EXECUTIVE SUMMARY

In June 1997, the Federal Communications Commission (FCC) Office of Inspector General (OIG) established a task order with TWM Associates, Inc. to conduct a special review of the Commission's Collection System. The objective of this review was to examine the current operational system, examine on-going modifications, and recommend alternative products. To accomplish these objectives, the review team conducted interviews with Commission and contract support staff; evaluated Collection System documentation and computer code; conducted research on alternative software solutions; and conducted a benchmarking effort of other government agencies.

During our assessment of the current Collection System, the review team made one-hundred twenty-eight (128) observations in the areas of: internal controls; audit trails; programming support; database support; security; banking related matters; business process improvements; policies and procedures, and systems development lifecycle issues. Of the one hundred twenty-eight (128) observations, forty-six (46) are considered high and medium exposure items that should be addressed immediately. Significant high exposure observations are as follows:

- As part of a data quality review initiated by the Wireless Telecommunications Bureau (WTB), the collection database was loaded with data from a paradox file containing modified data elements. This upload was performed without a proper audit trail, including evidence supporting individual changes, the deletion of individual transactions, and changes made to original source documents.

- The collections system does not have functionality to allow for an audit trail when changes (including data element changes, insertions, and deletions) are made to the database. An audit trail is a core requirement of any financial accounting system.

- The collection system does not record and track all collection-related transactions. Although some collection transaction information has been provided to contractor support personnel for loading into the collection database, at the time this review was completed, this information load had not yet been performed.

- The Commission has not established separate operating environments for system development/maintenance work and production. In addition, contract support staff responsible for system enhancements and maintenance are

also responsible for system operation.

In addition, the review team identified high exposure observations related to systems development and systems security issues. A detailed description of all one hundred twenty-eight (128) observations with accompanying recommendations is included in Section E of this report.

During early discussions with management from the Wireless Telecommunications Bureau (WTB) and the Office of Managing Director (OMD), the OIG became aware of discussions about a parallel collection system review effort being considered by these organizations. After review of the proposed project, the OIG agreed to establish an additional task under their existing task order with TWM. The objective of the additional task was to assess the integrity of the data contained in the Collection System for completeness, validity, accuracy, and proper recording. To conduct this portion of the review, the OIG worked with WTB and OMD staff to develop an appropriate statement of work to conduct an "Agreed Upon Procedures" review. The OIG then requested that TWM solicit bids from "Big Six" accounting firms to establish a subcontract with TWM to perform the procedures. After discussion with FCC management, Ernst & Young, L.L.P. (hereafter referred to as "E&Y") was selected to complete the work.

On April 24, 1998, E&Y issued a report, entitled "Collection System Agreed Upon Procedures Report," summarizing the results of their review. In this report, E&Y identified a multitude of data quality issues within the Collection Database. Of the one thousand six-hundred ninety-five (1695) transactions selected for review, E&Y identified the following conditions:

- Source documents were not provided for fifty-two (52) of the selected transactions.

- Data contained in the collections database differed from source documents for seven-hundred eleven (711) items representing forty-two percent (711/1695 = 42%) of selected transactions.

- Of the seven-hundred eleven (711) transactions, thirty-three (33) transactions, with a total dollar value of approximately $39 million, related to discrepancies in monetary amounts or instances where no check or wire slip could be located to substantiate the transaction. Of these, only one was an auction-related transaction.

Although E&Y successfully completed the engagement, the review team experienced significant difficulties. The process of tying supporting documents to data elements in the collections database proved to be time consuming as extra analysis was

required to determine how to tie the items together. The results of the E&Y data integrity review are discussed in summary in Section F of this document and the detailed report is included as Appendix A. As part of the review process, E&Y requested that FCC management prepare a representation memorandum for the data integrity portion of the review. In this document, FCC management made representations regarding the integrity of data in the collection system, the conduct of the review, the condition of internal controls, and compliance with laws and regulations. A copy of the representation letter is included as Appendix B of this report.

On December 31, 1997, Chairman Kennard forwarded the FY 1997 Federal Managers' Financial Integrity Act (FMFIA) Annual Report for the Federal Communications Commission to President Clinton. In the cover memorandum forwarding that report, the Chairman recognized a material weakness and material non-conformance dealing with the "integration of the Commission's billings and collections system with the central accounting system." The Chairman went on to state that "(b)ecause of the material non-conformance of our automated system, we must rely more on manual than automated processes" but that "we do not have evidence at this time to believe that the actual management integrity of the Commission is materially weakened by reliance on manual processing." It should be noted that the scope of this review did not included an assessment of the manual controls associated with the Commission's collection process and that we are not, therefore, expressing an opinion on the adequacy of those controls. A copy of the cover memorandum is included as Appendix E in this report.

The Commission's Collection System is a financial application. As a financial application, it should adhere to strong internal controls, security controls, and management controls in accordance with OMB circulars and FCC Security Directives. The one hundred twenty-eight (128) observations and recommendations contained in this report would indicate the Collection System is not in compliance with OMB, or the FCC Security Directives. The Collection System as it exists at the time of this review, does not evidence all payment transactions, does not provide clear audit trails for changes made to payment transactions, does not provide for an adequate level of logical internal controls, does not reconcile to the General Ledger, and supports less than thirty percent (30%) of desired functionality.

Our review further revealed that it would be cost prohibitive to bring the current in-house developed Collection System to an acceptable level of functionality in compliance with OMB and FCC Security Directives. Therefore, it is our opinion that it is in the best interest of the Commission that a COTS product should be evaluated, selected, and implemented. The existing Collection System should be minimally maintained during the period the COTS product is evaluated, selected, and

implemented. Once the COTS product is implemented, the existing Collection System should be phased out.

On June 9, 1998, the OIG issued a draft report summarizing the results of this review. On September 8, 1998, the OMD and WTB issued a joint response to the draft report. In their response, they indicated concurrence with one hundred twenty-six (126) and non-concurrence with two (2) of the one hundred twenty-eight (128) observations and recommendations. In addition, the response indicated concurrence with the data integrity portion of the review conducted by E&Y and summarized in Section F of this report. We have incorporated each OMD/WTB response by observation into the body of this report. In those cases where it was appropriate, we have provided comments to the OMD/WTB response. In addition, we have attached a complete copy of the response as Appendix C to the report.

ACKNOWLEDGMENT

The Review team acknowledges the contributions of all that were involved with the Special Review of the Collection System. Their efforts were highly professional and contributed to the successful completion of this effort.

NAME	ORGANIZATION/COMPANY
Mr. Tom Holleran	FCC, FOD
Ms. Linda King Friedman	FCC, FOD
Ms. Regina Dorsey	FCC, BCB
Mr. Linwood Jenkins	FCC, BCB
Mr. John Bopp	FCC, Wireless
Mr. Andy Cox	FCC, Wireless/OMD
Ms. Rachel Kazan	FCC, Wireless
Mr. Bob Snow	FCC, OMD ITC
Ms. Robbie Burroughs	Computech, Inc.
Ms. Cathy Ganneck	Computech, Inc.
Mr. Sam Orlando	Computech, Inc.

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Appendix A: Ernst & Young L.L.P. Report entitled "Collection System Agreed Upon Procedures Report," dated April 24, 1998

Appendix B: Representation Letter from FCC Management to Ernst & Young L.L.P.

Appendix C: Memorandum, dated September 8, 1998, from the Managing Director and Chief, Wireless Telecommunications Bureau entitled "Responses to the Draft Special Review Report No. 97-21"

Appendix D: Selected Citations from Office of Management and Budget (OMB) Circulars and FCC Policies

Appendix E: Memorandum, dated December 31, 1997, from Chairman Kennard to President Clinton forwarding the FY 1997 FMFIA Annual Report for the Federal Communications Commission

A.   CONCEPT OF OPERATIONS

The FCC was originally established by the Communications Act of 1934. In February 1996, President Clinton signed into law the Telecommunications Act of 1996 that contained the first major overhaul of the telecommunications rules and regulations in over 60 years. The FCC is an independent United States government agency, directly responsible to Congress. The primary mission of the FCC is to promote competition among the five lanes of the information super highway: broadcast, cable, wire, wireless, and satellite. The FCC has Bureaus that represent each lane, plus the Compliance and Information Bureau.

The Commission's Collection System began as a tracking system on a Honeywell mainframe. The purpose of the system was to keep record of application and regulatory fees paid into Commission bank accounts. The manual processing that kept records of the regulatory fee payments was converted into computer processes to keep records of the regulatory fees. The Commission personnel were familiar with the mainframe technology, the manual processes, and were successful in converting those manual processes into computer processes.

On August 10, 1993, the Omnibus Budget Reconciliation Act of 1993 was amended to add a new section 309(j) to the Communications Act of 1934. This amendment gave the FCC express authority to employ competitive bidding procedures to distribute licenses for spectrum services. In order to track the payments as a result of winning bids, the FCC had to develop systems to support the auction process. The FCC established a reimbursable agreement with the Department of Justice (DOJ). Under this agreement, the FCC contracted with DynCorp to modify the existing collection system and convert from a mainframe to a client-server operating environment. After much disappointment, the FCC then moved to contract with Computech to build the Collection System. Since 1994, well over $4 million dollars have been spent on the development of the Collection System.

1.   Introduction

a.   Purpose. The purpose of this special review was to assess the existing and planned abilities of the Collection System to meet FCC requirements and recommend alternate commercial-off-the-shelf (COTS) solutions. The review was intended to be a quick study of the Collection System to quickly provide feedback on areas where improvements can be made.

b. Requirements: The criteria used for this review were Office of Management and Budget (OMB) Circulars and Commission policies. These criteria included:

Office of Management and Budget (OMB) Circular A-130, entitled "Management of Federal Information Resources," as

revised February 8, 1996.

Office of Management and Budget (OMB) Circular A-123, entitled "Management Accountability and Control," as revised June 21, 1995.

Office of Management and Budget (OMB) Circular A-127, entitled "Financial Management Systems," as revised July 23, 1993.

Federal Communications Commission (FCC) Directive FCCINST 1479.1, entitled "FCC Computer Security Program," dated November 30, 1995.

2.   Systemic Functions

The FCC's Collection System was the specific application focused on during this special review.

3.   Site Location

Work on this special review was conducted primarily at the FCC's headquarters facility located at 1919 M Street in Washington, D.C. For the purpose of understanding the full collection cycle, interviews were also held with fee collection personnel in Gettysburg, Pennsylvania and with Mellon Bank staff in Pittsburgh, Pennsylvania.

B.   **PURPOSE OF THE SPECIAL REVIEW**

The purpose of the special review was to examine the current operational collection system and assess its ability to meet requirements; assess on going and planned system development/modification efforts and determine their effect on system performance following implementation; and develop recommended system performance solutions including identification/assessment of commercially available products. In addition, following discussions with FCC management, the review was modified to include an assessment of the integrity of data contained within the Collection System to ascertain whether recorded transactions are complete, valid, accurate, properly classified, properly recorded, and recorded in a timely fashion. The scope of this special review did not extend to security, either physical or logical, outside of the Collection System. Those are separate reviews to be conducted at another time, outside the scope of this review.

C.   **REVIEW TEAM**

The Review Team included representatives from the FCC Office of Inspector General (OIG) and TWM Associates, Inc. The following is a list of individuals who participated in the review.

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Thomas Bennett,    FCC, OIG                Team Member
Paul Brachfeld,    FCC, OIG                Team Member
Thomas Housman,    TWM Associates, Inc.    Team Member
Keith Meins,       TWM Associates, Inc.    Team Member
Sanjay Shantaram,  TWM Associates, Inc.    Team Member
Thomas Welch,      TWM Associates, Inc.    Team Member
Bruce Wilkins,     TWM Associates, Inc.    Team Member
Lisa Wilkins,      TWM Associates, Inc.    Team Member
Nicole Williams,   TWM Associates, Inc.    Team Member
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D.   SPECIAL REVIEW APPROACH

The Special Review Approach was based on a two-phased approach. Phase I was the evaluation of the Collection System. Phase II was the data integrity review performed by E&Y.

1.   Phase I Collection System Evaluation

The following provides an outline of the procedures performed in order to accomplish the objectives of Phase I of the Collection System Review. OMB and FCC guidance were used to assess the Collection System and to develop observations and recommendations. The procedures performed included a look at the Collection System Cycle, review of program coding (shell scripts, stored procedures, etc.), review of the data elements, review of program documents (i.e., contractor support Statement of Work, Quality Assurance plans, Project plans, etc.), review of Sybase security and other pertinent procedures.

OMB Circular Guidance

OMB Circulars A-123, A-127, and A-130 provide guidance to Federal agencies as to how financial applications should be developed, implemented, and maintained. Essentially, these Circulars establish that development of financial applications should include: Effective internal controls, proper System Development Life Cycle (SDLC) methodologies and cost/benefit analysis, movement towards COTS, and maintenance of adequate audit trails and transactional records to support the general ledger. Several specific OMB Circular citations were used as guidance in developing the detailed observations and recommendations during the evaluation of the Collection System. The specific citations are included in Appendix D. The detailed recommendations refer to OMB Guidance as a whole and are not tied to specific citations. The OMB citations are included in the appendix for ease of reference.

Procedures Performed

Cycle vs. System. It became evident early in the review that not all users of the Collection System viewed the application in the same manner. Most users and personnel interviewed viewed the

application as just a tracking mechanism. Others viewed the
system as a financial application. Through our discussions it
became apparent that the Collection System entailed more than
just a tracking mechanism and was actually supposed to be a part
of a larger Collection Cycle vs. a Collection System. The
Collection Cycle consists of: gathering banking information,
application of banking transactions at both the accounting sub-
ledgers and general ledgers, collection on past due payments,
analysis of collection activities, bank account transaction
recording in the general ledger, reconciliation of general ledger
accounts to bank statements, and reconciliation of accounts
receivable sub-ledger to the general ledger accounts.

Shell Scripts. Powerbuilder scripts, SQL, and C Programs Review.
Shells Scripts, SQL, Powerbuilder scripts, and C Programs are
used in conjunction with the Sybase Stored Procedures to schedule
batch jobs and perform other programming needs. The scripts and
programs were reviewed to determine completeness,
standardization, and programming quality.

Stored Procedures. The Collection System is built using Sybase
System 11. Sybase System 11 uses Stored Procedures that allow
for business or application processing logic to be placed within
Sybase and be executed on the main computer. The stored
procedures were reviewed to identify and evaluate the programming
standards used and the quality of programming contained within
the stored procedures.

Log files. Logs within the Collection System environment are
used to keep records of programs that are started, completed, and
errors that occur during the process. Logs are only written to
if the program has been programmed to do so. The log files were
reviewed to determine if there was any indication of problems,
significant amounts of stops and restarts, and potential error
trending.

Data Elements. Data dictionaries contain the definitions of all
the data elements used in the database. Data dictionaries
usually contain a description of the field, the format of the
field, and the date last altered. The Data Dictionary was
reviewed on line for complete data elements, professional
language describing the data elements, and for completeness in
the descriptions.

Database Entities. Data entities contain the definitions of all
the data elements used in a given table or entity. Data entity
relationships usually contain a description of the entity, the
fields included in the entity, the primary key or field, and the
date last altered. The Data Entities were reviewed on line for
complete descriptions, professional language, and for
normalization.

Events Lists. Library Lists, and Database Fill. The Events List

is used as a basis for determining the modules to be created for the application. The Events List was reviewed to determine the automation of manual processes and inclusion of user requirements and functionality. The Library List is the list of all production source code for the Collection System. The Library List was reviewed to determine extent of standard naming conventions and security access. Data Fill consists of the placing of spaces or zeroes into a data record for further input into the database at a later point in time. The Data Fills were reviewed to determine the extent of use of such items.

Narrative Descriptions. The developers of the Collection System prepare narrative Descriptions. The Narratives describe the steps and procedures utilized by various user groups to assist them in the completion of the transactions. The Narratives were reviewed to determine the completeness and the logical flow of the narratives made sense to an unfamiliar user.

User Manual. The user manual is usually indicative of how the user maneuvers through an application. The Team performed a cursory review of the User Manual to gain an understanding of the programmed application from a user perspective.

Project Plans and Status Updates. Project plans are typically documents used to indicate the overall objective of the project, define the project maintainability, use of security, expandability, etc. Interviews were conducted and documents were gathered and evaluated for completeness of content with respect to a project plan. Status Reports are typically documents used to indicate the individual tasks being worked on by the development team and agreed to by the users for whom the development effort is being performed. Status reports typically include a list of action items, who is responsible for those items, the length of time for completing the items, and a source or mapping to user requirements for items being worked on. Status reports are usually the result of status meetings, which are held on a periodic basis. These were reviewed to determine completeness of content.

Security. To review the security over the Collection System application, several areas were considered. The first was the use of the C or Unix scripts. Second, Sybase access control was reviewed. Third, Collection System application tables access was reviewed. Fourth, Sybase Stored Procedures (i.e., programs) were reviewed. There were no reviews performed over the operating system security or manual controls over spreadsheet applications or PCs.

User Meetings. Meetings were held with various key personnel involved in the historical development of the Collection System or actively involved in the on-going development or operations of the Collection System. The purpose of these meetings was to ascertain the development environment, potential functional

requirements, and to develop an understanding of the development
process used historically and in the present time. Users were
considered to be those in development, database maintenance,
Financial Operations Division (FOD), Billing and Collections
Branch (BCB), Wireless, Information Technology Center (ITC), and
Acquisitions.

Bureau and Office Meetings. Meetings were held with other
Bureaus and Offices within the Commission who use the Collection
System. The purpose of these meetings was to ascertain the
potential functional requirements, and to develop an
understanding of how the department makes use of the information
contained in the Collection System. Bureaus and Offices included
Gettysburg Fee Processing, International, Common Carrier, and the
Office of Engineering and Technology.

Bank and Lockbox Processing. FCC primarily uses Mellon Bank to
receive its monies collected in terms of dollars. First Chicago
Bank is also used to collect monies, primarily for the Fines &
Forfeitures. Mellon Bank transmits banking information in an
AFCC specific layout on a daily basis and then overnights the
payments processed in hardcopy to the FCC. First Chicago does
not transmit electronically, but overnights the payments
processed in hardcopy to the FCC. Bank processing procedures
were discussed with FCC personnel and with Mellon Bank
representatives. The Mellon Bank lockbox operations and file
layouts for bank transmission of bank account activity to FCC
were reviewed. Pricing information and procedures were compared
to other banks providing lockbox processing.

Steering Committee. As part of the Collection System Review, FCC
Management requested that the OIG chair a Collection Systems
Steering Committee comprised of representatives from the
Financial Operations Division (FOD), the Auctions Division of the
Wireless Telecommunications Bureau (WTB), and the Information
Technology Center (ITC). In addition, the Contracting Officers
Technical Representative (COTR) for the existing collection
systems development and maintenance task orders was invited to
participate in steering committee meetings. The Steering
Committee was established in August 1997. The Steering
Committee: prepared a mission statement which was reviewed and
approved by FCC Management; provided the working traits expected
for personnel working on the Collection System; prepared the
Statement of Work for the Big Six Data Integrity Review;
recommended to FCC management the selection of the Big Six firm;
and assisted in Collection System Review status presentations to
FCC management. In addition, the Steering Committee kept abreast
of the status of the Data Integrity Review by E&Y and reviewed
the functionality requirements prepared as part of the Collection
System Review. The Steering Committee also prepared the Position
Description for the Project Manager to be hired for the
Collection System migration to COTS.

Functional Requirements Analysis. The approach was to establish
a generic model (which could be used in any environment) and then
incorporate the FCC specific requirements into the model. This
was a preliminary review since, presumably, the incoming Project
Manager will perform a full functional requirement analysis.
Interviews with users and documentation they provided were used
as the basis for the FCC requirements or desired functions.
Documentation was then obtained for selected COTS packages. From
the FCC requirements and COTS documentation, the functionality
matrix was built and indicated a 1 if the function was present in
the software (COTS or existing Collection System) or a 0 if the
function was not present in the software. Once the model was
established, the model was reviewed with the members of the
Steering Committee. Weighting of the functional requirements was
based on deemed importance to the users of the Collection System,
which was reviewed with Steering Committee members and adjusted
accordingly. The model was then used to compare the COTS
packages to the existing Collection System for percentage of
functionality incorporated in the packages.

Benchmarking. In order to determine the trend of accounting
software application development within the government agency
environment, it was deemed necessary to talk with other
government agencies. The talks with other government agencies
were to determine what type of software is used for their core
accounting applications. The type of software refers to
Commercial Off-The-Shelf (COTS) or in-house Developed (IHD).
Core accounting applications are deemed as General Ledger,
Budget, Funds Control, Accounts Payable, Accounts Receivable, and
Collections.

COTS Packages. To determine what COTS packages should be used
for the functional requirement analysis, research was conducted
to determine the most complete and current COTS packages out in
the financial marketplace. Five COTS packages were selected that
entailed accounts receivable processes and that market the
Federal Government and are used by other Government Agencies. In
addition, two Treasury Workstation packages were also selected to
be included in the evaluation process since Treasury Workstations
typically perform the front-end processing of a Collection System
process. Vendors for each COTS package were contacted to obtain
details about each product and pricing information. A
preliminary cost analysis was performed based on the available
information. The costs reflect ballpark figures for the purpose
of demonstrating costs of COTS packages relative to the existing
Collection System.

System Development Methodology Analysis. The Team was requested
to review the existing Collection System Developers Quality
Assurance (QA) and System Development Plans. From those plans,
the Developers were queried as to how they adhered to their own
QA and System Development Plans, including milestones and
deliverables.

2.   Phase II Data Integrity Review

     This phase engaged E&Y as a subcontractor to TWM Associates,
Inc. to assist the FCC in testing certain elements in the
collection database. The testing was part of an effort to gauge
next steps in implementing a new system and assessing the data
included in the existing database. The procedures performed were
outlined in the statement of work, and were further discussed and
refined in subsequent meetings between FCC representatives, FCC
OIG, TWM, and the Collection System Steering Committee.

     The testing requested consisted principally of utilizing
computer-assisted techniques to select a sample of transactions
for testing of information in the database extract provided
against source data.

     For each transaction selected in the sample, E&Y agreed the
data included in the collection file to supporting documentation.
This included tracing transactions to:

- Files containing Form 159 remittance documents or
  equivalent;

- Spreadsheets used outside of the collection system to
  track up-front auction payments;

- Bank statements to agree transactions to wire transfer
  evidence (wire slips);

- Auction Installment Payment (AIP) report extracts to
  substantiate Automated Clearinghouse (ACH) evidence;

- Refund spreadsheets to agree transactions netting to
  zero; and

- Refund extracts from the National Finance Center (NFC)
  and the Federal Financial System (FFS).

     Specific data elements included date payment received, payor
name and address, amount, FCC account number and fee control
number, payment type code, and payment method.

     For certain types of transactions, including wire transfers
between FCC bank accounts, residual payments from successful
auction bidders, and transactions related to the Client Initiated
Payment Program, E&Y agreed a subset of data elements between the
collection database and the supporting documentation. In these
cases, the remaining data elements are not required on the
documentation received. For example in their Agreed-Upon-
Procedures report, E&Y reported that:

- For wire transfers between the lockbox provider and the FCC, they agreed the payor name and the amount from the wire slip to the collection database.

- For residual payments from successful auction bidders, they agreed the FCC account code, the Payor name, address, and amount from the collection database to the appropriate Auction spreadsheet and agreed the spreadsheet total to the Lockbox Provider Bank Statement.

- For the Client Initiated Payment Program, they agreed payment name and amount from the Lockbox Providers AIP report.

In addition, E&Y reviewed the document files for those transactions selected and documented any refund activity noted in the files provided. E&Y traced the refund activity to two data files provided by FCC Office of Managing Director:(1) general ledger accounts payable extracts files including refund activity for the related period; and (2) a paradox file of all transactions reloaded into the collection system in April/May 1997.

Finally, during the review of the collection files, E&Y identified ninety-two (92) Form 159 FCC Remittance Advise documents identifying amounts greater than $100,000 that were not directly traceable to the sample. Additional procedures were identified and performed to determine if the amounts represented valid transactions that should be included in the collection database. These procedures included:

- Tracing those items representing Auction upfront payments and refunds to the appropriate Auction Spreadsheet,

- Agreeing transactions to supporting documentation that a name change had taken place and the item, under the new name, was represented within the sample, and

- Agreeing the summarization of two (2) Form 159s to a summarized transaction within the sample.

E.   DETAILED RECOMMENDATIONS PHASE I

Following are the detailed observations noted during Phase I. The observations are grouped by classification. The classifications assigned were:

A   Audit trail controls issues.

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B   Banking related matters to improve efficiency or costs.
C   Contracting matters.
D   Database issues.
I   Internal control issues affecting segregation of duties
     and compromise of controls.
P   Programming related matters.
PI   Process improvement matters.
PO   Policy and procedures issues.
S   Security issues.
SDLC Life Cycle development issues.

If an observation represents more than one classification, it is shown in the first occurrence of the classification only. Where applicable, references to other classification categories are noted in parenthesis at the end of the observation.

The individual observations and recommendations have also been assigned an exposure rating of High, Medium, or Low. The rating of High is assigned when it is perceived the segregation of duties is compromised and/or the security risk is high enough to possibly cause on-going operational concerns or business disruptions. The rating of Medium is assigned when it is perceived the segregation of duties may be compromised and/or security risk is medium to cause on-going operational annoyances, but would not cause a business disruption in the event of an occurrence. The rating of Low is assigned when it is perceived the segregation of duties could be compromised and/or security risk is low to cause on-going operational efficiency issues, but does not cause a business disruption in the event of an occurrence. The category of each observation (i.e., high, medium, or low) is identified at the end of each observation enclosed in brackets.

Audit Trail Control Issues

Audit trail controls determine the ability of the information being processed to be traceable throughout the cycle of the data used. From the introduction of the data through the recording of the data to the reporting of the data, controls are present to ensure the data retains its' integrity. In addition, processes (manual or computerized) which controls those data inputs, processing and outputs also affect the audit trail controls. The lack of definitive and effective audit trail controls may result in erroneous data, which may be contained in the database, other applications which obtain data, reports to management, and may result in decisions based on faulty or incorrect assumptions based on the data provided.

1.   **Observation**: As part of a data quality review, the
     Collection Database was loaded with data from a Paradox
     file. The Paradox file was not a direct feed from Mellon
     Bank. Though Mellon Bank information may have been used as

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the basis for the Paradox file, many of the individual data elements (i.e., transaction date, address, payor, amount, payment type code, etc.) were changed. The Paradox file was loaded into the Collection Database without: a proper audit trail, evidence supporting the individual changes, evidence supporting the deletion of transactions which netted to zero (i.e., upfront payments made and then refunded) or changes made to the source documents originally supporting the transactions. The Paradox file information also did not contain references back to the original transactions being adjusted. (I, P, S) **[High]**

Recommendation: Do not allow updates to the Collection Database without the proper supporting records and audit trails.

OMD/WTB Response: Concur, all updates to the system shall be supported by proper source documents and provide complete audit trails.

2.   **Observation:** The Collection System does not have the functionality in place to allow for the proper traceability of changes to a transaction (i.e., change of name, address, amount, etc.) as required for an accounting system under OMB guidance. (P) **[High]**

Recommendation: Whether the Collection System is enhanced or another system is put in its place, ensure there is proper functionality and audit trails for making changes, updates, insertions, and deletions to the transactional database.

OMD/WTB Response: Concur, efforts are underway to ensure that the current system properly provide the necessary functionality and audit trails for making changes, updates, insertions, and deletions to the transactional database. Required coding changes to ensure that the current system corrects this finding are due to be placed into production on December 31, 1998.

A mandatory requirement will be included in the RAMIS RFP to assure that audit trails are maintained for all transactions including changes to table entries.   (Second Quarter FY 1999)

3.   **Observation:** Not all collection related transactions are loaded and recorded in the Collection Database (e.g., Auction 11 refunds, upfront payments, unsupported transactions, installment payments, credit card transactions in 1995, or AIPs). While some of the information may have been provided to contractor support to load into the database, the programming to provide the load did not occur. (D, I, P) **[High]**

Recommendation: Revise procedures to ensure all transactions are properly recorded in the Collection System.

OMD/WTB Response: Concur, procedures shall be revised to ensure that all transactions are properly recorded in the Collection System. Revision to procedures due last quarter FY 1998. All transactions will be recorded in RAMIS.

4. **Observation:** Edit controls to ensure the transmissions received from Mellon Bank are valid, complete, accurate, and for the proper date do not seem to be in place and/or functioning properly. (B, I) **[Medium]**

    Recommendation: Implement the proper automated edit controls to ensure file transmissions received are valid (summary and detail transaction records), complete (using the 01 and 99 BAI record identifiers in the file transmission), accurate (file count and testing through the adding of details and comparing to the summary record), and for the proper date (date requested is the date received).

    OMD/WTB Response: Concur, the lockbox nightly load process has been modified to include proper automated edit controls to ensure file transmissions received are valid (summary and detail transaction records), complete (using the 01 and 99 BAI record identifiers in the file transmission), accurate (file count and testing through the adding of details and comparing to the summary record), and for the proper date (date requested is the date received). Due to be placed into production September 30, 1998.

    The lock box service bank file transmission will need to be reevaluated and changed depending on the COTS package selected as the basis for the new system (RAMIS). Recommendation #4 will be incorporated in the design of the file transmission. (Implementation FY 2000)

5. **Observation:** When requesting a refund through the Collection System, the person inputting the request can change the payor name. (I) **[Medium]**

    Recommendation: Alter the system to disallow the changing of the payor name unless there is manager approval for such a change and the change is documented in the Collection system along with the reason for the change.

    OMD/WTB Response: Concur, the Collection system will be modified to require manager approval for payor name changes by adjusting permission grants. Review of the current system design will be performed in September 1998, with required modifications due first quarter 1999. RAMIS

implementation will include Recommendation 5. (RAMIS implementation FY 2000).

6. **Observation:** Wire transfers into FCC bank accounts are not always accompanied by Form 159s. In addition, Mellon Bank does not always prepare the Form 159s for those transfers. However, only the information keyed in Mellon Bank is transmitted to FCC for the Collection System data population. Use of the specialized Form 159 keying procedures and transmission of information increases the chances for information to be lost or mis-keyed, causing improper recording or untimely recording of payment information. (B, PI, SDLC) **[Low]**

   Recommendation: For any type of electronic payment or non-check payment, Mellon Bank should not key in the information. This information should be transmitted electronically to the Commission through standard BAI formats, not through a specialized FCC format (i.e., Form 159).

   OMD/WTB Response: Concur, this recommendation shall be explored during the design of RAMIS. The lock box service bank file transmission will need to be reevaluated and changed depending on the package selected as the basis for the new system. Recommendation #6 will be incorporated in the design of the file transmission. (Implementation FY 2000)

7. **Observation:** Refunds of upfront payments typically exceed $1 million. Due to Treasury limitations, BCB breaks refunds in excess of that amount into smaller payments. Without permission from Treasury, this is an internal control that is compromised. (PI) **[Low]**

   Recommendation: Work with Treasury to adjust the limitations in light of the business need for refunding auction payments in excess of $1 million.

   OMD/WTB Response: Non-Concur, this recommendation has been overcome by events. In February 1996 Congress gave the FCC authority to establish an interest bearing account for deposit of incoming auction upfront money. Since that time, all upfront refunds have been disbursed from the account via Mellon's Telecash System(). The system allows the FCC to process wire transfers without dollar limitation.

   In addition, there will be a mandatory requirement that the new system accommodate $999B dollar values. Treasury guidelines concerning the maximum value of refund transactions shall be addressed through the FFS interface. The use of Mellon Telecash wire transfers significantly

mitigates the impact of this issue on the Collections System.

8. **Observation:** Credit card transactions were not all authorized prior to granting the license or purchased service. (I) **[High]**

    Recommendation: Ensure strict authorization procedures are documented for manual and automated processing of credit card transactions.

    OMD/WTB Response: Concur, OMD/WTB addressed this issue over a year ago. Only authorized credit card transactions are passed to the Commission via the nightly load. All non-authorized credit card transactions are returned to the applicant within 24 hours. The FCC is coordinating its automated credit card program with the U.S. Treasury and is in compliance with all Treasury rules, regulations, and policies concerning the automated use of credit cards by a federal agency.

9. **Observation:** Payments made into Mellon Bank without sufficient information to identify the payor results in undocumented manual procedures that are performed by a programmer. (C, I) **[High]**

    Recommendation: Document the processes for matching payments to the information received from the bank.

    OMD/WTB Response: Concur, this un-documented procedure is no longer being performed. This observation has already been corrected and the process replaced by a more efficient procedure. On March 16, 1998, the FCC implemented new procedures for reporting the customer initiated payments to the Birmingham site.

    The transmission file which has now been superseded did not have sufficient information to allow for recording and posting the payments. The new transmission file which contains sufficient information for posting the payments, thus eliminating the need for programmer intervention.

    There will be a mandatory requirement in the new system that corrections to batch files be made on-line with adequate security. Use of database reference table edits will reduce the need for intervention and manual correction.

10. **Observation:** Sybase contractors are responsible for placing production code into the production environment. The process for ensuring the production code program changes are authorized, tested, and approved are informal. (D, I, P) **[High]**

Recommendation: Implement formal change control procedures to ensure all program changes are authorized, tested, and approved, prior to placing the code into the production environment.

OMD/WTB Response: Concur, this recommendation has already been placed into practice. All program changes are authorized, tested, and approved, prior to placing the code into the production environment. The Collections team has separated development, test, and production into separate regions. Test plans, and approval procedures are in place to control any future software releases into production.

The RAMIS Project manager has proposed that separate regions be dedicated to the new system for training, interface development, conversion and acceptance/system testing, production staging and production.

The COTS contractor will be required to maintain full configuration management under the terms of the contract during system modification, data conversion and roll out. RAMIS maintenance procedures will incorporate Recommendation # 10 as a part of the maintenance contract or will need to be absorbed by FCC using commercial configuration management software.

11. **Observation:** There are no formal security administration procedures at the database level (though some user level controls have been implemented at the application level). There are five-hundred fifty-seven (557) active userids on the Collection System, and of those, four-hundred seventy-three (473) have no user information supporting the userids, or authorization for those userids to exist on the Collection System. (I, S) **[High]**

    Recommendation: Implement formal security administration procedures to ensure only authorized users have access to necessary information, database elements, and stored procedures. Implement a periodic review to ensure only the necessary number of users have access to the Collection System and that they are properly authorized for such access to the Collection System.

    OMD/WTB Response: Concur, a review of the Sybase and application security administration is underway. Furthermore periodic reviews shall be conducted to ensure that only necessary users have access to the Collection System. The number of system users shall be determined by the needs of the users. The review which is currently underway will be concluded by July 31, 1998.

Security issues will be addressed as a part of the implementation phase of the RAMIS project. Both operating system security and application security will be documented and implemented. (Implementation FY 2000)

12. **Observation**: There are no separate testing and production environments. Without a proper testing and user acceptance environment, daily operations can become unnecessarily affected by programming bugs and other unknowns that may have been corrected in a test environment (as evidenced during the six week down time of the Collection System). (D, I) **[High]**

   Recommendation: Implement a formal testing and user acceptance environment separate from the live production environment for the Collection System.

   OMD/WTB Response: Concur, OMD/WTB has already responded to this problem by ensuring that a formal testing and user acceptance environment exist separate from the live production environment of the Collection System. This change was made several months ago.

   The RAMIS Project Manager has proposed that separate regions be dedicated to the new system for training, interface development, conversion and acceptance/system testing, production staging and production.

13. **Observation**: Due to the Collection System development effort longevity, daily Billing and Collections Bureau (BCB) operations make use of spreadsheets to track incoming monies, at least for the upfront auction payments, withdrawal payments, refunds, and cash balances. (I) **[Medium]**

   Recommendation: During the testing and implementation of the full Collection System (i.e. existing or future COTS), ensure proper access controls and segregation of duties are in place for the existing manual procedures surrounding the maintenance of the spreadsheet used for tracking bank transactions.

   OMD/WTB Response: Concur, over the past year proper access controls and segregation of duties were put in place for the procedures used to tracking bank transactions. Missed schedules and lags in the development effort forced the Billings and Collections Branch (BCB) to create tools (spreadsheets, etc) for recording, tracking, and reporting transactions. Further, a task on the RAMIS project plan is to evaluate current processes and procedure to identify those that should be re-engineered to assure maximum functionality from the selected COTS core package.

(3rd Quarter FY 1999)

14. **Observation**: The audit log is not used in the Sybase database for the Collection System. (D, I) **[High]**

   Recommendation: Turn the audit log on for sensitive procedures, sensitive accesses, and sensitive write commands. Implement audit log review procedures to ensure logged events are authorized and not indicative of unauthorized activities. Audit log events also ensure accountability of transactional changes.

   OMD/WTB Response: Concur. The use of the system-level audit capability has several technical issues, including space and performance considerations, that must be researched and resolved before steps could be taken toward implementation of system-level auditing. Action will be taken to resolve these issues and activate system-level auditing by September 30, 1998.

15. **Observation**: The Shell scripts used to load Mellon bank data into the Collection Database did not contain the necessary edit checks to ensure valid date and file completeness. File completeness checks usually include a test to add the detail transaction records together to determine if they match the contents contained in the bank transmitted balance records. However, if standard BAI Code file layouts are not used for the bank transmission of information, this becomes much more difficult. (B, D) **[Medium]**

   Recommendation: Adjust the scripts to include checks to ensure the transaction data included in the Mellon bank transmission is for the expected transaction date. In addition, file completeness edits should be included (counting the number of headers and trailers does not ensure file completeness for bank transaction transmissions).

   OMD/WTB Response: Concur, The Collections Team will adjust the nightly load Unix and SQL scripts to ensure that necessary edits are in place to check inclusiveness of transaction data for the expected transaction date and file completeness. These scripts, which identify specific steps to be taken in a specific order, process the data files sent from Mellon on a nightly basis. Review necessary adjustments - due September 30, 1998.

   The lockbox service bank file transmission will need to be reevaluated and changed depending on the package selected as the basis for the new system. Recommendation #15 will be incorporated in the design of the file transmission. (Implementation FY 2000)

16. **Observation**: Changes to modules are not currently under a formal configuration management process (CM). It is left up to the programmer. (I, P) **[Medium]**

Recommendation: Create a Configuration Management group that manages the configuration. This group should not include programmers or managers of programmers.

OMD/WTB Response: Concur, Configuration Management is informal and should be made more formal. However, Configuration Management should be controlled by the Project Manager and the COTR.

The ITC accepts this recommendation. The FCC is pursuing improvement on several paths. The first is by defining and implementing an FCC SDLC. The second is through the ITC providing increased support to programming task staff for the management of software configuration changes/upgrades etc. In support of this effort ITC recently purchased the CAST Workbench. PVCS, PowerSite and other products that can support this effort are under evaluation. Thirdly, ITC is establishing a more defined and controlled process through which releases/version are moved from development to test/acceptance and implementation under the control of FCC staff.

The COTS contractor, selected for RAMIS, will be required to maintain full configuration management under the terms of the contract during system modification, data conversion and roll out. RAMIS maintenance procedures will incorporate Recommendation # 10 and 16 as a part of the maintenance contract or will need to be absorbed by FCC (probably ITC contractors) using commercial configuration management software.

OIG Comment: The intent of this recommendation was to ensure that programmers are not responsible for configuration management. We were not attempting in our recommendation to dictate the structure of the configuration management group except to recommend that it not be comprised of programmers or managers with programming responsibilities. A project configuration management group comprised of the COTR and project manager is entirely appropriate as long as the project manager does not also have programming responsibilities.

17. **Observation**: The programming standards identified are incomplete for a development program. The compliance to existing standards during the review process could not be verified. (I, P) **[Medium]**

Recommendation: Develop programming standards that all

programmers must follow and institute a formal review process that includes the verification that the developed software conforms to the programming standards.

OMD/WTB Response: Concur. Changes in ITC contracts for Sybase, PowerBuilder and web support staff now being made will permit these contractors to work with FCC staff to develop programming standards for the basic languages in use at the FCC. These standards will be promulgated and their use by Programming Services Contract (PSC) staff verified.

The RAMIS Project manager will work with ITC to assure that all standards adopted by the FCC are adhered to during the project.

18. **Observation:** Unit (development or enhancements) folders that were provided by contract identified were not organized and did not contain sufficient information for evaluation. (I, P) **[Medium]**

Recommendation: Develop a standard for what is required in a unit folder. Then initiate a review of all Unit folders for compliance with the standard.

OMD/WTB Response: Concur, the RAMIS Project manager will work with ITC to assure that all standards adopted by the FCC are adhered to during the project.

19. **Observation:** Upfront payments prior to an auction and upfront payments refunded, after the auction is concluded, are not recorded in the general ledger. (I) **[Medium]**

Recommendation: All transactions should be included in the general ledger, even if they are custodial in nature.

OMD/WTB Response: Concur, as part of the development of RAMIS all transactions shall be included in the general ledger, even those identified as custodial in nature. The transaction shall be included in the new revenue system, and be reported to the appropriate standard general ledger (SGL) account.

20. **Observation:** Upfront payment activities are maintained on an Excel Spreadsheet in BCB. The spreadsheet contains no references to dates payments were posted to the bank accounts. Manual controls over the integrity of the spreadsheet have not been reviewed. (I) **[Medium]**

Recommendation: If the spreadsheet is to be used as a source of management information, the date the money was posted to the bank account should be included. In addition, the controls surrounding the accuracy of the spreadsheet should

be reviewed in order to ensure the integrity of the numbers being provided for management information reporting.

OMD/WTB Response: Concur, all manually created spreadsheets shall include the date the money/transaction was posted to the bank account.

21. **Observation**: Verification and Validation was not performed. (I, P, SDLC) **[Medium]**

   Recommendation: The project should implement a tracing of requirements to functionality. This traceability should allow the government to determine the magnitude of efforts that were proposed versus the cost of the as built. In addition, the process should be conducted or monitored by subject area experts.

   OMD/WTB Response: Concur. The FCC is pursuing via contract the development of an appropriate SDLC for adoption throughout the Commission. This SDLC is expected to define the development and tracking of initial requirements and to establish a mechanism for maintaining requirements definitions throughout the life cycle.

   The RAMIS Project Manager will propose that the FCC hire or task an IV&V contractor to perform tests against modifications and interfaces and, depending on the documented track record of the package selected, production.

22. **Observation**: Contractor staff do not produce minutes or agendas for project meetings. In addition, only five months of status reports were provided for a project that has been on going for several years. (C, I) **[Low]**

   Recommendation: All meetings that are paid for by the government should be formally recorded and should, at a minimum include an agenda, any action items, and minutes.

   OMD/WTB Response: Concur, this practice is already in place for all OMD/WTB funded contracts.

   The RAMIS Project Manager and the contractors will issue regular bi-weekly project status reports that address issues, concerns, and status on ongoing tasks and identify completed tasks. All meetings will be documented.

23. **Observation**: The developer is not following their proposed Quality Assurance (QA) plan. In addition, of the few documents produced, content can be significantly strengthened. (C, I, SDLC) **[Low]**

   Recommendation: The developer should be required to follow

the QA plan they proposed.

OMD/WTB Response: Concur, as a part of the SOW, peer reviews will be required as part of the quality assurance function.

24. **Observation**: The developer should have meeting minutes that documents their perspective of events that occurred in the meeting. For the period February 1997 through March 7, 1997 weekly status reports were provided, but for no period prior to or after. (C, I, SDLC) **[Low]**

   Recommendation: The developer should record all events that occur in meetings that affect schedules, programming efforts, enhancement efforts, or contractual requirements.

   OMD/WTB Response: Concur, this practice is already in place for all OMD/WTB funded contracts. As part of the RAMIS SOW, contractors will be required to submit comments on meetings, etc.

25. **Observation**: Due to the lack of userid documentation (i.e., the FCC personnel name, location, job responsibility, reason for access, title, etc.), it is not feasible to associate the userids with the groups defined in Sybase to determine if the group and associated user access is reasonable. (I, S) **[Medium]**

   Recommendation: A full review of the Sybase access control structure should be performed to fully document the structure, ensure it is reasonable based on the program structure, determine if the userids are current or should be deleted, and then determine their reasonableness of access.

   OMD/WTB Response: Concur, as stated previously a review of the Sybase access control structure is underway. This review is schedule to be completed and document by July 31, 1998.

   Additionally, security issues will be addressed as a part of the implementation phase of the RAMIS project. Both operating system security and application security will be documented and implemented.

26. **Observation**: The Sybase groups defined with access to stored procedures and database objects does not seem reasonable and does not seem to acknowledge a logical internal control system.   In addition, there seems to be references to userids which no longer exist (i.e., develop). (I, PO) **[High]**

   Recommendation: Review and correct group definitions as well as individual user accesses to ensure access is considered

reasonable based on job responsibilities and based on a sense of logical internal controls in accordance with OMB. In addition, security access structures should be reflective of the current environments. As the user base changes, there needs to be processes in place to ensure that userids are added, changed, and deleted accordingly.

OMD/WTB Response: Concur, the Collection's Team is in the process of reviewing group definitions as well as individual user accesses to ensure that access is based on job responsibility and that logical internal control exist.

Security issues will be addressed as a part of RAMIS's implementation phase. Both operating system security and application security will be documented and implemented.

27. **Observation:** The Sybase access control reports showed defined accesses to stored procedures which did not seem to exist as they were not found in the extract of stored procedures provided. (I, S) **[Medium]**

   Recommendation: Administrative procedures must be put in place to ensure that once stored procedures are added or deleted, the appropriate access control changes are also made.

   OMD/WTB Response: Concur, over the past year the Collections Team has been instituting administrative procedures to ensure that all stored procedures added or deleted to the Collections System are tracked to ensure that the appropriate access control changes are also made and documented. Under RAMIS, security issues will be addressed as a part of the implementation phase of the project. Both operating system security and application security will be documented and implemented.

28. **Observation:** The Project Manager userid is aliased (i.e., defined) to the dbo, which has full permissions on all objects in the database owned by the dbo. (I, S) **[High]**

   Recommendation: In order to effect an appropriate logical internal control function, no single person should have access to the entire system. The Project Manager and developer personnel should be restricted to the development area only and should not have access to production or operational environments.

   OMD/WTB Response: Concur, security is of great concern and has been reviewed by OMD/WTB to ensure that the appropriate individuals have access only regions which meet their specific needs. The Data Base Owner (DBO) alias does not imply full permissions to all objects. Permissions are

subset of those possessed by the DBA; the Project Manager and DBA are trustees of the system. We caution reliance on this observation, since the position of DBO is essential to database maintenance.

OMD is currently working to implement a system development and management life cycle plan to ensure that no one person will have or be able to access the entire system.

Security and access issues will be addressed as a part of the implementation phase of the RAMIS project. Both operating system security and application security will be documented and implemented.

29. **Observation:** The Sybase Configuration file shows many default settings, which may or may not be appropriate for the Collection System. Particularly, the lack of enforced system-wide password changes, the use of allowing remote access, and the number of allowed remote logins and remote sites. (I) **[Medium]**

Recommendation: The Configuration File options should be reviewed for their appropriate settings in the Collection System.

OMD/WTB Response: Concur, over the past year the Collections Systems Database Administrator, COTR, and TPOC have reviewed all settings and established a management control policy and review system to ensure appropriate settings are maintained.

Security issues will be addressed as a part of the implementation phase of the RAMIS project. Both operating system security and application security will be documented and implemented.

30. **Observation:** Non-standard naming conventions (J:\magoo\dave***) are used for storing production source code. (P) **[Low]**

Recommendation: Use standard naming conventions.

OMD/WTB Response: Concur, over the past year the Collections Team has been reviewing naming conventions and, where possible and feasible, been standardizing all naming conventions. Under RAMIS standard naming conventions shall be employed.

31. **Observation:** Weekly Status Reports and/or Problem logs did not contain certain critical elements in order to be effective management tools. Critical elements include: What is the issue or discussion item; how did it become an issue (i.e., what caused the problem or who requested); who is

responsible for resolving the issue; how was the issues resolved; when was it resolved. (P) **[Low]**

Recommendation: Rework the status reports to include the critical elements.

OMD/WTB Response: Concur, over the past year the Collections Team, COTR, and TPOC have reviewed and restructured all status reports. Under RAMIS the status reports will be reviewed and restructured based upon the needs of the FCC and the limitations of the selected COTS package.

32. **Observation**: Because of the way in which bank information and auction information is processed within the Collection System, there is no subsidiary ledger for the Accounts Receivable in the General Ledger. (I) **[Medium]**

   Recommendation: Modifying the existing Collection System to create a subsidiary ledger is cost prohibitive. Move towards a different programming solution, considering COTS, and ensure the subsidiary ledger is a requirement of the system.

   OMD/WTB Response: Concur, the new system will function as a subsidiary ledger for all revenue, collection, and accounts receivable. Loan activity will be carried in a separate subsidiary ledger and will be summarized into the new system and then include in the summary reporting to FFS. (Implementation FY 2000)

33. **Observation**: Review of the Stored Procedures indicated the intermingling of stored procedures labeled as test or temp. (I, P) **[Medium]**

   Recommendation: Test procedures should not be intermingled within the production stored procedures. Separate and distinct test and production environments should exist to assure only authorized changes to production code and data occur.

   OMD/WTB Response: Concur, this recommendation has already been satisfied, separate and distinct test and production environments are utilized. Additionally, RAMIS development and testing will be kept in separate environments from production.

34. **Observation**: Execution of the extended fieldwork procedures highlighted the need for further documentation in the files in the event of bidder defaults and declining to participate in the auction after their Form 159s have been sent in and received by the FCC. (PI) **[Low]**

Recommendation: Document in the files of the bidders when they have defaulted or declined to participate in an auction event if they have sent in a Form 159.

OMD/WTB Response: Concur, source documents without dollars (FCC Form 159) shall be annotated by BCB to indicate non-participation in the auction event.

35. **Observation:** During the Ernst & Young Data Integrity Review, it became readily apparent that same FCC Account Numbers are used to represent several companies. Although there may be valid reasons for this condition (e.g., companies are affiliated, company names have changed), it becomes very difficult to ascertain payment and refund trails. (I, PI) **[High]**

    Recommendation: Manual or automated procedures should be implemented to ensure a company name is associated with only one FCC Account Number within the Collections Database to ensure data integrity.

    OMD/WTB Response: Concur, over the past year the Collections Team, COTR, and TPOC have been addressing this issue. We are currently testing several approaches for an automated process for one name per account in order to ensure system data integrity. The new nightly load, which is due in production on September 30, 1998, will fulfill this requirement by allowing the update and association of the company name with the appropriate "FCC Account Number".

    Relational systems will not allow duplicate keys. The TIN as the primary key may present operational problems. A unique key must be established and used by all interfaced systems.

36. **Observation:** During the Data Integrity Review Procedures, there were several instances in which items in the database did not behave properly. Records that were shown on the screen as reversed were still in the database with payment amounts (e.g., Jennifer Plant wire reversal). Items which should have been included in the database extract provided to Ernst & Young were not included (e.g., Omnipoint). Transactions that should have been in the database were placed in the database through a Paradox upload vs. a Mellon Bank transmission (e.g., Southeast Telephone LP). And a few transactions for $1.3 billion showed only as .3 billion (e.g., AT&T Wireless PCS Inc.) and $1.6 billion showed as .6 billion due to field limitations in the database (through the details totaled the proper $1.3 billion on the Payment Transactions Detail Report). (D, I, P) **[High]**

    Recommendation: Ensure that the selected COTS package

incorporates edits to detect these types of exceptions.

OMD/WTB Response: Concur, the RAMIS SOW will identify the need for data quality checks and data integrity.

37. **Observation:** Initially, Auction 11 transactions were recorded for using manual spreadsheets. After auction completion, net transactions were keyed into the Collection Database. Keying errors were identified in Auction 11 transactions when these manual records were keyed into the collections database (e.g., Fee Control Number 9703068850904016). (D, I, PI) **[Low]**

Recommendation: All transactions, including upfront payments, refunds, and withdrawal payments, should be recorded directly into the Collections Database.

OMD/WTB Response: Concur, all transactions will be captured in the current and new system as original entries.

38. **Observation:** A significant percentage of the dates recorded in the Collection Database as Date Received were different from the supporting documents by one to three days, and in the case of auction payments, by months. For one check (Fee Control Number 9409098835469001), there were two dates noted where FCC asked Mellon to hold the check until the regulatory fee window opened a few months later. The integrity of the transaction recorded is compromised without proper date information. (D, P) **[Medium]**

Recommendation: Transactions entered into the Collection Database should reflect the proper date received, date paid, etc.

OMD/WTB Response: Concur, transactions entered into the Collection Database shall reflect the proper date received, date paid, etc.

39. **Observation:** While reviewing files supporting auction payments, many Form 159s were identified which did not have corresponding transactions in the database. Subsequent research had to be performed to identify if the forms were duplicates or if the payor was in default or elected not to participate. (D, I, PI) **[Low]**

Recommendation: Notations should be made on the Form 159s, which are not supporting valid transactions.

OMD/WTB Response: Concur, annotation shall be made on the Form 159s, which are not supporting valid transactions, i.e., no money was received, or duplicate copy.

40. **Observation:** Once auction events are completed, the monies are moved from the FCC Interest Bearing account into the Treasury bank account. These movements are recorded in the Collection Database. In addition to the movements of the net auction amounts are also recorded in the database. The money movements between bank accounts are subsequently reversed, but the payment amount field of the reversal is a positive number while the detail amount field is a negative number. This creates difficulties in obtaining reports from the Collection Database unless all fields are properly obtained. (D, I) **[Low]**

   Recommendation: Traditionally, bank account to bank account movements are recorded only in the cash accounts of the general ledger. Only customer payments coming into a bank account should be recorded in the Collection Database. The Collection Database should be corrected to accurately reflect the payment amounts as negative numbers in the Payment Amount field for reversals to ensure reports properly reflect the underlying detail transactions.

   OMD/WTB Response: Concur, recommendations presumes to change requirements and functionality; data must be accessed completely, and in the proper manner, in order to obtain complete results; finding is the result of improper data access. This will be included in the Collections Contractor tasking for FY 1999.

   A mandatory requirement will be included in the RAMIS RFP to assure that all transactions are recorded properly and that reversals reflect underlying detail.

41. **Observation:** During the data integrity portion of the review, the Commission was unable to provide supporting documentation for selected transactions in a timely manner. This condition is indicative of business process issues, audit trail issues, and record-keeping issues. (I, PI) **[Medium]**

   Recommendation: Business processes for recording incoming money, refunds, and other payment should be improved to ensure that proper data elements are being recorded in the Collection Database. Changes to any data elements should be recorded with an adequate audit trail to allow for determination of who made the change, the reason for the change, and details concerning the specific change. This should exist whether the change was to an automated or manual record (i.e., documents maintained in the folders supporting the transaction.

   OMD/WTB Response: Concur, the new nightly load which is scheduled to go into production on September 30, 1998, will

correct this finding. The RAMIS SOW will specify that the
capability to retain notes with any transaction is highly
desirable.

Although the recommendation is based on an observation with
which we do not totally agree, we will continue to improve
our business processes to the maximum extent feasible.

OIG Comment: This observation was based upon work conducted
by E&Y as part of the data integrity portion of the review.
The results of the E&Y data integrity review are discussed
in summary in Section F of this document and the detailed
report is included as Appendix A to this report.

Management has stated that they "do not totally agree" with
the observation on which this recommendation is based.
However, they do not provide any details, either here or in
their response to Section F, indicating why they believe
that the observation is not factually accurate.

42. **Observation:** The Paradox Upload performed in May 1997 was
supposed to follow programmatic guidelines and rules for
"updating" records in the Collection Database. Throughout
the Data Integrity Review Procedures, database oddities
appeared though the transactions all had supporting
documentation showing money coming into the FCC bank
account. Upon further investigation, it was learned that
the Paradox Upload didn't function as intended, resulting in
many oddities within the database transactional records.
(D, I, P) **[High]**

Recommendation: Do not perform any "uploads" to the
collection Database that are not Bank originated
transmissions. Any changes to be made to bank transactions
should be made through an auditable process with proper
audit trails and supporting documents of the items changed.
Each of the transactions with the PDX initials (indicating
the record was generated or changed as a result of the
Paradox Upload) should be reviewed and tied to supporting
documents. If the record is not supportable, it should be
removed.

OMD/WTB Response: Concur, over the past year the Collections
Team, COTR, TPOC, and Mellon Bank have been developing a new
"nightly load" process. The nightly load is generated from
Mellon Bank and sent directly to the FCC's Collections
System. All changes to be made to Mellon's transmission
bank transactions follow a totally auditable process through
the Billings and Collections Branch (BCB). Prior to
migrating to RAMIS, the historical data maintained in the
collections database will be reviewed, validated, and
verified to determine if migration is recommended.

Banking Related Matters to Improve Efficiency or Costs

Banking related matters concern those processes contained at the bank or at the Commission which involve the handling of banking information. When identifying areas for process improvement, the ideal basis is to concentrate on single sources for information, input, and processing in lieu of redundancy.

43. **Observation**: Mellon Bank is using primarily manual processes for processing lockbox payment information including handwritten fee tables; if-then type procedures; manual adding of payment amounts; copying of documents; matching of payments to 159 forms; preparation of 159 forms if there are none; and creation of zero amount records. There is no use of available technology to make the process more efficient at the Bank or at the FCC. This leaves a significant room for mis-keying and mis-matching of payments to supporting documents. (PI) **[Low]**

   Recommendation: Perform a lockbox bank processing analysis and review of FCC payment processing procedures to make use of more current computer technology for processing the high volume of small dollar payments.

   OMD/WTB Response: Concur, the RAMIS Project Manager will work with the servicing banks to streamline processes and improve data integrity. Since the "feed" will have to be entirely rewritten to accommodate any system that is put in place, this will be an ideal opportunity to improve our processes.

44. **Observation**: The electronic interface between the Collection System and Mellon Bank is using non-standard transmission formats. Use of the non-standard transmission formats ignores currently available technology and causes the need for more maintenance at both Mellon Bank and at the FCC. (PI) **[Low]**

   Recommendation: Use the banking standard BAI format to allow for identification of all payment types (i.e., check, wire transfer, ACH, etc.) and for descriptive detail (i.e., payor name, payor address, nature of the payment, etc.) to be transmitted for potential matching in the Collection System.

   OMD/WTB Response: Concur, the new system will use the BAI terminology and formats to the extent feasible.

45. **Observation**: FCC does not receive full summary and detail transaction records from Mellon Bank in the existing electronic transmission. (PI) **[Low]**

Recommendation: Direct Mellon Bank to furnish full summary, detail, and returned item records from Mellon Bank in order to properly populate the Collection System database.

OMD/WTB Response: Concur, the Commission shall request the lockbox provide full summary, detail and return item records to allow for the proper population of the Collection System database. The request shall be submitted to the lockbox bank on or before July 31, 1998.

The RAMIS system will be the control point for all servicing banks transactions.

46. **Observation:** FCC issues approximately 700 wire transfers per year at a cost of $10-12 per wire transfer. (PI) **[Low]**

    Recommendation: Use ACH payments instead of wire transfers. ACH rates are typically less (could be pennies per transactions or at most $1-2 dollars) and can be issued with one-day settlement instructions. This will result in bank fee savings for the FCC.

    OMD/WTB Response: Non-Concur, the use of wire transfer for returning auction upfront money to non-winners is preferred by the customer and has proven to be very efficient. This is the only refund processing application which utilizes wires, all other refunds utilize ACH or check, including credit card refunds. There is no charge to the FCC for this service.

    The new system must be able to support a wide range of receipt mechanisms as well as payment (refund) options.

    OIG Comment: In their response, OMD/WTB have indicated their decision to use wire transfers for customer convenience and because it has proven to be very efficient. The response also states that "(t)here is not charge to the FCC for this service."

    Certainly it is appropriate for management to take into consideration such elements as customer convenience and efficiency during the selection of a refund payment process. The intent of our recommendation was to point out a lower cost alternative. It is also worth noting that, although the Commission is not charged for wire transfers, it is likely that the Department of the Treasury incurs charges for this service.

47. **Observation:** Multiple receipt files are sent from Mellon Bank to the Collection System, and the FFS General Ledger System. This means that there must be multiple input file validation checks on the same banking data sent to several

different locations. (PI) **[Low]**

    Recommendation: A central group should be used for obtaining the banking information and then disbursing the information to the other systems for processing. This central group can then ensure the banking information is complete and for the correct date, and it can be done once and only once instead of the repetitive procedures in the multiple sites.

    OMD/WTB Response: Concur, all transactions will be included in the RAMIS database and will be transmitted in summary to FFS for the general ledger and to other users to update their databases. (Implementation FY 2000)

48.   **Observation:** Wire transfers and ACH electronic payments are paid into bank accounts monitored by the lockbox processing area of Mellon Bank. Traditionally, electronic payments (wire or ACH) are paid into separate bank accounts not monitored or handled by the lockbox processing area. This is done to ensure the immediate availability that comes when those types of electronic payments are realized. If these type of payments come into a lockbox account after the lockbox cutoff time, the agency may not get the immediate availability until the next business day, thus losing use of funds for that time period. (PI) **[Low]**

    Recommendation: The Commission should explore the feasibility of establishing separate accounts outside the lockbox processing area for electronic payments.

    OMD/WTB Response: Concur, as a part of the business re-engineering process, the RAMIS team will evaluate banking processes and recommend changes depending on the COTS system chosen.

Contracting Matters

During the contracting process, attempts are made to place guidelines, standards, and units of measure for how the contract support should perform in order to carry out the Commission objectives. Without adherence to those units of measure by the Contractor Support teams and without enforcement by Commission representatives, development efforts take on their own path without the success of the Commission as the goal. This path may or may not incorporate the appropriate controls required in financial applications. As a result, many of the controls are left out or are compromised during the development process. The end result can be applications that do not meet the desired functionality of the Commission, do not support the proper internal control structures for adherence to OMB requirements. A lack of measurable performance units may limit recourse against systems development contractors by the Commission.

49. **Observation:** Computech and Sybase contractors perform operational functions for the FCC as part of the daily Collection System process. In addition, these same contractors are responsible for the development of the Collection System. (I) **[High]**

   Recommendation: Remove the contractors who develop the Collection System from the operational aspects of the FCC Collection process. A clear division of labor should exist between Operations and Development. Developers, DBA, and programmers should not be allowed to perform live production or operational activities as it compromises the segregation of duties required by OMB.

   OMD/WTB Response: Concur, over the past year the Collections Team, COTR, and TPOC have separated the Collections Team development and production duties and responsibilities. Currently, there is a separate and distinct development team, testing environment, and production team to support the FCC's Collections System. Under RAMIS this recommendation will be fully complied with and adopted.

50. **Observation:** The Commission has not established an adequate process to measure and evaluate Collection System contractor performance. Our review indicates that minimal task order status reports, designed to ensure adherence to existing contracts and statements of work, have been provided. Those status reports that were obtained and evaluated were determined to be repetitive (i.e., reporting the same events from month to month) or found by FCC contract personnel to be non-compliant. Without the accountability and enforcement of measuring contractor performance, funds become quickly expended and the FCC has not received reasonable services or deliverables for their money. (I) **[Low]**

   Recommendation: Accountability for contractor performance on contracts and adherence to Statements of Work must be enforced within the FCC contract monitoring structure.

   OMD/WTB Response: Concur, the respective Project Managers will work closely with Contracts to assure that a statement of work is developed that will assure performance-based compliance. The project will be monitored using tools such as, but not limited to Microsoft Project, with tasks identified at the lowest level possible to assure control.

51. **Observation:** The Development Contractors did not possess appropriate financial expertise to develop the Collection System that we have defined as a financial system. (SDLC) **[Low]**

Recommendation: When developing financial systems, require the contractors to supply personnel with financial application development expertise to ensure financial requirements are being properly interpreted from the users and programmed into the application.

OMD/WTB Response: Concur, over the past year Computech has hired Collections Team programmers who have stronger programming and financial experience more in line with the requirements to support the Collections System. Under RAMIS personnel with financial application development expertise will be utilized to ensure that the financial requirements are properly interpreted from the users and programmed into the COTS application.

52. **Observation:** The most experienced programmer assigned to the project (i.e., Senior Developer) had no experience in developing financial applications. Others interviewed have little or no experience in developing financial applications. (P, SDLC) **[Low]**

    Recommendation: The criteria for replacement of individuals should include that a majority of the individuals be experienced in the development of financial applications.

    OMD/WTB Response: Concur, over the past year the Collections Team has been restructured and, through attrition, replacements have been brought on the team with stronger programming and financial experience more in line with the requirements to support the Collections System.

53. **Observation:** The deviations from the Project Plan were never formalized. Instead informal correspondence was used to document changes in priorities and tasks. (SDLC) **[Low]**

    Recommendation: All changes to tasking and requirements should be coordinated through the contracting officer. In addition, the contractor should not accept contractual relief from the COTR.

    OMD/WTB Response: Concur, this no longer occurs.

54. **Observation:** There was no Quality Assurance on this project. (I, SDLC) **[Low]**

    Recommendation: The FCC should require the contractor to implement their proposed quality assurance plan for this project.

    OMD/WTB Response: Concur, over the past year the Contractor has implemented procedures to ensure compliance with their

Quality Assurance (QA). The COTR and TPOC regularly meet
with the Contractor's Program Manager to review deliverables
under this project. Under RAMIS the COTS contractor will be
required to propose and then maintain rigorous quality
assurance, an engineering approach to any modifications, and
meet the test plan requirements set out by the FCC.

The ITC also accepts this recommendation. Information is
now being assembled defining each contractors QA plans and
COTRs will use this information to review their contractors
project management efforts and evaluate performance.

55. **Observation:** Buzz words and multiple-meaning words (e.g.
"completed") are used in the Status Reports, which would
cause the reader to make an incorrect assumption. For
example, it has been indicated in the Status Reports that
all auction payment processing has been completed. In fact,
up-front auction payments had not been processed and loaded
into the Collection Database. (P) **[Low]**

Recommendation: The Commission should direct Collection
System contractor's to revise the wording of the status
reports so that persons reading the documents who are not
close to the project are able to make the correct
assumptions and not be mislead or misinterpret the status of
the project tasks.

OMD/WTB Response: Concur, future status report wording will
include adequate text in order to avoid misinterpretation of
the status of the project. The respective Project Managers
and the contractors will issue regular bi-weekly project
status reports that address issues, concerns, and status on
ongoing tasks and identify completed tasks.

56. **Observation:** Stored Procedures exist without appropriate
header comments. Without header comments there is no place
for describing the Stored Procedure, identifying the
developer, and recording the changes to the Stored
Procedure. Good programming standards, such as header
comments, are essential in support of change management.
(I, P) **[Low]**

Recommendation: Develop a coding standards manual mandating
that all Stored Procedures contain header comments. Update
all Stored Procedures to comply with the coding standards
manual. Ensure that the program code review procedures
include steps to verify compliance with the coding standards
manual.

OMD/WTB Response: Concur, over the past year the Collections
Team has been developing a coding standards manual which
includes a requirement that all stored procedures contain

header comments and that all updates comply with the coding standards manual. As part of the development of the manual a quarterly program review requirement is being instituted to ensure that the Collections System program code review procedures include steps to verify compliance with the coding standards manual.

Database Issues

Database issues are similar to the audit trail control issues in that they affect the integrity of the data in the Collection System. The database specific issues can be more technical in nature than the general audit trail control issues, and thus have been segregated out from those. Without the proper controls built into the database structures, database security, and database procedures, the entire application can be compromised and the desired internal controls structures can also be more easily compromised. If database controls are not properly implemented and adhered to, inconsistent handling of the data can result in erroneous and/or missing data in the Collection System. The Collection System can also become more costly for the Commission to maintain in the long run without adherence to proper database maintenance standards.

57. **Observation**: The tracking of operational problem resolution is not formal and does not document what the problem is, what caused the problem, how it was resolved, and by whom with an appropriate tracking number. (P, PI) **[Low]**

Recommendation: Implement a formal problem resolution tracking system to ensure that operational problems are resolved in a timely and maintainable manner.

OMD/WTB Response: Concur, this practice is in place within the current management structure of the Collection System. A formal process is in place to track operational problems within the database.

58. **Observation**: Historical collection data is maintained on the Altos Computer. The Altos computer has modem connections used to dial out to the bank. Altos Computer security has not been reviewed. **[Low]**

Recommendation: A comprehensive security review should be performed on the Altos computer to ensure the data is controlled in a secure environment.

OMD/WTB Response: Concur, the data previously housed and maintained on the Altos has been transferred to a stand-alone database that can be accessed by the Collections System. The waiver application still resides on the ALTOS. Programming efforts to include the waiver application

software in the current Collection System is expected to implemented in the first quarter FY 1999. Additionally, waiver tracking will be a requirement of RAMIS.

59. **Observation**: Historical data has not been converted off of the Altos computer to the new Collection System database. (P) **[Low]**

    Recommendation: Study, plan, design and implement the conversion of the data from the Altos computer to the new Collection System database.

    OMD/WTB Response: Concur, the data has been transferred to a stand-alone database that can be accessed by the Collections System.

60. **Observation**: Sybase contractors are not performing typical DBA activities such as: documentation of the Unix and Sybase environments, monitoring and optimizing the database performance, optimizing indices, preparing and testing contingency plans and scripts, documenting and preparing DBA workbooks, etc. Instead, Sybase DBAs are [add typical functions]. (I) **[High]**

    Recommendation: Refocus the Sybase contractor efforts onto DBA activities instead of operational activities.

    OMD/WTB Response: Concur, this recommendation has already been implemented.

61. **Observation**: The Collection System is comprised of two separate databases (one in Gettysburg, PA and one in Washington, DC). Maintenance of procedures and databases for two separate but similar databases is costly and inefficient. (PI) **[Low]**

    Recommendation: Consolidate the two separate databases into one database.

    OMD/WTB Response: Concur, the task to consolidate the two databases is under consideration.

62. **Observation**: Operating system, network application, database application, and program application changes are made to the production environment without proper testing of the underlying applications to ensure proper operation and functionality after the change. In one case, changes were made to the version of Sybase being used. This change results in a significant negative impact on collection system performance. (P, PI) **[High]**

    Recommendation: Implement formal procedures to ensure all

underlying critical applications are tested with the new software prior to the new software being placed into the production environment.

OMD/WTB Response: Concur, the Collections Team has already adopted this recommendation.

63. **Observation:** The Collection System shares its server with other non-critical applications. (P) **[Medium]**

Recommendation: Due to the criticality of the accuracy of the information processed by the Collection System, develop an infrastructure which can ensure proper security and controlled environmental changes to the programs being run (such as a separate enclave).

OMD/WTB Response: Concur, the Collection System now has three separate environments (development, testing and production) as an infrastructure to assure security and a controlled environment for change. It is anticipated that RAMIS will be supported on a dedicated server.

64. **Observation:** Data fill is used in the form of zeroes on Collection System database records in order to attain the fixed length defined for the record set. The system is thus storing unnecessary zeroes. (P) **[Low]**

Recommendation: Evaluate the system design and tools used to determine if this is the most efficient manner for obtaining and storing database records. Storing of unnecessary information places undue burden on the database optimization.

OMD/WTB Response: Concur, the Collections Team has already evaluated the system design and the available tools used to determine the efficiency of the Collections System. Based upon this review the COTR procured additional software tools for tracking and deleting unnecessary information as well as authorizing modifications to existing system modules to optimize performance.

65. **Observation:** Review of the log files displayed many lines of errors (i.e., file not found, command aborted, cannot open input file). These types of errors may be indicative of loose ends in the program code. (P) **[Low]**

Recommendation: Each and every error in the log files should be fully explored to determine the cause, and how the error should be fixed for operational purposes and for programming purposes.

OMD/WTB Response: Concur, the log is reviewed at least daily

by the DBA, problems are promptly followed up on.

66. **Observation**: The SQL file cc_match.sql has extensive programming contained within the file. (P) **[Low]**

   Recommendation: The cc_match.sql programming should be rewritten into a stored procedure which falls under the normal Sybase access control protection and maintains programming consistency.

   OMD/WTB Response: Concur, the new nightly load which will be place into production by October 1, 1998, will satisfy this recommendation.

67. **Observation**: A Shell script (holdload.sh) contains code that obtains information from a Data Fill file (WFEETAB5.FIL). The Data Fill file has to be changed each day in order for the information to be valid. (P) **[Low]**

   Recommendation: Adjust the script to make use of more automated checks. For example, date validation checks, BAI end of file checks, Summarized transactions in comparison to balance records checks, etc.

   OMD/WTB Response: Concur, the new nightly load which will be place into production by October 1, 1998, will satisfy this recommendation. In addition, all future upgrades, enhancements and changes will comply with this requirement.

68. **Observation**: The Data Dictionary documentation of the date last altered does not seem to be working properly. A Data Dictionary copy was obtained from the Billings and Collection Branch and from the Developers. The contents of the BCB document were empty as of 11/8/96, but the "date last altered" shows 9/16/96 on the Developers copy. If the date last altered does not function correctly, this may present serious documentation issues as it will not be known if the most current version is being worked with. (P, PO) **[Low]**

   Recommendation: Review the settings for the date last altered to ensure it is properly functioning.

   OMD/WTB Response: Concur, the Collections Team has been tasked to review the settings for the date last altered to ensure it is properly functioning. Review to be performed by July 31, 1998.

69. **Observation**: The Data Dictionary and Data Entities Listing contained many loose ends. Sources were not shown on diagrams, elements were not used, and much of the individual element documentation was not considered complete. (P, PO,

SDLC) **[Low]**

> **Recommendation**: The Data Dictionary and Data Entities Listing should be reviewed and cleaned up to reflect the system as it exists, delete obsolete elements, and ensure elements are fully documented.

> **OMD/WTB Response**: Concur, the Data Dictionary and Data Entities Listing are dynamic documents which over the past year the Collections Team has been updating to reflect the current system. Additionally, when a software update has been successfully tested and accepted by BCB these documents are updated to reflect the additions, changes, and/or modifications.

70. **Observation**: The Data Dictionary and Data Entities Listing are not normalized. Our review identified several instances in which the exact same field element was presented numerous times. (P, SDLC) **[Low]**

> **Recommendation**: Conduct an analysis to determine if data elements and data entities can be further reduced.

> **OMD/WTB Response**: Concur, a feasibility study will be conducted in the FY 1999 to reduce data elements and data entities.

71. **Observation**: The Auction Application passes along a significant amount of information to the Collection System. In some cases, the same information is stored on both the Auction Application Database and the Collection System Database, resulting in redundant amounts of data. (PI) **[Low]**

> **Recommendation**: Review the interfacing between the Auction Application and the Collection System to streamline the dataflows and only store the necessary information in one system.

> **OMD/WTB Response**: Concur, a review shall be conducted in order to streamline the dataflows and only store the necessary information in one system. The review shall be completed by September 30, 1998. We hope to minimize data redundancy to the maximum extent within security constraints. So long as we can communicate with feeder systems, the revenue/collection system should hold as little unnecessary data as possible.

*Internal Control Issues Affecting Segregation of Duties
And Compromise of Controls*

Segregation of Duties internal controls help to ensure that no one person has the ability to facilitate or process in all

aspects of a system. This helps to ensure that only authorized activities happen in an application or a system. The compromise of the segregation of duty controls can allow for exposure to unauthorized activities that may be at the detriment of the Commission in a financial or regulatory manner.

72. **Observation:** BCB personnel responsible for the daily collection activities may also initiate refunds related to those same activities. While there is a formal review and approve process in place, the reviewers and approvers are also performing daily collection activities and are responsible for reviewing those daily activities. **[High]**

   Recommendation: Define a Business Process that segregates the refund function from the BCB personnel.

   OMD/WTB Response: Concur, since all checks, credit card transactions, and wire transfers are handled through the lockbox facility, we believe that the processing of properly authorized refunds is adequate. Under RAMIS the workflow analysis and the subsequent business process re-engineering will address separation of duties.

73. **Observation:** Credit card numbers of customers paying for fees and other matters with their credit cards are maintained on the Server with no encryption in place. FMS allows the use of credit cards as long as the credit card numbers are not maintained in a database. (S) **[High]**

   Recommendation: Remove the credit card numbers from the Collection Database or work with FMS to determine if FCC can instead encrypt the credit card numbers in the database.

   OMD/WTB Response: Concur, the Collections Team is actively working with the U.S. Treasury and Mellon Bank to develop a credit card system for the FCC. All credit card numbers, those already in the Collections System as well as those to be in-put into the system, will be protected following U.S. Treasury rules, policies, and guidelines. This credit card program will migrate to RAMIS.

74. **Observation:** Segregation of duties between refund of auction payments, daily cash application, and daily reconciliation of Certificates of Deposit has room for improvement. **[Medium]**

   Recommendation: Define a business process that segregates the reconciliation of the Certificates of Deposit, the refund execution of auction payments, the cash application process, and the reconciliation of Bank Statements.

   OMD/WTB Response: Concur, the RAMIS workflow analysis and

the subsequent business process re-engineering will address separation of duties. (3rd Quarter 1999)

75. **Observation:** Programming standards do not exist for the programmers of the Collection System. (P, PO) **[Medium]**

Recommendation: Implement and enforce the use of standard programming procedures from the existing Developers Company guidelines or other acceptable guidance.

OMD/WTB Response: Concur, over the past year the COTR and TPOC have implemented and enforced the use of standard programming procedures by the Collections Team programmers.

76. **Observation:** Customers credit card numbers are stored in the Collection System Database. (S) **[High]**

Recommendation: Credit card numbers should be secured in the tightest manner possible, which would include strong encryption and strong access controls. Implement the strong encryption techniques and access controls to help prevent unauthorized access and/or use of customer credit card numbers.

OMD/WTB Response: Concur, the Collections Team is actively working with the U.S. Treasury and Mellon Bank to develop a credit card system for the FCC. All credit card numbers, those already in the Collections System as well as those to be in-put into the system, will be protected following U.S. Treasury rules, policies, and guidelines. This credit card program will migrate to RAMIS.

77. **Observation:** Data Entity labeled CONFIDENTIAL_PAYMENT could be indicative of surreptitious activities. It is not a normal financial application feature. (S) **[High]**

Recommendation: Delete this data entity.

OMD/WTB Response: Concur, we will review the labelling, and if it is appropriate we will delete this data entity. The review will be accomplished by July 31, 1998.

78. **Observation:** Sybase roles and responsibilities have an excessive number of userids assigned to the sa_role (13), sso_role (10), sybase_ts_support role (4). (S) **[Medium]**

Recommendation: Implement a periodic review procedure to determine whether the userids assigned these more powerful Sybase functions are still necessary and that the access is appropriately authorized.

OMD/WTB Response: Concur, over the past year the Collections

Team DBA has met with the COTR and TPOC on a quarterly basis to determine whether the userids assigned to the Sybase functions are still necessary and that the access is appropriately authorized. New userids must go through the TPOC and COTR for authorization.

79. **Observation**: Until recently, software peer reviews had not been used in the development of the software. The establishment of these reviews occurred such a short time ago that the effectiveness is unknown. (P, SDLC) **[Low]**

    Recommendation: The Commission should periodically review the results of the software peer review process to ensure that it been effectively implemented.

    OMD/WTB Response: Concur, as a part of the RAMIS SOW, peer reviews will be required as part of the quality assurance function. (2nd Quarter FY 1999)

80. **Observation**: Some of the developers on the project are following informal programming standards. (P, SDLC) **[Medium]**

    Recommendation: The Commission should ensure that Collection System contractors implement either a government provided programming standard or their corporate programming standards.

    OMD/WTB Response: Concur, The ITC's emphasis is being placed on the development of FCC programming standards for each language. Changes in ITC contracts for Sybase, PowerBuilder and web support staff now being made will permit these contractors to work with FCC staff to develop programming standards for the basic languages in use at the FCC. These standards will be promulgated and their use by PSC staff verified.

    FCC published standards or COTS Contractor standards will be used for RAMIS.

81. **Observation**: The project did not have a problem report with the associated documentation that would indicate a formal change management process. (I, P, SDLC) **[Medium]**

    Recommendation: The project needs to implement a change control process that is formalized with documentation and approval processes.

    OMD/WTB Response: Concur, the COTR and TPOC, in coordination with the Contractor's Program Manager, have implemented a formalized change control process. This process requires a "Change Request" document be initiated by the Requestor and

be submitted to the COTR for approval by the COTR and TPOC before the programmers make any changes.

The FCC is pursuing improvement to the management of all ADP development projects on several paths. The first is by defining and implementing an FCC SDLC. The second is through the ITC providing increased support to programming task staff for the management of requirements definition, changes to requirements, system releases, hardware and software configuration changes/upgrades etc. In support of this effort ITC recently purchased the CAST Workbench. PVCS, PowerSite and other products that can support this effort are under evaluation. Thirdly, ITC is establishing a more defined and controlled process through which releases/version are moved from development to test/acceptance and implementation under the control of FCC staff.

82. **Observation:** The project could not show any evidence of a cohesive project plan. (P, SDLC) **[Low]**

Recommendation: The project manager for this program should either be trained or relieved. In either case, a cohesive project plan should be developed to address the activities that are projected during the course of the effort.

OMD/WTB Response: Concur, the Collections Team has been reorganized and the current Project Manager is a fully qualified Sybase and Powerbuilder programmer. In addition, there has been a staff transition within the Collection Team which has added qualified Powerbuilder 5.0 programmers and a management analyst which strengthen the credentials of the team. OMD/WTB has worked with the Collections Team Project Manager to develop a cohesive project plan which address activities that are projected during the course of the effort. Specifically, these activities focus on the production modules which must be maintained for daily operations, the remaining modules will be addressed by RAMIS.

83. **Observation:** A Test Plan does not exist. (SDLC) **[Low]**

Recommendation: The project should formalize the testing process. It should address, at the minimum, unit testing, integration testing, performance testing, and government acceptance testing.

OMD/WTB Response: Concur, the Collections Team has already instituted a segregated test environment with formalized testing procedures and "push-pull" approval requirements. In addition, the Collections Team maintains a library of all test plans.

84. **Observation:** Unprofessional naming conventions were identified in the review of the Sybase Stored procedures which make reference to "junk" or individual programmers names. (P) **[Low]**

   Recommendation: Standard naming conventions with professional naming should be used for labeling of all stored procedures. Meaning of the stored procedure should be entailed within the naming convention used.

   OMD/WTB Response: Concur, over the past year the Collections Team has been utilizing standard naming conventions with professional naming for labeling of all stored procedures to include a definition of the stored procedure.

85. **Observation:** Review of the stored procedures yielded several procedures which would seem to be obsolete since the coding of the stored procedure did not cause an action of any kind to occur on a Collection System Table. (P) **[Low]**

   Recommendation: Standard change control procedures help to prevent retention of obsolete code and should be employed. Additional controls in the form of periodic reviews for obsolete code and scrubbing of the system are also encouraged.

   OMD/WTB Response: Concur, over the past year the Collections Team has been utilizing standard change control procedures in order to prevent retention of obsolete code. In addition, the Collections Team has been tasked to review and delete obsolete code within the Collections System program modules. The review of existing code will be completed by December 31, 1998.

   In addition, the Collections Team has instituted a quarterly code review to maintain a configuration management system for the Collections System program code.

86. **Observation:** Stored Procedures variables are being declared without an appropriate comment. Variables need to be defined and identified with a comment to assist the maintainer of the Stored Procedure in understanding the value and relationship of the variable. Ensure that the program code review procedures include steps to verify compliance with the coding standards manual. (P) **[Low]**

   Recommendation: Develop a coding standards manual mandating that all variables within Stored Procedures contain comments that describe the purpose of the variable. Update all Stored Procedures to comply with the coding standards manual. Ensure that the program code review procedures

include steps to verify compliance with the coding standards manual.

OMD/WTB Response: Concur, over the past year the Collections Team has been utilizing standard naming conventions with professional naming for labeling of all stored procedures to include a definition of the stored procedure. The Collections Team has been tasked to develop a coding standards manual with a requirement to update all Stored Procedures to comply with the coding standards manual.

87. **Observation:** The underlying behavior of a Stored Procedure is not being expressed in plain language. Maintainers should find, within the header comments of Stored Procedures, plain language that describes the function and flow of the Stored Procedure. (P) **[Low]**

    Recommendation: Develop a coding standards manual mandating that all Stored Procedures contain, within the header comments, plain language that expresses the behavior of the Stored Procedure. Update all Stored Procedures to comply with the coding standards manual. Ensure that the program code review procedures include steps to verify compliance with the coding standards manual.

    OMD/WTB Response: Concur, over the past year the Collections Team has been utilizing standard naming conventions with professional naming for labeling of all stored procedures to include a definition of the stored procedure. The Collections Team is developing a coding standards manual which includes procedures to ensure that all Stored Procedures contain, within the header comments, plain language that expresses the behavior of the Stored Procedure. The completed manual is due by March 31, 1999.

88. **Observation:** Some Stored Procedures do not contain comments in code to help in the understanding of the code. Comments within the body of the Stored Procedure need to exist for identify logic flow and function to assist maintainers in the change. (P) **[Low]**

    Recommendation: Develop a coding standards manual mandating that all Stored Procedures contain comments in code to facilitate understanding the algorithm reflected in the software. Update all Stored Procedures to comply with the coding standards manual. Ensure that the program code review procedures include steps to verify compliance with the coding standards manual.

    OMD/WTB Response: Concur, the Collections Team will develop a coding standards manual mandating that all Stored Procedures contain comments in code to facilitate

understanding the algorithm reflected in the software. Updates to all Stored Procedures will comply with the coding standards manual. The completed manual is due by March 31, 1999.

89. **Observation**: A standard layout format for Stored Procedures could not be identified. (P) **[Low]**

    Recommendation: Develop a coding standards manual mandating that all Stored Procedures conform to a standard layout format and ensure that the program code review procedures include steps to verify that Stored Procedures conform to the standard layout format in the coding standards manual.

    OMD/WTB Response: Concur, the Collections Team will develop a coding standards manual mandating that all Stored Procedures conform to a standard layout format and ensure that the program code review procedures include steps to verify that Stored Procedures conform to the standard layout format in the coding standards manual. The completed manual is due by March 31, 1999.

90. **Observation**: A consistent naming convention for Stored Procedures could not be identified. (P) **[Low]**

    Recommendation: Develop a coding standards manual mandating that all Stored Procedures conform to a standard naming convention. Ensure that the program code review procedures include steps to verify that Stored Procedures conform to a standard naming convention as specified in the coding standards manual.

    OMD/WTB Response: Concur, the Collections Team will develop a coding standards manual mandating that all Stored Procedures conform to a standard naming convention. Ensure that the program code review procedures include steps to verify that Stored Procedures conform to a standard naming convention as specified in the coding standards manual. The completed manual is due by March 31, 1999.

91. **Observation**: The Collection System Payments Narrative Processes Breakdown documentation has numerous clerical errors, and lists many processes that were missing or unaccounted for. (P) **[Low]**

    Recommendation: The Commission should direct the contractor's developing the Collection System to complete the documentation of the existing processes listed in the Payment Process breakdown and make them available to all users.

    OMD/WTB Response: Concur, over the past year the Collections

Team has been documenting the entire Collections System's modules and processes, including the Payment Process breakdown. The completed manual will be available for all users in the second quarter of FY 1999.

92. **Observation**: The Collection System Payment Processes do not use a standard format, and do not have clear cut step by step procedures. In addition, insufficient information is provided within the content of the process described. (P) **[Low]**

Recommendation: Establish a standard format that all processes will be drafted by. Include in each process the objective of the process, why the process is being done, who is responsible for the completion of the process, when it is to be done, step by step procedures on how the process is to be done, how the process is verified and validated, and what the user does with the completed transaction.

OMD/WTB Response: Concur, the Collections Team, COTR and TPOC have been establishing a standard format for all Collections System processes. This includes the objective of the process, why the process is being done, who is responsible for the completion of the process, when it is to be done, step by step procedures on how the process is to be done, how the process is verified and validated, and what the user does with the completed transaction.

93. **Observation**: Non standard banking terminology was used in the drafting of the processes, which could be misinterpreted. (P) **[Low]**

Recommendation: Use standard banking terminology in the drafting of all Collection System Payment Processes.

OMD/WTB Response: Concur, over the past year the Collections Team has been using standard banking terminology in the drafting of all Collection System Payment Processes.

94. **Observation**: Numerous processes have been drafted containing little or no information at all. (P) **[Low]**

Recommendation: Establish a standard format that all processes will be drafted by. Include in each process all information required to complete that process.

OMD/WTB Response: Concur, over the past year the Collections Team has been working with the COTR and TPOC to establish a standard format for drafting all processes.

Programming Related Matters

Programming issues are systematic of not having or adhering to a System Development Life Cycle (SDLC) methodology. Without the proper controls built into the programming methods, programming code, and programming processes, the entire application can be compromised and the desired internal controls structures can also be more easily compromised. This leads to more costs for the Commission to maintain the Collection System in the long run without adherence to proper programming standards. New releases of software can also make the maintainability of the Collection System more difficult as the application may have to be re-written each time a new operating system or database software release is implemented due to the way in which the program code has been effected and documented. This could result in tremendous costs to the Commission.

95. **Observation:** The Data Dictionary contained several instances of non-professional language. (PO, SDLC) **[Low]**

Recommendation: Enforce good programming standards to ensure professional language is used throughout the Data Dictionary.

OMD/WTB Response: Concur, over the past year the Collections Team has followed good programming standards to ensure professional language is used throughout the Data Dictionary. The Data Dictionary will be updated on a quarterly basis until convergence to RAMIS.

The ITC also accepts this recommendation. Instructions to contractor project managers will be promulgated and task COTRs will be shown how to verify compliance.

96. **Observation:** The draft user manual dated 7/3/97 was given a perfunctory review. There are several areas noted in which improvements could be made: Cohesiveness of the document; Glossary of Terms; Reflection of the actual functionality in the working environment; Reflection of the modules in actual use; Financial Terminology. These comments are in addition to the Collection System Users Guide Review Report provided by the Billing and Collections Branch to the system developers which states that the application is not in compliance with OMB Circular A-127. **[Low]**

Recommendation: A re-write of the user manual should be performed, if the application is to be retained to take into account the above items.

OMD/WTB Response: New manuals and training guides will be prepared for the new System.

97. **Observation:** All contract programming staff interviewed were new (≤ 3 months) to the Collections System project. This

lack of corporate history can be overcome through effective management of the project. **[Low]**

Recommendation: The Commission take steps (e.g., establish key personnel classifications) to ensure that changes to the staff be in small increments allowing for the transfer of corporate knowledge.

OMD/WTB Response: Concur, the ITC accepts this recommendation and will pursue with Acquisitions staff the development of appropriate contract language to encourage the contractor firm to work towards this goal.

Employee retention will be an issue for the new system as well, particularly since only Civil Service temporary appointments are available.

98. **Observation**: The schedules that were identified for enhancements or development did not reflect any reviews or acceptance testing. (SDLC) **[Low]**

Recommendation: Schedules should be developed to include developmental lifecycle concepts of formal reviews.

OMD/WTB Response: Concur, current and future tasks will include schedules to include developmental lifecycle concepts of formal reviews.

The SDLC under development will provide for and define the needed review phases and efforts. Responsibilities for directing and participating in these efforts will also be defined.

99. **Observation**: Formal acceptance criteria could not be identified. (SDLC) **[Low]**

Recommendation: Formal acceptance criteria should be developed for each task. Without formal acceptance criteria the developer has little or no direction as it relates to the end product.

OMD/WTB Response: Concur, over the past year the Collection Team has implemented formal acceptance criteria and procedures for software in-products. Under the current Collection System and RAMIS, acceptance testing criteria will be included in the Project Test Plan.

The ITC is examining alternatives that might improve the acceptance process by employing a separate contractor to develop acceptance criteria, develop test data and test plans, and to participate along with FCC staff in the acceptance testing process.

100. **Observation**: Of the weekly and monthly status reports provided, there does not seem to be a logical progression and resolution of tasks as they are assigned or discussed. Items which are scheduled for the next reporting period are not always addressed as to their status in the next reporting period. (PI) **[Low]**

Recommendation: In presenting the status reports, The contractor should be directed to indicate the resolution of the items indicated as planned to be worked on during the reporting period at hand.

OMD/WTB Response: Concur, over the past year the status reports, provided to the COTR include resolution of the items indicated as planned to be worked on during the reporting period at hand.

The ITC also accepts this recommendation. This subject will be discussed at the monthly COTR meetings and task COTRs will be encouraged to require their contractors to comply.

101. **Observation**: Vague narrative was contained in a monthly status report wherein the Projected Completion Date was stated as indefinite. **[Low]**

Recommendation: The Commission should direct Collection System contractor's to include only specific language in official documents.

OMD/WTB Response: Concur, the ITC accepts this recommendation as it applies to all PSC work. This subject will be discussed at the monthly COTR meetings and task COTRs will be encouraged to require their contractors to comply.

102. **Observation**: There is no standardized header format and no overall standardized format for all C programs and shell scripts reviewed. **[Low]**

Recommendation: Establish a standardized header format for all C programs and shell scripts.

OMD/WTB Response: Concur, Changes in ITC contracts for Sybase, PowerBuilder and web support staff now being made will permit these contractors to work with FCC staff to develop programming standards for the basic languages in use at the FCC. These standards will be promulgated and their use by PSC staff verified.

103. **Observation**: There are no comments written within the code for C programs and shell scripts. Functions are not

identified or expressed in plain language. **[Low]**

Recommendation: Include comments in the code that identify the individual functions in plain language, and comments that describe what function the code is executing.

OMD/WTB Response: Concur, changes in ITC contracts for Sybase, PowerBuilder and web support staff now being made will permit these contractors to work with FCC staff to develop programming standards for the basic languages in use at the FCC. These standards will be promulgated and their use by PSC staff verified.

104. **Observation:** There are no comments in the header to describe the code nor identify for C programs and shell scripts modifications to the code as to who made the modification and when. **[Low]**

Recommendation: Develop and implement a standardized header format for C programs and shell scripts that will include comments in the header to describe the code, and identify modifications to the code as to who made the modification and when.

OMD/WTB Response: Concur, changes in ITC contracts for Sybase, PowerBuilder and web support staff now being made will permit these contractors to work with FCC staff to develop programming standards for the basic languages in use at the FCC. These standards will be promulgated and their use by PSC staff verified.

105. **Observation:** Functions have no headers, no comments, or underlying behavior statements to assist in the maintenance of the code for C programs and shell scripts. **[Low]**

Recommendation: Develop and implement a standardized header format that will include headers, comments in the header, and underlying behavior statements to assist in the maintenance of the code.

OMD/WTB Response: Concur, changes in ITC contracts for Sybase, PowerBuilder and web support staff now being made will permit these contractors to work with FCC staff to develop programming standards for the basic languages in use at the FCC. These standards will be promulgated and their use by PSC staff verified.

106. **Observation:** There are no variable or constant declaration statements in the C programs or shell scripts. **[Low]**

Recommendation: All programs contain sufficient statements and/or comments as to how variables and constants are being

used throughout the code for Powerbuilder programs.

OMD/WTB Response: Concur, the ITC accepts this recommendation. Changes in ITC contracts for Sybase, PowerBuilder and web support staff now being made will permit these contractors to work with FCC staff to develop programming standards for the basic languages in use at the FCC. These standards will be promulgated and their use by PSC staff verified.

107. **Observation:** A standardized naming convention is undefined for C programs and shell scripts. **[Low]**

   Recommendation: Establish a standard naming convention that all C programs and shell scripts will be drafted by.

   OMD/WTB Response: Concur, changes in ITC contracts for Sybase, PowerBuilder and web support staff now being made will permit these contractors to work with FCC staff to develop programming standards for the basic languages in use at the FCC. These standards will be promulgated and their use by PSC staff verified.

108. **Observation:** There is no standardized header format and no overall standardized format for all Powerbuilder programs and scripts reviewed. **[Low]**

   Recommendation: Develop and implement one overall standard format and a standardized header format and create all Powerbuilder programs and scripts in accordance with the agreed upon formats.

   OMD/WTB Response: Concur, changes in ITC contracts for Sybase, PowerBuilder and web support staff now being made will permit these contractors to work with FCC staff to develop programming standards for the basic languages in use at the FCC. These standards will be promulgated and their use by PSC staff verified.

109. **Observation:** There are no comments in the header to describe the code and identify modifications to the code as to who made the modification and when for the Powerbuilder programs. **[Low]**

   Recommendation: Develop and implement a standardized header format that will include comments in the header to describe the code, and identify modifications to the code as to who made the modification and when for the Powerbuilder programs.

   OMD/WTB Response: Concur, changes in ITC contracts for Sybase, PowerBuilder and web support staff now being made

will permit these contractors to work with FCC staff to develop programming standards for the basic languages in use at the FCC. These standards will be promulgated and their use by PSC staff verified.

110. **Observation:** There are no comments written within the code for Powerbuilder programs. Functions are not identified or expressed in plain language. **[Low]**

Recommendation: Include comments in the code that identify the individual functions in plain language, and comments that describe what function the code is executing for Powerbuilder programs.

OMD/WTB Response: Concur, changes in ITC contracts for Sybase, PowerBuilder and web support staff now being made will permit these contractors to work with FCC staff to develop programming standards for the basic languages in use at the FCC. These standards will be promulgated and their use by PSC staff verified.

111. **Observation:** Functions have no header, no comments, or underlying behavior statements to assist in the maintenance of the code for Powerbuilder programs. **[Low]**

Recommendation: Develop and implement a standardized header format that will include headers, comments in the header, and underlying behavior statements to assist in the maintenance of the code for Powerbuilder programs.

OMD/WTB Response: Concur, changes in ITC contracts for Sybase, PowerBuilder and web support staff now being made will permit these contractors to work with FCC staff to develop programming standards for the basic languages in use at the FCC. These standards will be promulgated and their use by PSC staff verified.

112. **Observation:** There are no variable or constant declaration statements in the programs or scripts for Powerbuilder. **[Low]**

Recommendation: All Powerbuilder programs contain sufficient statements and/or comments as to how variables and constants are being used throughout the code.

OMD/WTB Response: Concur, the ITC accepts this recommendation. Changes in ITC contracts for Sybase, PowerBuilder and web support staff now being made will permit these contractors to work with FCC staff to develop programming standards for the basic languages in use at the FCC. These standards will be promulgated and their use by PSC staff verified.

113. **Observation**: A standardized naming convention for Powerbuilder programs is undefined. **[Low]**

   Recommendation: Establish a standard naming convention that all Powerbuilder programs and scripts will be drafted by. Include the identification of the naming convention in the Powerbuilder program or script.

   OMD/WTB Response: Concur, changes in ITC contracts for Sybase, PowerBuilder and web support staff now being made will permit these contractors to work with FCC staff to develop programming standards for the basic languages in use at the FCC. These standards will be promulgated and their use by PSC staff verified. RAMIS will establish a standard naming convention that all Powerbuilder programs and scripts will be drafted by. Include the identification of the naming convention in the Powerbuilder program or script.

114. **Observation**: Blocks of code exist that contain no comments as to their function, no headers, no naming convention, no declaration statements, or statements that assist in the maintenance of the code for Powerbuilder programs. **[Low]**

   Recommendation: Develop and implement one overall standard format and a standardized header format and create all Powerbuilder programs and scripts in accordance with the agreed upon formats. Include comments in the code that identify the individual functions in plain language, and comments that describe what function the code is executing. Establish a standard naming convention that all programs and scripts will be drafted by. Include the identification of the naming convention in the program or script.

   OMD/WTB Response: Concur, changes in ITC contracts for Sybase, PowerBuilder and web support staff now being made will permit these contractors to work with FCC staff to develop programming standards for the basic languages in use at the FCC. These standards will be promulgated and their use by PSC staff verified.

Process Improvement Matters

During the review, several areas were noted in which the processes, if engineered in a different manner, could result in more efficient and less costly operations for the Commission. When identifying areas for process improvement, the ideal basis is to concentrate on single sources of information, singles sources of input, and single sources of processing. So as not to cause redundancy, inefficiency, and result in more costs to the entities involved.

115. **Observation:** During the review of functionality requirements and system requirements, it was evident that not all users of the Collection System information had been involved during the design of the Collection System. In order to design effective accounting and management information systems, it is imperative that all users have input into the process in order for the system to become a functional system used throughout the Commission. (SDLC) **[Low]**

   Recommendation: Revise development procedures to ensure the opportunity for all users communities to be involved in the design and testing of the application.

   OMD/WTB Response: Concur, RAMIS will revise development procedures to ensure the opportunity for all users communities to be involved in the design and testing of the application. The Project Plan will include tasks for workflow analyses, data and reporting needs, and focus groups about the new system. The steering committees should consist of representatives from all of the Bureaus and Offices who are stakeholders.

116. **Observation:** While significant volumes of information on user requirements exist, there is no one cohesive user requirement document or formal procedures for tracking to ensure implementation or disposition of a user requirement. In addition, the user requirements were never turned into functional requirements and placed into more programmable requirements, resulting in the achievement of only 30% of the intended functionality. Without the documented user requirements and functional requirements, the business process improvements are never programmed and therefore the automation does not help make the processes more efficient. (SDLC) **[Low]**

   Recommendation: When undertaking development efforts, a full user requirements and functional requirements analysis should be performed in order to prepare the requirements analysis document from which the program plan maybe generated. In addition, a formal method for tracking the user requirements through to implementation or disposition should be implemented.

   OMD/WTB Response: Concur, the Project Manager recommends that, to the extent possible, all procedures and processes be changed to use the capabilities of the COTS package selected. The requirements analyses will provide the basis for developing the RFP, identifying BPR areas, developing the OCD tests, and developing the evaluation criteria.

117. **Observation:** The Collection System Wireless department users have a need for intraday information from Mellon Bank during

auction programs. The requirements as defined require the use of another form (Form 159) to be input as wires and checks are received instead of using currently available technology. **[Low]**

Recommendation: Require electronic intraday bank reporting be used with any Collection System put in place at the FCC.

OMD/WTB Response: Concur, a requirement will be included in the RFP that either unique data records be imported while the system is in production or that remote entry be available.

118. **Observation**: At the time our review was completed, plans were being considered in which three separate data feeds would be required from Mellon bank. **[Low]**

Recommendation: The Commission should recognize the risks associated with duplicate data feeds and consider eliminating this practice.

OMD/WTB Response: Concur, this will be considered under the RAMIS "Requirements Analysis". Further, Nortridge (or other loan management system data) will be treated as a subsidiary ledger with daily, weekly and monthly updates to the central revenue system.

119. **Observation**: The Collection System requirements did not automate the information for returned checks (also known in the banking industry as returned items). **[Low]**

Recommendation: Returned items information should be returned electronically from Mellon Bank in order to automatically populate the Collection System and take the automated appropriate actions as a result of the returned items.

OMD/WTB Response: Concur, the new system will require that returned check data be included in the electronic feed from the servicing bank.

120. **Observation**: FCC has no common data dictionary for programming efforts. (PO) **[Low]**

Recommendation: Develop a Commission-wide common data dictionary, which will allow for more efficient programming efforts and sharing on information among applications. This common data dictionary should also make use of standardized data elements, data fill, and data interoperability.

OMD/WTB Response: Concur, RAMIS will develop a Commission-wide common data dictionary, which will allow for more

efficient programming efforts and sharing on information among applications. This common data dictionary will also make use of standardized data elements, data fill, and data interoperability.

121. **Observation:** The developer has not adopted an engineering approach to developing software. (SDLC) **[Low]**

    Recommendation: The contractor should be directed to implement software development standards. In addition the contractor should train their developers on how to professionally develop software.

    OMD/WTB Response: Concur, over the past year the Collections Team programmers have implemented and followed software development standards. The programmers have been professionally developing software for the Collections System.

122. **Observation:** The contractor is not engineering this system. This results in the project having no characteristics of an engineering effort. The project has separated from the requirements and is moving forward reacting to the current issues. **[Low]**

    Recommendation: No new work requirements should be developed until an appropriate or formalized engineering structure is established.

    OMD/WTB Response: Concur, under RAMIS new work requirements will be developed following an established or formalized engineering structure.

123. **Observation:** The costs of the existing Collection System are far greater than the costs of a COTS package implementation. In addition, the existing Collection System contains less than 30% of the desired functionality whereas the COTS packages contain 80% to 90% of the desired functionality. (SDLC) **[High]**

    Recommendation: Abandon the in-house developed Collection System solution and migrate towards a COTS package.

    OMD/WTB Response: Concur, however, the current system must be maintained until a COTS solution is identified, tested and implemented.

Policy and Procedures Issues

These comments relate to specific instances in which adherence to a specific policy was not followed or in which a specific manual process is followed for which no formal documented policy exists.

124. Observation: Adherence to a System Development Life Cycle (SDLC) methodology from system design to system implementation was not apparent. Documents expected through the adherence to any type of SDLC were neither prepared nor readily available. Use of a SDLC methodology will help ensure the system is properly designed (whether Commercial Off the Shelf (COTS) or in-house developed (IHD)), documented, programmed, implemented, and users are properly trained. This also helps to ensure the system is maintainable with the minimum amount of resources. **[Low]**

   Recommendation: Whether contractor support or FCC personnel, use of a SDLC should be mandatory and measured to ensure a SDLC is being used.

   OMD/WTB Response: Concur, an FCC SDLC will be developed.

125. Observation: During the data integrity review, many transactions with payment type code >ZZZ= or >ZZZZ= were noted. No formal procedures for reclassifying these transactions to their appropriate payment type code exist. Without the proper payment type code classification, the correct service type has not been identified. **[Low]**

   Recommendation: Establish formal processing procedures for reclassifying AZZZ= and >ZZZZ= transactions to their appropriate payment type code.

   OMD/WTB Response: Concur, formal processing standards shall be developed by, or before, October 31, 1998.

126. Observation: The transmission between the FCC and Mellon Bank is over open and clear telephone lines without any encryption. **[High]**

   Recommendation: Implement encryption technology for the Mellon Bank transmission.

   OMD/WTB Response: Concur, the implement of encryption technology for the servicing bank transmission will be reviewed as part of RAMIS.

SDLC – Life Cycle Development Issues

OMB Guidance specifically recommends adherence to a System Development Life Cycle methodology, whether for newly developed or for the enhancements of existing applications. Specific comments regarding the adherence to any SDLC methodology are indicated to emphasize the importance of the need for adherence to a SDLC. Without the use of and adherence to a SDLC methodology, the end application may result in pieces which are

not easily maintainable, are costly to maintain, and which do not function as desired by the

127. **Observation**: Throughout the evolution of the Collection System and the processes used by Mellon Bank, the Commission has failed to fully explore commercially available options. In addition, a feasibility analysis of available options has not been performed. **[Low]**

    Recommendation: A documented feasibility analysis should be performed any time a new system or application is being considered. The Commission should ensure that any methodology used to develop Commission information systems includes a requirement for conducting a feasibility analysis.

    OMD/WTB Response: Concur, the FCC has already decided to develop and implement a new system based upon a COTS package. Future information system enhancements will follow a SDLC which includes feasibility analyses.

128. **Observation**: The User Manual reads like an automated paper process. The Collection System did not automate or make more efficient the business processes, but instead placed those manual processes on the computer. **[Low]**

    Recommendation: The business processes for Money Collection should be reviewed and streamlined in order to make the process less time consuming, more accurate, and more efficient. Moving towards a more COTS-oriented package will not prove beneficial unless the business processes themselves are evaluated and improved.

    OMD/WTB Response: Concur, OMD will review the business processes for Money Collection. This review will be conducted in unison with the development of the new system.

F.   DETAILED RECOMMENDATIONS PHASE II

The Ernst & Young results of the Phase II portion of the review are encompassed in this detailed recommendations section. Ernst & Young's complete report is included in its entirety as Appendix A of this report.

In summary, the E&Y report noted the FCC did not provide source data for fifty-two (52) of the one-thousand six-hundred ninety-five (1695) transactions selected. There were seven-hundred eleven (711) instances in which the data contained in the collections system differed from the source documents provided, most of which related to discrepancies in non-monetary fields. The differences include discrepancies in dates of payment receipt, payor names and addresses, amounts, FCC fee control numbers, FCC account numbers, payment type codes and payment methods. Of the seven-hundred eleven (711) instances noted, thirty-three (33) instances were sample items totaling approximately $39 million related to discrepancies in monetary amounts or instances where no check or wire slip could be located to substantiate the transaction. One (1) item represented an auction-related transaction where the discrepancy between the bank wire and the Collection System extract totaled $87,435.

In addition, the collections system allows transaction information to be updated without necessarily creating and retaining an audit trail. E&Y also noted a need to reconcile information included in the data extract with amounts reflected in the FCC general ledger, and to reconcile the total deposits and disbursements in FCC cash accounts to such amounts as well.

What isn't stated in the E&Y report is the elongated duration of time incurred to obtain documents to support the transactions. In addition, there is not a mention of the significant analysis time spent to determine how to agree documents, once obtained, to the transactions they are supposed to represent. Both of these represent the need for extensive improvement in the areas of record keeping and audit trails for transactions recorded in the Collection System.

Appendix A contains the detailed E&Y report as well as the schedules supporting their report. E&Y also included, at the request of FCC Management, recommendations on observations they made during the course of the Agree-Upon Procedures. These are also included in Appendix A.

OMD/WTB Response: Concur, a monthly proof of cash has been implemented to assure that dollars are reconciled.

We agree to make improvements in record keeping and audit trails.

G.   OVERALL CONCLUSIONS

The Commission's Collection System application does not meet OMB guidance as it relates to segregation of duties, accountability within the application, adequacy of preparedness for contingency planning, and overall access controls. In addition, after over five years of development effort the Collection System provides less than 30% of desired functionality. The data contained in the Collection System is not fully supported for dates of the transaction, payor, addresses, payment type codes, or other related fields. Amounts are supported, except for the ten thousand (10,000+) plus duplicated transactions contained in the database.

Based on the above, the Team recommends an abandonment of the existing Collection System development effort. Funds to be used for development should be moved towards the selection and implementation of a COTS package for processing incoming payments to the FCC.

Concurrent with abandonment of the existing system, overall controls should be strengthened while moving towards the new system. The Commission should: formalize the Systems Development Life Cycle (SDLC) process; implement proper logical and physical segregation of duties; implement proper security administration of userids; establish formal roles and responsibilities; establish logical segregation of developers from security and application functions; and formalize the change management process.