less confusing. The DRIS schedule for print and data capture tests was not synchronized or realistic with decennial census production work. A better coordination and understanding of the content determination, form design process, and schedule by the contractor would help reduce such re-work and avoid costly reprinting of test forms in the future.

5.2.7 Were the enhancements made to the IBEAM system after 2008 helpful in ensuring content consistency across forms and reducing forms design errors?

The IBEAM system was designed to support processing across multiple survey/census life cycle phases (Garrett, 2009) that include content creation, layout and design, data capture, processing, analysis, and dissemination. The system was used to create and manage content for the 2010 Census paper questionnaires; it was not used to create and update other printed materials, such as letters, envelopes, flashcards or non-Spanish language materials.

Appendix E provides a list of enhancements made to the IBEAM system between January 2008 and September 2009 (from completion of 2008 Census DR questionnaires to delivery of 2010 Census questionnaires). In general, enhancements made during that period enabled DMD to manage the content creation process for the 2010 Census questionnaires more efficiently by improving user interface and enabling better communication.

The improved search and reporting functionalities allowed users to compare question content and know where the same question wording was used when planning for a new questionnaire. The keying instruction fields and matrix report were modified to include new features to accommodate new requirements. To prevent user errors that caused questionnaire content loss and therefore re-work, a number of system generated messages and restrictions were added to alert content users about the questionnaire submission status rendering it unavailable for content updates if the form had already been checked out by the ACSD forms designer.

New graphic features were also added to the system due to new requirements, such as using angled brackets for displaying the website address on various forms. While designing enumerator questionnaires and the ICR in May 2008, we realized that the graphic images stored in IBEAM were not sufficient and if DMD needed new graphics (such as upside down arrows or arrows with different size/shape), ACSD would need to change their application. This was not possible since ACSD was working on many other forms and the questionnaires needed to be delivered for Prior-to-Production printing by December 9, 2008. In July 2008, an IBEAM enhancement "Universal Graphics Objects" was implemented which allowed ACSD to custom create any graphic object, transmit, and save it to IBEAM for re-use on any questionnaire.

5.2.8 Was the IBEAM system utilized as planned by stakeholders in content determination, forms design, data processing, and record keeping for the 2010 Census printed materials?

For content creation and management: With the exception of GQV questionnaires, the IBEAM system, as designed, was used by staff in CLB to support paper questionnaire content creation across operations. It provided an automated mechanism to manage, control and maintain content by establishing a pool of questions and instructions to use in an automated way for both English and Spanish questionnaires across operations so they could be applied consistently across questionnaires. When the wording or other attributes of a question or instruction changed, we used IBEAM functionality to analyze the impact of the changes across all designed questionnaires.

For the 2010 Census, we decided not to use the IBEAM system to create and manage GQV questionnaires due to resource restraints and the complexity of redesign. Using the IBEAM system to design a new questionnaire would have meant that we needed to define the number of pages the form would have upfront in the system before creating questionnaire content, so that ACSD could create a base template for the questionnaire. Since all elements of GQV were new and there was no way to know in advance how many pages would be needed after DRIS requirements were applied to all checkboxes and write-in fields, designing an IBEAM GQV booklet would have resulted in a significant amount of additional time and money.

The current IBEAM system was not designed to be used for collaborative content development or reviewing and approving designed questionnaires by stakeholders. We recommend that this aspect of workflow be incorporated into the future IBEAM system to make the entire process more efficient.

For forms design and layout: IBEAM provided form designers in ACSD an automated mechanism to import questionnaire content, and to produce check boxes, segmented boxes and text boxes and a limited number of predefined graphic images. The form design software that ACSD used, OneForm Designer Plus (OFDP), was developed by Amgraf, Inc. and utilized an Extensible Markup Language (XML)[4] interface to facilitate content exchange with the IBEAM system.

The IBEAM system in general worked well for forms designers in ACSD in that they did not need to manually enter any content (wording) changes in order to design or update a questionnaire. Additionally, the notification functionality in IBEAM enabled effective and direct communication between the content specialists and forms designers. Appendix F provides an example of information exchanges between the two areas via IBEAM Notifications during the design of MO/MB questionnaire in 2008.

However, there were instances in 2008 where changes to one question on an already designed form resulted in starting from scratch for the entire questionnaire. We learned that the upgrades and fixes made to OFDP at the time were not properly tested for the interface with the IBEAM system, which caused errors in previously error-free questionnaires. Significant time was lost due to the use of this software for the 2010 Census. ACSD expressed that they preferred forms to be designed outside of IBEAM first, which enables them to layout select portions of a questionnaire to see how the content fits, make necessary adjustments, then copy approved layout for person 2 into the columns for person 3 to person 6.

Data capture: IBEAM provided an automated mechanism to develop standardized data capture requirements, to define unique capture edit rules, and enabled multiple subject matter experts to contribute to data capture requirements development. It was designed to provide keying/data capture specifications documents and normalization mapping documents to Lockheed Martin and DSPO. The DRIS team performed their evaluation using a direct import of IBEAM data in XML format in order to improve the efficiency of the form definition process, and attempted to

[4] XML is a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable.

use the coordinates of the fields as defined in IBEAM for form definitions. However, it was determined that this approach did not improve the efficiency of the process as the coordinates always had to be adjusted slightly for the DRIS processed images. Additionally, direct import made it harder for DRIS to detect any errors or omissions in the file. For these reasons, DRIS decided to obtain form definition information, such as variable names and data capture rules, in an Excel spreadsheet format created by DMD staff for each of the questionnaires utilizing information from IBEAM. The process ultimately created extra data input and review work for staff in DMD content and data collection areas, as well as staff in subject matter areas.

Feedback received from lessons learned sessions indicated that the system worked well for POP specialists working on creating the keying specifications. However, to avoid variable naming confusion and unnecessary mapping efforts, data fields naming conventions need to be coordinated early and agreed upon by all "data field owners" in the subject matter and operational areas.

5.2.9 How was the IBEAM system utilized for designing the 2010 Census language questionnaires?

The IBEAM system was fully utilized to manage content and format for Spanish questionnaires in the same way it did for the English questionnaires. For the other eight non-Spanish language questionnaires (MO/MB and BC questionnaires in Chinese, Korean, Russian and Vietnamese), we used the English questionnaire content and variables stored in IBEAM and submitted these to ACSD to create a PDF file template using their OneForm Designer Plus software. This file had locations of each data field (checkbox and segmented write-in box) and the translators could replace English text with appropriate translated text using their own forms design tool. This approach did not work well because the translated text often did not "fit" on the page in the same way as the designed English language questionnaires.

Additionally, since content modifications for the non-Spanish language questionnaires were not entered into the IBEAM system, content consistency had to be manually verified. Since we do not have the forms design tool that the translation contractor used, and because ACSD's software could not handle these language materials, layout elements such as barcode resolutions, spacing, and text wrapping often had to be adjusted manually directly on the PDF form for compliance to data capture requirements.

For the 2020 Census, the translation contract needs to specify desktop publishing requirements for non-Spanish foreign language forms to ensure that the contractor can produce acceptable final print files.

5.3 Data Capture/Processing: What was the process and outcome for ensuring the 2010 Census paper questionnaires could be data captured and processed correctly?

To address one of the Census 2000 recommendations for better integration of forms design specifications with data capture system development, Lockheed Martin prepared a document "Forms Design Guidelines" and provided it to the Census Bureau in March 2006. This

document listed guidelines relating to forms layout and design for optimal data capture based on their expertise and testing results which was the result of a collaborative effort between the Census Bureau and the data capture contractor and was critical to successful data capture of the designed forms.

5.3.1 Was the forms design guideline document provided by the data capture contractor (Lockheed Martin) adequate, appropriate, and followed in all of the forms designed for data capture?

Forms design guidelines included layout elements such as paper size and weight as well as design elements that included color, margins, barcode standards, and the size and spacing requirements for text and various data entry fields. This ensured that all the required parties dependent on the form definition had a baseline to work from, and the necessary specifications were included.

These guidelines were followed by CLB and ACSD staff in most cases to create the 2008 Census DR questionnaires, and DRIS did not report any issues with data capturing these 2008 Census DR forms. However, they were not always adequate or appropriate for the creation of 2010 Census questionnaires since the content had been revised several times and grew since the 2008 Census DR. As a result, Lockheed Martin revised the guidelines nine times through October 2010. The many changes during the 2010 Census forms design production timeframe inevitably created confusion for the forms designers, reviewers and the contractor, and impacted our ability to finalize the design of questionnaires for data capture. It also caused the DRIS contractor to have difficulty meeting their contract accuracy requirements. In the future, stakeholders need to be fully aware that there is a tension between the "value of content changes" and the "cost of capture."

5.3.2 Was the forms design guideline document provided by Lockheed Martin developed/updated with the correct inputs from forms designers/stakeholders?

Internal stakeholders were brought together to collaborate in the creation of the Forms Design Guideline document in 2006, but the key Census Bureau staff who agreed to these guidelines retired before content was finalized for all questionnaires. Their successors, though made aware of the guidelines, were not able to follow them to design the questionnaires since there was more content on the forms and there was little, if any, extra space on the questionnaire for the added content. All the pre-tests prior to the 2008 Census DR did not take into account the data capture requirements which made it very difficult later in the process to make changes once problems were discovered.

Additionally, the forms design guidelines did not appear to encompass all 2010 Census form types for data capture. The contractor's guidelines appeared to have been developed based on their data capture system requirements without a full understanding of the decennial census questionnaire content determination process. Spacing issues were found and corrected on a flow basis and the guidelines were negotiated and updated constantly during the production period

between Census Bureau forms design staff and the contractor. In the future, data capture requirements need to be integrated much earlier in the entire process.

5.3.3 How well did the content development process interface with data capture requirements?

The content development process needs to be improved and better integrated. Since the specific data capture requirements for the 2010 Census questionnaires were not known until after the DRIS contract was awarded, content revisions were made to the test forms without knowing specific data capture limitations. Even after the 2008 Census DR, "small" and "non-substantial" content revisions were ongoing which resulted in an overall "crowded" look of the final 2010 Census MO/MB questionnaires. Lengthier content and a significant reduction of white space on the questionnaire may have contributed to an increase in item nonresponse, as well as the decrease in overall returns.

It was learned that the checkboxes on high use fields were so close together that some respondents' marks would cross into another check box causing both boxes to be read as marked. The respondents had trouble checking the boxes in some areas without accidently checking another box.

Additionally, the allowable colors for forms need to be identified early. Due to late requirement changes, MCR and Reinterview EQ form colors were changed after the first few form versions were drafted and delivered to DRIS for review and testing.

In the future, questionnaire content, forms design, and data capture requirements need to be developed and tested in a more integrated manner. Optimal questionnaire size for response, optimal color of the form(s), and optimal font size and spacing, should be considered in conjunction with the content as required by intercensal testing that include testing for data capture. We cannot just place words on the page to make them fit data capture requirements. The two sets of very different requirements and needs must be discussed in combination very early in the decade.

5.4 Communication with Stakeholders: Were requirements and issues communicated timely and sufficiently with stakeholders?

In general, issues found during the forms design and finalization process for the 2010 Census were communicated directly with internal stakeholders in a timely and sufficient manner via emails or face-to-face meetings. Forms deliveries and issues were communicated with external stakeholders, such as OMB, contractors/vendors, and various advisory committees through established Census Bureau staff designated as points of contact.

5.4.1 Was there sufficient communication with stakeholders in relevant operational areas to obtain requirements for 2010 printed materials?

For the 2010 Census forms, we experienced difficulties with requirements management and scheduling. Requirements such as color block placement, proper placement/inclusion of geography fields on the BC and PR forms, or the various Zip+4 designations for the return address and postal indicia on envelopes were not documented or known to the content and forms designers. Some of the requirements came late in the process, which resulted in changes to forms that had to be re-delivered to contractors for data capture re-work and re-review. Some of the GQE forms were designed, reviewed, tested for data capture and printed but were never used in the field.

There is a need to have a formal requirements gathering process where one comprehensive list of specific content and design requirements from all operations can be approved and baselined. Changes to these requirements must be documented and tracked so that staffing changes in any area would not introduce unnecessary changes to the designed forms.

5.4.2 Was there sufficient and timely communication with stakeholders on issues raised during the forms design/finalization process?

There were challenges at times in the communication and delivery of draft questionnaires to the data capture contractor; they did not always have the latest version to update their test documents. Also, communication of form design priorities was not adequate among stakeholders. Communication of issues and review and delivery of designed forms could be improved by utilizing a shared portal site or shared drive to communicate information within the Census Bureau and with the data capture contractor.

5.4.3 How well did the process provided for reviewers to report errors alleviate conflicting corrections, redundancies, and inclusion of superseded or incorrect information?

The process worked well. CLB staff did not experience any issues with inclusion of superseded or incorrect comments. Conflicting comments were resolved either in the CFD IPT meetings or with individual reviewers. To alleviate redundancies, there is a need to keep better electronic records so reviewers do not need to make the same comments more than once. A historical log of comments and resolutions along with current version of the form image would help reviewers with each review.

5.5 Schedule Management: How did the planned start and finish dates for each of the content and forms design activities/deliveries compare to the actual dates?

For the 2010 Census, CFD program met the majority of milestone dates for finalizing and delivering print files to contractors and National Processing Center for print production and package assembly. Specifically, 63 percent of the content and forms design activities were completed on time or ahead of schedule. Some of the remaining activities that were finished late

resulted from late requirement changes, such as adding five in-language sentences to the advance letter, adding a direct mail postcard, and waiting for the appointment of the new director for proper signature on various cover letters. These late-finished activities had no impact on print production and any 2010 Census operations.

5.5.1 Was there adequate time in the schedule for thorough reviews of the materials?

As indicated in the Master Activities Schedule (MAS) for the CFD program, review cycles differed based on the type of materials being reviewed:

Table 5: Timeline for Review Activities

Type of Review/Duration	Questionnaire	Letter / Envelope	Field Item	Questionnaire with embedded letter
1) Initial review of drafts by subject matter experts – 5 days	X		X	X
2) CFD IPT review – 5 days	X		X	X
3) Initial quality reviews – 3 days	X		X	X
4) Response Processing System and DRIS Program Management Office review – 7 days	X			X
5) Final quality review – 3 days	X		X	X
6) Technical table review – 5 days	X	X	X	X
7) Correspondence Quality Assurance Staff review – 3 days				X

Source: 2010 Master Activities Schedule

In general, the allocated time periods were adequate for thorough reviews of the 2010 Census materials. However, from managing the review activities using the MAS there is a need to improve scheduling in the following ways:

1) A formal preflight review should be scheduled in the MAS after incorporation of table review comments to ensure that final print file meets all print requirements.

2) Correspondence Quality Assurance Staff (CQAS) review activities should be added to the MAS to accurately reflect the review timing needs for letters and reminder postcards. It took more than three weeks for the 2010 Census letters and Reminder Postcards to clear through CQAS.

3) ACSD activity lines should be restricted in the CFD MAS schedule to submissions and deliveries of forms (hand-offs) to make the schedule management more efficient.

5.5.2 Was the forms design process completed on schedule or were there bottlenecks that could be identified and reduced and/or eliminated for 2020 Census planning?

The 2010 CFD program operation had the baseline start date of June 29, 2006 and the baseline finish date of April 9, 2010. The baseline finish date was based on the incorrect delivery date of the GQ experimental questionnaire entered in the MAS. This questionnaire was approved for delivery on May 28, 2009. Table 6 outlines the outcome of the materials produced under the CFD program as identified in the MAS.

Table 6: Start/Finish by Type of Printed Items

	Start			Finish		
	Early	On-Time	Late	Early	On-Time	Late
Questionnaires IBEAM	44%	15%	40%	46%	15%	39%
Non-IBEAM	6%	46%	48%	4%	41%	55%
Non-Spanish Language	53%	3%	45%	45%	11%	44%
Other Materials (Letters, etc.)	54%	19%	27%	55%	14%	32%
Total	45%	18%	37%	46%	16%	37%

Source: 2010 Master Activity Schedule

Table 7 provides schedule comparisons by type of content and forms design activities under CFD program.

Table 7: Start/Finish by Type of Activities

	Start			Finish		
	Early	On-Time	Late	Early	On-Time	Late
Prepare and Finalize Content	42%	35%	23%	45%	33%	22%
Prepare and Submit Content	48%	26%	26%	50%	21%	29%
ACSD Create Draft	50%	19%	32%	55%	15%	31%
Subject Area Content Review	38%	33%	29%	37%	33%	30%
ACSD Update Draft	46%	26%	28%	53%	24%	24%
CFD IPT Review	47%	28%	25%	47%	33%	21%
DRIS and RPS Review	36%	28%	36%	31%	27 %	43 %
Consolidate and Submit Comments	62%	26%	12%	49%	22%	29%
Update Draft with IPT, DRIS, RPS Comments	48%	11%	41%	56%	15%	29%
Final Quality Review	47%	12%	41%	43%	14%	43%
Update Draft with Technical Table Review Comments	84%	0%	16%	81%	1%	18%
Obtain Approval for Print	58%	3%	39%	51%	9%	40%

Source: 2010 Master Activity Schedule

6. RELATED EVALUATIONS, EXPERIMENTS, AND/OR ASSESSMENTS

- 2010 Census Alternative Questionnaire Experiment (AQE): Census 2000 Form Replication Panel
- 2010 Census Deadline Messaging and Compressed Mailing Schedule Report
- Be Counted/Questionnaire Assistance Center Assessment
- Bilingual Questionnaire Assessment
- Decennial Response Integration System Data Capture Assessment
- Enumeration at Transitory Locations Assessment
- Forms Printing Assessment
- Language Program Assessment
- Non-ID Processing Assessment
- Nonresponse Followup Operations Assessment
- Nonresponse Followup Contact Strategy Experiment
- Race and Hispanic Origin Alternative Questionnaire Experiment Study Plan
- Service-based Enumeration Assessment
- Shipboard Enumeration Assessment
- Telephone Questionnaire Assistance Assessment
- Update/Enumerate Operations Assessment

7. LESSONS LEARNED, CONCLUSIONS, AND RECOMMENDATIONS

7.1 Lessons Learned

There are a number of lessons learned collected from CFD IPT members, CLB staff, DACMO staff, staff from operational areas, stakeholders, and the data capture contractor during and after the 2010 Census. Below are some of the major lessons learned for the future planning of the .

- Ownership for each of the data items on a questionnaire needs to be properly identified. The "owner" for each data field should be responsible for the entire life cycle of that field, including providing requirements and participating in review and approving final content. The owner should have the authority to resolve content issues and have expert knowledge on the usage and processing of the data fields, and be required to participate in the final approval of the questionnaire.

- Not all stakeholders participated fully in providing content requirements and in each of the review cycles. This resulted in late changes to forms that required additional resources for updating and reviewing.

- It would be helpful to have a point-of-contact from each division to resolve conflicting comments during forms review.

- Late changes to the color of some paper forms and the size limitation of the paper questionnaires created issues for design and data capture.

- Forms design errors and last minute revisions due to non-compliance with data capture or print requirements could have been avoided if the staff had adequate knowledge, access to, and training for using advance features of available tools (such as VisioDiff and Adobe Acrobat Pro). These types of expertise will help to decrease turnaround time leading to a final accepted product.

- The forms delivery process between the content area, the forms design area, and the data capture contractor, was generally successful but with some confusions that could have been avoided. A shared drive for internal file deliveries and a file transfer portal site for external deliveries should have been established.

- Managing the CFD MAS schedule during production was difficult. It is suggested to include only schedule lines in the CFD MAS for milestone activities and deliverables, and to track the detailed lines with a separate internal schedule.

7.2 Conclusions and Recommendations

As technologies evolve, the structure and operations of the 2020 Census will be different from that of the 2010 Census. The CFD program will need to strive not only to achieve content and layout consistency for paper forms across operational areas, but for electronic instruments on various devices. Below are some of the recommendations based on conducting the 2010 Census CFD program:

- Make sure timing is sufficient for testing the operational specific content. Content development and testing for all operations should begin earlier and should include all related PUFs, not just questionnaires.

- Content modifications to forms in the future need to be evaluated with forms design elements, mode, and language usage in mind (such as for size, color, spacing implications for the specific language form) and be tested for successful data capture before implementation.

- Establish a formal process for gathering, documenting, and approving requirements for all forms from all operational areas earlier in the decade.

- Research and evaluate alternative modes for data collection and minimize the use of paper instruments. If paper instruments cannot be eliminated for the 2020 Census, we need to explore a print-on-demand solution to reduce print cost and research for a better questionnaire layout with cost-effective format to improve the “overcrowded” look of the 2010 Census questionnaires.

- For the next census, testing “families” of forms together would work better than testing forms individually. This approach is also applicable for establishing content, designing layout, reviewing, and finalizing questionnaires. Designers and reviewers would work more efficiently and produce greater consistency across like-kind forms.

- The content and form review process can be made more efficient by expanding IBEAM functionality that allows integrated review by stakeholders so that each reviewer can view real-time information such as comments and responses from others, supporting documents, and change history to a specific question or to a form.

- Develop a corporate forms repository that includes content and design elements for multiple modes of data collection instruments, mailing pieces and other supporting materials. This will enhance our ability to produce consistent content and forms layout across operational areas.

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Appendix A: Changes Made to the Census Short Form Since Census 2000

Header	Header modified with text inline and triangle, no seal from the United States Department of Commerce	Implemented 2004 Census Test
	Header text smaller	Implemented in 2005 NCT
Population Count	Box placed around instruction and population count field	Implemented in 2004 Census Test
	The response box moved until after the instructions	Implemented in 2004 Census Test
	Residence rules instruction have been modified	Implemented in 2004 Census Test
Undercount	This is a new question that has been added for the 2010 Census	Tested in 2005 NCT Implemented in 2006 Census Test
Tenure	Statement, "Include home equity loans" at the end of the first response category	Tested in 2005 NCT Implemented in 2008 Census DR
	Dropped, "for cash rent" from "rented" category	Tested in 2005 NCT Implemented in 2008 Census DR
	Drops "cash" from "Occupied without payment of cash rent" category	Tested in 2005 NCT Implemented in 2008 Census DR
Phone Number	"What is your telephone number" instead of "What is Person 1's telephone number"	Implemented in 2004 Census Test
	Reverse order of Phone number and respondent name questions	Implemented in 2005 NCT
Person 1's Name	Moved from bottom of column 1 to the top of column 2.	Implemented in 2004 Census Test
	Instructions for who to list as Person 1 were changed	Different versions tested throughout decade. 2010 Census version implemented in 2008 Census DR
	Response boxes appear to the right instead of below	Implemented in 2006 Census Test
Person 2-6's Name	Response boxes to the right instead of below	Implemented in 2006 Census Test
	Removal of "What is Person 2's name? *Print name below.*" Replaced with "Print name of Person 2."	Implemented 2003 NCT

Sex	No changes made	N/A
Age/Date of Birth	Places Age and Date of Birth next to each other instead of stacked on each other for Person 1	Implemented in 2004 Census Test
	Adds instructions for reporting babies as age zero if child is under one year	Tested in 2005 NCT Implemented in 2006 Census Test
Hispanic Origin	Adds instructions that states, "For this census, Hispanic origins are not races."	Tested in 2003 NCT Implemented in 2006
	Order of Hispanic, Latino, or Spanish terms are different	Tested in 2005 NCT Implemented in 2006 Census
	Hispanic, Latino, or Spanish origin (term "origin" added) and uses commas (,) instead of slashes (/)	Tested in 2003 NCT Implemented in 2004 Census
	Removes instruction to mark "x" in the "No" box	Implemented in 2006 Census Test
	Response categories are stacked on top of each other starting with the "No" response instead of two columns	Implemented in 2008 Census DR In 2006 Census, only response categories are "Yes" and "No"
	Adds examples of other Hispanic origins	Tested in 2003 NCT Implemented in 2004
Race	Removes instruction, "to indicate what this person considers himself/herself to be."	Implemented in 2006 Census Test
	Adds examples to 'Other Asian' and 'Other Pacific Islander' categories	Tested in 2003 NCT Implemented in 2004 Census Test
Overcount	Adds a new question: "Does Person 1/this person sometimes live or stay somewhere else?" with "No"/"Yes" responses and an additional six response categories if "Yes" is checked.	Tested in 2005 Census Test Implemented in 2006 NCT

Relationship	Removes “If NOT RELATED to Person 1” spanner	Tested in 2005 NCT Implemented in 2006
	Uses “Biological” instead of “Natural-born”	Tested in 2005 NCT Implemented in 2006 Census Test
	Removes “other relative” write-in field	Tested in 2004 Census Verified in 2005 NCT Implemented in 2006 Census Test
	Removes “Foster Child” response category	Implemented in 2008 Census DR
	Uses “or” instead of slashes (/) or commas (,)	Implemented in 2004 Census Test
Person 2 - 6	Removes graphic icon and statement at top of column about helping the community	Implemented in 2003 NCT
Person 7 - 12	Adds sex, age, date of birth, and relation to person one	Implemented in 2004 Census Test

Source: 2010 Census Alternative Questionnaire Experiment (AQE): Census 2000 Form Replication Panel

Appendix B: Print File Delivery Dates by Operations

Address Canvassing – Wave 1 & Wave 2 (4/6/09 – 7/10/2009)

Form Number	Description	Date Approved for Print	Date Due to Printer
D-31	Confidentiality Notice (Eng/Span) (pads of 50)	10/9/2008	10/1/2008
D-31 PR	Confidentiality Notice- PR (Eng/Span)	10/9/2008	10/1/2008

PUFs for Group Quarters Validation (9/28/09 – 10/23/2009)

Form Number	Description	Date Approved for Print	Date Due to Printer
D-351(GQV)	Group Quarters Validation (GQV) Questionnaire - English	10/27/2008	2/4/2009
D-351 CF(GQV)	GQ Validation -Correctional Facility Continuation - English	10/27/2008	2/4/2009
D-351 HU(GQV)	GQ Validation - Housing Unit Continuation - English	10/12/2008	2/4/2009
D-351 NSL(GQV)	GQ Validation - Non-survivor Label Form - English	10/27/2008	2/4/2009
D-351(GQV) PR (S)	Group Quarters Validation (GQV) Questionnaire - PR - Spanish	10/28/2008	2/4/2009
D-351CF(GQV)PR(S)	GQ Validation - Correctional Facility Continuation - PR - Spanish	10/27/2008	2/4/2009
D-351HU(GQV)PR(S)	GQ Validation - Housing Unit Continuation - PR - Spanish	10/12/2008	2/4/2009
D-351NSL(GQV)PR(S)	GQV - Non-survivor Label Form - PR - Spanish	10/27/2008	2/4/2009

PUFs for Remote Alaska Operation – Wave 1 - 3 (1/25/10 – 4/30/2010)

Form Number	Description	Date Approved for Print	Date Due to Printer
D-1(E)	Enumerator - English	12/03/2008	2/26/2009
D-1(E)SUPP	Enumerator Continuation - English	2/10/2009	2/26/2009
D-1(E)(RI)	Enumerator Reinterview - English	2/10/2009	2/26/2009
D-26	Notice of Visit (Eng/Span)	5/23/2008	10/1/2008
D-3309	Language ID Flashcard	4/9/2009	6/25/2009
D-1(F)	Information Sheet - (Blue) English	5/5/2009	6/17/2009

PUFs for Advance Letter Delivery to U/L Housing Units (2/17/10 – 2/19/2010)

Form Number	Description	Date Approved for Print	Date Due to Printer
D-5(L)(UL)	Advance Letter-Update/Leave (U/L) Areas -English	9/18/2009	9/22/2009
D-5(L)(E/S)(UL)	Advance Letter- Bilingual - Update Leave (U/L) Areas - English/Spanish	9/2/2009	9/22/2009
D-5(L)(UL) PR	Advance Letter - PR - English/Spanish	9/2/2009	9/22/2009
D-5(UL) PR	Outgoing envelope for U/L Advance Letter - PR	9/2/2009	9/22/2009

PUFs for Telephone Questionnaire Assistance- Fulfillment Operation (2/25/10 – 4/21/10)

Form Number	Description	Date Approved for Print	Date Due to Printer
D-1	Mailback - (Initial, Replacement, Fulfillment, Update/Leave (addressed)) -English	12/19/2008	6/9/2009
D-1(C)	Fulfillment - Chinese (Simplified)	5/7/2009	6/9/2009
D-1(K)	Fulfillment - Korean	5/7/2009	6/9/2009
D-1(R)	Fulfillment - Russian	5/7/2009	6/9/2009
D-1(S)	Fulfillment - Spanish	5/7/2009	6/9/2009
D-1(V)	Fulfillment - Vietnamese	5/7/2009	6/9/2009
D-16(L)(C)	Cover Letter-Chinese (Fulfillment)	7/1/2009	6/9/2009
D-16(L)(K)	Cover Letter-Korean (Fulfillment)	7/1/2009	6/9/2009
D-16(L)(R)	Cover Letter-Russian (Fulfillment)	7/1/2009	6/9/2009
D-16(L)(S)	Cover Letter-Spanish (Fulfillment)	7/1/2009	6/9/2009
D-16(L)(V)	Cover Letter-Vietnamese (Fulfillment)	7/1/2009	6/9/2009
D-16(L)(UL) PR(S)	Cover Letter - Spanish & English U/L and U/L Adds, Spanish fulfillment - PR	7/1/2009	6/9/2009
D-16(L)PR	Cover Letter - English fulfillment - PR - English	7/1/2009	6/9/2009
D-6(Chinese)	Outgoing for Chinese Fulfillment (Postal Indicia)	5/7/2009	6/9/2009
D-6(Korean)	Outgoing for Korean Fulfillment (Postal Indicia)	5/7/2009	6/9/2009
D-6(Russian)	Outgoing for Russian Fulfillment (Postal Indicia)	5/7/2009	6/9/2009
D-6(Spanish)	Outgoing for Spanish Fulfillment (Postal Indicia)	5/7/2009	6/9/2009
D-6(Vietnamese)	Outgoing for Vietnamese Fulfillment (Postal Indicia)	5/7/2009	6/9/2009
D-6D	Outgoing envelope for English Fulfillment (Postal Indicia)	5/7/2009	6/9/2009
D-8C(AZ)	Return for U/L, U/L ADDs, and Replacement, Fulfillment (S,C,K,V,R)	4/23/2009	6/9/2009
D-1 PR	Fulfillment - PR - English	5/5/2009	6/9/2009
D-1 PR(S)	Update/Leave (initial, addressed) and fulfillment - PR - Spanish	5/5/2009	6/9/2009
D-6PR(S)	Outgoing - Spanish fulfillment	5/5/2009	6/9/2009
D-6PR	Outgoing - English Fulfillment	5/5/2009	6/9/2009

PUFs for Advance Letter Delivery to Mailout/Mailback Housing Units (3/8/10 – 3/10/2010)

Form Number	Description	Date Approved for Print	Date Due to Printer
D-5(L)	Advance Letter - Mailout/mailback (MO/MB -English)	9/18/2009	9/22/2009
D-5(L)(E/S)	Advance Letter-Bilingual MO/MB - English/Spanish	9/2/2009	9/22/2009
D-5	Outgoing Envelope for Advance Letters and Reminder Letter	9/2/2009	9/22/2009
D-5(L)(X1)	Exp AL Deadline Message 1, Advance Letter – English	9/18/2009	6/22/2009

PUFs for Advance Letter Delivery to CPEX (Panels 19 – 22 & 30) Housing Units (3/15/10 – 3/17/2010)

Form Number	Description	Date Approved for Print	Date Due to Printer
D-5(L)(X4)	Exp AL Version 3 (Compressed Schedule date change) - English	9/18/2009	6/22/2009
D-5(L)(X5)	Exp AL Version 4 (Deadline Message 1 + Compressed Schedule date change) - English	9/18/2009	6/22/2009

PUFs for Initial Questionnaire Package Delivery: Mailout/Mailback, Bilingual, UL & CPEX (3/15/10 – 3/17/2010)

Form Number	Description	Date Approved for Print	Date Due to Printer
D-1	Mailback - (Initial, Replacement, Fulfillment, Update/Leave (addressed)) -English	12/19/2008	6/9/2009
D-1(E/S)	Bilingual - (mailout/mailback and update/leave) - English/Spanish	5/28/2009	6/9/2009
D-1(UL)	Update Leave ADDs - English	4/23/2009	6/9/2009
D-16(L)	Cover Letter-Initial Mailing - English (Fulfillment)	7/1/2009	6/9/2009
D-16(L)(E/S)	Cover Letter-Bilingual MO/MB - English/Spanish	7/1/2009	6/9/2009
D-16(L)(UL)	Cover Letter-Update Leave and U/L ADDs	7/1/2009	6/9/2009
D-16(L)(E/S)(UL)	Cover Letter - Bilingual Update/Leave - English/Spanish	7/1/2009	6/9/2009
D-6(UL)	Outgoing envelope for Update Leave and U/L ADDs	4/23/2009	6/9/2009
D-6A(AZ)	Outgoing envelope for Initial Mailing - return to AZ	5/6/2009	6/9/2009
D-6A(IN)	Outgoing envelope for Initial Mailing & CPEX - return to IN	5/6/2009	6/9/2009
D-6A(MD)	Outgoing envelope for Initial Mailing - return to MD	5/6/2009	6/9/2009
D-6B(AZ)	Bilingual & CPEX (X13) Mailing - Outgoing	5/6/2009	6/9/2009
D-6B(MD)	Bilingual Mailing - Outgoing	5/6/2009	6/9/2009
D-6B(IN)	Bilingual Mailing - Outgoing	5/6/2009	6/9/2009
D-6B(UL)	Outgoing envelope for Bilingual Mailing - flat for 12 pg. booklet	4/23/2009	6/9/2009
D-8A(IN)	Return for Initial Mailing IN (2nd window for postal tracking barcode)	5/6/2009	6/9/2009
D-8A(AZ)	Return for Initial Mailing AZ (2nd window for postal tracking barcode)	5/6/2009	6/9/2009
D-8A(MD)	Return for Initial Mailing MD(2nd window for postal tracking barcode)	5/6/2009	6/9/2009
D-8B	Bilingual Return envelope	4/23/2009	6/9/2009
D-8B(IN)	Bilingual Return envelope	5/6/2009	6/9/2009
D-8B(AZ)	Bilingual & UL Bilingual Return envelope	5/6/2009	6/9/2009
D-8B(MD)	Bilingual Return envelope	5/6/2009	6/9/2009
D-1 PR(S)	Update/Leave (initial, addressed) and fulfillment - PR - Spanish	5/5/2009	6/9/2009
D-1(UL)PR(S)	Update/Leave ADD - PR - Spanish	5/5/2009	6/9/2009
D-16(L)(UL) PR(S)	Cover Letter - Spanish & English U/L and U/L Adds, Spanish fulfillment - PR		6/9/2009
D-6(UL) PR(S)	Outgoing for U/L (Spanish) & Fulfillment	5/5/2009	6/9/2009
D-8(UL) PR	Return for U/L (Spanish) & (English) Fulfillment & UL Adds	5/5/2009	6/9/2009
D-1(XA)	Exp Control 1, with Overcount Coverage Questions - English	6/4/2009	8/4/2009
D-1(XB)	Exp Control 2, without Overcount Coverage Question - English	6/4/2009	8/4/2009
D-1(X1)	Exp Version 1 (Census 2000 Treatment), Initial, Replacement - English	7/23/2009	8/4/2009
D-1(X2)	Exp Version 2 (Combined Race/Hispanic Origin Treatment), Initial, Replacement - English	7/6/2009	8/4/2009
D-1(X3)	Exp Version 3 (Combined Race/Hispanic Origin Treatment), Initial, Replacement - English	7/6/2009	8/4/2009
D-1(X4)	Exp Version 4 (Combined Race/Hispanic Origin Treatment), Initial, Replacement - English	7/6/2009	8/4/2009

D-1(X5)	Exp Version 5 (Combined Race/Hispanic Origin Treatment), Initial, Replacement - English	7/6/2009	8/4/2009
D-1(X6)	Exp Version 6 (Race Treatment), Initial, Replacement - English	6/16/2009	8/4/2009
D-1(X7)	Exp Version 7 (Hispanic Origin Treatment), Initial, Replacement - English	6/29/2009	8/4/2009
D-1(X8)	ExpVersion 8 (Hispanic Origin Treatment), Initial, Replacement - English	6/16/2009	8/4/2009
D-1(X9)	Exp Version 9 (Race and Hispanic Origin Treatment), Initial, Replacement - English	7/6/2009	8/4/2009
D-1(X10)	SF Exp Version 10 (Race and Hispanic Origin Treatment), Initial, Replacement - English	6/16/2009	8/4/2009
D-1(X11)	Exp Version 11 (Race and Hispanic Origin Treatment), Initial, Replacement - English	6/16/2009	8/4/2009
D-1(X12)	Exp Version 12 (Hispanic Origin Treatment) Initial, Replacement - English	6/16/2009	8/4/2009
D-1(X13)	Exp Version 13 (Coverage Treatment) Initial, Replacement - English (booklet)	7/6/2009	8/4/2009
D-1(X14)	Exp Version 14 OMB Race Panel 1 - English	6/29/2009	8/4/2009
D-1(X15)	Exp Version 15 - OMB Race Panel 2 - English	6/29/2009	8/4/2009
D-1(X16)	Exp Version 16 - OMB Race Panel 3 - English	6/29/2009	8/4/2009
D-1(X17)	Exp Version 17 - OMB Race Panel 4 - English	6/29/2009	8/4/2009
D-16(L)(X1)	Exp IQ Coverage, Cover Letter - English	7/31/2009	8/4/2009
D-16(L)(X2)	Exp IQ Deadline Message 1, Cover Letter - English	7/22/2009	8/4/2009
D-16(L)(X3)	Exp IQ Deadline Message 2, Cover Letter - English	7/22/2009	8/4/2009
D-16(L)(X4)	Exp IQ Deadline Message 3, Cover Letter - English	7/22/2009	8/4/2009
D-16(L)(X5)	Exp IQ Compressed Schedule Date Change, Cover Letter - English	7/22/2009	8/4/2009
D-16(L)(X6)	Exp IQ Deadline Message 1 + Compressed Sched Date Change, Cover Letter - English	7/22/2009	8/4/2009
D-16(L)(X7)	Exp IQ Deadline Message 2 + Compressed Sched Date Change, Cover Letter - English	7/22/2009	8/4/2009
D-16(L)(X8)	Exp IQ Deadline Message 3 + Compressed Sched Date Change, Cover Letter - English	7/22/2009	8/4/2009
D-16(L)(X9)	Exp IQ Privacy Msg 1, Cover Letter - English	7/22/2009	8/4/2009
D-16(L)(X10)	Exp IQ Privacy Msg 2, Cover Letter - English	7/22/2009	8/4/2009
D-16(L)(X11)	Exp IQ Deadline Message 4	7/22/2009	8/4/2009
D-16(L)(X12)	Exp IQ Deadline Message 4 + Compressed Schedule Date	7/22/2009	8/4/2009
D-6A(X14)	Exp IQ Outgoing Envelope (open window w/ Deadline Message 1)	6/24/2009	8/4/2009
D-6A(X15)	Exp IQ Outgoing Envelope (open window w/ Deadline Message 2)	6/24/2009	8/4/2009
D-8A(X1)	Exp IQ Return Envelope (no postal tracking)	6/24/2009	8/4/2009

PUF for Direct Mail Postcard with In-Language Telephone Questionnaire Assistance Numbers Delivery (3/18/10 – 3/20/2010)

Form Number	Description	Date Approved for Print	Date Due to Printer
D-9(TQA)	Postcard with TQA Phone Numbers in 6 languages		1/22/2010

PUFs for Conducting Be Counted Operation (3/19/10 – 4/19/10)

Form Number	Description	Date Approved for Print	Date Due to Printer
D-10	Be Counted-English	6/12/2009	7/23/2009
D-10(C)	Be Counted-Chinese	6/29/2009	7/23/2009
D-10(K)	Be Counted-Korean	6/29/2009	7/23/2009
D-10(R)	Be Counted-Russian	6/29/2009	7/23/2009
D-10(S)	Be Counted-Spanish	6/23/2009	7/23/2009
D-10(V)	Be Counted-Vietnamese	6/29/2009	7/23/2009
D-10(L)	Cover Letter-Be Counted-English	7/22/2009	7/23/2009
D-10(L)(C)	Cover Letter-Be Counted-Chinese	7/22/2009	7/23/2009
D-10(L)(K)	Cover Letter-Be Counted-Korean	7/22/2009	7/23/2009
D-10(L)(R)	Cover Letter-Be Counted-Russian	7/22/2009	7/23/2009
D-10(L)(S)	Cover Letter-Be Counted-Spanish	7/22/2009	7/23/2009
D-10(L)(V)	Cover Letter-Be Counted-Vietnamese	7/22/2009	7/23/2009
D-12	Outgoing for Be Counted--English	6/15/2009	7/23/2009
D-12(C)	Outgoing for Be Counted--Chinese	6/15/2009	7/23/2009
D-12(K)	Outgoing for Be Counted--Korean	6/15/2009	7/23/2009
D-12(R)	Outgoing for Be Counted--Russian	6/15/2009	7/23/2009
D-12(S)	Outgoing for Be Counted--Spanish	6/15/2009	7/23/2009
D-12(V)	Outgoing for Be Counted--Vietnamese	6/15/2009	7/23/2009
D-14	Return for Be Counted--English	6/10/2009	7/23/2009
D-14(C)	Return for Be Counted--Chinese	6/10/2009	7/23/2009
D-14(K)	Return for Be Counted--Korean	6/10/2009	7/23/2009
D-14(R)	Return for Be Counted--Russian	6/10/2009	7/23/2009
D-14(S)	Return for Be Counted--Spanish	6/10/2009	7/23/2009
D-14(V)	Return for Be Counted--Vietnamese	6/10/2009	7/23/2009
D-10 PR	Be Counted- PR - English	6/23/2009	7/23/2009
D-10 PR(S)	Be Counted- PR - Spanish	6/23/2009	7/23/2009
D-10(L) PR	Cover Letter-Be Counted-PR - English	7/21/2009	7/23/2009
D-10(L) PR(S)	Cover Letter-Be Counted-PR - Spanish	7/21/2009	7/23/2009
D-12 PR	Outgoing for Be Counted-PR - English	6/15/2009	7/23/2009
D-12 PR(S)	Outgoing for Be Counted-PR - Spanish	6/15/2009	7/23/2009
D-14 PR	Return for Be Counted-PR - English	6/10/2009	7/23/2009
D-14 PR(S)	Return for Be Counted-PR - Spanish	6/10/2009	7/23/2009
D-10A	Container for Be Counted Packages-(Eng/Span)	5/20/2009	7/23/2009
D-10A PR(S)	Container for Be Counted Packages-PR - Span/Eng	5/20/2009	7/23/2009

PUFs for Enumeration at Transitory Locations Operation (3/19/10 – 4/12/10)

Form Number	Description	Date Approved for Print	Date Due to Printer
D-15	Enumeration at Transitory Locations - English	1/6/2009	4/17/2009
D-1(E)SUPP	Enumerator Continuation - English	2/10/2009	2/26/2009
D-15 PR(S)	Enumeration at Transitory Locations - PR - Spanish	2/10/2009	4/17/2009
D-1(E)(SUPP)PR(S)	Enumerator Continuation - PR - Spanish	2/10/2009	2/26/2009
D-26	Notice of Visit (Eng/Span)	5/23/2008	10/1/2008
D-26 PR	Notice of Visit- PR - (Eng/Span)	5/23/2008	10/1/2008
D-1(F)	Information Sheet - (Blue) English	5/5/2009	6/17/2009
D-1(F)(S)	Information Sheet - (Green) Spanish	5/5/2009	6/17/2009
D-1(F) PR	Information Sheet (Blue)- English	5/5/2009	6/17/2009
D-1(F) PR(S)	Information Sheet (Green) - Spanish	5/5/2009	6/17/2009
D-3309	Language ID Flashcard	4/9/2009	6/25/2009

PUFs for Reminder Postcard Delivery: Mailout/Mailback, U/L & CPEX (3/22/10 – 3/24/2010)

Form Number	Description	Date Approved for Print	Date Due to Printer
D-9	Reminder Postcard - English	9/2/2009	9/22/2009
D-9(UL)	Reminder Postcard-Update/Leave (U/L) Areas	9/2/2009	9/22/2009
D-9(L)(E/S)	Reminder Letter-Bilingual MO/MB - English/Spanish	9/2/2009	9/22/2009
D-9(L)(E/S)(UL)	Reminder Letter - Bilingual - Update/Leave - English/Spanish	9/2/2009	9/22/2009
D-9(X1)	Exp Reminder Postcard (Deadline Message Ver. 1) - English	9/9/2009	9/22/2009
D-9(X2)	Exp Reminder Postcard (Deadline Message Ver. 2) - English	9/9/2009	9/22/2009
D-9(X3)	Exp Reminder Postcard (Deadline Message Ver. 3) - English	9/9/2009	9/22/2009
D-9(X4)	Exp Reminder Postcard (Compressed Schedule date change) - English	9/9/2009	9/22/2009
D-9(X5)	Exp Reminder Postcard (Deadline Message Ver. 1 + Compressed Schedule date change) - English	9/9/2009	9/22/2009
D-9(X6)	Exp Reminder Postcard (Deadline Message Ver. 2 + Compressed Schedule date change) - English	9/9/2009	9/22/2009
D-9(X7)	Exp Reminder Postcard (Deadline Message Ver. 3 + Compressed Schedule date change) - English	9/9/2009	9/22/2009
D-9(X8)	Exp Reminder Postcard (Deadline Message Ver. 4) - English	9/9/2009	9/22/2009
D-9(X9)	Exp Reminder Postcard (Deadline Message Ver. 4 + Compressed Schedule date change) - English	9/9/2009	9/22/2009
D-9(UL) PR	Reminder Postcard-Puerto Rico, Update/Leave - English/Spanish	9/2/2009	9/22/2009

PUFs for Group Quarters Enumeration Operation (3/29/10 – 5/21/10)

Form Number	Description	Date Approved for Print	Date Due to Printer
D-20	Individual Census Report (ICR)-English	4/3/2009	4/16/2009
D-20(S)	Individual Census Report (ICR)-Spanish	4/3/2009	4/16/2009
D-20(X1)	Exp Individual Census Report - English	5/28/2009	6/11/2009
D-21	Military Census Report (MCR)-English	4/3/2009	4/16/2009
D-23	Shipboard Census Report (SCR)-English	4/3/2009	4/16/2009
D-40	Outgoing/Return for Individual Census Report/Military Census Report/Shipboard Census Report -English	3/10/2009	4/16/2009
D-40(S)	Outgoing/Return for Individual Census Report - Spanish	3/10/2009	4/16/2009
D-20 PR	Individual Census Report (ICR)-PR - English	4/3/2009	4/16/2009
D-20 PR(S)	Individual Census Report (ICR)-PR - Spanish	4/3/2009	4/16/2009
D-21 PR	Military Census Report (MCR)-PR - English	3/31/2009	4/16/2009
D-23 PR	Shipboard Census Report (SCR)-PR - English	3/31/2009	4/16/2009
D-40 PR	Outgoing/Return for ICR/MCR-PR - English	3/10/2009	4/16/2009
D-40 PR(S)	Outgoing/Return for ICR/MCR- PR - Spanish	3/10/2009	4/16/2009

PUFs for Delivery of Blanketed Replacement MOMB & CPEX Questionnaire Packages (4/1 – 4/3/2010) & Targeted 2nd Mailing for Selected Areas (4/6/10 – 4/10/2010)

Form Number	Description	Date Approved for Print	Date Due to Printer
D-1	Mailback - (Initial, Replacement, Fulfillment, Update/Leave (addressed)) -English	12/19/2008	6/9/2009
D-17(L)	Cover Letter-Replacement Mailing - English	7/1/2009	6/9/2009
D-6C(AZ)	Replacement Mailing- Outgoing	4/23/2009	6/9/2009
D-6C(MD)	Replacement Mailing- Outgoing	4/23/2009	6/9/2009
D-6C(IN)	Replacement Mailing- Outgoing	4/23/2009	6/9/2009
D-8C(AZ)	Return for U/L, U/L ADDs, and Replacement, Fulfillment (Spanish,Chinese,Korean,Vietnamese,Russian)	4/23/2009	6/9/2009
D-8C(IN)	Return for U/L & CPEX Replacement	4/23/2009	6/9/2009
D-8C(MD)	Return for U/L & Eng. Fulfillment	4/23/2009	6/9/2009
D-1(XA)	Exp Control 1, with Overcount Coverage Questions - English	6/4/2009	8/4/2009
D-1(XB)	Exp Control 2, without Overcount Coverage Question - English	6/4/2009	8/4/2009
D-1(X1)	Exp Version 1 (Census 2000 Treatment), Initial, Replacement - English	7/23/2009	8/4/2009
D-1(X2)	Exp Version 2 (Combined Race/Hispanic Origin Treatment), Initial, Replacement - English	7/6/2009	8/4/2009
D-1(X3)	Exp Version 3 (Combined Race/Hispanic Origin Treatment), Initial, Replacement - English	7/6/2009	8/4/2009
D-1(X4)	Exp Version 4 (Combined Race/Hispanic Origin Treatment), Initial, Replacement - English	7/6/2009	8/4/2009
D-1(X5)	Exp Version 5 (Combined Race/Hispanic Origin Treatment), Initial, Replacement - English	7/6/2009	8/4/2009
D-1(X6)	Exp Version 6 (Race Treatment), Initial, Replacement - English	6/16/2009	8/4/2009
D-1(X7)	Exp Version 7 (Hispanic Origin Treatment), Initial, Replacement - English	6/29/2009	8/4/2009

D-1(X8)	ExpVersion 8 (Hispanic Origin Treatment), Initial, Replacement - English	6/16/2009	8/4/2009
D-1(X9)	Exp Version 9 (Race and Hispanic Origin Treatment), Initial, Replacement - English	7/6/2009	8/4/2009
D-1(X10)	Exp Version 10 (Race and Hispanic Origin Treatment), Initial, Replacement - English	6/16/2009	8/4/2009
D-1(X11)	Exp Version 11 (Race and Hispanic Origin Treatment), Initial, Replacement - English	6/16/2009	8/4/2009
D-1(X12)	Exp Version 12 (Hispanic Origin Treatment) Initial, Replacement - English	6/16/2009	8/4/2009
D-1(X13)	Exp Version 13 (Coverage Treatment) Initial, Replacement - English (booklet)	7/6/2009	8/4/2009
D-1(X14)	Exp Version 14 OMB Race Panel 1 - English	6/29/2009	8/4/2009
D-1(X15)	Exp Version 15 - OMB Race Panel 2 - English	6/29/2009	8/4/2009
D-1(X16)	Exp Version 16 - OMB Race Panel 3 - English	6/29/2009	8/4/2009
D-1(X17)	Exp Version 17 - OMB Race Panel 4 - English	6/29/2009	8/4/2009
D-17(L)(X1)	Exp RQ Coverage, Cover Letter, - English	7/31/2009	8/4/2009
D-17(L)(X2)	Exp RQ Privacy Msg 1, Cover Letter, - English	7/31/2009	8/4/2009
D-17(L)(X3)	Exp RQ Privacy Msg 2, Cover Letter, - English	7/31/2009	8/4/2009
D-6B(X13)	Exp IQ Replacement Envelope (flat/booklet)	6/24/2009	7/17/2009
D-8B	Return Envelope for CPEX Panel 15	4/23/2009	6/9/2009

PUFs for Non-Response Follow-Up Operation (5/1/10 – 7/10/10)

Form Number	Description	Date Approved for Print	Date Due to Printer
D-1(E)	Enumerator - English	2/10/2009	2/26/2009
D-1(E)SUPP	Enumerator Continuation - English	2/10/2009	2/26/2009
D-1(E)(RI)	Enumerator Reinterview - English	2/10/2009	2/26/2009
D-1(E) PR(S)	Enumerator - PR - Spanish	2/10/2009	2/26/2009
D-1(E)(SUPP)PR(S)	Enumerator Continuation - PR - Spanish	2/10/2009	2/26/2009
D-1(E)(RI) PR(S)	Enumerator - Reinterview - PR - Spanish	2/10/2009	2/26/2009
D-1(E)(X1)	Exp Enum 3-contact, - English	5/28/2009	6/4/2009
D-1(E)(X2)	Exp Enum 4-contact - English	5/28/2009	6/4/2009
D-26	Notice of Visit (Eng/Span)	5/23/2008	10/1/2008
D-26 PR	Notice of Visit- PR - (Eng/Span)	5/23/2008	10/1/2008
D-1(F)	Information Sheet - (Blue) English	5/5/2009	6/17/2009
D-1(F)(S)	Information Sheet - (Green) Spanish	5/5/2009	6/17/2009
D-1(F) PR	Information Sheet (Blue)- English	5/5/2009	6/17/2009
D-1(F) PR(S)	Information Sheet (Green) - Spanish	5/5/2009	6/17/2009
D-3309	Language ID Flashcard	4/9/2009	6/25/2009

Appendix C: Example of Comments on Data Capture Review

Branch and Division of Reviewer:	Lockheed Martin-DRIS
Date of Review:	7/14/2008

Form #	Page #	Comments
D-1(E)	1	In certification, employee ID fields seem higher than enumerator's signature field.
D-1(E)	1	Label area within 3 inches from the top.
D-1(E)	1	Enumerator signature field's border is a different color.
D-1(E)	2	For person 1 in question 7, all options are bold except No.
D-1(E)	2	Other Pacific Islander race checkbox is missing arrow. Applies to all five person sections.
D-1(E)	2	The arrow pointing to the other race explanation is too small. Applies to all five person sections.
D-1(E)	2	Border running across the top of person 4 & 5 off a couple pixels to the right.
D-21(PR)	2	GQ Control Number label too close to bottom. Must be 3" from cut line.
D-21(PR)	2	Field labels may be too close to answer fields
D-23 PR	1,2	Form Face 1 is English only, while Form Face 2 is bi-lingual.
D-15	1	Label area within 3 inches from the top.
D-15	1	R3 in respondent information, has misaligned checkbox labels.
D-15	1	Missing color code blocks at the bottom of the page.
D-15	2	For person 1 in question 7, all options are bold except No.
D-20(S)	2	Label area within 3 inches from the bottom.
D-21	1	This form is Okay.
D-10	1	Missing "Use blue or black pen" above "Start Here"
D-10	2	No form label on back. Therefore, no draft version information as well.
D-1(E)Supp	1	Label too close to the top edge of page.
D-1(E)Supp	1	The two color blocks on the right are a couple of pixels too low.
D-1(E)Supp	1	Left Note Page appears to be missing a line at the top when compared to the Note Page on the right.
D-1(E)Supp	1	Seventh row of Right Note Page is out of alignment to the left.
D-1(UL)	1	"Person" Boxes 7-12 are outside the bounds of the light blue background.
D-1 PR	OK	This form is Okay.

Appendix D: Example of Comments on Preflight Review

Pre-flight Report for Lockheed Martin – September 8, 2008

File Name: D-1(E)(SUPP)PR(S)_1_2_081508 Census 2010 Questionnaire
File Date: 8/15/2008
Reviewed: 9/5/2008
1. Page 2, 1st person block the segmentation lines are 25% instead of 40%.
2. Page 2, 1st person block the box borders are 50% instead of 65%.
3. The white text in the spanner is not knocked out. The 10% FCP_320 background will show up through the letters.
4. The "Pegue Etiqueta Aqui" box is not being knocked out. It will print with a 10% FCP_320 fill.

File Name: D-1(E)PR(S) 08_07_08.pdf Census 2010 Questionnaire
File Date: 8/07/2008
Reviewed: 9/5/2008
1. Helvetica and ZapfDingbats are not embedded. This could be an issue.
2. P2-P5 Q7 the OMR border boxes (except the "No" answer) are defined as 50% instead of 65%.
3. S1, S2 and S3 OMR boxes are defined as 50% instead of 65%.
4. The Background in the "Informacion del Respondedor" header is defined as 50% instead of the 65% of the other headers.

File Name: D-1(UL)PR(S)_1_2 702908.pdf Census 2010 Questionnaire
File Date: 7/29/2008
Reviewed: 9/5/2008
1. Helvetica, Courier and ZapfDingbats are not embedded. This could be an issue.
2. In P9 the border boxes for the English equivalent of the Last and First Name and P8 Age, Month, Day, Year, and MI are defined as 50% instead of 65%.
3. P11 the MI border box is defined as 50% not 65%.
4. JIC1 and JIC2 segmentation lines are defined as 25% instead of 40%.
5. P4 & P2 Q6 "Alguna otra raza" OMR box is defined as 50% instead of 65%.

File Name: D-1(V)_Vietnamese 2010 Fulfillment Questionnaire – 8-21-08.pdf Census 2010 Questionnaire
File Date: 8/21/2008
Reviewed: 9/4/2008
1. The Census 2010 logo is showing through the Vietnamese text in the black spanner.
2. The black box behind the Vietnamese text that covers the Census 2010 logo in the spanner is defined as CMYK with K being 100% as opposed to being defined as a Spot color like the original spanner.
3. The "US Department of Commerce" text can be seen behind the Vietnamese text in the spanner. The black box behind the Vietnamese text in this area is also defined as CMYK with the black being 100%.

4. Segmentation lines for P8 Age, Month, Day, and Year fields are defined with a .014 width instead of the .007 width.
5. The segmentation lines for P1-P6 Q7 “Age” were defined .014 instead of .007. This also appears in the P3 Month field.
6. P2-P6 Q4 has text that is really close to the Age, Month, Day, and Year fields. Could cause data capture issues.
7. The Black text is defined in the RGB color space.
8. The fonts VNI-HelveBoldItalic, VNI-HelveBold, and VNI-Helve use an artificial italic style.

File Name: D-10PR(S)_1_3 080508.pdf Census 2010 Questionnaire
File Date: 8/05/2008
Reviewed: 9/4/2008
1. Helvetica, Courier and ZapfDingbats are not embedded. This could be an issue.
2. The text “Edad el de abril de 2010” is located in the middle of the P7 “Nobre” OCR box.
3. In Q1, the KM, HM and Area 2 border boxes are defined as 50% instead of 65%.
4. In Q1 all the fields have segmentation lines defined as 25% instead of 40%.
5. In Q2, the OCR boxes are defined as 50% instead of 65%.
6. In P2 Q5 the OMR boxes are defined as 50% instead of 65%.
7. In P6-P10 all the segmentation lines are defined as 25% instead of 40%.
8. Uses Spot Color FCP_2 (c-100, m-0, y-100, k-0)

Appendix E: List of IBEAM Enhancements from 2008 to 2010

IBEAM Releases (2008-2010)	Date	Description
9.1	3/29/2008	• Keying Specification New Features • FDCC Compliance • Risk Mitigation – Primavera Conflict – User Provisioning • User Interface Focus - Questionnaire Planning: – Planning Phase • Print questionnaire report to see what questions/groups you want to add or remove • Search for questions to be used in new questionnaire • Park questions/groups in Workspace to be used in execution phase – Execution Phase • Questionnaire entry through IBEAM screens • When creating Groups/Questions; the ability to select from Workspace or Repository – Power Search • Compare and Search for question to see if it does exist and where it is used – Enhanced Preview Layout – UI Analysis Change Requests
9.2	7/21/2008	• Risk Mitigation – User Provisioning – Technical Questionnaire Validation • Enhancements – Shared Workspaces – Universal Graphic Object (UGO) – Synchronization Control
9.2.3	9/25/2008	• Mode Switch – Restricted Access Mode: Only those users who belong to the test group will be able to access the application when it is in Restricted Access mode. – Controlled Email: The submit Process will use the test group email list when the application is in Restricted Access mode. • Bilingual Fixes

9.3	11/24/2008	• Notifications Forwarding • Bilingual Package – Update Content – Version History – Bilingual Preview Layout – Hide English Content • Content Editor • Synchronization Control • User Session
9.3.1	12/12/2008	• Fixes – Notifications – Synchronization Control – Copy Bilingual Questionnaire – Menu Functionality • Static Graphic Objects – (SGO's or Special Characters) Preview
10.0	4/20/2009	• Notifications – Groups – Sharing – UI Changes
10.1	8/17/2009	• Database Enhancements • Security Policies Implementation • RIVET Enhancements – DADS II Requirements – RIVET Template.
11.0	12/14/2009	• Enhancements to the functionality in RIVET – to meet the DADS II requirements – changes to the DADS output. – provide users a new output format specification for the Census 2010 HDF Microdata Metadata file. – For the DADS II Replacement Tabulation System (RTS)
11.0.1 Patch	2/1/2010	• Enhancements to the functionality in RIVET – to meet the DADS II requirements – changes to the DADS output. – provide users a new output format specification for the Census 2010 HDF Microdata Metadata file. – For the DADS II Replacement Tabulation System (RTS)

Appendix F: IBEAM Notification Log for MO/MB Questionnaire

Data Requested	Changes Requested
03/17/2008 00:00:00	The "line" above Person 10 that seperates Person 9 and Person 10 extends beyond the right margin.
03/18/2008 00:00:00	********** Questionnaire: D-1 v.1 Title: 2010 Census ********** Info for DMD: On 3/14/08 updated questionnaire D-1NANCY to create questionnaire D-1 by doing the following: 1. Successfully copied D-1NANCY to D-1. 2. Group MOMB-P1, Category OMBnumber, created a new version to update Approval Expires to 12/31/2011 3. Group Contact, Category Contact, created a new version (16 to 19) to add Phone Number (English TQA 866-872-6868) and change FROM between 9:00 a.m. and 9:00 p.m. TO between 8:00 a.m. and 9:00 p.m. 4. Updated the Spanish line on the back page "?NECESITA AYUDA?..." by entering a value for the phone number (SPANISH TQA, 866-928-2010) and changed hours FROM "between 9:00 a.m. and 9:00 p.m...." TO "between 8:00 a.m.and 9:00 p.m...." 5. I successfully validated questionnaire D-1. It is now ready for your review. Info for ACSD: 1. The "line" above Person 10 that seperates Person 9 and Person 10 extends beyond the right margin. 2. The barcode on the back page should change FROM 700101 TO 711101. 3. On back page, be sure the 7 is not "alone" at the end of a line. For example keep:"7 days" or "7 dias" together. Be sure the text for "This is the official form for all the people at this address...." is centered.
03/18/2008 00:00:00	I mentioned that you need to center the text "This is the official form for all the people at this address..." In addition I should have asked you to please remove the text for "2010 Census" above that line. Please call with any questions. Pat Story 35724
03/26/2008 00:00:00	Sorry, I "deviated" from Lockheed Martin's list of barcode instructions. Earlier today in a notification, I said, "change the barcode wherever it appears to the PROUDUCTION BARCODE, i.e., 111101" This is for the form face 1. The last digit should change accordingly per the list you have from Lockheed Martin. Call if you need further information. Pat Story, 35724.

03/26/2008 00:00:00	NOTES FOR ACSD:Question 6 for Person 2 through and including Person 6 - Lockheed Martin requested that you look at the spacing between checkboxes to the left of White; Black, African Am. or Negro; American Indian or Alaska Native. Please be sure the spacing is even.Back page on TDD line - DO NOT split time. Also, delete the EXTRA space between 783- 2010. NOTE: this is correct (has no space) in IBEAM.Back page on NECESITA AYUDA line - there should be a 1 BEFORE 866-928-2010. NOTE: this is correct (1-866-928-2010) in IBEAM.Remove the "Title"(2010 Census) at the top of the first page. The line "This is the official form....answers are protected by law." should remain where it is and be centered vertically as it is now.Please change the barcode wherever it appears to the PRODUCTION BARCODE, i.e., 111101
04/17/2008 00:00:00	1. Pat sent and email on 4/17/08 to Mrinal asking that he resend email regarding GUIDs to David. 2. Question 9: What is person 1's race? Correct spacing between checkboxes for: White; Black, African Am.; or Negro and American Indian or Alaska Native for Person 2 through and including Person 6 to minimum of .05 " 3. Need angled brackets around "Paperwork@census.gov"on Face 1, Page 6.
04/25/2008 00:00:00	Group: MOMB-HH Question: TOTAL POP, added Z at end of line for instructions: "• Do not count anyone....." AND end of line for: "<B>The Census must also include..." that we will remove for last cycle. This is done due to missing GUIDs issue for these instructions.
05/29/2008 00:00:00	Deleted Z from the end of line in the TOTAL POP category...need to re-layout for added spaces: "Do not count anyone..." and "The census must also include..."Add angle bracket xml text where needed on page/face 1-6 CONTACT section.Thanks.
08/28/2008 00:00:00	Face-Page 1-1: Upper left, update with new logo Face-Page 1-1: Lower left, bold "D-1" Face-Page 1-6: remove spaces around email address (done in IBEAM) Face-Page 1-5: Person 7 - Person 12, label boxes are outside of background - please align. Face 2: No changes.
09/05/2008 00:00:00	This questionnaire copied from D-1 per Sharon's request. No changes in IBEAM required. Just copy, send notification and SUBMIT.
11/06/2008 00:00:00	Page/Face 1/1: Please square corners for all lighter shaded areas. age/Face 1/5: Please update the space between the "y" tail and the write-in box below it to meets DRIS guideline (0.08") for Persons 7 through 12. Gwen will bring over a mock-up showing the adjustment requested. Page/Face 1/5: Please update the space between the "y" tail and the write-in box below it to meets DRIS guideline (0.08") for Persons 7 through 12. Gwen will bring over a mock-up showing the adjustment requested. Page/Face 1/5, Person 12: Please update the "Last Name" caption so that the font size/type are cosistent with the ones that are used for Persons 7 - 11.

12/05/2008 00:00:00	Face-Page 1-5, Person 8: Age/Month/Day/Year the segmentation lines should be 1/2 pt.Face-Page 1-1: OCR boxes in the phone number shifted so the Cyan background show through. Please fixFace-Page 1-1, Person 1 Question 10: The OMR boxes "In the military" and "In jail or prison" are not bottom aligned like the other OMR boxes in Question 10.Face-Page 1-1, Person 1 Question 7: The segmentation lines in the age field should be 1/2 pt.Face-Page 1-1, Person 1 Question 7:The Age/Month/Day/Year test and OCR boxes are not aligned by their baseline. Please fix.Face-Page 2-3, Person 2 Question 4: Age segmentation lines should be 1/2 pt.Face-Page 2-3, Person 3 Question 4: Age and Day segmentation lines should be 1/2 pt.Face-Page 2-3, Person 4 Question 4: Age segmentation lines should be 1/2 pt.Face-Page 2-3, Person 5 Question 4: Age segmentation lines should be 1/2 pt.Face-Page 2-3, Person 6 Question 4: Age segmentation lines should be 1/2 pt
12/12/2008 12:42:41	********** Questionnaire: D-1 v.1 Title: 2010 Census ********** After talking with Brenda Damario and Keith Woodling, I know the Spanish line in supposed to be on the English questionnaire. Therefore, I updated the Spanish line on the back page "?NECESITA AYUDA?..." by entering a value for the phone number (SPANISH TQA, 866-928-2010) and changed hours FROM "between 9:00 a.m. and 9:00 p.m...." TO "between 8:00 a.m.and 9:00 p.m...." I validated the questionnaire and you can run a Preview Layout at this time. NOTE for ACSD: In addition to the notification sent earlier, the barcode on the back page should change FROM 700101 TO 711101.
	**********Questionnaire: D-1 v.1Title: 2010 Census**********On 3/14/08 updated questionnaire D-1NANCY to create questionnaire D-1 by doing the following:1. Successfully copied D-1NANCY to D-1.2. Group MOMB-P1, Category OMBnumber, created a new version to update Approval Expires to 12/31/20113. Group Contact, Category Contace, created a new version (16 to 19) to add Phone Number (English TQA 866-872-6868) and change FROM between 9:00 a.m. and 9:00 p.m. TO between 8:00 a.m. and 9:00 p.m.NOTE: I notice some Spanish on the back page of this questionnaire. This is an English questionnaire; however, in Group: Contacts, Question Category: Contacts, there is a line (Seq. 80) with Spanish text, ?NECESITA AYUDA?¿.I did not update the phone number on this line, nor did I remove this line.I successfully validated questionnaire D-1. It is now ready for your review.